

Department of Education
Parramatta West Public School
Transport Assessment

Rev E | 10 August 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 256940

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1 Introduction

Arup was commissioned by Conrad Gargett Ancher Mortlock Woolley Architects on behalf of the NSW Department of Education and Communities, to develop a Traffic and Transport Assessment to support the State Significant Development for the proposed expansion of Parramatta West Public School (the school).

The school is a Kindergarten to Year 6 School and had 766 students enrolled during the 2017 school year, supported by 49 staff (including 10 non-teaching staff). The proposed upgrades provide twenty new learning areas to cater for a total of 961 students and 13 additional staff. It should be noted that the 2018 enrolment has climbed to 854 students, placing additional pressure on the school buildings. The upgrades to the school will support the growth of primary-school aged children within the Parramatta Centre primary schools assets cluster over the next 13 years.

The school is bounded by Railway Street in the north, Franklin Street in the east and Auburn and Young Streets in the south. The primary pedestrian access is located on Railway Street. Vehicular accesses to the school are located on Franklin Street and Young Street. These local roads are segregated from the Western Motorway in the south shown in Figure 1. The school is located in the suburb of Parramatta in a primarily low-density residential area. North Campus is located just opposite the existing school buildings and will be the site of the new buildings for the expansion of the school.



Figure 1: Parramatta West Public School boundary

Traffic requirements for the site have been developed using the RMS Guide to Traffic Generating Development. Where this does not provide data or guidance, reference is made to similar developments.

This report examines the existing and future traffic and transport impacts on the surrounding road network and supports the development application submission for the proposed upgrades.

1.1 Consultation

1.1.1 Road and Maritime Services

Attendees: Navin Prasad, Roads and Maritime
Nazli Tzannes, Roads and Maritime

Discussion held: Thursday 3 May 2018

- The existing transport and access arrangements were discussed including the need to put in place kerb side controls to improve the pick-up and drop-off activity.
- It was noted that the City of Parramatta urban design comments requested consideration be given to upgrade the crossing. If required, Roads and Maritime requested that the upgrade would be to the current Roads and Maritime and Australian standards.
- NP advised that there will be future works to the on-ramp of the motorway. This will include widening of the on-ramp road to 2 lanes and construction of a retaining wall. This may result in adjacent local roads being restricted to one way during the construction period.
- NP advised that the increase to traffic resulting from the school population increase should not cause knock on effects to other nearby road intersections.

Other issues discussed included:

- the potential for closing Railway Street
- school entry gate locations
- implementation of a pedestrian crossing supervisor
- the use of road safety education programs for students and parents

1.1.2 Transport for NSW

Attendees: Ken Ho, Transport for NSW
Mark Ozinga, Transport for NSW

Discussion held: Wednesday 16 May 2018

- The existing transport and access arrangements were discussed including the need to put in place kerb side controls to improve the pick-up and drop-off activity.
- The existing pedestrian crossing of Railway Street was discussed although TfNSW had no formal position on the crossing as this is a Council issue. It was noted that Council have asked for the crossing to be reviewed,

particularly given the split site arrangement. Pedestrian fencing could be installed to direct pedestrians to use the crossing.

- KH advised that he doesn't envisage any issues pertaining to buses (School & Public) from the proposed development.
- MO also advised that the proposal to have drop-off/pickup zones located on both Railway and Crimea streets would improve traffic congestion as the load would be spread between the two streets.
- MO requested that the safety implications of ambulance vehicles travelling along Railway Street be considered with the proposed increase in school population and the split site.
- MO requested a Road Safety Evaluation/ Audit to be undertaken for the pedestrian crossing if it is to be upgraded. This may need to be undertaken by a traffic consultant that is independent to the project team in accordance with Austroads Guidelines.

1.1.3 City of Parramatta

Attendee: Richard Searle, Service Manager Traffic and Transport

Discussion held: Wednesday 23 May 2018

- Holroyd City Council (now amalgamated with City of Parramatta) approved in June 2015 a pedestrian crossing for Franklin Street south of Railway Street with a pedestrian refuge in Franklin Street to the north of Railway Street. It was resolved that a funding application be made to Roads and Maritime. The status of this application is unknown.
- The existing pedestrian crossing in Railway Street appears to be configured as a suitable arrangement with kerb and central islands, raised crossing with approach line marking, hoops and No Stopping signage. The request to consider an upgrade to the crossing was included in Council's urban design comments and not the traffic engineering comments.
- Installation of No Parking zones for school drop-off/ pick-up in Railway Street is supported. The use of Crimea Street would also be supported to spread the kerbside load.
- The headmaster has requested two No Parking zones, one in Railway Street and the other in Auburn Street and these will be installed shortly. We can monitor the success of these zones for future expansion to suit the new school.
- On-street car parking is not under strain and encouraging staff to park in underutilised sections of Auburn Street would be a suitable strategy to keep the kerbside clear adjacent to the school.

1.2 SEARs report

A Secretary's Environmental Assessment Requirements (SEARs) report has been submitted by the Department of Planning.

- Application Number: SSD 8790
- Proposal Name: Alterations and Additions to Parramatta West Public School
- Location: Auburn and Young Street, Parramatta
- Applicant: Blue Visions Management Pty Ltd on behalf of NSW Department of Education
- Date of Issue: Reissued 24 January 2017

The following details in Table 1 respond to the requirements raised in the SEARs report.

Table 1: Secretary's Environmental Assessment Requirements and response

SEARs requirements	Addressed
Include a transport and accessibility impact assessment, which details, but not limited to the following:	This report details a transport and accessibility impact assessment of the proposed school development
accurate details of the current daily and peak hour vehicle, public transport, pedestrian and cycle movement and existing traffic and transport facilities provided on the road network located adjacent to the proposed development;	Discussed in section 2.10 and 2.4
an assessment of the operation of existing and future transport networks including public transport networks, and their ability to accommodate the existing trips and the forecast number of trips to and from the development;	Discussed in section 2.4
details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips based on surveys of the existing and similar schools within the local area;	Discussed in section 3.8
the adequacy of public transport, pedestrian and bicycle networks and associated infrastructure to meet the likely future demand of the proposed development;	Discussed in section 2.4
the impact of the proposed development on existing and future public transport infrastructure within the vicinity of the site in consultation with Council, Roads and Maritime Services and Transport for NSW and identify measures to integrate the development with the transport network;	Discussed in section 2.4
the identification of infrastructure required to ameliorate any impacts on traffic efficiency and road safety impacts associated with the proposed development, including details on improvements required to affected intersections	Discussed in section 3
details of travel demand management measures to minimise the impact on general traffic and bus	Discussed in section 4

SEARs requirements	Addressed
operations, including details of a location-specific sustainable travel plan and the provision of facilities to increase the non-car mode share for travel to and from the site;	
the impact of trips generated by the development on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for, and details of, upgrades or road improvement works, if required. Traffic modelling is to be undertaken using SIDRA network modelling for current and future years;	Discussed in section 3.10
the proposed walking and cycling access arrangements and connections to public transport services;	Discussed in section 2.4
details of any proposed school bus routes along bus capable roads (i.e. travel lanes of 3.5 m minimum) and infrastructure (bus stops, bus layovers etc.);	No additional bus routes are required. Discussed in section 2.4.3
the proposed access arrangements, including car and bus pick-up/drop-off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and bicycle networks, including pedestrian crossings and refuges and speed control devices and zones;	Discussed in section 3.1
measures to maintain road and personal safety in line with CPTED principles;	Discussed in section 3.1
proposed bicycle parking provision, including end of trip facilities, in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance;	Discussed in section 3.6
proposed number of on-site car parking spaces and corresponding compliance with existing parking codes and justification for the level of car parking provided on-site;	Discussed in section 3.12
an assessment of the cumulative on-street parking impacts of cars and bus pick-up/drop-off, staff parking and any other parking demands associated with the existing and proposed development;	Discussed in section 3.12
details of emergency vehicle access arrangements;	Discussed in section 3.7
an assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures to minimise the risk of vehicle-pedestrian crashes	Discussed in section 3.1
details of measures to prevent or minimise the need for students to cross Railway Street throughout the school day;	Discussed in section 3.2
service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times);	Discussed in section 3.7

SEARs requirements	Addressed
proposed management of construction traffic impacts, detailed within a draft Construction Traffic Management Plan, including: • assessment of cumulative impacts associated with other construction activities (if any); • an assessment of road safety at key intersections and locations subject to heavy vehicle construction traffic movements and high pedestrian activity; • details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process; • details of anticipated peak hour and daily construction vehicle movements to and from the site; • details of on-site car parking and access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle; • details of temporary cycling and pedestrian access during construction; and • 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	Detailed in the CPTMP appended to the report

Relevant Policies and Guidelines:

- Guide to Traffic Generating Developments (Roads and Maritime Services)
- EIS Guidelines – Road and Related Facilities (DoPI)
- Cycling Aspects of Austroads Guides
- NSW Planning Guidelines for Walking and Cycling
- Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development
- Standards Australia AS2890.3 (Bicycle Parking Facilities)

2 Existing Context

The existing transport infrastructure surrounding the site are detailed in this section, including private and public transport, active modes and site-specific arrangements.

2.1 Existing land uses

The existing land uses surrounding the site are defined by the Parramatta Local Environment Plan (2011), as illustrated in Figure 2.

The school is situated in a primarily low-density area with various public recreation facilities in close proximity.

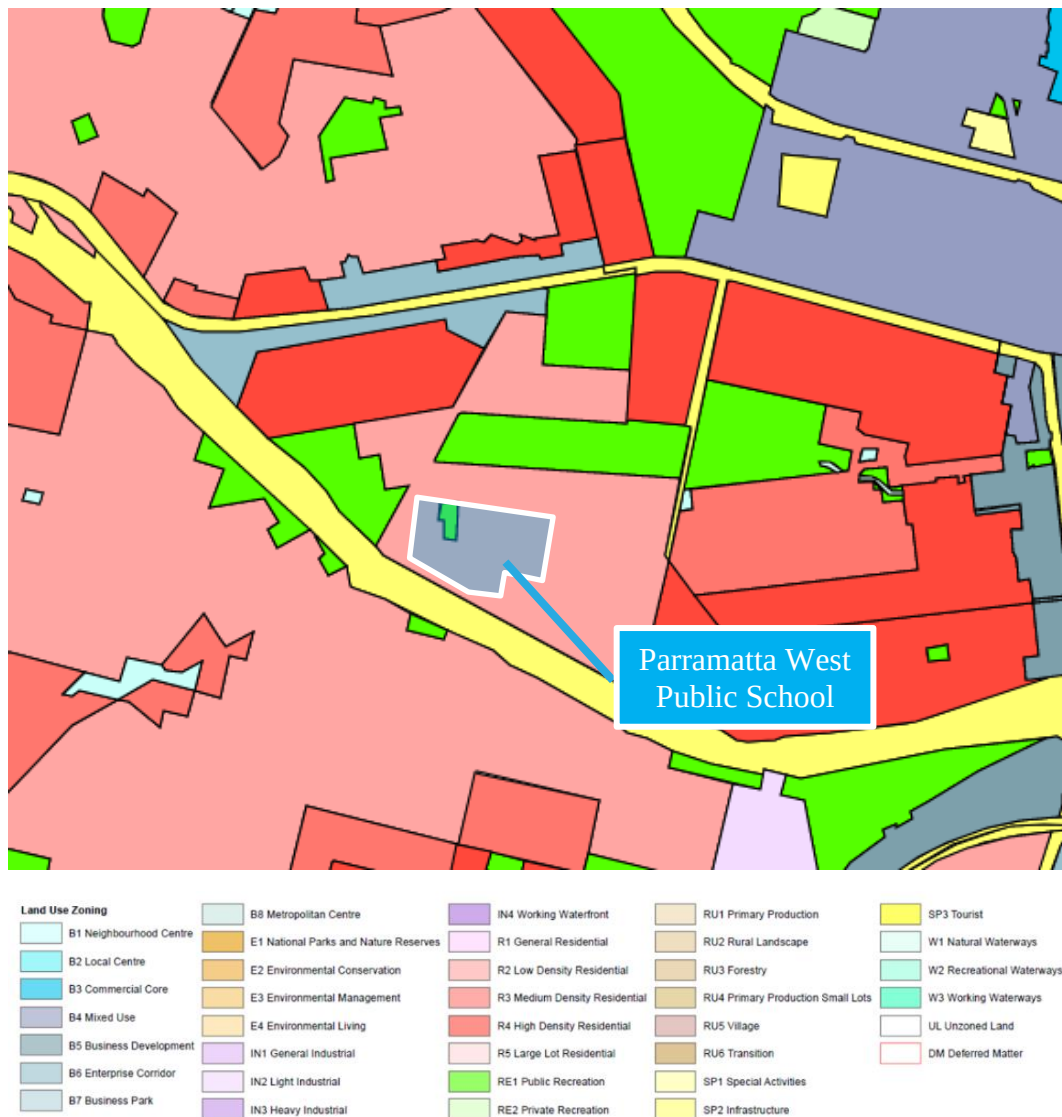


Figure 2: Land zoning map

2.1.1 Parramatta Ambulance Station

A key traffic generator adjacent to the school is the Parramatta Ambulance Station which is located on Railway Street to the west of the school as shown in Figure 3. Ambulances traverse Railway Street to gain access to Pitt Street.



Figure 3: Parramatta Ambulance Station

The NSW Ambulance Service provided advice as outlined below on 18 December 2017 on the existing facilities and services provided by NSW Ambulance in the study area.

Parramatta Ambulance Station will not be closing, but there will be an operational change in its use. NSW Ambulance is in the process of enhancing the way services are delivered in Sydney by introducing a 'hub and spoke' style operational model. This Paramedic Response Network (PRN), made up of superstations and Paramedic Response Points (PRPs), is an innovative, evidence-based operating model that will deliver a more sophisticated and even deployment of paramedics and ambulance vehicles across metropolitan Sydney. Paramedic Response Points (PRPs) are new, smaller stations strategically located around superstations, along with existing stations, to provide paramedic coverage in areas of demand based on the hour of day and day of week.

In the PRN that Parramatta is part of, paramedics will begin their shift at a superstation in Northmead and based on operational need, paramedics may be deployed to a PRP during their shift (including the existing Parramatta station location). Parramatta station will remain operational as a PRP for the foreseeable future.

How will this proposal affect the service provided by this agency?

The potential of the upgrade of Parramatta West Public School to impact NSW Ambulance operations has been brought to our attention. This upgrade is

likely to result in an increase in traffic in Railway Street, adjacent to Parramatta Ambulance station, at peak school drop-off and pick-up times from 8:30am to 9am and from 2:30pm to 3pm.

Compared to the current Parramatta station, the PRP will have fewer emergency vehicles entering and exiting the site. Due to this and the narrow time bands that traffic is expected to increase along Railway St, we do not believe that the proposed school upgrade development will have a negative impact on ambulance operations.

Based on this advice, we can confirm that ongoing use of the Ambulance Station and development of the school can occur with suitable recognition of these two activities on Railway Street.

2.2 Travel characteristics

2.2.1 Journey to work

The Bureau of Transport Statistics (BTS) 2016 Journey to Work data provides travel characteristics of workers in the local employment area. Figure 4 illustrates the travel zone extent that contains the school.



Figure 4 Journey to Work (2011) mode share

The data identified that 161 people work in the area, destination zone (DZN 114923747). Their mode share breakdown is shown in Figure 5:

There is an approximate private vehicle usage of 87% (driver and passenger) and 9% public transport utilisation. The low usage of public transport could be due to the proximity of the railway station and the abundance of on-street parking available in the area.

Mode share for workers in the destination zone catchment

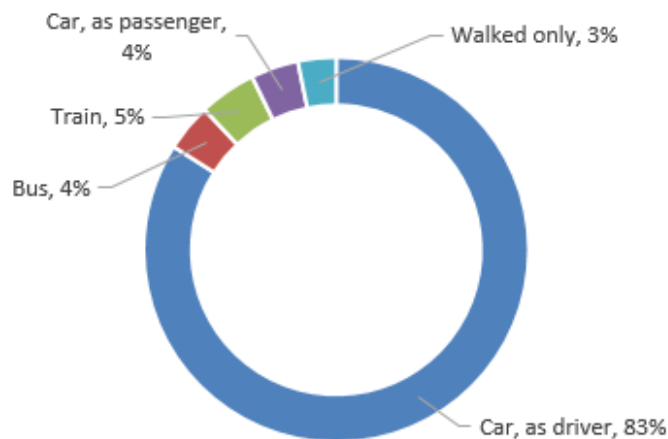


Figure 5: Mode share of workers in the study area (BTS 2016 Journey to Work)

2.3 Existing road network

The key RMS classified roads surrounding the school are shown in Figure 6. The key classified roads that provide access to the site are Burnett Street and Pitt Street. Burnett Street runs in a north-south direction between Great Western Highway in the north and Merrylands Road in the south. It has one lane in each direction and a sign-posted speed limit of 60km/h in some sections and 50km/h in other sections. Pitt Street runs in a north-south direction between Macquarie Street in the north and Merrylands Road in the south. It has two lanes in each direction and a sign-posted speed limit of 60km/h.

Local access to the site and streets for drop-off and pick-up activity unclassified roads and include Railway Street, Auburn Street, Franklin Street and Young Street.

2.4 Public Transport

The existing public transport network in the area is primarily bus-based (public and school services). The closest train stations include Merrylands, Harris Park and Parramatta and are all located approximately 2 kilometres from the school.

The key public transport nodes around the school are shown in Figure 6.

