



STANBURY
TRAFFIC PLANNING

TRAFFIC, PARKING & TRANSPORT CONSULTANTS

UPDATED PARKING & TRAFFIC IMPACT ASSESSMENT

**PROPOSED PRIMARY SCHOOL
THE INTERNATIONAL CHINESE SCHOOL
211 PACIFIC HIGHWAY
ST LEONARDS**

**PREPARED FOR INTERNATIONAL CHINESE SCHOOL
OUR REF: 19-050**



APRIL 2020

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ATTACHMENTS

- 1. Architectural Plans**
- 2. Swept Path Plans**
- 3. Sight Distance Diagram**
- 4. Traffic Management Plan**
- 5. Potential Future Statement of Operations**
- 6. Traffic Survey Output**
- 7. SIDRA Modelling Output (Existing Conditions)**
- 8. SIDRA Modelling Output (Projected Conditions)**
- 9. Green Travel Plan**

1. INTRODUCTION

1.1 Scope of Assessment

Stanbury Traffic Planning has been commissioned by International Chinese School to undertake an Updated Parking & Traffic Impact Assessment in support of a proposal to establish a primary school at 211 Pacific Highway, St Leonards.

The proposal involves the alterations and additions to an existing commercial building situated within Cemetery Trust land between Pacific Highway and Gore Hill Oval to accommodate The International Chinese School, a bilingual primary school with a capacity of 160 students.

The school is proposed to be serviced by a small undercroft car parking area containing 10 parking spaces. Further, it is proposed that a formal set-down / pick-up area be provided to the east of the building, being located on Cemetery Trust land.

Vehicular access to the undercroft parking area and formal student set-down / pick-up area is proposed to be obtained via a Council owned public off-street car parking area situated further to the east, which links with Pacific Highway eastbound carriageway via a driveway to the south-east of the subject building. Vehicular access movements from the Pacific Highway eastbound carriageway is proposed to be assisted by the construction of a deceleration lane, specifically servicing the Council car park.

This aim of this assessment is to investigate and report upon the potential parking and traffic consequences of the proposal and to recommend appropriate ameliorative measures where required. This report provides the following scope of assessment:

- Section 1 provides a summary of the site location, details, existing and surrounding land-uses;
- Section 2 describes the proposed development and operational characteristics;
- Section 3 assesses the site access, internal circulation and servicing considerations of the proposal with respect to the relevant Australian Standard and Council specifications in conjunction with the expected operational requirements;
- Section 4 assesses the adequacy of the on-site and immediately adjoining long and short term parking supply associated with established Council requirements and the expected operational demands;
- Section 5 assesses the existing transport conditions within the vicinity of the site including road network operation and sustainable transport access and connectivity;

- Section 6 assesses the projected transport conditions incorporating the development with respect to the projected traffic generating ability of the proposed development and the ability or otherwise of the surrounding road network to be capable of accommodating the altered demand in a safe and efficient manner; and
- Section 7 provides an indicative assessment of the traffic and pedestrian management measures likely to be implemented during the construction phases of the development.

The report has been prepared pursuant to State Environmental Planning Policy (Infrastructure) 2007.

The application forms a State Significant Development and the Secretary's Environmental Assessment Requirements (SEARs) for the preparation of an Environmental Impact Statement are extensive with respect to Transport and Accessibility. To assist, **Table 1** below and overleaf specifies which section or sections of this report address each of the SEARs with respect to Transport and Accessibility.

TABLE 1 SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS TRANSPORT & ACCESSIBILITY	
Requirement	Section/s of Report Addressing Item
An assessment of all relevant vehicular traffic routes and intersections for access to / from the subject properties.	Sections 3.1, 5.1, 6.2 and 6.4.3
An assessment of construction and operational traffic impacts on existing intersections, capacity of the local and classified road network.	Sections 5.3, 6.3, 6.4.1 and 7
Identify road network infrastructure upgrades that are required to maintain existing levels of service on both the local and classified road network for the development (if required).	Sections 6.4.1 and 6.5
The adequacy of public transport, pedestrian and bicycle networks in the vicinity of the site.	Sections 5.4, 5.5, 5.6, 6.5 and 6.6
Access arrangements, including car and bus pick-up / drop-off facilities if proposed, and measures to mitigate any associated traffic impacts and impacts on public transport, including pedestrian crossings and refuges and speed control devices and zones.	Sections 3, 4, 6.4.2, 6.4.3, 6.5 and 6.6
Proposed bicycle parking provision, including end of trip facilities, in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance.	Sections 3.3.3 and 4.1.4
Details of available on-site car parking spaces for teaching staff and visitors in accordance with the existing parking codes and justification for the level of car parking provided on-site.	Section 4
An assessment of the cumulative on-street parking impacts of cars and bus pick-up / drop-off, staff parking and any other parking demands associated with the development.	Section 4
An assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures and personal safety in line with CPTED.	Sections 5.5 and 6.5

TABLE 1 CONTINUED SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS TRANSPORT & ACCESSIBILITY	
Requirement	Section/s of Report Addressing Item
Emergency vehicle access, service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times).	Section 3.4
Details of travel demand management measures to minimise the impact on general traffic and bus operations, including details of a location-specific sustainable travel plan (Green Travel Plan and specific Workplace travel plan) and the provision of facilities to increase the non-car mode share for travel to and from the site.	Sections 3.3.3, 4.1.4, 4.2.2, 5.5, 5.6, 6.5 and 6.6
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 bicycle networks, including pedestrian crossings and refuges and speed control devices and zones.	Sections 3, 6.4.2, 6.5 and 6.6

1.2 Reference Documents

Reference is made to the following documents throughout this report:

- The Roads & Maritime Services' *Guide to Traffic Generating Developments*;
- Transport for NSW's *Guide to Transport Impact Assessments*;
- Willoughby City Council's *Willoughby Development Control Plan* (DCP 2016);
- The following Australian Standards for *Parking Facilities*:
 - *Part 1: Off-Street Car Parking* (AS2890.1:2004);
 - *Part 2: Off-Street Commercial Vehicle Facilities* (AS2890.2:2002);
 - *Part 3: Bicycle Parking* (AS2890.3:2015);
 - *Part 5: On-Street Parking* (2890.5:1993); and
 - *Part 6: Off-Street Parking for People with Disabilities* (AS2890.6:2009).
- Austroads' *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*.

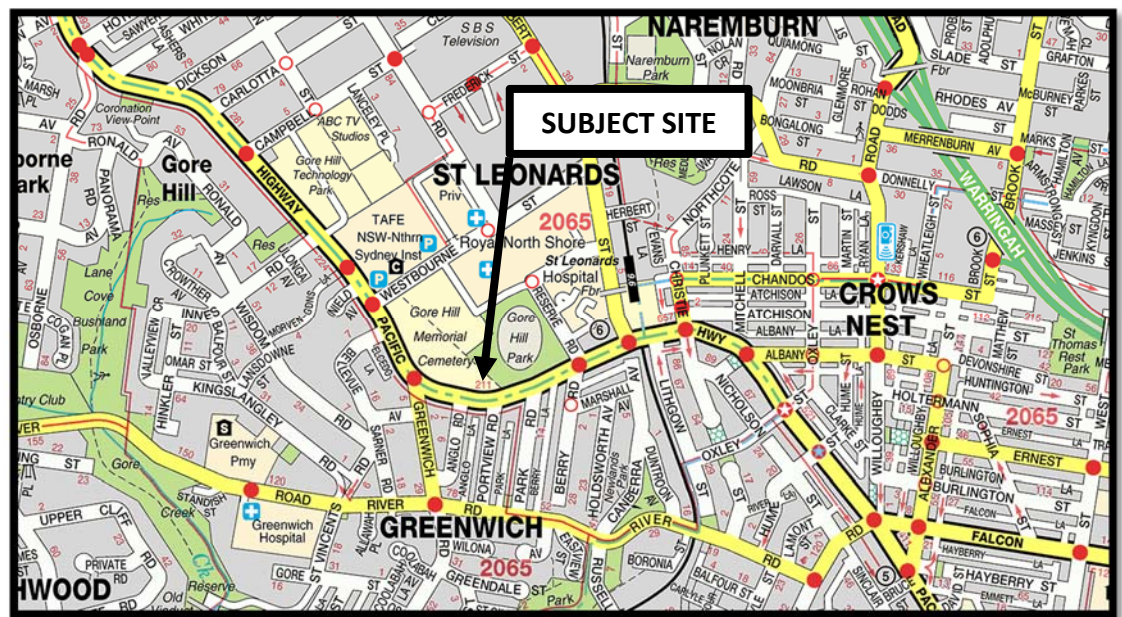
Architectural plans have been prepared by Stanton Dahl Architects, reduced copies of a selection of which are attached as **Attachment 1**.

1.3 Site Details

1.3.1 Site Location

The subject site is located on the northern side of Pacific Highway, approximately midway between Greenwich Road and Reserve Road, St Leonards. The site location is illustrated below and overlaid within a local aerial context by **Figure 1** and **Figure 2**, respectively.

FIGURE 1
SITE LOCATION WITHIN A LOCAL CONTEXT



Source: UBD Australian City Streets – Version 8

FIGURE 2
SITE LOCATION WITHIN AN AERIAL CONTEXT



Source: Nearmap (accessed 2/05/19)

1.3.2 Site Description

The site provides a street address of 211 Pacific Highway, St Leonards. The site predominantly forms a triangular shaped parcel of land, providing an approximate frontage of 75m to Pacific Highway. The site extends to the north away from Pacific Highway approximately 58m and 51m along the north-eastern and north-western boundaries, respectively, resulting in a total site area in the order of 1,600m².

1.3.3 Existing Use

The subject site currently accommodates a vacant commercial building providing an approximate leasable floor space of 700m², which is currently undergoing extensive alterations and addition works including a first floor addition to replace an existing mezzanine in accordance with DA-2014/301.

The existing site building is currently serviced by an undercroft parking area.

Vehicular connectivity between the on-site basement parking area and a Council owned public off-street car parking area is provided via a single lane access road over a primarily pedestrian access pathway extending between Pacific Highway and Westbourne Street servicing Gore Hill Memorial Cemetery (known as The

Avenue). This Council owned car parking area thence provides connectivity to the Pacific Highway eastbound carriageway via a driveway to the south-east of the site.

Pedestrian access to the site is provided via formal pedestrian gates connecting with the northern Pacific Highway footpath, approximately central to the public roadway frontage. Further pedestrian access is provided via The Avenue, connecting to the north-eastern boundary of the site.

1.3.4 Surrounding Land Uses

The site is surrounded by a mix of land-uses as follows:

- Land immediately adjoining to the north-west is occupied by Gore Hill Memorial Cemetery;
- The Avenue, a primarily pedestrian access path bisecting the abovementioned cemetery abuts the eastern site boundary and links Westbourne Street in the north to Pacific Highway in the south;
- Gore Hill Park is situated to the north-east of the site, comprising the following:
 - A Council owned car park containing 37 spaces (including two disabled spaces) is situated to the east of the site on the opposite side of The Avenue, connecting with Pacific Highway eastbound carriageway via a driveway to the south-east of the site;
 - A half basketball and handball court is situated to the north of the car parking area;
 - A change room building is situated to the east of the car parking area;
 - A children's playground is situated to the north of the half basketball court; and
 - Gore Hill Oval is situated to the north-east of the change room building.
- Royal North Shore Public & Private Hospitals are situated to the north of Gore Hill Park.

2. DESCRIPTION OF PROPOSAL

2.1 Built Form & Operation

The subject proposal involves the alterations and additions to an existing commercial building situated within Cemetery Trust land at 211 Pacific Highway, St Leonards, to accommodate a bilingual International Chinese School, providing the following site population capacities:

- 160 students; and
- 12 staff (including teachers and administration employees).

The school is proposed to provide staggered start and finish times as follows:

- Years K – 1, comprising up to 55 students, are to operate between 8:45am and 2:45pm;
- Years 2 – 4, comprising up to 55 students, are to operate between 9:00am and 3:00pm; and
- Years 5 – 6, comprising up to 50 students, are to operate between 8:30am and 3:15pm.

Notwithstanding the above, a small before and after school program is also proposed, capable of accommodating up to 25 students between 7:00am – 9:00am and 2:45pm – 6:00pm.

The school is proposed to be contained within the existing commercial building, which is to be modified to provide the following:

- Ground Floor:
 - Four general learning areas;
 - An entry foyer and reception area;
 - A sick bay / clinic;
 - Four small offices / meeting rooms / general purpose rooms;
 - A shared resource area / library; and
 - Amenities.
- First Floor:
 - Three general learning areas;
 - A shared resource area;
 - Amenities.

The school building is to be supplemented by a large open play area situated within the south-eastern corner of the site, providing an area of approximately 300m².

Pedestrian access is proposed to be provided via an existing gate connection with The Avenue, to the north of the abovementioned open play area. The existing gate connecting the northern Pacific Highway footway, to the west of the play area, are also proposed to be retained but locked during normal school operation. These gates are only proposed to be utilised in the event of an emergency.

The school is proposed to be serviced by the existing basement car parking area containing 10 passenger vehicle parking spaces and one motorcycle parking space connecting with The Avenue via a single lane driveway situated in the north-eastern corner of the site. A further 10 bicycle parking spaces are proposed to be provided within the development, situated at ground floor level to the south of the building.

2.1.1 External Works

The following external works are proposed adjacent to the site in order to ensure the school integrates into the precinct in a safe and efficient manner:

- The construction of an approximately 35m long deceleration lane adjacent to the Pacific Highway eastbound carriageway, assisting ingress movements from the Highway to the existing adjoining Council car parking area.
- The establishment of a new formal one-way northbound roadway within The Avenue adjacent to the north-eastern boundary accommodating:
 - A student set-down / pick-up area, capable of accommodating up to five passenger vehicles in a queued arrangement at any one time;
 - An adjacent northbound travel lane facilitating connectivity to the basement car parking area; and
 - A formal pedestrian footpath between the roadway and the north-eastern site boundary.
- Construction of a new 25m long one-way roadway facilitating ingress movements between the Council car park access road situated to the east of the site and the abovementioned school access roadway.
- Minor modifications / widening of the existing roadway connecting The Avenue to the northern extent of the existing Council car park (which is proposed to provide an egress only function from the abovementioned school access roadway).
- Minor modifications to the existing Council car parking area in order to facilitate the reinstatement of parking spaces lost associated with provision of vehicular access to / from The Avenue.

3. ACCESS & INTERNAL CIRCULATION CONSIDERATIONS

3.1 Vehicular Access

3.1.1 Precinct Access / Egress

Vehicular connectivity between the existing on-site basement parking area and the adjacent formal student set-down / pick-up area within The Avenue is proposed to be obtained via an existing Council owned public off-street car parking area situated further to the east. This car parking area is serviced by an existing driveway connecting with the eastbound Pacific Highway carriageway, providing 4m wide ingress and egress laneways, separated by a triangular island containing a pedestrian refuge. The ingress and egress lanes merge to the north of the Highway to form a single two-way access roadway, thence forming the central aisle servicing adjacent 90 degree angled parking spaces within the off-street car parking area.

The proposal involves modification to the abovementioned existing access arrangements to provide for a construction of a deceleration lane adjacent to the Pacific Highway eastbound kerb-side travel lane. The suitability or otherwise of the proposed deceleration lane design is contained within subsequent sections of this report.

Connectivity between the Council car park access roadway and the school access and set-down / pick-up roadway within The Avenue is proposed via a new roadway extending to the west of the Council car park some 40m to the north of Pacific Highway. This roadway is proposed to provide a minimum width of 4m, prior to connecting with The Avenue, and result in the removal of three existing parking spaces situated within the western Council car parking row. Within The Avenue, the school access roadway is proposed to provide a width of 6.5m, providing a 3m wide formal student set-down / pick-up lane in conjunction with an adjacent 3.5m wide through travel lane.

The abovementioned school access roadway is proposed to provide connectivity to the school basement car parking area via a 3.5m wide combined ingress / egress lane situated in the north-eastern corner of the site. Egress from the school access roadway is proposed via a widened (to a minimum of 4m) existing roadway connecting The Avenue and the northern portion of the Council owned car parking area, which thence connects back to the Pacific Highway eastbound carriageway via the existing driveway to the south-east of the subject site.

The proposed creation of the school access and set-down / pick-up roadway within The Avenue results in school traffic occurring via a one-way clockwise circular movement between the Council car parking area and The Avenue.

3.1.2 Assessment of Deceleration Lane Design

The deceleration lane is proposed to provide a total length of approximately 37m including taper, which is slightly less than the desirable length of 50m specified by Austroads' *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*, on the basis of a sign posted speed limit of 60km/h within Pacific Highway.

The proposed deceleration lane length is however considered appropriate in the subject circumstances, given the following:

- A longer deceleration lane would require the removal of existing gates defining the connection of Pacific Highway and The Avenue, which is understood to have unreasonable heritage implications;
- The proposed realignment of the existing footpath along the northern side of Pacific Highway associated with the deceleration lane effectively increases the length of the lane to 50m, which accords with the desirable Austroads requirements; and
- Reduced traffic demands within the Pacific Highway eastbound travel lane and the limited traffic generating capability of the development (see subsequent sections of this report) is such that the warrant for a deceleration lane associated with the subject application is questionable.

Whilst the school is primarily proposed to generate passenger vehicles associated with staff parking and parent set-down / pick-up arrangements, it is acknowledged that a minor extent of heavy vehicles may also be accommodated associated with regular waste collection, deliveries, mini buses and emergency vehicles. In order to assess the ability of the proposed precinct and site access arrangements, swept path plans have been prepared by this Practice, copies of which are contained within **Attachment 2**. These swept paths illustrate that vehicles up to and including Medium Rigid Vehicles (MRVs) are capable of manoeuvring between the Pacific Highway eastbound carriageway and the precinct via the deceleration lane. In consideration of this and the above discussion, the proposed upgraded precinct access arrangements are considered to be suitability capable of accommodating school ingress and egress activity in a safe and efficient manner.

3.1.3 Assessment of Sight Distance

Clause 3.2.4 (a) AS2890.1:2004 specifies that a driveway connecting with a frontage road governed by a sign posted speed limit of 60km/h is required to provide a minimum and desirable sight distance of 65m and 83m, respectively. The sight distance is measured from an exiting driver position (within the driveway 2.5m back from the public road) and an approaching vehicle within the public road.

It is acknowledged that the extent of sight distance between the car park egress driveway and approaching eastbound traffic within Pacific Highway is somewhat limited by the following:

- The variable horizontal alignment of Pacific Highway to the west of the driveway; and
- The prevalence of hedging vegetation along the northern side of Pacific Highway situated immediately to the east of The Avenue.

Whilst the Pacific Highway alignment cannot readily be altered, the existing hedging vegetation is proposed to be removed as part of the proposed deceleration lane works. It is expected that the removal of this vegetation will result in the abovementioned desirable sight distance requirement of 83m being achieved. A typical sight distance diagram representing the improved sight distance provisions has been prepared and attached as **Attachment 3**.

Notwithstanding the above, it should be acknowledged that the extent of sight distance facilitated by driveway would presumably have been assessed as being acceptable by Council (and Roads & Maritime Services) in association with the recently completed Gore Hill Oval and associated car park and driveway works.

3.2 Pedestrian Access

Pedestrian connectivity between the school and the adjoining public infrastructure is proposed via an existing pedestrian gate connecting between the school and The Avenue, approximately 20m north of Pacific Highway access.

A footpath is also proposed to be formalised along the western alignment of The Avenue adjacent to the site, providing connectivity between the abovementioned school access gate and the formalised school access road, and linking with The Avenue pedestrian connection to the northern Pacific Highway footpath to the south-east of the site.

The existing gate connecting the subject site and the northern Pacific Highway footway, to the west of the play area, are also proposed to be retained but locked during normal school operation. These gates are only proposed to be utilised in the event of an emergency.

3.3 Internal Circulation and Manoeuvrability

3.3.1 Set-Down / Pick-Up Area

It has previously been presented that connectivity between the Council car park access roadway and the school access and set-down / pick-up roadway within The Avenue is proposed via a new roadway, extending to the west of the Council car parking area some 40m north of Pacific Highway. This roadway is proposed to provide a straight alignment with a minimum width of 4m, prior to connecting with The Avenue. Within The Avenue, the school access roadway is proposed to provide a width of 6.5m, providing a formal student set-down / pick-up lane in conjunction with an adjacent through travel lane, providing the following minimum dimensions in accordance with AS2890.5:1993:

- Parallel parking space width = 3m;

- End parallel parking space length = 5.4m;
- Central parallel parking space length = 6m; and
- Adjoining one-way roadway width = 3.5m.

The abovementioned school access roadway is proposed to provide connectivity to the school basement car parking area via an existing 3.5m wide combined ingress / egress lane situated in the north-eastern corner of the site. Egress from the school access roadway is proposed via a widened (to a minimum of 4m) existing roadway connecting The Avenue and the northern portion of the Council owned car parking area, which thence connects back to the Pacific Highway eastbound carriageway via the existing driveway to the south-east of the subject site.

The proposed creation of the school access and set-down / pick-up roadway within The Avenue results in school traffic occurring via a one-way clockwise circular movement between the Council car parking area and The Avenue.

In order to assess manoeuvrability throughout the abovementioned clockwise precinct access roadways, a series of swept paths have been prepared by this Practice, copies of which are contained within **Attachment 2**. These swept paths illustrate that passenger vehicles are capable of manoeuvring throughout the precinct access roadways in a safe and efficient manner.

3.3.2 Basement Car Parking Area

Passenger vehicles wishing to access the existing on-site basement parking area will do so in a forward direction via left turn movement from the formal student set-down / pick-up area within The Avenue.

The basement car parking area is to primarily comprise two rows of 90 degree angled parking spaces, being serviced by a single circulating aisle. A further two parking spaces are proposed to be provided in the same alignment of the parking aisle, being directly access from the end of the aisle.

The constrained dimensions of the basement area are such that a majority of the parking spaces are to be allocated as 'small car' bays, providing reduced parking space lengths. Notwithstanding this, the passenger vehicle parking area have been designed to accord with the relevant requirements of AS2890.1:2004 and AS2890.6:2009, providing the following minimum dimensions:

- Staff car parking space width = 2.4m;
- Disabled car vehicular parking space width = 2.4m (with adjoining 2.4m wide shared area);
- Visitor car parking space width = 2.6m;
- Motorcycle parking space width = 1.2m;

- Standard and disabled vehicular parking space length = 5.4m;
- Small vehicular parking space length = 5.0m;
- Motorcycle space length = 3m;
- Vehicular parking aisle width adjoining parking spaces = 5.8m;
- Minimum clearance = 2.2m; and
- Minimum clearance above disabled parking space = 2.5m.

Safe and efficient internal manoeuvring and parking space accessibility is anticipated to result, taking into consideration the above compliance with the relevant AS2890.1:2004 and AS2890.6:2009 specifications.

In order to demonstrate the internal passenger vehicle manoeuvrability within the vicinity of these areas and generally throughout the overall parking area, this Practice has prepared a number of swept path plans which are included as **Attachment 2**. The turning paths provided on the plans have been generated using Autoturn software and derived from B99 and B85 vehicle specifications provided within AS2890.1:2004.

Section B4.4 of AS2890.1:2004 states the following with regard to the use of templates to assess vehicle manoeuvring:

‘Constant radius swept turning paths, based on the design vehicle’s minimum turning circle are not suitable for determining the aisle width needed for manoeuvring into and out of parking spaces. Drivers can manoeuvre vehicles within smaller spaces than swept turning paths would suggest.’

It would therefore appear that whilst the turning paths provided within AS2890.1:2004 can be utilised to provide a ‘general indication’ of the suitability or otherwise of internal parking and manoeuvring areas, vehicles can generally manoeuvre more efficiently than the paths indicate. Notwithstanding this, the swept path plans illustrate that passenger vehicles can manoeuvre throughout and enter and exit the most difficult passenger vehicle parking spaces within the parking areas.

Whilst the basement parking area forms a dead end aisle, a formalised turnaround bay is provided allowing passenger vehicles to undertake a three point turn in order to exit the site in a forward direction in the event of all parking spaces being occupied.

It is acknowledged that six of the seven staff spaces are proposed to form ‘small car’ spaces. This ‘small car’ definition is provided in accordance with AS2890.1:2004 as the parking space lengths are less than the standard requirement of 5.4m. Notwithstanding this, four of the staff spaces are proposed to provide a length space of 5.0m which are capable of accommodating B85 passenger vehicles, whilst two of the staff spaces are proposed to provide a

length of 5.2m which are capable of accommodating B99 passenger vehicles. The 'small car' spaces can accordingly accommodate larger vehicles in practice.

Only one of the three visitor parking spaces is proposed to be allocated as a 'small car' bay, providing a length of 5.2m thereby being capable of accommodating a B99 passenger vehicle. The remaining two visitor spaces provide appropriate dimensions for standard and disabled spaces in accordance with AS2890.1:2004 and AS2890.6:2009, respectively.

The undercroft parking area is existing and approved for use in a similar manner to that proposed. The parking area is primarily to provide a private use and accordingly largely accommodate everyday users whom will be aware of the specific manoeuvring requirements. The proposed basement parking area layout as it relates to passenger vehicle manoeuvrability is therefore considered to be satisfactory.

3.3.3 Bicycle Parking

The proposal involves the provision of five parking racks situated at ground floor level to the south of the school building, capable of accommodating 10 bicycles, being situated in a secure, convenient, accessible area close to the main entry of the school, incorporating appropriate levels of lighting and passive surveillance. These racks have been designed in accordance with AS2890.3:2015, providing the following minimum dimensions:

- Bicycle parking length = 1.8m;
- Rack spacing = 1.0m; and
- Adjacent manoeuvring aisle and access path width = 1.5m.

In consideration of the above compliance of the bicycle parking infrastructure with AS2890.3:2015, the bicycle parking arrangements are concluded to be satisfactory.

3.4 Heavy Vehicle Activity

Whilst the proposed school is primarily to generate and accommodate passenger vehicle traffic, it is expected that the school will generate demand for a minor level of heavy vehicular traffic, as follows:

- The school is likely to generate regular demand for waste collection activities, expected to be undertaken by private contractors, utilising vehicles up to and including 8.8m long Medium Rigid Vehicles (MRVs);
- The school is envisaged to generate semi-regular demand for deliveries such as food and stationary, most likely within vans, utilities and 6.4m long Small Rigid Vehicles (SRVs), but also occasionally up to MRVs; and
- It may be necessary that the school accommodate emergency vehicles such as ambulances and fire appliances up to and including MRVs.

Further, whilst it is understood that the school does not propose to provide a regular special school bus service, there may be occasions when one or more mini-buses may specifically be chartered for class excursions. It is expected that this irregular bus activity is comprise mini-buses, which provide dimensions and manoeuvring capabilities similar to SRVs.

The largest vehicles expected to service the school are therefore envisaged to be MRVs. It is accordingly not expected that the site will be required to be serviced by 12.5m long Heavy Rigid Vehicles (HRVs).

The abovementioned heavy vehicle servicing of the site is proposed to be undertaken within the formal set-down / pick-up roadway adjacent to the site within The Avenue.

The abovementioned regular and scheduled servicing is proposed to occur outside of peak student set-down / pick-up activity (between 10:00am – 2:00pm) to ensure there is no undesirable interaction between heavy vehicles and school activity. Specific operational management measures associated with the servicing of the site by heavy vehicles is contained within a Traffic Management Plan contained within **Attachment 4**.

In order to assess the ability of the proposed amended circulation areas to accommodate heavy vehicles, a series of swept path plans have been prepared by this Practice, copies of which are contained within **Attachment 2**. These plans indicate that vehicles up to and including MRVs are capable of servicing the site in a safe and efficient manner.

It should be acknowledged at this point that the approved commercial building within the site could be expected to generate a regular requirement for servicing by MRVs, for which no arrangements are formalised.

4. PARKING CONSIDERATIONS

4.1 On-Site Parking Provision

4.1.1 Vehicular Parking Provision

Formalised on-site passenger vehicle parking is proposed to be contained within a single basement level, containing 10 spaces.

4.1.2 Council's Vehicular Parking Requirements

Willoughby City Council relies on DCP 2016 for locally sensitive parking requirements for the subject site. DCP 2016 provides the following parking requirements for educational establishments relating to the subject proposal:

- 1 space per 2 staff*
- 1 space per 10 tertiary students*
- 1 space per 10 students in assembly hall*

As the school is only proposed to accommodate children between Kindergarten and Year 6 and is not proposed to accommodate an assembly hall, DCP 2016 specifies that the requirement parking is solely a function of the number of staff proposed. In this regard, DCP 2016 requires a minimum of five parking spaces on the basis of a maximum of 10 staff being employed by the school.

The proposed basement car parking area, providing 10 parking spaces, therefore complies with the relevant DCP 2016 requirements and also provides additional capacity for irregular visitor parking demand, should it be required.

4.1.3 Motorcycle Parking

The basement parking area is proposed to provide one motorcycle parking space.

DCP 2016 specifies that motorcycle parking should be provided at a rate of one space per 25 car spaces within all developments.

On the basis of the development providing 10 passenger vehicle parking spaces, a minimum of 0.4 (adopt one) motorcycle parking space is required.

The proposed motorcycle parking provision is accordingly compliant with DCP 2016 and therefore considered to be satisfactory.

