Department of Education

Arthur Phillip High School and Parramatta Public School

Transport Assessment

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Contents

Tables

Figures

1 Introduction

1.1 Background

Arup has been engaged by Grimshaw Architects on behalf of the Department of Education to prepare a report outlining the traffic and transport concept design strategy for the proposed redevelopment of the existing Arthur Phillip High School (APHS) & Parramatta Public School (PPS) located along Macquarie Street between Smith and Charles Street.

This report has been prepared as supporting documentation to accompany a development application for the site with regards to the State Significant Development (SSD) assessment criteria (Application Number - SSD 15_7237).

1.2 Secretary's Environmental Assessment Requirements

This report addresses the Secretary's Environmental Assessment Requirements (SEARs) for the State Significant Development (SSD) 15_7237 throughout this report, specifically Section 5: Transport and Accessibility and Section 2: Policies in the SEARs Key Issues.

This report will provide an assessment of the traffic and transport impact of the concept proposal to be undertaken, considering all approved and planned developments located within and adjacent to the school, with particular regard to the SEARs issued by Department of Planning and Environment (DP&E) listed in Table 1.

Table 1: Secretary's Environmental Assessment Requirements

Key Issues (SEARs)	Report Section
• the existing pedestrian and cycle routes and facilities within the vicinity of the site and measures to maintain road safety	Section 2.5 and Section 4.5
• an estimate of the total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and cycle trips;	Section 4.1
• the adequacy of public transport to meet the likely future demand of the proposed development	Section 2.4 and Section 4.6
• impact of the proposed development on existing and future public transport infrastructure proposals within the vicinity of the site	Section 3.5 and Section 4.6
• measures to promote travel choices that support the achievement of State targets, such as a location-specific sustainable travel plan	Section 4.7
• 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);	Section 4.1 and Section 4.3

• the proposed access arrangements, including pick-up/drop/off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and cycle networks;	Section 3.2
• proposed car and bicycle parking provision, including consideration of the availability of public transport and the requirements of the relevant parking codes and Australian Standards;	Section 3.4 and Section 4.4
• service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times); and	Section 3.2
• traffic and transport impacts during construction and how these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact.	Section 4.8

1.3 Scope

This traffic impact assessment supports the rezoning application for the Albion Hotel site and will outline the following:

- Existing transport conditions
- Forecast traffic generation
- Road network impacts
- Parking provisions
- Access arrangements
- Public transport availability

2 Existing conditions

2.1 Site location

The site is located on the north-eastern corner of the Parramatta City Centre, on the corner of George Street and Harris Street. The site is made up of two lots, with addresses at 175 Macquarie Street and 800-100 Macquarie Street, Parramatta.

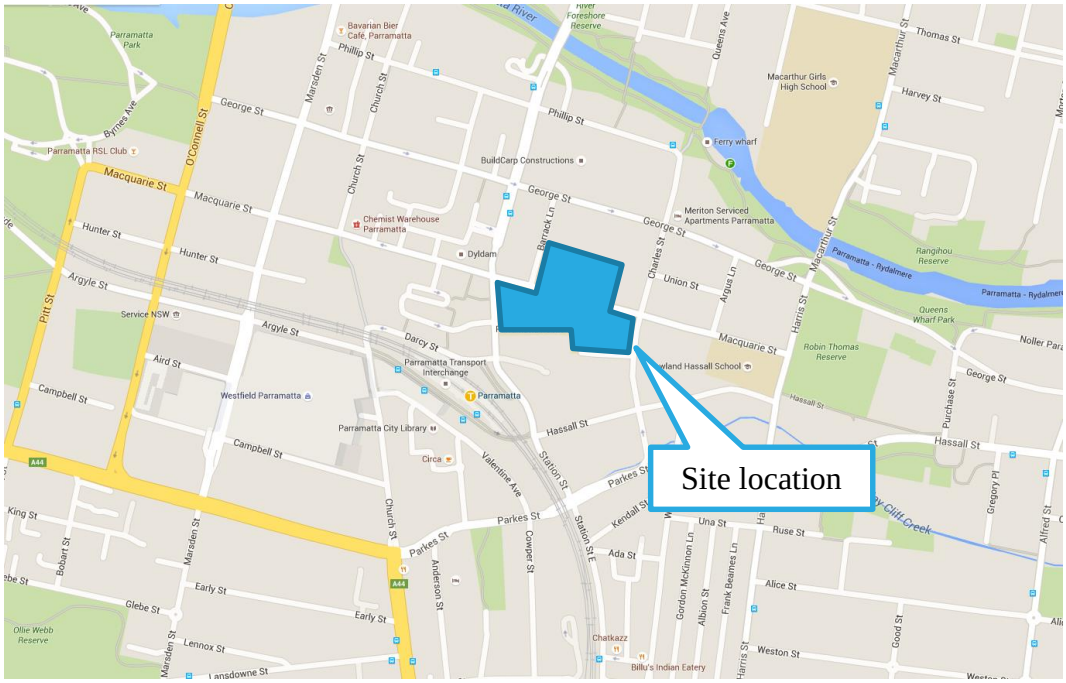

Figure 1: Site location

2.2 Road network and access

Harris Street / Macarthur Street is a regional road, connecting to Parkes Street south of the site and Victoria Road north of the site. Parkes Street is the main east-west regional road crossing the railway corridor, connecting Church Street / Great Western Highway with James Ruse Drive.

Macquarie Street and George Street are local east-west roads, operating as one way pairs into and out of the Parramatta CBD respectively. A George Street underpass is located under Macarthur Street (Gasworks Bridge) as a bypass of the traffic signals. Both roads carry in the order of 600-700 vehicles in each direction during peak hours. Charles Street and Smith Street are local north-south roads, providing access through the Parramatta CBD. These roads carry two-way volumes in the order of 600-700 vehicles during peak hours as well. Little Street is a cul-de-sac with local access from Charles Street.

2.2.1 Site access

Vehicular access to the site's car parking areas are currently provided on Macquarie Street and Charles Street. There is also a forwards-in, reverse-out

service access at the end of Little Street. More details of the parking is summarised in Section 2.3.2.

