

Proposed Inner Sydney High School
244 Cleveland Street, Surry Hills

'Transport and Accessibility Impact Assessment Report

Prepared for: Department of Education

June 2017

Report No: PT16042r01_Final_3

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1. Introduction

This report has been prepared on behalf of the Department of Education to present findings of a Traffic and Accessibility assessment of the proposed Secondary School at the site known as 244 Cleveland Street, Surry Hills.

The study has assessed existing traffic conditions, parking demands, access arrangements, future traffic conditions, service vehicle provision and design compliance.

The remainder of the report is set out as follows:

- Section 2 - responds to the SEARS matters
- Section 3 - presents a review of background documentation pertaining to the site;
- Section 4 - describes the existing traffic and parking conditions;
- Section 5 - summarises the proposed development;
- Section 6 - reviews the potential traffic impacts of the proposal;
- Section 7 – provides commentary on other traffic and transport matters; and
- Section 8 - presents the conclusions

2. Response to SEARS

The following provides a summary of the SEARS requirements and where the responses to each can be found in this report:

Item	Report Location
Include a transport and accessibility impact assessment, which details but is not limited to:	
accurate details of the current daily and peak hour vehicle, public transport, pedestrian and bicycle movements and existing traffic and transport facilities provided on the road network located adjacent to the proposed development;	See Section 4, Appendix C
assessment of the operation of existing and future transport networks including the rail, bus networks and the Sydney Light Rail and their ability to accommodate the forecast number of trips to and from the development;	See Section 4, Appendix C
details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips;	See Section 6, Appendix C
the adequacy of public transport, pedestrian and bicycle provisions to meet the likely future demand of the proposed development	See Section 6.7
impact of the proposed development on the operation of existing and future public transport infrastructure within the vicinity of the site in consultation with RMS and TfNSW and identify measures to integrate the development with the transport network	See Section 6.3, 6.7
details of any upgrading or road improvement works required to accommodate the proposed development	See Section 6.3
details of any pedestrian/cycleway improvement works required to accommodate the proposed development, including any new proposed pedestrian crossing locations	See Section 6.8
measures to promote travel choices that support sustainable travel such as a location-specific sustainable travel plan, provision of end-of-trip facilities, green travel plans and wayfinding strategies	See Section 6.5, Appendix D
the daily and peak (AM, PM and events) vehicle movements impact on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for upgrading or road improvement works (if required);	See Section 6.3, Appendix C
the proposed active transport access arrangements and connections to public transport services	See Section 5
the proposed access arrangements, including car and bus pickup / drop-off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and bicycle networks	See Section 7.2
measures to maintain road and personal safety in line with CPTED principles;	See Section 7.5

Item	Report Location
proposed car and bicycle parking provision and justification for the number of spaces provided, including consideration of the availability of public transport and the requirements of the relevant parking codes and Australian Standards	See Section 6.5
proposed service and emergency vehicle access arrangements, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times); and	See Section 6.6
traffic and transport impacts during construction, including cumulative impacts associated with other construction activities, and how these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact (which must include vehicle routes, number of trucks, hours of operation, access arrangements and traffic control measures for all demolition/construction activities).	See Section 7.1

3. Background Report Review

The proposed development has been subject to a full assessment of opportunities and constraints as part of the masterplanning for the site. An original Concept report was initially developed for the site by Perumal Pedavoli Architects for the Department of Education. Of note, much of the existing conditions assessment in this report has been based on the Traffic Report prepared by Thompson Stanbury and Associates titled "Preliminary Transport, Traffic and Parking Assessment – Proposed Secondary School - 244 Cleveland Street, Surry Hills" dated May 2016. This report was prepared during the site investigation phase of the development of the proposal.

The benefit of the above approach is the inclusion of a wide range of data collection of traffic / public transport conditions, given this information was collected within 9 months of this report, the data is still considered valid for this report.

In summary, the report found the following:

- *SIDRA modelling indicates that the surrounding local road network currently operates with a reasonable level of service with spare capacity;*
- *The site is particularly well serviced by public transport and sustainable transport infrastructure in various forms;*
- *Pedestrian access to the site should primarily be via Prince Alfred Park to allow large groups of students to disperse along the Park pathways in all directions;*
- *The existing vehicle driveway connecting with Cleveland Street is capable of facilitating safe and efficient vehicle access to and from the school, albeit to a limited extent, subject to the considerations contained within Section 4.1.1 of this report;*
- *The limited capacity of the site to accommodate on-site passenger vehicle parking is consistent with existing strategic transport planning controls applicable to the site and the school use;*
- *The City of Sydney provides established requirements with respect to the provision of bicycle (parking and end of trip facilities), disabled persons vehicle and service vehicle accommodation / infrastructure, as detailed within this report, which should be incorporated within the detailed design of the school;*
- *The provision of formalised student set-down / pick-up areas within the surrounding road network will be subject to consultation with the CBD Coordination Office which includes the City of Sydney, the Roads & Maritime Services and Transport for NSW;*
- *The existing formalised Bus Lane within Chalmers Street provides efficient connectivity to bus services for school students and staff although the school will need to liaise with the CBD Coordination Office to provide additional special bus services depending on the demographic characteristics of students;*
- *The school will need to implement an operational management plan incorporating a series of integrated management measures to ensure that students and staff can access and exit the site in a safe and efficient manner during peak school start and finish periods;*
- *Further detailed assessment of the likely impacts of the development and the required alterations to surrounding public road infrastructure will need to be cognisant of the staged alterations to the surrounding road network associated with the CBD Light Rail construction; and*

- *A detailed and staged construction traffic management plan will need to be prepared and implemented to ensure that construction works do not unreasonably impact adjoining public road traffic and pedestrian movements adjacent to and surrounding the subject site.*

A copy of this report is provided in [Appendix C](#).

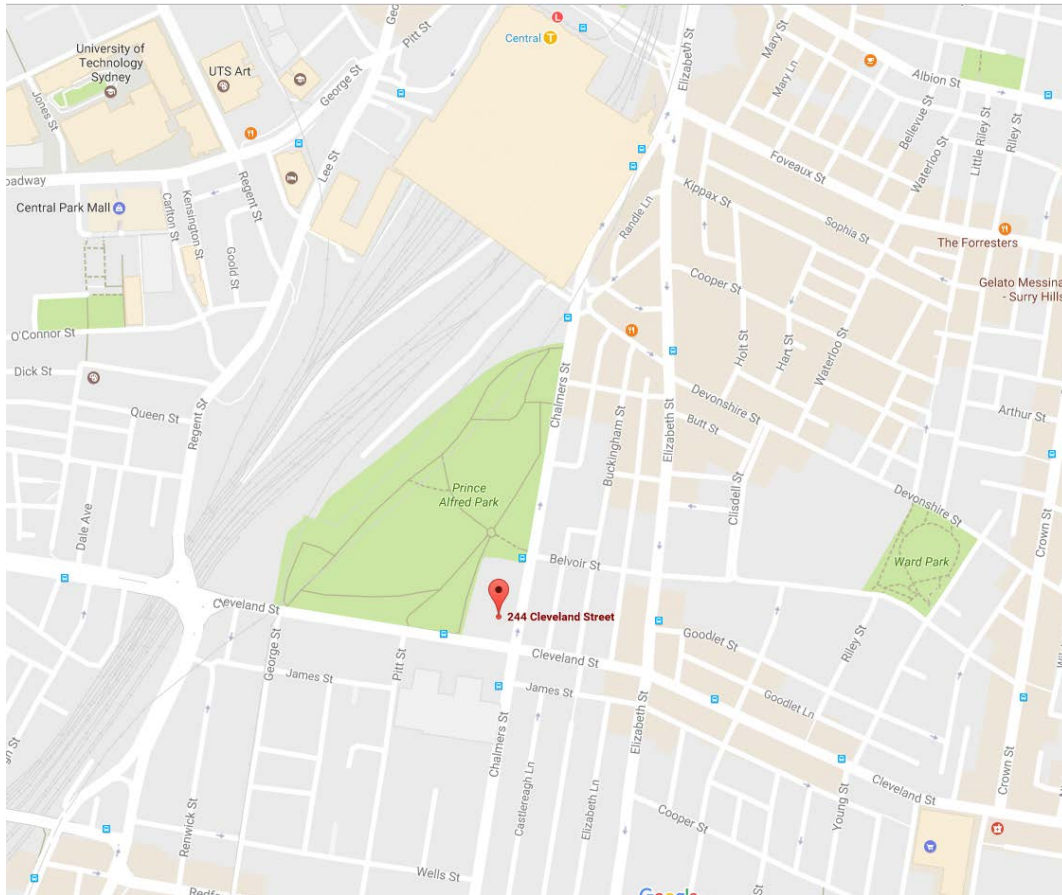
4. Existing Development / Conditions

The following presents a summary of existing site and traffic conditions.

4.1 Site Location

The location of the development site is shown in **Figure 1**.

Figure 1 - Site Location



Source: Google maps

The site currently accommodates Cleveland Street Intensive English High School which includes some 360 students and 40 staff. The existing school presently accommodates five interconnected buildings constructed since 1867. The total gross floor area of the site is approximately 7,072m²

The site provides a small car park with access from Cleveland Street and a total of 8 formal parking spaces. However, of note some of the observed parking was in a 'stacked' parking arrangement which not be considered appropriate for staff parking of a school.

Access to the small car park is via a 3.0m wide entry / exit driveway from Cleveland Street. This driveway also provides access for service and waste vehicles. The existing driveway is shown below in **Figure 2**.

Figure 2 – Existing Car Park Driveway in Cleveland Street



4.2 Classification Criteria

It is usual to classify roads according to a road hierarchy in order to determine their functional role within the road network. Changes to traffic flows on the roads can then be assessed within the context of the road hierarchy. Roads are classified according to the role they fulfil and the volume of traffic they should appropriately carry. The Roads and Maritime Services (previously the RTA) has set down the following guidelines for the functional classification of roads.

- Arterial Road – typically a main road carrying over 15,000 vehicles per day and fulfilling a role as a major inter-regional link (over 1,500 vehicles per hour)
- Sub-arterial Road – defined as secondary inter-regional links, typically carrying volumes between 5,000 and 20,000 vehicles per day (500 to 2,000 vehicles per hour)
- Collector Road – provides a link between local roads and regional roads, typically carrying between 2,000 and 10,000 vehicles per day (250 to 1,000 vehicles per hour). At volumes greater than 5,000 vehicles per day, residential amenity begins to decline noticeably.
- Local Road – provides access to individual allotments, carrying low volumes, typically less than 2,000 vehicles per day (250 vehicles per hour).

4.3 Existing Road Network

Cleveland Street - is an east to west arterial road through the area linking City Road in the west with South Dowling Street / Anzac Parade in the east. The road is under the care and control of the Roads & Maritime Services. The road also functions as a major bus route through the area.

Across the frontage of the subject site, Cleveland Street includes a four-lane undivided carriageway, providing two through lanes in each direction. The street includes a speed limit of 50km/h and a 40km/h school zone speed limit applies across the frontage of the site during school peak periods.

The intersection of Cleveland Street / Chalmers Street is controlled by traffic signals and includes pedestrian phasing on all legs of the intersection.

Chalmers Street – is a north – south sub-arterial road through the area in a one-way northbound direction. It forms a one – way pair with Elizabeth Street in the east and functions as a major bus corridor.

Chalmers Street provides a four-lane carriageway generally with two (2) through lanes of traffic and parallel parking along the kerbside lanes. Across the frontage, the western kerb-side lane (immediately adjacent to the site) is a marked and sign posted Bus Lane between 6.00am – 10.00am and 3.00pm – 8.00pm on weekdays. As with Cleveland Street, the street is signposted 50km/h with a 40km/h school zone speed limit during school peak periods.

4.4 Existing Site Traffic Generation

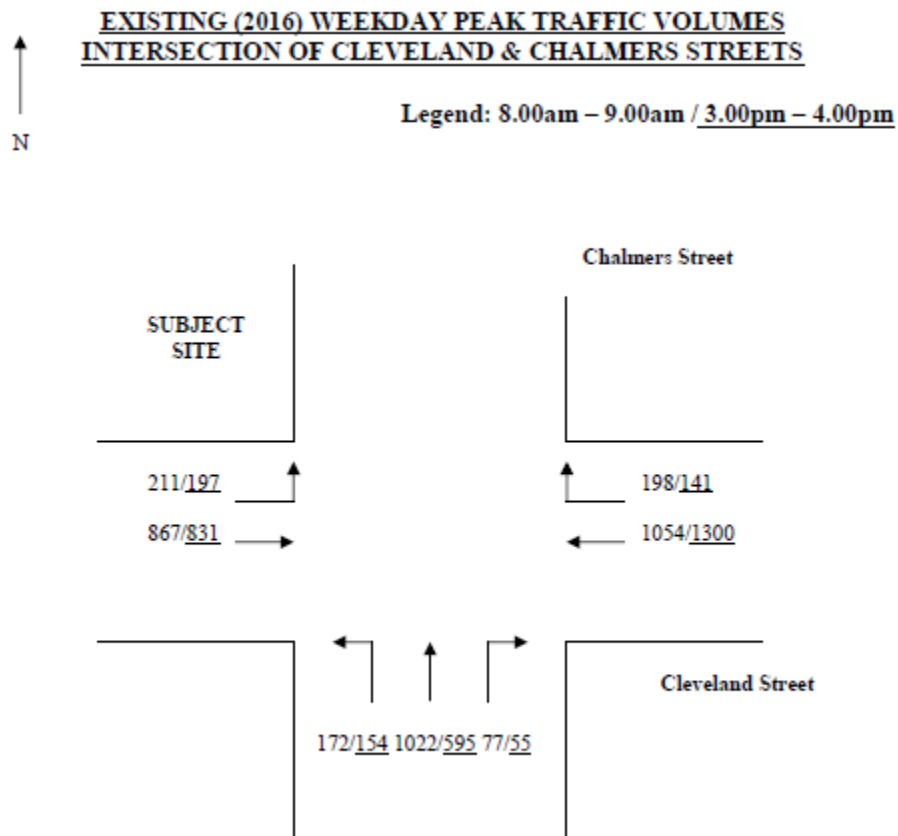
The RTA Guide to Traffic Generating Developments does not provide any peak hour traffic generation rates for a school. However, based on experience with other school projects, a typical school with sufficient on-site parking may generate in the order of 0.3 trips per student two way during school AM / PM peak hours. Therefore, the existing 360 place school may generate in the order of 108 peak hour trips. However, this is not expected to be the case given the easy access to a large range of public transport options, restricted on street parking during school peaks and limited on-site parking.

4.5 Existing Traffic Flows

The traffic report¹ included a peak hour traffic count at the intersection of Cleveland Street / Chalmers Street on 24th of February 2016 between 8.00am – 9.00am and 3.00pm – 4.00pm to capture the existing (and proposed) peak school start and finish periods. The recorded peak flows by direction in each street at each intersection are summarised below in [Figure 3](#).

¹ Preliminary Transport, Traffic and Parking Assessment – Proposed Secondary School - 244 Cleveland Street, Surry Hills May 2016 – Thompson Stanbury & Associates

Figure 3 – Existing Peak Hour Traffic Flows – Cleveland Street / Chalmers Street



The recorded traffic flows for both Cleveland Street / Chalmers Street were generally in line with their classification.

4.6 Existing Intersection Operating Conditions Analysis

The traffic report² included an assessment of the adjacent intersection using the Sidra Intersection analysis program. Sidra Intersection determines the average delay that vehicles encounter, the degree of saturation of the intersection, and the level of service. The degree of saturation is the ratio of the arrival rate of vehicles to the capacity of the approach. Sidra Intersection provides analysis of the operating conditions which can be compared to the performance criteria set out in [Error! Reference source not found.](#)

² et al

Table 1 – Level of Service Criteria

Level of Service	Average Delay per Vehicle (secs/veh)	Signals & Roundabouts	Give Way & Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & Spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode
F	> 70	Extra capacity required	Extreme delay, traffic signals or other major treatment required

Adapted from RTA Guide to Traffic Generating Developments, 2002.

For roundabouts and priority intersections, the reported average delay is for the individual movement with the highest average delay per vehicle. At signalised intersections, the reported average delay is over all movements. The existing weekday and weekend day intersection operating conditions are presented in [Error! Reference source not found.](#). Average delay is expressed in seconds per vehicle.

