Canterbury South Public School

NBRS Architecture

Traffic Impact Assessment

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SECA solution

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Contents

1 Introduction

1.1 Background

Seca Solution Pty Ltd has been engaged by NBRS Architecture to prepare a traffic impact assessment for the proposed redevelopment of Canterbury South Public School located in High Street, Canterbury.

The project involves the expansion of the existing school through the construction of a new education block, to accommodate up to 690 students across the school. The site is currently occupied by single storey buildings (most of which were built in 1976), with some of these to be demolished to make way for a multi-storey construction to provide the additional teaching spaces and appropriately sized core facilities.

1.2 Scope of Report

The Traffic and Access Strategy previously prepared for this project provided information, guidance and direction to the project at the following stages:

Functional Design Brief:
Provide traffic and materials flow diagrams for the site for both the construction and operational phases of the sites; and
Provide input into the plans to minimise impact on existing neighbours during both construction and once in use as they relate to traffic and access.

Concept Design Report:
Document vehicle and pedestrian access, traffic routes including emergency and service vehicles; and
Prepare Traffic Management Studies for the site documenting the site-specific requirements to be considered in the ongoing development of the project including the preparation of draft Construction Traffic Management Plan.

Schematic Design Report
Undertake AutoTURN analysis to assess access, circulation, parking and servicing on a suitable DWG base to be provided; and
Provide input into the annotation of traffic drawings showing pedestrian and vehicles, routes, turning circles and the like.

Detailed Design
Final annotated traffic drawings showing pedestrian and vehicles, routes, turning circles and the like having undertaken AutoTURN to confirm access, circulation, parking and servicing on a suitable DWG base.

This report considers the impact of the construction of Block C and associated works on traffic, access and parking.

1.3 Planning Context

In preparing this document, the following guides and publications were used:

- RTA Guide to Traffic Generating Developments, Version 2.2 Dated October 2002;
- RMS TDT 2013/04 “Update Traffic surveys August 2013”;
- Canterbury Development Control Plan 2012;
- Canterbury Residential Development Strategy 2013; and
- Australian / New Zealand Standard – Parking Facilities Part 1: 2004 Parking off-street car parking (AS/NZS 2890.1:2004).

2 Existing Situation

2.1 Site Description and Proposed Activity

Canterbury South Public School is located in High Street, Canterbury between France Street and Napier Street as shown below in Figure 2-1. The school covers an area of approximately 1.4 hectares and is surrounded by residential development on three sides while at the rear of the site is Pat O'Connor Reserve. It has a current enrolment of 265 students and 15 staff. School start time is 9.15am and finish time is 3.15pm.

The project involves the expansion of the existing school teaching spaces through the addition of a new multi-storey education block (Block C) with associated demolition of existing buildings and the relocation of one demountable. The additional teaching space shall see the school capacity increase to accommodate up to 690 students in 30 classrooms.

Figure 2-1 – Locality Plan

2.2 Site Access

All vehicular access to and from the school is via a gated driveway in France Street which provides access to an on-site parking area for staff as well as access for emergency vehicles, deliveries and for waste collection. The main pedestrian access is via High Street, with pedestrian access also available via France Street and Napier Street.

2.3 Existing Traffic Conditions

2.3.1 Road Hierarchy

High Street
High Street is a local residential street on a generally north-east / south-west alignment that provides access between the school and Canterbury Road via Fore Street in the east and Northcote Street in the west. It runs along the north-western frontage of Canterbury South Public School and is also the main access route to and from the school for pedestrians. High Street could also be regarded as part of a local collector route as it is the only street in the local area that provides a continuous east-west connection.

The High Street road reserve is 10 metres wide providing only a 6-metre-wide pavement between kerbs and a 2-metre-wide footpath on each side. This restricted width allows two-way traffic movements but does not provide sufficient width for parking. No Stopping restrictions have been implemented along a portion of the school frontage from the school boundary at France Street to 25 metres south-west of Canton Street but there are no such restrictions in place opposite the school or anywhere else along High Street except for a short section of No Stopping at Rome Street and No Parking between Rome Street and Fore Street.

Traffic controls along the length of the school frontage consist of a marked pedestrian crossing on the southern side of Canton Street. Two flat top humps are located one on either side of the crossing. These two humps provide a traffic calming effect to reduce traffic speeds in High Street. There is no School Crossing Supervisor on duty at this pedestrian crossing, however, there is a school zone in place which operates from 8.00am to 9.30am and 2.30pm to 4.00pm during which time the speed limit is reduced from 50km/h to 40km/h.

There is no vehicular access to the school along the High Street frontage. The main pedestrian access is located opposite Canton Street.

Canton Street
Canton Street is a local residential road on a north-east / south-west alignment that forms a T- intersection with High Street opposite the main pedestrian access point for Canterbury South Public School. It is 350 metres long and provides a connection between High Street and Canterbury Road as well as access to residential properties. Traffic in High Street has priority as Canton Street forms the terminating leg of the intersection.

The Canton Street road reserve is 20 metres wide providing a 10-metre-wide pavement between kerbs and 5 metre wide footpaths which allows two-way traffic movements and parking both sides.

France Street
France Street is a local residential street that runs along the north-eastern boundary of the school. It is a no through road 80 metres long with a turning circle at the terminating end. The France Street road reserve is 20 metres wide, but the road pavement is only 6 metre wide between kerbs. Along the school frontage it provides 90-degree angle parking for 12 vehicles. Due to the narrow pavement, No Stopping restrictions have been implemented along the side opposite the school which operates from 8.00am to 9.30am and 2.30pm to 4.00pm School Days.

There is a vehicular access for the school about 60 metres along France Street from High Street which provides access to the main staff carpark consisting of 14 spaces.

Napier Street
Napier Street is a local residential street that runs along the south-western boundary of the school. It is a no through road 120 metres long which ends at the boundary of Pat O'Connor Reserve. The Napier Street road reserve is 20 metres wide providing a 12 metre wide pavement between kerbs and 4 metre wide footpaths which allows two-way traffic movements and parking both sides.

There is a driveway access to the school located 90 metres along Napier Street from High Street, however, this access is primarily used as pedestrian access but could also provide access for emergency vehicles.

There is unrestricted parking along both sides of Napier Street which allows parents / carers to park while setting down and picking up school students. There is sufficient space for approximately 25 vehicles to park in the street.

Howard Street
Howard Street is a local residential road on a north-east / south-west alignment that forms a T- intersection with High Street about 80 metres west of and parallel with Canton Street and 50 metres east of Napier Street. It is 370 metres long and provides a connection between High Street and Canterbury Road as well as access to residential properties. Traffic in High Street has priority as Howard Street forms the terminating leg of the intersection.

The Howard Street road reserve is 20 metres wide providing a 10-metre-wide pavement between kerbs and 5 metre wide footpaths which allows two-way traffic movements and parking to both sides.

2.3.2 Pedestrian and Cyclist Facilities

There is an extensive network of pedestrian footpaths throughout the school catchment area with footpaths provided on at least one side of all streets. Pedestrian footpaths are provided along both sides of the streets surrounding the school except for Canton Street that has a footpath only on the eastern side. These footpaths provide a high level of pedestrian safety and connectivity between the surrounding residential areas and the school.