2.2.2 Drop-off

A P 15 minute zone is provided in Macquarie Street during school drop-off and pick-up times for the schools, accommodating up to nine cars. Kerb side drop offs are also provided within Little Street along the Police frontage on the southern side which provides 11x 5P parking bays. There are also 22x 5P 90 degree parking bays on the northern side which serve the school.

A traffic survey was conducted on 15 March 2016 for the AM peak hour trips into and out of the Little Street cul-de-sac to determine the level of activity generated by the primary school. The primary school drop-off site was found to generate up to 202 trips during the AM peak hour in Little Street, with a peak occupancy of 40 vehicles during a 10 minute window.

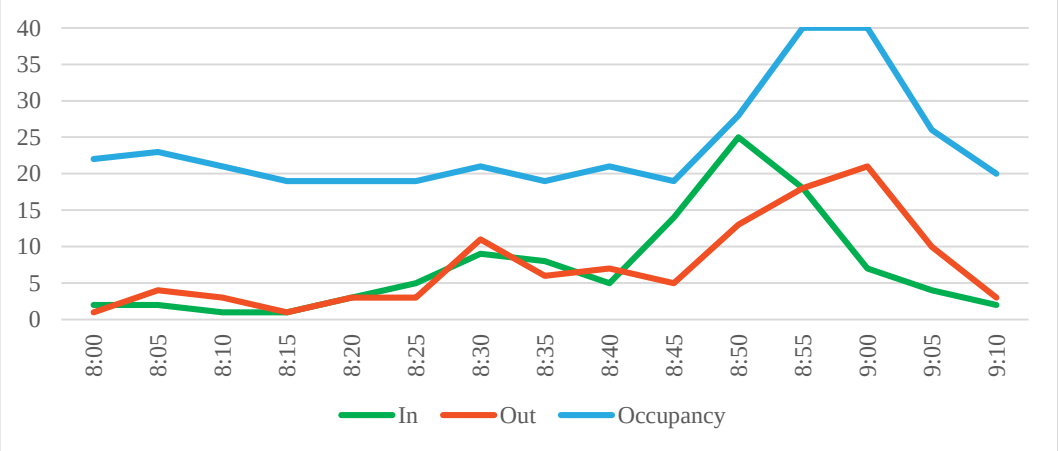

Figure 2: Drop off activity in Little Street

It was observed that approximately 10 vehicles (including marked police vehicles) remained parked in the short stay zones during the entire peak period, indicating enforcement is currently an issue. No vehicles were observed to queue back into Charles Street except when giving way to pedestrians crossing Little Street. Vehicles generally pushed through when turning right into and out of the street, which could be considered a safety issue.

2.3 Parking

2.3.1 On-street parking

On-street parking surrounding the site is meter restricted (8am-6pm Monday-Saturday) within the Parramatta City Centre. 10P commuter parking is provided in Harris Street and George Street (east of Harris Street). Short-stay 2P/4P meter parking is provided in Macquarie Street and George Street (west of Harris Street).

2P/4P (unmetered) resident permit parking is provided in streets surrounding the City Centre. These are located east of Robin Thomas Reserve and the Workers Club, north of Parramatta River and south of Parkes Street.

Parking is generally provided at $2.50 per hour for short-stay areas and $1.50 per hour for commuter parking areas, with rates up to $3.50 within the central CBD. Rates are capped at a maximum of $7.70 or $6.00 per day.

2.3.2 Off-street parking

Parramatta has a number of paid public parking stations within walking distance of the site. The relevant sites near the site include:

- Park Royal (182 spaces)
- Erby Place Car Park (559 spaces)
- Horwood Street PCC Car Park (25 spaces)
- Horwood Place Secure Parking (780 spaces)
- 80 George Street Wilson Car Park

The site also has a number of existing at-grade car parks located around the site with 47 formal marked bays and other areas providing parking with no bay markings. A car park occupancy survey was undertaken at 9:30am 15 March 2016, which found 116 vehicles parked (Figure 3).

Figure 3: Car parking occupancy

2.4 Public transport network

2.4.1 Parramatta interchange

Parramatta is highly accessible by public transport. The Parramatta Interchange is located to the west of the site within 5 minutes walking distance and includes train services on the T1 North Shore, Northern & Western Line, Blue Mountains Line and the T5 Cumberland Line as shown in Figure 4.

The interchange also provides connection to a wide range of bus services including Transitway services on Argyle Street. Bus services operate to key centres surrounding Parramatta including Epping, Bankstown, Liverpool and Rouse Hill.

The site is also located within walking distance of the Parramatta ferry wharf. The wharf provides regular ferry services along Parramatta River to Circular Quay.