4.1.4 Bicycle Parking

The subject development is to provide five bicycle storage racks, capable of accommodating up to 10 bicycles.

DCP 2016 does not provide bicycle parking requirements specifically for educational establishments. Notwithstanding this, the proposed bicycle parking provision, equating to approximately 1 space per 16 students is considered satisfactory.

Given the limited scale of the development and thus the limited number of bicycle parking spaces proposed, it is not considered that end of trip facilities such as lockers, change rooms and showers are required and accordingly, none are proposed.

4.2 Off-Street Student Set-Down / Pick-Up

4.2.1 Student Set-Down / Pick-Up Area Capacity

Notwithstanding the previously presented compliance of the on-site passenger vehicle parking provision with DCP 2016 requirements, it is acknowledged that the school is expected to generate additional short-term demand associated with the setting-down / picking-up of students by parents / guardians prior to the commencement and following the completion of the school day.

It has previously been presented that this activity is proposed to be accommodated within the formalised set-down / pick-up roadway contained within The Avenue, adjacent to the north-eastern boundary of the site. The roadway is proposed to provide a formalised set-down / pick-up area with a length of 30m, thereby being capable of accommodating at least five vehicles at any one time. Further, the set-down / pick-up area is proposed to be serviced by a roadway connecting the area with the existing adjacent Council car park. This additional roadway is proposed to provide a length of approximately 30m between The Avenue and the Council car park, thereby being capable of accommodating a further five vehicles queued on approach to the set-down / pick-up area, without impeding the Council car park access roadway.

The abovementioned set-down / pick-up and approach queuing capacity of 10 vehicles represents approximately one parent vehicle per 16 students. Such a capacity compares well with established requirements for educational establishments within other Local Government areas which suggest an average instantaneous set-down / pick-up demand rate of 1 vehicle per 30 students enrolled at the school. Further, the set-down / pick-up and approach queuing capacity also compares favourably with other local schools in Artarmon Public and Mowbray Public Schools, which provide set-down / pick-up vehicle capacities of approximately 15 vehicles but student populations of 1175 and 595, being more than 7.3 and 3.7 times greater than the proposed school student population.

Notwithstanding the above, in order to ensure that the set-down / pick-up and approach queuing capacity is satisfactory, it is proposed that the school be strictly governed by a Traffic Management Plan which provides for the primary aim of maximising the efficiency of student set-down / pick-up during school start and finish times. This is proposed to be achieved through the implementation of a series of site specific operational management measures to achieve the abovementioned primary objective, including, but not limited to, the following:

- The staggering of school start and finish times;
- The provision of a before school supervision program (accommodating up to 25 students) will result in a notable portion of students being set-down outside of the normal school start peak period;
- The supervision of student set-down / pick-up activity within The Avenue; and
- The establishment of operational management measures to ensure that parent visitations of the school are undertaken outside of school start and finish periods.

A copy of the Traffic Management Plan is contained within **Attachment 4** for reference. The Traffic Management Plan should also be subject to periodic review by Councils Traffic and Transport Planner to ensure the management initiatives are appropriately implemented and observed.

4.2.2 Discussion on Impacts

It is acknowledged that the school proposes to rely upon the Council car parking area for access. It should also however be acknowledged that the site currently accommodates a vacant commercial building which is currently undergoing extensive alterations and addition works. The existing commercial building is serviced by an undercroft passenger vehicle parking area. In addition to the undercroft passenger vehicle parking area, it is envisaged that the commercial building would necessitate regular servicing by heavy vehicles associated with refuse collection and deliveries.

Vehicular connectivity between the site and the eastbound Pacific Highway carriageway is approved via The Avenue and thence the Council owned Gore Hill Oval car parking area.

It is acknowledged that the proposal involves an intensification of the approved use of the Council car park associated with the implementation of a formalised student set-down / pick-up area within The Avenue. It is however proposed that the intensified use be managed through the implementation of a Traffic Management Plan, a copy of which is attached as **Attachment 4**, which provides the following specific objectives:

- To ensure that formalised student set-down / pick-up arrangements do not unreasonably impede public vehicle access / egress movements within the Council car parking area;
- Address potential safety issues associated with the proposed normal daily school start and finish traffic operations; and
- Maximise the efficiency of the set-down / pick-up area, thereby ensuring that parking demand associated with student set-down / pick-up does not occur within the adjoining Council car parking area.

Further to the above, the proposal facilitates the following public domain improvements:

- The construction of a dedicated deceleration lane within the eastbound Pacific Highway carriageway specifically servicing the Council car park, thereby improving the existing level of safety and efficiency with which motorists are able to access the car park;
- An increase in the off-street passenger vehicle parking yield of 40% over and above that currently facilitated by the Council car park, through the following measures:
 - The provision of five additional off-street parking spaces within The Avenue which will be available for public use on weekday evenings and weekends; and
 - The provision of a further 10 off-street parking spaces within the development undercroft parking area which will be available for coaches and ground staff affiliated with the use of Gore Hill Oval.

It is accordingly expected that the proposal will result in substantial public benefit during the peak operational periods of the Gore Hill Oval (being weekend evenings and weekends).

4.2.3 Potential Future Alterations to Council Car Park

This Practice understands that Council may in the future alter the existing adjoining at-grade Council car park associated with Stage 2 of the adjoining Gore Hill Park upgrade. Whilst it is understood there is an existing legal agreement to continue to provide vehicular connectivity between Pacific Highway and the site basement parking, the Stage 2 Park upgrading works may involve temporary or permanent closure of the adjoining Council car park, which may involve the removal of the proposed set-down / pick-up area within The Avenue and access thereto.

In the event of the above, it is acknowledged that the currently proposed student set-down / pick up arrangements will need to be altered, either temporarily or permanently. Whilst such altered arrangements are expected to be subject to future application and assessment by Willoughby Council, it is understood that preliminary liaison with Council has indicated that the student set-down / pick-up activity is likely to be relocated to Westbourne Street. An indicative Statement of Operations detailing such potential future student set-down / pick-up arrangements has been prepared by the school, a copy of which is contained within **Attachment 5**.

4.3 Council Car Park Activity

4.3.1 Existing Car Park Capacity

It has previously been presented that site is adjoined to the east by a Council owned public off-street car parking area. The car parking area services the surrounding land uses and has capacity to accommodate up to 37 passenger vehicle parking spaces, as follows:

- 34 car parking spaces governed by signposted two hour restrictions between 6:00am – 6:00pm Monday to Friday;
- Two disabled car parking spaces; and
- One car parking space governed by signposted full time five minute restrictions.

4.3.2 Existing Parking Demand

The Council car parking area accommodates demand associated with Gore Hill Park, comprising the half basketball court, the children's play area and the playing field.

In order to obtain an indication of existing demands within the Council car parking area, a week of parking demand surveys were undertaken between the 3rd and 9th of December, inclusive. **Table 1** below provides a summary of the survey results between 7:00am and 6:00pm Monday to Friday, being the operational periods of the school, whilst full details are available upon request.

TABLE 1 SUMMARY OF PEAK PARKING DEMAND COUNCIL CAR PARKING AREA – GORE HILL PARK 3 – 9 DECEMBER 2019		
Time Period	Average Number of Spaces Occupied	Maximum Number of Spaces Occupied
7:00am – 8:00am	13	25
8:00am – 9:00am	17	28
9:00am – 10:00am	24	30
10:00am – 11:00am	27	32
11:00am – 12:00pm	29	34
12:00pm – 1:00pm	29	33
1:00pm – 2:00pm	23	28
2:00pm – 3:00pm	22	28
3:00pm – 4:00pm	18	23
4:00pm – 5:00pm	13	20
5:00pm – 6:00pm	12	24

Table 1 indicates the following:

- The average and minimum number of unoccupied spaces available during the school start period (8:00am – 10:00am) was surveyed to be 13 and seven spaces, respectively; and

- The average and minimum number of unoccupied spaces available during the school finish period (2:00am – 4:00am) was surveyed to be 15 and nine spaces, respectively.

Accordingly, there is typically capacity within the Council car park during the proposed peak school start and finish periods to accommodate some additional demand.

It should be acknowledged that some demand captured by the surveys was observed to be that associated with the construction works occurring within the subject site, thereby resulting in the surveys portraying a higher than normal demand.

4.3.3 Discussion

The minimum number of unoccupied parking spaces within the Council car park during the likely peak operational periods of the school has been surveyed to be seven spaces. There is accordingly considered to be notable capacity to accommodate additional parking demand which may be generated associated with the proposed school. Notwithstanding this, the overall intention of the Traffic Management Plan is to ensure that school parents / guardians are expected to utilise the formal student set-down / pick-up area within The Avenue to drop-off and collect children immediately prior to and following the school periods. The desired outcome is therefore that parents do not park within the Council car park prior to and following the school day.

Notwithstanding the above, it is important to note that the proposed school operation is to be governed by a Traffic Management Plan, which provides the aim of ensuring that the school does not result in additional demand within the adjoining Council car park.

5. EXISTING TRANSPORT CONDITIONS

5.1 Surrounding Road Network

The following provides a description of the surrounding road network:

- **Pacific Highway** performs a State Road function under the care and control of Roads & Maritime Services, providing a major inter-regional link between the city of Sydney in New South Wales and the city of Brisbane in Queensland. Within the context of Sydney, Pacific Highway provides a connection between Hornsby in the north and North Sydney in the south.

Pacific Highway, in the vicinity of the subject site, primarily provides three lanes in each direction, separated by a raised concrete central median. Pavement widening is provided on approach to major junctions to facilitate exclusive turning lanes.

Clearway parking restrictions apply along the eastbound kerb-side travel lane during the morning peak period (6:00am – 10:00am) on weekdays to facilitate three unobstructed traffic lanes. Notwithstanding this, the eastbound kerb-side lane forms a T3 transit lane during the morning weekday commuter peak period. Further, the provision of regular bus stops ensure that eastbound kerb-side travel lane vehicle volumes are significantly reduced compared with the adjacent centre and median travel lanes. Kerb-side parking is accommodated within the eastbound kerb-side travel lane outside of weekday morning commuter periods, being governed by a combination of two and four hour ticket restrictions between 10:00am – 6:00pm weekdays and between 8:30am – 12:30pm on Saturdays.

Pacific Highway forms a T-junction with Greenwich Road approximately 150m to the west of the subject, operating under traffic signal control. Unrestricted turning movements are facilitated at this junction, with Greenwich Road access movements being assisted by exclusive left and right turning lanes within the westbound and eastbound Highway carriageways, respectively.

Pacific Highway forms a cross intersection with Reserve Road and Berry Road approximately 200m to the east of the subject site, operating under traffic signal control. Unrestricted turning movements are facilitated at this intersection, with Reserve Road and Berry Road access movements being assisted by the provision of opposing exclusive right turn lanes within both Highway carriageways.

The westbound Pacific Highway carriageway also forms T-junctions with a series of low order local access roads within the subject precinct in Anglo Road, Portview Road, Park Road and Berry Lane operating under major / minor priority control with Pacific Highway forming the priority route in these instances.

Traffic flow on Pacific Highway within the vicinity of the site is governed by a sign posted speed limit of 60km/h.

- **Greenwich Road** performs a collector road function under the care and control of Lane Cove Council, facilitating connectivity between the Greenwich residential precinct to the south and Pacific Highway.

Greenwich Road in the vicinity of the site provides a varying pavement width of approximately 13m, generally facilitating one through lane of traffic in each direction in conjunction with parallel parking along both kerb alignments. Kerb-side parking restrictions however apply in Greenwich Road on approach to Pacific Highway to facilitate two approach and departure travel lanes.

Greenwich Road forms T-junctions with Bellevue Avenue and Anglo Road to the south-west of the site, operating under major / minor priority control with Greenwich Road forming the priority route in both instances.

Further south, Greenwich Road intersects with River Road operating under traffic signal control and allowing for all turning movements, with the exception of right turn movements from the eastern River Road approach.

Traffic flow within Greenwich Road is governed by a speed limit of 50km/h, consistent with State Government Policy for local residential roads.

- **Reserve Road** performs an access function to the hospital precinct situated to the north of Gore Hill Park, comprising Royal North Shore Private and Public Hospitals. Reserve Road forms a 13m wide pavement, generally providing one through lane of traffic in each direction in conjunction with kerb-side parking along the eastern kerb alignment. Kerb-side parking restrictions apply on approach to Pacific Highway to facilitate two southbound approach lanes to the signalised intersection.

Reserve Road intersects with a series of hospital precinct access roads approximately 200m north of Pacific Highway, under single lane circulating roundabout control, providing a convenient turnaround facility.

- **Berry Road** performs an access function between Pacific Highway and the commercial precinct immediately to the south of the Highway and the residential precinct further to the south. Berry Road forms a 13m wide pavement, generally providing one through lane of traffic in each direction in conjunction with kerb-side parking along both alignments. Kerb-side parking restrictions apply on approach to Pacific Highway to facilitate two northbound approach lanes to the signalised intersection.

5.2 Existing Traffic Volumes

This Practice has commissioned the undertaking of morning and afternoon peak period traffic surveys of the following junctions in order to accurately ascertain existing traffic demands within the immediate precinct:

- The junction of Pacific Highway and Greenwich Road;
- The junction of Pacific Highway and the Council owned car park driveway; and

- The intersection of Pacific Highway, Reserve Road and Berry Road.

Surveys were undertaken between 7:00am – 9:30am and 2:30pm – 6:00pm on the 7th of May 2019 in order to capture the peak operational periods of the school.

Table 2 below provides a summary of the surveyed peak hour (8:00am -9:00am and 2:30pm – 3:30pm) traffic demands throughout the surrounding public road network, whilst more detailed summaries are provided as **Attachment 6**. Whilst it is acknowledged that the abovementioned afternoon peak hour period does not align with the commuter peak, it has been assessed as it aligns with the school finish period.

TABLE 2 EXISTING MORNING AND AFTERNOON PEAK HOUR TRAFFIC VOLUMES						
Road	AM Peak Hour			PM Peak Hour		
	North / East	South / West	Total	North / East	South / West	Total
Pacific Highway						
West of Greenwich Road	1507	1266	2773	1015	1307	2322
East of Greenwich Road	1799	1305	3104	1083	1414	2497
West of Council Car Park Access	1830	1489	3319	1034	1371	2405
East of Council Car Park Access	1829	1489	3318	1027	1371	2398
West of Reserve Road	1778	1440	3218	1094	1273	2367
East of Reserve Road	1809	1579	3388	1204	1312	2516
Greenwich Road						
South of Pacific Highway	669	416	1085	357	396	753
Car Park Access						
North of Pacific Highway	4	3	7	12	5	17
Reserve Road						
North of Pacific Highway	266	157	423	156	223	379
Berry Road						
South of Pacific Highway	147	146	293	141	137	278

Table 2 indicates the following approximate peak hour traffic demands:

- Pacific Highway accommodates:
 - Two directional demands of between 2,700 – 3,400 vehicles during the morning peak hour; and
 - Two directional demands of between 2,300 – 2,500 vehicles during the afternoon peak hour.
- Greenwich Road accommodates:
 - Two directional demands of approximately 1,100 vehicles during the morning and peak hour; and
 - Two directional demands of approximately 750 vehicles during the afternoon and peak hour.
- Reserve Road accommodates:
 - Two directional demands of up between 380 – 420 vehicles during both the morning and afternoon peak hours.

- Berry Road accommodates:
 - Two directional demands of between 275 - 300 vehicles during both the morning and afternoon peak hours.
- The Council car park access road accommodates less than 20 vehicles per hour during the morning and afternoon peak hours.

5.3 Existing Road Network Operation

The surveyed public road junctions has been analysed utilising the SIDRA computer intersection analysis program in order to objectively assess the operation of the nearby public road network.

SIDRA is a computerised traffic arrangement program which, when volume and geometrical configurations of an intersection are imputed, provides an objective assessment of the operation efficiency under varying types of control (i.e. signs, signal and roundabouts). Key indicators of SIDRA include level of service where results are placed on a continuum from A to F, with A providing the greatest intersection efficiency and therefore being the most desirable by the Roads and Maritime Services.

SIDRA uses detailed analytical traffic models coupled with an iterative approximation method to provide estimates of the abovementioned key indicators of capacity and performance statistics. Other key indicators provided by SIDRA are average vehicle delay, the number of stops per hour and the degree of saturation. Degree of saturation is the ratio of the arrival rate of vehicles to the capacity of the approach. Degree of saturation is a useful and professionally accepted measure of intersection performance.

SIDRA provides analysis of the operating conditions that can be compared to the performance criteria set out in **Table 3** below (being the RMS NSW method of calculation of Level of Service).

TABLE 3		
LEVEL OF SERVICE CRITERIA FOR INTERSECTIONS		
Level of Service	Average Delay per Vehicle (secs/veh)	Expected Delay
SIGNALISED INTERSECTIONS AND ROUNDABOUTS		
A	Less than 14	Little or no delay
B	15 to 28	Minimal delay and spare capacity
C	29 to 42	Satisfactory delays with spare capacity
D	43 to 56	Satisfactory but near capacity
E	57 to 70	At capacity, incidents will cause excessive delays
F	> 70	Extreme delay, unsatisfactory
PRIORITY CONTROLLED INTERSECTIONS		
A	Less than 14	Good
B	15 to 28	Acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Near capacity
E	57 to 70	At capacity and requires other control mode
F	> 70	Unsatisfactory and requires other control mode

The existing conditions have been modelled utilising the peak hour traffic volumes presented within **Attachment 6**.

Table 4 below provides a summary of the SIDRA output data whilst more detailed summaries are included as **Attachment 7**.

TABLE 4 SIDRA OUTPUT EXISTING WEEKDAY PEAK HOUR PERFORMANCE		
	AM	PM
Pacific Highway & Greenwich Road		
Delay	25.3	18.9
Degree of Saturation	0.65	0.56
Level of Service	B	B
Pacific Highway & Council Car Park Access Road		
Delay	8.2	5.8
Degree of Saturation	0.32	0.25
Level of Service	A	A
Pacific Highway, Reserve Road & Berry Road		
Delay	25.1	26.5
Degree of Saturation	0.77	0.47
Level of Service	B	B

Table 4 indicates that the immediately surrounding public road intersections provide a level of service of A or B during peak commuter periods, representing good operation with spare capacity.

5.4 Public Transport

5.4.1 Heavy Rail

The site is located approximately 400m to the south-west of St Leonards Station. St Leonards Station provides access to train services which operate along the T1 (North Shore, Northern & Western) Line.

Services along the T1 Line provide efficient connectivity to the remainder of the Sydney metropolitan rail network via interchanges at the Hornsby, City, Redfern, Strathfield, Lidcombe, Clyde, Granville and Blacktown.

5.4.2 Buses

Sydney buses operate the following bus services in the immediate vicinity of the site:

- Route 143 – Manly to Chatswood via Balgowlah & St Leonards;
- Route 144 – Chatswood to Manly via Royal North Shore Hospital;
- Route 252 – Gladesville to City King Street Wharf via North Sydney;
- Route 254 – McMahon's Point to Riverview;

- Route 265 – North Sydney to Lane Cove via Greenwich;
- Route 286 – Milsons Point to Denistone East via North Sydney & St Leonards;
- Route 287 – Ryde to Milsons Point via St Leonards & North Sydney;
- Route 290 – Epping to City Erskine St via Macquarie University & North Sydney;
- Route M20 – Botany to Gore Hill;
- Route 622 – Dural to Milsons Point via Cherrybrook;
- Route 653 – West Pennant Hills to Milsons Point;
- Route 602X – Rouse Hill to North Sydney; and
- Route 612X – Kellyville to Milsons Point.

Routes 143, 144, 252, 254, 265, 286, 287, 290 and M20 operate along Pacific Highway with the closest stop being situated within approximately 200m walking distance of the site.

Routes 140, 622, 653, 602X and 612X also operate on Pacific Highway, to the west of the subject site, with the closest stop being situated within 320 walking distance of the site.

5.4.3 Sydney Metro

Stage 2 of Sydney Metro is planned to extend between Chatswood and Bankstown via The City by 2024, with a new station being located at Crows Nest, situated approximately 800m to the south-east of the subject site. Sydney Metro is planned to provide a 'turn up and go' facility with capacity for services to operate every two minutes during peak periods.

5.5 Pedestrian Infrastructure

The following pedestrian access and mobility infrastructure surrounds the subject site:

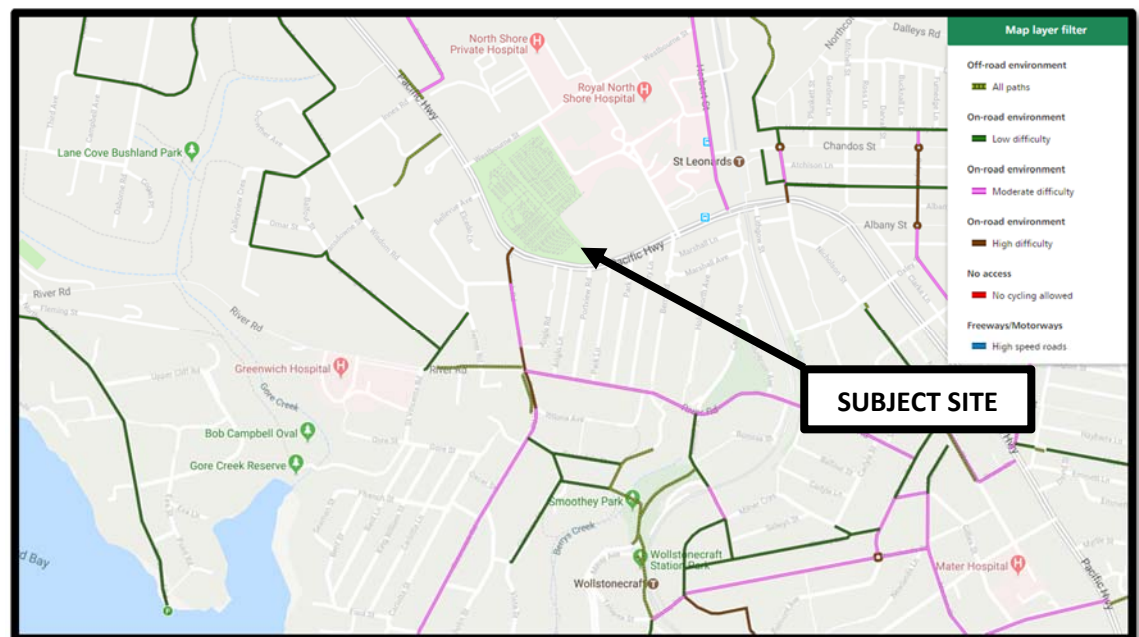
- Footpaths are provided on both sides of Pacific Highway adjacent to the site;
- Signalised pedestrian crossings are provided over the northern, southern and western approaches of the intersection of Pacific Highway, Berry Road and Reserve Road to the north-east of the site;
- Signalised pedestrian crossings are provided over the southern and western approaches of the intersection of Pacific Highway and Greenwich Road to the west of the site; and

- A path is provided along The Avenue between Pacific Highway and Westbourne Street.

5.6 Cycle Routes

Figure 3 below provides a graphical representation of on and off-road cycleways within the immediate vicinity of the subject site.

FIGURE 3
SURROUNDING CYCLEWAYS WITHIN THE SUBJECT VICINITY OF THE SITE



Source: RMS Website

Figure 3 indicates the following:

- Herbert Street, Broadcast Way, Greenwich Road, River Road (east of Greenwich Road), Herbert Street, Christie Street and Atchison Street provide on-road cycle routes; and
- Off-road cycle paths are provided on River Road (to the west of Greenwich Road), Morven Gardens and a short section of Pacific Highway to the north of Broadcast Way.

It is further understood that Council is progressing with a planned shared pedestrian / bicycle path along Pacific Highway, immediately adjacent to the site.

6. PROJECTED TRANSPORT CONDITIONS

6.1 Traffic Generation

The traffic generating capacity of schools is most directly proportional to the number of students. The proposal involves the alterations and additions to an existing commercial building to accommodate an International Chinese school containing up to 160 students.

Whilst the capacity of the school is proposed to be 160 students, 25 students are envisaged to attend the before and after school program, thereby travelling to and from the school prior to and following the standard school start and finish periods. The peak hourly traffic generating capacity of the school is therefore most appropriately estimated based on a population of 135 students.

To quantify the above, reference is made to Transport for NSW's *Guide to Transport Impact Assessments*. This publication presents that primary schools typically generate an average of 0.7 and 0.5 hourly vehicle trips per student during the morning and afternoon peak hours, respectively. Application of this rate results in approximately 94 and 68 vehicle trips to and from the precinct during weekday morning and afternoon peak hours respectively.

Given the high proportion of the above trips are likely to comprise student set-down and pick-up activity, it is projected that these trips will be evenly split between inbound and outbound movements. The proposal is therefore expected to generate in the order of 47 inbound and 47 outbound vehicle movements during the morning peak hour and 34 inbound and 34 outbound vehicle movements during the afternoon peak hour.

6.2 Trip Assignment

The development has been projected to generate in the order of 94 and 68 vehicle movements to and from the subject site during school start and finish peak hours, respectively. The specialist nature of the school is such that it could be expected that students will travel from various areas within the Sydney metropolitan area. Notwithstanding the above, the following trip assignment has been formulated generally based on existing student residence data provided by the school:

- 40% of vehicles are expected to approach and depart the site from and to the north-west via Pacific Highway;
- 40% of vehicles are expected to approach and depart the site from and to the south-east via Pacific Highway; and
- The remaining 20% of vehicles are expected to approach and depart the site from the south via Greenwich Road.

The restricted left in / left out access arrangements facilitated between the site (via the Council car park) and Pacific Highway eastbound carriageway are such that approach routes from the south-east and departure routes to the north-west via Pacific Highway westbound carriageway are somewhat circuitous. In this regard, vehicle approach routes from the south-east via Pacific Highway westbound carriageway can occur via one of the following routes:

- Left turn from Pacific Highway to Portview Road, right turn to River Road, right turn to Sarner Road, right turn to Bellevue Road, left turn to Greenwich Road, right turn to Pacific Highway eastbound carriageway and thence a left turn to the site (via the Council car park);
- Right turn from Pacific Highway to Reserve Road, left turn to unnamed southern hospital precinct access road, left turn to Westbourne Street, left turn to Pacific Highway eastbound carriageway and thence a left turn to the site (via the Council car park); or
- Right turn from Pacific Highway to Westbourne Street, circulate around hospital precinct access roundabout to access Westbourne Street westbound travel lane, left turn to Pacific Highway eastbound carriageway and thence a left turn to the site (via the Council car park).

For the purposes of this assessment and in order to generate an absolute worst case scenario, all vehicles approaching the site from the south-east via Pacific Highway are projected to travel via the first of the abovementioned routes.

Vehicle departure routes to the north-west via Pacific Highway westbound carriageway can occur via one of the following routes:

- Left turn from the site (via the Council car park) to Pacific Highway eastbound carriageway, right turn to Berry Road, circulate around roundabout at Marshall Avenue to access the Berry Road northbound travel lane and thence turn right to Pacific Highway westbound carriageway;
- Left turn from the site (via the Council car park) to Pacific Highway eastbound carriageway, left turn to Reserve Road, circulate around hospital precinct access roundabout to access the Reserve Road southbound travel lane and thence turn right to Pacific Highway westbound carriageway;
- Left turn from the site (via the Council car park) to Pacific Highway eastbound carriageway, left turn to Reserve Road, left turn to unnamed southern hospital precinct access road, left turn to Westbourne Street followed by right turn to Pacific Highway westbound carriageway;
- Left turn from the site (via the Council car park) to Pacific Highway eastbound carriageway, left turn to Herbert Street, left turn to Frederick Street, right turn to Reserve Road, left turn to Campbell Street and thence a right turn to Pacific Highway westbound carriageway.

For the purposes of this assessment and in order to generate an absolute worst case scenario, all vehicles departing the site to the north-west via Pacific Highway are projected to travel via the first of the abovementioned routes.

6.3 Projected Road network Performance

The surrounding public road intersections have been modelled in order to estimate that likely impact on traffic safety and efficiency utilising the projected traffic volumes incorporating the proposed development. A summary of the most pertinent results are indicated within **Table 5** whilst more detailed summaries are provided within **Attachment 8**.

TABLE 5 SIDRA OUTPUT WEEKDAY PEAK HOUR PERFORMANCE				
	Existing Conditions		Projected Conditions	
	AM	PM	AM	PM
Pacific Hwy & Greenwich Rd				
Delay	25.3	18.9	25.9	19.6
Degree of Saturation	0.65	0.56	0.67	0.57
Level of Service	B	B	B	B
Pacific Hwy & Council Car Park Access Rd				
Delay	8.2	5.8	8.2	5.7
Degree of Saturation	0.32	0.25	0.33	0.26
Level of Service	A	A	A	A
Pacific Hwy, Reserve Rd & Berry Rd				
Delay	25.1	26.5	28.3	27.0
Degree of Saturation	0.77	0.47	0.79	0.48
Level of Service	B	B	B	B

Table 5 indicates that the additional traffic generated by the development is not projected to have noticeable impacts on operation of the surrounding public road intersections with only minor alterations projected with respect to delay and degree of saturation. In this regard, the intersection levels of service are projected to remain unaltered, representing good conditions with spare capacity.