Table 2 – Existing Weekday Intersection Operating Conditions

Intersection	Control	Morning Peak		Evening Peak	
		Av Delay	LOS	Av Delay	LOS
Cleveland Street / Chalmers Street	Signals	36.4	C	27.1	B

Avg Delay (sec/veh) is over all movements at signals, and for worst movement at priority and roundabouts

From [Error! Reference source not found.](#), it can be seen that the intersection of Cleveland Street / Chalmers Street currently operates at a satisfactory level of service with adequate spare capacity for increased demands.

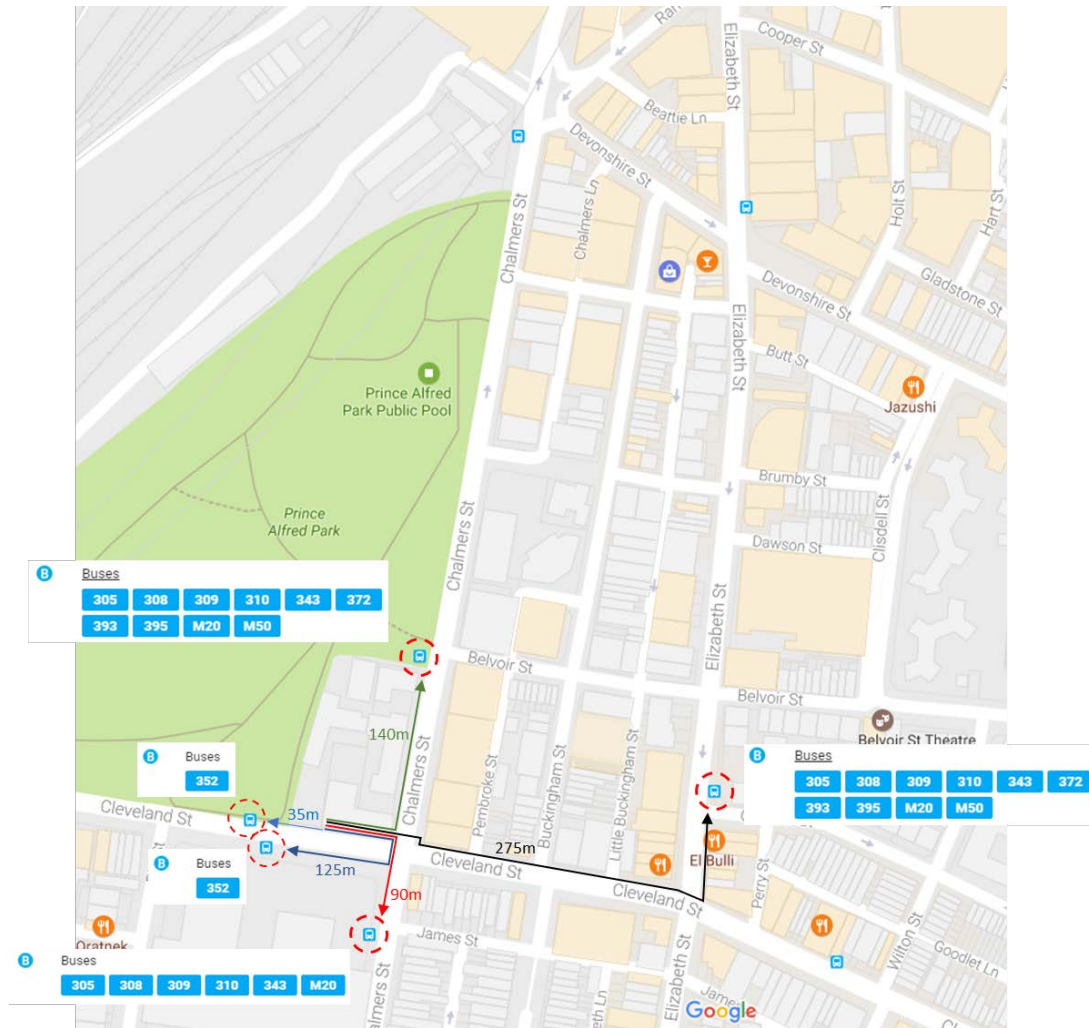
4.7 Public Transport

The school site is located within easy walking distance to a large number of public transport options. These are described further below:

4.7.1 Bus Operations

As stated above, both Cleveland Street and Chalmers Street provide bus route corridors through the area. The existing bus routes which operate in the vicinity of the development site are shown below in [Figure 4](#):

Figure 5 – Existing Bus Routes Operating Within Walking Distance to Development Site



Chalmers Street forms a major northbound access route for buses servicing the Sydney CBD as well as the Railway Square bus interchange adjacent to Central Railway Station.

Chalmers Street Bus Services

The following buses services currently operate along Chalmers Street:

- Route 305 – Mascot to Railway Square;
- Route 308 – Marrickville to City;
- Route 309 – Port Botany to City;
- Route 310 – Eastgardens to City;
- Route 343 – Kingsford to Chatswood;
- Route 372 – Coogee to Railway Square;
- Route 393 – Little Bay to Railway Square;
- Route 395 – Maroubra Beach to Railway Square;
- Route m20 – Mascot to Gore Hill; and
- Route m50 – Coogee to Drummoyne.

Northbound services are provided with a bus stop on the western side of Chalmers Street, immediately to the north of the site. These bus services are assisted by the provision of an exclusive marked Bus Lane being operational between 6.00am – 10.00am and 3.00pm – 8.00pm on weekdays.

Southbound services of the above routes generally operate along Elizabeth Street, with the closest stop being located to the north of Cleveland Street, approximately 250m walking distance from the site.

Cleveland Street Bus Services

Further to the above, the following bus service currently operates along Cleveland Street:

Route 353 – Marrickville to Bondi Junction.

This route is serviced by bus stops located on both sides of Cleveland Street immediately to the west and south of the site.

In addition, a significant number of additional bus services terminate or provide stops at Railway Square, which is located approximately 700m walking distance from the subject site.

4.7.2 Rail Operations

The site is located within some 350m walking distance to the Devonshire Street pedestrian subway. This provides direct pedestrian access to Central Railway Station. This station is the largest rail station within the Sydney Rail Network providing access to local, regional and country link services. The following lines (other than country link services) operate from Central Railway Station:

- T1 North Shore, Northern & Western Line, connecting with the Blue Mountains and beyond to the west, Richmond to the north-west and the Central Coast and beyond to the north;
- T2 Airport, Inner West & South Line, connecting with Leppington to the south-west and the Southern Highlands and beyond to the south;
- T3 Bankstown Line, connecting with Liverpool to the south-west; and
- T4 Eastern Suburbs & Illawarra Line, connecting with Bondi Junction to the east, Cronulla to the south-east and the South Coast to the south.

4.7.3 Existing / Future Light Rail Operations

Existing Light Rail

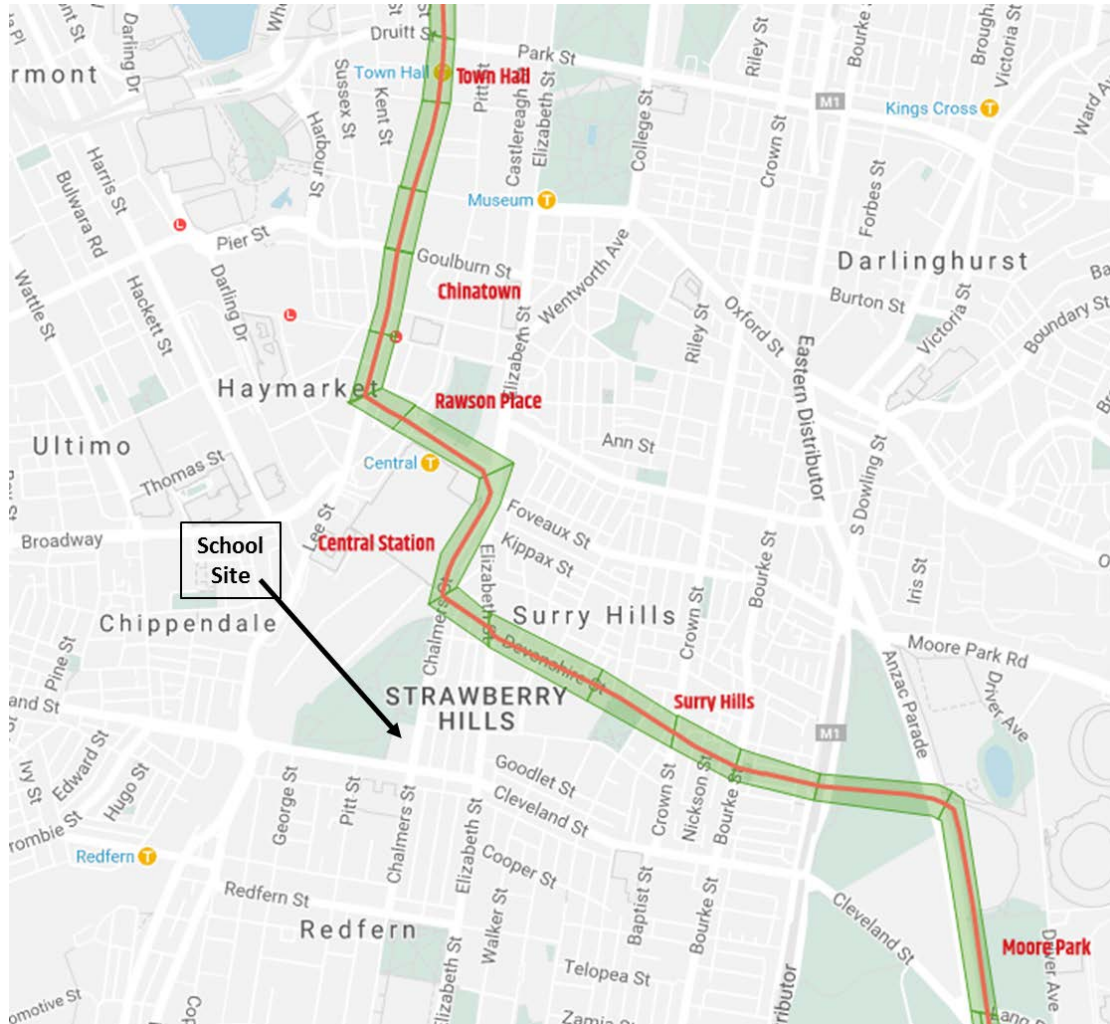
The site is located approximately 750m walking distance to the south of the Central Station Light Rail stop near Central. The existing Light Rail network runs between Central and Dulwich Hill, via Darling Harbour, Pyrmont and the inner western suburbs of Sydney.

The light rail provides weekday peak hour frequencies of between eight and 15 minutes, extending to a maximum of 25 – 30 minutes during other periods.

CBD & South East Light Rail

The new CBD and South East Light Rail line is currently under construction at the time of preparing this report and is due to be completed by 2019. The line will operate between Circular Quay and Kingsford, via Central Railway Station. The locations of the proposed stations to the development site is shown below:

Figure 6 – Proposed CBD and South East Light Rail Corridor + Proposed Stations



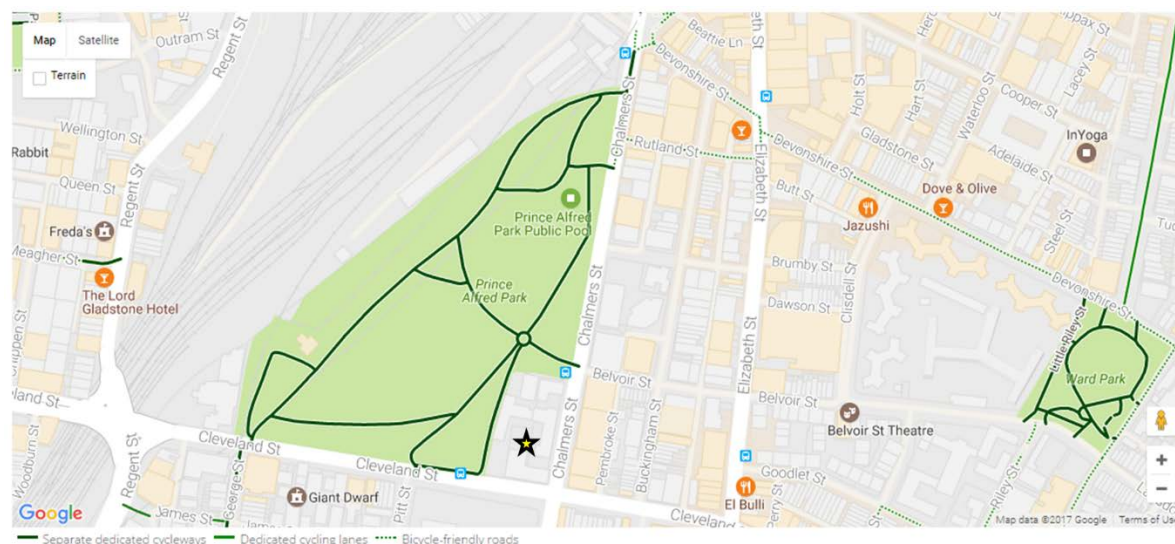
The stations of the new light rail are identified above in red text. The development site would be located within 750m walking distance to the new light rail station at Central Rail Station.

4.8 Bicycle Network

The subject site adjoins an established major north-south bicycle route through Prince Alfred Park. This route links with Mascot via a series of on-road paths commencing with George Street to the west of the site. It also links with designated paths within Chalmers Street to the north thence connecting with Central Railway Station, at which point a series of on-road lanes link with the Sydney CBD via Castlereagh Street, Liverpool Street and Kent Street.

The existing bicycle network in the vicinity of the school site is shown below:

Figure 7 – Existing Bicycle Network Near School Site



4.9 Pedestrian Network

The site is located within an existing well established pedestrian network with full width footpaths provided in both Chalmers Street and Cleveland Street.

The signalised intersection of Cleveland Street / Chalmers Street includes Pedestrians are provided with footpaths along both sides of all surrounding streets.

In addition to the facilities at the intersection of Cleveland and Chalmers Streets, the following additional access and mobility infrastructure provides connectivity between the subject site and the previously presented surrounding public transport and non-car travel nodes:

- Signalised crossings are provided over all approaches at the junction of Cleveland and Pitt Streets;
- Signalised crossings are provided over the eastern and southern approaches of the junction of Cleveland and George Streets;
- Signalised crossings are provided over all approaches at the intersection of Cleveland and Regent Streets;
- Signalised crossings are provided over all approaches at the intersection of Cleveland, Walker and Wilton Streets;
- Signalised crossings are provided over all approaches at the intersection of Cleveland and Marlborough Streets;
- A signalised crossing is provided over Chalmers Street at Devonshire Street;
- A signalised crossing is provided over Chalmers Street to the south of Eddy Avenue;

In the immediate vicinity of the subject site, signalised crossings are provided over all approaches at the intersection of Cleveland and Chalmers Streets.

5. The Proposed Development

The following project description has been sourced from the SSD report and provides a summary of the key elements of the project:

The NSW Department of Education (DoE) are preparing a State Significant Development Application (SSD 16_7610) for the development of a new 'Inner Sydney High School' (ISHS) located at the corner of Cleveland and Chalmers Street, Surry Hills (the 'site'), identified as 244 Cleveland Street, Surry Hills.

The new Inner Sydney High School is proposed to accommodate up to 1200 students to take enrolment pressure off surrounding high schools exceeding student capacity, and accommodate future population growth within City of Sydney Local Government Area (LGA). The high school will contain high quality learning, collaborative learning spaces and associated facilities.

Specifically, this proposal seeks development consent for the following works at the site:

- Internal reconfiguration and refurbishment of the existing heritage listed buildings on the site to create:
 - Collaborative learning hubs with a combination of enclosed and open spaces;
 - Amenities and support areas; and
 - Workplaces and lounge spaces for teachers and administrative staff.
- Construction of a 13 storeys plus roof level and basement (approximately 56.5m from park level), multi-purpose school building, containing:
 - Collaborative learning hubs with a combination of enclosed and open spaces;
 - Library;
 - Staff workplaces;
 - Student canteen;
 - Indoor gymnasium and other indoor recreation and performance spaces;
 - Ancillary outdoor learning and recreational areas.
- Associated site landscaping and public domain improvements; and
- 114 bicycle parking spaces
- Augmentation and construction of ancillary infrastructure and utilities as required.



6. Traffic, Parking and Access Assessment

6.1 Introduction

The following presents an assessment of the potential traffic impacts of the proposal using the RTA (now known as the RMS) Guide to Traffic Generating Developments standard approach.