A marked pedestrian crossing is provided in High Street at the Canton Street intersection which provides access to and from the main pedestrian entry to the school. A 40km/h school speed zone is in place on all streets surrounding and approaching the school.

A shared cycle path is located within the Pat O'Connor Reserve to the rear of the school. This shared pathway is accessible via France Street and continues north to the Cooks River Cycleway and south through Hughes Park to two proposed new cycle routes along Jarrett Street and Francis Street. This allows a safe connection for pedestrians and cyclists from the school to the wider surrounding area. Local roads without designated cycleways can also be utilised.

2.4 Existing Traffic Volumes

2.4.1 Peak Hour and Daily Traffic Volumes

Traffic surveys were conducted at the High Street / Canton Street intersection on Monday 20 November from 8.30am to 9.30am and on Friday 11 May 2018 from 2.30pm to 4.00pm to capture traffic and pedestrian volumes during the peak school times.

These surveys recorded vehicle turning movements at the intersection, queue lengths, parking activity and pedestrian volumes at the existing pedestrian crossing and at other informal crossing locations.

The traffic surveys show that the two-way traffic flows along High Street were 267 vehicles per hour in the AM peak and 76 vehicles per hour in Canton Street. During the afternoon peak period traffic volumes in High Street were 303 vehicles per hour and 87 vehicles per hour in Canton Street. Typically, peak hour flows represent between 8% and 12% of daily traffic flows, indicating the daily flows in High Street would be in the order of 2,000 to 3,000 vehicles per day and daily flows in Canton Street would be between 600 and 1,000 vehicles per day.

During the traffic surveys it was observed that, on occasions, vehicles were parked along High Street opposite the school. As a result, the traffic flow was blocked in that direction until there was a gap in the opposing traffic flow, creating unnecessary congestion.

The RTA *Guide to Traffic Generating Developments section 4.3 Impact on Amenity* provides guidance on the acceptable environmental capacity of residential streets where there is a need to balance the traffic function of the street with the safety and amenity of residents. Table 4.6 sets out the recommended Environmental Capacity performance standards for residential streets as a maximum of 300 vehicles per hour for a local street and 500 vehicles per hour for a collector road. On this basis it is clear that both of these streets are currently operating within their environmental capacity and would be able to carry a limited amount of additional traffic generated by the proposed upgrade of Canterbury South Public School. High Street could also be regarded as being part of a local collector route and as such it would have the capacity to carry an additional 200 vehicles per hour.
The RTA Guide also indicates that the environmental capacity of a street can be increased through a reduction in speed. Since there are speed humps located in High Street along the school frontage which restrict vehicle speeds below 40km/h, High Street could be regarded as having a higher environmental capacity than indicated above.

2.4.2 Pedestrians and Cyclists

The traffic surveys also recorded pedestrian and cycle activity at and near the High Street / France Street intersection where there is a marked pedestrian crossing. During the morning peak in November 2017, 64 pedestrians were recorded using this crossing, 28 were recorded crossing Canton Street and 11 were recorded crossing High Street north of the crossing. There were also 29 pedestrians who walked along the High Street frontage to access the main school entry gate. While no count was made of the number of adults and children using the crossing it is estimated that 90% of users were school-aged children or younger siblings either crossing independently or in groups under adult supervision. Similar pedestrian numbers were recorded during the afternoon peak period in May 2018.

In addition to the pedestrian activity crossing High Street and Canton Street it was also observed that around 30 pedestrians (children accompanied by adults) walked along High Street from the north and entered the school via a gate in France Street.

It is estimated that 90% of pedestrians observed during the traffic survey were walking to the site indicating that a high proportion of students live within easy walking distance of the school.

No cyclists were observed during the traffic survey.

2.4.3 Vehicle Speeds

No speed surveys were conducted as part of the study work, however, all streets in the local area have the urban default speed limit of 50km/h and vehicles observed during the traffic surveys were travelling well below the speed limit.

2.4.4 Heavy Vehicles

Heavy vehicles accounted for less than 1% of vehicle volumes recorded during the traffic surveys. The local streets in the area do not provide any viable alternative traffic routes for heavy vehicles, therefore the only heavy vehicles expected in the area will be delivery vehicles on an occasional basis.

2.4.5 Road Safety and Crash History

Advice has been received from Roads and Maritime Services that there have been no reported crashes in the streets surrounding Canterbury South Public School in the period from 1 January 2012 to 26 June 2018. This is a clear indication that the local road network around the school operates with a high level of safety.

2.5 Parking Supply and Demand

Parking associated with the school is concentrated primarily in France Street and Napier Street with a minor amount of parking in Canton Street. The parking capacity in the vicinity of the school is estimated as follows:

- France Street has 12 designated 90 degree parking spaces;
- Napier Street has a capacity of up to 25 vehicles parking parallel to the kerb along both sides; and
- Canton Street has the capacity for up to 25 vehicles parking parallel on both sides between High Street and Ivy Street.

A parking survey was conducted in conjunction with the traffic surveys for the streets surrounding the school. During the morning peak period in November 2017 the main parking activity occurred in France Street and Napier Street where on-street parking was operating almost at capacity. The parking situation was the same during the afternoon peak period in May 2018. Due to the No Stopping restrictions in High Street all parking activity at this location occurred in Canton Street where no more than 10 vehicles parked for short periods leaving 15 spaces underutilised. There were no vehicles observed parked in Howard Street.

The current parking demand and capacity in the streets around the school is summarised to follow in Table 2-1. The survey data indicated that a total of 47 parking spaces were utilised in the local streets in association with school traffic during the morning and afternoon peak periods. Note that the 14 staff parking spaces within the school grounds have not been included as staff generally arrive and depart outside the school peak periods.

Table 2-1 – Current parking demand and capacity

Street	Demand	Capacity	Spare Capacity
France Street	12	12	0
Napier Street	25	25	0
Canton Street	10	25	15
Total	**47**	**62**	**15**

2.6 Public Transport

The closest bus route to Canterbury South Public School is the 491 Hurstville to Rockdale route which runs along Fore Street about 240 metres from the main entrance to the school.

Other routes that provide opportunities for travel via public transport to and from Canterbury South Public School are the 444 and 455 routes that operate along Canterbury Road between Campsie Station and Darling Harbour and the 487 route between Bankstown Station and Canterbury Station that also operates along a section of Canterbury Road near the school.

These bus services provide links between the school and adjoining suburbs and also link with rail services operating from outer suburbs to the south and west of the school.

These bus routes and are shown below in Figure 2-2.

The local area around the school has an extensive network of footpaths that provided a continuous pedestrian link between the school and the bus stops located in Fore Street and Canterbury Road. Canterbury Railway Station is almost 1 kilometre north-east of the school via High Street, Fore Street and Canterbury Road.