Whilst it is acknowledged that there may be some variations from the trip assignment assessed in reality, the abovementioned public road intersection analysis outlines a notable level of capacity at surrounding intersections, with all junctions providing a level of service 'B' or better. The traffic generating ability of the proposed school is envisaged to constitute a minor portion of the total public road intersection demands and accordingly it is considered that there is adequate capacity to accommodate some variances to the assessed trip assignment.

6.4 Traffic Impacts

6.4.1 Road Network Efficiency

The proposal has been estimated to generate up to 47 inbound and 47 outbound vehicle movements during peak operational periods of the school. Such a level of additional traffic represents, on average, less than one additional inbound vehicle trip and one additional outbound trip per minute during peak periods.

It is acknowledged that the left in / left out nature of the site access arrangements (via the Council car park) and Pacific Highway are such that some motorists will be required to undertake somewhat circuitous approach and departure routes. In this regard, motorists approaching the site from the south-east via Pacific Highway are required to travel an additional 1km to access the Highway eastbound carriageway and thus the site. Similarly, motorists departing the site to the north-west via the Pacific Highway are required to travel an additional 600m to access the Highway westbound carriageway. The extent of these approach and departure routes are considered to be unreasonably onerous and are common for developments fronting divided carriageways. Indeed, motorists may well elect to alter their approach and departure routes further away from the subject site thereby resulting in these local circuitous routes not being travelled.

The previous analysis contained within this report presents that the surrounding public road network currently operates with a good level of service with spare capacity. The abovementioned level of additional traffic is accordingly not projected to result in any unreasonable impacts on the current operational performance of the road network. Upgrades / alterations to the surrounding road network are therefore not warranted in association with this development.

6.4.2 Speed Limit Impacts

It is expected that the proposal will result in the implementation of a 40km/h school zone speed limit applying within Pacific Highway eastbound carriageway within the immediate vicinity of the site, applying between 8:00am – 9:30am and 2:30pm – 4:00pm on school days. Consultation with the Roads & Maritime Services has indicated that the length of this reduced speed limit zone is envisaged to be a maximum of 300m, applying from a position to the east of Greenwich Road to a position to the west of Reverse Road. The reduced speed limit is expected to result in an increased travel time of less than 10 seconds in the eastbound direction along the Highway, thereby not resulting in noticeable impacts on through arterial road traffic efficiency.

6.4.3 Site Access

In consideration of the previous sub-sections of this report, the impact of the development is therefore most likely to be a factor of the ability or otherwise for vehicles to safely and efficiently access the site via the Council car park access roadway.

It has previously been presented that Pacific Highway eastbound carriageway immediately adjacent to the site provides three lanes, being separated from the westbound carriageway by a raised concrete central median. Clearway parking restrictions apply along the eastbound kerb-side travel lane during the morning peak period (6:00am – 10:00am) on weekdays to facilitate three unobstructed traffic lanes. Notwithstanding this, the eastbound kerb-side lane forms a T3 transit lane during the morning weekday commuter peak period. Further, the provision of regular bus stops to the east and west of the site ensure that eastbound kerb-side travel lane vehicle volumes are significantly reduced compared with the adjacent centre and median travel lanes. Kerb-side parking is accommodated within the eastbound kerb-side travel lane outside of weekday morning commuter periods, being governed by a combination of two and four hour ticket restrictions between 10:00am – 6:00pm weekdays and between 8:30am – 12:30pm on Saturdays. A break in the abovementioned kerb-side parking and indeed, the provision of bus stops to the east and west of the site therefore facilitate a pseudo deceleration lane on approach to the existing Council car park access road.

In order to quantify the above analysis, this Practice has obtained SCATS traffic signal detector data for eastbound Pacific Highway travel lanes on approach to Greenwich Road and Reserve Road from Roads & Maritime Services. Further, lane by lane traffic surveys have subsequently been undertaken by staff of this Practice between 7:00am and 10:00am on Thursday the 14th of November, immediately adjacent to the site.

A summary of the obtained data is provided within **Table 6**, whilst full details are available upon request.

TABLE 6 SUMMARY OF LANE BY LANE TRAFFIC DEMANDS PACIFIC HIGHWAY EASTBOUND CARRIAGEWAY WEEKDAY MORNING COMMUTER PEAK PERIOD				
Time	Kerb-side Lane	Middle Lane	Median Lane	Total
7am-8am	143	762	499	1404
8am-9am	230	916	667	1813
9am-10am	180	816	445	1441
Total	553	2494	1611	4658

Table 6 indicates that the Pacific Highway kerb-side lane accommodates between 10-15% of the total eastbound carriageway traffic demands during the weekday morning peak period. The significantly reduced demands within the kerb-side travel lane, in conjunction with the moderate projected peak hourly inbound traffic demands associated with the development (47 movements during the morning peak hour and 34 vehicle movements during the afternoon peak hour) are such that the impacts on trailing public road traffic flow is anticipated to be negligible.

Notwithstanding the above findings and following subsequent liaison with Roads & Maritime Services' officers, the application provides for a deceleration lane to service the Council car parking area. The provision of such infrastructure is envisaged not only reduce the potential for impacts of the application on adjoining public road traffic flow during school start and finish period but also

provide significant public benefit with respect to the existing and future operational demands of the Gore Hill Oval precinct outside of the operational periods of the school.

Site egress movements are expected to be significantly assisted by the punctuation of eastbound Highway traffic demands associated with the operation of traffic signals to the west at Greenwich Road. These signals provide for regular and extended gaps in eastbound Highway traffic flow allowing motorists to exit the Council car park access driveway with a reasonable level of efficiency. Further to the above, the proposed removal of existing hedging along the northern side of Pacific Highway in association with the provision of the deceleration lane has previously been presented to notably improve the prevailing extent of sight distance between the existing car park access driveway and approaching eastbound Highway traffic flow, in accordance with minimum Australian Standard requirements.

In consideration the above discussion, it not considered that the subject development will result in any unreasonable impacts on the safety and efficiency of the adjoining Pacific Highway eastbound carriageway traffic flow efficiency and accordingly not alterations to the existing infrastructure are required.

6.5 Pedestrian Impacts

The proposed development has the potential to result in a minor level of additional pedestrian demands within the immediate vicinity of the site. The notable pedestrian access and mobility infrastructure within the immediate vicinity (see Section 5.5 of this report) is such that pedestrians are provided with a particularly good level of service and connectivity throughout the surrounding precinct, which is readily capable of accommodating additional demand.

Notwithstanding the above, it is acknowledged that Pacific Highway somewhat forms an impediment to north-south pedestrian desire lines within the immediately precinct. Safe and efficient pedestrian crossing movements over Pacific Highway is facilitated within 200m of the site both to the east and west via signalised crossings at Reserve Road and Greenwich Road, respectively.

The primary school nature of the school is such that students are not expected to walk to and from the school unattended. In this regard and having consideration to the abovementioned nearby signalised pedestrian crossing facilities over Pacific Highway, it is not expected that students will undesirably attempt to cross the Highway immediately adjacent to the school in an ad-hoc manner. Similarly, it is not expected that parents will set-down / pick-up students on the southern side of Pacific Highway, thereby resulting in their child be required to cross Pacific Highway. Notwithstanding this, if considered necessary central median pedestrian fencing could be provided within Pacific Highway, within the vicinity of the school, the requirement for which could be imposed as a condition of consent.

Specific management measures in regard to pedestrian movements to and from the site are contained within the Traffic Management Plan, a copy of which is contained within **Attachment 4**.

6.6 Public Transport Impacts

Section 5.4 of this report presents that the precinct surrounding the subject site is particularly well serviced by public transport infrastructure with the site being in easy walking distance to rail and bus services as well a planned metro service at Crows Nest. It is accordingly expected that a proportion of the future school staff and some older students may utilise the surrounding public transport infrastructure to access destinations throughout the Sydney metropolitan area. The capacity of the existing public transport system is however not envisaged to be measurably affected by any additional demand associated with the development, given its limited scale.

It is acknowledged that school and / or employment generated developments are, at times, required to prepare a site specific Green Travel Plan. A Green Travel Plan has accordingly been prepared, a copy of which is contained within **Attachment 9** for reference. This Plan provides advice to development users with respect to sustainable travel modes and infrastructure and on the basis of infrastructure available provide sustainable travel targets, which are to be viewed regularly following occupation of the development.

7. PRELIMINARY CONSTRUCTION MANAGEMENT PLAN

7.1 Introductory Statement

This Section of the report constitutes a preliminary Construction Traffic Management Plan (CTMP) addressing the traffic access and safety issues associated with demolition and construction works associated with the proposal. CTMPs are generally prepared at Construction Certificate stage following the commissioning of a builder thereby allowing a greater appreciation of the likely construction methodology and therefore the required traffic management measures to be implemented.

The terms of the initiatives contained within the following subsections of this report are therefore somewhat generic and some modifications may be needed by or on behalf of the successful builder / civil contractor at Construction Certificate stage depending on their feasibility taking into consideration all project requirements.

7.2 Traffic Management During On-Site Works

The scale of the development works are such that they are contained within off-street areas and therefore are not envisaged to require the temporary or medium term occupation of the public road network.

Construction vehicles and equipment are most likely to be wholly accommodated either within the site or within The Avenue, being accessed via the adjacent Council car parking area.

Class A Hoarding or construction fencing will be provided around the site and The Avenue boundaries thereby effectively separating construction activities from the adjoining public spaces.

7.3 Safe Ingress and Egress of Construction Traffic

It is expected that construction vehicles servicing the site will be limited to MRVs, accessing the construction area in a forward direction via the adjoining Council car parking area. Similarly, construction vehicles are envisaged to exit the construction area in a similar simple forward direction to the adjoining Council car parking area.

All construction vehicle Works Zone access and egress movements are to be strictly controlled by appropriately qualified traffic controllers.

No queuing / marshalling of construction vehicles is to occur in any public road.

7.4 Construction Vehicle Transport Routes

Construction vehicles are to access and vacate the subject site utilising Pacific Highway, as follows:

Inbound Route

Pacific Highway, left turn into the Council car parking area and thence a left turn into the construction area.

Outbound Route

Forward movement from the construction area to the Council car parking area and thence a left turn into Pacific Highway.

7.5 Parking Control

All construction employee / tradesperson passenger vehicle parking is to be accommodated within the surrounding public road network until such time as the basement car park is capable of being utilised. Construction workers / tradespersons will be encouraged to do either of the following when travelling to the site in order to minimise the extent of parking demand:

- Utilise public transport to the site (the site is well serviced by previously presented rail and bus services operating within the subject vicinity); and / or
- Car pool with other construction workers.

The above transport options will form part of the conditions of commissioning when engaging the relevant site workers and as such form part of any site induction process.

No construction worker parking is occur within the adjoining Council car park or Pacific Highway.

7.6 Construction Traffic Generation

The small scale of the construction works are such the traffic generating capacity of the construction works are limited. In this regard, it is expected that a maximum of two heavy vehicles will service the site during peak construction periods, such as concrete pours. During these periods of heavy construction vehicle generation, drivers are to be instructed by radio when to arrive at the site to ensure that there is no vehicle queuing or parking within the adjoining road network. This is to be strictly adhered to.

7.7 Traffic Impact

The recent traffic investigations of the adjoining road network and the analysis contained within previous sections of this report have indicated that motorists are provided with a reasonable level of service within the immediately adjoining public road network. It is therefore considered that the limited traffic generation associated with the construction activities can be accommodated without any unreasonable impacts on adjoining vehicle movements considering the previously mentioned maximum hourly traffic generation.

Notwithstanding the above, it is recommended that construction vehicle movements to and from the site be eliminated where possible during road peak operational periods (7:00am – 9:00am and 4:00pm – 6:00pm).

7.8 Impacts on Pedestrians

Pedestrian demands along Pacific Highway and indeed, within the Council car parking area are notable however pedestrian movements adjacent to the site are to occur in an unimpeded fashion during all periods of construction. Qualified traffic controllers will supervise the movement of construction vehicles between the construction area and Pacific Highway.

Unimpeded pedestrian access to adjoining developments and indeed, nearby bus stops, will be maintained at all times.

Boundary hoarding / fencing will protect pedestrians from dust and debris.

No unreasonable impacts on the safety or mobility of pedestrians are therefore anticipated during the construction works associated with the subject development.

8. CONCLUSION

This report assesses the potential parking and traffic implications associated with a proposal involving the undertaking of alterations and additions to an existing commercial building situated within Cemetery Trust land at 211 Pacific Highway, St Leonards, to accommodate an International Chinese school containing up to 160 students. Based on this assessment, the following conclusions are now made:

- The proposal involves the construction of a new formal student set-down / pick-up area to be situated along the north-eastern boundary directly adjacent to the site;
- The proposal also involves the construction of a new one-way roadway facilitating access between the Local Council car park situated to the east of the site and the abovementioned proposed student set-down / pick-up area;
- The new off-street set-down / pick-up area is proposed to be capable of accommodating up to 10 passenger vehicles in a queued arrangement at any one time;
- Connectivity from the Pacific Highway eastbound carriageway to the Council car park is proposed to be assisted by the construction of a deceleration lane;
- The school is proposed to implement a Traffic Management Plan to govern the abovementioned student set-down / pick-up arrangement to ensure safe and efficient operation during school start and finish periods;
- Whilst it is expected that the off-street set-down / pick-up facility will accommodate peak operational demands, recent surveys have indicated that there is additional capacity within the adjoining Council car parking area to accommodate a moderate level of additional demand, in the unlikely event that it is generated by the school operation;
- Further to the above, an on-site parking area capable of accommodating 10 car spaces is specifically allocated for staff and visitor use during school operational periods;
- The on-site passenger vehicle parking provision is compliant with the numerical requirements of DCP 2016;
- The proposed access and internal circulation arrangements are projected to be capable of accommodating internal passenger vehicle manoeuvring in a safe and efficient manner;
- The surrounding road network has been observed to operate with a reasonable level of service during peak school start and finish periods with some spare capacity;
- It is expected that the proposal will result in the generation of a moderate level of additional vehicle trips to and from the precinct during school start and finish periods;

- The surrounding road network is capable of accommodating the moderate level of additional traffic projected to be generated by the precinct during school start and finish periods and in this regard, it is not envisaged that any specific road upgrades are required to accompany the development;
- The site is well serviced by a variety of sustainable transport infrastructure including public bus services, train services, pedestrian infrastructure and primarily on-road cycle routes; and
- The limited scale and primary school nature of the site is such that it is not expected that the development will result in any notable impact on the capacity of the existing public transport infrastructure.

It is considered, based on the contents of this report and the conclusions contained herein, there is no parking or traffic related issues that should prevent approval of the subject proposal. This action is therefore recommended.

ATTACHMENT 1

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New playground area
(construction completed)

Gore Hill Oval
(Stage 1 reconstruction completed)

New Building
(Gore Hill precinct - stage 2 proposal - yet to be constructed)

Gore Hill Memorial Cemetery

refer to SSD03 for plan details
Site area 1,636.75 m²

211 Pacific Highway, St Leonards
new landscaped area refer to Landscape Plan prepared by Inview Design

Kiss & Drop Finishes



Typical bollard
(Removable)



Permeable paver
Similar to Hydroston H80, colour to match existing.



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Stanton Dahl Architects
PO Box 833, Epping, NSW 1710, Australia
Tel +61 2 8876 5300 Fax +61 2 9868 2624
www.stantondahl.com.au

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01	Client Issue	25/02/19
02	Client Issue	03/04/19
03	Quattro Issue	11/09/19
04	Consultant Issue	23/05/19
05	SSD DRAFT Issue	12/06/19
06	SSD Final DRAFT Issue	19/06/19
07	SSD Issue	26/06/19
08	Revised SSD Issue	13/12/19

Architecture
Project management
Interior design



stanton dahl architects



International Chinese School

211 Pacific Highway,
St Leonards, NSW

Drawn; cjh
Checked; cjh
Plot date; 13/12/19

Scale; 1:200 as noted @ A1

Project No;
2417.19

Drawing No;
SSD01

Revision#;
08

Site Plan

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06	Revised SSD Issue	13/12/19

Architecture
Project management
Interior design



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International Chinese
School

211 Pacific Highway,
St Leonards, NSW

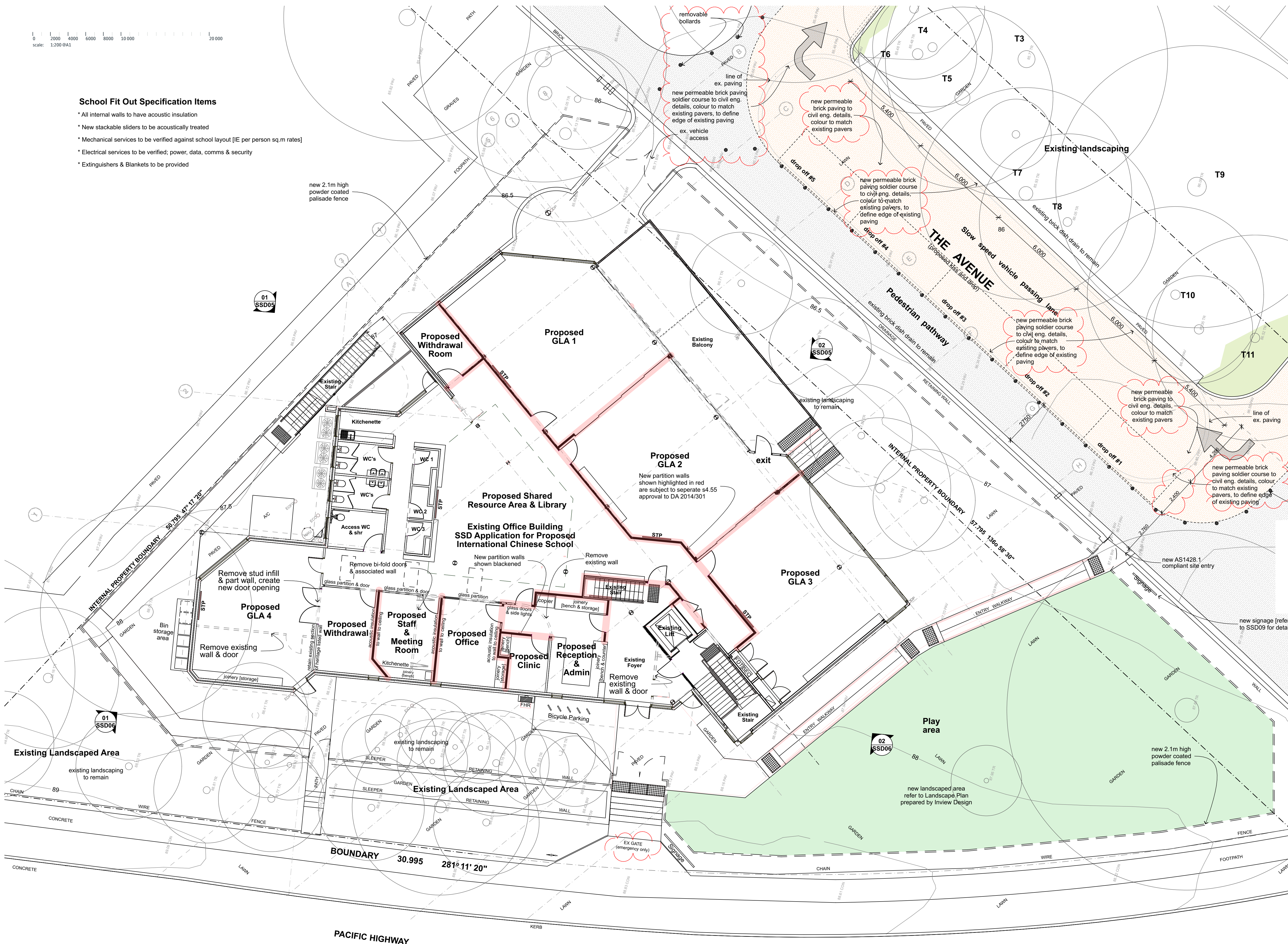
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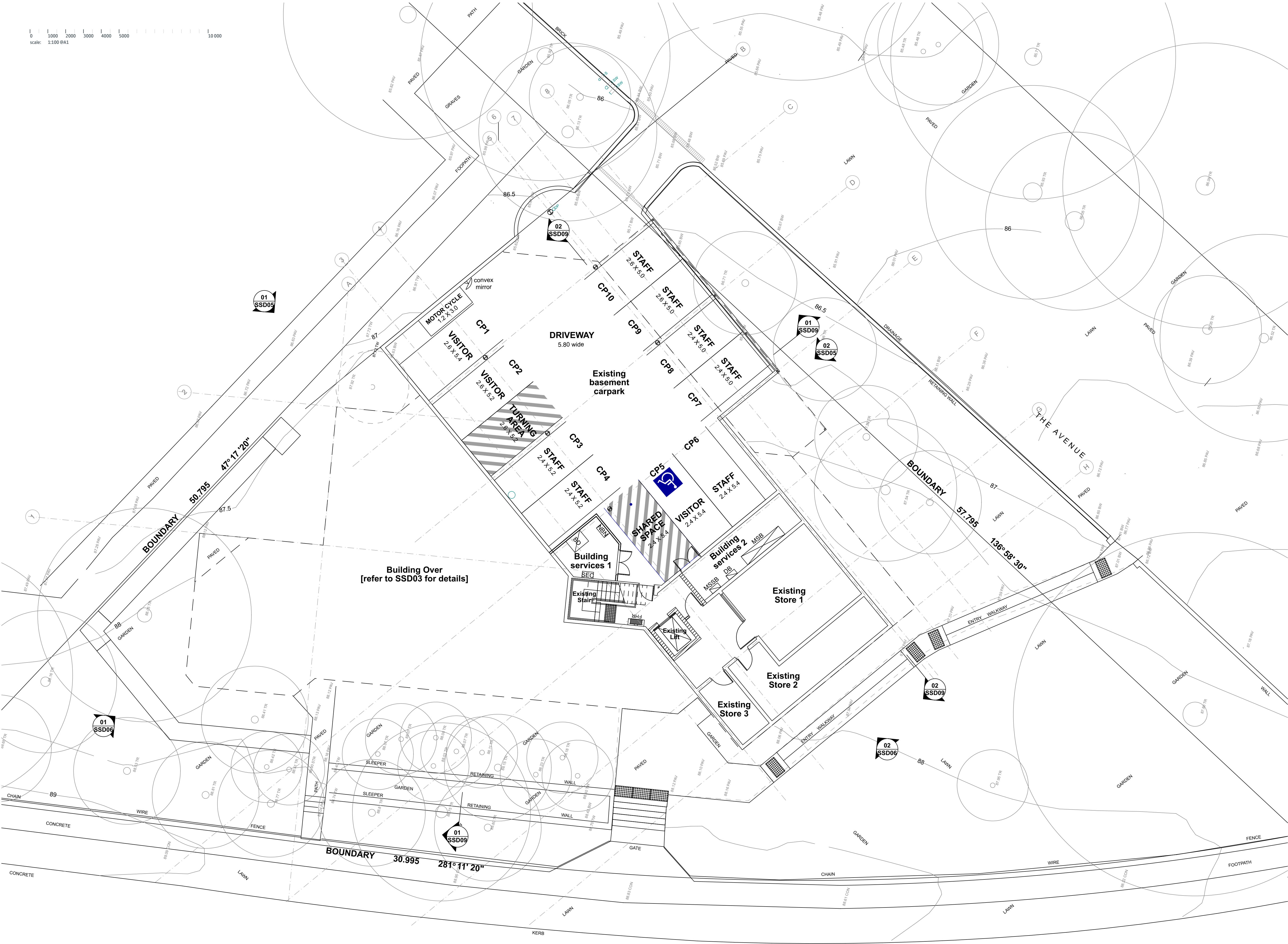
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Drawing No; **SSD03** Revision#; **06**

Ground Floor Plan





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Stanton Dahl Architects
PO Box 833, Epping, NSW 1710, Australia
Tel +61 2 8876 5300 Fax +61 2 9868 2624
www.stantondahl.com.au

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Architecture
Project management
Interior design

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International Chinese School

211 Pacific Highway,
St Leonards, NSW

Drawn: cjh
Checked: cjh
Plot date: 26/8/19

Scale: 1:100 as noted @ A1

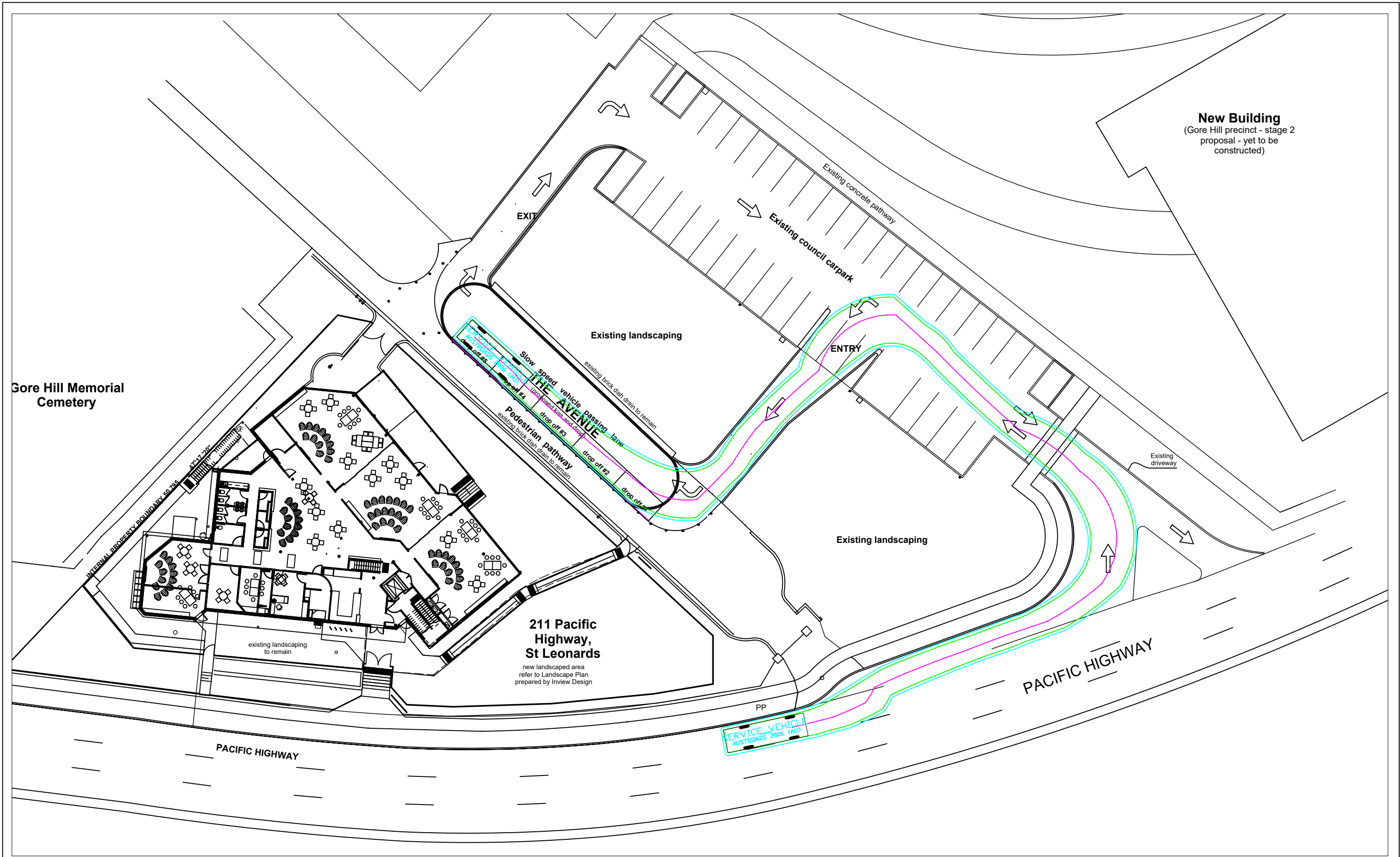
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Revision#;
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Basement Floor Plan