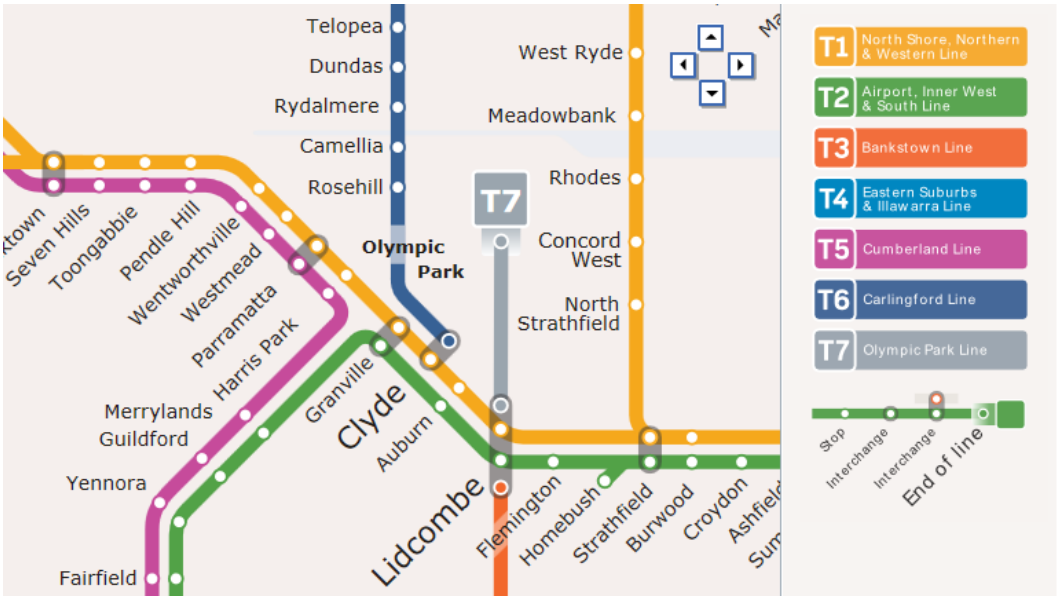

Figure 4: Sydney Trains map

2.4.2 Free shuttle bus

The Parramatta Shuttle Bus (formerly The Loop) is a free transport solution that connects tourists, residents and commuters to the commercial, retail and recreational landmarks of the city. A stop is located within five minutes walking distance west of the site. The free Parramatta Shuttle Bus runs every 10 minutes, seven days a week, with a stop directly in front of the site.

Figure 5: Parramatta Free Shuttle

2.5 Walking and cycling network

The site is in an established urban area with a good network of footpaths on either side of the road. The site is within 5 minutes' walk to the City Centre and key transport nodes. Crossing facilities are provided at all signalised intersections on approach to the site. The Little Street connection to Charles Street is an uncontrolled intersection with pram ramps for pedestrians but no formal crossing.

A number of dedicated cycleways are located in close vicinity of the site, including the Parramatta Valley Cycleway, which is located north of the site. This 12km cycleway connects Putney to Elizabeth Street, Parramatta via the Parramatta River. Cycleways within Parramatta are presented in Figure 6.

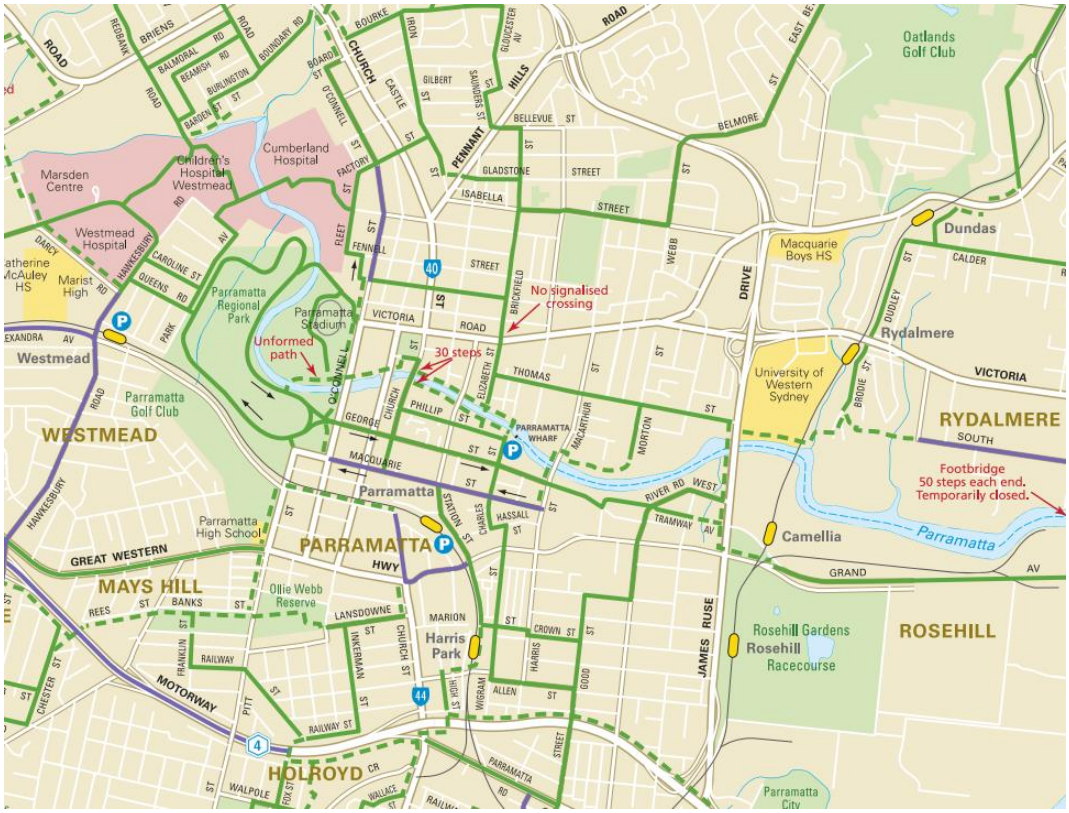

Figure 6: Cycleways in the vicinity of the site

2.6 Existing travel patterns

Mode share patterns at the site were analysed using 2011 Journey to Work (JTW) Census data from the Bureau of Transport Statistics. The JTW data for travel zone 1057 were used for the future staff of the site (see Figure 7).