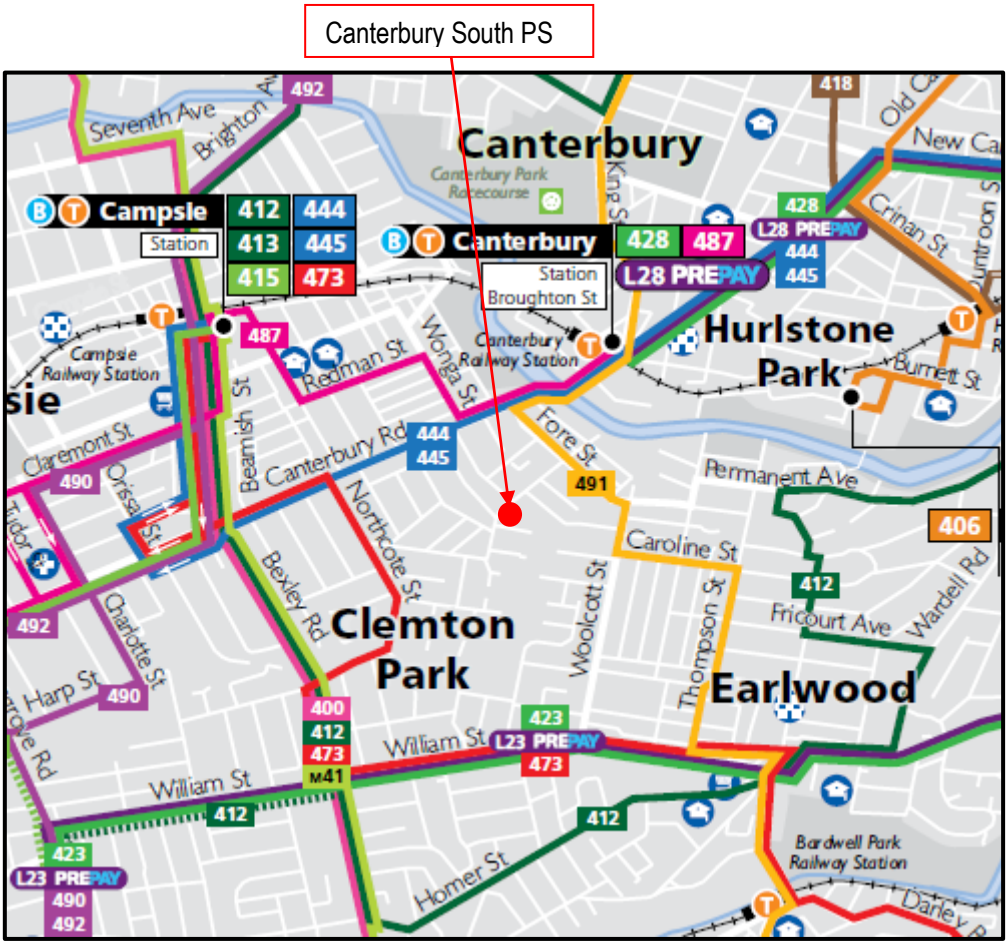


Figure 2-2– Bus Routes and railway stations

3 Proposed Development

The project involves the expansion of the existing Canterbury South Public School through the addition of a new multi-storey education block (Block C) with associated demolition of existing buildings and the relocation of one demountable. The additional teaching space shall see the school capacity increase to accommodate up to 690 students in 30 classrooms, being an increase in the order of 400 students over the existing population. The total staff population is expected to increase to 58 including administration staff.

Surrounded as it is by R3 and R4 zoned land the locality will see an ongoing increase in residential density with the resulting population increase. Along with such changes to the area will also come changes to travel patterns with families becoming more reliant on public transport and less on private vehicle use. Similarly, increases in high and medium density housing will see increased opportunities for walking to school given that the primary school has a local catchment and is within an easy walking distance of local high density and medium density development.

3.1 Existing Trip Generation

The RMS Guide to Traffic Generating Developments does not provide a traffic generation rate for educational facilities. A traffic generation rate for the site has been applied based on the existing and future operations of the school.

The existing traffic volumes generated by the school have been estimated based on the traffic and parking surveys conducted during the morning and afternoon peak periods. Parking associated with the school is concentrated primarily in France Street and Napier Street with a minor amount of parking in Canton Street. The parking capacity in the vicinity of the school is estimated as follows:

- France Street has 12 designated 90 degree parking spaces;
- Napier Street has a capacity of up to 25 vehicles parking parallel to the kerb along both sides; and
- Canton Street has the capacity for up to 25 vehicles parking parallel on both sides between High Street and Ivy Street. However, during the traffic surveys it was observed that no more than 10 vehicles were parked in Canton Street at any time.

This equates to a practical demand for 47 parking spaces that could be associated with school traffic during the morning and afternoon peak periods. The 14 staff parking spaces within the school grounds have not been included as staff generally arrive and depart outside the school peak periods.

Based on observations on site each parking space turns over on average 1.5 times during the peak periods which equates to 71 vehicles arriving and departing (142 peak hour trips). For a school population of 265 students this gives a trip generation rate of 0.5 trips per student. This is a very high trip rate compared to other schools surveyed in regional areas, however, as the school is located in a densely populated area and has no school bus service, it is considered to be appropriate.

To check the accuracy of this trip rate, it was observed that around 120 students walked to and from the school from the surrounding residential area. This leaves 145 students arriving by car and assuming an average occupancy of 2 students in each car, this equates to 73 vehicles arriving and departing or 146 peak hour trips which is close to the 142 peak hour trips previously calculated.

The current school peak hour trip generation is thus considered to be up to 146 trips per hour which is around 50% of the vehicles recorded in High Street during the PM traffic survey. This again is considered to be a reasonable outcome as, apart from providing access to and from the school, High Street operates purely as an access street for local residents and is not a desirable route for through traffic.

3.2 Future Trip Generation

The Canterbury Residential Development Strategy prepared for Canterbury City Council in 2013 indicated that there were over 50,000 private dwellings in Canterbury LGA accommodating approximately 146,000 residents in 2012. Historically, the NSW Government dwelling target for the Canterbury LGA was for 7,100 dwellings between

2004 and 2031, equivalent to 263 dwellings per annum, however, since 2007, the Government's goal for housing creation in the South subregion has increased from 1,143 to 2,100 dwellings per annum – an increase of 84 percent. If this is applied proportionately to Canterbury LGA the local housing target would be 483 dwellings per annum, an annual increase of around 1%. It is expected that this increase will be achieved by increasing residential densities by the construction of medium and high-density dwellings.

This expected increase in dwellings and residential densities will necessitate measures to change travel patterns away from car-based travel to more sustainable travel such as walking, cycling and public transport. This is particularly important in relation to travel to and from schools which generate a high concentration of travel over short time periods in the morning and afternoon.

The impact of more sustainable travel for students and staff of Canterbury South Public School will be discussed later in this report based on a Green Travel Plan developed for the school. The objective of this Green Travel Plan is to identify and implement measures that will increase active transport and the use of public transport while reducing the dependence on car-based travel. As a guide, an estimation of the impact of such measures on the future trip generation from the school redevelopment has been made based on a Green Travel Plan that was developed in 2012 for Flemington Primary School, an inner-city school in Melbourne. One of the main targets was to increase the proportion of the school community regularly travelling to and from school other than by car from 57% to 70%, an increase of 13%. However, for the purposes of the current assessment a conservative target of 10% has been adopted as a more realistic objective as past experience has identified a general resistance by Sydney residents to change their travel behaviour away from private vehicles.