6.2 Development Traffic Generation

As is the case for parking provision rates, the RTA Guide to Traffic Generating Developments does not provide any recommended traffic generation rates for a school. Thus, the potential traffic generation of the development needs to be undertaken on a first principles basis and needs to consider the potential modes of travel to / from the school.

As also stated the proposed school is located within a short walking distance to a significant volume of public transport options. The Sydney City Centre is a significant growth area and accordingly, it is anticipated that the number of dwellings in the CBD and the surrounds will increase in the near future. An example of such a development is Central Park located some 800m walking distance to the proposed school which provides some 1,300 new dwellings.

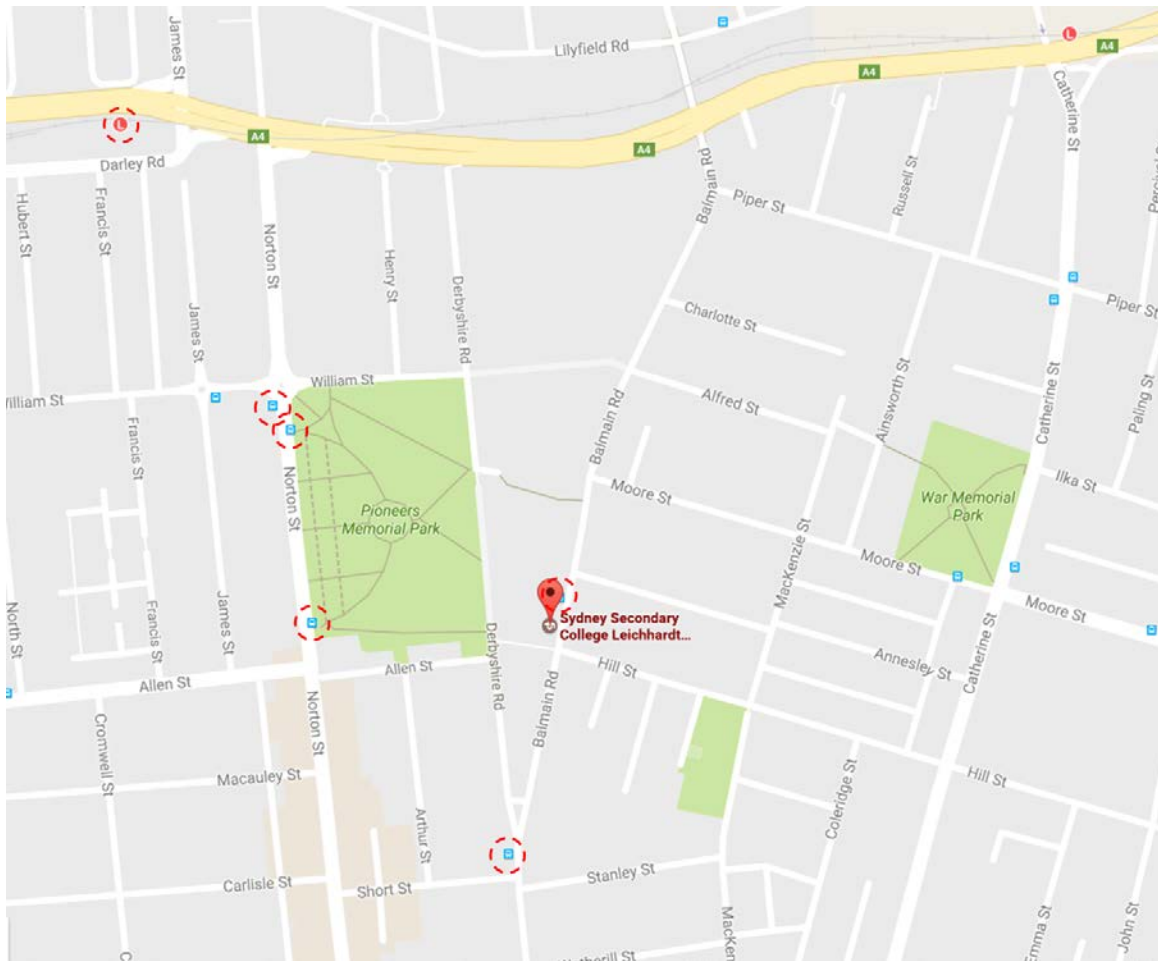
To endeavour to provide an estimate of mode of travel to / from this new school, mode of travel surveys was undertaken at existing schools within the Sydney CBD and surrounding areas. A copy of the mode of travel surveys is provided in [Appendix A](#) of this report.

The mode of travel survey included a record of the postcode of the student / staff member and the mode of travel they respondent took to and from the school on the survey day. Each student surveyed also had their current year of education recorded as part of the survey.

6.2.1 Sydney Secondary College Leichardt

The location of the college is shown below in [Figure 8](#).

Figure 8 – Sydney Secondary College Leichhardt



The school includes a high school and a student population of some 950 students and only includes Years 7-10. The school is located within 500m of four bus stops and 950m to the Leichhardt Light Rail Station. The school resides in postcode 2040. Parking around the school is generally restricted to 2 hours in Balmain Road and is unrestricted in side streets.

A summary of the mode of travel survey results as shown below in [Table 3](#):

Table 3 - Sydney Secondary College Leichhardt Mode of Travel Survey Results

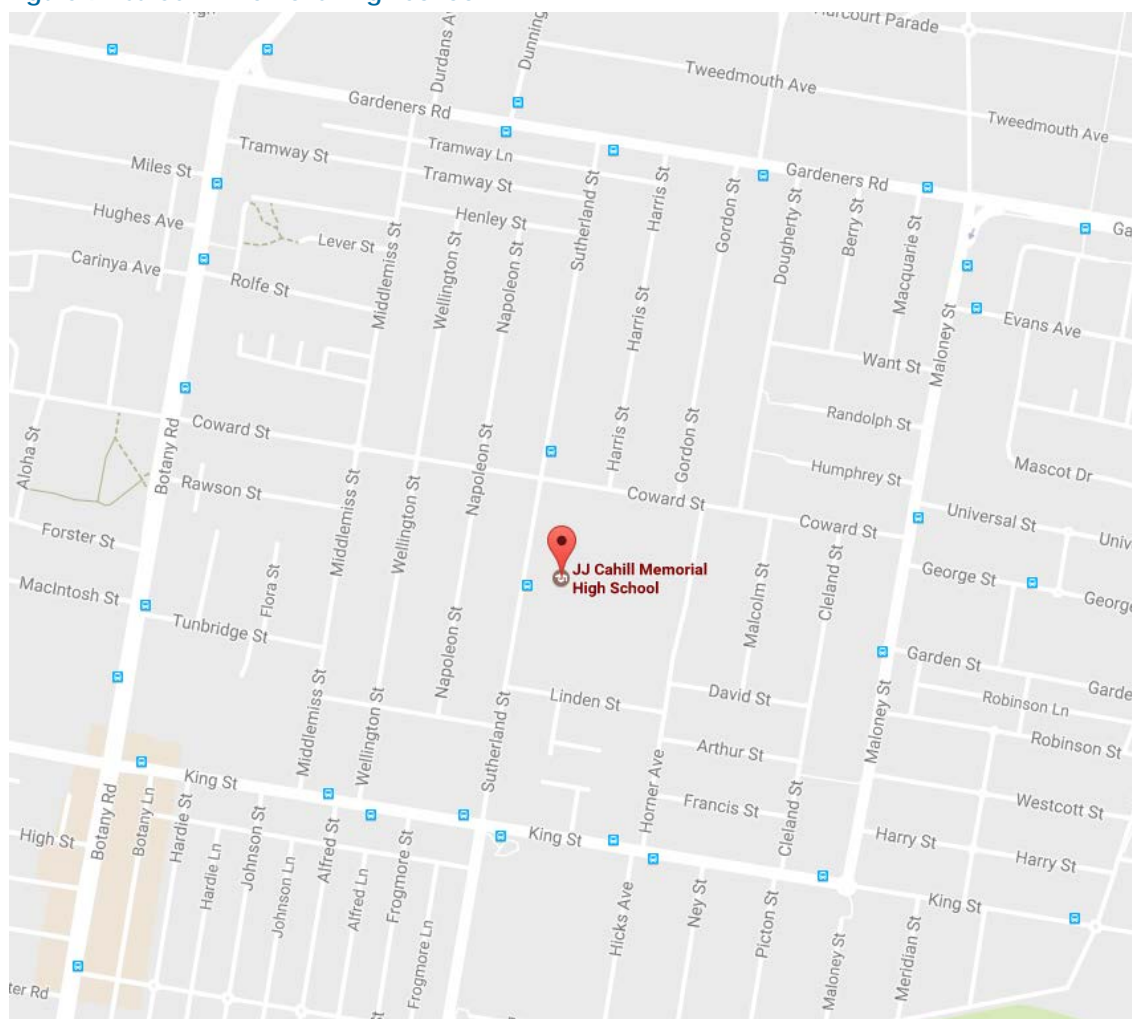
	How did you travel to school today?										
Year / Staff	BOARDER	TRAIN	SELF DRIVE	CAR DROP OFF	MOTOR CYCLE	BUS	WALK	BICYCLE	FERRY	LIGHT RAIL	OTHER
Year 7	0%	0%	0%	15%	0%	38%	38%	4%	0%	0%	4%
Year 8	0%	5%	0%	14%	0%	29%	38%	5%	0%	10%	0%
Year 9	0%	0%	0%	0%	0%	64%	27%	0%	0%	9%	0%
Year 10	0%	16%	0%	8%	0%	36%	16%	4%	0%	20%	0%
AVG	0%	5%	0%	9%	0%	42%	30%	3%	0%	10%	1%
Staff	0%	0%	85%	0%	4%	4%	8%	0%	0%	0%	0%
	How will you travel home today?										
Year / Staff	BOARDER	TRAIN	SELF DRIVE	CAR DROP OFF	MOTOR CYCLE	BUS	WALK	BICYCLE	FERRY	LIGHT RAIL	OTHER
Year 7	0%	4%	0%	8%	0%	46%	35%	4%	0%	0%	4%
Year 8	0%	5%	0%	5%	0%	48%	33%	0%	0%	10%	0%
Year 9	0%	0%	0%	0%	0%	59%	32%	0%	0%	9%	0%
Year 10	0%	16%	0%	4%	0%	32%	20%	0%	0%	28%	0%
AVG	0%	6%	0%	4%	0%	46%	30%	1%	0%	12%	1%
Staff	0%	0%	85%	0%	4%	4%	8%	0%	0%	0%	0%

From Table 3 it can be seen that no students of this school drove (having regard to their ages) and only 4-9% travelled by car with 92% travelling by either public transport or walking. In contrast 85% of staff drove to / from the school which reflects the availability of all day parking within easy walking distance to the school.

6.2.2 JJ Cahill Memorial High School

The location of the college is shown in Figure 9.

Figure 9 – JJ Cahill Memorial High School



The school caters for Years 7-10 and is located south of the Sydney CBD near the Sydney Domestic airport. Public transport availability is confined to bus services on a number of streets surrounding the school within 50-500m walking distance of the school. In comparison, the school has a lower public transport accessibility index compared with Sydney Secondary College given students / staff do not have access to rail as a transport mode option.

A summary of the mode of travel survey results as shown below in [Table 4](#):

Table 4 - JJ Cahill Memorial High School Mode of Travel Survey Results

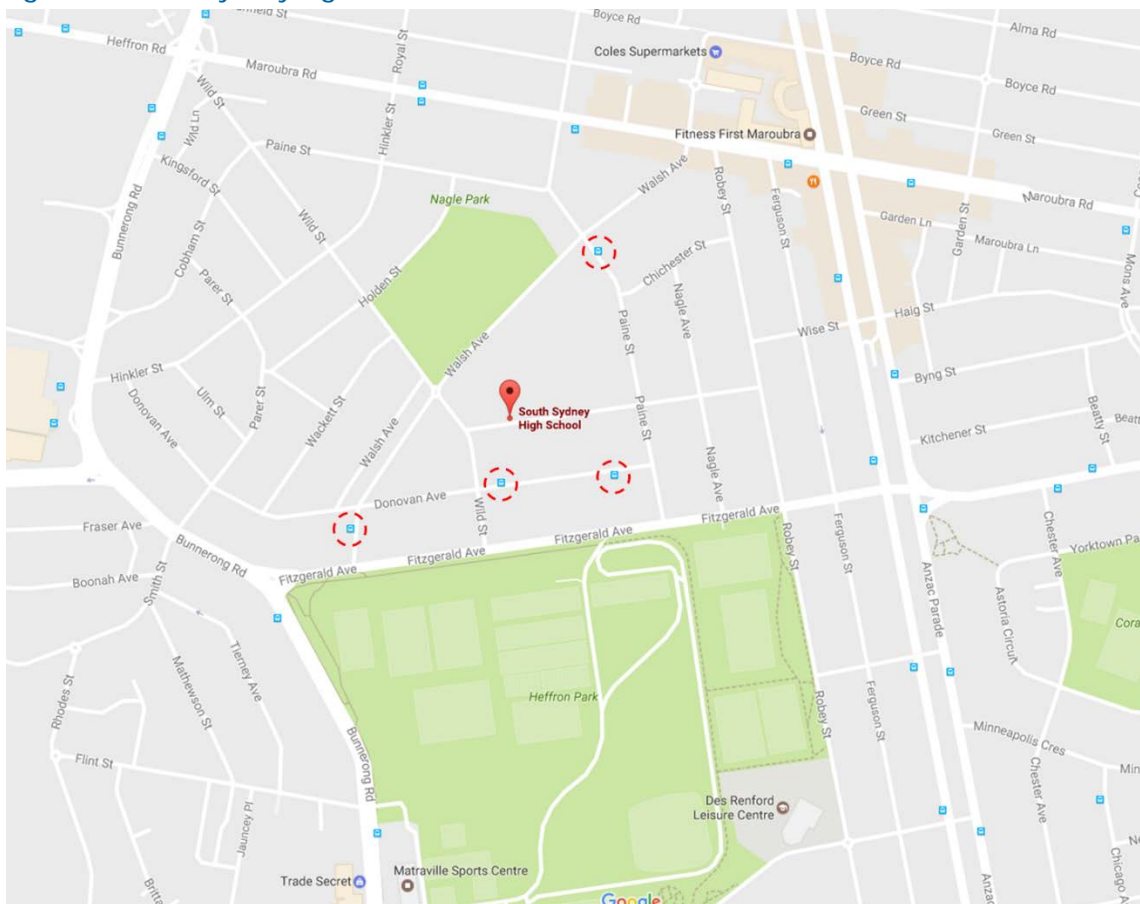
	How did you travel to school today?										
Year / Staff	BOARDER	TRAIN	SELF DRIVE	CAR DROP OFF	MOTOR CYCLE	BUS	WALK	BICYCLE	FERRY	LIGHT RAIL	OTHER
Year 7	0%	2%	0%	36%	0%	14%	48%	0%	0%	0%	0%
Year 8	0%	0%	0%	8%	0%	31%	62%	0%	0%	0%	0%
Year 9	0%	3%	0%	37%	0%	18%	39%	3%	0%	0%	0%
Year 10	0%	8%	0%	18%	0%	21%	51%	3%	0%	0%	0%
AVG	0%	3%	0%	25%	0%	21%	50%	1%	0%	0%	0%
Staff	0%	6%	0%	16%	0%	26%	52%	0%	0%	0%	0%
	How will you travel home today?										
Year / Staff	BOARDER	TRAIN	SELF DRIVE	CAR DROP OFF	MOTOR CYCLE	BUS	WALK	BICYCLE	FERRY	LIGHT RAIL	OTHER
Year 7	2%	0%	22%	0%	17%	59%	0%	0%	0%	0%	2%
Year 8	0%	0%	0%	0%	38%	62%	0%	0%	0%	0%	0%
Year 9	3%	0%	29%	0%	26%	39%	3%	0%	0%	0%	3%
Year 10	8%	0%	15%	0%	15%	59%	3%	0%	0%	0%	8%
AVG	3%	0%	17%	0%	24%	55%	1%	0%	0%	0%	3%
Staff	13%	0%	13%	0%	25%	50%	0%	0%	0%	0%	6%

Despite having a lower public transport accessibility index than Sydney Secondary School, there were no car driver trips by staff.

6.2.3 South Sydney High School

The location of the college is shown in [Figure 10](#).

Figure 10 – South Sydney High School



As is the case with JJ Cahill Memorial High School, public transport options for the school are confined to bus. The school caters for Years 7-12 and is located south of the Sydney CBD near Eastgardens Shopping Centre. The school includes a student population of approximately 520. In comparison, the school has a lower public transport accessibility index compared with Sydney Secondary College given students / staff do not have access to rail as a transport mode option and a similar accessibility index to that of JJ Cahill Memorial High School.