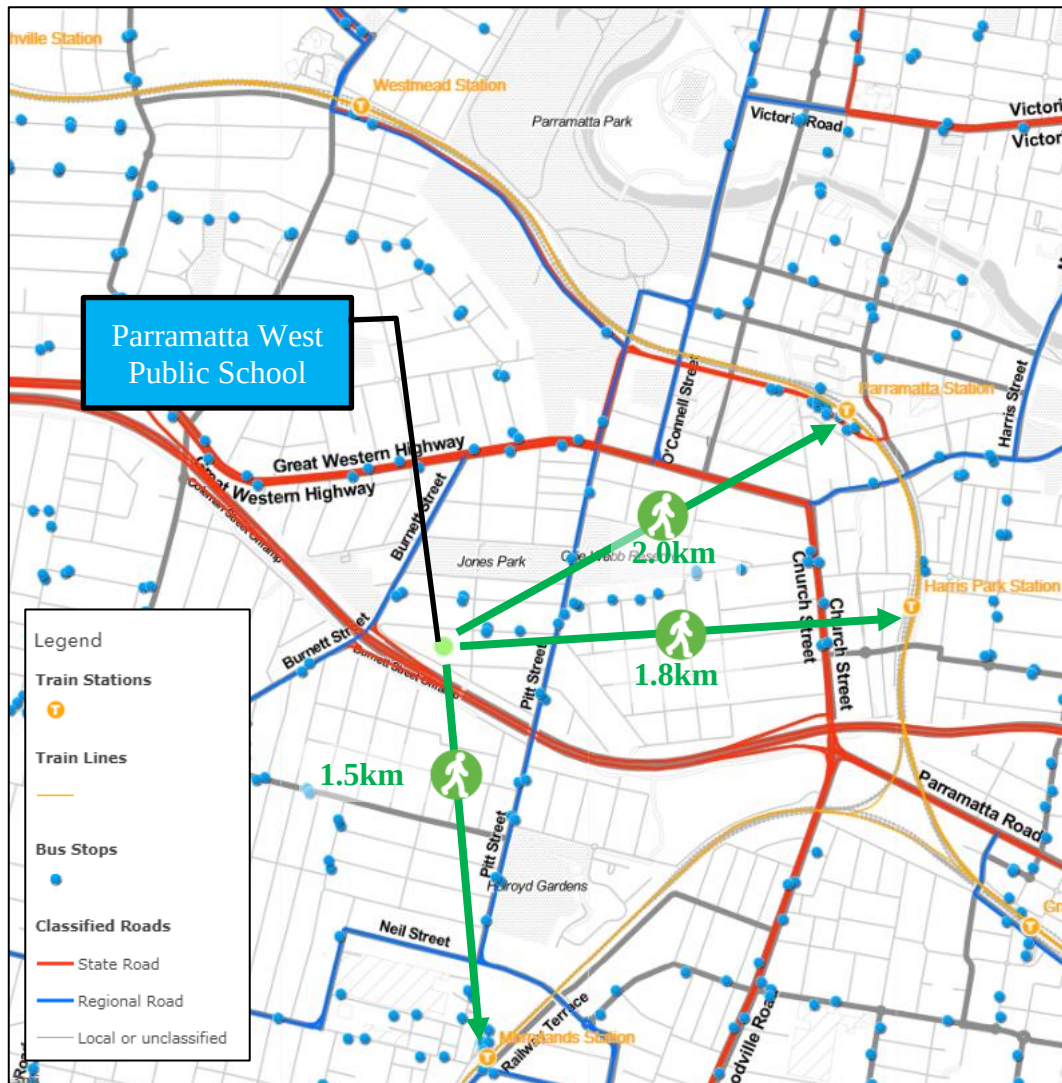


Figure 6: Key public transport nodes and classified roads around the school

2.4.1 Trains

The school is located outside of a recommended walking catchment from the nearest train stations. The nearest train stations to the school are:

Merrylands Train Station is located 1.5km away and is the closest to the school. The number of services operating on the relevant train lines are shown below, where the AM peak is 8:00am-9:00am:

- T2 Inner West & Leppington Line
 - 6 eastbound trains in the AM peak
 - 6 westbound trains in the AM peak

- T5 Cumberland Line
 - 1 northbound train in the AM peak
 - 2 southbound trains in the AM peak

Harris Park Train Station is located 1.9km away from the school. The number of services operating on the relevant train lines are shown below, where the AM peak is 8:00am-9:00am:

- T1 Western Line
 - 6 eastbound trains in the AM peak
 - 6 westbound trains in the AM peak
- T2 Inner West & Leppington Line
 - 4 eastbound trains in the AM peak
 - 4 westbound trains in the AM peak
- T5 Cumberland Line
 - 2 northbound trains in the AM peak
 - 2 southbound trains in the AM peak

Parramatta Train Station is located 2.1km away from the school. The number of services operating on the relevant train lines are shown below, where the AM peak is 8:00am-9:00am:

- T1 North Shore Line & Northern Line
 - 13 eastbound trains in the AM peak
 - 12 westbound trains in the AM peak
- T1 Western Line
 - 22 eastbound trains in the AM peak
 - 20 westbound trains in the AM peak
- T2 Inner West & Leppington Line
 - 4 eastbound trains in the AM peak
 - 4 westbound trains in the AM peak
- T5 Cumberland Line
 - 2 northbound trains in the AM peak
 - 2 southbound trains in the AM peak
- Blue Mountains Line
 - 4 eastbound trains in the AM peak
 - 2 westbound trains in the AM peak

2.4.2 Buses

Five different bus routes serve the school. Nearby bus stops and routes are shown in Figure 7. Key bus routes are:

- 802 Liverpool to Parramatta via Guilford, Green Valley, Fairfield West and Miller. Service operates daily.
- 804 Parramatta to Liverpool via Merrylands, Chetwynd Road (Guildford), Fairfield, Hamilton Road (Fairfield West), Greenfield Park, Bonnyrigg, Hinchinbrook, Miller and Sadleir.
- 806 Parramatta to Liverpool via Merrylands, Greystanes, Wetherill Park, Prairiewood, Abbotsbury, Edensor Park, Bonnyrigg and Reservoir Road (Mount Pritchard). Service operates daily
- 810 Merrylands to Parramatta via Merrylands West, Pemulwuy and Greystanes, Service operates daily.
- 811 Greystanes to Parramatta via Merrylands West and Pemulwuy. Service operates daily.



Figure 7: Bus stops and routes surrounding the school

2.4.3 School buses

School bus 9402 services the school in the morning. On 13 December 2017, 20 students were observed to be dropped-off at the bus zone along Railway Street at 8:38am, as shown in Figure 8.

School bus 9574 services the school in the afternoon. On 13 December 2017, approximately 20 students were observed to be picked-up from the bus zone along Railway Street at 3:00pm.

Site observations estimated that school bus occupancy levels were no more than 50% in both cases. These school buses also serve other surrounding schools besides Parramatta West Public School



Figure 8: School bus 9402 on Railway Street

2.4.4 Cycling

The RMS recommended cycling routes near the school are shown in Figure 9. A shared path, south of the Western motorway provides a continuous east-west connectivity. Pitt Street provides a certain degree of north-south connectivity to the school. While certain sections do not have dedicated paths, other alternate local routes can be utilised such as Franklin Street.

The school is well placed to make use of the comprehensive cycling network, to encourage older students and staff to cycle to school.

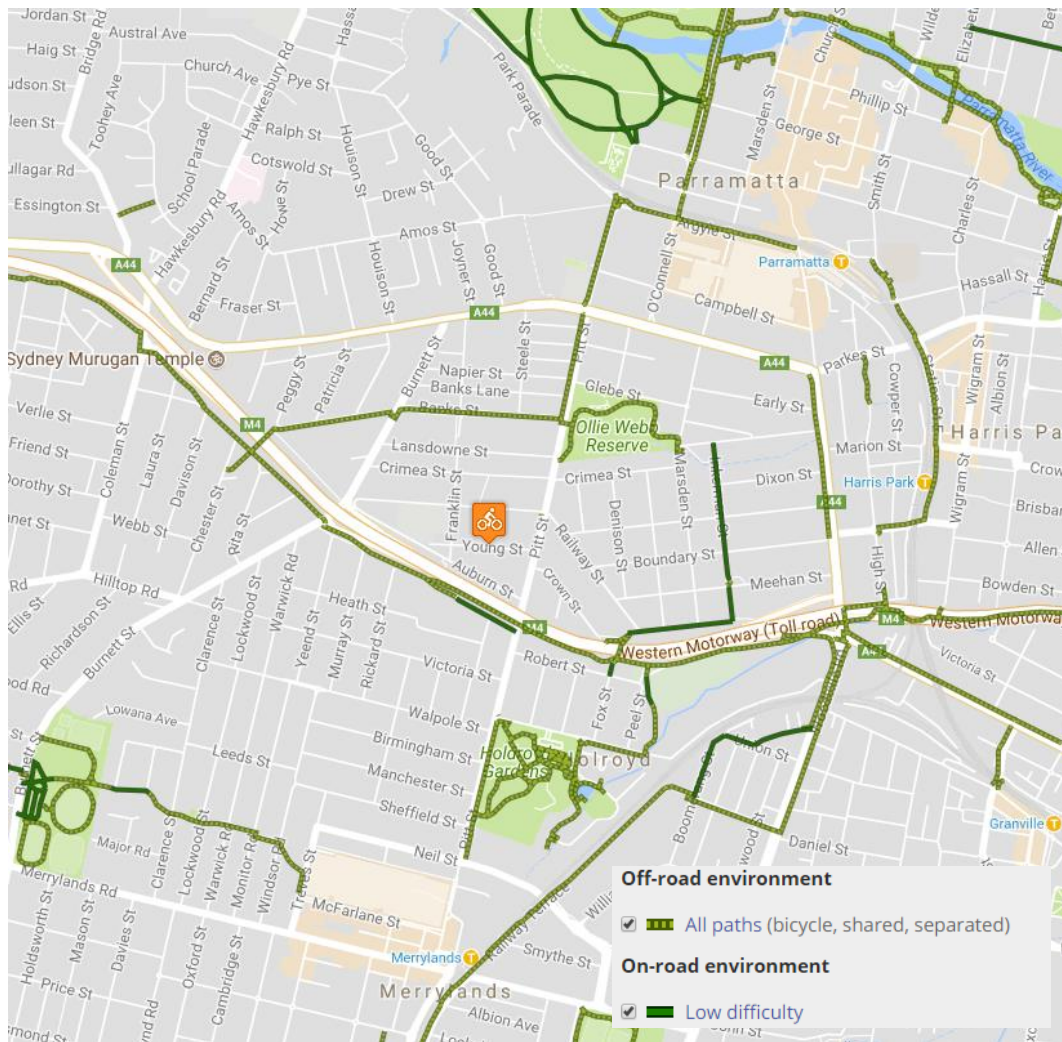


Figure 9: RMS cycleway finder near the school

Source: <http://www.rms.nsw.gov.au/roads/bicycles/cyclewayfinder>

2.5 Pedestrian safety

The surrounding streets consist of local roads which predominantly serve low density residential dwellings. Traffic volumes are therefore significantly lower during school off-peak hours. Streets surrounding the school are typically wide, for example Railway Street having a kerb to kerb width of 12 metres. Wider streets tend to give cars a sense of priority and a tendency to speed. School Zones are enforced along Auburn Street, Railway Street and Franklin Street and the raised pedestrian crossing in Railway Street forms of traffic calming device to reduce traffic speeds.

The school has a network of footpaths leading to bus stops and school entries. A pedestrian overbridge is provided across the Western Motorway. Some of the local roads such as Auburn Street and parts of Railway Street have footpaths on only one side of the road. The main pedestrian entry is along Railway Street, with a raised zebra crossing connecting Railway Street and entry to the school sportsground, as shown in Figure 10.



Figure 10: Pedestrian entries and crossings

2.6 Indicative school catchment

The indicative school catchment is shown in Figure 11 and shows that the catchment extends approximately 1.2 kilometres south and 800m north of the school.

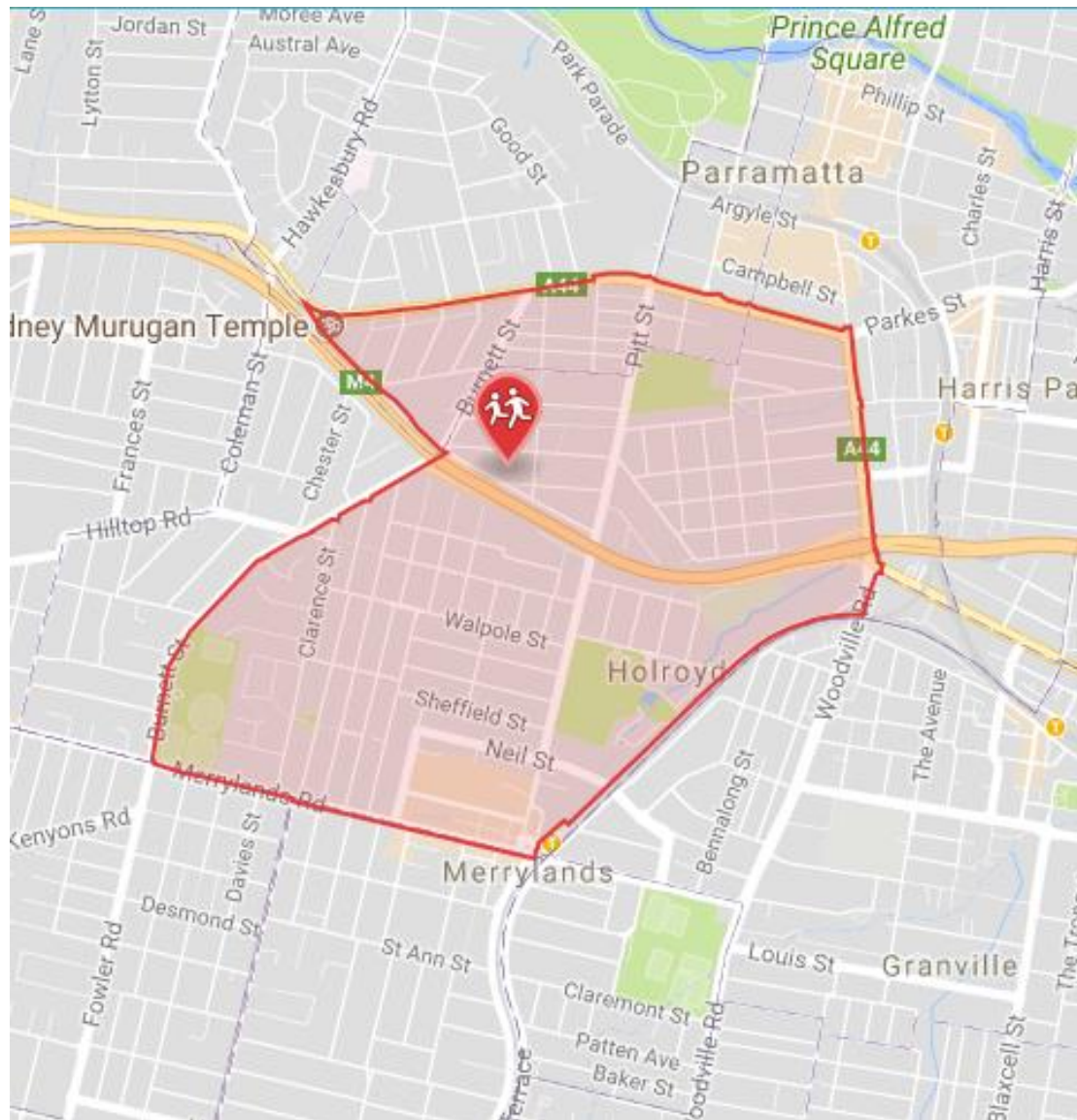


Figure 11 School catchment area

Source: <http://schoolzones.net.au/nsw/schools/parramatta-west-public-school/>

2.7 Crash data analysis

Crash data has been analysed for the 5 year period 1 Jan 2012 to 31 Dec 2016 in the school catchment area. During this period there were 1225 crashes reported in the study area. The location of these crashes is shown in Figure 12. The crashes included 53 crashes involving pedestrians and three fatal crashes; two of which were involving pedestrians.

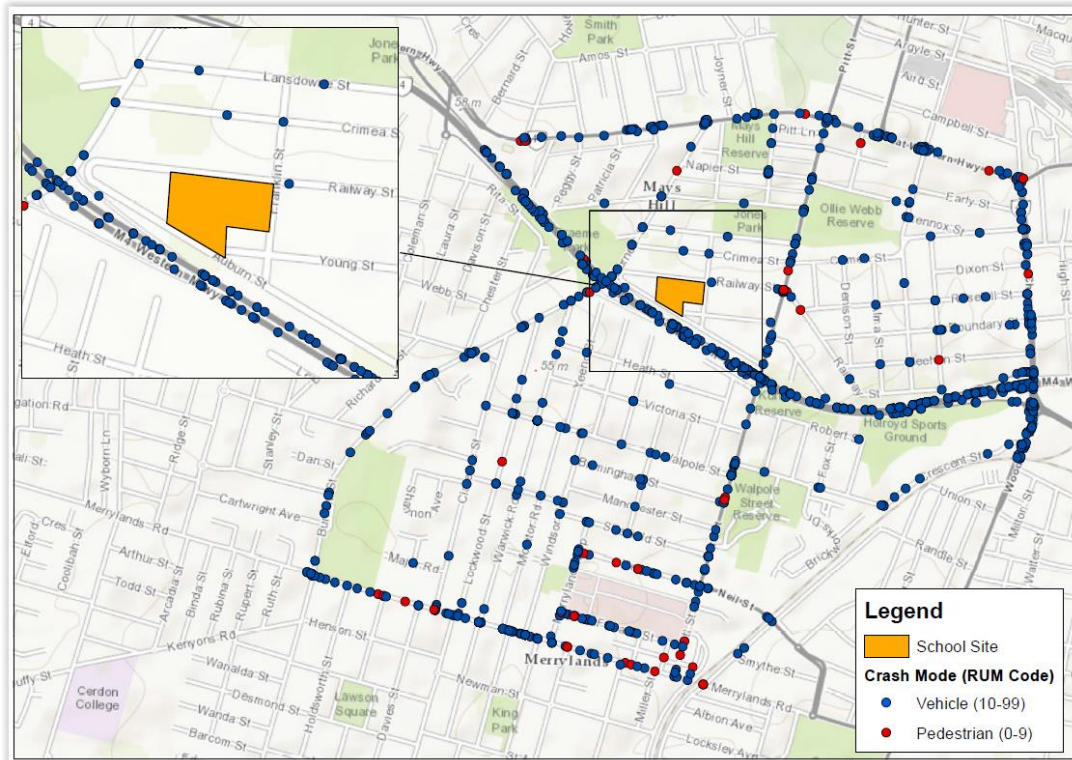


Figure 12: Crash locations within study area

A tool to explore and understand what happened in a crash is the road user movement (RUM) which describes the first cause for the crash. The following section provides detail on what RUM codes crashes in the study area where identified.

As it can be seen in Figure 13, the most common crash type in the study area was rear ending. This occurred 431 times which accounts for 35 percent of crashes, over half of these crashes occurred along the M4 Western Motorway. The second most common crash type was when vehicles are turning right across traffic, this occurred 147 times which accounts for 12 percent of crashes.