During the traffic surveys conducted at Canterbury South Public School it was observed that around 120 students walked to and from the school from the surrounding residential area which meant that the remaining 145 students arrived by car – a ratio of 45% to 55%. Applying the above target of an increase of 10% in sustainable travel to and from Canterbury South Public School would see the ratio change to 55% sustainable travel and 45% by car.

For a school population of 690 students, 45% arriving by car equates to 310 students at a rate of 0.45 trips per student. Assuming the average vehicle occupancy increases to 2.5 students in each car (as a result of increased car-pooling), this equates to 124 vehicles arriving and departing or 248 peak hour trips.

The existing trip generation at the school has been estimated at a maximum of 146 trips per hour, therefore the redevelopment of the school is expected to generate an additional 102 peak hour trips.

3.3 Impact of Generated Traffic

The major impact of the additional 102 peak hour trips estimated to be generated by the school redevelopment will be on the environmental capacity of High Street being the main access route to and from the school. The traffic surveys conducted at the school have indicated AM peak hour traffic volumes of 267 vehicles per hour and PM peak volumes of 303 vehicles per hour in High Street. The additional 102 trips would increase these to 369 vehicles per hour in the AM and 402 vehicles per hour in the PM respectively.

As High Street could be regarded as functioning as part of a local collector route, its maximum environmental capacity would be 500 vehicles per hour. Therefore, High Street would still be operating within this environmental capacity and would not require any upgrading as a result of the additional trips 102 trips generated by the school redevelopment.

It is however, recommended that "No Stopping" or "No Parking" signs be installed along High Street opposite the school frontage to discourage drivers from parking in this area as the narrow pavement is wide enough for two-way traffic movements only. Any vehicles stopping along High Street block traffic flow in that direction and create unnecessary congestion.

3.4 Impact on Parking

It has been determined that there is a demand for 47 parking spaces associated with school traffic during the morning and afternoon peak periods. The 14 staff parking spaces within the school grounds have not been included as staff generally arrive and depart outside the school peak periods. These 47 parking spaces are sufficient for the existing school population of 265 students.

The future trip generation from the school redevelopment has been estimated to be 248 peak hour trips (124 vehicles arriving and departing). On the basis that each parking space has a turnover of 1.5 vehicles during the peak periods this equates to a demand for 83 parking spaces. This however makes no concessions for future mode share as the residential area surrounding the school densifies and there is less reliance on vehicle ownership.

The Canterbury DCP recommends parking for schools at a rate of one space per 2 staff. Based on a total of 58 staff, the parking demand would equate to 29 spaces. Parking within the school provides for 14 vehicles with no additional parking proposed in conjunction with the proposed development. The balance of parking would therefore be reliant on the existing on-street parking available within the side streets that connect with High Street.

The streets around the school that are currently used for parking have a capacity for 62 parking spaces, with 47 of these utilised and 15 available (Table 2-1). The additional parking demand, based on the DCP, can therefore be accommodated within this existing supply. This is consistent with the RMS Guide to Traffic Generating Developments which recognises that streets surrounding schools provide opportunity for pick-up, set-down and overspill parking (Sec 7).

In order to provide the additional parking spaces to cater for pick up and drop off demands the following actions are recommended:

- Install signage and line marking along the school frontage in Napier Street to provide 90 degree parking, including parking restrictions of “5 minute Parking 8.00am to 9.30am and 2.30pm to 4.00pm School Days”; (additional 15 spaces)
- Install “No Stopping” linemarking (yellow line adjacent to kerb) along the southern side of Napier Street to maintain two-way traffic flow in conjunction with the 90 degree parking;
- Utilise the spare parking capacity in Howard Street (25 spaces)
- It is also recommended that the existing twelve 90 degree parking spaces in France Street should be signposted as “5 minute Parking 8.00am to 9.30am and 2.30pm to 4.00pm School Days”. This will not increase the number of parking spaces but will assist in reserving these spaces for drop-off and pick up before and after school.

Napier Street currently provides parallel parking along both sides with capacity for about 25 vehicles. The installation of 90-degree parking along the school frontage will provide approximately 40 spaces, however, the current parallel parking in front of residences opposite the school will need to be removed to maintain two-way traffic flow in the street. It is acknowledged that this loss of on-street parking in Napier Street will cause some inconvenience to residents, but it has been noted that all properties along Napier Street opposite the school have capacity for off-street parking. Outside of school zone times the 90-degree parking along the school frontage will be available for residents and visitors. Napier Street thus has the capacity to provide an additional 15 spaces during the school drop off/pick up.

Howard Street is not currently used for school parking and has capacity for 25 spaces.

The additional parking associated with the pick up and drop off for the school of 36 spaces can thus be provided by delineating 90 degree parking in Napier Street (15 spaces) and utilising the spare capacity in Howard Street (25 spaces), a total of 40 spaces, 4 spaces more than required.

It should be noted that the peak demand for parking associated with the school occurs only for short periods of time around 30 minutes during the morning and afternoon school zone times. For the clear majority of the time parking demand in the streets surrounding the school is very low and parking for residents and visitors is readily available.

3.5 Public Transport

There is no existing school bus service provided for the transport of students to and from the school. However, in anticipation of such a service being provided a suitable bus stop for school services has been identified on the south-western side of Canton Street near the High Street intersection. This location provides convenient and safe access to and from the school via the existing pedestrian crossing on High Street. The additional infrastructure

required would consist of 30 metres of concrete footpath from High Street along the south-western side of Canton Street, a bus shelter and bus zone signs. It is recommended that the bus stop operate only on school days during the morning and afternoon school zone times so that the kerb space is available for general parking at all other times.

3.6 Pedestrians and Cyclists

The existing extensive network of pedestrian footpaths and cycle routes will be adequate to cater for the increased travel demand generated by the school redevelopment and no improvements are proposed.

The existing pedestrian crossing in High Street will also be adequate for the future demand, however, consideration should be given to the provision of a School Crossing Supervisor to provide a higher level of supervision and safety due to the increased number of pedestrians that will utilise this crossing.

3.7 Road Safety

The crash data provided by Roads and Maritime Services indicates that there is a high level of safety on the road network surrounding the school. This high level of road safety is expected to continue following the redevelopment of the school due to the extensive network of pedestrian and cyclist facilities and the pedestrian crossing in High Street, combined with low vehicle speeds during the school peak times. The speed humps in High Street are very effective in maintaining vehicle speeds at a safe level past the school. Consequently, no further road safety infrastructure treatments are proposed.

3.8 Access for emergency and service vehicles

Access for emergency and service vehicles will continue to be provided at the France Street access. No changes to the current arrangements are proposed.

4 Green Travel Plan

4.1 Background

The Canterbury South Public School Green Travel Plan has been prepared in support of the Development Application for the proposed expansion of the existing school facilities. The expansion entails the construction of a multi-storey education block with 30 teaching spaces accommodating up to 690 students, being a significant increase over the existing population of 265 students.