Of note, there is little to no parking restrictions on the road network surrounding the school and thus there is an opportunity to students / staff to drive and park all day near the school.

Of note, the survey information was not collected by either year or whether the respondent was a staff members. Thus, the survey responses provide a picture of the overall school mode of travel choices. A summary of the mode of travel survey results as shown below in [Table 5](#).

:

Table 5 – South Sydney Secondary High School Mode of Travel Survey Results

	How did you travel to school today?										
Year / Staff	BOARDER	TRAIN	SELF DRIVE	CAR DROP OFF	MOTOR CYCLE	BUS	WALK	BICYCLE	FERRY	LIGHT RAIL	OTHER
AVG	0.0%	0.3%	9.5%	29.1%	2.1%	31.8%	23.7%	0.0%	1.8%	1.8%	0.0%
	How did you travel to school today?										
Year / Staff	BOARDER	TRAIN	SELF DRIVE	CAR DROP OFF	MOTOR CYCLE	BUS	WALK	BICYCLE	FERRY	LIGHT RAIL	OTHER
AVG	0.0%	0.9%	9.1%	17.3%	2.1%	40.1%	28.4%	0.0%	0.6%	1.8%	0.0%

As expected the school did include a proportion of car drivers to and from the school. However, despite the fact that streets surrounding the school did not include timed parking restrictions, the proportion of car drivers was still less than 10%.

6.3 Potential Traffic Generation

It is noted the existing school which operates at the site includes some 360 students and associated staff. Thus, all potential vehicle trips generated by the current school would have been captured in the nearby intersection counts.

The proposed school will include some 1,200 students and 100 staff or 75% more than the current school. Given surrounding streets are well protected from all day parking and the school will provide only in the order of eight (8) on-site parking spaces, travel by car by students is expected to be drop off only and not as car driver.

Car drop off proportions for the schools surveyed (all with well below the public transport accessibility this school would have) ranged from 9-25% in the morning and 4-17% in the afternoon for pick up. However, it is likely that many of these new student trips would be linked with existing commuter trips to / from surrounding areas.

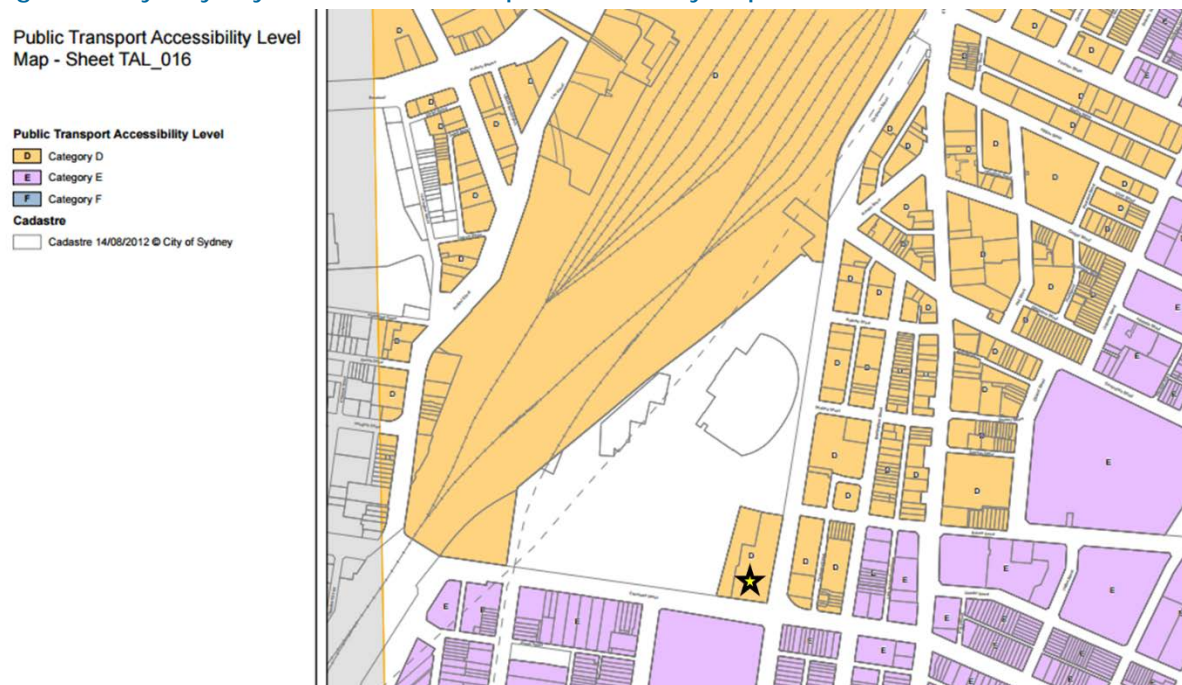
As a worst case, on the basis say 12.5% of the additional 840 students travelled as a passenger by car, this would equate to some 105 vehicles which include students. Of these, it is expected that a reasonable proportion are linked with existing commuter trips. On the basis that 50% of these trips are 'new' trips on the network, this would equate to a potential 53 additional peak hour trips by students travelling as passengers. The potential impact of this small increase of traffic on the surrounding road network would be negligible.

For staff, the limited-on site parking will require some 90-95% of staff will travel to and from the site by means other than a private vehicle on a daily basis. As stated above the school site is currently provided with extremely good connectivity to various forms of public transport infrastructure including bus, rail and ferry services.

The proposed off street car park retains the provision of 8 parking spaces for accessible, service and staff parking.

As confirmed below **Figure 11**, the school site is classified a 'Category D' for public transport accessibility, that is the highest level within Sydney City Councils LEP 2012.

Figure 11 – Sydney City Council Public Transport Accessibility Map



LEP 2012 recommends a maximum parking provision of 1 space per 175m² gross floor area for commercial premises located within the Public Transport Accessibility Level Category D. Applying Council's maximum parking rate of 1 space per 175m² suggests that a maximum of one in eight to nine staff members of commercial development within the Public Transport Accessibility Level Category D are provided with an on-site parking space.

Whilst the commercial rate above provides an indicator of on-site parking demands, it is not considered appropriate for the school. A commercial development does not reflect the high potential for shared trips by staff / students which would occur on public transport. The staff on-site parking provision is in line with current planning principles for the City of Sydney with respect to limiting private vehicle use for staff.

Of note, the off-street car park is available for use by staff of the existing school (360 students). Thus, given no additional parking is proposed on site, the traffic generated by the car park as a whole would have been captured in the counts of existing traffic conditions. Thus, it is estimated there would be no additional vehicle trips generated by staff of the expanded school. This is reinforced by the fact that no all-day parking is available within a reasonable walking distance to the school. Overall the potential traffic impacts of the development are considered satisfactory within the need for any upgrade works to accommodate anticipated increase traffic demands.

6.4 Visitor Parking Provision

Of the eight (8) parking spaces proposed parking would be included for visitors / service vehicles. As stated below, the western kerbside lane in Chalmers Street provides four (4) hour timed parking opportunities between the hours of 10:00am – 3:00pm. That is, during peak operating periods of the proposed school.

The low parking provision for visitors is considered appropriate given the schools proximity to a wide range of high frequency public transport services and the availability of on-street parking within reasonable walking distance to the school during school peak operating periods.

6.5 Bicycle Parking

The City of Sydney and the RMS do not provide bicycle parking rates for educational establishments. However, the following is considered an appropriate provision of facilities for cyclists travelling to and from the school having regard bicycle use of schools surveyed as part of this report

Notwithstanding this, the following would be considered appropriate for this school having regards to the schools accessibility to public transport with respect bicycle parking:

- 20% of staff should be provided with formal bicycle parking facilities (18 spaces)
- 7.5% of students should be provided with formal bicycle parking facilities (90 spaces)
- Staff bicycle parking spaces should comply with Class 1 facilities in accordance with AS2890.3-2015;
- Student bicycle parking spaces should comply with Class 3 facilities in accordance with AS2890.3-2015; and
- End of trip facilities should be provided for staff bicycle parking should be provided in close proximity of the bicycle parking area in accordance with DCP 2012, as follows:
 - 2 showers / change rooms for the first 20 spaces and then 1 shower / change room for each 20 spaces thereafter; and
 - 1 locker per parking space.

As the development includes 114 bicycle parking spaces, the bicycle parking provision is considered appropriate.

6.6 Car Park Design

The proposed car park design has been reviewed for compliance in accordance with the relevant specifications of AS2890.1-2004 and AS2890.6-2009 and was found to be satisfactory.

A turning path assessment of the largest vehicle expected to enter the car park (8.8m long service vehicle) has been undertaken and is provided in [Appendix B](#) of this report. This assessment confirmed the proposed car park design can accommodate this vehicle type entering and exiting the car park in a forward direction.

Overall the proposed car park and service vehicle facilities are considered satisfactory.

6.7 Public Transport Capacity

As stated above, the site is located within Sydney City Council's highest level of public transport accessibility close to a range of high frequency rail and bus services. Further, the provision of the new City Centre South East Light Rail service will provide a further major public transport facility for potential use by students and staff of this school.

The numerous forms of public transport within the immediate vicinity of the subject site is such that there is significant capacity within the surrounding public transport infrastructure to accommodate this additional demand.

6.8 Pedestrian Network Capacity

As stated above the site is located adjacent to the signalised intersection of Cleveland Street / Chalmers Street with all legs of the intersection accommodating pedestrian phases. All frontage of the development includes full width footpaths in both Cleveland Street and Chalmers Street.

The pedestrian network surrounding the proposed school is considered adequate to accommodate potential future demands of pedestrians walking to / from public transport nodes.

6.9 Waste Management

It is expected that waste collection of the school would be undertaken by Sydney City Council waste services. Of note, Sydney City Council includes in their waste vehicle fleet both large and small garbage trucks.

As stated above, a turning path assessment of an 8.8m service vehicle entering and exiting the car park in a forward direction are provided in [Appendix B](#) of this report. The proposed car park can accommodate the expected garbage truck satisfactorily and is considered adequate.

7. Other Matters

7.1 Construction Traffic Management Plan

Without the formal commission of the preferred construction company it is not possible to provide a detailed analysis of construction traffic impacts to inform a Construction Traffic Management Plan (CTMP) at this stage.

Such a plan would consider the following elements:

- Construction vehicle transport routes;
- Construction site access locations and management measures;
- Construction personnel parking controls;
- Stage by stage construction traffic generation; and
- Impacts of construction on adjoining traffic and pedestrian movements.

All construction activities will need to be accommodated on-site or within the adjoining Prince Alfred Park (with appropriate approval from the City of Sydney).

The site access location should be via the existing vehicle crossover connecting in Cleveland Street. Access by construction vehicles should be minimised during peak commuter periods (6.00am – 9.00am and 3.00pm – 7.00pm) to minimise impacts.

Given the location the CTMP must include strategies to minimise any potential queuing of construction vehicles on approach roads to the site. This can include call up / pre-arranged times generally outside peak network periods.

Pedestrian management during construction will require the development of a detailed strategy in consultation with the CBD Coordination Office (incorporating the City of Sydney, the Roads & Maritime Services and Transport for NSW).

7.2 Set Down / Pick Up Locations

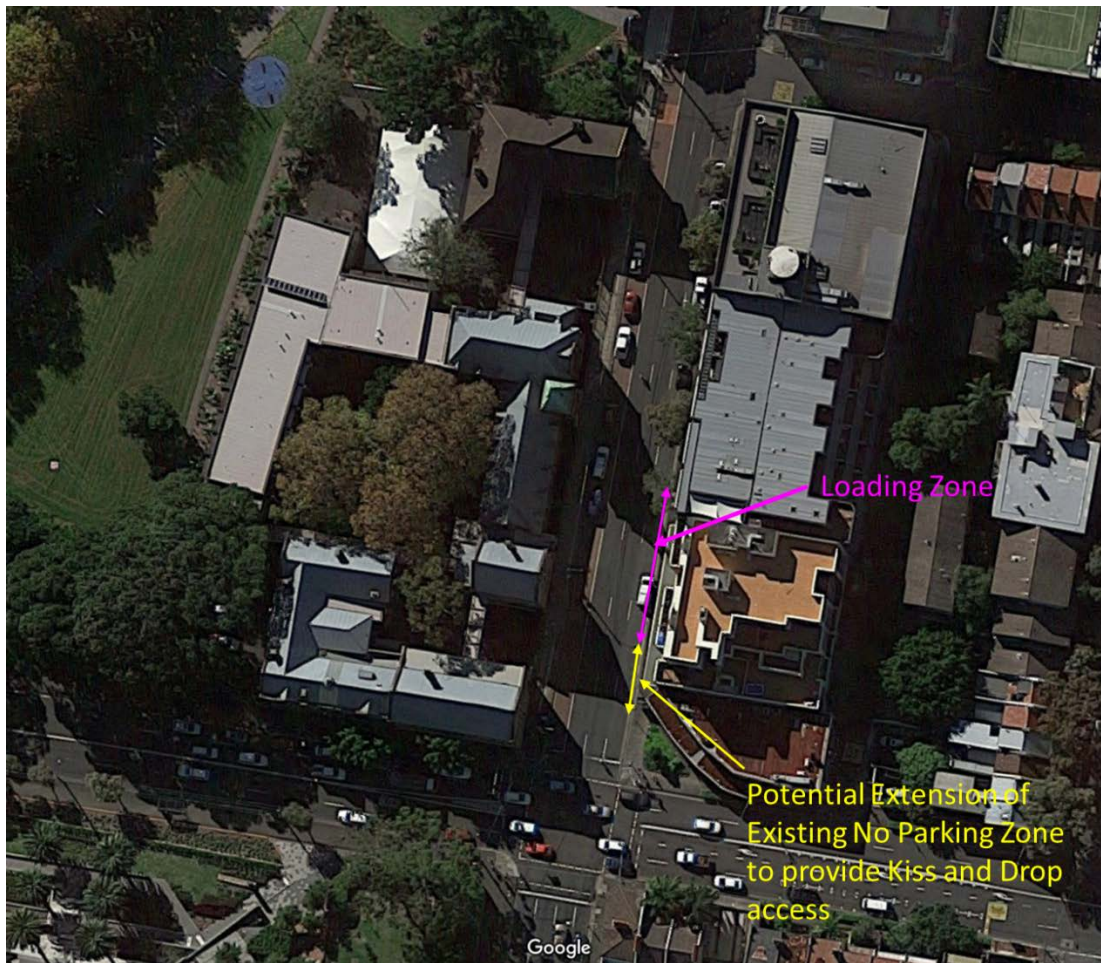
There is currently no opportunity within the on-street network which forms the frontages of the school to provide drop off / pick up facilities.

The Cleveland Street frontage includes clearway restrictions between the hours of 6:00am – 10:00am and 3:00pm – 7:00pm. The Chalmers Street frontage includes a dedicated bus lane northbound between the hours of 6:00am – 10:00am and 3:00pm – 7:00pm.

The eastern side of Chalmers Street immediately north of Cleveland Street includes an existing No Parking zone (2 vehicles in length) which could be used as a kiss and drop zone. However, this would require passengers to alight from the driver's side of the vehicle which is possible. Any extension of this No Parking zone would require some loss of general parking spaces in Chalmers Street so to maintain the existing length of the Loading Zone.

This is shown below in [Figure 12](#).

Figure 12 – Potential Location of Kiss and Drop Zone



As the existing traffic signals at Chalmers Street / Cleveland Street includes pedestrian crossing facilities on all legs of the intersection, the location can be accessed by a safe crossing facility. Of note, the preparation of green travel plans for both staff and students would provide a wealth of information on the availability of public transport options tailored to each student / staff member's needs.

Accessible parking provision would be accommodated within the reconstructed car park with access from Cleveland Street.

7.3 Sport Traffic Generation

It is noted the school will not provide any outdoor facilities for formal sport games which are commonplace at public high schools. Thus, it is understood that all sport (either internal or against other schools) requiring playing fields or multi courts would be facilitated at playing fields in other locations in close proximity to the school.

The Department of Education has advised the following in regards to potential organised sport for this school:

“All secondary schools provide arrange of physical education and sporting options for students depending on student interest, staff expertise, school location and access to local facilities. Students are transported to and from venues to ensure diverse opportunities are provided. It would be rare for a secondary school to be able to accommodate all activities on their site; particularly in metropolitan locations. There are already established networks for competitive sport in the inner Sydney should the school decide to go down that path.”