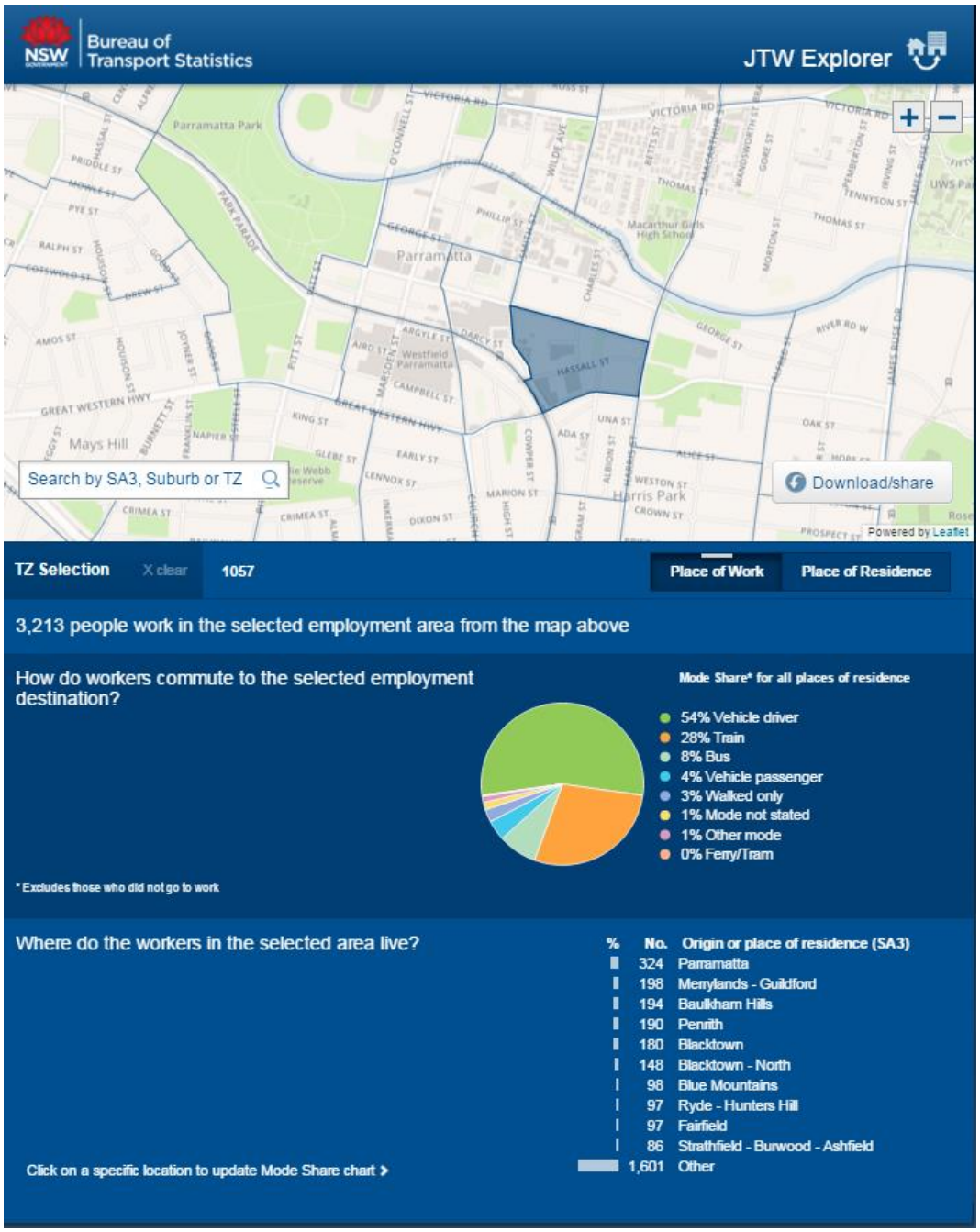

Figure 7: Place of work

The Place of Work results indicate approximately half of workers drive to the site possibly due to the large parking stations located nearby. A large proportion of workers also arrive by train. The data revealed that inbound trips are largely made locally, or from Western Sydney locations. This data is used to determine the likely 'other use' trips associated with the development.

3 Proposed development

3.1 Overview

It is proposed that the existing primary and high school be substantially demolished and replaced with two multi-story buildings, with smaller existing historic buildings retained for supporting functions. The northern site parcel would be developed for the high school and the southern parcel for the primary school, refer below.

The high school comprises a tower building of 17 storey equivalent height (11 primary levels plus mezzanines) towards the north east corner plus a sports hall on the western site with a total floor area of approximately18,000m².

The primary school building is a 4-storey "U-shaped" building opening onto the school coutryard with a floor area of approximately 10,000m².

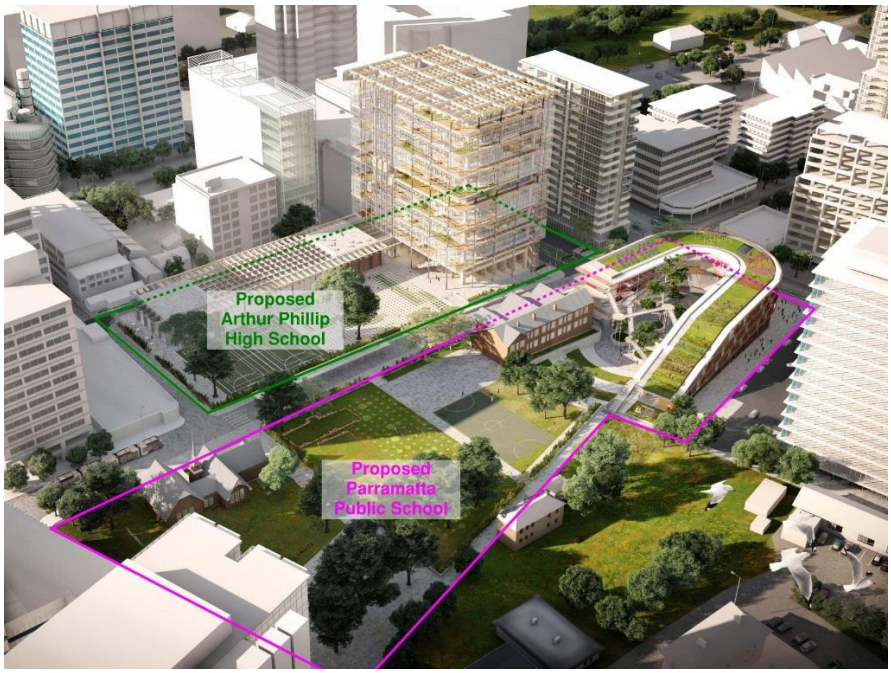

Figure 8 Proposed Development (Grimshaw)

3.2 Access arrangements

It is assumed that any kerbside provisions in Macquarie Street will be lost once Light Rail is implemented, so this section assumes the ultimate scenario when Light Rail is implemented.

3.2.1 Parramatta Public School

The primary school will retain the service vehicle point at the end of Little Street for waste management. The drop-off and pick-up facilities will be expanded in Little Street to cater for the expected increase in demand.