4.2 Issues and Objectives of the study

According to the Canterbury DCP, parking for schools should be provided at a rate of one space per 2 staff. Based on a total of 58 staff, the parking demand would equate to 29 spaces which is 15 spaces more than currently provided within the school grounds. The concept plan for the school does not include additional parking within the school grounds so the additional parking demand will need to be met by the existing on-street parking available within the side streets that connect with High Street. Further to this, the increase in school population for the expansion results in an additional 36 spaces associated with pick up and drop off being required to meet future demand for students based on current travel patterns.

It is proposed to provide 90 degree parking in Napier Street adjacent to the school that will provide an additional 15 spaces, with a further 25 spaces available in Howard Street. The parking beat survey completed also found 15 vacant spaces in Canton Street. As such, the parking outlined above shall be sufficient to accommodate the pick up and drop off demands with an excess of 4 spaces.

The purpose of the Green Travel Plan is to inform and encourage staff and visitors to the school to utilise active (sustainable) travel options and in doing so ensure that the demand for parking and private vehicle travel can be managed within the context of the expansion of the school, thus improving the amenity of the local residential streets.

4.3 School Catchment Area

The catchment area for Canterbury South Public School is only about 3 square kilometres in area and is bounded by Canterbury Road, Cooks River, Earlwood Road, Kitchener Street, Spark Street, Hughes Park and Bexley Road. The longest travel distance to and from the school within the catchment area is 1.6km and it is estimated that 80% of the properties within the catchment area are within 1km travel distance from the school. Combined with the extensive network of pedestrian footpaths and the reasonably flat topography in the area there is potential for a large proportion of the school population to walk, cycle, scooter to and from the school.

4.4 Land Use Zoning

The majority of the properties within the school catchment area are zoned R3 (Medium Density) or R4 (High Density) with a strip along the Canterbury Road corridor zoned B5 (Business Development) which permits residential use in conjunction with mixed use development such as business, warehouses and bulky goods.

The Canterbury Residential Development Strategy prepared for Canterbury City Council in 2013 indicated that there is potential for housing in the Canterbury area to increase at a rate of 483 dwellings per year up to the year 2031 - an increase of 1% per annum. This increase in dwellings will be achieved by the redevelopment of existing single dwellings and the increase in high density dwellings particularly along the Canterbury Road corridor.

This increase in high and medium density housing sees a reduced expectation for private vehicle parking and will create increased opportunities for walking / cycling to both work and to school given that the primary school has a local catchment that is within an easy walking distance of local high density and medium density development.

4.5 Staff Travel

The current number of staff at the school is 22, none of which live within the catchment area, however, most of the staff live close enough to be within 15 to 20 minutes travel by car or between half to one hour by public transport. The expansion of the school population from 265 to 690 students will require staff numbers to be increased to around 60 and also provide opportunities to promote sustainable travel either by walking / cycling, carpooling or public transport. The future increase in residential densities and more affordable housing in the area may provide

incentives for future staff to live within the local area close to their employment and so reduce the reliance on car-based transport.

4.6 Spheres of Influence

With regards to the Canterbury South Public School development the primary spheres of influence are:

- Car Pooling - Reduce the number of individual private car drivers by encouraging carpooling by staff and parents / carers both to and from the school.

  Many staff do not perceive carpooling as a viable option because they are concerned that their plans may change and they are either stranded at work or will let other people down. Improvements in, and increased acceptance of, ride share apps however provide opportunities for staff to easily determine whether other staff live nearby and are candidates for ride sharing.

  Given that many of the staff live in neighbouring suburbs there may be opportunities through either formal or less formal means to promote carpooling on a regular or semi-regular basis. This willingness to carpool should be encouraged through the instigation of preferred parking for carpooling vehicles given that there will be insufficient parking available in the school grounds to cater for all staff.

  Informal carpooling by parents / carers and staff can be promoted through school newsletters and website.

- Public Transport - The opportunity to encourage bus and train patronage must be supported, ensuring all staff who are open to bus and / or train travel have sufficient relevant information supporting this as a positive experience. This can be done by providing staff with information about public transport options and including the Transport for NSW Trip Planner app on the staff intranet for convenient use.

  Although the school is located less than 1km from Canterbury Railway Station the perception can be that travel by rail is not always convenient. However, many of the suburbs from which staff currently travel have a reliable, regular train service to and from Canterbury Station offering a viable alternative to car-based travel.

  Bus travel is one mode for which there is the potential for an increase in demand to be created by the new development, particularly for staff. Bus service 491 Hurstville to Five Dock runs along Fore Street about 240 metres from the main entrance to the school. Suburbs along this route include Bexley North, Bardwell Park, Earlwood, Croydon Park and Ashfield. Bus stops for services in both directions are located in Fore Street about 30 metres north of Ivy Street.

  Despite this there is a perception that bus travel is not convenient and is not considered viable by the majority. The need to change services and the lack of express routes are often given as reasons why people do not consider bus travel. There is therefore a need to educate commuters to overcome this negative mind set.

- Promote walking / cycling to school for students, e.g. *Walk Safely to School Day campaign and ensure staff who indicate that they are prepared to walk or cycle are supported in this choice.

  Walking to school can be perceived as undesirable by some parents / carers due to concerns about safety for students. Participation in the annual Walk Safely to School Day campaign and the introduction of Active Paths will assist in addressing these safety concerns and help to reduce dependence on car-based travel. Including safe pedestrian and cycling education in the school curriculum can also support this shift as can the introduction of Walking Buses. In addition, providing information about end of walk facilities, showers and lockers, can increase the number of staff prepared to walk over driving.

  Cycling as a mode of travel to work generally provides a viable and healthy alternative over car travel. The topography in the area surrounding the school is relatively flat and there are several identified cycle routes in the area surrounding the school. It is important to promote cycling for students as a safe alternative travel option and support those staff who are open to riding to work through the provision of suitable information about routes and end of trip facilities as well as ride-based activities.

  Details of the Action Plan are included in the Green Travel Plan document.

5 Construction Activities

5.1 Methodology

The redevelopment of Canterbury South Public School will involve the demolition of existing buildings and the construction of a new multi-storey building to provide accommodation for up to 690 students.

A site office will be located within the site with parking for construction staff vehicles and machinery as well as a materials storage area.

5.2 Timing

The demolition and construction on site is due to commence during the 2nd quarter 2019 and be completed by mid-2021.

5.3 Working Hours

Demolition and Construction hours will be between 7:00am and 6:00pm Monday to Friday and 7.00 AM to 5.00 PM on a Saturday.

No demolition or construction work is to be carried out on a Sunday or public holiday. No demolition or construction work contributing to unacceptable noise levels or major deliveries are scheduled outside of the weekdays in line with EPA Guidelines.

Work may be undertaken outside these hours where the following occurs:

- The delivery of fill or material may occur outside these hours if required by the Police or other authorities.
- Council providing permission for working out of hours;
- It is required in an emergency to avoid loss of life, damage to property and / or to prevent environmental harm;
- The work is approved from the Construction Noise and Vibration Management Plan;
- Residents likely to be affected by the works are notified of the timing and duration of these works at least 48 hours prior to the commencement of the works.