Students would be required to travel to / from by pre-arranged buses. However, at this stage of planning it is uncertain whether travel by bus to sporting events would be required on a weekly basis or an ad hoc basis.

However, the existing northbound bus lane in Chalmers Street along the frontage of the school provides the best opportunity to park buses to pick up and drop off students to / from organised sporting events. Between the hours of 10:00am – 3:00pm the existing bus lane is not operational and the kerbside lane provides four (4) hour parking opportunities.

As travel to and from sporting events typically occurs between the hours of 10:00am – 3:00pm, no changes to the kerbside arrangements are considered necessary to accommodate buses associated with sporting events.

7.4 Green Travel Plans

The preparation of a detailed green travel plan/s for the school is beyond the scope of this transport at this stage. Such plans require the origin / destination information of each potential user combined with existing / future public transport and alternative mode information.

However, a preliminary green travel plan has been prepared by Urbis and is provided in [Appendix D](#) of this report. It provides a summary of existing public transport routes, transport node walkability and alternative mode pathways / routes.

It is recommended that upon registration of all staff / students of the new school, the planning of Green Travel Plans is commenced with the view of having such plans completed for each student / staff member prior to arrival.

Given the high bus and rail frequency public transport options for new staff and students within an easy walking distance to the school, the potential for high levels of public transport use is significant.

7.5 Crime Prevention Through Environmental Design (CPTED)

As noted in the State Significant Development (SSD) report prepared by FJMT architects in consultation with the Surry Hills Police Command, the design of the school has given careful consideration to CPTED principles.

Following consultation with local police the main risks for the school were identified as:

- Graffiti
- Theft

- Harassment

Having regard to the above, the guiding principles of the design included Surveillance, Access Control, Territorial Reinforcement and Space Management.

The following provides a summary of the elements included in the design which reflect the CPTED principles detailed above:

Surveillance Principles

- Clear sightlines have been provided between public entrance and the student entrance. For example, the location and partition treatment of the Public Reception located at the Main School Entrance allows for passive surveillance from the Reception counter. The main entrance is a new generous public plaza with good sightlines from Chalmers Street.
- Internal and external pathways and circulation areas are wide and open. Constrained corridors are minimised.
- Dead end corridors are minimised
- Building re entrants at fire stairs are minimised and if required will be well lit and if possible are visible from adjacent glazed areas.
- All gates are transparent to allow for visual access. (ie: palissade)
- External lighting is consistent along pathways with increased lighting at facility entries.
- Egress paths are open and integrated into the overall design.
- All stairs are used for both egress and general circulation with all stair doors on “hold open” only closed during emergency modes.
- CCTV cameras provide additional active surveillance to deter unacceptable behaviour.

Access Control Principles

- Both fencing provisions and building envelope restrict access.
- Climability of facades is limited.
- Landscaping design responds to pedestrian movement paths and guides people to entries and public spaces. Landscaping enhances pathway boundaries and shields visual connections to limited access areas. Landscape design also discourages access to the building perimetre at parkside.
- Carpark access is by prior arrangement only. A security system will be provided to control access.
- Lift orientation is restricted to within the building extents and as such only operational during opening hours. A separate lift is provided for after hours public access which will be controlled through a swipe card system.
- External and internal way finding signage will assist in access legibility and pathways

Territorial Reinforcement Principles

- The school name will be prominently displayed at the main entrance..
- Consistent maintenance, graffiti and damage monitoring and management will be provided and will be outlined in the Operational Management Plan which will be developed once the management of the school is determined.

Space Management Principles

- Management methodologies have an emphasis on damage, graffiti and maintenance to ensure the facility presents a clean, cared-for environment. Detailed requirements will be outlined in the Operational Management Plan which will be developed once the management of the school is determined.
- Selection of materials, furniture, fitments and fittings will have an emphasis on reducing vandalism.
- Gathering spaces will be integrated into the design.
- Lighting will be integrated into the Landscaped Terraces.

8. Conclusions

This report has reviewed the potential traffic impacts of the proposed Secondary School at the site known as No.244 Cleveland Street, Surry Hills. The findings of this review are presented below:

1. The site is extremely well serviced by a range of high frequency public transport options for staff and students.
2. There is little opportunity to staff / students to drive and park within a reasonable walking distance to the school and thus public transport use will be very high.
3. The likelihood of students which travel by car would be low and of those who do much of these trips would be linked trips as part of an existing commuter trips.
4. On-site parking is low and would not be attractor of large numbers of peak hour trips.
5. The net traffic increase on the network by the school would be negligible and would not impact on the surrounding road network or the operational capacity of surrounding intersections.

Overall the traffic impacts of the proposal are considered acceptable.



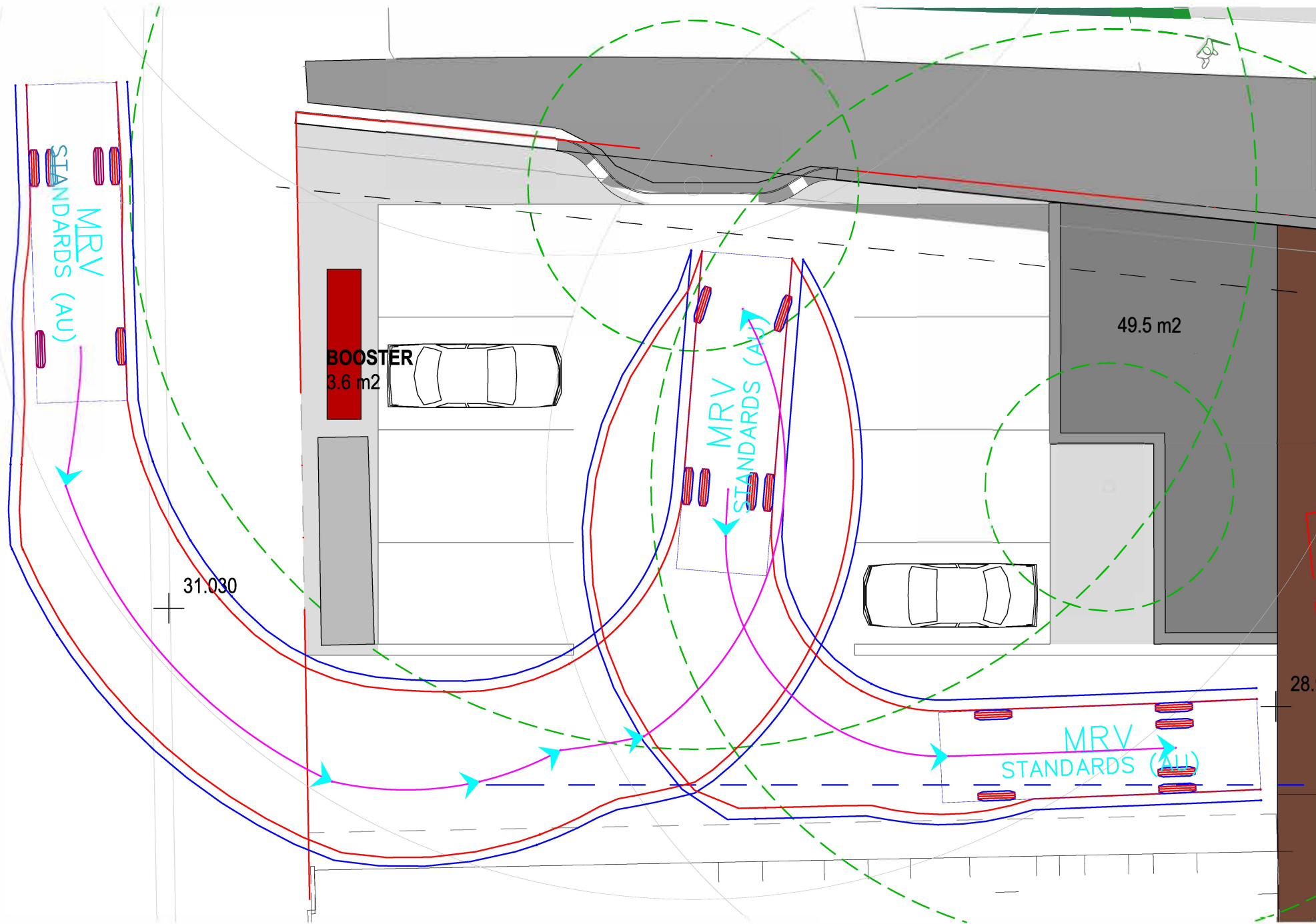
9. Appendix A - Mode of Travel Survey Form

Mode of Travel Survey - YEAR 7

Student	How did you travel to school today?										How will you travel home today?									
	BOARDER	TRAIN	SELF DRIVE	CAR DROP OFF	MOTOR CYCLE	BUS	WALK	BICYCLE	FERRY	OTHER	BOARDER	TRAIN	SELF DRIVE	CAR DROP OFF	MOTOR CYCLE	BUS	WALK	BICYCLE	FERRY	OTHER
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10. Appendix B – Waste Vehicle Turning Path Assessment

CLEVELAND STREET



11. Appendix C – Thompson and Stanbury Preliminary Transport, Traffic & Parking Assessment Report

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**PRELIMINARY TRANSPORT, TRAFFIC & PARKING ASSESSMENT
PROPOSED SECONDARY SCHOOL
244 CLEVELAND STREET
SURRY HILLS**

15-264

MAY 2016

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1. INTRODUCTION

The Department of Education (DoE) proposes to redevelop and expand the existing Cleveland Street Intensive English High School located at 244 Cleveland Street, Surry Hills to accommodate a new state-of-the-art high rise high school. The school is proposed to have a capacity to accommodate between 1,200 – 1,500 secondary students and is expected to be open by 2020. The school is proposed to meet expected new demand arising from a growing inner city population and growth in surrounding suburbs.

The Practice of Thompson Stanbury Associates has been engaged by the DoE to prepare a preliminary traffic and parking impact assessment for the proposed high school. The proposal will be defined as being of State Significance and therefore will be required to be submitted to the Department of Planning and Environment and accordingly, subject to the Secretary's Environmental Assessment Requirements. The purpose of this report is to provide preliminary assessment of the proposal with respect to traffic, parking and transportation considerations to assist in the ongoing formulation of the school design and Secretary's Environmental Assessment Requirements, which will be subject to future detailed assessment. In particular this study assesses the following:

- Existing road network conditions within the vicinity of the site including traffic volumes and general traffic safety;
- Existing sustainable transport infrastructure including pedestrian, cycle, bus, train and ferry travel modes within the vicinity of the site;
- Estimate likely traffic to be generated by the proposal and assess the ability of the surrounding road network to accommodate additional traffic movements;
- Identify likely additional demands on surrounding pedestrian, cycle, bus and train infrastructure as a result of the proposal and the ability of existing (and proposed) infrastructure to accommodate additional demand;
- Accessibility to and from the site from the frontage roads under existing and projected conditions;
- Suitability and safety of the internal circulation, manoeuvring, queuing and parking arrangements as relevant to the site and local conditions; and
- Preliminary assessment of the traffic and transport impacts during construction and the primary items to be incorporated into a Construction Traffic & Pedestrian Management Plan.

Reference is made in this report to the following:

- The Australian Standard 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 Facilities* (AS2890.3-1993) and *Part 6: Off-Street People for People with Disabilities* (AS2890.6-2009); and

- The City of Sydney Council's *Development Control Plan 2012* (DCP 2012) and *Local Environmental Plan 2012* (LEP 2012).

The report should be read in conjunction the Master Plan Concept Report prepared by Perumal Pedavoli Architects dated 19 February, 2016.

2. SITE DETAILS

2.1 Site Location

The subject site provides southern and eastern frontages to Cleveland and Chalmers Streets respectively in the suburb of Surry Hills. This location is shown within neighbourhood and aerial contexts by **Figures 1** and **2** respectively overleaf.

2.2 Site Description

The site comprises two allotments being Lot 1 DP 797483 and Lot 8 DP 821649. The parcel of land collectively form a predominantly rectangular shaped parcel of land providing approximate frontages of 61.2m and 100.8m to Cleveland and Chalmers Streets respectively. The site area is approximately 5,700m².

2.3 Existing Use

The site currently accommodates Cleveland Street Intensive English High School, providing an approximate maximum population of 600 students. The existing school presently accommodates five interconnected buildings constructed in 1867, 1891, 1908, 1924 and 1969. These buildings combine to provide an existing gross floor area of approximately 7,072m².

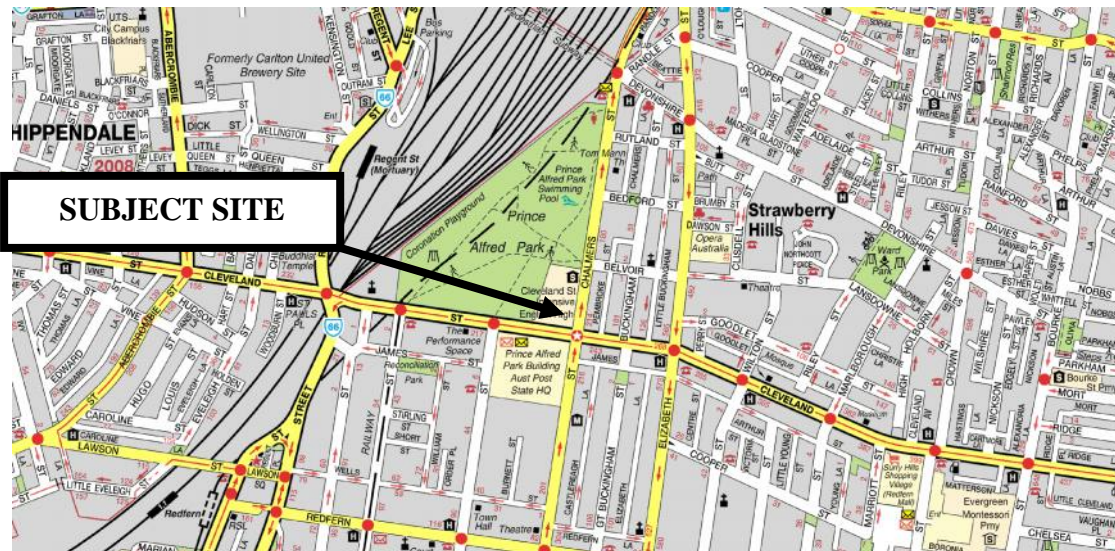
The school is serviced by an existing off-street informal passenger vehicle parking area within the south-western corner of the site. This parking area is capable of accommodating in the order of 15 spaces, with some parking spaces provided in a stacked arrangement. The parking area is serviced by a combined ingress / egress driveway connecting with Cleveland Street approximately 50m to the west of Chalmers Street.

Pedestrian access is facilitated by a series of doorways / gates connecting with both Cleveland and Chalmers Streets.

2.4 Surrounding Land Uses

The site is surrounded to the north and west by Prince Alfred Park whilst residential and mixed use developments of various scales accommodate land to the south and east.

FIGURE 1
SITE LOCATION WITHIN A NEIGHBOURHOOD CONTEXT



Source: UBD's Australian City Streets – Version 4

FIGURE 2
SITE LOCATION WITHIN AN AERIAL CONTEXT



Source: Six Maps

3. PROPOSED DEVELOPMENT

3.1 Introductory Statement and Proposal Methodology

The Sydney City Centre is a significant growth area and accordingly, it is anticipated that the number of dwellings in the CBD and the surrounds will increase in the near future, placing additional pressure on existing schools which are already approaching full capacity. The DoE proposes to develop a new secondary school on the site as a key project strategy to meet projected increases in student enrolments and demand for additional teaching facilities into the future. The site's proximity to the Sydney CBD and surrounding residential areas ensures it is ideally placed to provide a new secondary school that is integral to the local and wider community.

Following a concept planning process, site constraints and opportunities have been identified and a preliminary master plan approach has been formulated. This process has identified that there are inherent limitations within the existing site components, largely due to heritage restrictions, that result in some compromises with respect to the ability of the site to accommodate certain infrastructure which would be achievable within a greenfield site. Such constraints are however common to CBD locations and all reasonable efforts should be made during the development design to provide a safe and efficient school environment, without unreasonably impacting on the surrounding land-uses and infrastructure.

3.2 Summary of Proposal

The proposal involves the adaptive reuse of a significant majority of existing buildings within the site, known as the Cleveland Street Intensive English High School, and the construction of new infrastructure to accommodate a new state-of-the-art high rise high school. The school is proposed to have a capacity to accommodate between 1,200 – 1,500 secondary students, approximately 70 – 90 staff and is expected to be open by 2020.