ATTACHMENT 2

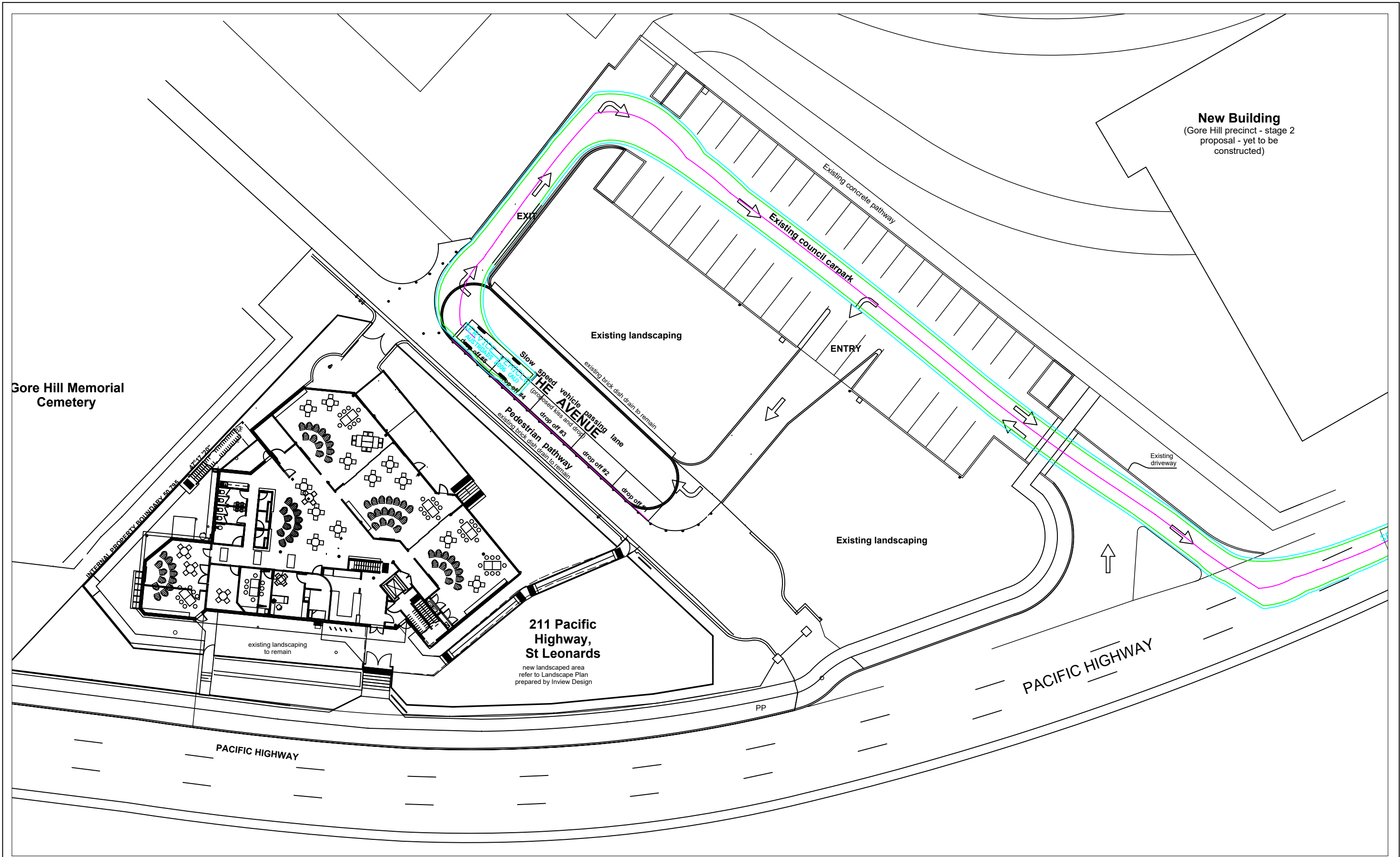


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ADDRESS: 302/166 GLEBE POINT RD, GLEBE
PH: (02) 8971 8314
MOB: 0410 561 848
EMAIL: info@stanburytraffic.com.au
WEBSITE: www.stanburytraffic.com.au

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SITE INGRESS MOVEMENT
PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

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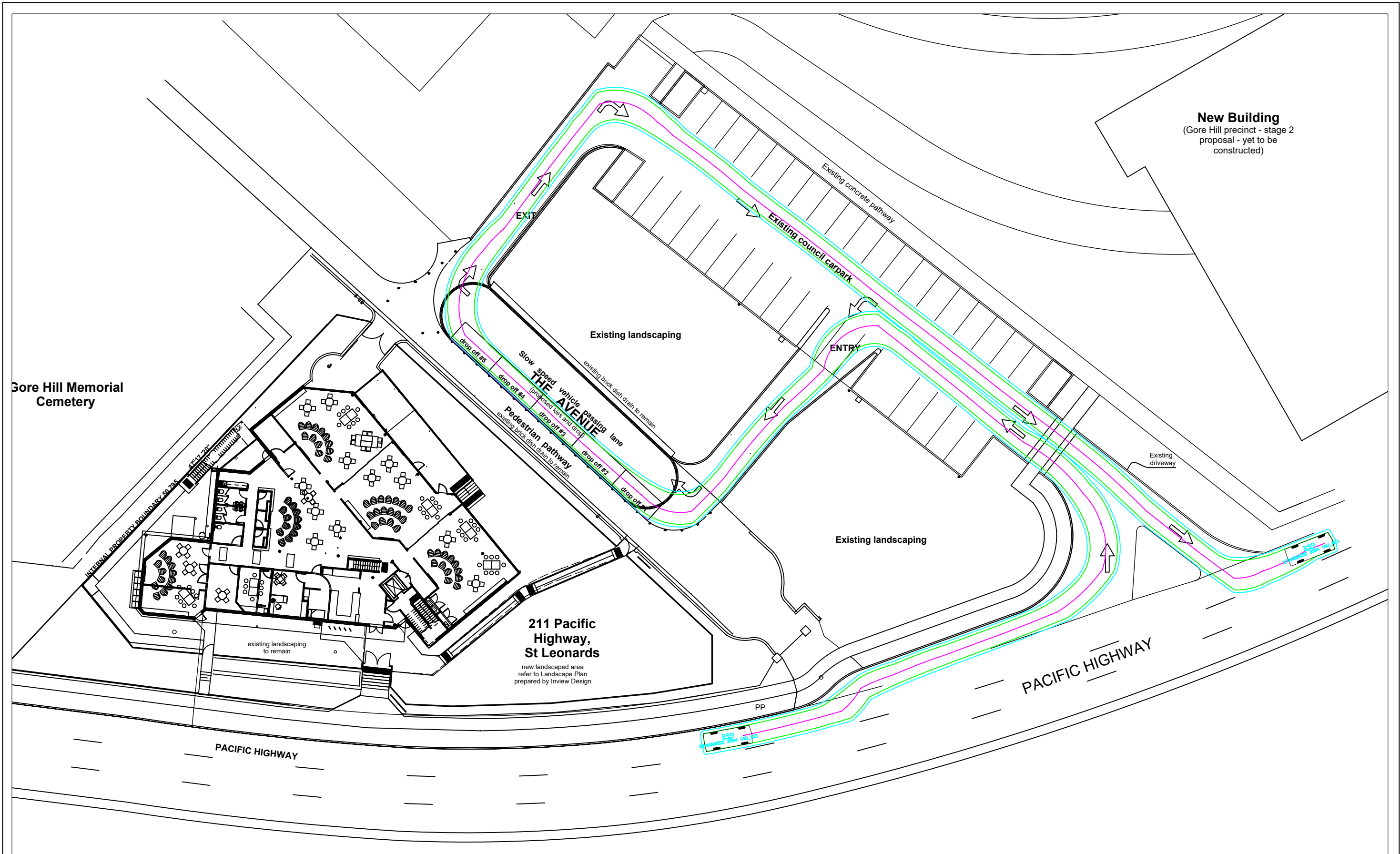
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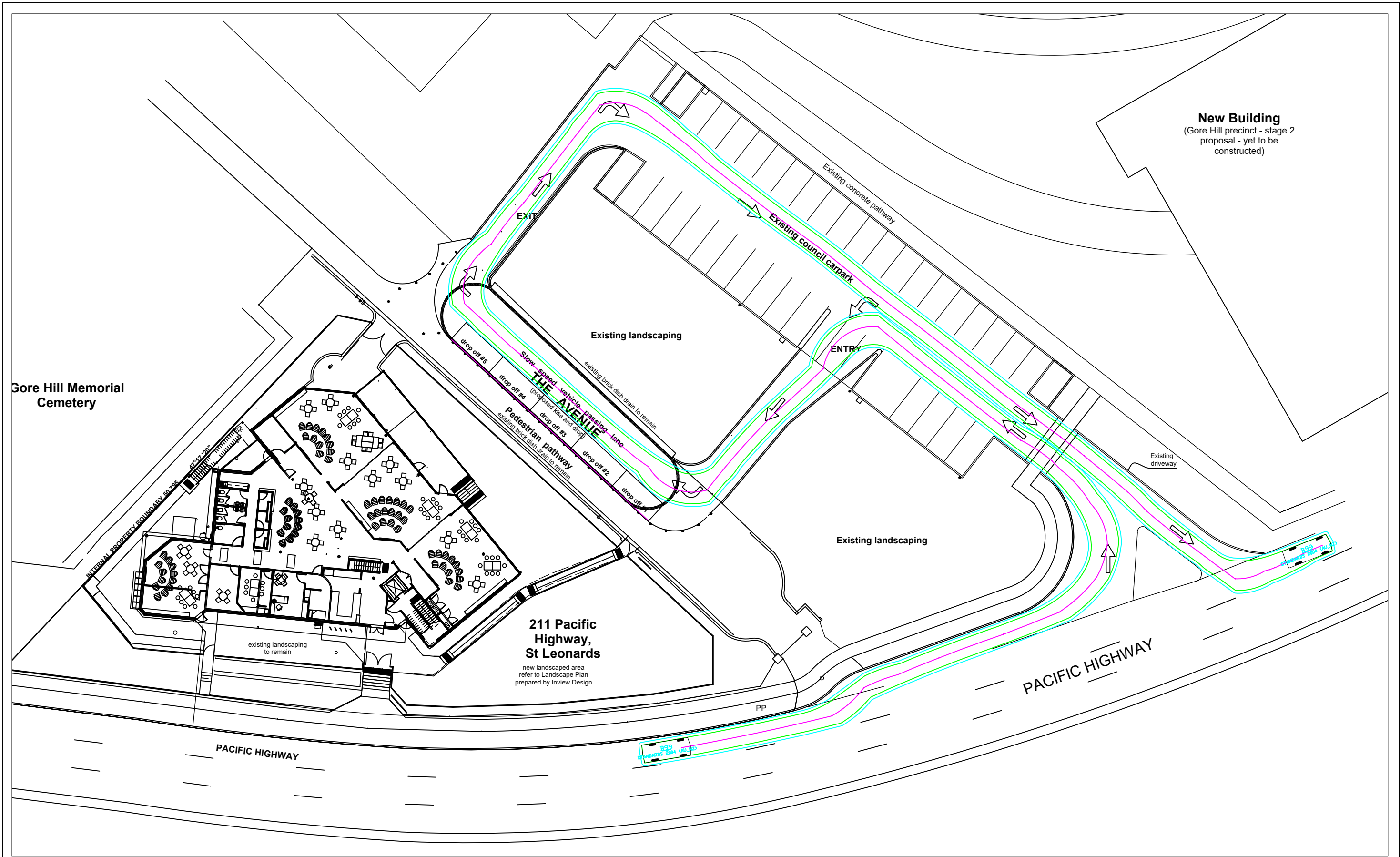
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PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

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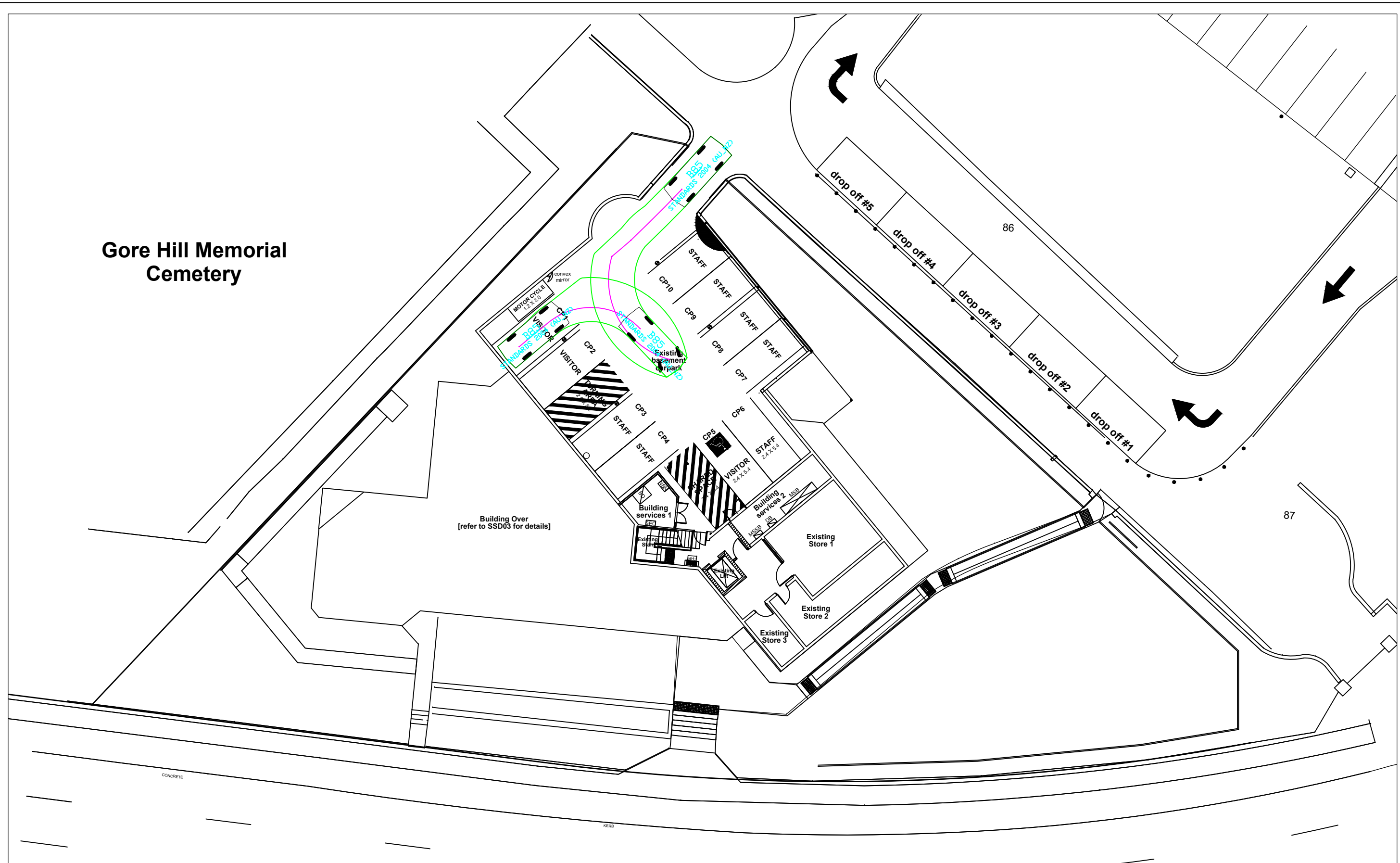
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Gore Hill Memorial
Cemetery



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ADDRESS: 302/166 GLEBE POINT RD, GLEBE
PH: (02) 8971 8314
MOB: 0410 561 848
EMAIL: info@stanburytraffic.com.au
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STANBURY TRAFFIC PLANNING
PASSENGER VEHICLE SWEEP PATHS
INTERNAL PARKING SPACE MANOEUVRING
PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

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FILE: 19-050

DATE: 27/08/2019

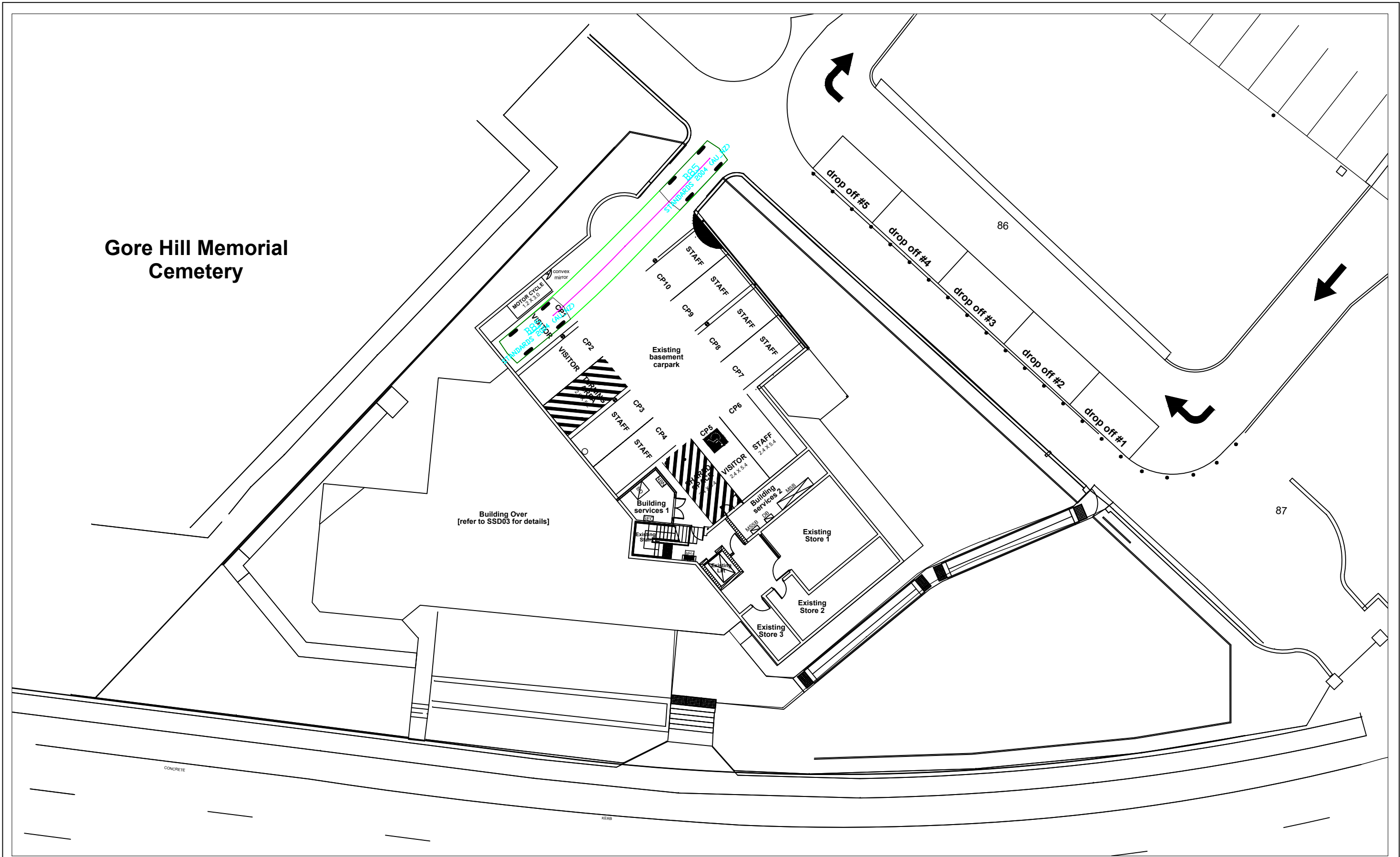
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Gore Hill Memorial Cemetery

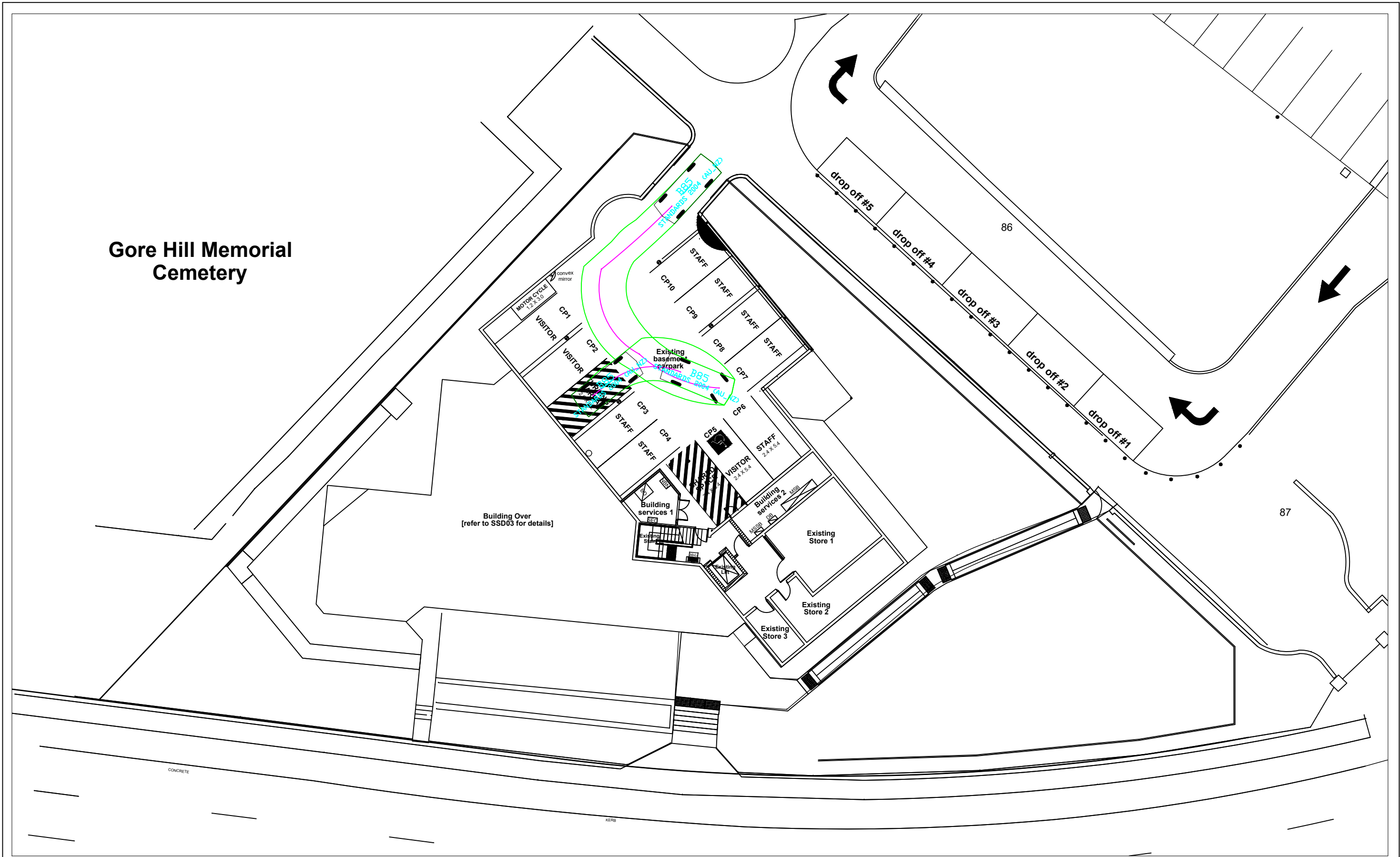


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PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

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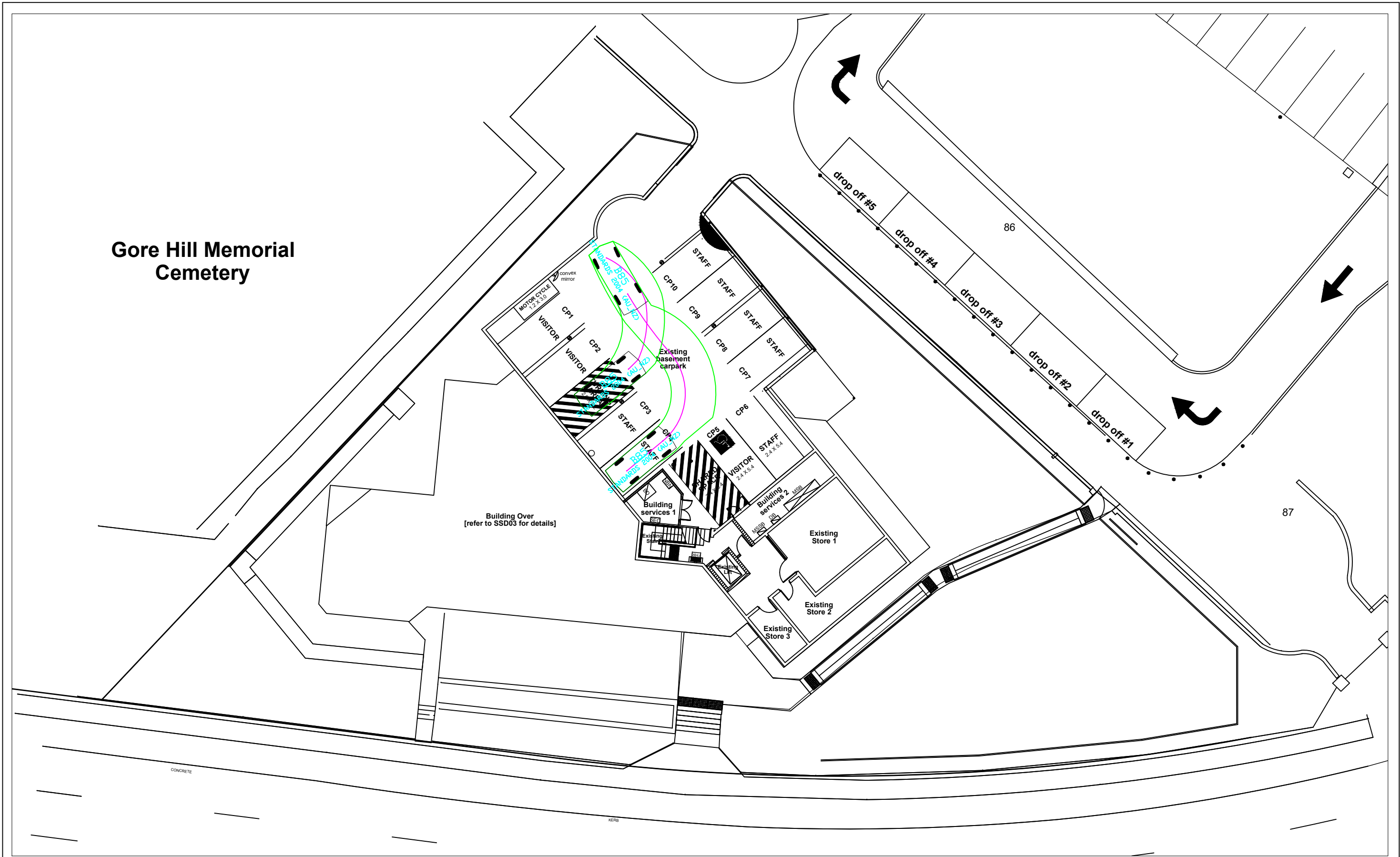


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INTERNAL PARKING SPACE MANOEUVRING
PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

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Gore Hill Memorial Cemetery



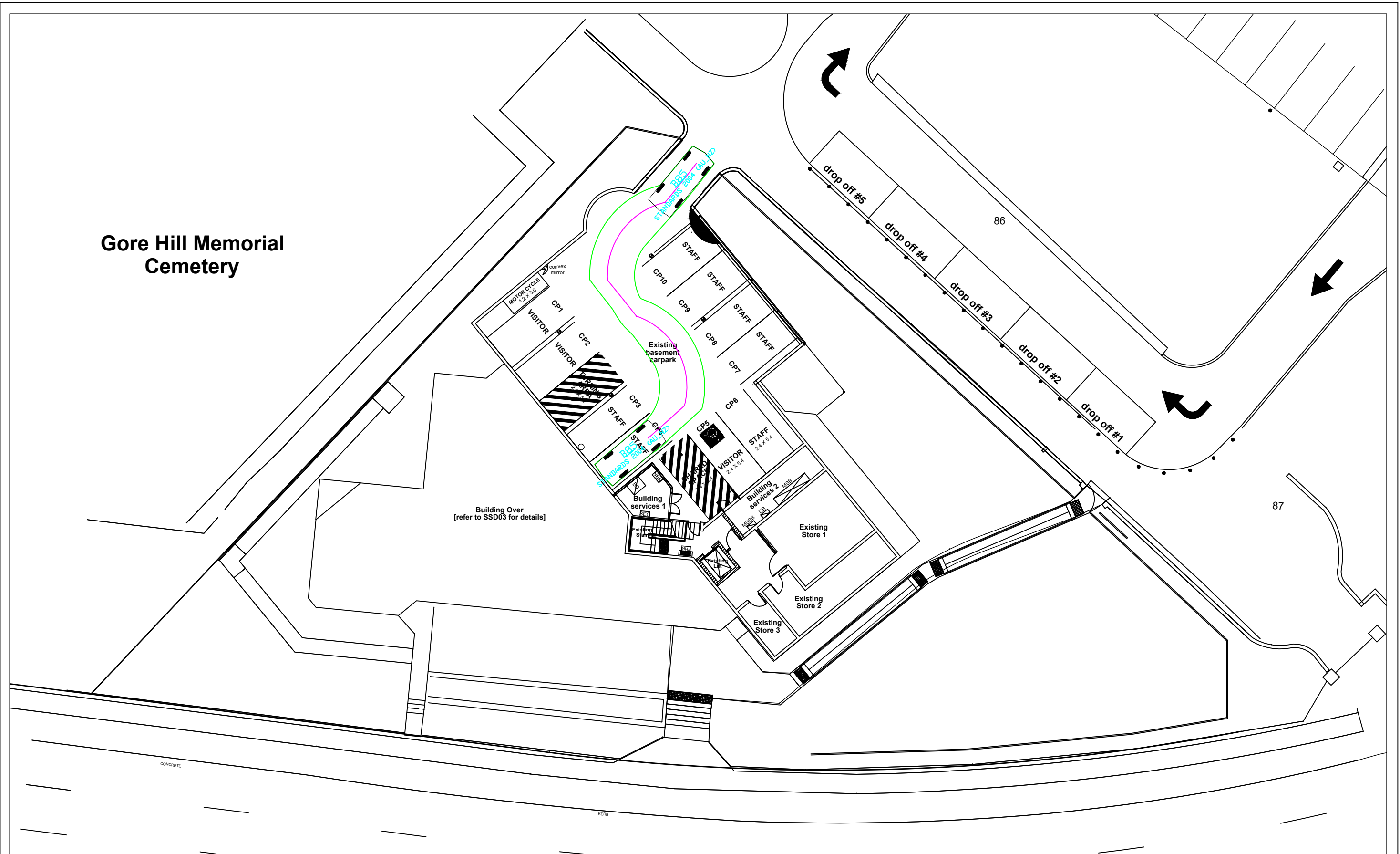
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211 PACIFIC HIGHWAY, ST LEONARDS