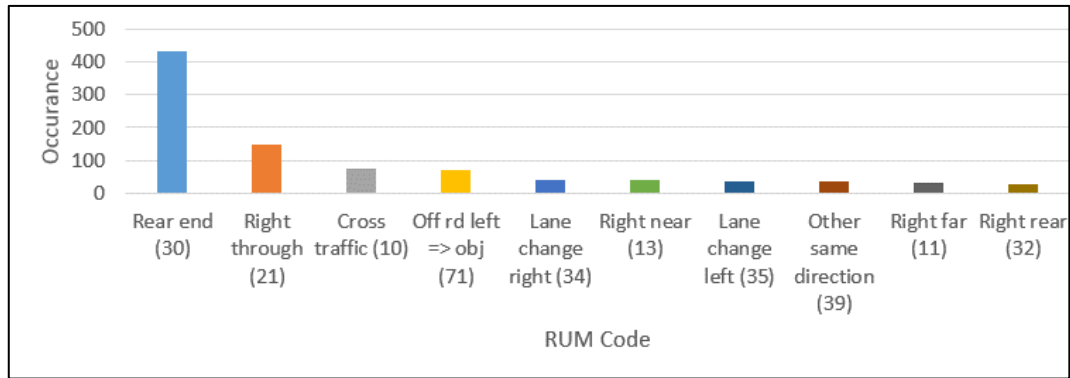


Figure 13 Top 10 crash types by RUM Code

On the local roads adjacent to the school site there has only been one recorded crash. This occurred near the intersection of Railway Street and Franklin Street due to a collision with a car travelling west and a vehicle leaving a parking spot.

2.8 Staff parking

The former staff off-street car park, which contained approximately 14 spaces accessed via Young Street, has been replaced by three demountable classrooms shown in Figure 14. Staff were found parking on-street, with occupancy levels discussed in the next section.



Figure 14: Demountable classrooms located in the staff car park at the school



Figure 15: Auburn Street found to have a large number of empty spaces, photo taken at 9:30am

2.9 On-street parking

Arup has conducted on-street parking surveys on 27 July 2017, Thursday at 9:30am. During this period, staff would have occupied on-street spaces as they no longer have access to any off-street parking spaces in the staff car park.

Auburn Street had 90 unoccupied spaces, while Franklin Street and Young Street were close to capacity. These spaces were likely utilised by staff and residents. Crimea Street had very low levels of occupancy.



Figure 16: Young Street at 9:15am



Figure 17: Franklin Street at 9:05am

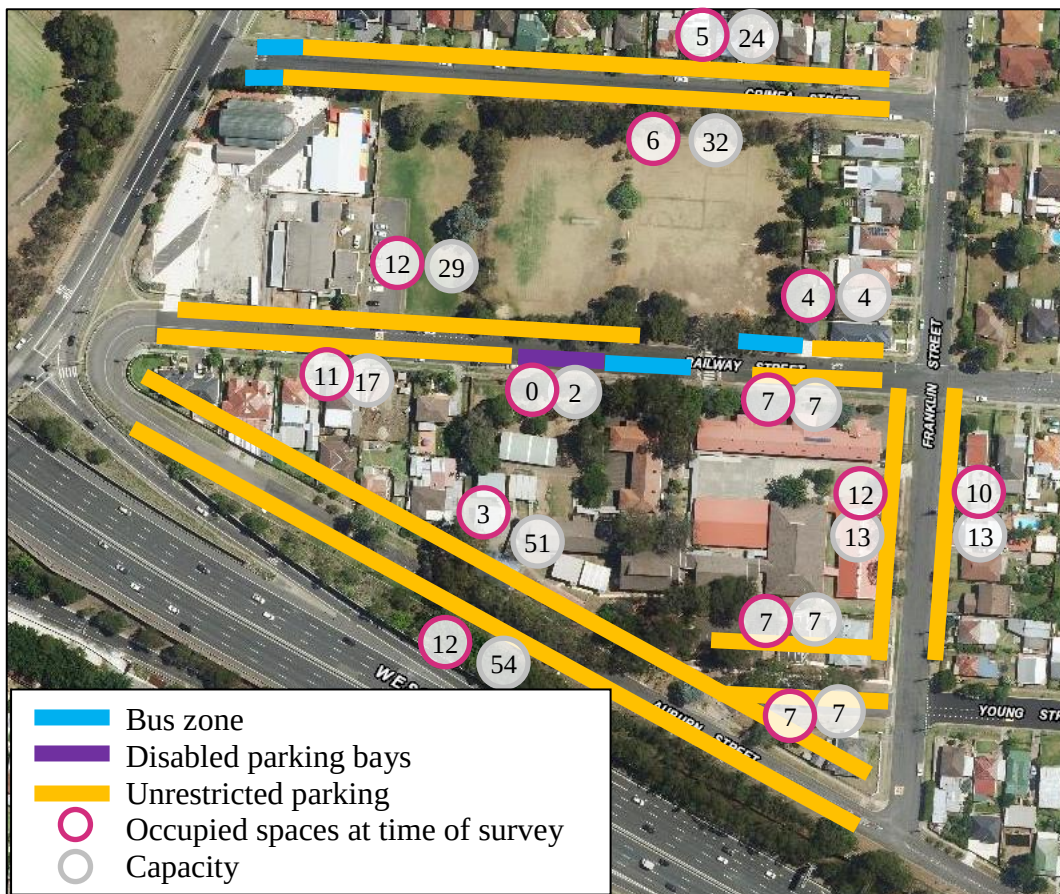


Figure 18: On-street parking restrictions and capacity at time of survey (Thursday 9:30am)

2.10 Drop-off period

2.10.1 Drop-off profile

With school commencing at 8:55am, Arup has conducted on-site observations on Thursday 13 December 2017, commencing at 8:00am to 9:00am. Drop-off activity was observed along Railway Street, Franklin Street, Auburn Street and Young Street. A large number of parents were found to park their vehicles and walk students to the entrance of the school while others performed drop-off activity in the surrounding streets near school entrances.

During the on-site observations, a drop-off profile was generated with the following observed at the surrounding streets:

- 286 cars dropping off students
- 429 students arriving by cars
- This equates to 1.5 students / car

The arrival profile of vehicles observed during the surveys, are shown in Figure 19.

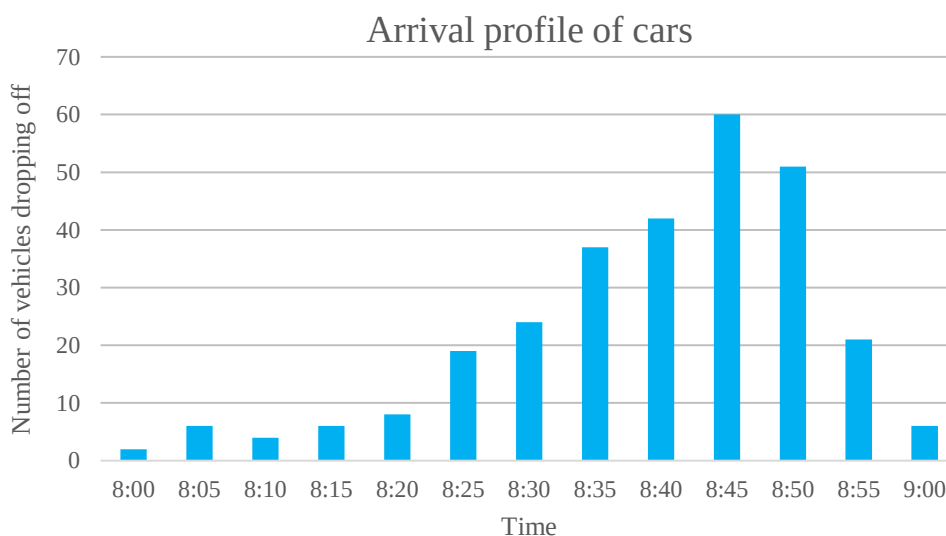


Figure 19: Arrival profile of vehicles observed during school drop-off period

Due to the unrestricted nature of the parking in surrounding local streets and a lack of formal drop-off bays, some parents were found to park further away on surrounding local streets, such as Crimea Street, and walk to the school with their children. As the surveys were limited to the main drop-off areas, they were unable to capture the full extent of the number of vehicles arriving.

The number of cars dropping off students would be higher, however the surveys do provide a robust understanding of car occupancy rates in the school (1.5 students / car), with a majority of students having siblings in the same school.

2.10.2 Driver behaviour

In general, the existing drop-off arrangement was found to be disorganised with improper behaviour observed such as 3-point turns along Railway Street and Franklin Street, in order to exit to the collector roads of Pitt Street and Burnett Street, as shown in Figure 20. This is a result of wide carriageways and a lack of a proper drop-off system.

The cul-de-sac along Young Street was found to be heavily utilised for U-turns but was made difficult due to existing unrestricted parking along Young Street, which was utilised at the time of the surveys, as shown in Figure 21. Unrestricted parking spaces along Young Street and Franklin Street were found to be utilised, likely by staff of the school.



Figure 20: Parents performing 3-point turns on Railway Street



Figure 21: Cul-de-sac along Young Street being used for parking

Vehicle movements were found to be busy in all surrounding streets with double parking observed along Franklin Street, making the overall school environment unsafe, as shown in Figure 22.



Figure 22: Double parking observed along Franklin Street



Figure 23: Queues along Franklin Street caused by vehicles dropping off children



Figure 24: Parents dropping off children in the middle of the road

2.11 Pick-up period

2.11.1 Pick-up profile

With school ending at 2:55pm, Arup has conducted on-site observations on Thursday 13 December 2017, from 2:40pm to 3:20pm. Pick-up activity was observed along Railway Street, Franklin Street, Auburn Street and Young Street. A majority of parents were found parking their cars along Auburn Street before 2:55pm, waiting for children to finish school.

During the on-site observations, a pick up profile was generated with the following observed at the surrounding streets:

- 211 cars picking up students
- 346 students departing by cars
- This equates to 1.64 students / car

The arrival profile of vehicles observed during the surveys are shown in Figure 25.

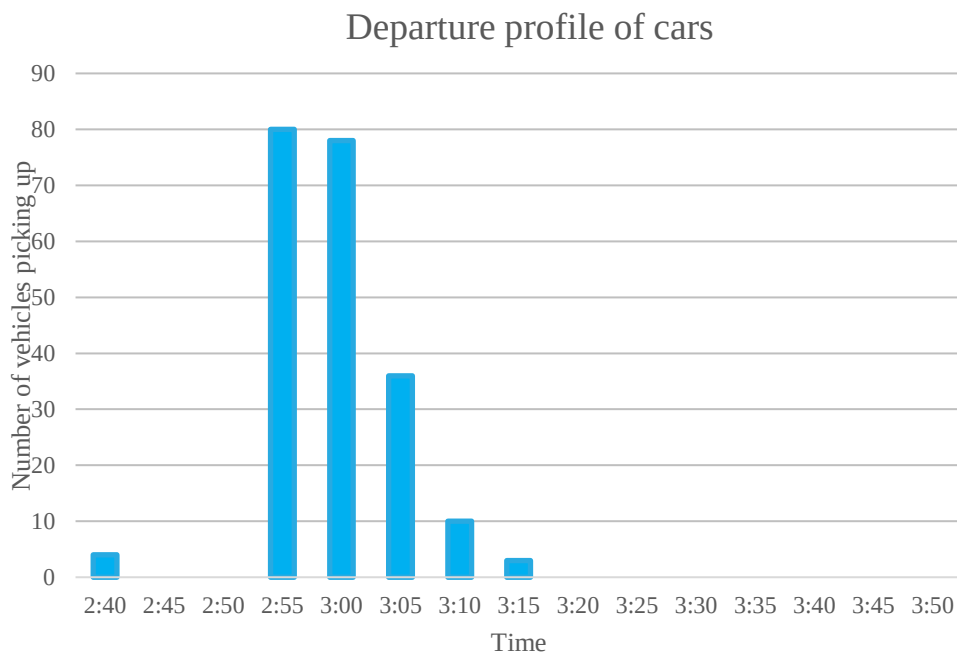


Figure 25 Indicative departure profile of vehicles picking up students

Some parents were found to park further away on surrounding local streets, such as Crimea Street, and walk to the school with their children.

The surveys provide a robust understanding of car occupancy rates in the school (1.64 students / car), indicating tendency for ride sharing with siblings or school mates.

2.11.2 Driver behaviour

The pick-up period was more organised when compared to the AM drop-off period. Figure 26 shows parked cars along Auburn Street at 2:50pm, waiting for children to finish school.

Pick-ups operated efficiently with sufficient parking in the surrounding streets. At the time of the surveys, no double parking and illegal U-turns were observed.



Figure 26: Parents parked along Auburn Street at 2:50pm



Figure 27: Parents parked along Auburn Street at 3:15pm

3 Proposed Upgrades

Parramatta West Public School had 766 students enrolled during 2017, supported by 49 staff members (including 10 non-teaching staff members). The project will provide 20 new permanent teaching spaces and the expansion of core facilities. This will accommodate additional students taking the capacity to 961 students. Key upgrades for the school, shown in Figure 28 include:

- Provision of 20 new home bases to replace existing demountable home bases
- Internal alterations to the existing building
- A new building at the existing North Campus, north of the existing school
- Upgrading administration and library facilities to core standards



Figure 28: Parramatta West Public School proposed upgrades

Source: Conrad Gargett Ancher Mortlock Woolley

3.1 Proposed drop-off and pick-up arrangements

3.1.1 Kerbside controls – current school

The existing drop-off and pick-up arrangement is disorganised and potentially unsafe as discussed in section 2.10. A designated drop-off and pick-up location along with proper traffic enforcement is needed in order for the school to function efficiently upon completion of the upgrades.

The following priorities should be introduced to control on-street parking:

- Utilise kerbside space along the school frontages for drop-off and pick-up activity with appropriate signage.
- Encourage staff parking to occur along Auburn Street where there is capacity for all day car parking without impacting on local residents.

The new school principal for 2018 has requested that City of Parramatta install two No Parking zones along the existing school frontage roads of Railway Street and Auburn Street. Two zones 18m in length to accommodate 3 cars each have been proposed by City of Parramatta as shown in Figure 29. These two zones will be a good starting point for the existing school to improve the drop-off activity. These zones can be monitored for effectiveness and expanded as appropriate for the proposed school upgrade.

The introduction of formal zones only requires the installation of signage with no physical road infrastructure upgrades required.

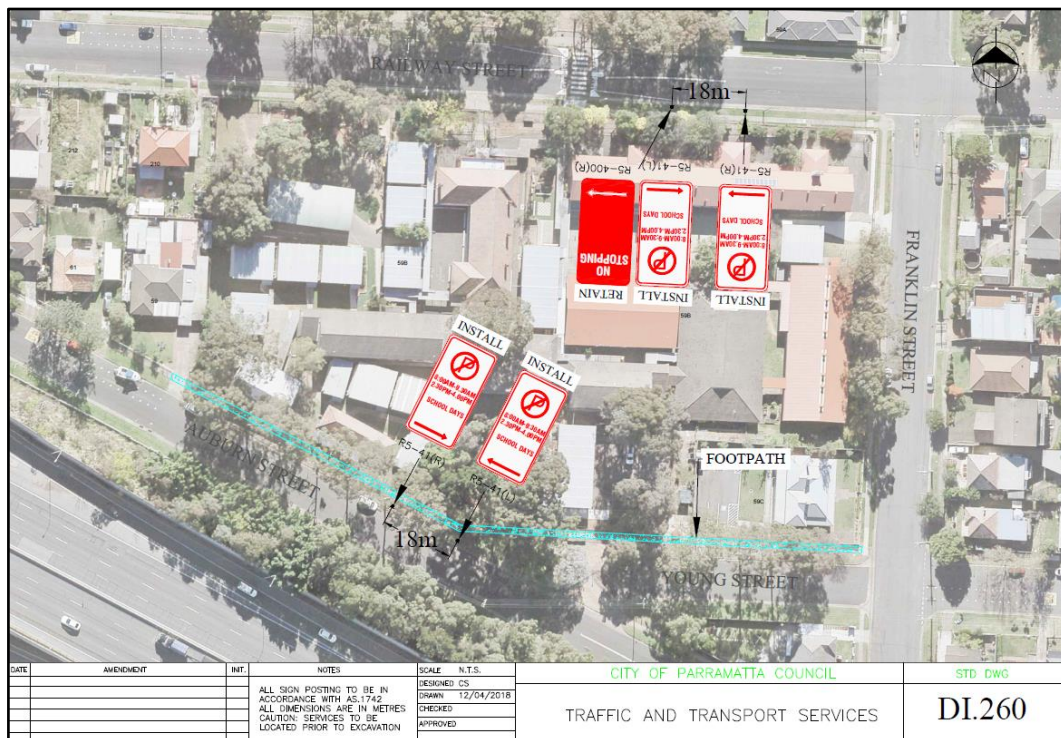


Figure 29: Proposed No Parking zones 2018

3.1.2 Kerbside controls – upgraded school

Possible on-street parking modifications for the upgraded school are shown in Figure 30. This consists of a series of short-term parking and No Parking restrictions during school times. This initiative is currently used in Rosehill Public School along Virginia Street, which was observed to perform safely and efficiently by Arup on 28 July 2017. By formalising the drop-off and pick-up areas, parents will spend less time parking, creating a faster turn-around at the key locations near the school entrances. Parents who wish to park for longer periods may still use the current unrestricted spaces available around the school, located further from the entry points. We have proposed an additional 2 disabled parking bays on the north side of Railway Street adjacent to the new school entrance.

In Railway Street No Parking zones could be installed on both sides of the street. In Franklin Street and Crimea Street P5 Minute zones may be more appropriate. Young Street should be subject to monitoring with a possibility of similar on-street restrictions to formalise it as a drop-off area. Restricting parking would also enable vehicles to utilise the cul-de-sac more efficiently. In total up to 38 drop-off/pick-up cars would be accommodated in these formal zones.



Figure 30: New proposed on-street parking restrictions along the school frontages, near the entries, shown in green and pink.

3.1.3 Education

The school will inform existing and future students and parents of the new drop-off and pick-up locations. They should also be informed that double-parking is illegal and three point turns on the surrounding streets are unsafe. A traffic circulation map should also be provided to inform parents of the proper drop-off and pick-up procedures, with an example shown in Figure 31 .