5.4 Construction staff numbers

Indicative demand levels will be up to a maximum of 30 staff with 10 during the demolition work based on site. All construction staff vehicles will be parked on-site within an allocated parking area.

5.5 Traffic Management Assessment

All construction vehicles shall be directed to use the major traffic routes in and through the area such as Canterbury Road and Fore Street to access the site to reduce the impact of heavy vehicles on the safety and amenity of residents. Construction access should be via Napier Street as the pavements in High Street and France Street are too narrow for entry / exit by heavy vehicles.

Due to the nature of the work the indicative number of trucks through the day could be 20 over an average working day. The type of vehicles accessing the site will include:

- Articulated vehicles for delivery of heavy plant and equipment;
- Heavy and medium rigid trucks for construction material delivery;
- Heavy rigid tankers for fuel delivery for compacting and excavation machinery;
- Rigid trucks for removal of excavated material;
- Mobile cranes;
- Fixed cranes;
- Piling Rigs;
- Concrete delivery trucks and concrete pumps; and
- Light vehicles, including workers' private vehicles.

Vehicular and pedestrian access to the school will be maintained at all times but there will be no public access within the site of the construction works with a fence provided to prevent unauthorised access.

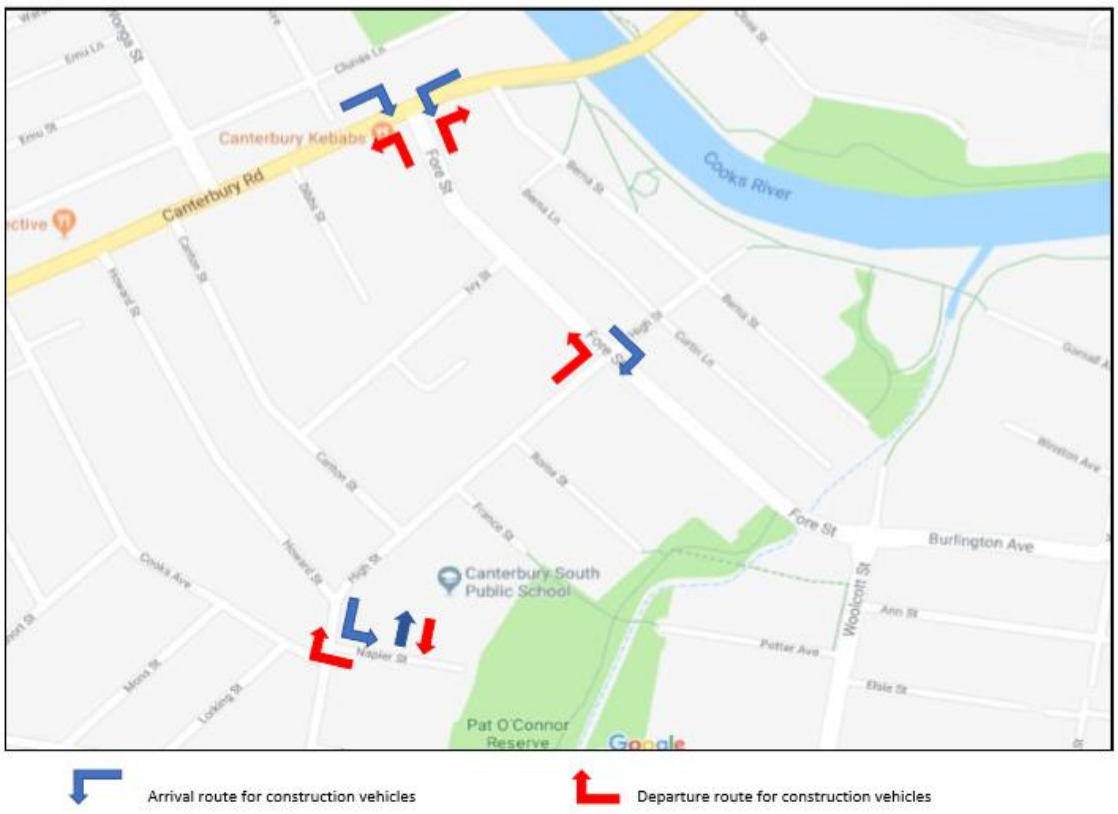
The number of heavy vehicles associated with the construction work is low and it is considered that the movement of vehicles in and out of the site for construction works can safely occur with minimal delays to traffic and in a safe manner. No truck access shall be permitted during the critical morning and afternoon school arrival and departure times, particularly 8.30am to 9.15am and 2.45pm to 3.30pm.

There will be minimal impact upon public transport services with no diversions required.

There will be minimal impact for emergency vehicles and delivery vehicles with no diversions required for normal work days.

Traffic routes in and out of the locality will be along the arterial road network which will experience minimal impacts due to the works.

CANTERBURY SOUTH PUBLIC SCHOOL - MOVEMENT DIAGRAM FOR CONSTRUCTION VEHICLES



5.6 Traffic Control Plan

5.6.1 General

A TCP will need to be prepared to meet the requirements of the RMS Traffic Control at Work Sites Manual 2018 Edition. The TCP will need to cover the access requirements to the site and the safe passage of vehicles in and out of the subject site via the arterial road network and the local roads shown above as well as for passing traffic in this location during the construction works.

At all times the requirements of the Roads and Maritime Services Traffic Control at Work Sites Manual must be adhered to. Please refer to this Manual for traffic control matters not listed in this report

5.6.2 Existing traffic conditions

- Traffic volumes on Canterbury Road were recorded to be 45,620 vehicles per day in 2018 with 5 per cent of these vehicles being heavy vehicles. The current mid-block level of service (LOS) along Canterbury Road is A to B in the AM peak (8.00am to 9.00am) and B to C in the PM peak (5.00pm to 6.00pm).

- The traffic surveys show that the two-way traffic flows along High Street were 267 vehicles per hour in the AM peak (8.45am to 9.45am) and 76 vehicles per hour in Canton Street. During the afternoon peak period (3.00pm to 4.00pm) traffic volumes in High Street were 303 vehicles per hour and 87 vehicles per hour in Canton Street.

5.6.3 Cyclists and Pedestrians

There are existing footpaths for pedestrians to and from the school that will be clear of the construction site. Pedestrian access to the school will be maintained at all times during construction.

Cyclists accessing the school currently share the road space with all other vehicles. This arrangement will continue during the construction period and after construction is completed. The low speed environment in the local streets and availability of footpaths allows cyclists to access the school with relative safety.

5.6.4 General Traffic Control Considerations

The factors that need to be considered in preparing the TCP are:

- During the construction, all construction vehicle movements will enter and exit the site via Napier Street;
- Parking will be available on site for construction staff in an allocated parking area. This will be managed as part of the overall site management and reinforced during the tool box meetings;
- Loading / unloading and deliveries will be completed within the construction site;
- Pedestrian and cyclist considerations – there is no change to the existing situation for cyclists. Pedestrians will be able to use the existing footpaths in the local area to access the school;
- The construction site will be fenced off with access only to authorised personnel;
- The long-term construction time for the completion of the works from 2nd quarter 2019 to mid-2021; and
- Safety of road users and site personnel.