The proposed new building envelope will be about 65m in height (approximately 14 levels plus plant) bringing the total gross floor area (new and existing floor space) on the site to about 12,000m². This will require the 1969 building at the western edge of the site to be demolished. Some 4,500m² of existing gross floor area is to be retained within the existing 1867, 1891, 1908 and 1924 buildings and reused.

The existing informal passenger vehicle parking area within the south-western corner of the site is proposed to be retained and formalised and also accommodate the delivery / service functions of the school.

Pedestrian access is proposed to be provided via Chalmers Street and Prince Alfred Park to the east and north respectively. No pedestrian access between the site and Cleveland Street is proposed.

4. EXISTING TRAFFIC CONDITIONS

4.1 Surrounding Road Network

It is usual to classify roads according to road hierarchy in order to determine their functional role within the road network. Changes to traffic flows on the roads can then be assessed within the context of the road hierarchy. Roads are classified according to the role they fulfil and the volume of traffic they should appropriately carry. In this regard, the Roads & Maritime Services has set down the following guidelines for the functional classification of roads:

- **Arterial Road** – typically a main road carrying over 15,000 vehicles per day and fulfilling a role as a major inter-regional link (over 1,500 vehicles per peak hour);
- **Sub-Arterial Road** – defined as secondary inter-regional links, typically carrying volumes between 5,000 and 20,000 vehicles per day (500 to 2,000 vehicles per peak hour);
- **Collector Road** – provides a link between local roads and regional roads, typically carrying between 2,000 and 10,000 vehicles per day (250 to 1,000 vehicles per peak hour). At volumes greater than 5,000 vehicles per day, residential amenity begins to decline noticeably; and
- **Local Road** – provides access to individual allotments, carrying low volumes, typically less than 2,000 vehicles per day (250 vehicles per peak hour).

Peak hour volumes on most roads are typically eight to twelve percent of the daily volumes. In accordance with the above, the roads in the vicinity of the subject site are therefore described below:

- **Cleveland Street** performs an arterial road function under the care and control of the Roads & Maritime Services, providing an east-west State Road connection between Anzac Parade in the east and City Road in the west.

In the vicinity of the subject site, Cleveland Street primarily forms a four lane undivided carriageway, providing two through lanes in each direction. Notwithstanding this, pavement widening is provided on approach to major intersections to provide additional exclusive turning lanes. Traffic flow is governed by a sign posted speed limit of 50km/h, however a 40km/h school zone speed limit applies in the immediate vicinity associated with the existing Cleveland Street Intensive English High School use of the site.

Cleveland Street intersects with Regent, George and Pitt Streets to the west, Elizabeth, Wilton and Marlborough Streets to the east as well as Chalmers Street immediately adjacent to the site, under traffic signal control. Pavement widening is provided within the westbound Cleveland Street approach to facilitate the provision of an exclusive right turn lane servicing northbound movements along Chalmers Street.

- **Chalmers Street** performs a sub-arterial traffic function under the care and control of the City of Sydney. It provides a one-way northbound traffic function in this context between Redfern Street, Redfern to the south and Eddy Avenue, Central to the north, where it connects with and forms the northbound carriageway of Elizabeth Street.

Chalmers Street provides a four lane carriageway, primarily providing two through lanes of traffic in conjunction with parallel parking along both kerb alignments. Parking restrictions apply on approach to major junctions to facilitate the provision of exclusive turning lanes.

In the immediate vicinity of the site, Chalmers Street provides two through northbound traffic lanes in conjunction with parking lanes along both kerb alignments. The western kerb-side lane (immediately adjacent to the site) is a marked and sign posted Bus Lane between 6.00am – 10.00am and 3.00pm – 8.00pm on weekdays. Traffic flow is governed by a sign posted speed limit of 50km/h, however a 40km/h school zone speed limit applies in the immediate vicinity associated with the existing Cleveland Street Intensive English High School use of the site. A Safety Camera located at the Cleveland Street intersection effectively governs the variable speed limit within Chalmers Street in the immediate vicinity of the school, as well as red light infringement for northbound traffic.

4.2 Traffic Volumes

Staff of this Practice undertook weekday traffic surveys at the intersection of Cleveland and Chalmers Streets on the 24th of February 2016. The surveys were undertaken between 8.00am – 9.00am and 3.00pm – 4.00pm to capture the existing (and proposed) peak school start and finish periods.

Figure 3 overleaf illustrates the surveyed peak hour traffic flows at the subject intersections, whilst more detailed summaries are available upon request.

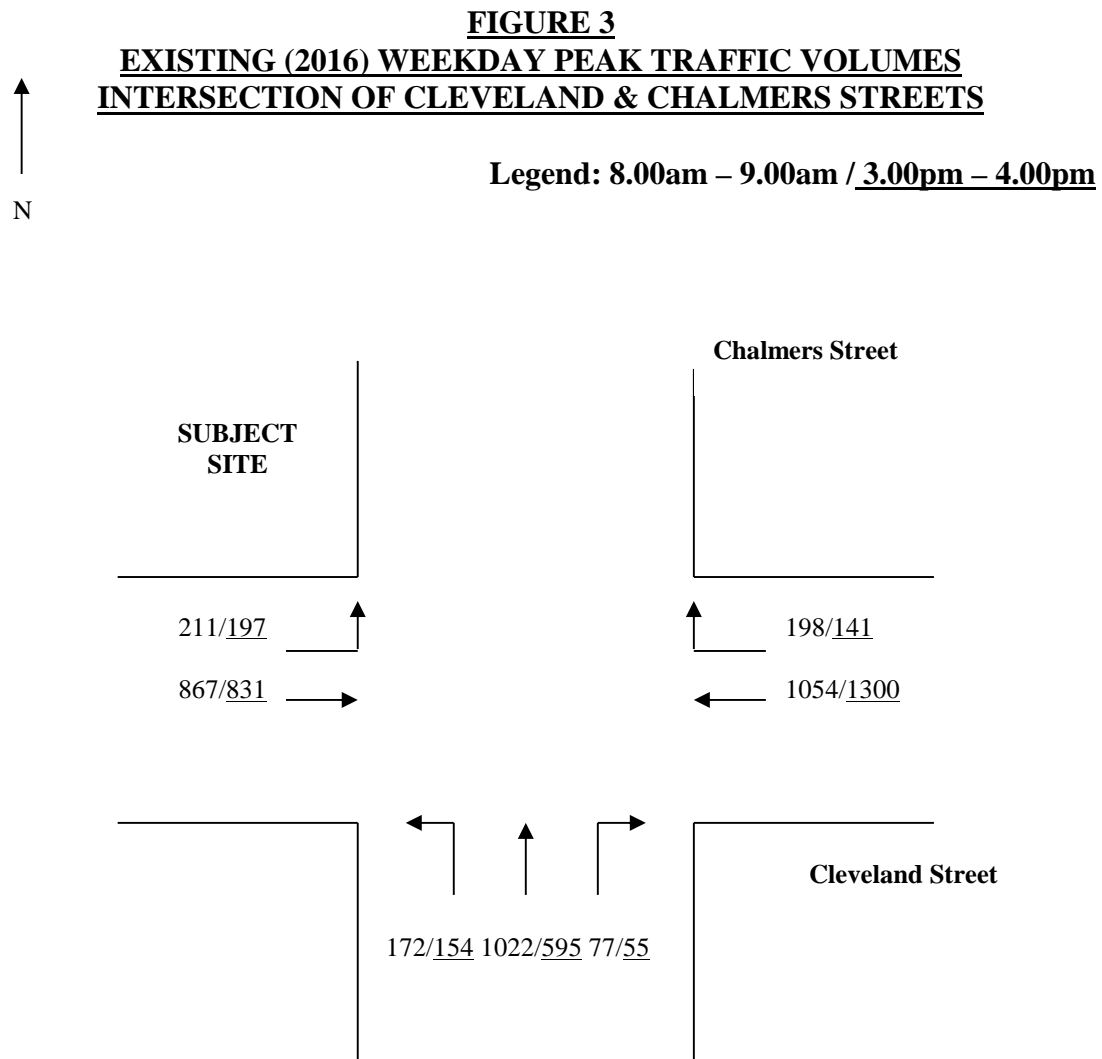


Figure 2 indicates the following:

- Directional traffic flows within Cleveland Street past the subject site are approximately 1,000 – 1,500 vehicles per hour during school start and finish periods; and
- Northbound traffic flows within Chalmers Street past the subject site are approximately 1,500 vehicles during the morning peak hour and 1,000 vehicles during the afternoon peak hour.

4.3 Existing Intersection Operation

In order to estimate the existing peak efficiency of the adjoining road network, a SIDRA computer intersection analysis has been undertaken of the intersection of Cleveland and Chalmers Streets. 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 1** (being the RMS NSW method of calculation of Level of Service).

TABLE 1 LEVELS OF SERVICE CRITERIA FOR INTERSECTION SIGNALISED INTERSECTIONS AND ROUNDABOUTS		
Level of Service	Average Delay per Vehicle (secs/veh)	Expected Delay
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 by near capacity
E	57 to 70	At capacity, incidents will cause excessive delays
F	> 70	Extreme delay, unsatisfactory

The existing conditions have been modelled utilising the peak hour traffic volumes presented within **Figure 3. Table 2** overleaf provides a summary of the SIDRA output data whilst full details are available upon request.

TABLE 2		
SIDRA OUTPUT – PEAK HOUR INTERSECTION PERFORMANCE		
INTERSECTION OF CLEVELAND & CHALMERS STREET		
	AM Peak	PM Peak
CHALMERS STREET SOUTH		
Average Vehicle Delay (sec/veh)	39.8	39.7
Degree of Saturation	0.84	0.61
Level of Service	C	C
CLEVELAND STREET EAST		
Average Vehicle Delay (sec/veh)	27.0	18.9
Degree of Saturation	0.83	0.63
Level of Service	B	B
CLEVELAND STREET WEST		
Average Vehicle Delay (sec/veh)	43.5	28.6
Degree of Saturation	0.82	0.62
Level of Service	D	C
TOTAL INTERSECTION		
Average Vehicle Delay (sec/veh)	36.4	27.1
Degree of Saturation	0.84	0.63
Level of Service	C	B

Table 2 indicates the following:

- The intersection of Cleveland and Chalmers Streets operates with a level of service ‘C’ during the morning peak period, representing satisfactory delays with spare capacity; and
- The intersection of Cleveland and Chalmers Streets operates with a level of service ‘B’ during the afternoon peak period, representing minimal delay with spare capacity.

4.4 Public Transport & Non Car Travel

State Government metropolitan planning has, for many years, promoted the Sydney CBD as Australia’s primary commercial hub. An array of business activities are now located in the adjoining Surry Hills precinct providing significant employment opportunities to inner Sydney residents. Land use and transport policy have been integrated, encouraging new commercial activities in an area where public transport services are intended to be the principal form of travel. The following sub-sections of this report provide a summary of the public transport infrastructure within the immediate vicinity of the subject site.

4.4.1 Train

The site is located approximately 350m to the south of the Devonshire Street pedestrian subway, which provides a pedestrian access to Central Railway Station, the largest and busiest of Sydney’s railway stations. Central Railway Station services the following lines on the Sydney Trains network:

- T1 North Shore, Northern & Western Line, connecting with the Blue Mountains and beyond to the west, Richmond to the north-west and the Central Coast and beyond to the north;
- T2 Airport, Inner West & South Line, connecting with Leppington to the south-west and the Southern Highlands and beyond to the south;
- T3 Bankstown Line, connecting with Liverpool to the south-west; and
- T4 Eastern Suburbs & Illawarra Line, connecting with Bondi Junction to the east, Cronulla to the south-east and the South Coast to the south.

High frequency services run along the above lines, providing efficient connectivity to the entire Sydney trains network.

4.4.2 Light Rail

The site is located approximately 750m walking distance to the south of the Central Station Light Rail stop, situated at the northern end of the Central precinct. The existing Light Rail network runs between Central and Dulwich Hill, via Darling Harbour, Pyrmont and the inner western suburbs of Sydney.

The light rail provides weekday peak hour frequencies of between eight and 15 minutes, extending to a maximum of 25 – 30 minutes during other periods.

Construction works have also recently commenced on the CBD and South East Light Rail line, which is to extend between Circular Quay and Kingsford, via Central Railway Station (with the closest station being located within Chalmers Street, immediate adjacent to Central Railway Station). Construction works on this new Light Rail Line are expected to be completed by 2019.

4.4.3 Bus

Chalmers Street forms a major northbound access route for buses servicing the Sydney CBD as well as the Railway Square bus interchange adjacent to Central Railway Station. The following buses services currently operate along Chalmers Street:

- Route 305 – Mascot to Railway Square;
- Route 308 – Marrickville to City;
- Route 309 – Port Botany to City;
- Route 310 – Eastgardens to City;
- Route 343 – Kingsford to Chatswood;
- Route 372 – Coogee to Railway Square;

- Route 393 – Little Bay to Railway Square;
- Route 395 – Maroubra Beach to Railway Square;
- Route m20 – Mascot to Gore Hill; and
- Route m50 – Coogee to Drummoyne.

Northbound services are provided with a bus stop on the western side of Chalmers Street, immediately to the north of the site. These bus services are assisted by the provision of an exclusive marked Bus Lane being operational between 6.00am – 10.00am and 3.00pm – 8.00pm on weekdays.

Southbound services of the above routes generally operate along Elizabeth Street, with the closest stop being located to the north of Cleveland Street, approximately 250m walking distance from the site.

Further to the above, the following bus service currently operates along Cleveland Street:

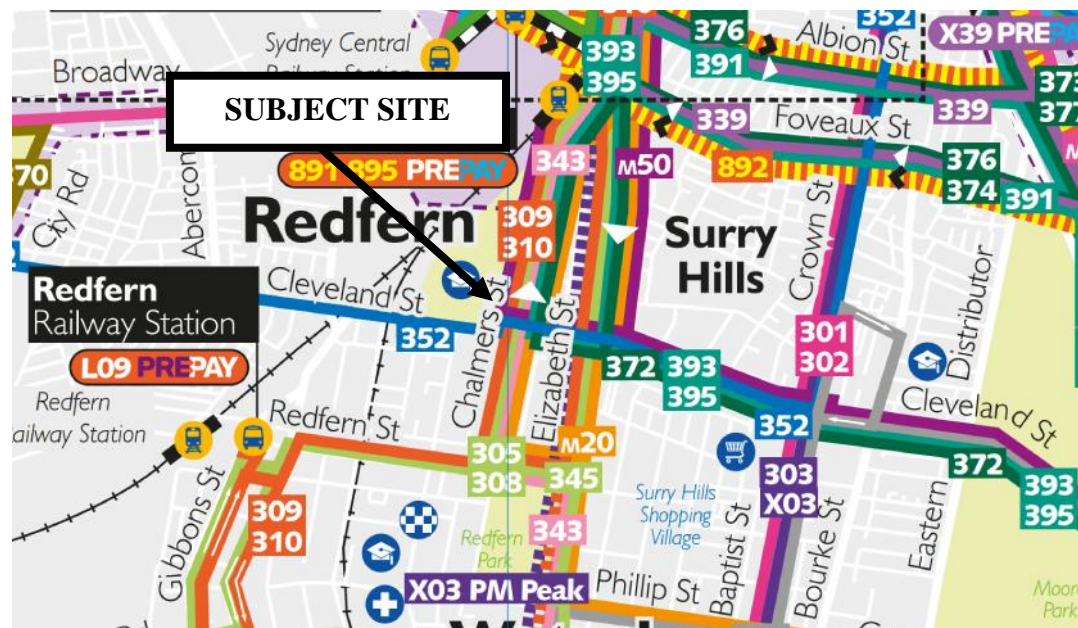
- Route 353 – Marrickville to Bondi Junction.

This route is serviced by bus stops located on both sides of Cleveland Street immediately to the west and south of the site.

In addition, a significant number of additional bus services terminate or provide stops at Railway Square, which is located approximately 700m walking distance from the subject site.

Figure 4 overleaf provides a graphical representation of the bus routes immediately surrounding the subject site.