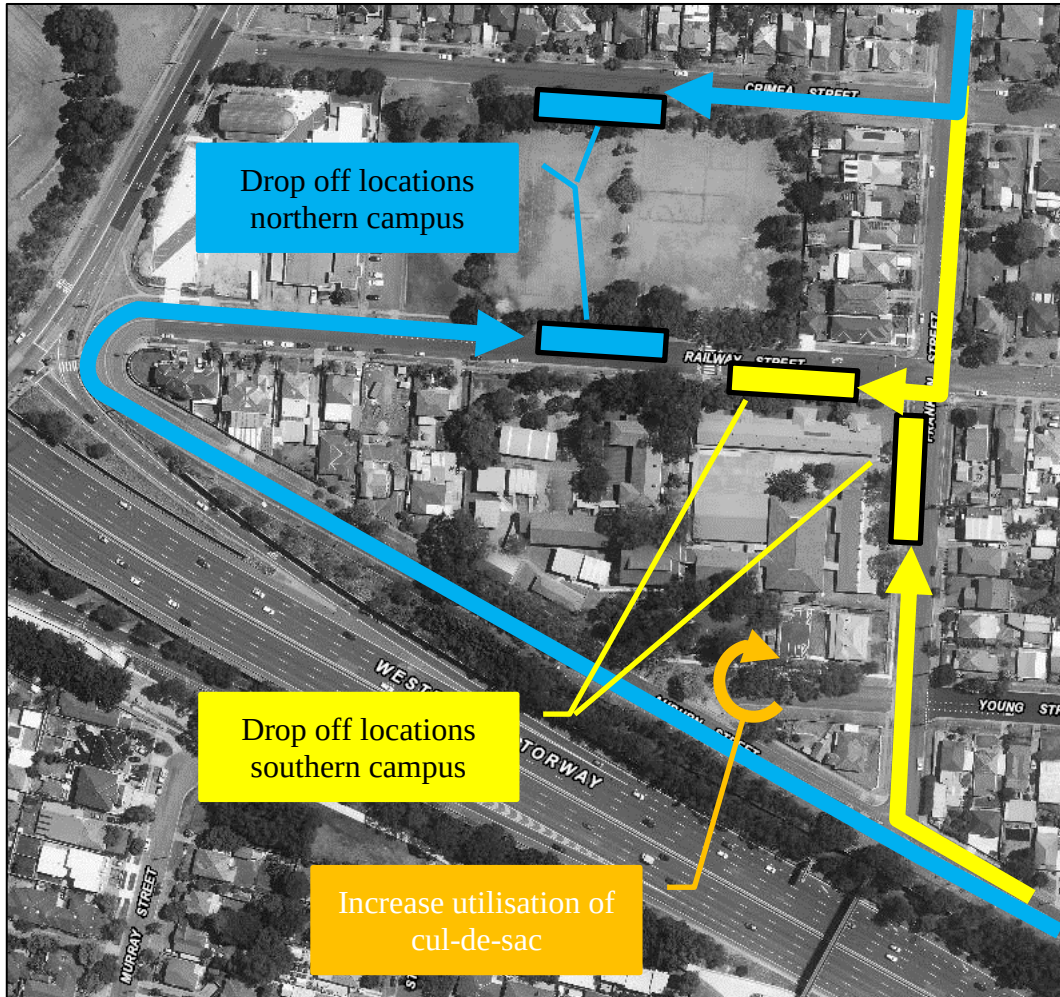


Figure 31: Proposed drop-off and pick-up circulation

Road safety education is taught to all students from Kindergarten to Year 6 at Parramatta West Public School as part of personal development, health and physical education (PDHPE). Driver education programs are also taught as part of the PDHPE 7-10 syllabus.

There are programs available for Road Safety around schools. A NSW Government document is attached outlining various programs. The Stop Look Listen Think message for crossing roads is particularly appropriate here. Some images of signage/ brochures are shown below in Figure 32.

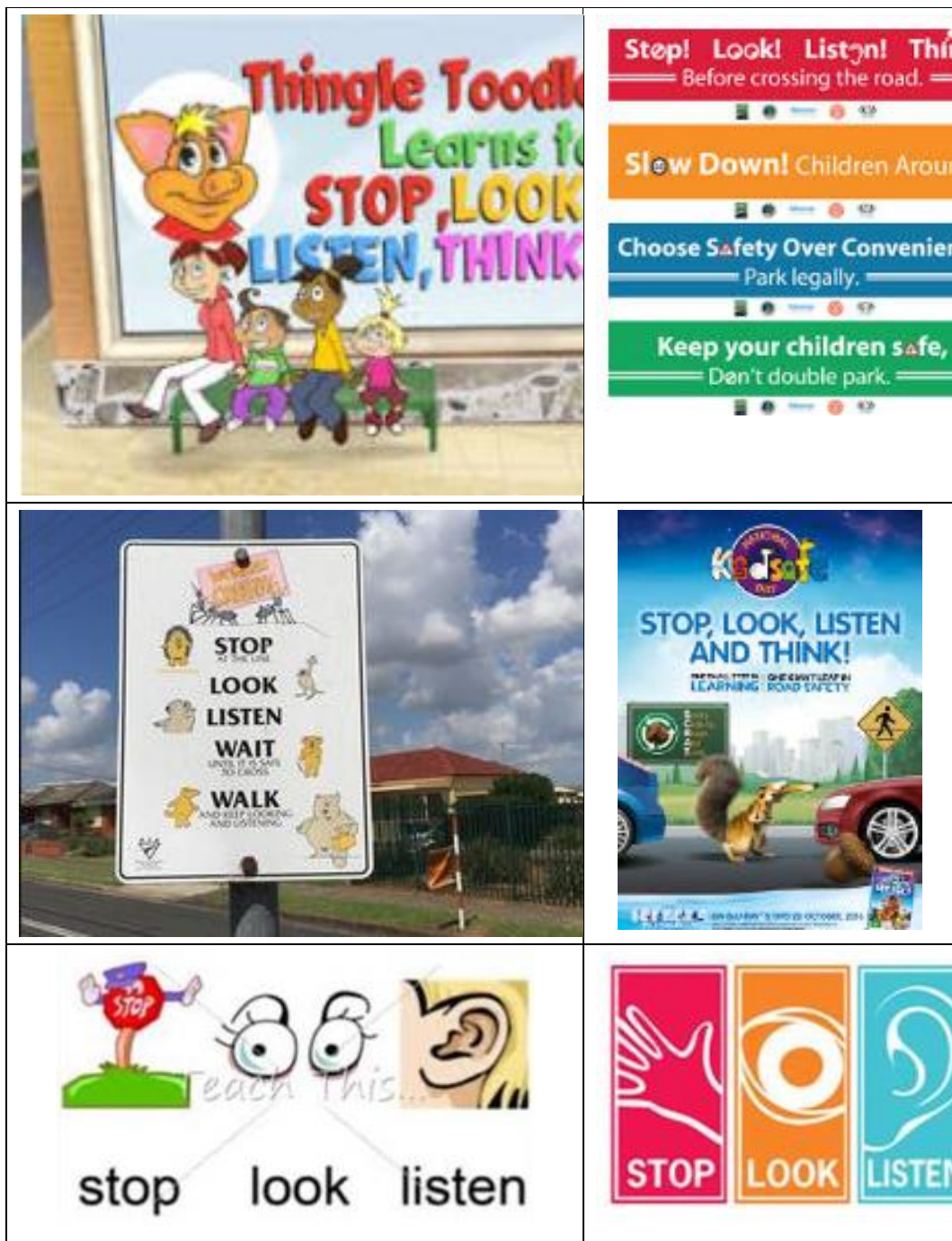


Figure 32: Road safety signage and brochure material

There appears to be no specific signage available, however it would be beneficial for the school to involve the students in development of the signage which would be located at all gates and at the school crossing.

The Road Safety programs are also aimed at parents/carers who are accompanying students to and from school. In particular, driver behaviour during school drop-off and pick-up periods is an area which needs to be targeted every year.

3.1.4 Enforcement

Enforcement of safe driving practices can be through traffic officers and signage, shown in the figures below as seen at Lidcombe Public School.



Figure 33: No parking signage and warnings



Figure 34: Double parking signage and warnings

3.2 Pedestrian connectivity

The new school will be developed north of the existing school along Railway Street in Burra Reserve. Connectivity between the existing school in the south and the new school buildings to the north will be through the existing raised zebra crossing across Railway Street, shown in Figure 35.



Figure 35: Raised zebra crossing connecting both buildings across Railway Street

3.2.1 School drop-off and pick-up periods

Pedestrian activity across Railway Street occurs during school drop-off and pick-up periods. At these times the crossing is unsupervised. As described in Section 3.1, it is proposed to formalise drop-off and pick-up zones for both the southern and northern sites along the site frontages which will mean there is less need for students to cross the road. Parents/carers will be educated to approach the most appropriate zone for drop-off and pick-up relative to each side of Railway Street. It is also recommended that the school investigate the support of a pedestrian crossing supervisor at the Railway Street pedestrian crossing.

3.2.2 Throughout the day

Currently school children cross Railway Street under supervision of a staff member at recess and lunch to utilise the play and sports space in North Campus. At other times, groups of children may use the crossing under supervision to access North Campus for activities.

For the upgraded school split across two campuses, students will be assigned to respective buildings throughout school hours. There will be times when students need to transfer between buildings, resulting in crossing activity across Railway Street during school hours.

The various time periods through a school day where a management strategy is needed are described in the table. The strategy assumes that gate locks will be in

place at the school access points adjacent to the pedestrian crossing. Many schools now have swipe cards to access certain parts of the schools rather than issue keys. It is particularly relevant at the split campus to install a level of control at the access points to the school crossing. Gates should be fitted with swipe access card control. The proposed management periods for the Railway Street pedestrian crossing are shown in Table 2.

Table 2: Management periods for the Railway Street pedestrian crossing

Time period	Time	Management
Before School		Unattended/parent
Drop-off period	8.00am – 8.55am	Crossing attendant
Morning session 1	8.55am – 10.55am	Locked gates/ Individual supervision
Morning recess	10.55am – 11.15am	Staff supervised
Morning session 2	11.15am – 1.00pm	Locked gates/ Individual supervision
Lunch	1.00pm – 1.50pm	Staff supervised
Afternoon session	1.50pm – 2.55pm	Locked gates/ Individual supervision
Pick-up period	2.55pm – 3.20pm	Crossing attendant
After school		Unattended/parent

3.3 Railway Street traffic count and speed data

A traffic counter was installed in Railway Street on approach to the school crossing to record vehicle volume, speed and type for a one week period commencing Friday 9 March 2018.

3.3.1 Average Speed of the vehicles (over the week)

- 87% of vehicles were travelling at less than 30km/hr in the vicinity of the pedestrian crossing.
- Only 2% were travelling between 40 and 50km/hr.

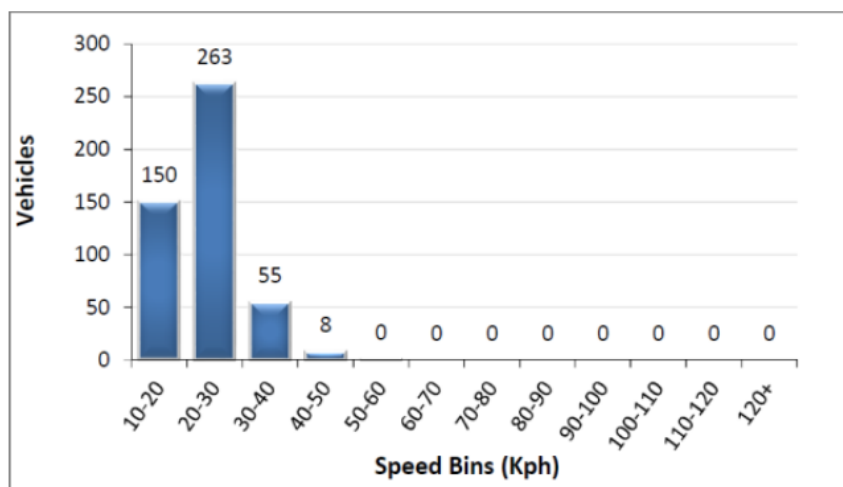


Figure 36: Vehicle speeds on Railway Street

3.3.2 Two-way Traffic Volumes

- Peak activity is at 8am associated with school drop-off when 120-150 vehicles per hour travel along Railway Street
- The afternoon school pick-up peak is lower at 80-100 vehicles per hour.
- Background traffic flow is very low during the week with a church peak occurring on Sunday.

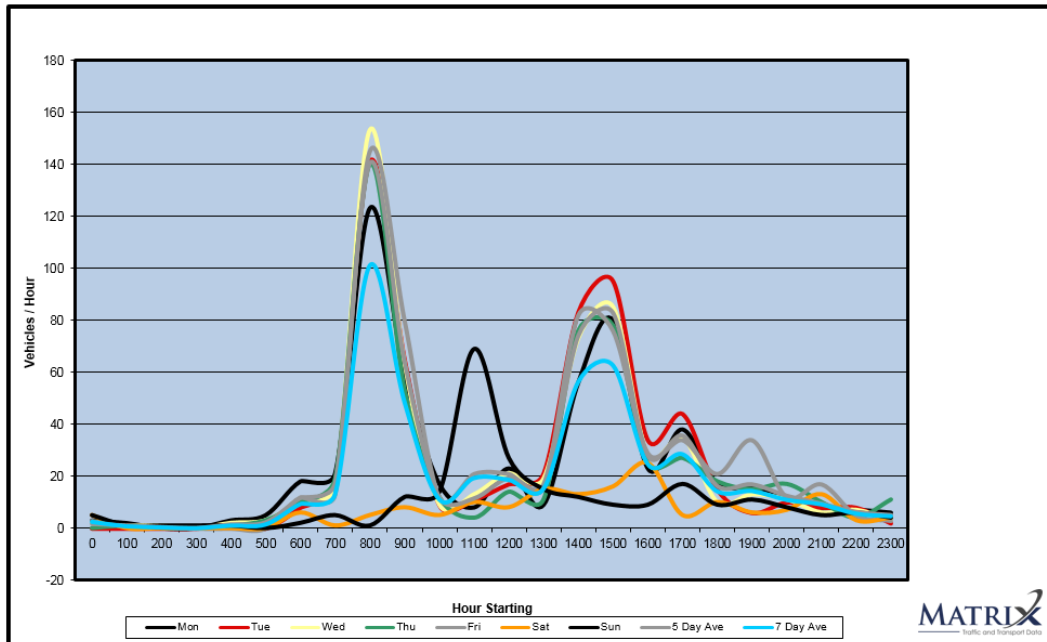


Figure 37: Two-way traffic volumes on Railway Street over a one week period

3.3.3 Vehicle type

- 98% of the vehicles were classified as light vehicles with the remaining (approximately 2%) as medium/heavy vehicles.

3.4 Existing Railway Street pedestrian crossing configuration

The existing design of the crossing arrangements is considered appropriate for the levels of children crossing anticipated under school supervision and the traffic characteristics.

3.4.1 Safety measures installed with the pedestrian crossing

Statutory No Stopping zones of 20m on the approach side and 10m on the departure side of the pedestrian crossing will be installed.

Pedestrian fencing will also be installed to extend from the crossing along the edge of the kerb to match the length of No Stopping zone. On the southern side the fence will be extended to approximately 20m to extend beyond the school entry point.

The proposed extent of No Stopping and pedestrian fencing is shown in Figure 38 with typical RMS roadside fencing shown in Figure 39.

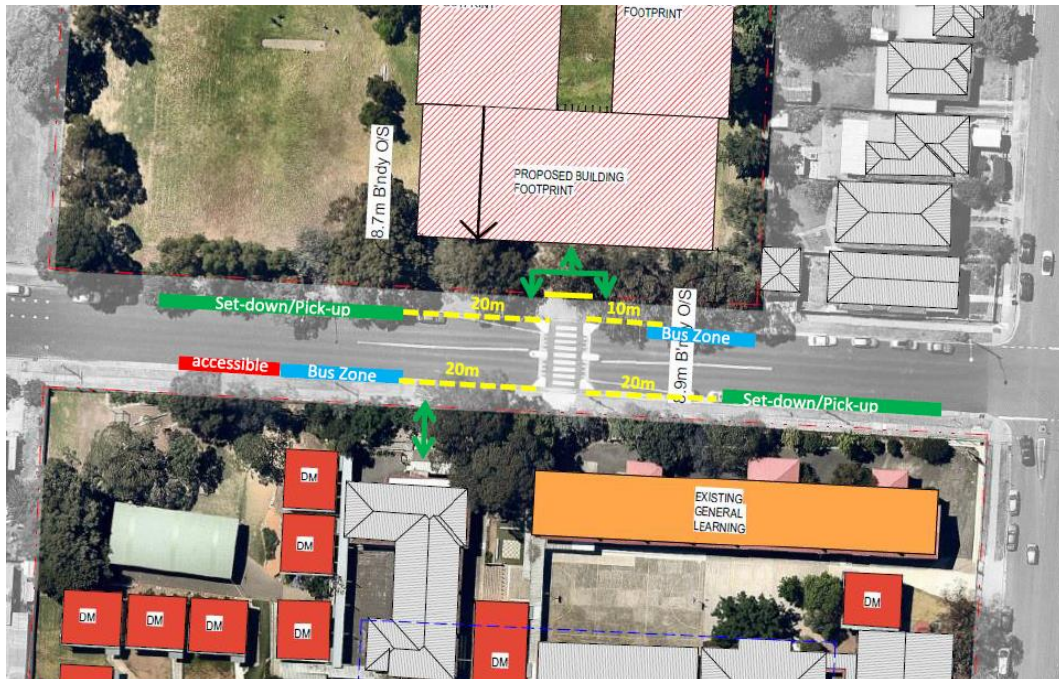


Figure 38: Proposed crossing safety fencing



Figure 39: Typical RMS roadside fencing

3.5 Wider footpath network

In 2015, the school requested a marked pedestrian crossing be installed on Franklin Street on the southern side of Railway Street to improve the safety for children and parents walking to the school. Holroyd City Council (now amalgamated with Parramatta City Council) considered the request and determined that the crossing meets the Roads and Maritime reduced warrant for pedestrian crossings where school children are involved. A pedestrian refuge was considered appropriate for the northern side of Railway Street.

In June 2015, Council resolved to install both devices subject to Roads and Maritime grant funding for the project. The Council report and proposed layout plan are contained in Appendix B. An extract from the plan is shown in Figure 40.