The TCAWS manual recommends safety barriers are considered if:

- The location will continue to be a work area for longer than two weeks. (Applicable)
- Traffic speeds are likely to be greater than 80 km/hr. (Not applicable)
- AADT exceeds 5000 vehicles for traffic lane nearest the works. (Not Applicable)
- The work area is less than 3 metres clear of traffic on straights (less on tight curves) (Applicable)
- Personnel do not have other protection, such as operating plant. (Not Applicable)

The location and nature of the work will **NOT** require safety barrier to be installed.

5.6.5 Traffic Control – Signage and Line Marking

A Traffic Control Plan (TCP) providing work site definition will need to be prepared by the construction contractor. Temporary signage required as part of the works is included due to the nature of the passing traffic and the location and nature of the works.

All signs shall be placed on the road and made secure against wind and shall be covered when not in use and removed outside of working hours. The signs shall be uncovered before any trucks access the site. This can be co-ordinated between the truck driver and the site manager via mobile phone as required.

A copy of the relevant TCP must be on site at all times during the demolition and construction work.

5.6.6 Daily Checklist

In accordance with the Roads and Traffic Authority of New South Wales Traffic Control at Worksites Manual, the site foreman / manager should complete a daily traffic control checklist and this checklist should be filed for future reference. The Proforma Checklist is provided in Appendix E of the Traffic Control at Worksites Manual.

- Contractors Contact Details

Project Manager: TBA

Mobile: TBA

E-mail: TBA

- TCP Approval

The TCP will be submitted to the road authority for review and approval.

Details for lodging the TCP and the Construction Traffic Management Plan are:

Canterbury Bankstown Council
Upper Ground Floor, Bankstown Civic Tower
66-72 Rickard Road,
Bankstown NSW 2200
Phone: (02) 9707 9000
Email: council@cbcity.nsw.gov.au

6 Summary and Recommendations

The proposed expansion of the school represents a significant increase in student numbers of up to 690 compared to the current enrolment of around 265 students. It is expected that this increase in enrolments will lead to a significant increase in traffic volumes on the surrounding road network during the short pick up and drop off periods at the start and end of the school day. This is particularly due to the location of the school in relation to public transport services. Even allowing for increased pedestrian access to the school in conjunction with high density development along Canterbury Road, which is within easy walking distance to the school, High Street will be impacted by any increase in traffic volumes as it is currently operating at close to its environmental capacity.

However, due to the low speed environment that exists along High Street as a result of the narrow pavement and flat top speed humps, it is considered that High street will have the capacity to cater for the additional traffic volumes without any further engineering treatments. The other side streets adjacent to and surrounding the school are currently operating well within their environmental capacities and will not be adversely affected by increased traffic volumes during the school peak periods.

Based on the DCP rate of 1 space per 2 staff the parking demand would be for 29 spaces, 14 of these existing on site and 15 currently available within the existing on-street supply.

It is estimated that the redevelopment of the school will create a total demand for 83 parking spaces based on surveys of the current demands associated with both parking and pick up and drop off. There are currently 62 spaces available, 47 of which are used. Proposed changes to the parking arrangements shall be sufficient to cater for this future situation as well as the 15 required for staff. Parking in the surrounding streets for at least 40 vehicles can be provided within 150 metres walking distance of the main school entry in High Street.

The following traffic and access issues need to be addressed in the redevelopment of the school:

- The main school pedestrian access should continue to be via High Street as it offers a convenient access location for pedestrians walking from Canterbury Road or for parents / carers who park in Canton Street or Howard Street and walk to the school.
- In order to provide the additional parking spaces required the following actions are recommended:
  - Install signage and line marking along the school frontage in Napier Street to provide 90 degree parking, including parking restrictions of “5 minute Parking 8.00am to 9.30am and 2.30pm to 4.00pm School Days” (net increase of 15 spaces);
  - Install “No Stopping” linemarking along the southern side of Napier Street to maintain two-way traffic flow in conjunction with the 90 degree parking;
  - Utilise spare parking capacity in Howard Street (25 spaces);
  - It is also recommended that the existing 90 degree parking spaces in France Street should be signposted as “5 minute Parking 8.00am to 9.30am and 2.30pm to 4.00pm School Days”. This will not increase the number of parking spaces but will assist in reserving these spaces for drop-off and pick up before and after school.
- Install “No Stopping” or “No Parking” signs along High Street opposite the school frontage to discourage drivers from parking in this area as the narrow pavement is wide enough for two-way traffic movements only. Any vehicles stopping along High Street block traffic flow in that direction and create unnecessary congestion.
- Public Transport – investigate representations to Transport for NSW in relation to the introduction of a school bus service to provide an alternate transport option for travel to and from the school. If a school bus service is provided a suitable location for a bus stop has been identified on the south western side of Canton Street near the High Street intersection. Additional infrastructure required would consist of 30 metres of concrete footpath, a bus shelter and bus zone signs.

Allowing for the above recommendations and the implementation of the Green Travel Plan the additional traffic and parking demands associated with the school expansion can be accommodated within the existing road network.