FIGURE 4
EXISTING BUS ROUTES IN THE IMMEDIATE VICINITY OF THE SITE



Source: Sydney Buses Website (accessed 24 May 2016)

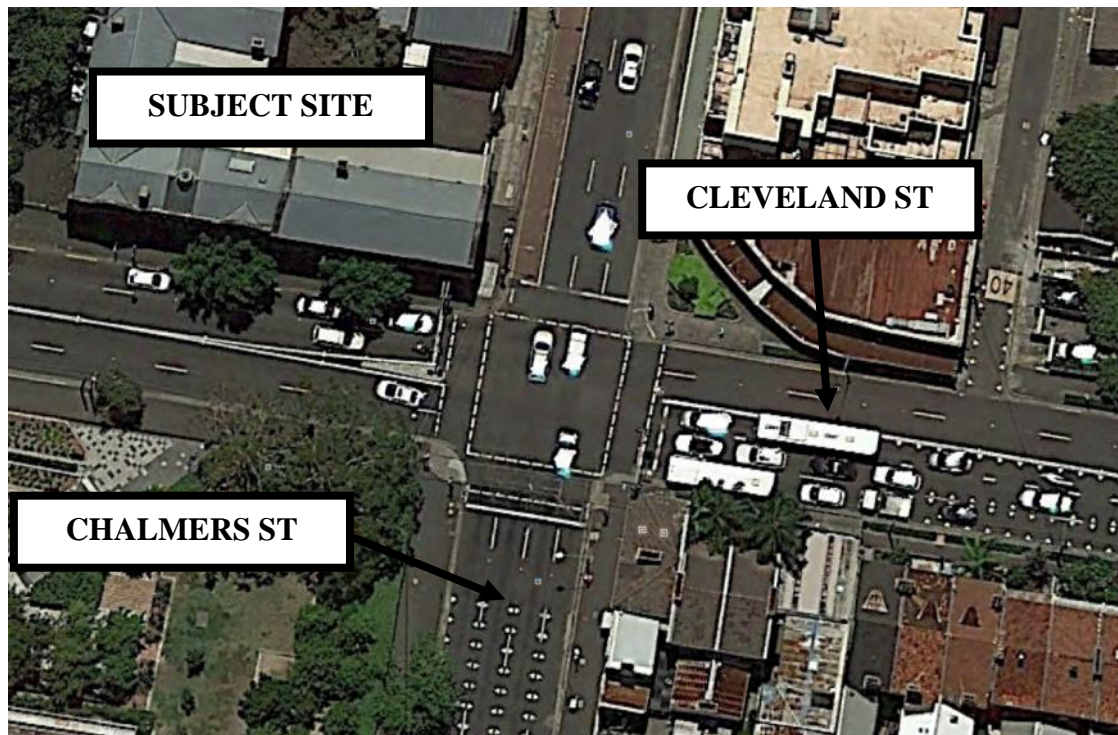
4.4.4 Bicycle

The subject site adjoins an established major north-south bicycle route through Prince Alfred Park. This route links with Mascot via a series of on-road paths commencing with George Street to the west of the site. It also links with designated paths within Chalmers Street to the north thence connecting with Central Railway Station, at which point a series of on-road lanes link with the Sydney CBD via Castlereagh Street, Liverpool Street and Kent Street.

3.5 Pedestrian Conditions / Infrastructure

Pedestrians are provided with footpaths along both sides of all surrounding streets. In the immediate vicinity of the subject site, signalised crossings are provided over all approaches at the intersection of Cleveland and Chalmers Streets. Figure 5 overleaf provides an aerial view of the adjoining intersection of Cleveland and Chalmers Streets including the existing pedestrian crossings and connecting footpaths.

FIGURE 5
AERIAL VIEW OF PEDESTRIAN INFRASTRUCTURE AT THE
INTERSECTION OF CLEVELAND & CHALMERS STREETS



Source: Google Maps

In addition to the facilities at the intersection of Cleveland and Chalmers Streets, the following additional access and mobility infrastructure provides connectivity between the subject site and the previously presented surrounding public transport and non-car travel nodes:

- Signalised crossings are provided over all approaches at the junction of Cleveland and Pitt Streets;
- Signalised crossings are provided over the eastern and southern approaches of the junction of Cleveland and George Streets;
- Signalised crossings are provided over all approaches at the intersection of Cleveland and Regent Streets;
- Signalised crossings are provided over all approaches at the intersection of Cleveland, Walker and Wilton Streets;
- Signalised crossings are provided over all approaches at the intersection of Cleveland and Marlborough Streets;
- A signalised crossing is provided over Chalmers Street at Devonshire Street;
- A signalised crossing is provided over Chalmers Street to the south of Eddy Avenue;

- A signalised crossing is provided over Eddy Avenue to the west of Chalmers Street; and
- The Devonshire Pedestrian Subway, provides a grade separated pedestrian connection between Chalmers Street and Railway Square, via Central Railway Station.

4.6 Parking Considerations

4.6.1 On-Street

Kerb-side parking along the western side of Chalmers Street in the immediately vicinity of the site is prohibited, with the lane forming an exclusive Bus Lane between 6.00am – 10.00am and 3.00pm – 8.00pm on weekdays. Parking at other times during weekdays is largely governed by 2P and 4P ticket restrictions.

Kerb-side parking along the eastern side of Chalmers Street is largely governed by 2P and 4P ticket restrictions, with the exception of a short section of No Parking and Loading Zone to the north of Cleveland Street. Similar 2P and 4P ticket restrictions apply to both sides of Chalmers Street to the south of Cleveland Street.

Kerb-side parking within Cleveland Street in the vicinity of the site is governed by Clearway restrictions between 6.00am – 10.00am and 3.00pm – 7.00pm on weekdays, with No Parking restrictions applying at other times.

5. SITE ACCESS & INTERNAL CONSIDERATIONS

5.1 Access Arrangements

5.1.1 Vehicle Access

The site is currently serviced by an approximately 6m wide combined ingress / egress driveway connecting with Cleveland Street located in the order of 50m to the west of Chalmers Street. It is proposed that this driveway be retained and provide connectivity to a small passenger vehicle parking area (accommodating in the order of 20 spaces) and heavy vehicle servicing area, forming the sole driveway servicing the subject site.

The existing driveway width suitably complies with established criteria specified by AS2890.1-2004 based on the minor passenger vehicle parking yield to be accommodated on-site. Whilst the City of Sydney's DCP 2012 requires that driveway widths be reduced as much as practicable (to a maximum width of 3.6m) to minimise the potential impacts on pedestrian movements adjoining development sites, the following should be considered when formulating the detailed design of the site access with respect to passenger vehicle access:

- It is anticipated that site access will be governed by a security measure (boom gate / fence) to ensure that authorised vehicles only park on-site. The access control should be positioned such that at least one entering vehicle can be wholly accommodated within the site prior to being required to stop, such that there is no unreasonable interaction between entering vehicles and pedestrians within the northern Cleveland Street footpath.
- The implementation of the abovementioned access control is likely to require a separation of ingress and egress movements within the site to accommodate a card reader / intercom housed within an internal median.
- Visibility between exiting motorists and pedestrians within the northern Cleveland Street footpath should not be impeded by obstructions (such as boundary fences / walls) adjoining the eastern side of the driveway in accordance with the relevant AS2890.1-2004 requirements.
- The grade of the internal roadway connecting the driveway and the parking area should be limited to a maximum of 1:20 within 6m of the southern property boundary to assist in the provision of acceptable sight distance between exiting motorists and pedestrians within Cleveland Street in accordance with the relevant AS2890.1-20014 specifications.

Further to the above passenger vehicle considerations, it is acknowledged that all site servicing associated with refuse collection and deliveries is to be accommodated within the south-western corner of the site. Site servicing is likely to be undertaken by vehicles up to and including 8.8m long Medium Rigid Vehicles (MRVs) and Council's 9.25m long refuse collection vehicle. The site access driveway design is to ensure that such vehicles can enter and exit the site without unreasonable

encroachment on public road kerb and gutter and / or internal development physical infrastructure.

5.1.2 Pedestrian Access

Pedestrian connectivity between the school and the adjoining road network is proposed via gates connecting with Princes Alfred Park to the north and west as well as Chalmers Street. No pedestrian access is proposed via Cleveland Street.

Pedestrian management during peak school start and finish periods should be governed by an operational management plan implemented by the school, the requirement for which could reasonably be implemented by a condition of development consent. This is discussed in subsequent sections of this report.

5.2 Parking Provision

The development is proposed to be serviced by a small passenger vehicle parking area located within the south-western corner of the site containing in the order of 20 spaces.

The City of Sydney City Council does not provide vehicular parking requirements for educational establishments within LEP 2012. An assessment of the proposed parking provision is therefore required to be undertaken on merits. In this regard, it is the experience of this Practice that parking demand for schools is split into three categories as follows:

- Long term staff parking (including short facilities and maintenance);
- Short term visitor parking, largely associated with parents visiting the school (not associated with student set-down / pick-up activities); and
- Short term parent parking associated with student set-down / pick-up activities.

The following provides a discussion on the proposed on and off-site parking provision with respect to likely demand associated with the subject development.

5.2.1 Vehicular Parking

5.2.1.1 Staff Parking

On-site staff parking demand can only be accommodated within the single off-street parking area within the south-western corner of the site, containing approximately 20 spaces. Allowing for say five visitor spaces, it is therefore likely that up to 15 spaces will be specifically allocated to staff of the school.

Primary factors resulting in staff parking demand are the number of staff employed by the school and the level of public transport available to staff travelling to and from the school. It has previously been presented that the school is anticipated to generate

employment for approximately 70 - 90 staff on-site at any one time (including both full and part time employees). The subject development therefore provides capacity for one in five to six staff to drive themselves to and from the site on a daily basis.

It is therefore required that 80 – 85% of staff will travel to and from the site by means other than a private vehicle on a daily basis. Section 3.4 of this report presents that the subject site is currently provided with extremely good connectivity to various forms of public transport infrastructure including bus, rail and ferry services.

By means of comparison, LEP 2012 provides a maximum parking provision of 1 space per 175m² gross floor area for commercial premises located within the Public Transport Accessibility Level Category D. The Roads & Maritime Services' *Guide to Traffic Generating Developments* specifies that the average employee rate for offices is approximately five staff per 100m². Application of Council's maximum parking rate of 1 space per 175m² suggests that a maximum of one in eight to nine staff members of commercial development within the Public Transport Accessibility Level Category D are provided with an on-site parking space, thereby indicating that the remaining staff are required to travel by means other than a private vehicle on a daily basis.

The proposed staff parking provision of 15 spaces for 70 - 90 staff indicates a more conservative rate of one in five or six staff members being provided with an on-site parking space. It is therefore considered that a staff parking provision of 15 spaces will accommodate the likely projected peak operational parking demand and is reasonably in accordance with current planning principles for the City of Sydney with respect to limiting private vehicle use for staff.

Notwithstanding the above assessment, this Practice notes that the City of Sydney normally requires employee generating developments to prepare a Green Travel Plan. 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 school staff and the surrounding precinct.

The provision of limited on-site passenger vehicle parking, in conjunction with bicycle parking (see subsequent sections of this report) forms a major part of the initiatives to encourage reductions in vehicle transport use for school. Notwithstanding this, a site specific 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. It is considered reasonable that the requirement for a Green Travel Plan can reasonably be imposed as a condition of development consent.

5.2.1.2 Visitor Parking

Further to the previously presented long term parking demand associated with staff, the proposed school can be expected to generate short term parking demand associated with visitors. These visitors may be parents of students with appointments with school staff or other visitors associated with the normal operation of the school. This

Practice's experience with the assessment of other educational establishments has indicated that the school could be expected to generate up to 10 visitors per day.

An on-site visitor parking provision in the order of five spaces is therefore considered to be satisfactory.

5.2.1.3 Parent Parking

The school is expected to generate short term parking 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. There is limited capacity to accommodate such activity either within the site or within the adjoining road network. The extent of this demand and how this is to be accommodated is discussed in subsequent sections of this report.

5.2.2 Bicycle Parking

The City of Sydney does not provide bicycle parking rates for educational establishments within DCP 2012. Notwithstanding this, the following discussion is provided with respect bicycle parking:

- The limited amount of passenger vehicle parking on-site indicates that up to 50% of staff should be provided with formalised bicycle parking on-site;
- A significant volume of formalised bicycle parking spaces should be provided for students (up to 20% of students);
- Staff bicycle parking spaces should comply with Class 1 facilities in accordance with AS2890.3-2015;
- Student bicycle parking spaces should comply with Class 3 facilities in accordance with AS2890.3-2015; and
- End of trip facilities should be provided for staff bicycle parking should be provided in close proximity of the bicycle parking area in accordance with DCP 2012, as follows:
 - 2 showers / change rooms for the first 20 spaces and then 1 shower / change room for each 20 spaces thereafter; and
 - 1 locker per parking space.

5.2.3 Motorcycle Parking

The City of Sydney specifies that motorcycle parking should be provided at a rate of one space per 12 passenger vehicle parking spaces within DCP 2012.

5.2.4 Disabled Parking

The City of Sydney specifies that disabled parking should be provided at a rate of one space per 20 passenger vehicle parking spaces within DCP 2012.

5.3 Internal Circulation

The passenger vehicle parking areas are to be designed in accordance with the relevant specifications of AS2890.1-2004 and AS2890.6-2009.

The suitability of the internal circulation arrangements with respect to the accommodation of delivery and refuse collection vehicles should be assessed through swept path assessment for the largest vehicle expected to service the site (likely to be 8.8m long MRV and / or 9.25m long refuse collection vehicle).

All vehicles are to enter and exit the site in a forward direction.

A site operational management plan, which can be imposed by a condition of development consent, should incorporate the prohibition of site servicing activities during peak inbound and outbound travel periods of staff to ensure that there is no undesirable conflict between passenger and servicing heavy vehicles. This will also ensure that heavy vehicle site access and egress movements between the site and Cleveland Street are limited to periods outside of normal commuter travel peaks.

6. EXTENRAL CONSIDERATIONS

6.1 School Travel Mode Choice

The ultimate school population is projected to be up to 1,500 students and 90 staff. The following provides a summary of the factors affecting student and staff travel modes to and from the school.

6.1.1 Student Travel Mode

Student travel mode choice is difficult to estimate and is subject to various factors, including but not limited to the following:

- The likely origin of the students;
- The availability of public transport infrastructure in close proximity;
- The availability of safe and efficient student set-down / pick-up areas within or adjacent to the school;
- The provision of on-site bicycle parking and associated end of trip infrastructure; and
- The extent and safety of surrounding pedestrian access and mobility infrastructure.

With respect to the first of the above factors, the closer the students live to the school the less likely those students are to be driven to and from the school. The fact that Government schools provide a primary catchment area within close proximity to the school in conjunction with the existing and planned residential development within the surrounding precinct is such that a significant portion of students will reside in close proximity to the site. The high level of pedestrian access and mobility infrastructure within the immediate vicinity and the provision of substantial on-site bicycle end of trip facilities is such that it is expected that a significant percentage of students (say up to 40%) are likely to walk or cycle to and from the school on a daily basis.

The extent of public transport connectivity to the school is such that students drawn from areas outside of walking / cycling distance are most likely to utilise public transport to travel to and from the site on a daily basis. This is expected to account for 50% of students.

The limited availability of safe and efficient student set-down / pick-up areas in the immediately surrounding public road network is such that the likelihood of students being driven to and from the school on a daily basis being low, being in the vicinity of 10% of students.

6.1.2 Staff Travel Mode

Staff travel mode is expected to be subject to the following factors:

- The provision of on-site passenger vehicle parking;
- The availability of public transport infrastructure in close proximity; and
- The provision of on-site bicycle parking and associated end of trip infrastructure; and

The limitation of on-site staff parking to approximately 15 spaces and the fact that there is little surrounding long term parking areas indicates that the percentage of staff driving themselves to and from the site on a daily basis will be limited to 15 – 20%.

The existence of excellent surrounding public transport infrastructure in conjunction with the provision of substantial on-site bicycle end of trip infrastructure is such that the remainder of staff are anticipated to be capable of travelling to and from the site in a safe and efficient manner utilising methods other than a private vehicle.

6.2 External Infrastructure and Management

6.2.1 Bus Servicing

Bus servicing of the site capable of occurring in a safe and efficient manner via the existing designated Bus Lane immediately adjoining the subject site within Chalmers Street. Notwithstanding this, it is acknowledged that a series of new / additional bus stops / stands are likely to be required along the site frontage to ensure that congestion of students within the western Chalmers Street footpath is limited to acceptable levels during peak school start and finish periods.

Further to the above, it is considered that an operational management plan will need to be implemented to ensure that bus set-down and pick-up occurs in a safe and efficient manner during peak school start and finish periods, the requirement for which can be imposed by a condition of development consent. This plan should include management practices including the holding of students within the subject property under the supervision of school staff until such time as buses arrive, following the completion of the school day. This plan will also need to consider the picking-up and setting-down of students outside of peak school start and finish times associated with excursions and the like. In this regard, it is understood that Transport for NSW and the Roads & Maritime Services are not supportive of the standing of buses within the Chalmers Street bus lane for extended periods of time.