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Gore Hill Memorial Cemetery



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PASSENGER VEHICLE SWEEP PATHS
INTERNAL PARKING SPACE MANOEUVRING
PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

SCALE: 1:200 AT A3

FILE: 19-050

DATE: 27/08/2019

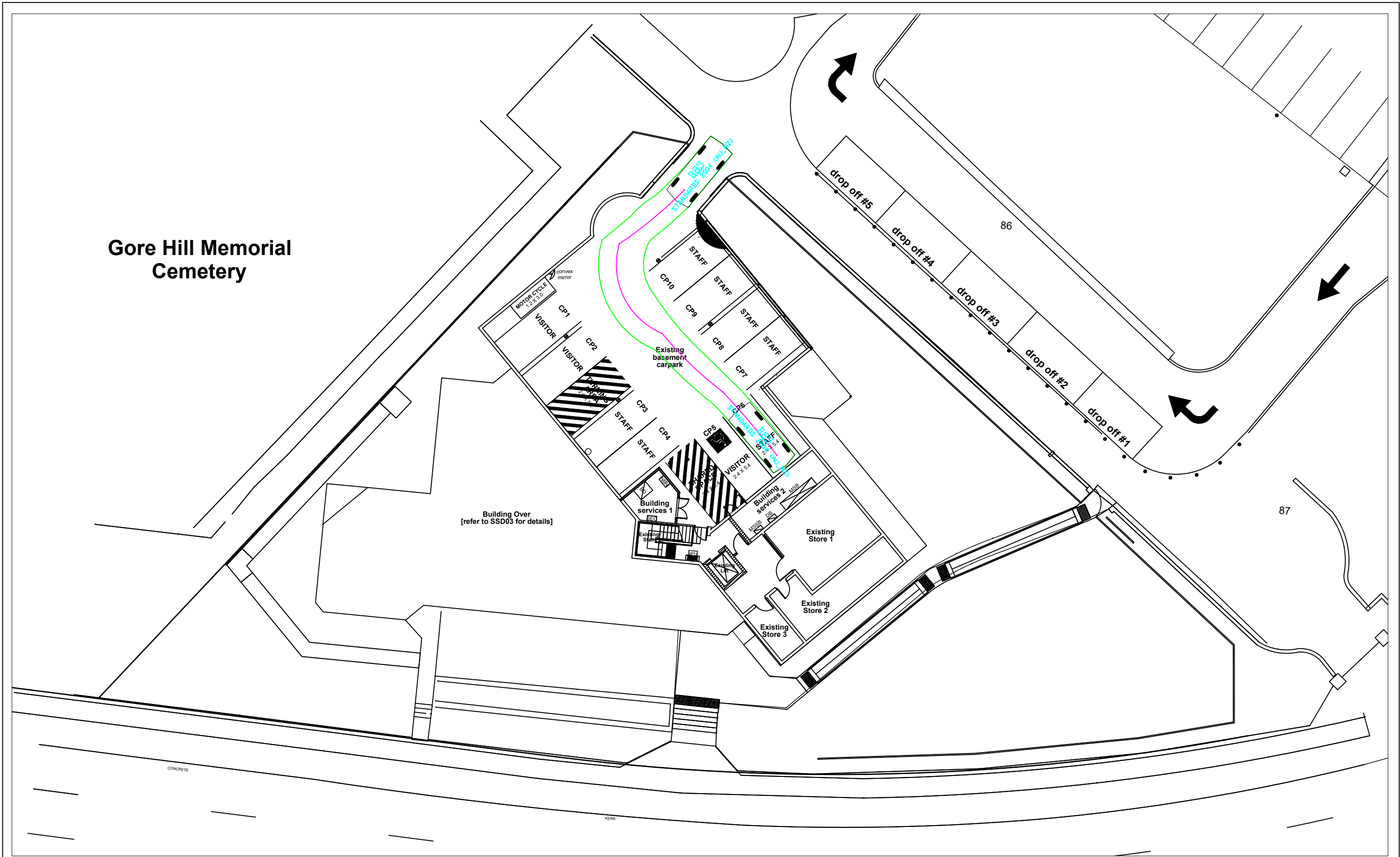
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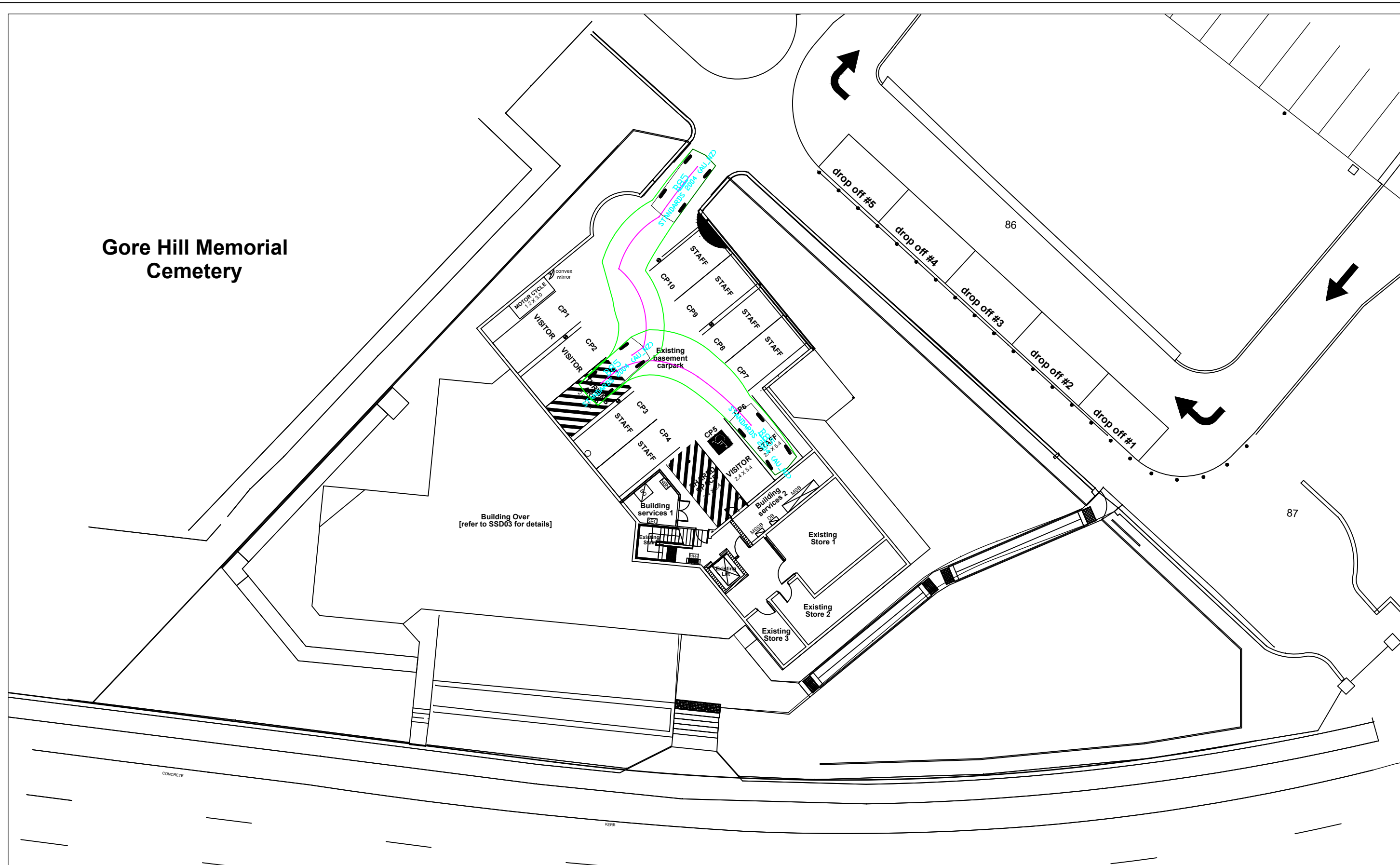
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PH: (02) 8971 8314
MOB: 0410 561 848
EMAIL: info@stanburytraffic.com.au
WEBSITE: www.stanburytraffic.com.au

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STANBURY TRAFFIC PLANNING
PASSENGER VEHICLE SWEEP PATHS
INTERNAL PARKING SPACE MANOEUVRING
PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

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Gore Hill Memorial Cemetery



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MOB: 0410 561 848

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PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

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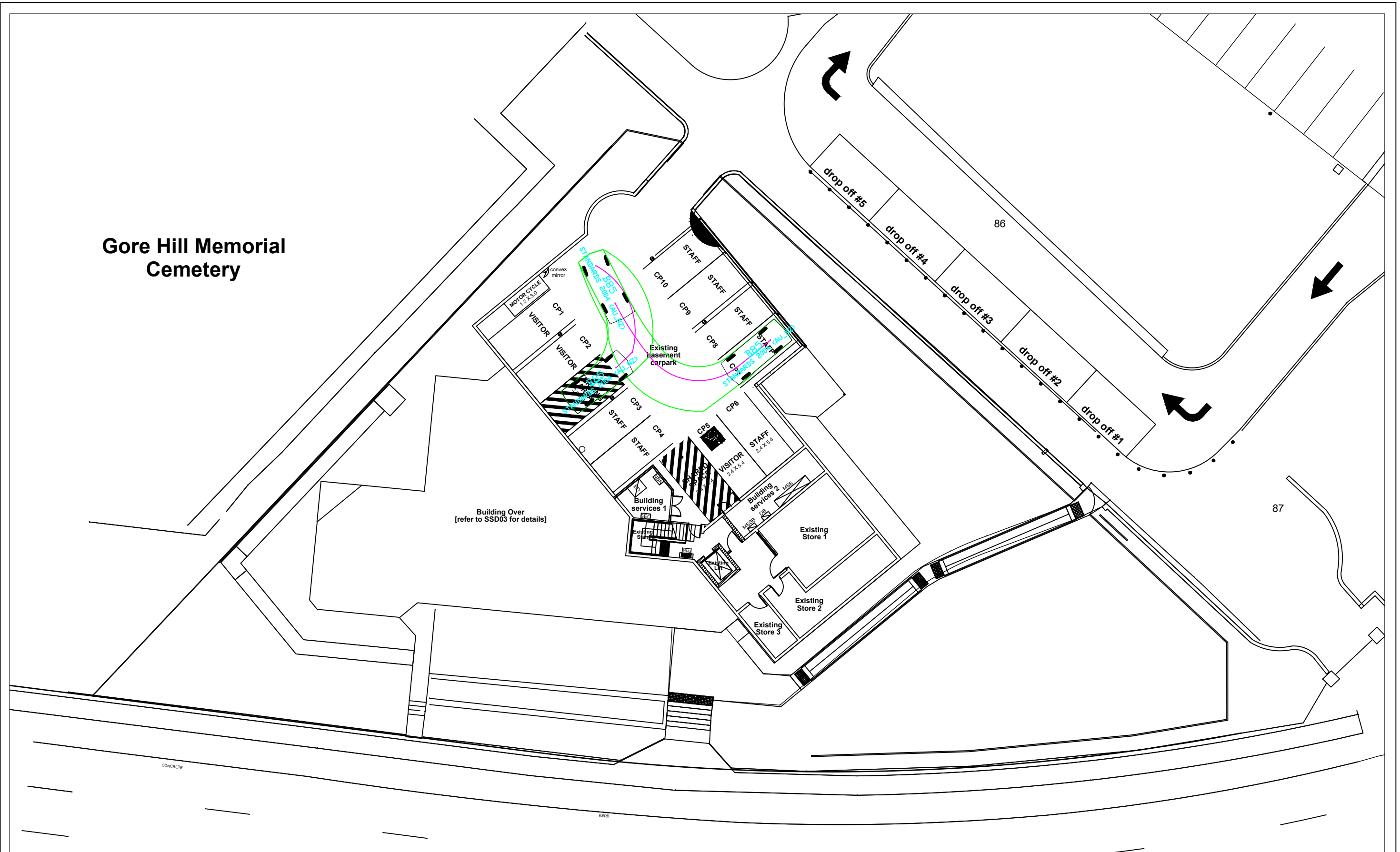
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Gore Hill Memorial Cemetery



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MOB: 0410 561 848
EMAIL: info@stanburytraffic.com.au
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STANBURY TRAFFIC PLANNING
PASSENGER VEHICLE SWEEP PATHS
INTERNAL PARKING SPACE MANOEUVRING
PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

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The site plan illustrates the layout of the Gore Hill Memorial Cemetery. The main building complex is centrally located, featuring several functional areas: a central 'Building Over' (refer to SSD03 for details), 'Building services 1', 'Building services 2', and three 'Existing Store' units. The building is surrounded by parking spaces labeled CP1 through CP10. CP1 and CP2 are designated for 'VISITOR' use, while CP3 through CP10 are for 'STAFF'. A 'convex mirror' is indicated near CP1. To the left of the building is an 'Existing basement carpark'. To the right, a series of 'drop off' zones are marked along a road, labeled 'drop off #1' through 'drop off #5'. The road is numbered 86. A large curved road, numbered 87, runs along the bottom right of the site. The cemetery is bordered by a 'CONCRETE' wall and a 'KERB' on the left. The plan also shows various internal roads, paths, and landscaping elements like trees and shrubs. A north arrow is located in the upper right corner of the plan.

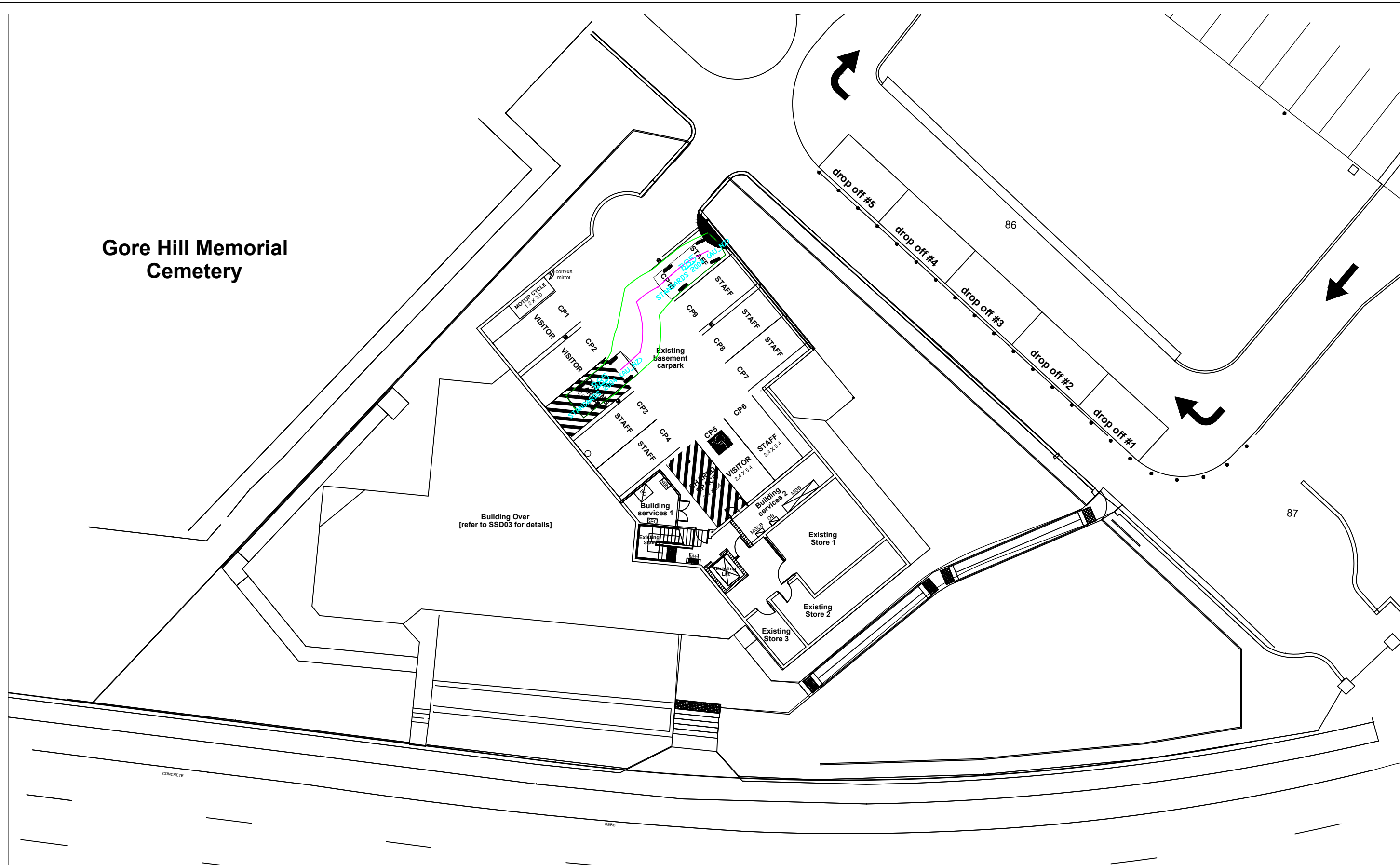


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Gore Hill Memorial Cemetery



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STANBURY TRAFFIC PLANNING
PASSENGER VEHICLE SWEEP PATHS
INTERNAL PARKING SPACE MANOEUVRING
PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

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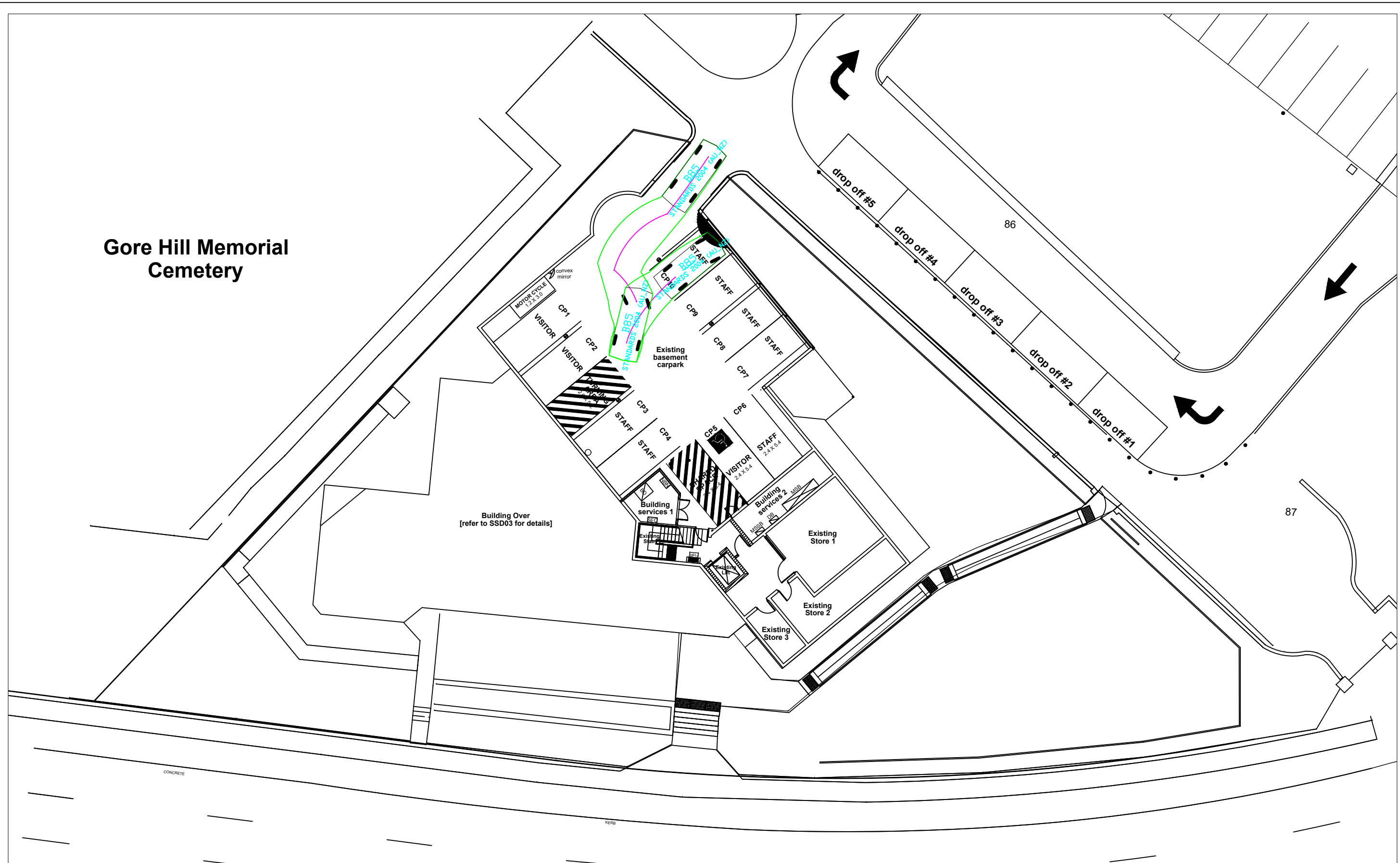
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Gore Hill Memorial
Cemetery



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PH: (02) 8971 8314

MOB: 0410 561 848

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STANBURY TRAFFIC PLANNING

PASSENGER VEHICLE SWEEP PATHS
INTERNAL PARKING SPACE MANOEUVRING
PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

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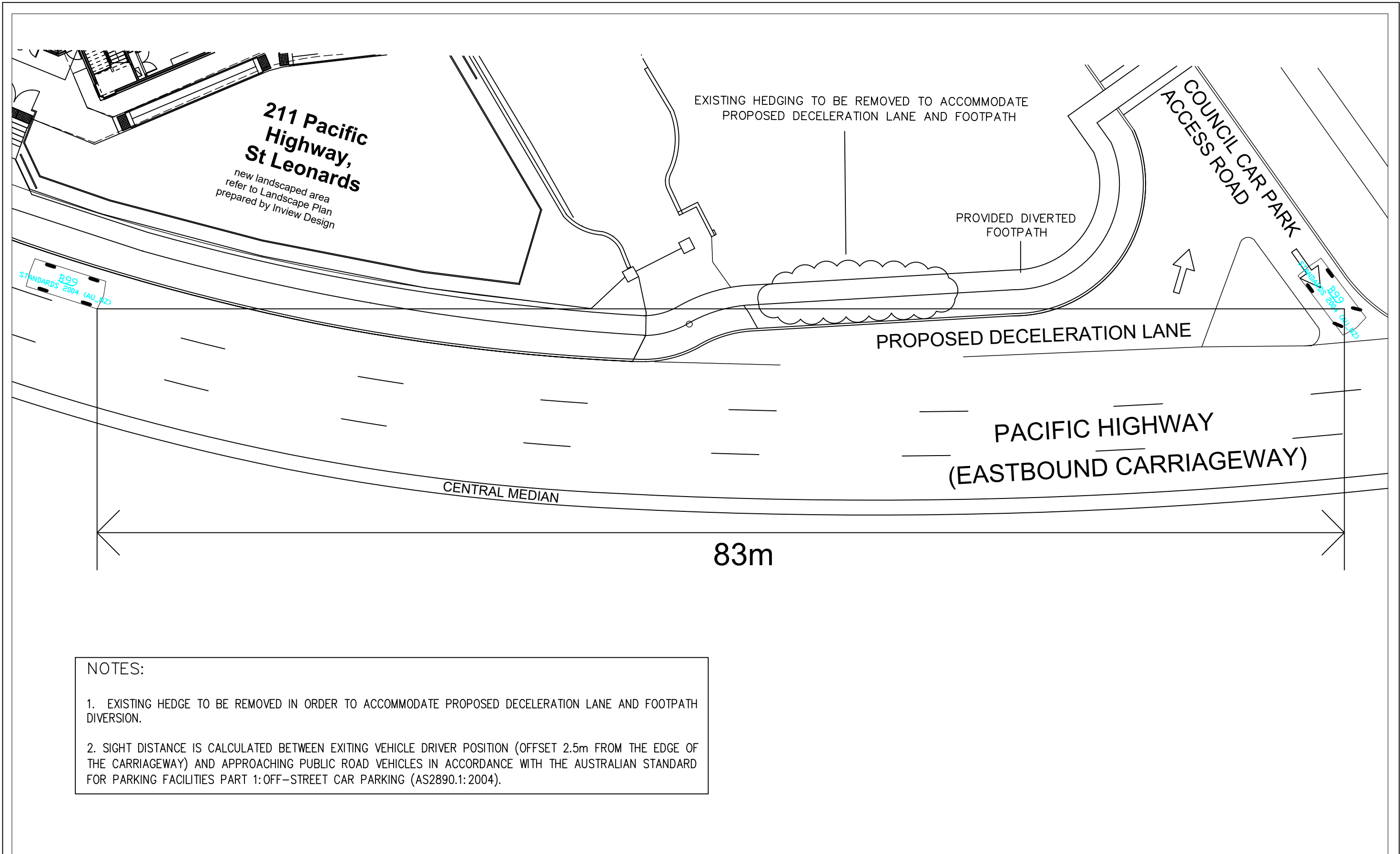
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ATTACHMENT 3



NOTES:

1. EXISTING HEDGE TO BE REMOVED IN ORDER TO ACCOMMODATE PROPOSED DECELERATION LANE AND FOOTPATH DIVERSION.
2. SIGHT DISTANCE IS CALCULATED BETWEEN EXITING VEHICLE DRIVER POSITION (OFFSET 2.5m FROM THE EDGE OF THE CARRIAGEWAY) AND APPROACHING PUBLIC ROAD VEHICLES IN ACCORDANCE WITH THE AUSTRALIAN STANDARD FOR PARKING FACILITIES PART 1: OFF-STREET CAR PARKING (AS2890.1:2004).



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PH: (02) 8971 8314
MOB: 0410 561 848
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STANBURY TRAFFIC PLANNING
SIGHT DISTANCE DIAGRAM INCORPORATING INDICATIVE EXTENT OF
EXISTING HEDGE TO BE REMOVED TO ACCOMMODATE PROPOSED
FOOTPATH AND DECELERATION LANE FOR A PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY, ST LEONARDS

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ATTACHMENT 4



STANBURY
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UPDATED TRAFFIC MANAGEMENT PLAN

**PROPOSED PRIMARY SCHOOL
211 PACIFIC HIGHWAY
ST LEONARDS**

**PREPARED FOR INTERNATIONAL CHINESE SCHOOL
OUR REF: 19-050-2**



APRIL 2020

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APPENDICES

1. Architectural Plans
2. School Statement of Operations

1. INTRODUCTION

1.1 Scope of Assessment

Stanbury Traffic Planning has been commissioned by International Chinese School to prepare a Traffic Management Plan (TMP) associated with the operation of a proposed primary school at 211 Pacific Highway, St Leonards.

This purpose of this Plan is to govern the implementation of the internal and external traffic management arrangements to maximise the safety and efficiency of student set-down / pick-up arrangements during school start and finish periods. This TMP addresses issues which are considered vital to the safety of school children as well as the surrounding site and public infrastructure management as they relate to traffic and pedestrian safety. To this end, this TMP:

- Details the number of vehicles expected to set-down / pick-up students during the school start and finish periods.
- Describes the proposed operational management measures to be employed during school start and finish periods.
- Describes other measures to mitigate the impacts of the traffic and parking activities with the operation of the school.
- Provides a copy of the Statement of Operations for the school.

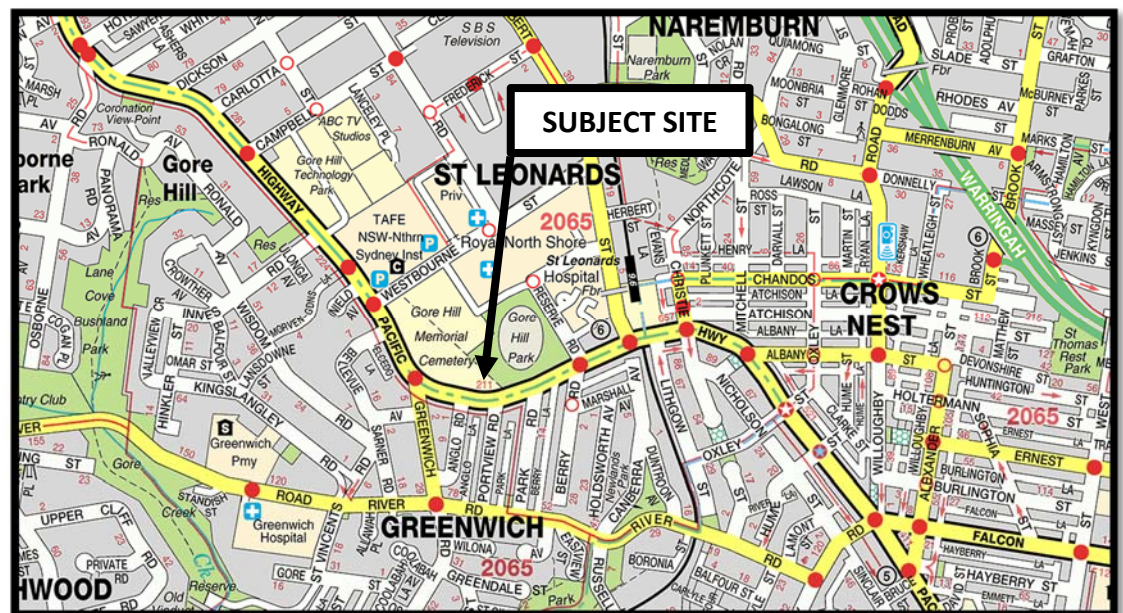
This TMP should be read in conjunction with architectural plans prepared by Stanton Dahl Architects, reduced scale copies of which are attached as **Appendix 1**.