There will be no changes to the DDA parking space provision (which currently has two parking spaces) or to the police parking provision, (which currently has three parallel parking bays allocated on the southeast of Little Street).

It is proposed to provide an additional eight spaces within Little Street, which will bring the total school allocated provision to 41 spaces. To improve traffic flow and safety, it is also proposed to restrict all right turn movements at the Charles Street / Little Street intersection.

It is proposed to relocate the part-time bus zone currently in Macquarie Street to four on-street parking provision along the western side of Charles Street. The bus zone will be time limited to the school drop-off / pick-up times as per current arrangements in Macquarie Street.

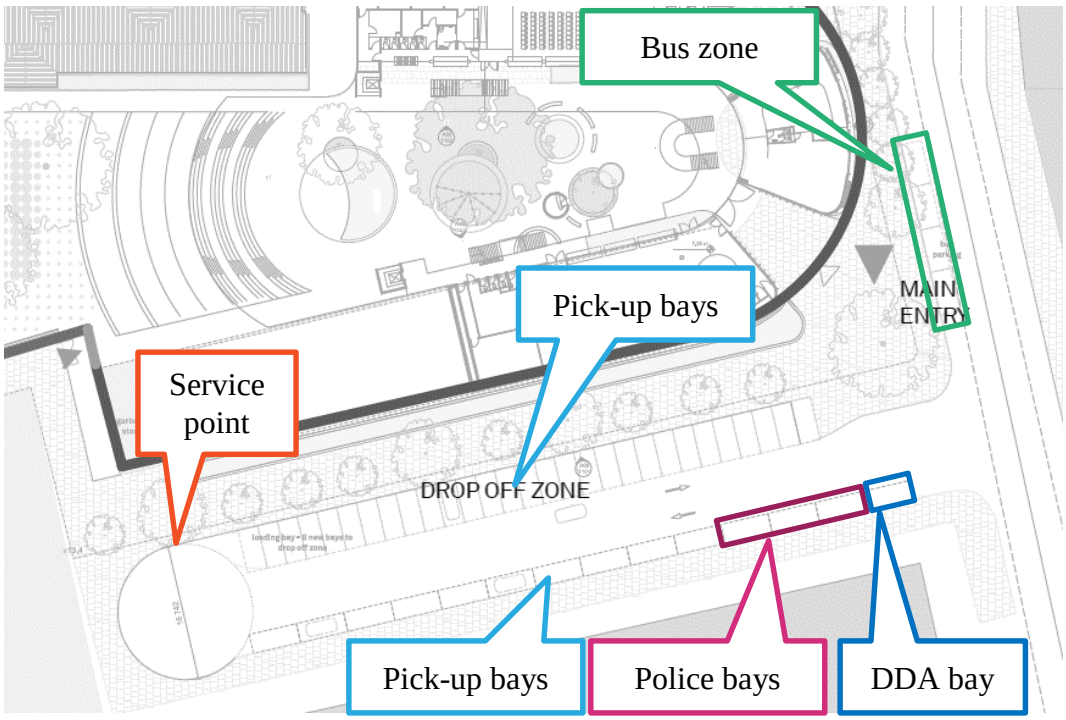

Figure 9: Primary School drop off area

3.2.2 Arthur Phillip High School

The High School is proposing a new driveway access to the east of the site from Macquarie Street, which will provide a one-way anti-clockwise loop around the site to Barrack Lane. This laneway will provide access to a parallel medium rigid vehicle servicing bay and 30 angled parking bays. The bays will be aligned for forwards-in within a secure area.

A drop-off and pick-up will be provided within the site for students with a disability only (currently 10 students), with loop access back out to Macquarie Street. This loop will also be anti-clockwise with sufficient turning area for a 99th percentile vehicle to turn around and return to Macquarie Street directly. Gates will be clearly marked to ensure that vehicles do not enter the wrong side.

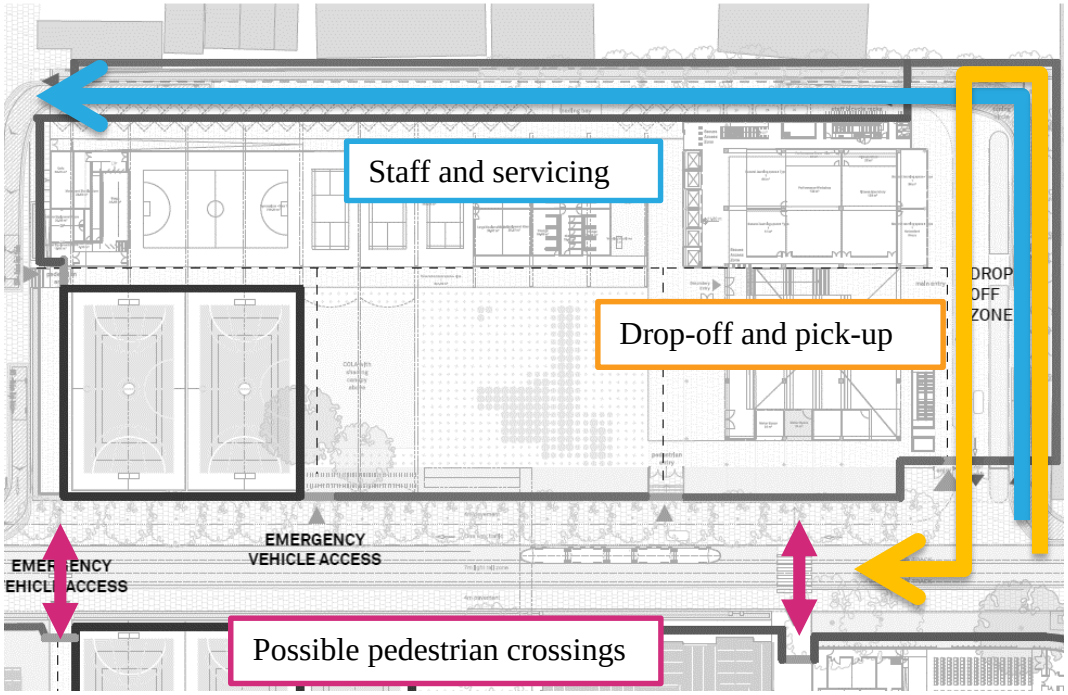

Figure 10: High School access

3.2.3 Pedestrians

A mid-block signalised crossing is currently located within Macquarie Street between the two school sites. Consideration is being given to removal of this crossing and provision of two zebra crossings to line up with proposed school access points. The traffic will be required to merge into one traffic lane approaching the eastern crossing, with appropriate kerb blisters. Parking will be permitted outside the mandatory No Stopping zones, and the traffic lanes will widen beyond the western crossing.