7 Site photos

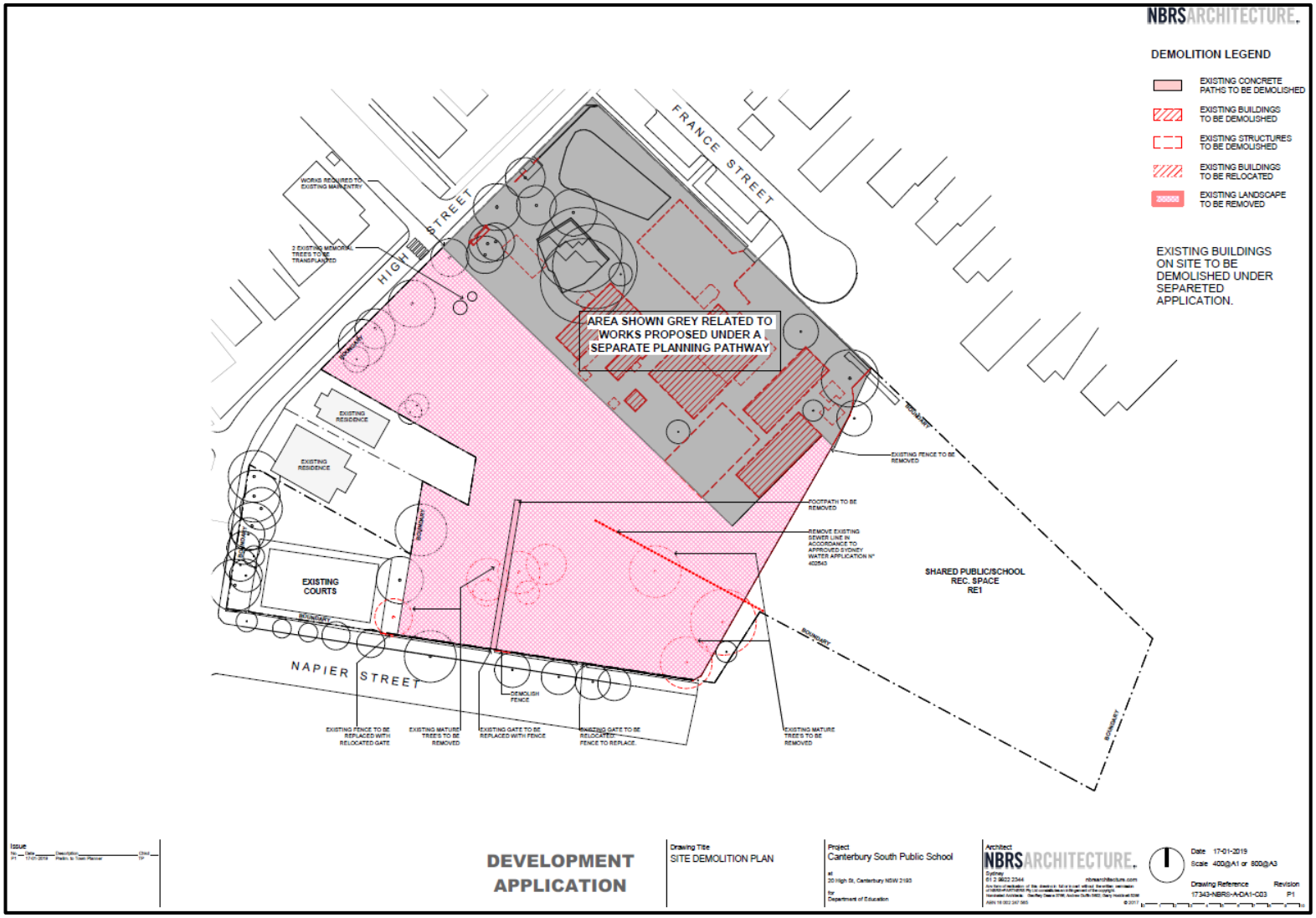
Photo 1 – High Street looking north

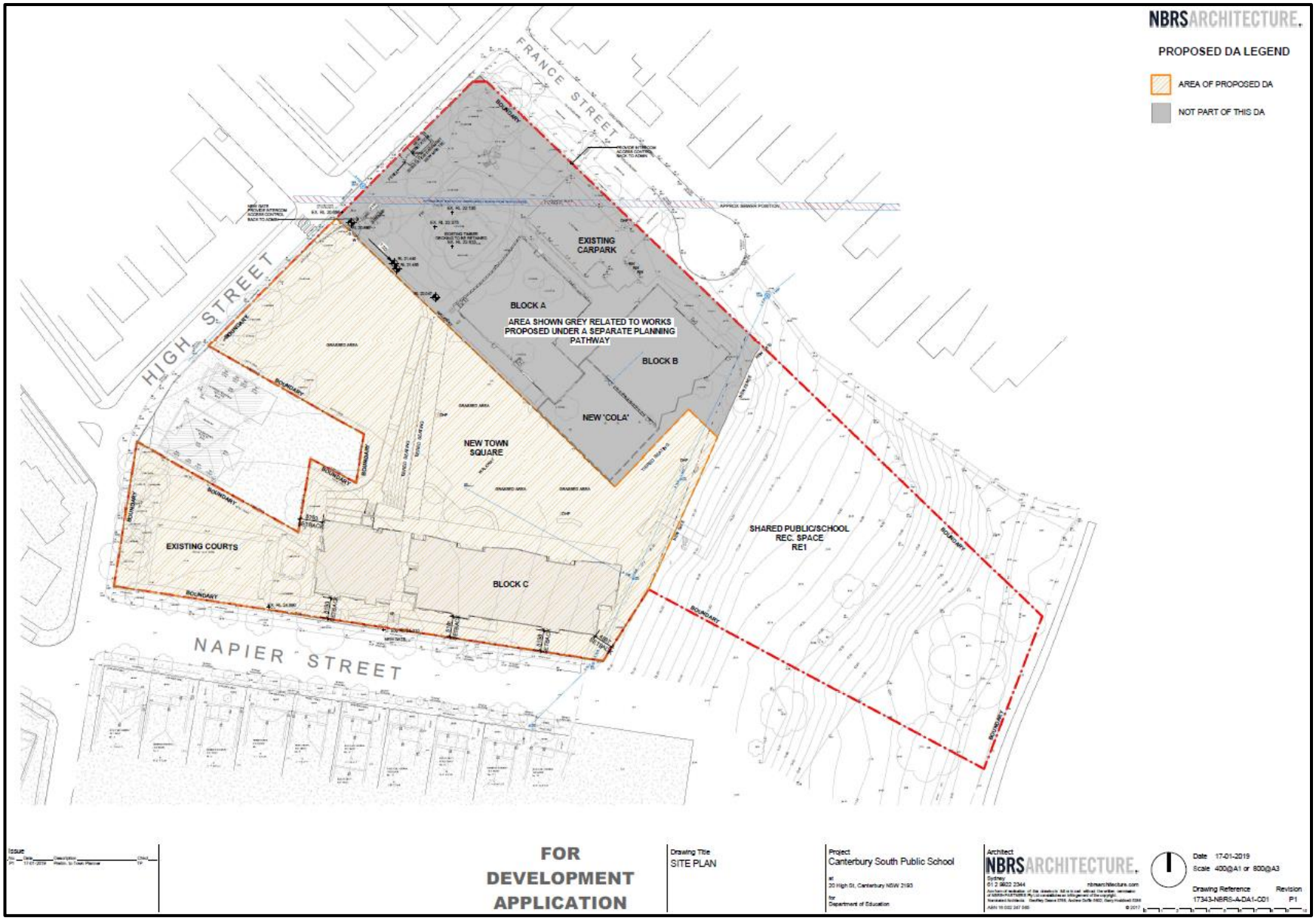
Photo 2 – High Street looking south

Photo 3 – 90 degree parking in France Street

Photo 4 – parking in Napier Street

Attachment A – Site Plans




NBRSARCHITECTURE
PROPOSED DA LEGEND
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NOT PART OF THIS DA
FRANCE STREET
HIGH STREET
NAPIER STREET
EXISTING CARPARK
BLOCK A
AREA SHOWN GREY RELATED TO WORKS PROPOSED UNDER A SEPARATE PLANNING PATHWAY
BLOCK B
NEW 'COLA'
NEW TOWN SQUARE
EXISTING COURTS
BLOCK C
SHARED PUBLIC/SCHOOL REC. SPACE RE1
BOUNDARY
FOR DEVELOPMENT APPLICATION
Drawing Title
SITE PLAN
Project
Canterbury South Public School
20 High St, Canterbury NSW 2193
Department of Education
Architect
NBRSARCHITECTURE
Sydney
61 2 9922 2344
nbrsarchitecture.com
Date 17-01-2019
Scale 400@A1 or 800@A3
Drawing Reference
17343-NBRS-A-DA1-C01
Revision
P1