2. INTRODUCTION

2.1 Site Location

The subject site is located on the northern side of Pacific Highway, approximately midway between Greenwich Road and Reserve Road, St Leonards. The site location is illustrated below and overlaid within a local aerial context by **Figure 1** and **Figure 2**, respectively.

FIGURE 1
SITE LOCATION WITHIN A LOCAL CONTEXT



Source: UBD Australian City Streets – Version 8

FIGURE 2
SITE LOCATION WITHIN AN AERIAL CONTEXT



Source: Nearmap (accessed 2/05/19)

2.2 Site Description

The site provides a street address of 211 Pacific Highway, St Leonards. The site predominantly forms a triangular shaped parcel of land, providing an approximate frontage of 75m to Pacific Highway. The site extends to the north away from Pacific Highway approximately 58m and 51m along the north-eastern and north-western boundaries, respectively, resulting in a total site area in the order of 1,600m².

2.3 Surrounding Land Uses

The site is surrounded by a mix of land-uses as follows:

- Land immediately adjoining to the north-west is occupied by Gore Hill Memorial Cemetery.
- The Avenue, a primarily pedestrian access path bisecting the abovementioned cemetery abuts the eastern site boundary and links Westbourne Street in the north to Pacific Highway in the south.

- Gore Hill Park is situated to the north-east of the site, comprising the following:
 - A Council owned car park containing 37 spaces (including two disabled spaces) is situated to the east of the site on the opposite side of The Avenue, connecting with Pacific Highway eastbound carriageway via a driveway to the south-east of the site;
 - A half basketball and handball court is situated to the north of the car parking area;
 - A change room building is situated to the east of the car parking area;
 - A children's playground is situated to the north of the half basketball court; and
 - Gore Hill Oval is situated to the north-east of the change room building.
- Royal North Shore Public & Private Hospitals are situated to the north of Gore Hill Park.

3. DESCRIPTION OF PROPOSAL

3.1 Built Form & Operation

The subject proposal involves the alterations and additions to an existing commercial building situated within Cemetery Trust land at 211 Pacific Highway, St Leonards, to accommodate a bilingual International Chinese School, providing the following site population capacities:

- 160 students; and
- 12 staff (including teachers and administration employees).

The school is proposed to provide staggered start and finish times as follows:

- Years K – 1, comprising up to 55 students, are to operate between 8:45am and 2:45pm;
- Years 2 – 4, comprising up to 55 students, are to operate between 9:00am and 3:00pm; and
- Years 5 – 6, comprising up to 50 students, are to operate between 8:30am and 3:15pm.

Notwithstanding the above, a small before and after school program is also proposed, capable of accommodating up to 25 students between 7:00am – 9:00am and 2:45pm – 6:00pm.

The school is proposed to be contained within the existing commercial building, which is to be modified to provide the following:

- Ground Floor:
 - Four general learning areas;
 - An entry foyer and reception area;
 - A sick bay / clinic;
 - Four small offices / meeting rooms / general purpose rooms;
 - A shared resource area / library; and
 - Amenities.
- First Floor:
 - Three general learning areas;
 - A shared resource area;
 - Amenities.

The school building is to be supplemented by a large open play area situated within the south-eastern corner of the site, providing an area of approximately 300m².

Pedestrian access is proposed to be provided via an existing gate connection with The Avenue, to the north of the abovementioned open play area. The existing gate connecting the northern Pacific Highway footway, to the west of the play area, are also proposed to be retained but locked during normal school operation. These gates are only proposed to be utilised in the event of an emergency.

The school is proposed to be serviced by the existing basement car parking area containing 10 passenger vehicle parking spaces and one motorcycle parking space connecting with The Avenue via a single lane driveway situated in the north-eastern corner of the site. A further 10 bicycle parking spaces are proposed to be provided within the development, situated at ground floor level to the south of the building.

3.2 External Works

The following external works are proposed adjacent to the site in order to ensure the school integrates into the precinct in a safe and efficient manner:

- The construction of an approximately 35m long deceleration lane adjacent to the Pacific Highway eastbound carriageway, assisting ingress movements from the Highway to the existing adjoining Council car parking area.
- The establishment of a new formal one-way northbound roadway within The Avenue adjacent to the north-eastern boundary accommodating:
 - A student set-down / pick-up area, capable of accommodating up to five passenger vehicles in a queued arrangement at any one time;
 - An adjacent northbound travel lane facilitating connectivity to the basement car parking area; and
 - A formal pedestrian footpath between the roadway and the north-eastern site boundary.
- Construction of a new 25m long one-way roadway facilitating ingress movements between the Council car park access road situated to the east of the site and the abovementioned school access roadway.
- Minor modifications / widening of the existing roadway connecting The Avenue to the northern extent of the existing Council car park (which is proposed to provide an egress only function from the abovementioned school access roadway).
- Minor modifications to the existing Council car parking area in order to facilitate the reinstatement of parking spaces lost associated with provision of vehicular access to / from The Avenue.

4. BEFORE / AFTER SCHOOL TRAFFIC ACTIVITY

4.1 Traffic Generation

The traffic generating capacity of schools is most directly proportional to the number of students. The proposal involves the alterations and additions to an existing commercial building to accommodate an International Chinese school containing up to 160 students.

Whilst the capacity of the school is proposed to be 160 students, 25 students are envisaged to attend the before and after school program, thereby travelling to and from the school prior to and following the standard school start and finish periods. The peak hourly traffic generating capacity of the school is therefore most appropriately estimated based on a population of 135 students.

To quantify the above, reference is made to Transport for NSW's *Guide to Transport Impact Assessments*. This publication presents that primary schools typically generate an average of 0.7 and 0.5 hourly vehicle trips per student during the morning and afternoon peak hours, respectively. Application of this rate results in approximately 94 and 68 vehicle trips to and from the precinct during weekday morning and afternoon peak hours respectively.

Given the high proportion of the above trips are likely to comprise student set-down and pick-up activity, it is projected that these trips will be evenly split between inbound and outbound movements. The proposal is therefore expected to generate in the order of 47 inbound and 47 outbound vehicle movements during the morning peak hour and 34 inbound and 34 outbound vehicle movements during the afternoon peak hour.

5. PROPOSED TRAFFIC MANAGEMENT PLAN

As the school population increases, the implementation of a TMP will be essential to ensure safe vehicle / pedestrian operation within and adjacent to the school during set-down and pick-up periods.

The following sub-sections of this TMP provide details with respect to the operational management measures to be implemented and is supported by the school's Statement of Operations which is provided as **Appendix 2**.

5.1 TMP Objectives

The objectives of the TMP are:

- To ensure that formalised student set-down / pick-up arrangements do not unreasonably impede public vehicle access / egress movements within the Council car parking area.
- Address potential safety issues associated with the proposed normal daily school start and finish traffic operations.
- Maximise the efficiency of the set-down / pick-up area, thereby ensuring that parking demand associated with student set-down / pick-up does not occur within the adjoining Council car parking area.

5.2 TMP Procedure

- A Management & Safety Committee is to be established to implement the TMP and to develop further guidelines in order to ensure that on and off-site vehicular and pedestrian safety is maximised. The committee shall comprise the school principal or his / her senior representative, a parent's representative, an independent traffic consultant to provide initial assistance in the implementation as well as subsequent periodic guidance in the ongoing review of the TMP.
- The TMP should also be subject to periodic review by Councils Traffic and Transport Planner to ensure that road safety issues as they relate to the public roads are both appropriately documented as well as being implemented in accordance with sound traffic engineering and road safety practices.
- The Management and Safety Committee shall undertake ongoing reviews of school student safety as necessary but initially ensure that the procedures contained within this TMP are put in place with respect to on and off-site traffic management and safety issues.
- The Committee shall put in place measures which should ensure parent / guardian compliance with the TMP. These should take the form of specific instructions via the student newsletter and indications that such instructions are to be observed as may be applicable to any private property and could therefore form part of the initial enrolment procedures.

5.2 TMP Measures

5.2.1 Staff Parking & Access

- Staff parking is to occur within the formalised seven (7) staff parking spaces within the basement car parking area.
- Staff vehicles are to enter the car parking area prior to 8:15am in order to eliminate potential interaction with student set-down activities prior to the school start period.
- Staff are not to park or stop vehicles within the formalised student set-down / pick-up area at any time.
- Staff are not to park within the adjoining Council car parking area.
- Staff vehicles are to exit the basement car parking area following 4:00pm in order to eliminate potential interaction with student pick-up activities following the school finish period.
- Staff are to be encouraged to utilise sustainable modes of travel to access and depart the school via the implementation of a Green Travel Plan (submitted under separate cover).

5.2.2 Parent Vehicle Set-Down Activities

- Student set-down is to be undertaken at the northern end of the formalised set-down / pick-up area within The Avenue.
- Parent vehicles setting-down students are to queue to the south within The Avenue until they reach the set-down point.
- Students disembarking parent vehicles will do so via the passenger side so that direct access to the adjoining footpath is obtained to ensure pedestrian safety.
- Parents are not to exit their vehicle during the setting-down of students (with the movement of students from vehicles to the school being undertaken by the school teacher) in order to increase the efficiency with which students are dropped-off.
- School staff are to supervise the off-street school set-down area during the morning prior to school start to ensure that students are disembark parent vehicles and access the school in an efficient manner.
- Parents are not to set-down students within the adjoining Council car park or within Pacific Highway.

5.2.3 Parent Vehicle Pick-Up Activities

- Students are to assemble under the supervision of school staff at the northern end of the set-down / pick-up area following the staggered completion of the school day.
- Parents are to display the names of children to be picked-up on the windscreen of the vehicle when entering the internal pick-up area.
- Staff supervising the student assembly area are to arrange for the relevant student/s to be brought to the front of the assembly area upon the arrival of the parent vehicle to the pick-up location.
- Parents picking-up / setting-down students lane must not exit their vehicle to assist in the loading / unloading of students. This is to be done under the supervision of teachers.
- No student pick-up / set-down is to occur within the queue lane on approach to the assembly area.
- Parents are not to pick-up students within the adjoining Council car park or within Pacific Highway.

5.2.4 Parent Parking

- Parents are to be discouraged to enter the school grounds during school start and finish periods.
- If parents are required to enter the school grounds, pre-arranged appointments are to be made with the school, which will be outside of peak set-down / pick-up periods.
- Parent parking associated with pre-arranged appointments is to occur either within the three designated visitor parking spaces within the on-site basement car parking area or within the upper Gore Hill Oval (paid) car parking area accessed via Reserve Road.
- Parents are to be discouraged to park within the adjoining Council car park during school start and finish periods.
- Parents are not to park within Pacific Highway or within local roads to the south of the Highway.

5.2.5 Bus Set-Down / Pick-Up Activities

- The school will not provide a designated regular school bus service.
- Students and staff however do have access to various public bus services which operate along Pacific Highway, with the closest public bus stop is situated approximately 200m walking distance of the site.

- Privately chartered mini-buses (within vehicles sizes up to and including that consistent with an 8.8m long Medium Rigid Vehicle) may be arranged for student travel from and to the school for special class excursions.
- Privately chartered mini-buses will pick-up and set-down students within the formalised set-down / pick-up area within The Avenue, outside of peak student set-down / pick-up activity (between 10:00am – 2:00pm) to ensure there is no undesirable interaction between heavy vehicles and school activity.

5.2.6 Refuse Collection & School Servicing

- The school is expected to generate regular demand for waste collection activities, with such activities to be undertaken by private contractors, utilising vehicles up to and including 8.8m long Medium Rigid Vehicles (MRVs).
- The school is envisaged to generate semi-regular demand for deliveries such as food and stationary, most likely within vans, utilities and Small Rigid Vehicles (SRVs), but also occasionally up to MRVs.
- It may be necessary that the school accommodate emergency vehicles such as ambulances and fire appliances up to and including MRVs.
- The abovementioned heavy vehicle servicing of the site is to be undertaken within the formal set-down / pick-up roadway adjacent to the site within The Avenue, outside of peak student set-down / pick-up activity (between 10:00am – 2:00pm) to ensure there is no undesirable interaction between heavy vehicles and school activity.

5.2.7 External Pedestrian Movements

- All pedestrian access is to occur via the gates connecting with The Avenue.
- School related pedestrian movements are to be contained within designated footpaths within The Avenue and connecting paths within Gore Hill Park and Pacific Highway.
- School related pedestrian movements are not to occur within the Council car parking area and / or the roadways connecting the Council car parking area and The Avenue.
- School related pedestrian movements which involve the crossing of Pacific Highway are to occur via the existing signalised crossings at Greenwich Road and / or Reverse Road.

6. CONCLUSION

This TMP provides a description of the traffic management measures to be incorporated during the operation of the proposed International Chinese School at 211 Pacific Highway, St Leonards.

I certify that the traffic and pedestrian management measures proposed to be implemented by this TMP are appropriate to satisfy the local traffic and pedestrian demands associated with the operation of the proposed primary school.



Morgan Stanbury
Transport Planner & Road Safety Auditor
PWZTMP Card No. 0042433534

7 April 2020

APPENDIX 1

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scale: 1:200 @A1

New playground area
(construction completed)

Gore Hill Oval
(Stage 1 reconstruction completed)

New Building
(Gore Hill precinct - stage 2 proposal - yet to be constructed)

Gore Hill Memorial Cemetery

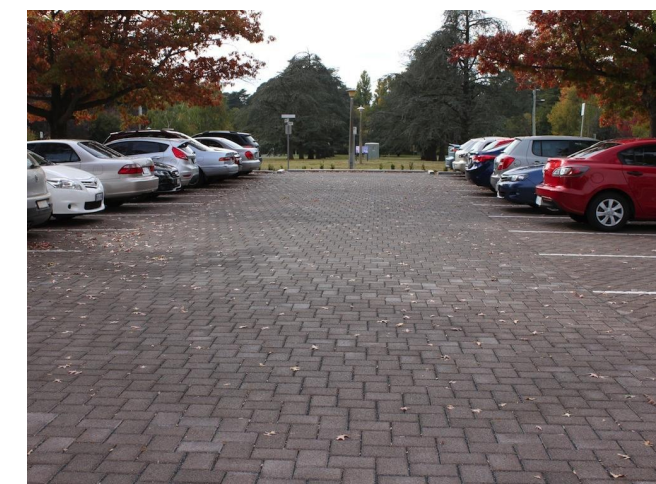
refer to SSD03 for plan details
Site area 1,636.75 m²

211 Pacific Highway, St Leonards
new landscaped area refer to Landscape Plan prepared by Inview Design

Kiss & Drop Finishes



Typical bollard
(Removable)



Permeable paver
Similar to Hydroston H80, colour to match existing.



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Registered Architects - NSW, Queensland, Victoria, South Australia, Western Australia, New Zealand
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Stanton Dahl Architects
PO Box 833, Epping, NSW 1710, Australia
Tel +61 2 8876 5300 Fax +61 2 9868 2624
www.stantondahl.com.au

All dimensions to be verified on site and any discrepancies referred to architect for determination. figured dimensions to take precedence over scaled dimensions.

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01	Client Issue	25/02/19
02	Client Issue	03/04/19
03	Quattro Issue	11/09/19
04	Consultant Issue	23/05/19
05	SSD DRAFT Issue	12/06/19
06	SSD Final DRAFT Issue	19/06/19
07	SSD Issue	26/06/19
08	Revised SSD Issue	13/12/19

Architecture
Project management
Interior design



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architects



International Chinese School

211 Pacific Highway,
St Leonards, NSW

Drawn; cjh
Checked; cjh
Plot date; 13/12/19

Scale; 1:200 as noted @ A1

Project No;
2417.19

Drawing No;
SSD01

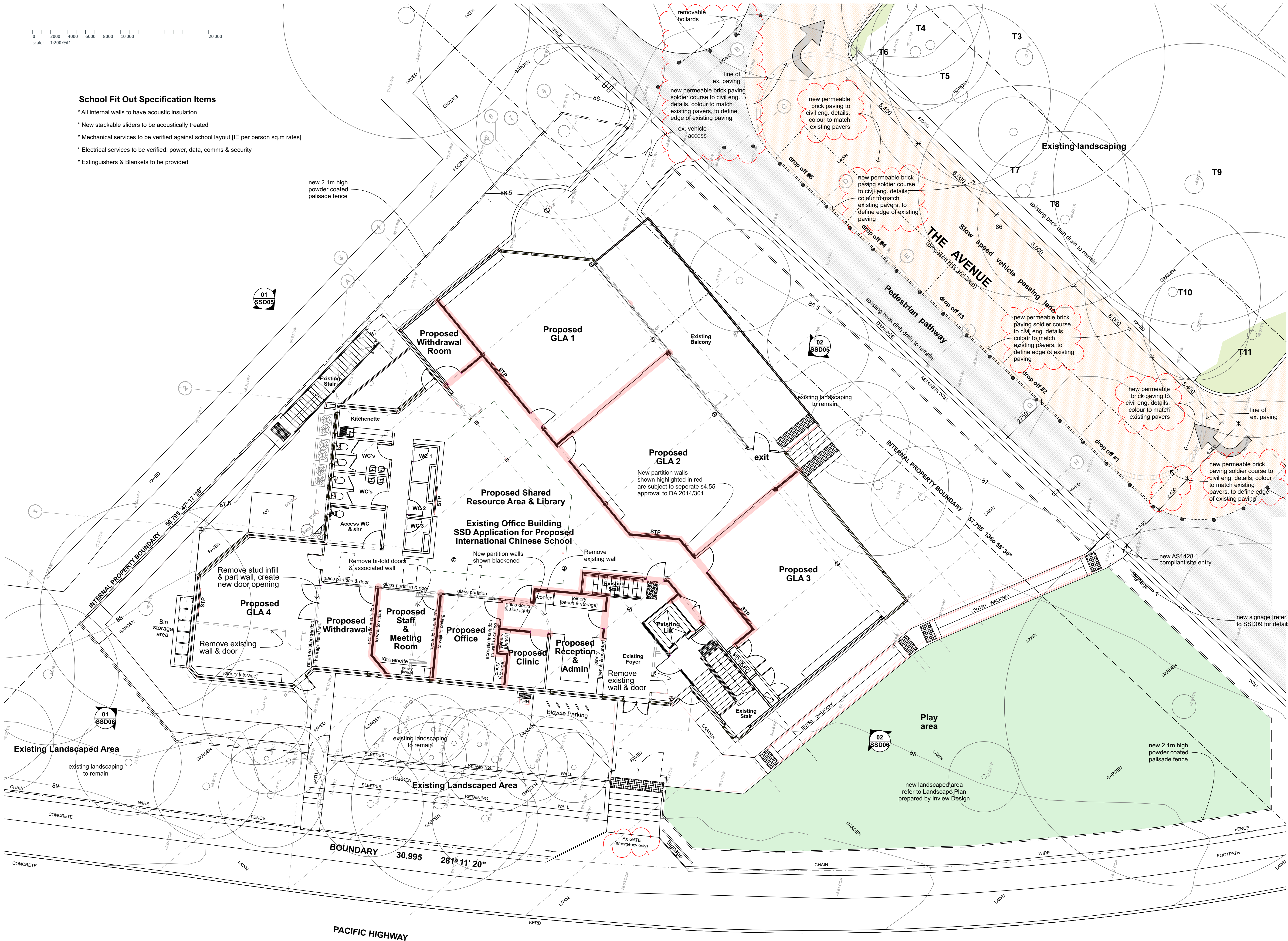
Revision#;
08

Site Plan

0 2000 4000 6000 8000 10000 20000
scale: 1:200 @A1

School Fit Out Specification Items

- * All internal walls to have acoustic insulation
- * New stackable sliders to be acoustically treated
- * Mechanical services to be verified against school layout [IE per person sq.m rates]
- * Electrical services to be verified; power, data, comms & security
- * Extinguishers & Blankets to be provided



Stanton Dahl & Associates Pty Limited ABN 12 002 762 7016
Registered Architects - QP Stanton 3642, S.M Evans 7486
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Stanton Dahl Architects
PO Box 833, Epping, NSW 1710, Australia
Tel +61 2 8876 5300 Fax +61 2 9868 2624
www.stantondahl.com.au

All dimensions to be verified on site and any discrepancies referred to architect for determination. figured dimensions to take precedence over scaled dimensions.

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Rev	Issue	Date
01	Client Issue	25/02/19
02	Quattro Issue	11.09.19
03	SSD DRAFT Issue	12.06.19
04	SSD Final DRAFT Issue	19.06.19
05	SSD Issue	26.06.19
06	Revised SSD Issue	13/12/19

Architecture
Project management
Interior design

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architects

International Chinese
School

211 Pacific Highway,
St Leonards, NSW

Drawn: cjh
Checked: cjh
Plot date: 13/12/19

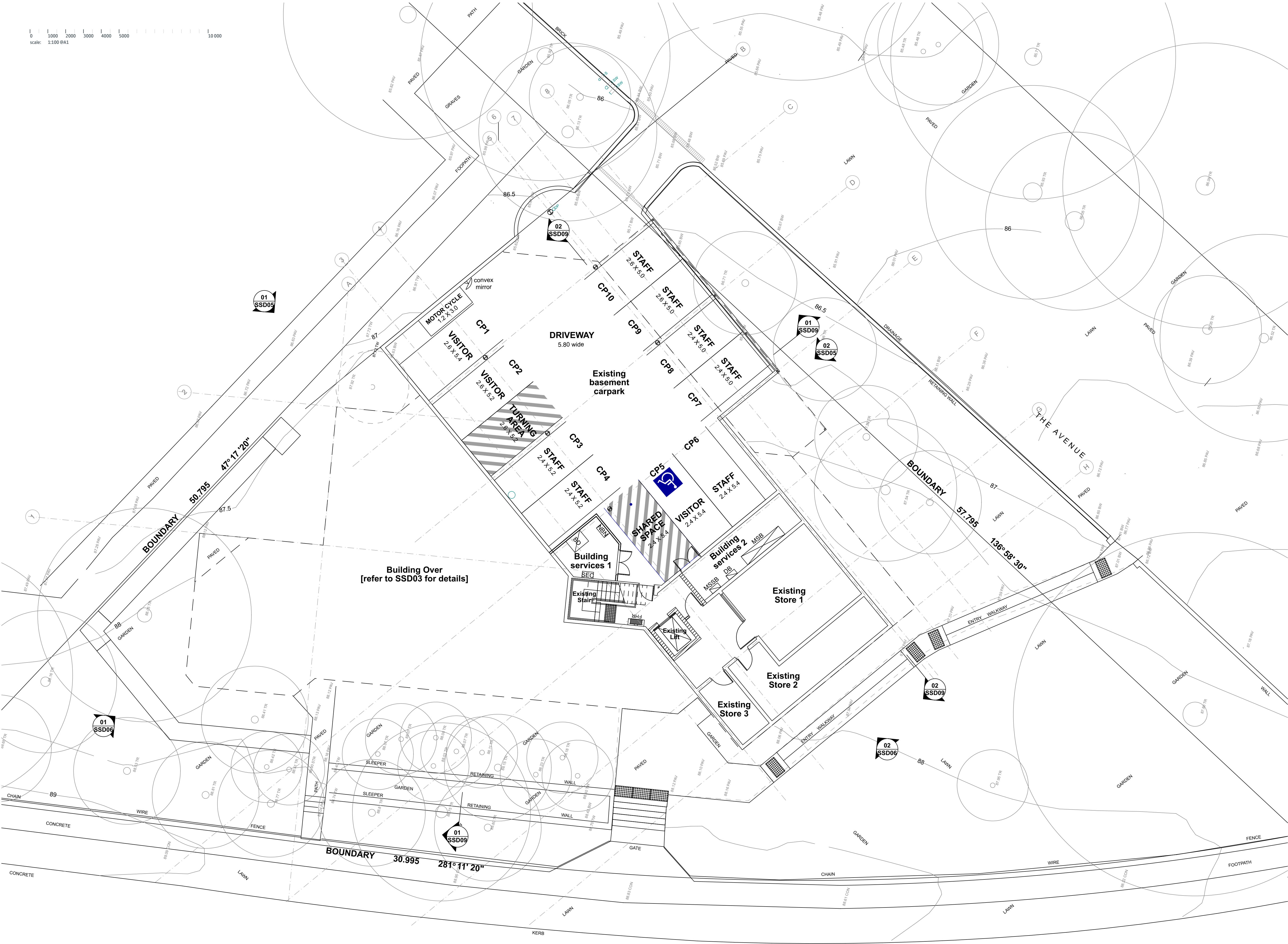
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Project No;
2417.19

Drawing No;
SSD03

Revision#;
06

Ground Floor Plan



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Rev	Issue	Date
01	Client Issue	25/02/19
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04	SSD Final DRAFT Issue	19/06/19
05	SSD Issue	26/06/19

Architecture
Project management
Interior design

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architects

International Chinese School

211 Pacific Highway,
St Leonards, NSW

Drawn: cjh
Checked: cjh
Plot date: 26/8/19

Scale: 1:100 as noted @ A1

Project No;
2417.19

Drawing No;
SSD02

Revision#;
05

Basement Floor Plan

APPENDIX 2

INTERNATIONAL CHINESE SCHOOL STATEMENT OF OPERATIONS

The International Chinese School appreciates Willoughby City Council agreeing (if consent granted) to the construction on its land of a driveway to provide vehicular to the School's drop-off/pick-up zone proposed for the Avenue.

The School recognises that Gore Hill Park represents valuable regional open space that is intended to be available to the public. Public access to Council parking is of the highest priority. The School is committed to working in partnership with Willoughby City Council and other prospective users of the Park.

Management Strategies

The following management strategies apply to minimise the impact of school related traffic:

- The start/finish of the school day has been staggered to reduce congestion at peak usage times. School hours are;
Years 3-6: 8:45am–3:15pm, Years K-2: 9:00am–3:00pm (2020).
- Staff are encouraged to use sustainable transport modes such to travel to and from the school such as public transport.
- Staff that drive are required to park onsite, in the basement carpark.
- Parents are to use the drop-off/pick-up zone for delivering and picking up their children from school, under the supervision of school staff. Parents are not to exit their vehicle during this process.
- Parents are to be discouraged from parking within the adjoining Council car park during school start and finish periods.
- For extended stays parents are to use the Gore Hill Oval Upper Carparking Area (paid parking) off Reserve Road, which offers paid parking for up to 12 hours.
- Parents are not to park in the drop-off/pick-up zone during the day.
- Parents are not to park on the Pacific Highway for student drop-off/pick-up.
- Students of appropriate age will be encouraged to use public transport to and from School. The train station is 400 metres from the school and two bus stops, one on the Pacific Highway and one on Reserve Road, are located just 150 metres away.
- Before and after school care will be provided at the School, reducing congestion during peak time.
- Local students of appropriate age will be encouraging to walk/ride their bicycles to school.
- On weekends the 5 bays in the drop-off/pick-up zone shall be available for overflow parking from Gore Hill Park. The 10 basement parking bays will be made available for coaches and officials of sporting clubs.
- If deemed necessary by RMS, the School will fund the construction of a deceleration lane from the Pacific Highway into Gore Hill Park.

Parents will receive regular reminders regarding the above conditions, through the School newsletter and by other appropriate means.



Peter Jamieson
Principal
International Chinese School

ATTACHMENT 5

INTERNATIONAL CHINESE SCHOOL

STATEMENT OF OPERATIONS

DURING WILLOUGHBY CITY COUNCIL'S GORE HILL PARK, STAGE 2 CONSTRUCTION – INDOOR SPORTS FACILITY (TEMPORARY)



INTERNATIONAL CHINESE SCHOOL
国际中文学校
An Anglican School
圣公会学校

The International Chinese School appreciates Willoughby City Council granting consent for the construction on its land of a driveway to provide vehicular to the School's drop-off/pick-up zone proposed for the Avenue, and occasional short-term use of public parking by parents of the School.

The School recognises that Gore Hill Park represents valuable regional open space that is intended to be available to the public. Further, that Stage 2 of the Gore Hill Park construction project, the indoor sporting facility, may result in the temporary closure of the public parking area off the Pacific Highway and adjacent to the School. This will impact parent access to the School's drop-off/pick-up zone and occasional parking when visiting the School.

Following are proposed interim management strategies to be enacted when / if the Gore Hill Oval carpark becomes unavailable.