With the proposed Parramatta Light Rail project, these crossing locations will be a key discussion point as zebra crossings are not generally accepted for Light Rail. Signalised crossings are generally required to be 130m apart and hence the Light Rail may require that only one traffic signal crossing is maintained.

3.3 School population

The current population of the high school is approximately 1,600 students and 80 staff. This is proposed to increase to 2,000 students (+25%) and 108 staff (+56%). The current population at the primary school is approximately 600 students and 55 staff. This is proposed to increase to 1,000 students (+67%) and 67 staff (+22%).

3.4 Car and bicycle parking provision

The proposal seeks to maintain 30 parking spaces for both schools within the northern laneway on the High School side, resulting in a reduction of parking spaces. There will be no provision made elsewhere on the site for any car parking. This will encourage staff to use public transport and active transport modes for site access.

In addition, secure bicycle parking will be provided for students and staff with appropriate end of trip facilities.

High school: (shower and facilities provided for both student and teachers)
Student bicycle spaces: 200
Staff bicycle spaces: 22

PPS: (shower and facilities provided for both student and teachers)
Student bicycle spaces: 126
Staff bicycle spaces: 14

3.5 Parramatta Light Rail

A Plan for Growing Sydney External website identifies the potential for Parramatta to become Sydney's second CBD with connections to employment, housing, education and other opportunities across the Greater Parramatta to Olympic Peninsula Growth Area.

Light rail will provide a frequent and reliable transport mode that will support growth in major employment areas. It will provide a modern public transport network that supports productivity by bringing businesses, destinations and employers closer to their suppliers, visitors, employees and customers. Parramatta Light Rail will be over 20km long, providing reliable public transport to link residential, employment, cultural and education precincts. High frequency services, seven days a week from early in the morning to late night will connect to the wider rail network, bus, ferry and active transport links. Modern, comfortable light rail vehicles will provide an attractive transport choice for local residents and an integrated ticketing system will provide a seamless journey for customers.

Transport for NSW is engaging with key stakeholders in the region so that they can help to shape the project and maximise the benefits from Parramatta Light Rail. Later in 2016, Transport for NSW will consult on a detailed route with the wider community, ahead of formal consultation on an Environmental Impact Statement in 2017. The current indicative timescale is for procurement for construction contracts to take place from 2017 to allow construction to commence in late 2018.

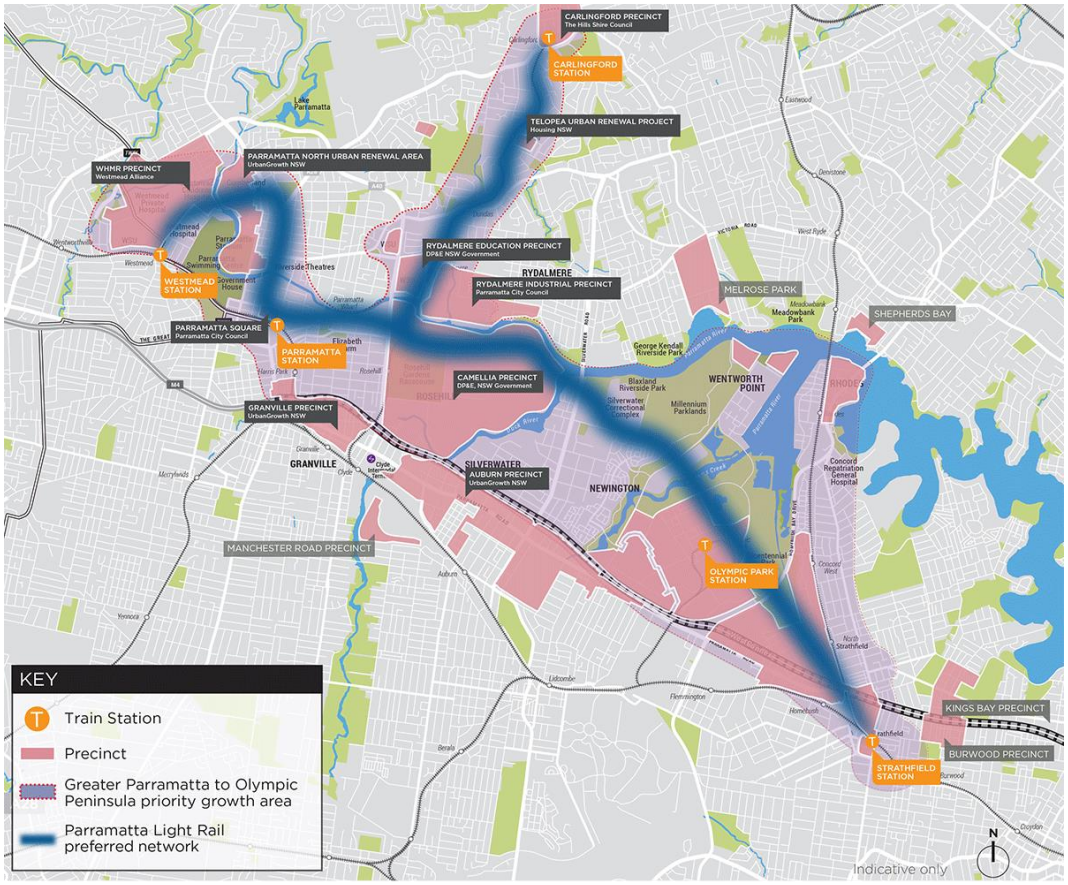

Figure 11: Preferred network (TfNSW)

4 Transport and parking assessment

4.1 Traffic generation

Traffic generation for the high school is expected to remain unchanged, as there is limited opportunity for parents to drop off and pick up children within the precinct. No high school students other than the students with disabilities (currently 7) will be permitted to be dropped off and picked up around the site.