6.2.2 Student Set-Down / Pick-Up

There is limited to no ability to accommodate student set-down / pick-up within the subject site. Further, there is limited availability of public road kerb spaces in the immediate vicinity of the site to accommodate the setting-down and picking-up of students by private vehicles.

Notwithstanding the above, there is opportunity to implement a formalised area on the eastern side of Chalmers Street to the north of Cleveland Street to accommodate this activity, through the provision of appropriate 'No Parking 8.00am – 9.30am and 2.30pm – 4.00pm School Days' signage. Whilst pedestrian connectivity between this set-down / pick-up area and the school is reasonably provided by the existence of a signalised pedestrian crossing over Chalmers Street to the north of Cleveland Street, it is understood that set-down / pick-up areas which necessitate student loading / unloading to occur on the driver's side of the vehicle is generally discouraged.

In any case, it is understood that the formalised set-down / pick-up areas will need to be resolved in consultation with the CBD Coordination Office which incorporates the City of Sydney, Roads & Maritime Services and Transport for NSW.

6.2.3 School Zone Speed Limit

It is not anticipated that existing 40km/h school zone speed limit signage within both Cleveland and Chalmers Streets will need to be altered as part of the subject proposal. This is however subject to review by the Roads & Maritime Services during the development application process.

6.3 Site Access Management

6.3.1 Pedestrian / Cycle Management

Whilst the school is provide pedestrian access gates to Chalmers Street, pedestrian and all cycle access can be provided via gates connecting with Prince Alfred Park, connecting with existing formalised pedestrian and shared paths, away from the adjoining road network. The use of these gates to the Park will allow large groups of students to disperse along Park pathways to link with surrounding transport hubs in all directions.

All pedestrian / cycle access gates should be separated from vehicular access / egress to ensure there is not unreasonable interaction.

Pedestrian access locations should be strategically positioned to provide connectivity to external desire lines, linking with external public transport infrastructure as well as primary pedestrian paths servicing the surrounding precinct. The movement of pedestrians and cyclists to and from the school should be subject to an operational management plan, which can reasonably be imposed as a condition of development consent. Notwithstanding this, the following considerations should be assessed during the design process:

- Consideration will need to be given to the requirement or otherwise for any alterations to surrounding public road pedestrian crossing infrastructure (crossing width provision and pedestrian crossing signal green time provision);
- The requirement or otherwise for the provision of pedestrian fencing within both Cleveland Street and Chalmers Street on immediate approach to the intersection of the two roads; and

- The requirement or otherwise for the alteration of existing traffic signal phasing at the intersection of Cleveland and Chalmers Streets to provide for turning left and / or right holds during peak school start and finish periods.

It is understood that the provision of an exclusive pedestrian only signal phase at the intersection of Cleveland and Chalmers Streets is not favoured by the Roads & Maritime Services.

6.3.2 Staff Vehicle Access Management

The limited provision of on-site passenger vehicle parking and the separation of passenger vehicle access from pedestrian / cycle access is such that unreasonable interaction between staff vehicles and external pedestrian / cycle movement is not expected to occur. Notwithstanding this, the operational management plan developed for the school should incorporate a restriction on site access / egress by staff vehicles during peak student / cycle site periods (8.30am – 9.00am and 3.00pm – 3.30pm).

6.4 External Impacts

6.4.1 Surrounding Road Network Operation

The limited on-site parking provision and external student set-down / pick-up infrastructure in conjunction with the extensive provision of surrounding public transport infrastructure is such that the traffic generating ability the school is unlikely to be significant. Section 3 of this report presented that whilst traffic demands adjoining the subject site are notable during peak school start and finish times, there is capacity to accommodate additional demand in a safe and efficient manner.

Notwithstanding the above, further traffic modelling of the surrounding road network will be required to undertake detailed assessment of the likely impacts on the surrounding road network. In this regard, the future detailed assessment of the likely external impacts of the school on the surrounding road network will need to be cognisant of the staged alterations and impacts of the CBD road works associated with the Light Rail construction on the local road network.

The network to the north of the site will alter when the CBD Light Rail construction phases commences, including the relocation of bus stops surrounding Central Railway Station.

The removal of George Street from the CBD road network has resulted in Chalmers Street becoming a crucial north-south artery and it has been defined as a “preferred driving route” by Transport for NSW during the CBD road works. The utilisation of Chalmers Street as a temporary waiting point for buses during special events and when offering alternative transport due to rail engineering works should also be assessed.

Cleveland Street is expected to feed the Chalmers Street north-south artery but also form an important southern CBD bypass route, resulting in increased traffic demands.

It is further expected that following the implementation of the CBD Light Rail services, additional bus services will operate along Chalmers Street to connect with the new infrastructure.

6.4.2 Public Transport Capacity

Whilst it is acknowledged that the school will generate significant demand for public transport use, the existence of numerous forms of public transport within the immediate vicinity of the subject site is such that there is significant capacity within the surrounding public transport infrastructure to accommodate this additional demand. Notwithstanding this, it is acknowledged that the school will need to liaise with bus providers to provide additional special bus services depending on the demographic characteristics of students. Further, as previously presented, consideration will also need to be given to the likely staged alteration of public transport services within the immediate precinct associated with the CBD Light Rail construction works.

7. CONSTRUCTION ISSUES

7.1 Construction Traffic Management Plan

The scale of the subject development is such that the construction will occur over a significant period of time during which an integrated series of traffic and pedestrian management measures will be required to be implemented. It is understood that as part of the development consent process, the applicant will be required to prepare a detailed site management plan providing traffic and pedestrian management measures to be implemented during construction including but not being limited to:

- Construction vehicle transport routes;
- Construction site access locations and management measures;
- Construction personnel parking controls;
- Stage by stage construction traffic generation; and
- Impacts of construction on adjoining traffic and pedestrian movements.

It is not expected that any long term accommodation of the adjoining and surrounding road network by construction activities, materials, vehicles or equipment will be acceptable during the construction works. In this regard, all construction activities will need to be accommodated on-site or within the adjoining Prince Alfred Park (with appropriate approval from the City of Sydney).

The site access location (likely to be via the existing vehicle crossover connecting with Cleveland Street) is to be supervised by appropriately qualified traffic controllers. Further, site access movements by construction vehicles should be reduced where practicable during periods of peak commuter periods (6.00am – 9.00am and 3.00pm – 7.00pm) to minimise impacts on adjoining traffic flow and indeed pedestrian cycle movements.

Construction vehicle transit routes to and from the site will be appropriately selected to minimise the impact on adjoining arterial road network capacities with routes governed by load limits being avoided as necessary. If necessary, construction vehicle layover locations may need to be identified and approved as necessary to ensure that there is no queuing of construction vehicles on immediate approach to the site.

Pedestrian management during construction will require the development of a detailed strategy in consultation with the CBD Coordination Office (incorporating the City of Sydney, the Roads & Maritime Services and Transport for NSW).

8. CONCLUSION & RECOMMENDATIONS

This study details our assessment of the parking and traffic demand expected to be generated by a proposed high school to be located at 244 Cleveland Street, Surry Hills. Having regard to the contents of this report, the following conclusions and recommendations are provided:

- SIDRA modelling indicates that the surrounding local road network currently operates with a reasonable level of service with spare capacity;
- The site is particularly well serviced by public transport and sustainable transport infrastructure in various forms;
- Pedestrian access to the site should primarily be via Prince Alfred Park to allow large groups of students to disperse along the Park pathways in all directions;
- The existing vehicle driveway connecting with Cleveland Street is capable of facilitating safe and efficient vehicle access to and from the school, albeit to a limited extent, subject to the considerations contained within Section 4.1.1 of this report;
- The limited capacity of the site to accommodate on-site passenger vehicle parking is consistent with existing strategic transport planning controls applicable to the site and the school use;
- The City of Sydney provides established requirements with respect to the provision of bicycle (parking and end of trip facilities), disabled persons vehicle and service vehicle accommodation / infrastructure, as detailed within this report, which should be incorporated within the detailed design of the school;
- The provision of formalised student set-down / pick-up areas within the surrounding road network will be subject to consultation with the CBD Coordination Office which includes the City of Sydney, the Roads & Maritime Services and Transport for NSW;
- The existing formalised Bus Lane within Chalmers Street provides efficient connectivity to bus services for school students and staff although the school will need to liaise with the CBD Coordination Office to provide additional special bus services depending on the demographic characteristics of students;
- The school will need to implement an operational management plan incorporating a series of integrated management measures to ensure that students and staff can access and exit the site in a safe and efficient manner during peak school start and finish periods;
- Further detailed assessment of the likely impacts of the development and the required alterations to surrounding public road infrastructure will need to be

cognisant of the staged alterations to the surrounding road network associated with the CBD Light Rail construction; and

- A detailed and staged construction traffic management plan will need to be prepared and implemented to ensure that construction works do not unreasonably impact adjoining public road traffic and pedestrian movements adjacent to and surrounding the subject site.

12. Appendix D – Preliminary Green Travel Plan - Urbis

DID YOU KNOW...
TEENAGERS NEED 60 MINUTES
OF PHYSICAL ACTIVITY A DAY!



WALK & BIKE

Walking is great way to get to school: it's fun, safe, active and healthy.

Signalised intersections at Chalmers and Cleveland Streets with footpaths all around the School for safe pedestrian travel.

You can bicycle to the School through Prince Alfred Park. This route links with Mascot and the CBD.

Suggested walking & cycling routes to the School are marked on the map overleaf.

Students and staff can use the bike racks provided in the school. Parents and visitors can secure their bikes near the XX. The School has end of trip facilities for staff.



LIGHT RAIL

The school is 750m from the Central Station Light Rail stop.

The Light Rail runs between Central and Dulwich Hill, via Darling Harbour, Pyrmont and the Inner Western.

The new CBD and South East Light Rail line is under construction. The line will run between Circular Quay and Kingsford, via Central Railway Station.

The Light Rail station and network is marked on the map overleaf.



TRAIN

The school is 350m walking distance from Central Railway Station which services:

T1 North Shore, Northern & Western Line, connecting with the Blue Mountains and beyond to the west, Richmond to the north-west and the Central Coast and beyond to the north;

T2 Airport, Inner West & South Line, connecting with Leppington to the south-west and the Southern Highlands and beyond to the south;

T3 Bankstown Line, connecting with Liverpool to the south-west; and

T4 Eastern Suburbs & Illawarra Line, connecting with Bondi Junction to the east, Cronulla to the south-east and the South Coast to the south.

The station and rail network is marked on the map overleaf.



BUS

CHALMERS ST BUS SERVICES:

Route 305 Mascot to Railway Sq

Route 308 Marrickville to City

Route 309 Port Botany to City

Route 310 Eastgardens to City

Route 343 Kingsford to Chatswood

Route 372 Coogee to Railway Sq

Route 393 Little Bay to Railway Sq

Route 395 Maroubra Beach to Railway Sq

Route m20 Mascot to Gore Hill

Route m50 Coogee to Drummoyne

CLEVELAND ST BUS SERVICES:

Route 353 Marrickville to Bondi JCT

Bus stops and routes are marked on the map overleaf. If you need help deciding which transport services to use, please visit www.sydneybuses.info/schools or www.transportnsw.info

INNER SYDNEY HIGH SCHOOL

GREEN TRAVEL PLAN

**AN ACTIVE TRAVEL GUIDE FOR
STUDENTS, PARENTS AND STAFF**



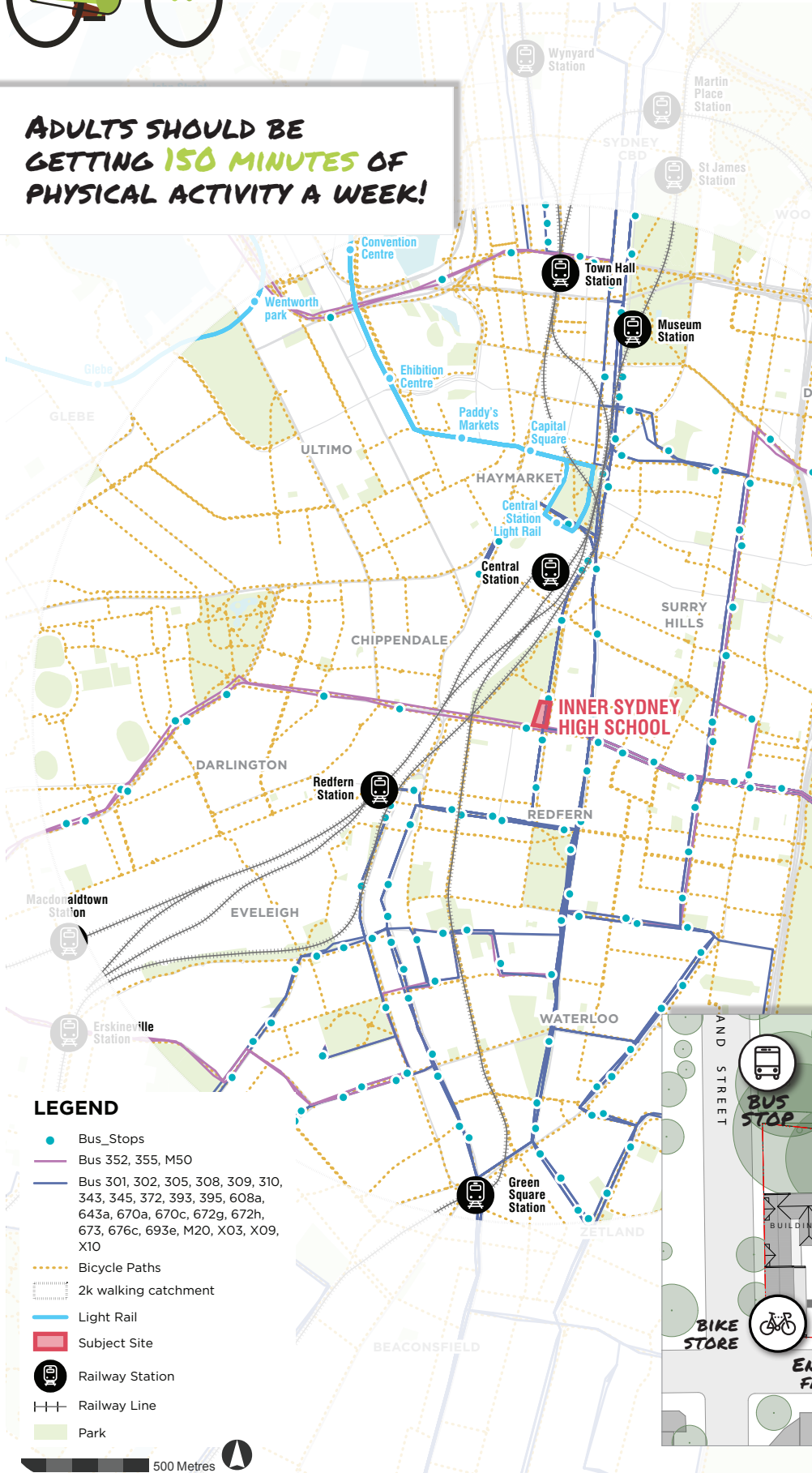
It is recommended that this plan be developed further when student enrollments and staff appointments are confirmed. This plan should be finalised and issued to each student and staff member before they start at the School.



YOUR GUIDE TO OUR GREEN TRAVEL

FOR INNER SYDNEY HIGH SCHOOL

ADULTS SHOULD BE
GETTING **150 MINUTES** OF
PHYSICAL ACTIVITY A WEEK!



Most families live within 1.2km of the school, with access to walking, cycling and public transport.

This Green Travel Plan provides suggested safe and accessible walking, cycling and transport routes in the local area.

GREEN TRAVEL

The NSW Department of Education supports sustainable and active travel:

SUSTAINABLE TRAVEL

We support sustainable forms of transport such as walking, cycling and public transport. We want to shift away from car use towards more sustainable forms of transport for the benefit of students, staff, visitors and the community.

ACTIVE TRAVEL

We encourage active travel, such as walking and riding a bike. These are great ways to incorporate regular exercise into our daily lives, contributing to our health and well-being, and reducing reliance on cars.

DRIVING TO SCHOOL

Driving to School is **not recommended**. There is nowhere to park within reasonable walking distance. Car share if you have to drive, to reduce traffic.