Management Strategies

The following management strategies will apply to minimise the impact of school related traffic:

- The start/finish of the school day will remain staggered to reduce congestion at peak usage times. School hours are;
Kindergarten – Year 1 8:45am – 2:45pm; Years 2-4 9:00am – 3:00pm; Years 5-6 8:30am – 3:15pm.
- Staff are encouraged to use public transport to and from school, or alternatively to park onsite in the basement carpark.
- Students of appropriate age will be encouraged to use public transport to and from School. The train station is 400 metres from the school and two bus stops, one on the Pacific Highway and one on Reserve Road, are located just 150 metres away.
- Local students of appropriate age will be encouraging to walk/ride their bicycles to school.
- A temporary parent drop-off/pick up zone may be established on Westbourne Street. This may necessitate alteration to existing 4P Ticket parking along the southern side of Westbourne Street, between Pacific Highway and The Avenue. Parents do not leave their vehicles. Student access is via foot, to and from school, via The Avenue. An official School Marshal to supervise drop-off/pick-up zone morning and afternoon to ensure parent compliance and safety of students.
- If required, the School will bus students to and from a central and appropriate location in Chatswood. Bus drop-off/pick-up would be in the bus zone on Reserve Road, or on Westbourne Street, St Leonards. Once again, this may necessitate alteration to existing 4P Ticket parking along the southern side of Westbourne Street. The School Marshal will supervise the bus drop-off (morning) and pick-up (afternoon) to ensure safety of students.
- Parents who may need to visit the school are required to use the Gore Hill Oval Upper Carparking Area, which offers paid parking for up to 12 hours.
- Parents are not to park on the Pacific Highway for student drop-off/pick-up.
- Before and after school care will be provided at the School, reducing congestion during peak time.
- Parents will receive regular reminders regarding the above conditions, through the School newsletter and by other appropriate means.

Peter Jamieson
Principal
International Chinese School

ATTACHMENT 6

St Leonards IC - Traffic Flows

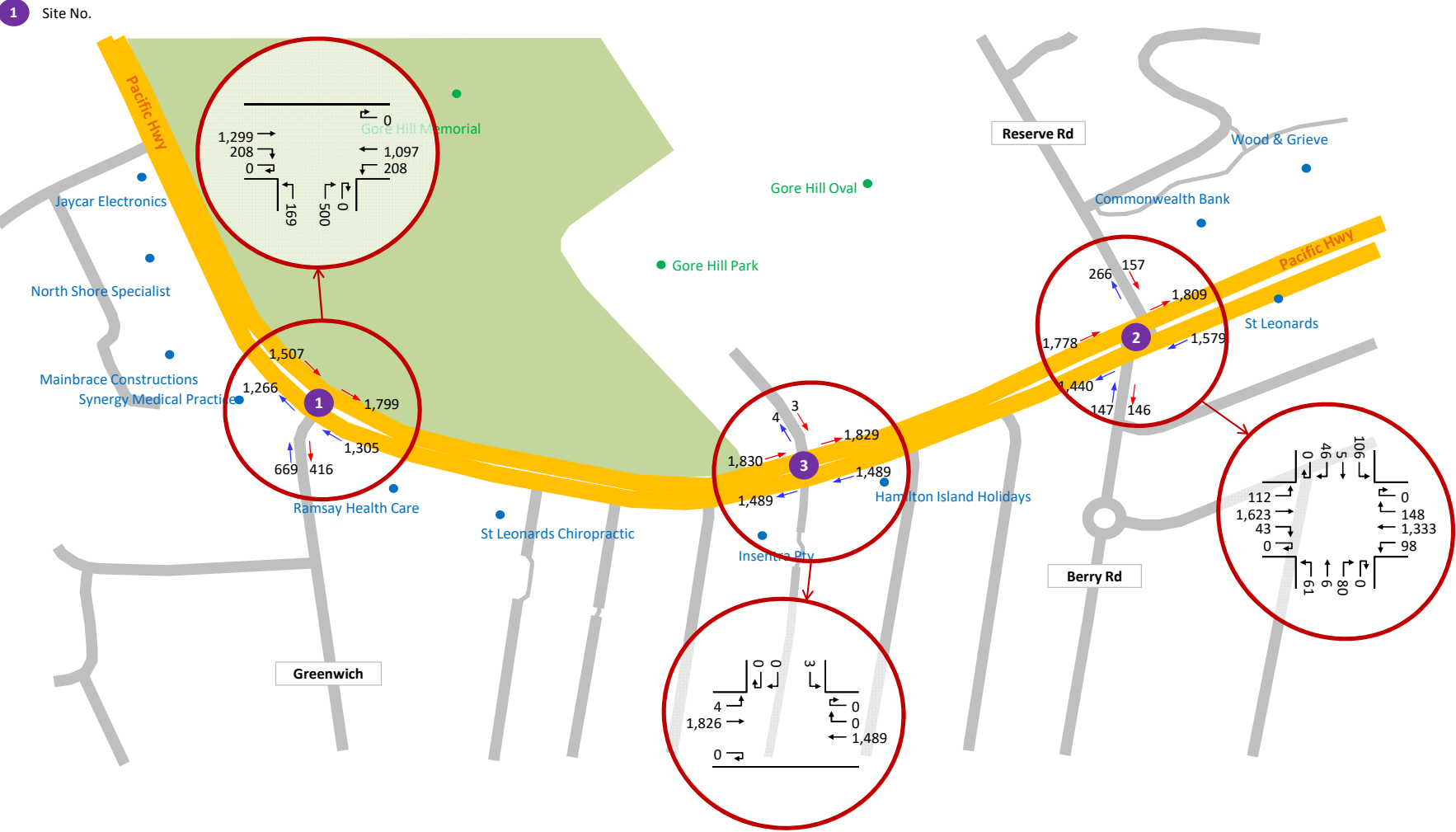


Search By Time and Classification

Day: AM Start Time: 8:00 End Time: 9:00 Classification: All vehicles

Volume Forecasting

0% * 0 = original survey data
(e.g. input 20 for volume increase 20% or -20 for volume decrease 20%)



St Leonards IC - Traffic Flows

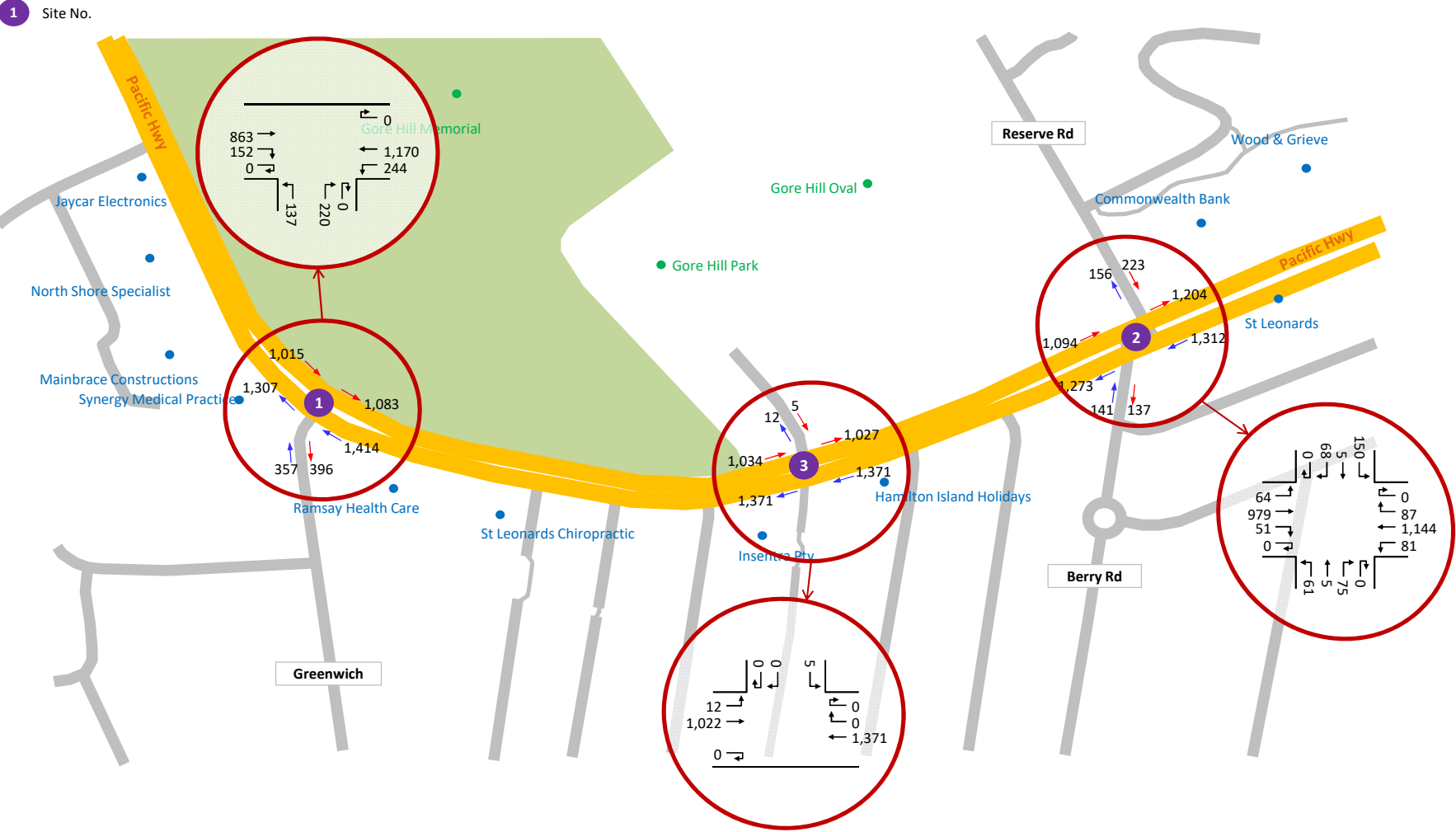


Search By Time and Classification

Day: PM Start Time: 14:30 End Time: 15:30 Classification: All vehicles

Volume Forecasting

0% * 0 = original survey data
(e.g. input 20 for volume increase 20% or -20 for volume decrease 20%)



ATTACHMENT 7

MOVEMENT SUMMARY

 **Site: [Pacific Highway & Greenwich Road]**

Existing AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Greenwich Road												
1	L2	169	5.0	0.640	44.9	LOS D	17.5	127.8	0.92	0.84	0.92	33.9
3	R2	500	5.0	0.640	45.9	LOS D	17.5	127.8	0.93	0.84	0.93	33.8
Approach		669	5.0	0.640	45.6	LOS D	17.5	127.8	0.93	0.84	0.93	33.8
East: Pacific Highway East												
4	L2	208	5.0	0.148	8.9	LOS A	2.9	21.2	0.26	0.65	0.26	50.9
5	T1	1097	5.0	0.645	27.3	LOS B	24.7	180.0	0.83	0.75	0.83	41.5
Approach		1305	5.0	0.645	24.4	LOS B	24.7	180.0	0.74	0.73	0.74	42.7
West: Pacific Highway West												
11	T1	1299	5.0	0.372	12.1	LOS A	12.4	90.3	0.53	0.47	0.53	50.1
12	R2	208	5.0	0.636	48.7	LOS D	11.2	81.5	0.98	0.96	1.25	32.8
Approach		1507	5.0	0.636	17.1	LOS B	12.4	90.3	0.60	0.54	0.63	46.7
All Vehicles		3481	5.0	0.645	25.3	LOS B	24.7	180.0	0.72	0.67	0.73	42.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95	
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95	
All Pedestrians		105	54.3	LOS E			0.95	0.95	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: [Pacific Highway & Greenwich Road]**

Existing PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 122 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Greenwich Road												
1	L2	137	5.0	0.546	53.0	LOS D	10.6	77.6	0.95	0.82	0.95	31.6
3	R2	220	5.0	0.546	56.0	LOS D	10.6	77.6	0.96	0.81	0.96	30.9
Approach		357	5.0	0.546	54.9	LOS D	10.6	77.6	0.96	0.81	0.96	31.1
East: Pacific Highway East												
4	L2	244	5.0	0.177	9.5	LOS A	3.8	27.4	0.28	0.66	0.28	50.5
5	T1	1170	5.0	0.556	18.3	LOS B	22.0	160.5	0.69	0.62	0.69	46.1
Approach		1414	5.0	0.556	16.8	LOS B	22.0	160.5	0.62	0.63	0.62	46.8
West: Pacific Highway West												
11	T1	863	5.0	0.289	5.5	LOS A	7.8	57.0	0.35	0.31	0.35	55.1
12	R2	152	5.0	0.407	30.7	LOS C	7.5	54.6	0.87	0.83	0.87	39.1
Approach		1015	5.0	0.407	9.2	LOS A	7.8	57.0	0.43	0.38	0.43	51.9
All Vehicles		2786	5.0	0.556	18.9	LOS B	22.0	160.5	0.59	0.56	0.59	45.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	55.3	LOS E	0.2	0.2	0.95	0.95	
P4	West Full Crossing	53	55.3	LOS E	0.2	0.2	0.95	0.95	
All Pedestrians		105	55.3	LOS E			0.95	0.95	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site:** [Pacific Highway & Car Park Access Road]

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

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Access Road												
7	L2	3	5.0	0.004	8.2	LOS A	0.0	0.1	0.52	0.61	0.52	51.5
Approach		3	5.0	0.004	8.2	LOS A	0.0	0.1	0.52	0.61	0.52	51.5
West: Pacific Highway West												
10	L2	4	5.0	0.323	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.0
11	T1	1826	5.0	0.323	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1830	5.0	0.323	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		1833	5.0	0.323	0.1	NA	0.0	0.1	0.00	0.00	0.00	59.9

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

MOVEMENT SUMMARY

▽ Site: [Pacific Highway & Car Park Access Road]

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

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Access Road												
7	L2	5	5.0	0.003	5.8	LOS A	0.0	0.1	0.17	0.53	0.17	52.9
Approach		5	5.0	0.003	5.8	LOS A	0.0	0.1	0.17	0.53	0.17	52.9
West: Pacific Highway West												
10	L2	12	5.0	0.050	5.6	LOS A	0.0	0.0	0.00	0.08	0.00	57.4
11	T1	1022	5.0	0.249	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		1034	5.0	0.249	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
All Vehicles		1039	5.0	0.249	0.1	NA	0.0	0.1	0.00	0.01	0.00	59.8

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

MOVEMENT SUMMARY

 **Site:** [Pacific Highway, Reserve Road & Berry Road]

Existing AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 121 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Berry Road												
1	L2	61	5.0	0.179	50.1	LOS D	3.0	22.2	0.88	0.75	0.88	32.4
2	T1	6	5.0	0.703	63.6	LOS E	5.4	39.3	1.00	0.85	1.15	28.2
3	R2	80	5.0	0.703	69.3	LOS E	5.4	39.3	1.00	0.85	1.15	27.9
Approach		147	5.0	0.703	61.1	LOS E	5.4	39.3	0.95	0.80	1.04	29.6
East: Pacific Highway East												
4	L2	98	5.0	0.105	21.1	LOS B	2.9	21.0	0.54	0.70	0.54	43.6
5	T1	1333	5.0	0.760	22.8	LOS B	28.9	211.0	0.80	0.72	0.80	43.6
6	R2	148	5.0	0.770	34.9	LOS C	5.6	40.9	0.94	0.90	1.15	37.5
Approach		1579	5.0	0.770	23.9	LOS B	28.9	211.0	0.80	0.74	0.82	43.0
North: Reserve Road												
7	L2	106	5.0	0.155	31.9	LOS C	4.1	29.7	0.69	0.74	0.69	38.6
8	T1	5	5.0	0.450	61.5	LOS E	3.1	22.4	1.00	0.75	1.00	28.8
9	R2	46	5.0	0.450	67.1	LOS E	3.1	22.4	1.00	0.75	1.00	28.4
Approach		157	5.0	0.450	43.1	LOS D	4.1	29.7	0.79	0.74	0.79	34.6
West: Pacific Highway West												
10	L2	112	5.0	0.603	27.1	LOS B	23.9	174.7	0.75	0.71	0.75	42.7
11	T1	1623	5.0	0.603	21.3	LOS B	24.2	176.4	0.75	0.68	0.75	44.3
12	R2	43	5.0	0.214	23.3	LOS B	1.1	7.8	0.76	0.72	0.76	42.4
Approach		1778	5.0	0.603	21.7	LOS B	24.2	176.4	0.75	0.68	0.75	44.1
All Vehicles		3661	5.0	0.770	25.1	LOS B	28.9	211.0	0.78	0.71	0.79	42.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	54.8	LOS E	0.2	0.2	0.95	0.95	
P3	North Full Crossing	53	54.8	LOS E	0.2	0.2	0.95	0.95	
P4	West Full Crossing	53	54.8	LOS E	0.2	0.2	0.95	0.95	
All Pedestrians		158	54.8	LOS E			0.95	0.95	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site:** [Pacific Highway, Reserve Road & Berry Road]

Existing PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Berry Road												
1	L2	61	5.0	0.146	44.9	LOS D	2.8	20.7	0.83	0.74	0.83	33.9
2	T1	5	5.0	0.469	55.0	LOS D	4.6	33.3	0.97	0.78	0.97	30.2
3	R2	75	5.0	0.469	60.6	LOS E	4.6	33.3	0.97	0.78	0.97	29.9
Approach		141	5.0	0.469	53.6	LOS D	4.6	33.3	0.91	0.76	0.91	31.5
East: Pacific Highway East												
4	L2	81	5.0	0.473	29.5	LOS C	16.2	118.5	0.74	0.68	0.74	41.6
5	T1	1144	5.0	0.473	23.9	LOS B	16.4	119.8	0.74	0.66	0.74	42.9
6	R2	87	5.0	0.312	22.5	LOS B	2.6	18.8	0.70	0.72	0.70	43.0
Approach		1312	5.0	0.473	24.2	LOS B	16.4	119.8	0.74	0.67	0.74	42.8
North: Reserve Road												
7	L2	150	5.0	0.189	27.3	LOS B	5.3	38.5	0.65	0.74	0.65	40.6
8	T1	5	5.0	0.429	55.4	LOS D	4.2	30.3	0.97	0.77	0.97	30.1
9	R2	68	5.0	0.429	61.1	LOS E	4.2	30.3	0.97	0.77	0.97	29.8
Approach		223	5.0	0.429	38.2	LOS C	5.3	38.5	0.75	0.75	0.75	36.3
West: Pacific Highway West												
10	L2	64	5.0	0.420	28.8	LOS C	14.0	102.1	0.72	0.66	0.72	42.0
11	T1	979	5.0	0.420	23.0	LOS B	14.1	103.0	0.71	0.63	0.71	43.4
12	R2	51	5.0	0.208	22.7	LOS B	1.5	10.7	0.71	0.71	0.71	42.9
Approach		1094	5.0	0.420	23.3	LOS B	14.1	103.0	0.71	0.63	0.71	43.3
All Vehicles		2770	5.0	0.473	26.5	LOS B	16.4	119.8	0.74	0.66	0.74	41.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95	
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95	
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95	
All Pedestrians		158	54.3	LOS E			0.95	0.95	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

ATTACHMENT 8

MOVEMENT SUMMARY

 **Site: [Pacific Highway & Greenwich Road]**

Projected AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Greenwich Road												
1	L2	169	5.0	0.650	44.3	LOS D	18.1	132.5	0.92	0.84	0.92	34.1
3	R2	528	5.0	0.650	45.3	LOS D	18.1	132.5	0.93	0.84	0.93	33.9
Approach		697	5.0	0.650	45.1	LOS D	18.1	132.5	0.93	0.84	0.93	34.0
East: Pacific Highway East												
4	L2	217	5.0	0.154	9.0	LOS A	3.0	22.2	0.26	0.65	0.26	50.9
5	T1	1116	5.0	0.669	28.3	LOS B	25.7	187.4	0.85	0.76	0.85	41.0
Approach		1333	5.0	0.669	25.2	LOS B	25.7	187.4	0.76	0.74	0.76	42.3
West: Pacific Highway West												
11	T1	1318	5.0	0.382	12.7	LOS A	12.9	94.0	0.55	0.49	0.55	49.7
12	R2	208	5.0	0.649	50.6	LOS D	11.2	82.1	0.99	0.97	1.29	32.2
Approach		1526	5.0	0.649	17.8	LOS B	12.9	94.0	0.61	0.55	0.65	46.3
All Vehicles		3556	5.0	0.669	25.9	LOS B	25.7	187.4	0.73	0.68	0.74	41.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95	
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95	
All Pedestrians		105	54.3	LOS E			0.95	0.95	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

 **Site: [Pacific Highway & Greenwich Road]**

Projected PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 122 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Greenwich Road												
1	L2	137	5.0	0.558	52.4	LOS D	11.0	80.6	0.95	0.82	0.95	31.7
3	R2	240	5.0	0.558	55.3	LOS D	11.0	80.6	0.96	0.81	0.96	31.1
Approach		377	5.0	0.558	54.2	LOS D	11.0	80.6	0.96	0.82	0.96	31.3
East: Pacific Highway East												
4	L2	250	5.0	0.181	9.5	LOS A	3.9	28.2	0.29	0.66	0.29	50.5
5	T1	1184	5.0	0.571	19.1	LOS B	22.8	166.4	0.71	0.64	0.71	45.7
Approach		1434	5.0	0.571	17.5	LOS B	22.8	166.4	0.63	0.64	0.63	46.4
West: Pacific Highway West												
11	T1	877	5.0	0.298	5.8	LOS A	8.3	60.3	0.36	0.32	0.36	54.8
12	R2	152	5.0	0.414	32.5	LOS C	7.7	56.6	0.90	0.84	0.90	38.3
Approach		1029	5.0	0.414	9.8	LOS A	8.3	60.3	0.44	0.39	0.44	51.5
All Vehicles		2840	5.0	0.571	19.6	LOS B	22.8	166.4	0.61	0.58	0.61	45.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	55.3	LOS E	0.2	0.2	0.95	0.95	
P4	West Full Crossing	53	55.3	LOS E	0.2	0.2	0.95	0.95	
All Pedestrians		105	55.3	LOS E			0.95	0.95	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

▽ Site: [Pacific Highway & Car Park Access Road]

Projected AM

Site Category: (None)

Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Access Road												
7	L2	50	5.0	0.058	8.2	LOS A	0.2	1.6	0.52	0.71	0.52	51.5
Approach		50	5.0	0.058	8.2	LOS A	0.2	1.6	0.52	0.71	0.52	51.5
West: Pacific Highway West												
10	L2	51	5.0	0.332	5.6	LOS A	0.0	0.0	0.00	0.05	0.00	57.6
11	T1	1826	5.0	0.332	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		1877	5.0	0.332	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles		1927	5.0	0.332	0.4	NA	0.2	1.6	0.01	0.03	0.01	59.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

▽ Site: [Pacific Highway & Car Park Access Road]

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

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Access Road												
7	L2	39	5.0	0.025	5.7	LOS A	0.1	0.7	0.13	0.54	0.13	53.0
Approach		39	5.0	0.025	5.7	LOS A	0.1	0.7	0.13	0.54	0.13	53.0
West: Pacific Highway West												
10	L2	46	5.0	0.052	5.6	LOS A	0.0	0.0	0.00	0.29	0.00	55.7
11	T1	1022	5.0	0.258	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach		1068	5.0	0.258	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.6
All Vehicles		1107	5.0	0.258	0.5	NA	0.1	0.7	0.00	0.04	0.00	59.4

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

MOVEMENT SUMMARY

 **Site:** [Pacific Highway, Reserve Road & Berry Road]

Projected AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 133 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Berry Road												
1	L2	117	5.0	0.350	53.6	LOS D	6.4	47.0	0.89	0.78	0.89	31.4
2	T1	6	5.0	0.770	72.4	LOS F	6.0	44.1	1.00	0.88	1.23	26.5
3	R2	80	5.0	0.770	78.1	LOS F	6.0	44.1	1.00	0.88	1.23	26.2
Approach		203	5.0	0.770	63.8	LOS E	6.4	47.0	0.94	0.82	1.03	29.0
East: Pacific Highway East												
4	L2	98	5.0	0.105	22.7	LOS B	3.2	23.1	0.54	0.70	0.54	42.7
5	T1	1352	5.0	0.777	25.4	LOS B	32.6	238.2	0.81	0.74	0.81	42.3
6	R2	148	5.0	0.794	40.9	LOS C	6.8	49.5	0.99	0.93	1.22	35.4
Approach		1598	5.0	0.794	26.7	LOS B	32.6	238.2	0.81	0.75	0.83	41.6
North: Reserve Road												
7	L2	106	5.0	0.151	33.4	LOS C	4.4	32.0	0.68	0.74	0.68	38.0
8	T1	5	5.0	0.501	68.6	LOS E	3.4	24.8	1.00	0.75	1.00	27.2
9	R2	46	5.0	0.501	74.3	LOS F	3.4	24.8	1.00	0.75	1.00	26.9
Approach		157	5.0	0.501	46.5	LOS D	4.4	32.0	0.79	0.74	0.79	33.5
West: Pacific Highway West												
10	L2	112	5.0	0.636	30.0	LOS C	28.3	206.7	0.78	0.73	0.78	41.4
11	T1	1661	5.0	0.636	23.8	LOS B	28.6	208.7	0.76	0.69	0.76	43.0
12	R2	99	5.0	0.502	27.5	LOS B	2.9	21.0	0.86	0.78	0.86	40.5
Approach		1872	5.0	0.636	24.4	LOS B	28.6	208.7	0.76	0.70	0.76	42.7
All Vehicles		3830	5.0	0.794	28.3	LOS B	32.6	238.2	0.79	0.73	0.81	40.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	60.8	LOS F	0.2	0.2	0.96	0.96	
P3	North Full Crossing	53	60.8	LOS F	0.2	0.2	0.96	0.96	
P4	West Full Crossing	53	60.8	LOS F	0.2	0.2	0.96	0.96	
All Pedestrians		158	60.8	LOS F			0.96	0.96	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: [Pacific Highway, Reserve Road & Berry Road]**

Projected PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 122 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Berry Road												
1	L2	81	5.0	0.190	45.6	LOS D	3.9	28.1	0.84	0.75	0.84	33.7
2	T1	5	5.0	0.477	56.1	LOS D	4.6	33.9	0.98	0.78	0.98	30.0
3	R2	75	5.0	0.477	61.8	LOS E	4.6	33.9	0.98	0.78	0.98	29.6
Approach		161	5.0	0.477	53.5	LOS D	4.6	33.9	0.91	0.77	0.91	31.5
East: Pacific Highway East												
4	L2	81	5.0	0.480	30.0	LOS C	16.8	122.7	0.74	0.68	0.74	41.4
5	T1	1163	5.0	0.480	24.4	LOS B	17.0	124.0	0.74	0.66	0.74	42.7
6	R2	87	5.0	0.319	23.0	LOS B	2.6	19.1	0.71	0.72	0.71	42.8
Approach		1331	5.0	0.480	24.6	LOS B	17.0	124.0	0.74	0.67	0.74	42.6
North: Reserve Road												
7	L2	150	5.0	0.189	27.5	LOS B	5.3	39.1	0.64	0.74	0.64	40.5
8	T1	5	5.0	0.446	56.7	LOS E	4.2	31.0	0.98	0.77	0.98	29.8
9	R2	68	5.0	0.446	62.4	LOS E	4.2	31.0	0.98	0.77	0.98	29.5
Approach		223	5.0	0.446	38.8	LOS C	5.3	39.1	0.75	0.75	0.75	36.1
West: Pacific Highway West												
10	L2	64	5.0	0.432	29.3	LOS C	14.7	107.4	0.72	0.66	0.72	41.7
11	T1	993	5.0	0.432	23.4	LOS B	14.8	108.3	0.71	0.63	0.71	43.2
12	R2	71	5.0	0.296	23.3	LOS B	2.1	15.4	0.72	0.72	0.72	42.6
Approach		1128	5.0	0.432	23.7	LOS B	14.8	108.3	0.71	0.64	0.71	43.1
All Vehicles		2843	5.0	0.480	27.0	LOS B	17.0	124.0	0.74	0.67	0.74	41.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	53	55.3	LOS E	0.2	0.2	0.95	0.95	
P3	North Full Crossing	53	55.3	LOS E	0.2	0.2	0.95	0.95	
P4	West Full Crossing	53	55.3	LOS E	0.2	0.2	0.95	0.95	
All Pedestrians		158	55.3	LOS E			0.95	0.95	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

ATTACHMENT 9



STANBURY
TRAFFIC PLANNING

TRAFFIC, PARKING & TRANSPORT CONSULTANTS

UPDATED GREEN TRAVEL PLAN

**PROPOSED PRIMARY SCHOOL
THE INTERNATIONAL CHINESE SCHOOL
211 PACIFIC HIGHWAY
ST LEONARDS**

**PREPARED FOR INTERNATIONAL CHINESE SCHOOL
OUR REF: 19-050-4**



APRIL 2020

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APPENDICES

1. Transport Access Guide

1. INTRODUCTION

Stanbury Traffic Planning has been commissioned by International Chinese School to prepare a Green Travel Plan to accompany a proposal to establish a primary school at 211 Pacific Highway, St Leonards.

The proposal involves alterations and additions to an existing commercial building situated within Cemetery Trust land at 211 Pacific Highway, St Leonards, to accommodate a bilingual International Chinese School, providing the following site population capacities:

- 160 students; and
- 10 staff (including teachers and administration employees).

Pedestrian access is proposed to be provided via an existing gate connection with The Avenue, to the north of the abovementioned open play area. The existing gate connecting the northern Pacific Highway footway, to the west of the play area, are also proposed to be retained but locked during normal school operation. These gates are only proposed to be utilised in the event of an emergency.