There is an expected 67% increase of primary school students, which is being catered within the Little Street drop off and pick up area. Given approximately 101 cars arrive in the AM peak hour, the additional 67% of students may be assumed proportionally to this rate, which equates to approximately 167 cars (or 334 trips) in the proposed school peak. Given that 30 vehicles from the school occupied the area during the peak 10 minutes, it is expected that this could potentially increase to 50 vehicles during this period.

Appropriate traffic management will need to be provided to ensure that no queuing occurs within the streets (especially Charles Street). Transport measures will also need to be in place to ensure that car trips will be discouraged as a result of the development (see Section 4.7).

4.2 Trip distribution

The school accepts both local and out of area enrolments (where vacancies exist). However, it is understood that the schools have a smaller catchment given the density of schools available within the Parramatta area and the demand for these schools. Therefore, trip distribution has been assumed within a local CBD nature and from observations taken from the site visit (see Figure 12).

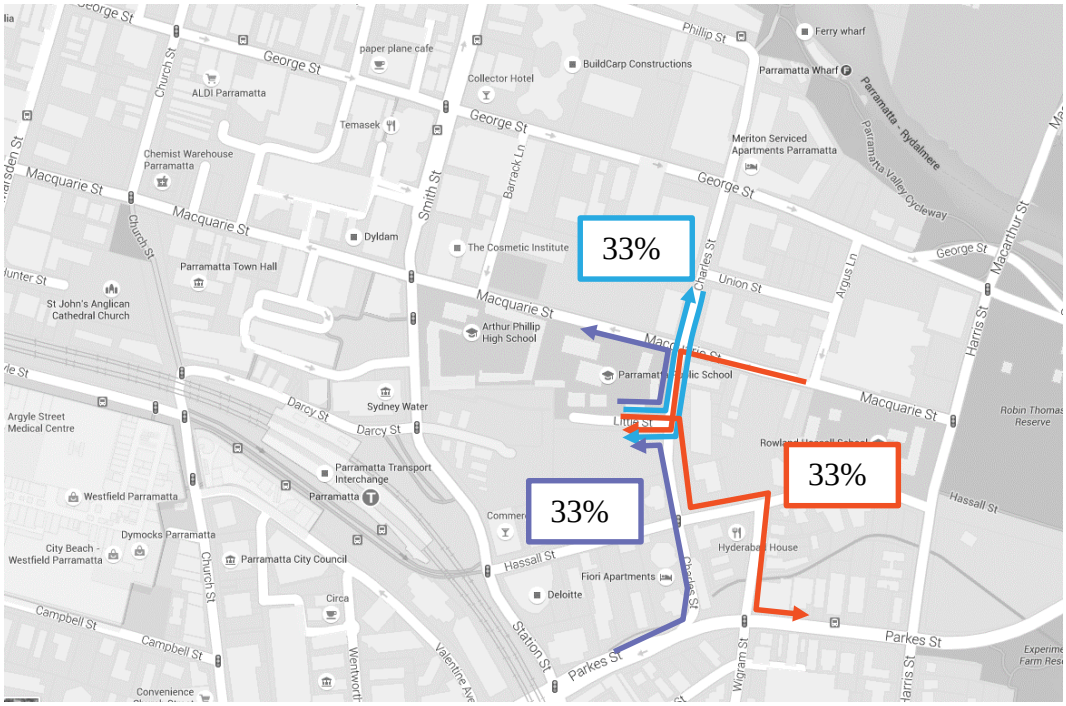

Figure 12: Trip distribution

4.3 Road network impacts

The proposal is considered to have a minimal impact on the operation of the local road network. Reasons for this include the following:

- Traffic movements at the key access points into the site operate efficiently;
- Additional traffic movements estimated are conservative as many of them would likely be vehicles already within the Parramatta CBD or not additional due to commuter activity;
- It is expected there will be a reduction of staff car trips associated with the reduction of parking from 116 cars to 30 formal staff parking spaces available at the proposed school;
- The forecast student increase in peak hour traffic of 67 vehicles in the AM peak hour is a modest increase of trips, but is considered minor when distributed onto the overall local road network;
- The forecast increase of student car trips will be offset by the reduction of staff car trips given the reduction in parking;
- The PM school peak hour does not coincide with the CBD commuter peak hour and is expected to have minimal impacts;
- The primary school drop-off may increase in numbers, but the provision of an extra 8 bays and better parking enforcement will be able to cater for the proposed student increases;
- There are opportunities for a mode shift away from private vehicle travel, with the site located within close proximity to Parramatta Interchange and the future Light Rail stops, and good walking and cycling links available; and

- The Little Street cul-de-sac encourages parents to loop and turnaround, providing more efficiency for drop-off and pick-up activity.

4.4 Parking assessment

As the site is located within the commercial core of Parramatta, there are only metered restricted parking opportunities available on surrounding streets. All streets within the Parramatta CBD are metered with a 2 hour restriction between 8am and 6pm, Monday to Saturday.

Due to the lack of unrestricted parking opportunities on surrounding streets, the school's students and staff will be discouraged from parking on surrounding streets. Parents will likely attempt to make use of the current P 5 minute zone as they currently do, even in PM school peak hours. As such, there is an expected mode shift from private cars given there is limited extra capacity for longer stay parking being provided. Enforcement of illegal parking behaviour will be an important issue to ensure continued safety around the school.

4.5 Walking and cycling access

The main pedestrian accesses will be spread around the sites on Macquarie Street, Smith Street and Charles Street. Pedestrian access for the primary school is located directly adjacent to the pick-up/drop-off zone.

Bicycles may access the site via the pedestrian or vehicular accesses along Macquarie Street and Barrack Lane. Secure bicycle racks will be made available within the school grounds with adequate end of trip facilities for students and staff.