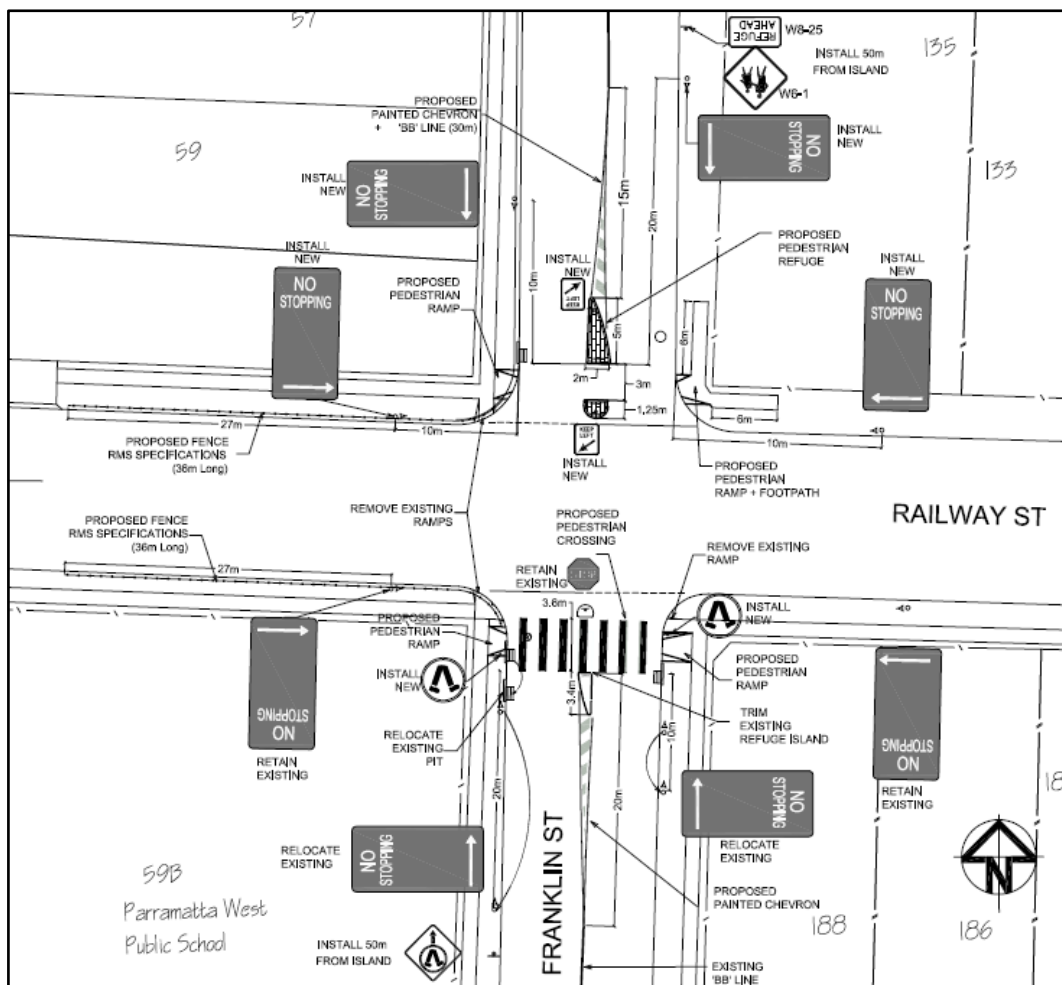


Figure 40: Proposed pedestrian crossing and pedestrian refuge in Franklin Street

3.6 Bicycle parking

The Department of Education website states that:

- Not all schools have the facilities to store students' bikes. The decision to install and maintain bike racks is made by the school. Some schools choose not to have bikes brought into the school. This may be due to safety reasons, or the inability to safely secure bikes. Principals have the authority to stop students from bringing bikes, scooters and skateboards onto school property.
- Bikes need to be stored in the area specified by the school. The school accepts no responsibility for loss, damage or theft. We recommend that students lock their bikes with a secure chain.
- The school may assist with safe storage of helmets if space permits.

Source: <https://education.nsw.gov.au/road-safety-education/safe-student-travel/bikes>

The Parramatta Development Control Plan (2011) does not specify a minimum bicycle parking requirement for primary schools.

Based on consultation with council the school would provide the following facilities to encourage cycling as a mode of transport to / from school:

- 2 additional staff bicycle racks (based on 10% of 11 additional staff). End of trip facilities for staff, including lockers, change rooms and showers
- 20 student bicycle racks (based on 10% of 200 additional students). The bicycle racks shall be located in a secure area, close to the school entrance and supported. Students may use the existing / future shower facilities

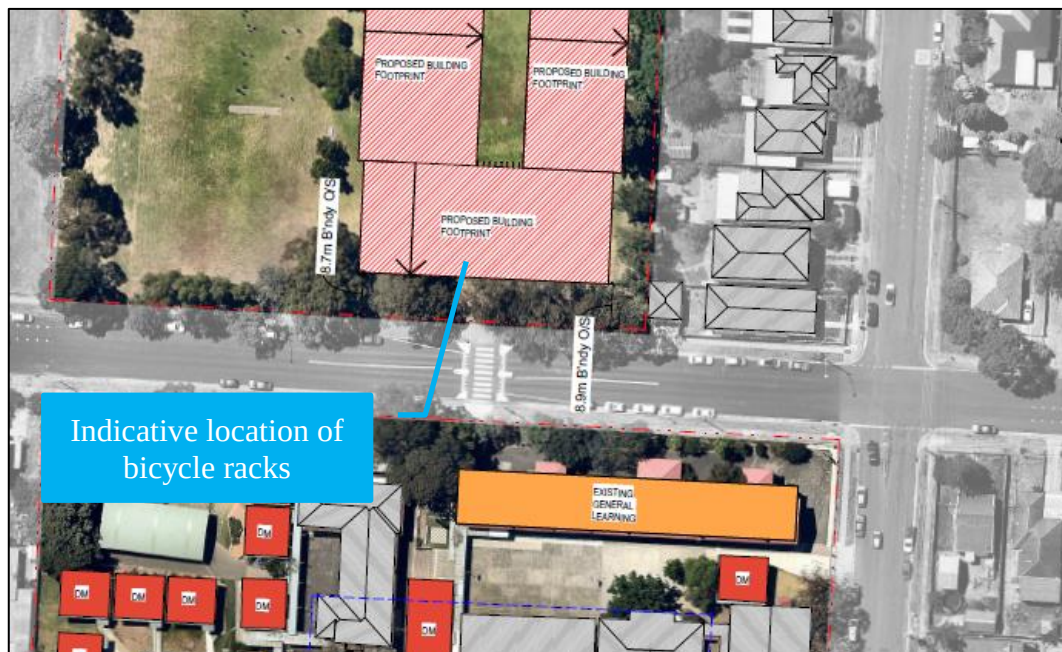


Figure 41: Proposed upgrades and location of bicycle racks, more details will be provided in detailed drawings

3.7 Emergency vehicle and loading

Existing emergency vehicle and loading access is provided along Young Street and Franklin Street. The proposal does not seek to modify the existing access arrangements.



Figure 42: Existing loading area along Young Street

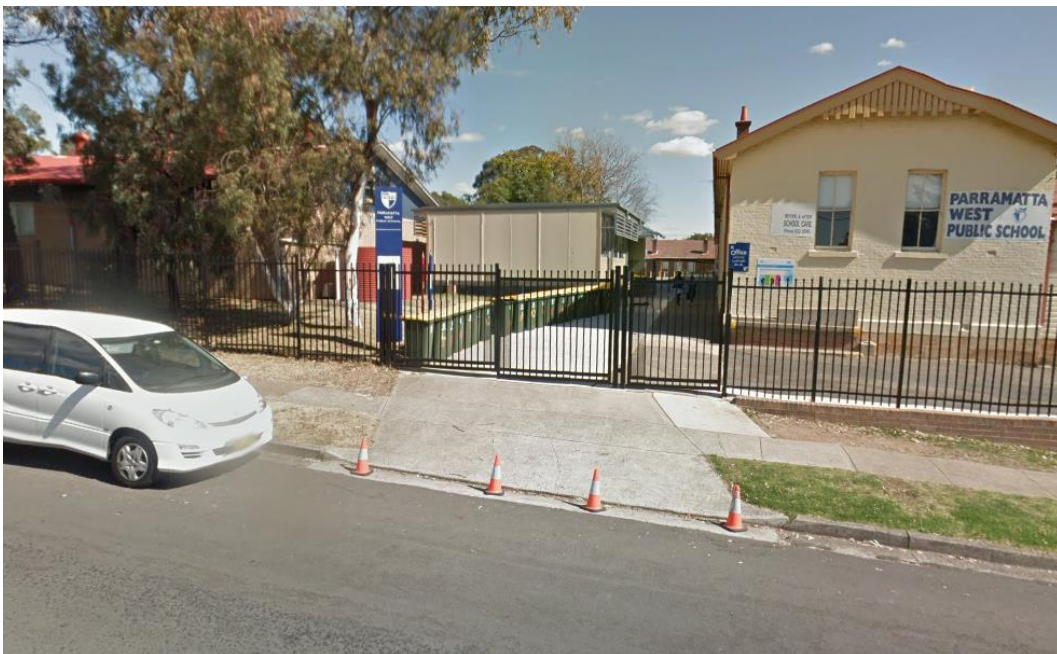


Figure 43 Existing loading area along Franklin Street

3.8 Forecast traffic

Student drop-offs and pick-ups

Completion of the school will result in a net increase of 13 new teaching spaces to cater for an additional 195 students (above the 2017 student enrolment). The morning peak has been identified as the busiest school peak, with the drop-off profile spread across a longer time period, which coincides with the commuter peak. Using the following assumptions based on survey data (section 2.7), traffic generated by additional students are derived:

- 1.5 children per car
- 61% of the children use private vehicle as a mode of transport
- 79 additional vehicles are generated

Staff driving to school

Completion of the school will result in an increase of 13 additional staff (1 staff per additional teaching space). Using the following assumptions, the traffic generated by additional staff are derived:

- 83% of people working in the area drive to work, based on 2016 Journey to Work data
- 11 additional staff vehicles will be generated

Observations from site visits have identified that no staff parking currently exists on-site.

Total additional traffic

Based on these assumptions, a total of 90 additional vehicles are estimated to be generated by the completion of the school during the morning peak.

3.9 Arrival profile

Assuming the future students adopt a similar arrival profile to existing students, the additional 90 vehicles are applied to obtain the future drop-off profile, shown in Figure 44. This analysis indicates that the busiest five-minute drop-off period occurring at 8:40am would see an increase of approximately 19 vehicles.

While the existing drop-off behaviour is disorganised, the future proposed changes to formalise the drop-off arrangements (section 3.1) would be able to accommodate 19 additional vehicles in a five-minute period. Rationalising and formalising drop-off arrangements would capitalise on the availability of local road space more efficiently.

With dispersed drop-off locations in identified zones, vehicles will be able to pull into a zone easily, drop-off and depart with no queuing expected in traffic lanes. It should be noted that the school frontage streets carry no through traffic serving only limited residential properties and the ambulance station.

Parramatta Ambulance Station will be undergoing an operational change in its use to a Paramedic Response Points (PRPs). Compared to the current Parramatta station, the PRP will have fewer emergency vehicles entering and exiting the site. Due to this and the narrow time bands that traffic is expected to increase along Railway St, the NSW Ambulance Service does not believe that the proposed school upgrade development will have a negative impact on ambulance operations.

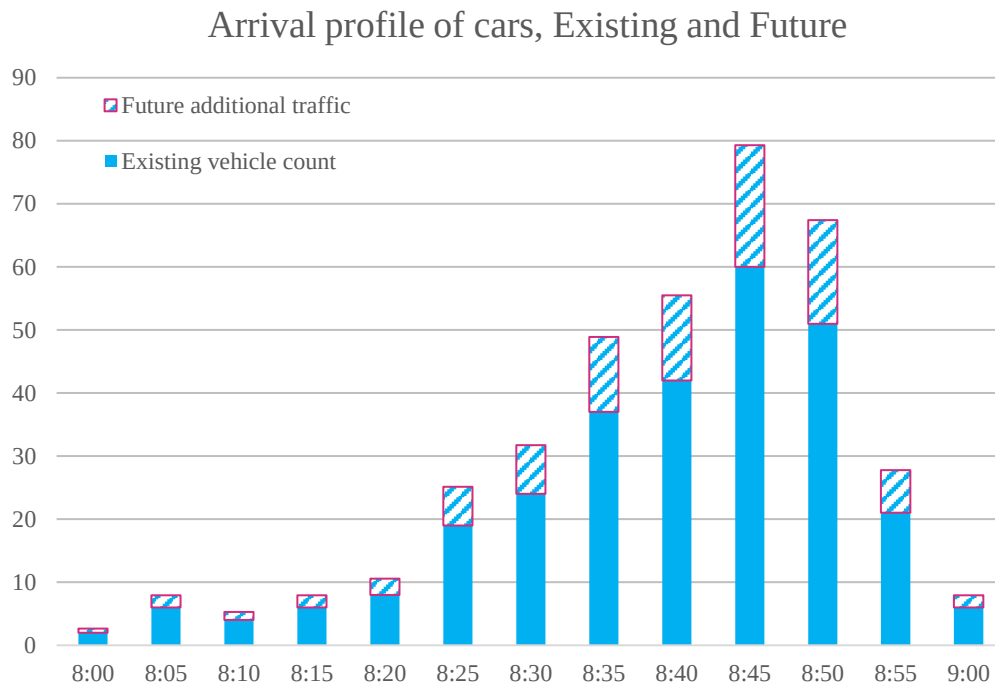


Figure 44: Future arrival profile of AM drop-off period, and the factored increase in 91 vehicles at each time interval.

3.10 Traffic distribution

The school is accessible from various collector roads and a permeable local road network. Local traffic surrounding the school is segregated from the Great Western Highway. Assuming an equal distribution of the 90 vehicles will result in a distributed arrival to the school, shown in Figure 45.

Given this permeable spread and local nature of the traffic, the additional traffic generated will not adversely affect the surrounding road network. Local traffic along Franklin Street, Young Street, Railway Street and Auburn Street will become busier during school pick-up and drop-off periods as a result of the completion of the school.

Proper drop-off locations, education and enforcement discussed in section 3.1, would make traffic flows in the local streets operate more safely and efficiently.



Figure 45: Distribution of additional trips

3.11 Traffic assessment

Based on the relatively low traffic generation numbers and the assumed distribution routes, a large majority of the traffic within the immediate network would utilise unsignalised intersections. Traditional methods of traffic modelling such as SIDRA would not be able to capture the existing effects of queueing along Franklin Street and Auburn Street. Furthermore, the proposed improved drop-off and pick-up arrangements could improve the existing driver behaviour and hence reduce any queues caused by the school. Therefore, SIDRA modelling has only been used for the traffic signals at Railway Street / Pitt Street intersection described in the next section.

The typical travel time metrics by Google are shown in Figure 46 for morning and afternoon school peak periods. The morning drop-off period is at its peak between 8:40 and 9:00am, dispersing by 9:05am. Local roads surrounding the school were observed to have slower travel times during both peak periods. Pitt Street and the Western Motorways have slower travel times during the morning drop-off period as they coincide with the commuter peak. These roads are less busy during the PM pick-up period.

Drop-off traffic arrives gradually over an hour and coincides with the AM network peak. Pick-up period sees a more intense arrival and departure of traffic over 20 minutes however does not coincide with a commuter peak period.

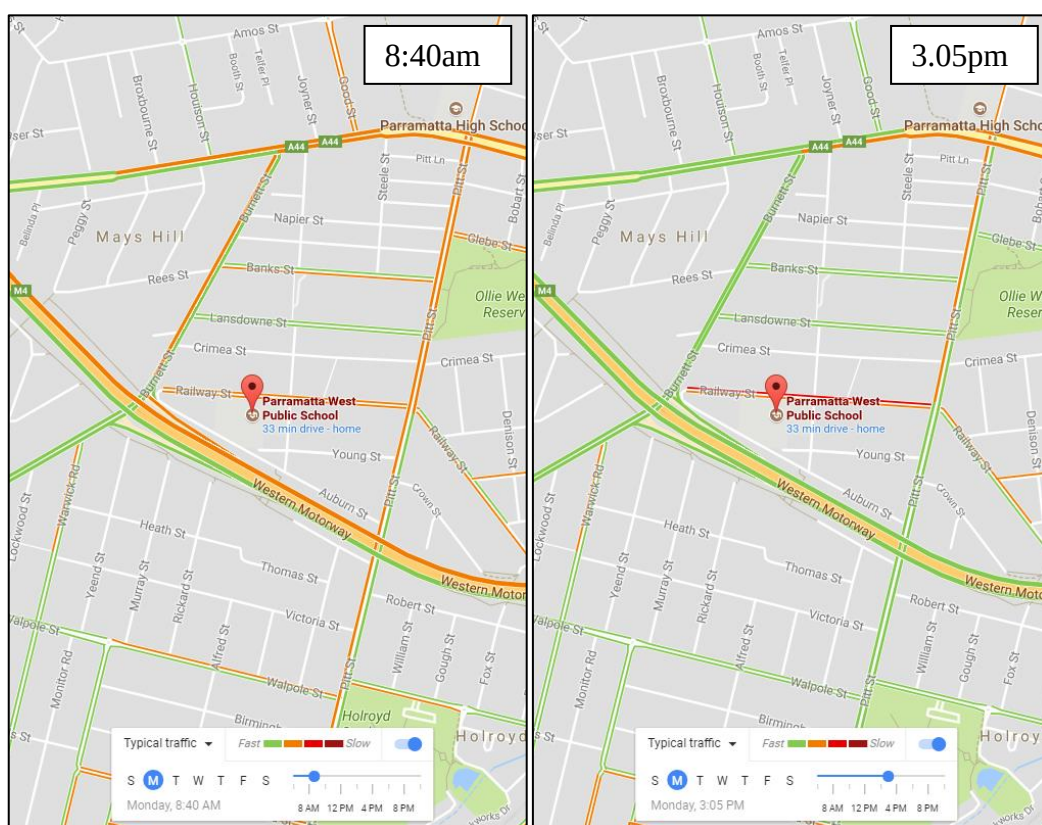


Figure 46: Google maps, July 2017 snapshots of typical traffic (travel time)

The increase in traffic at the main access to the school is shown in Table 3. This assumes a conservative estimate that all additional vehicles in the future use Railway Street.