The school is proposed to be serviced by the existing basement car parking area containing 10 passenger vehicle parking spaces and one motorcycle parking space connecting with The Avenue via a single lane driveway situated in the north-eastern corner of the site.

A further 10 bicycle parking spaces are proposed to be provided within the development.

Further, it is proposed that a formal set-down / pick-up area be provided to the east of the building, being located on Cemetery Trust land.

Vehicular access to the undercroft parking area and formal student set-down / pick-up area is proposed to be obtained via a Council owned public off-street car parking area situated further to the east, which links with Pacific Highway eastbound carriageway via a driveway to the south-east of the subject building. Access from the Pacific Highway eastbound carriageway and the Council car park is proposed to be assisted by a new deceleration lane.

2. GREEN TRAVEL PLAN

2.1 Introduction

Transport is an unavoidable factor in modern society and a major contributor to emissions in Australia. However, the effects of transport associated with new developments can be managed through the implementation of travel plans, which provide an opportunity to reduce harmful vehicle emissions. In conjunction with striving to provide more efficient environmental outcomes, providing a range of travel choices with a focus on walking, cycling and public transport will result in major public health advantages to the International Chinese School community.

The provision of constrained passenger vehicle parking rates in conjunction with minimum bicycle parking rates enforced by Willoughby Council forms a major part of the initiatives to encourage reductions in vehicle transport use. This Green Travel Plan will however ensure that the transport infrastructure, services and policies within and outside the site are tailored to the future site users, being coordinated to achieve sustainable outcomes.

2.2 Green Travel Plan Definition

This Green Travel Plan provides a series of measures aimed at promoting and encouraging sustainable travel and reducing reliance on the private car. The aim of the Plan is to achieve travel behaviour change through raising awareness of alternatives to private motor vehicle use. The development of a site based Plan focuses on providing information, offering incentives and mode specific actions to optimise the use of sustainable travel (public transport, cycling and walking).

This Green Travel Plan specifically examines how future site users can travel to and from the site and what can be done to replace single occupancy motor vehicle trips with sustainable trips. As a trip generator, the site can enhance the choices available to staff and parents of the school in a way that promotes health, safety and environmentally sustainable outcomes.

The potential to change site based travel is affected by several factors including car parking provision, site user interest in changing, the provision of support for change and the availability of various forms of public transport in the immediate vicinity.

2.3 Green Travel Plan Benefits and Objectives

This Green Travel Plan provides a wide range of benefits to staff, the students and their parents in conjunction with the environment including:

- Decreasing vehicle emissions;
- Promoting the school and surrounding area as an innovative and environmentally aware location;

- Improving health and fitness of school users through increased cycling and walking activity;
- Improving school user moral and social interaction;
- Reducing traffic congestion and car parking problems;
- Fostering a sense of community; and
- Reducing general living expenses.

The main objectives of this Green Travel Plan are to:

- Reduce vehicle kilometres travelled (VKT) to and from the subject site, particularly single occupancy staff vehicle trips;
- Increase school community user use of sustainable transport modes (walking, cycling and public transport);
- Ensure that the school community is informed on the opportunities and benefits of using sustainable transport; and
- Promote the subject school and area as an innovative and environmentally aware location.

2.5 Green Travel Plan Structure

The Green Travel Plan will capitalise on the availability of described sustainable transport options such that modal share which does not involve a private vehicle is expected to be relatively high.

The Plan itself takes the structure of a package of easy to understand travel information to be included in a new school community information pack.

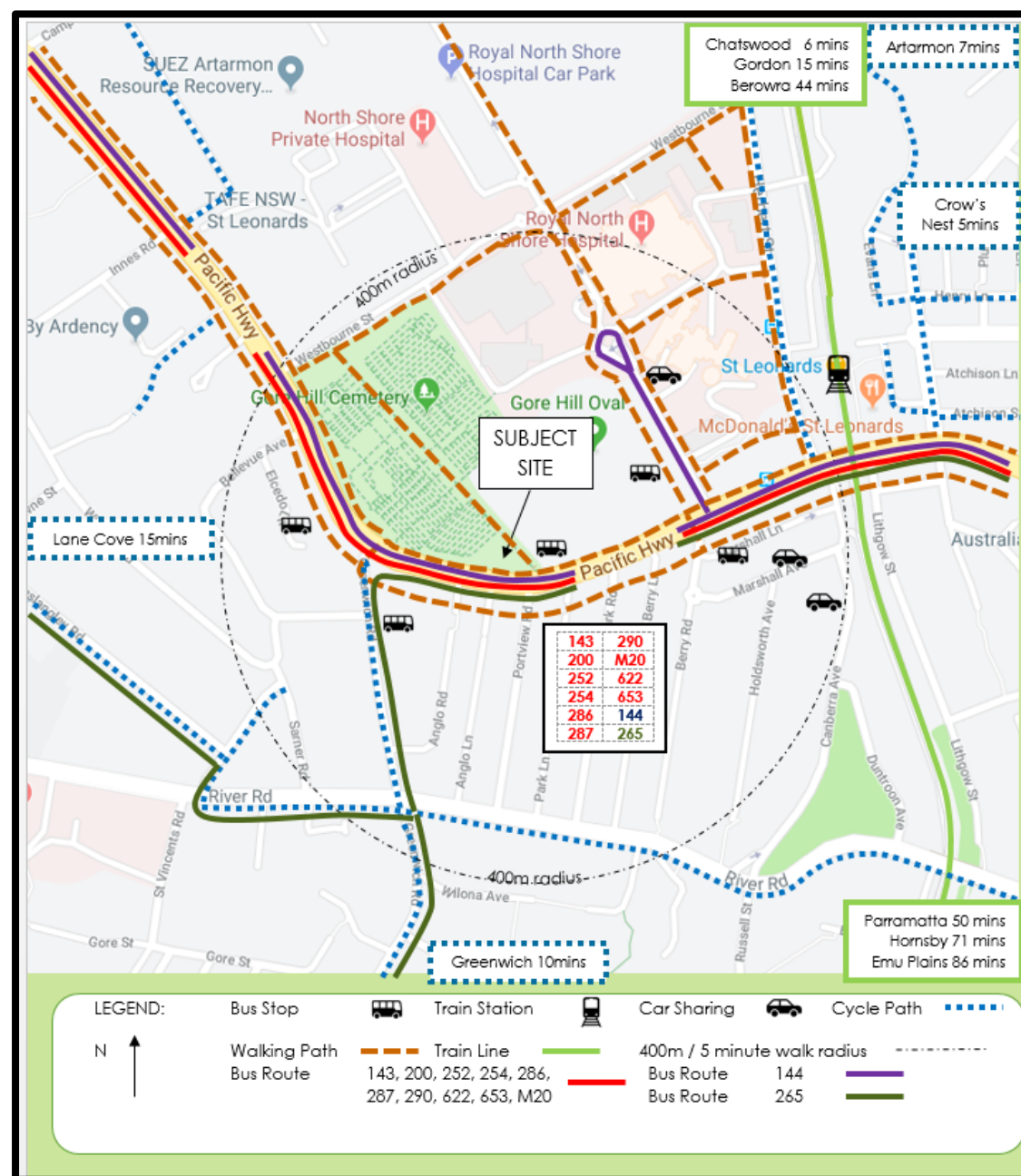
The information pack also includes a Transport Access Guide (contained within **Appendix 1**). This Guide provides a site centred customised travel information for school users with respect to sustainable forms of transport including walking, cycling and public transport. It provides a simple visual review of the subject locality containing easy to recognise relationships between the site and bus stops and routes, the nearby train station, on-road cycle routes, internal and external pedestrian links and internal and external car share pods.

2.6 Existing Transport Provision

The subject site is well serviced by a series of sustainable (or active) transport options available for future school staff, parents and students. **Figure 1** overleaf illustrates the sustainable transport options within easy walking distance of the subject site.

Subsequent sub-sections of this report provide a detailed description of each of the surrounding sustainable transport options.

FIGURE 1
TRANSPORT OPTIONS IN THE VICINITY OF THE SUBJECT SITE



2.6.1 Bus

The following bus stops are located within a five minute walk (400m) from the centre of the school site:

- A stop is located on the northern side of Pacific Highway approximately 150m walking distance to the east of the site;
- A stop is located on the western side of Reserve Road approximately 300m walking distance to north-east of the site;
- A stop is located on the southern side of Pacific Highway approximately 350m to the east of the site;
- A stop is located on the eastern side of Pacific Highway approximately 250m walking distance to the north-west of the site;
- A stop is located on the western side of Pacific Highway approximately 270m walking distance to the north-west of the site.

All stops within Pacific Highway service the following routes:

- Route 143 – Manly to Chatswood via Balgowlah & St Leonards;
- Route 144 – Chatswood to Manly via Royal North Shore Hospital;
- Route 252 – Gladesville to City King Street Wharf via North Sydney;
- Route 254 – McMahons Point to Riverview;
- Route 286 – Milsons Point to Denistone East via North Sydney & St Leonards;
- Route 287 – Ryde to Milsons Point via St Leonards & North Sydney;
- Route 290 – Epping to City Erskine St via Macquarie University & North Sydney;
- Route M20 – Botany to Gore Hill;

The stop within Reserve Road also services Route 144.

The stops within Greenwich Road Pacific Highway to the east of the site also service Route 265 between North Sydney and Lane Cove, via Greenwich.

The stop on the southern side of Pacific Highway to the east of the site also service the following routes:

- Route 200 – Bondi Junction to Chatswood;
- Route 622 – Dural to Milsons Point;

- Route 653 – West Pennant Hills to Milsons Point

Table 1 below provides a summary of the frequencies of the above bus routes.

TABLE 1 BUS SERVICE FREQUENCIES				
Route No.	Origin / Destination	Frequency		
		Weekday Peak	Weekday Business	Weekend
143	Manly / Chatswood	15-30 mins	-	-
144	Manly / Chatswood	5-15 mins	15 mins	15 mins
200	Bondi Junction / Chatswood	20 mins	-	-
252	Gladesville / City	20 mins	30 mins	30 mins
254	McMahons Pt / Riverview	20 mins	60 mins	60 mins
286	Denistone East / Milsons Pt	30 mins	-	-
287	Ryde / Milson Pt	30 mins	-	-
290	Epping / City	60 mins	-	-
622	Dural / Milsons Pt	30 mins	-	-
653	West Pennant Hills / Milsons Pt	30 mins	-	-
M20	Botany / Gore Hill	10 mins	15 mins	20 mins

Figure 1 illustrates the range of services and stop locations within a five minute walk from the site.

2.6.2 Heavy Rail

The site is located approximately 400m to the south-west of St Leonards Station. St Leonards Station provides access to train services which operate along the T1 (North Shore, Northern & Western) Line.

Services provide a peak weekday commuter period frequency of less than 10 minutes, extending to 15 minutes during other periods. Travel time to Central is approximately 20 minutes whilst travel time to Berowra is approximately 45 minutes.

Services along the T1 Line provide efficient connectivity to the remainder of the Sydney metropolitan rail network via interchanges at the Hornsby, City, Redfern, Strathfield, Lidcombe, Clyde, Granville and Blacktown.

2.6.3 Pedestrian Infrastructure

The following pedestrian access and mobility infrastructure surrounds the subject site:

- Footpaths are provided on both sides of Pacific Highway adjacent to the site;

- Signalised pedestrian crossings are provided over the northern, southern and western approaches of the intersection of Pacific Highway, Berry Road and Reserve Road to the north-east of the site;
- Signalised pedestrian crossings are provided over the southern and western approaches of the intersection of Pacific Highway and Greenwich Road to the west of the site; and
- A path is provided along The Avenue between Pacific Highway and Westbourne Street.

Figure 1 illustrates the pedestrian infrastructure within the immediate vicinity of the site.

2.6.4 Cycle Routes

Figure 1 provides a graphical representation of on and off-road cycleways within the immediate vicinity of the subject site, as follows:

- Herbert Street, Broadcast Way, Greenwich Road, River Road (east of Greenwich Road), Herbert Street, Christie Street and Atchison Street provide on-road cycle routes; and
- Off-road cycle paths are provided on River Road (to the west of Greenwich Road), Morven Gardens and a short section of Pacific Highway to the north of Broadcast Way.

2.6.5 Car Share

Car Share is a concept by which members join a car ownership club, select a rate plan and pay an annual fee. The fees cover fuel, insurances, maintenance and cleaning. The vehicles range from small hatchbacks to vans. Each vehicle has a home location, referred to as a 'pod', either in a public street, private road or off-street parking area. The number of pods within a particular area vary depending on the density of the population. Members reserve a vehicle by internet or telephone and use a key card to access and operate the vehicle.

Studies into car share use have reported that car share spaces replace a significant number (up to in excess of 20) of car parking spaces, depending on the location and surrounding community density. Car share spaces should therefore reduce the parking demand within and adjoining the site but also the traffic generated.

The GoGet car club has three pods located within five minutes walking distance of the site, and significantly more within a 10 minute walk. **Figure 1** provides a graphical illustration of the car share pods within the vicinity of the site.

2.6.6 Planned Sydney Metro

Stage 2 of Sydney Metro is planned to extend between Chatswood and Bankstown via The City by 2024, with a new station being located at Crows Nest, situated approximately 800m to the south-east of the subject site. Sydney Metro is planned to provide a 'turn up and go' facility with capacity for services to operate every two minutes during peak periods.

3. MODE SHIFT INITIATIVES

3.1 Introduction

The previously described proximity of the site to a wide range of sustainable transport modes is an important attribute in the justification of the International Chinese School development. The school will capitalise upon these links.

This Green Travel Plan involves the implementation of a series of measures to influence future site users' travel behaviours to encourage modal shift away from private cars.

A Green Travel Plan Coordinator and / or Committee is to be established by the school to implement the initiatives incorporated within this Plan and to develop further initiatives to ensure that sustainable travel modes are selected by the school community. The coordinator / committee shall facilitate the initial implementation of the Plan as well as subsequent periodic guidance in the ongoing review of the Plan.

The following sub-sections provide a summary of these measures to promote sustainable transport for the subject development. The measures are to be in place from the initial occupancy of the development as people will establish lasting habits from this time.

3.2 Site Specific Measures

3.2.1 Development Design

- Compliance with constrained car parking controls governed by Willoughby Council, whereby less than one parking space per school staff member is provided, minimising potential staff private vehicle use;
- Provision of bicycle parking infrastructure, despite not being required in accordance with Willoughby Council requirements to encourage the likelihood of cycling as a mode of transport;
- Compliance of motorcycle parking control in accordance with Willoughby Council requirements, providing an alternative to passenger vehicle use;
- Creation of clear and efficient connectivity of the site to the adjacent pedestrian public road network to encourage cycling and walking; and
- The provision of good quality, accurate and useful directional signage to promote walking and cycling, stating times and distances to surrounding destinations.

3.2.2 Information and Encouragement

<i>Information</i>	Provide information on travel options available to school staff, parents and students through noticeboards, newsletters, common area displays etc.
<i>Factsheets</i>	Develop factsheets on the benefits of walking, cycling, public transport, car pooling and working from home (where possible).
<i>Access Guide</i>	Produce a Transport Access Guide illustrating surrounding connectivity to walking and cycling routes as well as bus, train and car share pods.
<i>School Community Inductions</i>	<p>A way to encourage travel behaviour change is to promote healthy habits from the start. Ensure that new staff are provided with information on how to access the precinct using sustainable transport.</p> <ul style="list-style-type: none"> • Provide new staff, parents / students information on sustainable transport to the precinct such as public transport timetables or walking and cycling routes to the site. • Include a section on sustainable transport within the staff and parent / student information packages. • Ensure that staff and parents / students are aware of the on-site bicycle storage facilities.

3.2.3 Promote Cycling

<i>Information</i>	<p>Provide:</p> <ul style="list-style-type: none"> • Cycling maps. • Factsheets on the benefits of cycling.
<i>Cycling Infrastructure</i>	<ul style="list-style-type: none"> • Ensure that cycling desire lines within the precinct are well maintained. • Provide secure bicycle parking.
<i>Skills Development</i>	<ul style="list-style-type: none"> • Increase cycle confidence by providing information on cycle skills training for students who are learning to cycle or staff who haven't ridden for a long period of time. • Provide information on bicycle maintenance workshops for staff / parents.
<i>Establish a staff bicycle pool</i>	Provide a small number of bicycles for staff to share.
<i>Cycling Champions</i>	Identify staff / students who cycle to work or recreationally and encourage them to motivate others to join them.
<i>Bicycle Group</i>	<ul style="list-style-type: none"> • Match less confident cyclists with a 'cycle buddy' for cycle trips. • Organise recreational group rides for the school community.
<i>Events</i>	<p>Encourage participation in:</p> <ul style="list-style-type: none"> • Ride to Work / School Day. • Bike Week. • World Move for Health.

3.2.4 Promote Walking

<i>Information</i>	Provide: <ul style="list-style-type: none"> • Walking maps. • Factsheets on the benefits of walking.
<i>Walking Infrastructure</i>	<ul style="list-style-type: none"> • Ensure that walking paths within the site are well maintained with adequate lighting.
<i>Walking Champions</i>	Identify staff / students who walk to school or recreationally and encourage them to motivate others to join them.
<i>Walking Group</i>	<ul style="list-style-type: none"> • Establish a 'walking club' along a designated route where staff / students who want to walk recreationally can meet up with others.
<i>Events</i>	Encourage staff to participate in: <ul style="list-style-type: none"> • 10,000 steps program. • Walk to Walk / School Day. • Diabetes Day.

3.2.5 Promote Public Transport

<i>Information</i>	Provide: <ul style="list-style-type: none"> • Bus / train timetables. • Display maps detailing public transport to / from the subject site. • Provision of Opal cards within the staff induction pack with some pre-paid credits. • Staff to supervise the walking of students between the school and nearby bus stops and St Leonards train station.
<i>Public Transport Champions</i>	Identify staff / students that use public transport and encourage them, to motivate others to join them.
<i>Events</i>	<ul style="list-style-type: none"> • Host a site Public Transport Month. • World Environment Day

3.2.6 Promote Car Pooling / Sharing

<i>Information</i>	Provide: <ul style="list-style-type: none"> • Guidelines on car-pooling. • Factsheets on the benefits of car-pooling. • Display maps of surrounding car share pods.
<i>Car Pooling Champions</i>	Identify staff and students / families who car pool / share and ask them to write a story for school noticeboards about the advantages of car-pooling / sharing.
<i>Events</i>	<ul style="list-style-type: none"> • Establish a staff / family car pool register. • To facilitate car-pool matching, host regular breakfast / afternoon teas at the school.

4. MODE SHARE TARGETS

4.1 Existing Mode Share Data

Table 2 below provides a summary of St Leonards journey to work data 2016 as published by the Australian Bureau of Statistics.

TABLE 2 2016 JOURNEY TO WORK DATA		
Travel Mode	Number	Percentage
Car as Driver	759	21.3
Car as passenger	122	3.4
Train	1470	41.2
Bus	203	5.7
Walk	473	13.3
Cycle / Other	541	15.1
TOTAL	3568	100

4.2 Mode Share Targets

It is the intention that the implementation of the package of measures provided within this Green Travel Plan and the excellent connections to existing sustainable transport links will assist towards a higher non-car use by the school community.

Table 3 provides a summary of the mode share targets for the International Chinese School community, split into staff and students.

TABLE 3 JOURNEY TO SITE TARGETS		
Travel Mode	Percentage of Total	
	Staff	Students
Car as Driver	40	-
Car as Passenger	10	50
Public Transport	30	30
Walk	10	10
Cycle / Other	10	10
TOTAL	100	100

5. GREEN TRAVEL PLAN MONITORING

A Green Travel Plan is a dynamic document which will change over time depending on the environment and circumstances of the subject development. Accordingly, monitoring, evaluating and reviewing the Plan is important as it will guide ongoing efforts to reduce vehicle kilometres travelled and encourage the use of sustainable transport.

Monitoring and evaluation is an ongoing process which involves fine tuning. There is no standard methodology for the monitoring of a Green Travel Plan however, generally speaking, staff and parents / students should be regularly surveyed as to their travel behaviour to ascertain the areas in which the Travel Plan is successful and those which require altered or improved initiatives. It is therefore proposed that the school community will be surveyed 6 months after occupation with the main focus of the surveys to establish travel patterns including mode share of trips to and from the site. This information will also help inform the Plan for subsequent stages of the development, as necessary.

It is important to understand people's reasons for travelling the way they do, any barriers to changing their behaviour and their propensity to change. This will enable the most effective initiatives to be identified, and conversely less effective initiatives to be modified or replaced to ensure the best outcomes are achieved.

It will be necessary to provide feedback to residents to ensure that they can see the benefits of sustainable transport. It is proposed that this occur through the provision of survey results within the internal school community noticeboards.

6. SUMMARY

A Green Travel Plan is proposed to be implemented at the International Chinese School site at 211 Pacific Highway, St Leonards. The Plan aims to encourage the use of alternative transport choices to single car use and encourage a shift towards public transport, cycling and / or walking through the implementation of the measures contained within Section 3.2 of this Plan, including:

- The implementation of development design initiatives such as the limiting of private car parking spaces, the provision of bicycle parking facilities in conjunction with clear and efficient internal pedestrian and cycle networks and signage;
- The provision of clear and concise information to the school community detailing the surrounding available sustainable transport infrastructure and encouraging the use of transport modes other than the private car, including a Transport Access Guide; and
- The promotion of non-car travel through the provision of pre-paid Opal cards and occasional car share memberships to new school staff.

The school community is to be provided with information with respect to the Green Travel Plan within a welcome pack and up-to-date information with respect to the initiatives of the Plan are to be displayed within school noticeboards.

Monitoring of the implementation of the Green Travel Plan is to be undertaken six months following the occupation of site through the undertaking of travel mode surveys of residents. The results of these surveys and details with respect to whether or not the mode share targets contained within this Plan are being met are to be made available to the school community.

APPENDIX 1



STANBURY TRAFFIC PLANNING

TRAFFIC, PARKING & TRANSPORT CONSULTANTS

TRANSPORT ACCESS GUIDE

Your guide for accessing:
International Chinese School
211 Pacific Highway, St Leonards



Getting To and From the Site

Walking

Footpaths are provided along both sides of Pacific Highway in the immediate vicinity of the site.

Signalised pedestrian crossings are provided at the Pacific Highway intersections of Greenwich Road and Berry Road / Reserve Road.

A pedestrian footpath is provided along The Avenue between Pacific Highway and Westbourne Street.



Cycling

On and off-road cycleways are provided within the immediate vicinity of the site at the following locations:

On – Road

- Herbert Street, Broadcast Way, Greenwich Road, River Road (east of Greenwich Road), Herbert Street, Christie Street and Atchison Street

Off – Road

- River Road (to the west of Greenwich Road), Morven Gardens and a short section of Pacific Highway to the north of the Broadcast Way.



Bus Routes

The previously described pedestrian and cyclist infrastructure provide connectivity to the following bus stops, located within a 5 minute walk from the site:

- Multiple stops are located on both sides of Pacific Highway; Stops are also located along Greenwich Road and on the western side of Reserve Road.

All stops within Pacific Highway service the following routes:

- Route 143 – Linking Manly with Chatswood via Balgowlah & St Leonards;
- Route 144 – Linking Chatswood with Manly via Royal North Shore Hospital;
- Route 252 – Linking Gladesville to City King Street Wharf via North Sydney;
- Route 254 – Linking McMahons Point to Riverview;
- Route 286 – Linking Milsons Point to Denistone East via North Sydney & St Leonards;
- Route 287 – Linking Ryde to Milsons Point via St Leonards & North Sydney.
- Route 290 – Linking Epping to City Erskine Street via Macquarie University & North Sydney;
- Route M20 – Linking Botany to Gore Hill.

The stops within Greenwich Road also services Route 265 between North Sydney and Lane Cove.

Further services are provided at the stop on the southern side of Pacific Highway to the east of the site:

- Route 200 – Linking Bondi Junction to Chatswood;
- Route 622 – Linking Dural to Milsons Point;
- Route 653 – Linking West Pennant Hills to Milsons Point.

Reserve Road also services Route 144.



Wheelchair Accessibility

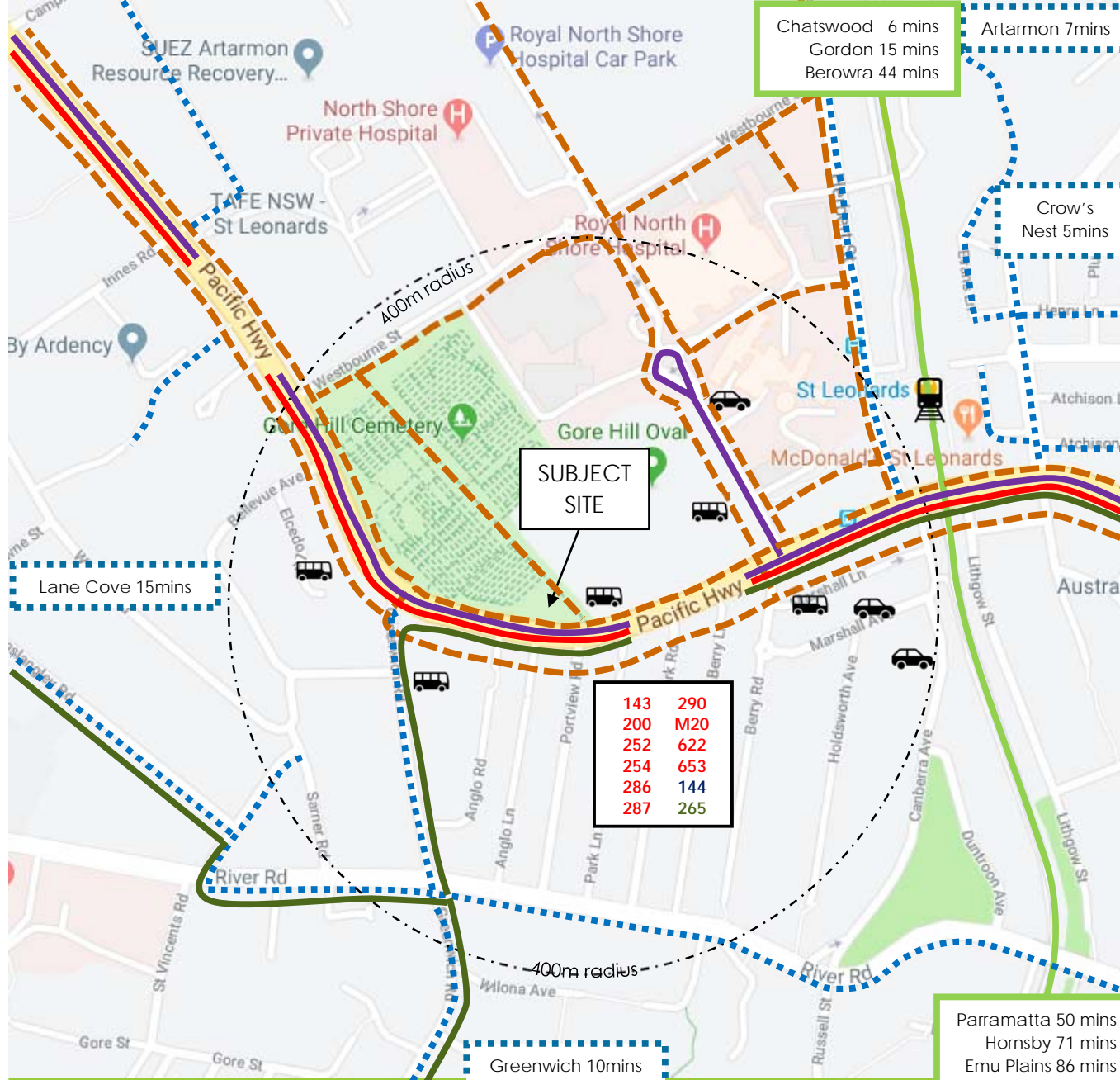
Sydney Buses offer wheelchair accessible services at limited times. Look for the accessibility symbol on the bus operator's timetable to identify these services.



Heavy Rail

St Leonards Station is located within a 5 minute walk from the site.

Services along the T1 (North Shore & Western Line) provides connectivity to the remainder of the Sydney metropolitan rail network via interchanges at locations such as Hornsby, City, Granville and Blacktown.



Planning your Trip

It is recommended that you contact the Transport Information Line to plan your trip and get the latest timetable, fare and wheelchair accessible information.



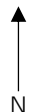
Other useful references:

- www.sydneybuses.info
- <http://www.transdevsydney.com.au>
- www.cityofsydney.nsw.gov.au
- <http://www.innerwest.nsw.gov.au>
- www.sydneycycleways.net

Disclaimer

The information contained in this brochure is current as of June 2019 and is provided as a guide. The brochure has been prepared in reliance on information provided by third parties and accordingly no guarantee, warranty or promise, express or implied, concerning the content or accuracy of information is provided. Readers should refer to the Transport Information Line, local bus companies or the local Council to obtain updated information referred to in this brochure.

LEGEND:



Bus Stop



Train Station



Car Sharing



Cycle Path



Walking Path
Bus Route

Train Line
143, 200, 252, 254, 286,
287, 290, 622, 653, M20

400m / 5 minute walk radius
Bus Route 144
Bus Route 265