4.6 Public transport assessment

As discussed in Section 2.4, the site is highly accessible by public transport. The Parramatta Interchange is located to the south west of the site within 5 minutes walking distance and includes train services and a wide range of bus services including Transitway services on Argyle Street.

Seated train loads at Parramatta were last taken in March 2015. The loads were on average 85% (with maximum of 93%) in the AM peak and on average 84% (with maximum of 95%) in the PM peak on Blue Mountains Line services at Parramatta, suggesting spare capacity is available. The maximum capacity of the trains is generally taken up to 160%, which results in 74 people standing in all levels and vestibules of a train carriage.

4.7 Travel demand measures

A Green Travel Plan (GTP) is a tool to minimise the negative impact of private vehicle travel on the environment. The Plan is a package of measures put in place to encourage more sustainable travel. GTP describes ways in which the use of sustainable transport may be encouraged. Using public transport, cycling, walking, working from home, carpooling, making business vehicles more fuel efficient and the use alternative fuels are all more sustainable means of transport than single occupant driving.

More generally, the principles of a GTP are applied to all people travelling to and from a site. Government authorities around the nation are placing increasing emphasis on the need to reduce the number and lengths of motorised journeys and in doing so encourage greater use of alternative means of travel which have less environmental impact than cars.

The main objectives of the Green Travel Plan are to reduce the need to travel and promotion of sustainable means of transport.

The more specific objectives include:

- To reduce the level of single occupancy car borne trips associated with commuting.
- To facilitate the sustainable and safe travel of visitors to the site.
- To reduce site traffic congestion and associated pollution in order to enhance, improve and make safe journeys of minority/sustainable transport mode users.

- To work in partnership with neighbouring organisations/developments, local authorities, retailers and other relevant bodies in achieving the maximum mode shift away from the private car.
- To continually develop, implement, monitor, evaluate and review the progress of the travel plan strategy.
- To facilitate all staff and student access to key facilities such as retail, leisure, health and education.

4.8 Construction Traffic Management Plan

The construction of the development will require access for heavy vehicles travelling to and from the site. Prior to the commencement of construction, a Construction Traffic Management Plan (CTMP) should be prepared to ensure the safest possible management of construction access and appropriate mitigation measures. The CMTP would be prepared by the Construction Contractor and address:

- The likely construction vehicle numbers and frequency;
- Approach and departure routes;
- Parking access arrangements during construction; and
- Provision of acceptable pedestrian management measures

A preliminary CTMP has been prepared alongside the Construction Management Plan and follows the following framework:

- Description of proposed works
- Impact of proposed measures
- Effects on existing and future developments
- Detailed of provisions made for emergency vehicles, heavy vehicles and cyclists
- Measures to ameliorate impacts
- Public transport services affected
- Public consultation

5 Consultation

5.1 Parramatta City Council

Richard Searle (Service Manager – Traffic and Transport: 02 9806 5642) at Parramatta City Council was contacted for comment on 11 March 2016 and on 16 March 2016 and provided the following comments:

- To determine the extent of drop-off and pick-up with the increased student numbers at Parramatta Public School, to ensure adequacy for schools in Little Street
- Confirmation from proponent that the Arthur Phillip High School will not provide drop off for private vehicles, except DDA requirements (expected approximately 7 vehicles)
- Council support in principle for the relocation of a bus zone for the school on Charles Street, given the relocation of the on-street parking to Little Street. Clarification is to be provided as the extent of parking provisions for increased drop-off/pick-up
- Consider the school buses operating in Darcy Street interchange
- Consider the shared zone proposal in Barrack Lane
- The rear proposed lane (in DCP) connecting to Barrack Lane was intended to be a pedestrian accessway with no current requirements for rear access from George Street properties – Council planners to confirm.
- The current primary school service point at the end of Little Street is supported as long as a management plan is implemented to ensure that conflicts from collection/loading are managed during school hours
- Consider safety of pedestrians crossing Little Street at the Charles Street uncontrolled intersection
- Existing signalised pedestrian crossing in Macquarie Street is in a good location (with sight-lines) – any changes to crossing Macquarie Street will have to be implemented with light rail given that zebras are not compliant due to high number of lanes to cross
- Pedestrian crossing on Smith Street shown as a zebra needs to be in fact signalised – noting the limited short distances between other signalised intersections

5.2 Transport for NSW

Jim Tsirimiagos at Transport for NSW was contacted by both email and phone on 11 March 2016 to determine the best contact for Parramatta Light Rail. Ian Brocklehurst (Transport Planning Manager: 02 8265 7238) at Transport for NSW was then contacted both email on 15 March 2016 to schedule a meeting about the proposed Parramatta Light Rail.

5.3 Roads and Maritime Services

Ahsanul Amin at Roads and Maritime Services was contacted on 10 March 2016 by email for comment. He has indicated that Roads and Maritime will provide comment once the report has been submitted.

6 Conclusions

This review has described the potential traffic and transport impacts of the proposed development of Arthur Phillip High School and Parramatta Public School at 175 Macquarie Street and 800-100 Macquarie Street, Parramatta. Key findings of the review are as follows:

- The site is located in the Parramatta CBD area with only restricted parking opportunities available nearby;
- The site is located within close proximity to the Parramatta Interchange with good access to public transport networks;
- The site has good access to the regional cycle network and cycle parking will be provided as a component of the proposed development;
- There is a good local pedestrian network with signalised crossings on surrounding intersections for increased pedestrian safety;
- A reduced number of on-site parking bays is to be provided which encourages staff to use public transport and active transport modes, thereby reducing trips by private vehicle;
- On-street pick-up and drop-off restrictions are proposed within Little Street to accommodate expected parent activity for the school;
- The development is forecast to generate 67 vehicle movements in the AM peak hour, a modest increase when distributed over the key access roads into the precinct and considered in the context of existing traffic volumes in the area;
- There will be a reduction in staff vehicle movements in the same period which will offset some of this increase; and
- Traffic movements into the site are expected to operate efficiently with minimal vehicle delays.