Table 3: Additional and existing traffic along Railway Street

Key street for access to school	Existing traffic flow	Total Additional Traffic	Total
Railway Street	266	90	356

Note:

- Traffic flows are number of vehicle per hour
- Additional traffic assumes vehicles arrive and leave within the hour
- Traffic does not U-turn therefore vehicles exiting are not included in Total Additional Traffic

3.12 SIDRA Analysis

SIDRA intersection modelling was carried out to assess the performance of the key access intersection in the vicinity of the school being Pitt Street/ Railway Street intersection. The existing and future intersection performance are assessed in terms of the following factors:

- Degree of Saturation
- Level of service
- Maximum queue length (in metres)

The existing signal phasing and timing were recorded during the observation dated 8 August 2018 and inputted directly into the SIDRA models.

It should be noted that in the existing and future model, the effect of the pedestrian movements in 'All Red' time (8 seconds from observation) was also applied. The average cycle time was recorded to be 75 seconds resulting in 48 cycles in an hour. Half of these cycles was observed to include a pedestrian activated all red, resulting in an additional 192 seconds of lost vehicle green time for the pedestrian crossing. This equates to a lost capacity of about 5% which was been taken into account by adding 5% to all of the intersection movement counts. (suggested modeling approach by Roads and Maritime Services)

The results of the SIDRA intersection modelling are outlined in Table 4. Reference should be made to the SIDRA outputs provided in **Appendix C** which provides detailed results for individual lanes and approaches.

Table 4: Intersection performance: Pitt Street/ Railway Street Intersection

AM Peak hour		2018				Future Scenario (Additional staff and student drop off/pick up trips)			
Intersection	Approach	Existing				DoS	Delay	LoS	Max Queue (m)
		DoS	Delay	LoS	Max Queue (m)				
Pitt Street/ Railway Street intersection	Pitt Street South	0.789	19.2	B	143.2	0.805	19.3	B	139.4
	Railway Street East	0.736	32.6	C	100.1	0.796	36	C	110.4
	Pitt Street North	0.252	10.7	A	36.0	0.262	10	A	37.5
	Railway Street West	0.503	29.2	C	56.1	0.574	21.8	B	62.6
	Total	0.789	20.9	B	143.2	0.805	21.8	B	139.4

It can be seen from the above that the proposed upgrades to the school will have minimal impact on the performance of the surrounding road network with the intersection continuing to operate with acceptable Level of Service and moderate delays.

3.13 Staff parking

Council guidelines

The Parramatta City Council Development Control Plan does not provide a guideline on the number of staff and visitor parking spaces that should be provided for primary schools. Therefore, there are no minimum or maximum parking space provision requirements. However, as a principle, the increase in on-street parking from the school should not affect the existing on-street parking supply adversely, thereby prohibiting residents from using them.

Existing parking conditions

As discussed in section 2.7, the former staff off-street car park, accessed via Young Street, has been replaced by three demountable classrooms. As a result, staff were found parking on-street. Surveys conducted during peak school parking periods indicated that Auburn Street had 90 unoccupied spaces, while Franklin Street and Young Street were close to capacity. These spaces were likely utilised by staff and residents.

Proposed staff parking provision

The school does not propose to provide any form of staff parking, so as to better utilise resources for educational purposes, in this case, allocating the former off-street car park to classrooms and open space for students.

With the surrounding local streets having spare capacity, and an abundance of on-street and unrestricted parking spaces, the increase in some 11 staff vehicles can easily be accommodated, especially along Auburn Street.

With the existing on-street parking arrangement between staff and residents working well (based on no particular comments that council has raised), the situation should be monitored closely. Staff could also be advised to park along the southern side of Auburn Street, away from the residential frontages.

Following relocation of demountable buildings, there may be an opportunity to reopen the staff car park for approximately 14 cars. This may not occur until a later stage of works on the site.

Key findings

- Staff currently park on-street, and at the time of the survey, Auburn Street had 90 unoccupied spaces
- An estimated 11 additional staff vehicles are anticipated to be parking on-street
- Completion of the school would not affect the existing on-street parking condition adversely
- The school should not have to provide additional off-street parking based on these findings. This will allow better resource allocation

3.14 Encouraging staff to adopt green travel

To minimise the impact of on-street parking by staff, the school can implement green travel strategies for staff. These solutions are easy and cost effective and may include:

- Staff carpool, the school can help organise a system which will reduce single private vehicle car trips to the school
- Encourage staff to take public transport
- Encourage active transport – provide 10% bicycle parking for staff and a shower

4 Strategies / Transport Management Plan

This section discusses the various transport strategies which the school may implement for staff. These initiatives aim to:

- Reduce parking demand from staff
- Reduce private vehicle usage of staff
- Reduce traffic congestion and improve existing intersection performance

4.1 Staff Green Travel Plan

To minimise the impact, the effects of on-street parking by staff, the school can implement green travel strategies for staff (and the wider school community). These solutions are easy and cost effective:

- Staff carpool, the school could help organise a system which will reduce single private vehicle car trips to the school (explained further below)
- Encourage staff to take public transport / active transport by making it inclusive and entertaining:
 - Host active travel events – such as ‘Ride to Work Days’
 - Safe riding days / demonstrations
 - Communication of benefits and measurements of improvements
- Improve walking and bicycle facilities and infrastructure in and around the school.

This plan could be implemented during the temporary relocation stage to ensure a gradual transition of mode shift and adoption of the proposed measures.

4.1.1 Active Transport/ Bike/ Scooter

As described in Section 2.4.4, the schools have good access to the cycling network and will provide onsite facilities for cyclists (i.e. easily accessible bike room/shelter, changing rooms and showers, lockers etc.). In order to activate and promote cycling the following measures should be considered:

- Supply a Green toolkit-this can consist of puncture repair equipment, a bike pump, a spare lock and lights;
- Consider an arrangement with a local cycle retailer for cheap servicing of student and staff bikes. If people buy enough bikes from the retailer, they may agree to service them for free;
- Consider providing interest-free loans for staff to buy a bicycle and accessories, which they then pay back from their wages;
- Provide cycle maps to staff and students;
- Participate in annual events such as ‘Ride to Work Day’;
- Notice boards should have news of events / generic posters promoting cycling;

- The schools should have a ‘Cycling to school’ webpage specific for their school containing details of storage areas, shower facilities and links on the intranet containing useful links to journey planning websites in Sydney;
- Make staff and students aware of public transport cycling carriage policies and cycle storage facilities at rail stations;
- Staff and students who cycle should be encouraged to form a Bicycle User Group in order to provide a body of regular cyclists who can discuss on issues relating to the provision of on-site cycling facilities and the maintenance of off-site cycle routes; and
- Set up ‘Bike Buddies’ scheme for less confident people interested in cycling.

4.1.2 Carpooling

Possible ways to further encourage carpooling may include staff registering their interest in carpooling by indicating where they live and matching their shift times with colleagues.

Under this scheme, the school would set up a system where real-time carpool information from participants can be displayed or changed. Schedules can be managed through a cloud, Google Maps or various smartphone applications. Carpooling should be a long term initiative. With consistent promotion of this travel mode and incentives, staff should be aware of the benefits and convenience.

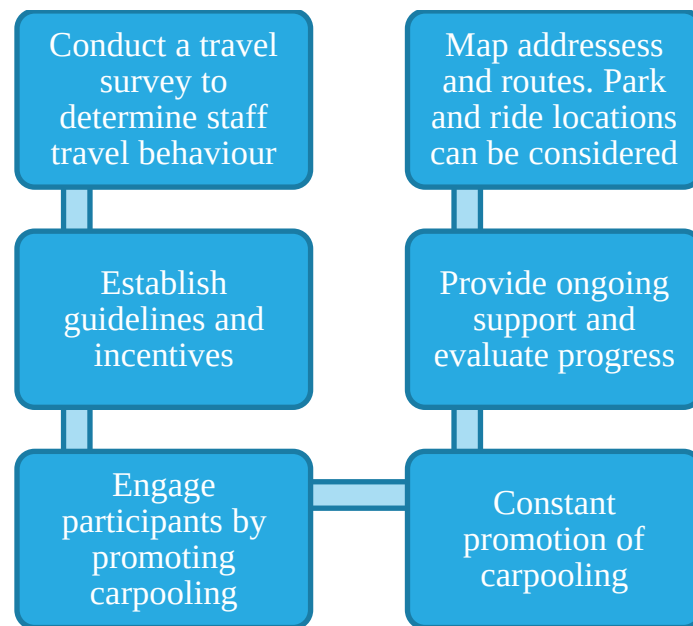


Figure 47: Setting up carpooling for staff¹

¹ http://www.transport.wa.gov.au/mediaFiles/active-transport/AT_TS_P_Car_Pooling_Toolkit.pdf
| Rev E | 10 August 2018 | Arup

UberPOOL

While UberPOOL has not been introduced in Sydney yet, it would create an efficient and cost efficient mode of transport for staff. According to Uber:

- UberPOOL allows you to share your ride and split the cost of your trip with another Uber rider headed in the same direction.
- The average time added to an uberPOOL trip is less than 5 minutes. Each uberPOOL rider can bring one additional passenger along.

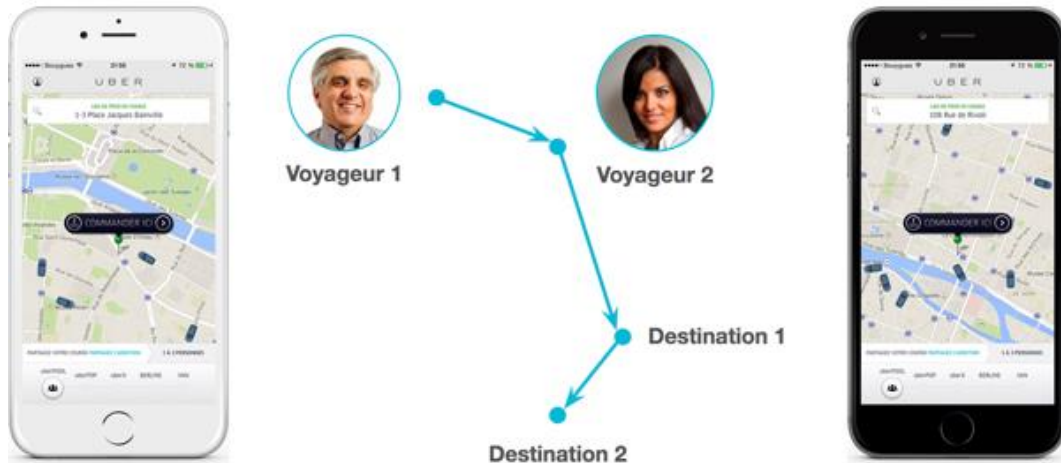


Figure 48: UberPOOL (newsroom.uber.com)

4.1.3 Pool cars, taxi share and shuttle bus service

In order to reduce the number of car trips and especially trips made to common destinations the following measures should be considered:

- Set up a journey to/from school car share system for all staff who are willing to participate in the scheme and dedicate at least one car space for this use. The system would inform participants of other staff who live in the same area or who pass through the area on their way to the schools. The participants either share the costs or alternate in driving to the schools;
- Utilise a range of free apps are currently available online to assist with the implementation of this initiative. The schools will need to investigate the most appropriate app that aligns with its Child Protection Policies before promoting this initiative; and
- Introduce a taxi or pool car share system for trips during the day for staff.

4.2 Student Green Travel Plan

A range of travel method alternatives have been recommended as well as incentives to change travel behaviour over the short and longer term period. The purpose is to encourage mode shifts away from private vehicle usage and create a positive outlook for active transport.

These initiatives aim to improve the existing and future conditions of campus population increase by:

- Reducing private vehicle usage (pick-ups and drop-offs) from students
- Reducing traffic congestion and improving intersection performance

The modal shift associated with these travel methods aim to reduce car trips to the development so there is no net impact from School population and proposed development increases on existing traffic conditions.

4.2.1 Existing School Measures

Currently students have to pay for public transport if they live within a certain distance of the School. This varies between the year groups and costs up to \$52 per term if they live within the distances as follows:

- a primary student (Years 3-6) who lives more than 1.6km (radial distance) from school, or 2.3km or more by the most direct practical walking route

It should be noted that an infant student (K, Year 1 and Year 2) older than 4 years and 6 months who lives any distance between home and school does not need to pay for public transport passes.

The School currently coordinates the process of having bus passes arranged for students. The School will continue to do this and raise awareness of this as an offering, to encourage greater use of public transport.

4.2.2 General Marketing and Promotion

The objectives of the Green Travel Plan will only be achieved with the support of staff and student's parents. Marketing the benefits and promoting the sustainable alternatives available are therefore crucial in encouraging staff and students to adopt the Green Travel Plan measures. It is important that at an early stage, everyone is made aware of the need for the Green Travel Plan, and that it is emphasised that the measures are being introduced to support and encourage people to use cars more wisely.

In addition to raising general awareness, any successes achieved will be fully publicised to staff and students in order to motivate them to use sustainable modes of transport.

- Support and promote events such as National Bike Week, Bike2Work Days, walk to work day to staff through lunch time presentations or students during assembly, notice board posters, newsletters intranet and email.

4.2.3 Public Transport

To promote the use of public transport for travel to school and school-related journeys during the day.

- Manage the student drop-off and pick-up areas surrounding the schools;
- Provide an intranet public transport page to contain useful links to journey planning websites in Sydney;
- Provide useful public transport maps and promotional items to potential and current public transport users in the existing induction pack for new employees; and
- Provide notice boards that should have news of events / generic posters promoting public transport.

4.2.4 Walking

Specific Travel Plan measures designed to encourage more walking trips to and from the schools by those staff and students living within a reasonable distance.

- Produce a map showing the most direct route connecting the transport interchange and schools, along with the estimated walking time;
- Produce walking related articles for inclusion in the school newsletters focussing on ‘walking champions’ to highlight best practise in walking;
- Create and maintain an intranet ‘useful walking routes’ containing useful routes to key areas;
- Make pedometers available to staff and students expressing an interest in walking to school; and
- Participate in Walk to Work day and look into holding a ‘healthy breakfast’ as a reward to all those who participate.

4.3 Scheme Administration

4.3.1 Administration

An essential part of an effective Green Travel Plan is to nominate a Travel Plan Co-ordinator for students. The role should be undertaken by enthusiastic and high quality communicators in order to promote measures that will encourage people to think about travel other than as a single occupancy car user. He/she will need to be an enthusiastic and respected member of staff who is keen to champion the cause of the Travel Plan. Other qualities that may be appropriate include the capability of dealing with all types of people within the schools and external organisations, the ability to lead by example, the ability to approach issues with a practical and balanced perspective and the capability for original and innovative thinking to raise awareness of the Travel Plan at a local level.

Senior management support is critical to ensuring the success of any travel plan for a number of reasons such as to:

- Lead by example;
- Allow budget allocations for the implementation of measures; and

- Give support to changes or development of policy documentation.

Administration of the Travel Plan involves the maintenance of necessary systems, data and paperwork, consultation and promotion.

4.3.2 Promotion

All students and staff will be made aware of the details of the Green Travel Plan, its objectives in enhancing the environment and the role of individuals in achieving its objectives at its launch.

Other promotional material will take a variety of forms and will be issued either to individual staff members and students, displayed in a prominent location in the school or provided in the form of ‘one off’ marketing initiatives. This would include outlining the benefits for the school in participating in government travel surveys to both improve public transport services and promote the use of public transport.

The promotional material will advise employees wishing to raise specific transport-related matters to discuss them with the appropriate nominated Travel Plan co-ordinator who in turn would liaise with the Green Travel Plan management team, transport operators and the local authority as required.

4.3.3 Staff Induction

To ensure new members of staff are aware of the Green Travel Plan, all new staff members should be made aware of the Plan as part of their induction process. The Green Travel Plan section of the induction should provide new starters with the following:

- A brief introduction to the Green Travel Plan and its purpose;
- Tour of the schools to include visit cycle parking areas and shower and changing facilities; and
- Provision of a Green Travel Plan information package which would include information on incentives to use sustainable means of transport e.g. pool bikes and car/taxi share system.

4.3.4 Consultation

The success of the Green Travel Plan will rely on the support of the employees which will be overseen by the Green Travel Plan co-ordinator.

The Green Travel Plan co-ordinator will be responsible for all liaisons with outside bodies, including local transport operators, planning and highway authorities.

Liaison with officers of the Council (e.g. those responsible for cycling and public transport will be undertaken as required). The co-ordinator will also seek to join and attend meetings with any local travel forums as appropriate in order to exchange ideas with other like-minded organisations.

4.3.5 Updating, reviewing and monitoring

The Green Travel Plan is a strategy that will evolve over time. Although the objectives of the Plan to ‘educate’ students and staff, and to facilitate travel by sustainable modes will not change, it may be possible over time to define or re-define specific targets.

Target setting should reflect an ambition for continued progress year on year and there should be a mechanism to review targets in light of monitoring surveys. The monitoring measures could include collecting data on travel patterns for journeys to school and also during the school hours. The recorded data would inform modes of transport and distance travelled by each mode, from which energy consumption and emissions could be estimated.

Following the implementation to the Green Travel Plan, the Green Travel Plan management team should meet annually to undertake a review of the Travel Plan measures in place. The objective will be to measure their success and to identify the potential for refinements. The plan would be updated to consider firmer details of the initiatives of the NSW Long Term Transport Masterplan, as they are forthcoming. The management team will further engage with Government to assist in designing and operating services which best support the needs to the students and staff, and therefore promote high levels of sustainable transport modes.

The Green Travel Plan management team will then compile a review report outlining the results of the review. The report will also incorporate the results of on-going monitoring processes throughout each of the preceding periods.

5 Outline Construction Pedestrian 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 Pedestrian and Traffic Management Plan (CPTMP) will be prepared to ensure the safest possible management of construction access and appropriate mitigation measures. The CPTMP 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 CPTMP (see Appendix A) 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
- Detail of provisions made for emergency vehicles, heavy vehicles and cyclists
- Measures to ameliorate impacts
- Public transport services affected
- Public consultation

6 Conclusion

A traffic and transport assessment has been carried out for the proposed school upgrades. The school had 766 students enrolled in 2017, and a total of 49 staff (including 10 non-teaching staff). The proposed upgrades provide new learning areas to cater for 961 students and 52 staff. Key findings of the report are:

- The new school will be developed north of the existing school along Railway Street. Connectivity between the existing school in the south and new school in the north will be through the existing raised zebra crossing across Railway Street.
- The school is located outside of a recommended walking catchment from the nearest train stations. Four different bus routes serve the school.
- School bus 9402 services the school in the morning, with 20 students being dropped off at the bus zone along Railway Street. School bus 9574 services the school in the afternoon, with 20 students being picked up at the bus zone along Railway Street.
- There are currently no staff parking spaces on the site as a result of demountable school buildings taking up the staff car parking area. There is parking available on street for staff parking which does not impact on adjacent residents.
- A total of 90 additional vehicles (from additional staff and students) are estimated to be generated by the completion of the school.
- Given the permeable spread and local nature of the traffic, the additional traffic generated will not adversely affect the surrounding road network. Local traffic along Franklin Street, Young Street, Railway Street and Auburn Street will become slightly busier as a result of the completion of the school.
- In general, the existing pick-up arrangement was found to be disorganised with improper driver behaviour observed such as 3-point turns along Railway Street and Franklin Street, in order to exit to the collector roads of Pitt Street and Burnett Street. Vehicle movements were found to be busy with double parking observed along Franklin Street, making the overall school environment less safe than desired.
- The following priorities should be introduced to control on-street parking:
 - Utilise kerbside along the school frontages for drop-off and pick-up activity with appropriate signage
 - Encourage staff parking to occur along Auburn Street where there is capacity for all day car parking without impacting on local residents
 - Educating parents of proper drop-off and driving behaviours
 - Enforcement through traffic wardens, penalties and signs
- The existing pedestrian crossing in Railway Street will be upgraded with the installation of pedestrian fencing.
- A new pedestrian crossing of Franklin Street has been proposed but is awaiting a Roads and Maritime funding grant.

Appendix A

Construction Pedestrian Traffic Management Plan

A1 Introduction

This report details the Construction Pedestrian and Traffic Management Plan (CPTMP) for the proposed works at Parramatta West Public School. The plan has been created by Arup on behalf of the NSW Department of Education and Communities to support the State Significant Development for the proposed expansion of Parramatta West Public School (the school).

The purpose of the CPTMP is to assess the proposed construction and site preparation works and operation of construction traffic associated with the proposed development with respect to safety and capacity. The CPTMP is to be submitted for comment by the relevant authorities.

This plan will detail the management needed to control construction traffic, while minimising effects on the surrounding developments and allowing for appropriate access at all times. The Construction Contractor will prepare a CPTMP with detailed Traffic Control Plans detailing specific methods of safely managing construction vehicle traffic within the surrounding area when appointed.

A2 Description of Proposed Works

A2.1 Location

The school is bounded by Railway Street in the north, Franklin Street in the east and Auburn and Young Streets in the south. The primary pedestrian access is located on Railway Street. Vehicular accesses to the school are located on Franklin Street and Young Street. These local roads are segregated from the Western Motorway in the south shown in Figure A1.



Figure A1 Site Location

A2.2 Overview of proposed development

The works seek approval to facilitate the construction of new buildings at the existing North Campus. This includes construction, site establishment and access arrangements. Specifically the works include:

- Site establishment and protection of adjoining development;
- Protection, diversion and/or temporary establishment of services and infrastructure as required;
- Erection of perimeter fencing, hoarding, gantry, scaffolding and site accommodation;
- Bulk excavation works

A more detailed and comprehensive description of the proposal is contained in the Preliminary Construction Management Plan. The project will provide 20 new permanent teaching spaces and the expansion of core facilities



Figure A2: Parramatta West Public School proposed upgrades

A3 Construction Management Plan

A3.1 Truck routes and controls

Construction vehicles would be restricted to the state road network for access to the site and vehicles will likely originate from this network. It is envisaged the main site entrance will be off Crimea Street. These routes are shown in Figure A3. An alternate site entry would be located off Railway Street and shall only be utilised outside of school hours.

Some movements may also be required along Burnett Street which is classified as a regional road, and Crimea Street, classified as a local road.

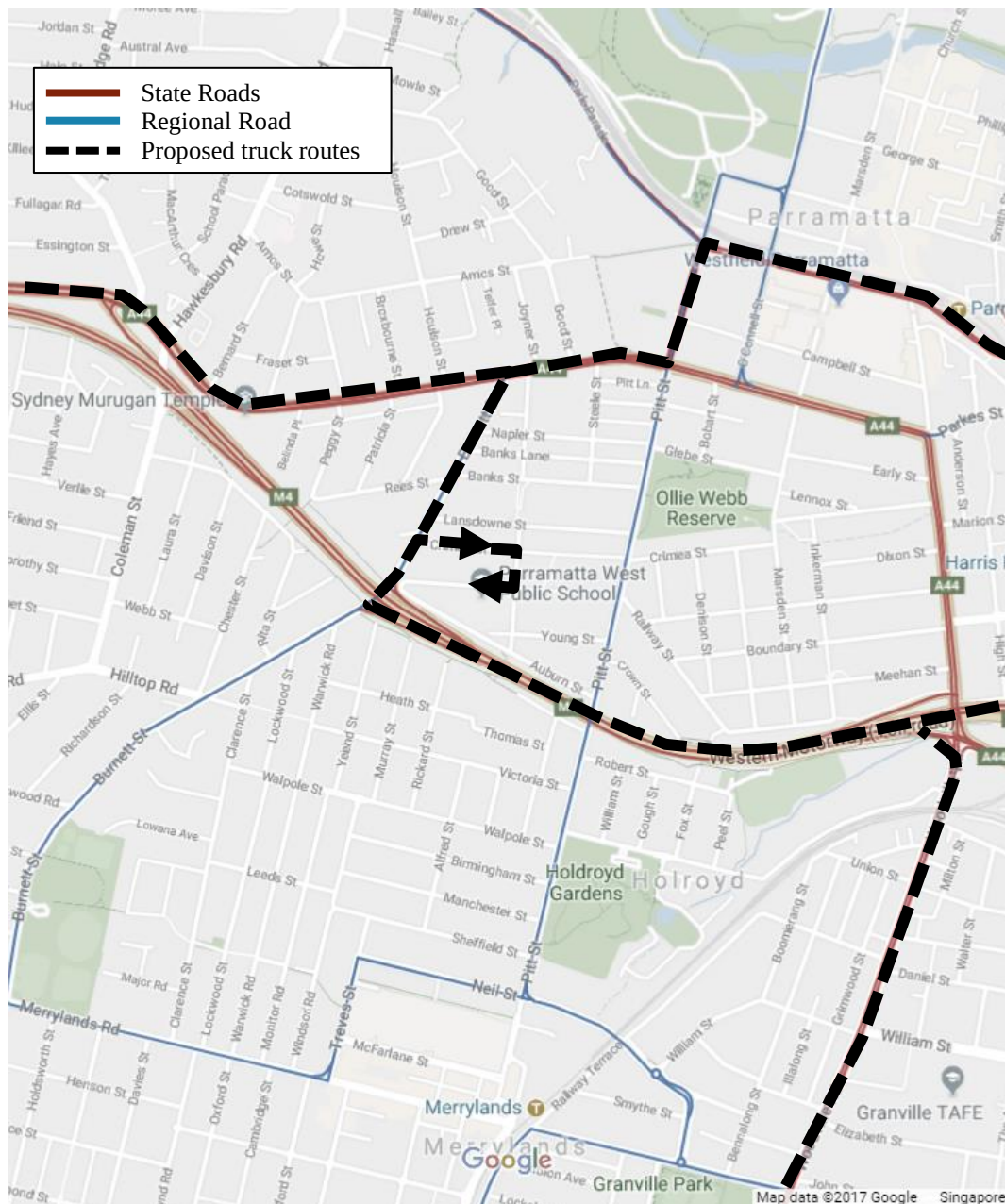


Figure A3: Construction Vehicle Routes

A3.2 Vehicle types

Vehicles that will access the site during construction will comprise:

- Articulated Vehicles (AV) for delivery of site equipment.
- Heavy Rigid Vehicles (HRV) for construction materials removal.
- Truck and Dogs for construction materials removal.

All heavy goods such as machinery plants will need to be delivered outside of peak traffic hours and school peak hours.

A3.3 Pedestrians

Pedestrians will be diverted and controlled by traffic controllers as necessary when larger vehicles wish to access the site. They will control pedestrians as well as vehicles. Pedestrians will be directed through appropriate fencing / hoarding along the street frontages, shown in Figure A4.



Figure A4: Proposed pedestrian controls

A3.4 Vehicle access

The existing general vehicle access (school drop-off and pick-up) will be retained and shall not be affected during school peak times between:

- 8am – 9:30am
- 2:30pm – 3:30pm

Vehicle access for an 18.3 metre articulated Truck and Dog is shown in Figure A5. The vehicle is shown using the Crimea Street compound entrance and the Railway Street alternative. Parking in these compound entries will have to be prohibited during construction periods.



Figure A5: Swept path of 18.3 metre truck and dog entering the site from Crimea Street

A3.5 Hours of work

Hours of works through the course of the project will be as per those detailed in the consent. Typical working hours will be as detailed below:

- Monday to Friday 07:00am to 18:00pm
- Saturday, 08:00am to 17:00pm
- Sundays and public holidays – No works.

Applications for ‘out of hours’ works will be considered on a case by case basis. All out of hour’s application will need to be approved by the relevant authority. Reasons for out of hours work may include the following;

- If it is an emergency
- The works create hazardous environment
- Plant break down have delayed works
- Extended hours should not impact the surrounding community.

A3.6 Construction traffic

Workers will generate additional traffic to the site. Road network impacts will be mitigated by the fact that construction workers generally start earlier and finish earlier than the commuter peak periods, and would likely not coincide with the school or road network peak periods.

The impact of construction traffic will be discussed once specific construction details are provided however heavy vehicle volumes are expected to be low, in the order of 60 vehicles per day with approximately 6 vehicles in a typical peak hour. The traffic generation of this magnitude is minimal in the context of the state roads which will be used, such as the Great Western Highway and Western Motorway. It should be noted that it is proposed to extend construction hours on Saturday afternoon up to 5pm. This will not increase traffic activity at any one point in time and hence will have no additional impact on capacity.

A3.7 Construction worker parking

A combination of on-site and adjacent off-site parking areas will be identified for construction worker parking. This will occur when a contractor is appointed with the aim of minimising on-street car parking where it will impact on resident amenity. Auburn Street and Crimea Street along the school frontage roads were found to have a low levels of occupancy and could be nominated.

A3.8 Works Zones

Works Zones may be provided on the western side of the compound. A majority of the construction work is anticipated to occur within the designated compound, affecting the existing road network minimally.

A3.9 Site worker access

On-site parking would not be provided for private construction vehicles, with construction vehicles utilising works zones.

A3.10 Measures to ameliorate impacts

Mitigation measures would be adopted during the construction phase to ensure traffic movements have minimal impact on surrounding land uses and the community in general, and would include the following:

- Truck loads would be covered during transportation off-site
- Neighbouring properties would be notified of construction works and timing. Any comments would be recorded and taken into consideration when planning construction activities.
- All activities, including the delivery of materials would not impede traffic flow along local roads
- Materials would be delivered and spoil removed during standard construction hours
- Avoid idling trucks alongside sensitive receivers
- Deliveries would be planned to ensure a consistent and minimal number of trucks arriving at site at any one time

A3.11 Driver code of conduct

To manage driver conduct the following measures are to be implemented:

- All truck movements will be scheduled
- Vehicles are to enter and exit the site in a forwards direction along the travel path shown on delivery maps
- Drivers are to give way to pedestrians and plant at all times.

Traffic Controllers will be used to stop traffic on the public street(s) to allow trucks to enter or leave the site. Where possible, vehicles must enter and exit the site in a forward direction. They must wait until a suitable gap in traffic allows them to assist trucks to enter or exit the site. The Roads Act does not give any special treatment to trucks leaving a construction site - the vehicles already on the road have right-of-way. Vehicles entering, exiting and driving around the site will be required to give way to pedestrians at all times.

A3.12 Public transport services affected

It is not expected that public transport services would be affected by the works. No bus services would be impacted by construction traffic as the work is confined to off street works. School buses along will not be affected during school peak periods as deliveries would occur outside these times.

A3.13 Construction traffic provisions made for emergency vehicles, heavy vehicles, cyclists and pedestrians

Construction works and vehicle storage would be mainly confined to the site. As such, no additional specific provisions for emergency vehicles, heavy vehicles, cyclists or pedestrians have been identified on the surrounding road network.

Appendix B

Proposed Franklin Street
pedestrian crossing

Item 1503/06 - Franklin Street, Mays Hill - Request for Installation of a Pedestrian Crossing

Responsible Department: Engineering Services
 Executive Officer: Director of Engineering Services
 File Number: INFOC/22 - BP15/228
 Delivery Program Code: 20.1.1 Council maintains effective working relationships with local MP's and their staff, government agencies and departments
 16.1.1 Ensure effective traffic movement within Holroyd town centres
 15.1.2 Facilitate coordinated approach to road and pedestrian safety

Summary:

Council received a request for a marked pedestrian crossing on Franklin Street, Mays Hill to improve the safety for children and parents from Parramatta West Public School.

This report outlines the result of the investigation into this matter.

Report:

Franklin Street is a local road to which the 50km/h urban default speed limit applies, except during school zone times where the speed limit is 40km/h. Franklin Street is a two lane road (one lane in each direction). The lane width is approximately 12 metres, with on-street parking provided on both sides of the street. There is an existing pedestrian refuge on Franklin Street.

Vehicle and pedestrian counts were undertaken at the intersection of Franklin Street and Railway Street, Mays Hill. Details of the traffic survey are provided in the table below:

	Pedestrians				No. of vehicles			
	1 Franklin St South	2 Railway St East	3 Franklin St North	4 Railway St West	5 Franklin St South	6 Railway St East	7 Franklin St North	8 Railway St West
8am - 9.15am	319	128	29	231	228	255	316	90
2.45pm - 4pm	315	181	48	262	310	315	372	112

In accordance with the RMS reduced warrant for pedestrian crossings:

- (a) The crossing is used predominantly by school children, is not suitable site for a children's crossing and in two counts of one hour duration immediately before and after school hours:-
 - i) $P \geq 30$
AND
 - ii) $V \geq 200$

Franklin Street (South) does meet the reduced warrant. It is also noted that Railway Street (west) also meets the reduced warrant, although there is an existing marked Pedestrian crossing on Railway Street, approx. 75metres west of the intersection with Franklin Street. According to the study, Franklin Street (north) does not meet the reduced warrant but would benefit from the installation of a pedestrian refuge to increase safety for students and parents of Parramatta West Public School.

It is noted that the installation of a marked pedestrian crossing on Franklin Street would require the implementation of full time 'No Stopping' restrictions on both sides of the street, therefore reducing the on-street parking availability to residents and parents.

From the survey, approximately 60% of the pedestrians were school children with 30% of parents accompanying school children to the school, the 10% were unknown.

Conclusion:

The installation of the proposed marked pedestrian crossing on Franklin Street (south) would improve pedestrian safety for parents and students of Parramatta West Public School.

The installation of type 1 pedestrian fencing should be considered for the corners of Railway Street and Franklin Street (west) to encourage pedestrians to use the existing pedestrian crossing.

Holroyd Traffic Committee Comments

The following comments were provided at the Holroyd Traffic Committee meeting:

- The vehicle and pedestrian counts require a breakdown of the different type of pedestrians – i.e. parents, children, elderly. It was suggested that the report indicate a percentage of parents and children's using the crossing.

- Issues were raised with regards to the design of the refuge. The turning paths for 12.5m vehicles (i.e. buses) are to be checked around kerb returns, ensuring that vehicles do not encroach over the pedestrian refuge. The RMS requests a copy of the turning paths for review before approval.
- The pedestrian fencing along Railway Street may need to be extended to encourage pedestrians to use the existing crossing - pending number of pedestrians using the crossing.
- The dimensions of the median island on Franklin Street must conform to the RMS Technical Directions. Design of the pedestrian refuge on Franklin Street to be reviewed.
- The Holroyd Traffic Committee generally agrees with the recommendation of this report.

Consultation:

Consultation will be undertaken in accordance with the recommendation of this report.

Financial Implications:

The cost estimate for all the works is \$65,000. Funding will be required for this work and an application will be made to the Roads and Maritime Services (RMS) for grant funding.

Policy Implications:

There are no policy implications for Council associated with this report.

Communication / Publications:

There are no communication / publication issues for Council associated with this report.

Report Recommendation:

The Holroyd Traffic Committee recommends that:

- i) The installation of a marked pedestrian crossing on Franklin Street, Mays Hill in accordance with the attached plan be supported.
- ii) The installation of Type 1 pedestrian fencing on the corners of Railway Street and Franklin Street (west) as per the attached plan be considered.
- iii) An application be made to the RMS for grant funding for this project.

The affected residents be consulted and the result be reported back to the Holroyd Traffic Committee if any objections are received.

Council Resolution

Resolved on the motion of Cllr. Monaghan, seconded Cllr. Whitfield that:

- i) The installation of a marked pedestrian crossing on Franklin Street, Mays Hill in accordance with the attached plan be supported.
- ii) The installation of Type 1 pedestrian fencing on the corners of Railway Street and Franklin Street (west) as per the attached plan be considered.
- iii) An application be made to the RMS for grant funding for this project.
- iv) The affected residents be consulted and the result be reported back to the Holroyd Traffic Committee if any objections are received.

Attachments:

1. Plan – Franklin Street and Railway Street, Mays Hill – Proposed Pedestrian Safety Improvements

Item 1506/14 - Late Item - Franklin Street, Mays Hill - Request for Installation of a Pedestrian Crossing - Consultation Results

Responsible Department:	Engineering Services
Executive Officer:	Director of Engineering Services
File Number:	INFOC/22 - BP15/647
Delivery Program Code:	20.1.1 Council maintains effective working relationships with local MP's and their staff, government agencies and departments
	16.1.1 Ensure effective traffic movement within Holroyd town centres
	15.1.2 Facilitate coordinated approach to road and pedestrian safety

Summary:

Council at its meeting of 4 March 2015 considered a report (HT018-15) regarding a request for the installation of a marked pedestrian crossing on Franklin Street, Mays Hill to improve the safety for children and parents from Parramatta West Public School. Council resolved that:

- "i) The installation of a marked pedestrian crossing on Franklin Street, Mays Hill in accordance with the attached plan be supported.*
- ii) The installation of Type 1 pedestrian fencing on the corners of Railway Street and Franklin Street (west) as per the attached plan be considered.*
- iii) An application be made to the RMS for grant funding for this project.*
- iv) The affected residents be consulted and the result be reported back to the Holroyd Traffic Committee if any objections are received."*

This report details the result of the consultation undertaken in accordance with Council's resolution.

Report:

Consultation was carried out following Council's resolution on this matter. 30 letters with an attached survey were distributed to residents and owners, 6 responses were received with 4 in support and 2 objections.

Residents who supported and objected to the proposal provided the following comments in the table below:

#	Residents Comments	Council's Comments
Supported		
1	Could you please explain the following: 1. Why the proposed footpath on 135 Railway St is only 6m. Given this is the main path children and parents use on that side (majority come up the lane way next to 131 Railway St) and there is a bus stop in front of 133 Railway St. It is only wise to extend the 6m footpath right up to the laneway. (There is a footpath ending at 129 Railway St). 2. Is the bus stop in front of 133 Railway St remaining? 3. Are there future plans for this bus stop? i.e. large bus stop sign (many people park in the bus stop) 4. The new 'No Stopping' sign in front of 135 Railway St where is the other no stopping sign? The current drawing indicated parking will be allowed all along 133 Railway St onwards.	Response was provided via email on 1. As detailed in the plan, the 6m footpath is part of the installation of kerb ramps associated with the proposed pedestrian refuge. 2. There are no changes to this bus stop in relation to the proposed changes by Council. 3. The bus stop locations and signage are under the control of the Bus Company not Council. In regards to vehicles parking in this area, this matter will be referred to Councils Parking Patrol officers and NSW Police for enforcement. 4. There are two proposed No Stopping signs, located in front of 135 Railway Street and the other on Franklin Street (to the side of the same property)
2	We believe that if Council consider to make pedestrian footpath through Burra Reserve it would be easy to access to the school kids to go to Crimea St. Construct pedestrian footpath on other side of Franklin St between Crimea St and Railway St	
Objected		
3	There is no need to create 'No Parking' area on the north side of Franklin Street in the Railway Street.	'No Stopping' restriction is related to the proposed Pedestrian Refuge and is in accordance with Australian Standards.

4	Why are you creating no parking in the Railway St on the north of Franklin St	Same as 3
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Based on the above responses, the majority of the concerns are regarding the proposed 'No Stopping' restrictions related to the proposed pedestrian refuge on the northern side of Franklin Street. It is noted that the installation of the pedestrian refuge would provide a safe place for students and parents of Parramatta West Public School to cross the road.

As shown in the table below, according to the pedestrian counts carried out at the intersection of Franklin Street and Railway Street, Mays Hill, and in accordance with the RMS reduced warrant for pedestrian crossings the north side of Franklin Street meets the reduced warrant for a pedestrian crossing in the afternoon only.

As the installation of a pedestrian crossing only meets the warrant in the afternoon, it recommended that a pedestrian refuge be installed in lieu of the pedestrian crossing which will increase the safety of children.

	Pedestrian Franklin St North	Vehicles Franklin St North
8am - 9.15am	29	316
2.45pm - 4pm	48	372

In accordance with the RMS reduced warrant for pedestrian crossings:

(a) *The crossing is used predominantly by school children, is not suitable site for a children's crossing and in two counts of one hour duration immediately before and after school hours:-*

i. $P \geq 30$

AND

ii. $V \geq 200$

Therefore, the Holroyd Traffic Committee should consider two options:

- **Option 1:** Installation of proposed pedestrian crossing and pedestrian refuge as per attached plan.
- **Option 2:** Installation of proposed pedestrian crossing excluding the pedestrian refuge.

Conclusion:

The installation of the proposed marked pedestrian crossing on Franklin Street (south) would improve pedestrian safety for parents and students of Parramatta West Public School.

The installation of type 1 pedestrian fencing should be considered at the corners of Railway Street and Franklin Street (west) to encourage pedestrians to use the existing pedestrian crossing.

Holroyd Traffic Committee Comments

The Holroyd Traffic Committee supported the installation of the proposed pedestrian crossing and pedestrian refuge on Franklin Street at the intersection with Railway Street as per the Option 1 based on safety reasons.

Consultation:

Consultation has been undertaken and the result is detailed in this report.

Financial Implications:

The cost estimate for all the works is \$65,000. Funding will be required for this work and an application will be made to the Roads and Maritime Services (RMS) for grant funding.

Policy Implications:

There are no policy implications for Council associated with this report.

Communication / Publications:

There are no communication / publication issues for Council associated with this report.

Report Recommendation:

The Holroyd Traffic Committee recommends that:

- i) The installation of the proposed pedestrian crossing and pedestrian refuge (Option 1) at the intersection of Franklin Street and Railway Street as per the attached plan be supported.
- ii) The installation of Type 1 pedestrian fencing on the corners of Railway Street and Franklin Street (west) as per the attached plan be considered.

- iii) An application be made to the RMS for grant funding for this project.

The affected businesses and residents be notified of the outcome generally.

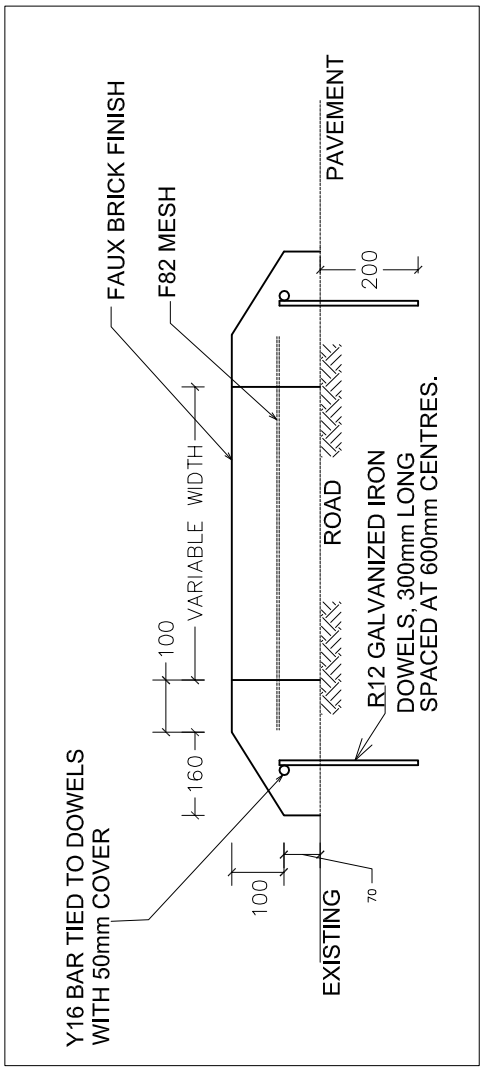
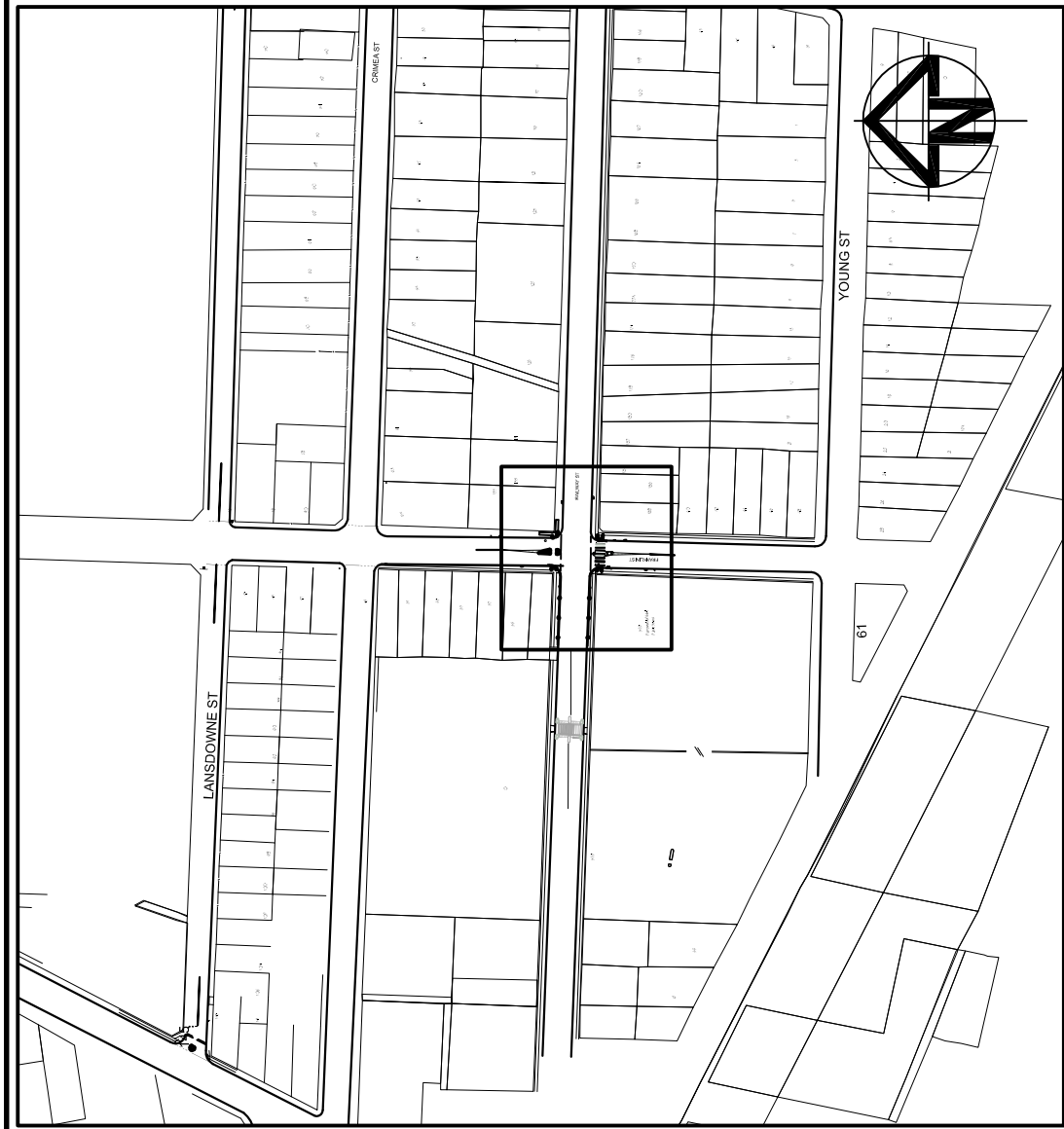
Council Resolution

Resolved on the motion of Clr. Dr. Brodie, seconded Clr. Colman that:

- i) The installation of the proposed pedestrian crossing and pedestrian refuge (Option 1) at the intersection of Franklin Street and Railway Street as per the attached plan be supported.
- ii) The installation of Type 1 pedestrian fencing on the corners of Railway Street and Franklin Street (west) as per the attached plan be considered.
- iii) An application be made to the RMS for grant funding for this project.
- iv) The affected businesses and residents be notified of the outcome generally.

Attachments:

1. Plan – Franklin Street and Railway Street, Mays Hill – Proposed Pedestrian safety improvements
2. Previous Report – HT018-15



CONCRETE ISLAND DETAILS

NOT TO SCALE

Holroyd City
a place for everyone

Engineering Services

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TITLE:

FRANKLIN STREET / RAILWAY STREET, MAYS HILL
PROPOSED PEDESTRIAN CROSSING

Drawn: K.W.

Scale: NTS

Drawing N°

Approved: Z.K.

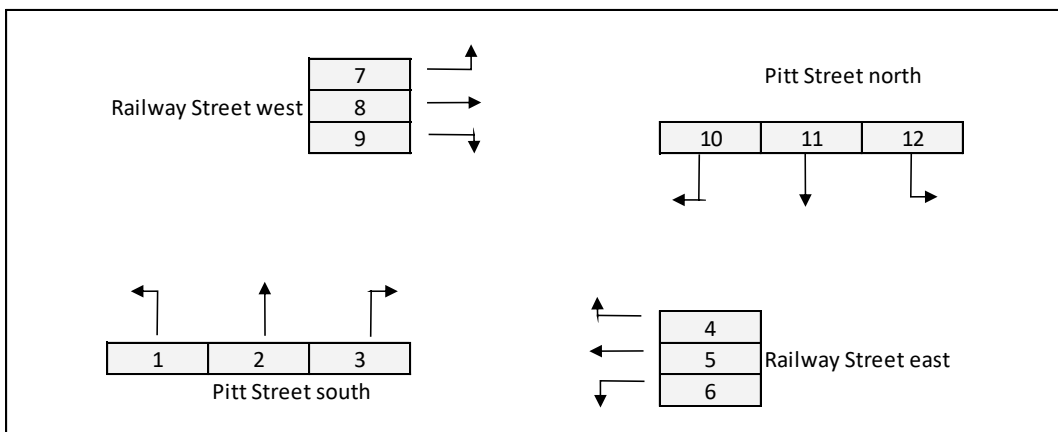
Date: 29/5/15

Wing N°
1506/14

Appendix C

SIDRA results

C1 Traffic count



AM Peak	Pitt Street south			Railway Street east			Railway Street west			Pitt Street north			
	1	2	3	4	5	6	7	8	9	10	11	12	Total
8.00-8.15	2	201	84	3	12	9	5	39	7	2	94	3	461
8.15-8.30	6	206	103	2	23	15	5	57	17	2	119	11	566
8.30-8.45	2	133	56	3	37	15	4	33	22	2	88	4	399
8.45-9.00	8	161	79	6	41	212	12	38	27	4	135	6	729
Total hour	18	701	322	14	113	251	26	167	73	10	436	24	2155

MOVEMENT SUMMARY



Site: 101 [Railway Street / Pitt Street Intersection - Existing]

Railway Street / Pitt Street

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 75 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Deg. HV %	Average Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pitt Street South												
1	L2	19	2.0	0.703	18.4	LOS B	20.1	143.2	0.78	0.71	0.78	36.0
2	T1	738	2.0	0.703	12.9	LOS A	20.1	143.2	0.78	0.71	0.78	29.9
3b	R3	339	2.0	0.789	32.9	LOS C	12.8	91.1	0.92	0.93	1.11	14.8
Approach		1096	2.0	0.789	19.2	LOS B	20.1	143.2	0.83	0.78	0.89	23.2
SouthEast: Railway Street East												
21b	L3	15	2.0	0.736	34.6	LOS C	14.1	100.1	0.97	0.88	1.04	14.8
21a	L1	119	2.0	0.736	32.5	LOS C	14.1	100.1	0.97	0.88	1.04	23.0
23a	R1	264	2.0	0.736	32.6	LOS C	14.1	100.1	0.97	0.88	1.04	15.0
Approach		398	2.0	0.736	32.6	LOS C	14.1	100.1	0.97	0.88	1.04	17.7
North: Pitt Street North												
7a	L1	25	2.0	0.252	14.4	LOS A	5.0	36.0	0.55	0.49	0.55	23.2
8	T1	459	2.0	0.252	10.3	LOS A	5.0	36.0	0.58	0.51	0.58	32.8
9	R2	11	2.0	0.252	17.4	LOS B	4.7	33.7	0.61	0.53	0.61	37.2
Approach		495	2.0	0.252	10.7	LOS A	5.0	36.0	0.58	0.51	0.58	32.3
West: Railway Street West												
10	L2	27	2.0	0.053	26.9	LOS B	0.7	5.2	0.76	0.69	0.76	26.0
12a	R1	176	2.0	0.503	29.0	LOS C	7.9	56.1	0.88	0.80	0.88	24.6
12	R2	77	2.0	0.503	30.3	LOS C	7.9	56.1	0.88	0.80	0.88	25.0
Approach		280	2.0	0.503	29.2	LOS C	7.9	56.1	0.87	0.79	0.87	24.8
All Vehicles		2269	2.0	0.789	20.9	LOS B	20.1	143.2	0.80	0.74	0.84	23.6

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

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

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

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

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

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	31.8	LOS D	0.1	0.1	0.92	0.92
P5	SouthEast Full Crossing	53	31.8	LOS D	0.1	0.1	0.92	0.92
P3	North Full Crossing	53	31.8	LOS D	0.1	0.1	0.92	0.92
P4	West Full Crossing	53	31.8	LOS D	0.1	0.1	0.92	0.92
All Pedestrians		211	31.8	LOS D			0.92	0.92

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

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

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

MOVEMENT SUMMARY



Site: 101 [Railway Street / Pitt Street Intersection - Future]

Railway Street / Pitt Street

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 75 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Deg. HV %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pitt Street South											
1	L2	21	2.0 0.689	17.7	LOS B	19.6	139.4	0.76	0.69	0.76	36.8
2	T1	738	2.0 0.689	12.1	LOS A	19.6	139.4	0.76	0.69	0.76	30.8
3b	R3	339	2.0 0.805	34.9	LOS C	13.3	94.4	0.93	0.95	1.16	14.2
Approach		1098	2.0 0.805	19.3	LOS B	19.6	139.4	0.81	0.77	0.88	23.2
SouthEast: Railway Street East											
21b	L3	15	2.0 0.796	37.9	LOS C	15.5	110.4	0.99	0.93	1.14	13.8
21a	L1	131	2.0 0.796	35.8	LOS C	15.5	110.4	0.99	0.93	1.14	21.7
23a	R1	264	2.0 0.796	36.0	LOS C	15.5	110.4	0.99	0.93	1.14	14.0
Approach		410	2.0 0.796	36.0	LOS C	15.5	110.4	0.99	0.93	1.14	16.8
North: Pitt Street North											
7a	L1	25	2.0 0.262	13.9	LOS A	5.3	37.5	0.53	0.48	0.53	23.6
8	T1	459	2.0 0.262	10.3	LOS A	5.3	37.5	0.58	0.51	0.58	32.8
9	R2	18	2.0 0.262	18.1	LOS B	4.7	33.2	0.63	0.55	0.63	36.3
Approach		502	2.0 0.262	10.7	LOS A	5.3	37.5	0.58	0.51	0.58	32.4
West: Railway Street West											
10	L2	29	2.0 0.059	27.8	LOS B	0.8	5.7	0.77	0.70	0.77	25.6
12a	R1	186	2.0 0.574	30.3	LOS C	8.8	62.6	0.91	0.81	0.91	24.0
12	R2	87	2.0 0.574	31.6	LOS C	8.8	62.6	0.91	0.81	0.91	24.4
Approach		302	2.0 0.574	30.5	LOS C	8.8	62.6	0.90	0.80	0.90	24.3
All Vehicles		2312	2.0 0.805	21.8	LOS B	19.6	139.4	0.81	0.75	0.87	23.1

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

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

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

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

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

Movement Performance - Pedestrians

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P4	West Full Crossing	53	31.8	LOS D	0.1	0.1	0.92	0.92
All Pedestrians		211	31.8	LOS D			0.92	0.92

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

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

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