

**preliminary  
construction traffic  
and pedestrian  
management plan;**

**New Primary School in Mulgoa Rise**

For SINSW  
20 August 2021

**parking;  
traffic;  
civil design;  
wayfinding;  
ptc.**

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# 1. Introduction

## 1.1 Background

ptc. has been engaged by School infrastructure New South Wales (SINSW) to prepare a Preliminary Construction Traffic and Pedestrian Management Plan (PCTPMP) report for a development of a new primary school in Mulgoa Rise (the School) at 1-23 Forestwood Drive, Glenmore Park.

The project is proposed to be submitted as a State Significant Development Application (SSDA) to the Department for Planning, Industry and Environment (DPIE). As the proposed site lies within the Penrith City Council local government area, the project has also considered the local controls.

This report addresses construction works related to the development of the school, and has been prepared to address the requirement for the submission of a preliminary Construction Traffic and Pedestrian Management Plan as set out in Item 5 of the SEARs issued for the project dated 2 December 2020.

The location of the site is shown in Figure 1.

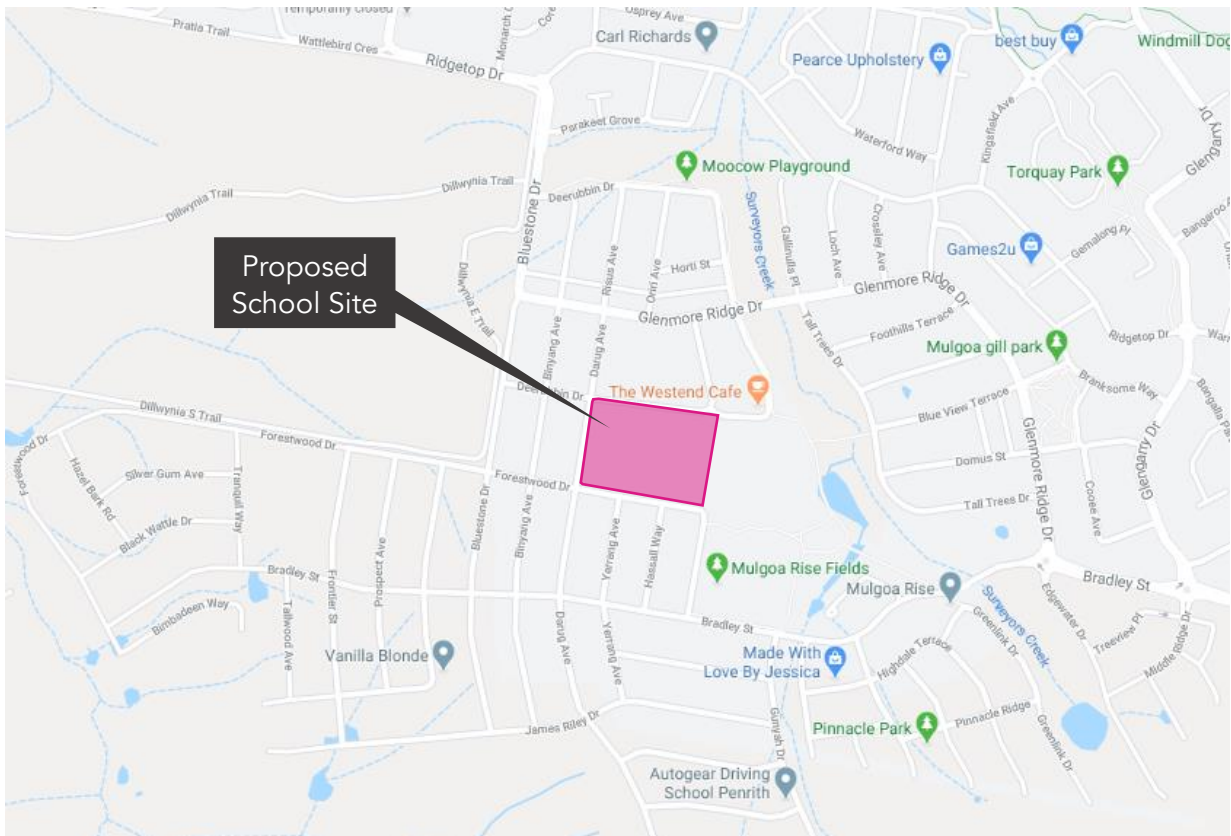


Figure 1 – Site Location (Source: Google Maps)

## **1.2 Structure of this Report**

This report presents the following considerations in relation to the PCTPMP:

Section 2	Background;
Section 3	A description of the project;
Section 4	A description of the road network and transport facilities serving the development site;
Section 5	Management of construction vehicles and non-site traffic; and
Section 6	Summary

## **1.3 Purpose of this Report**

The PCTPMP addresses the potential construction activity associated with the construction of the development, including:

- Location of any proposed Work Zone, Site Boundary, and any site office, crane locations, material and waste storage area and other components as necessary;
- Haulage routes;
- Construction vehicle access arrangements;
- A heavy vehicle swept path assessment, demonstrating feasibility of any site access, in addition to haulage routes if required;
- Estimated construction hours;
- Estimated number of construction vehicle movements;
- Estimated construction program;
- Mitigation of any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles during the construction of the proposed works;
- Development of a concept traffic management plan (TMP), outlining the construction access to the development and a description of likely traffic control measures required.

This report has been prepared to present the traffic and pedestrian management arrangements (including Traffic Control Plans) associated with the construction of the school.

## 2. Background Information

### 2.1 Site Location

The proposed school site is located at 1-23 Forestwood Drive, Glenmore Park and is identified as Lot 1663 in Deposited Plan 116686. It is located approximately 33 kilometres west of Paramatta CBD.

The site has a frontage to Deerubbin Drive to the north, Forestwood Drive to the south and Darug Avenue to the west. The east of the site is bound by Council's car park.

A mixed-use development has recently been approved north of Deerubbin Drive, which will act as a local town centre. To the east of the school are Council sports grounds with an adjoining car park.

The aerial view of the subject site is shown in Figure 2.

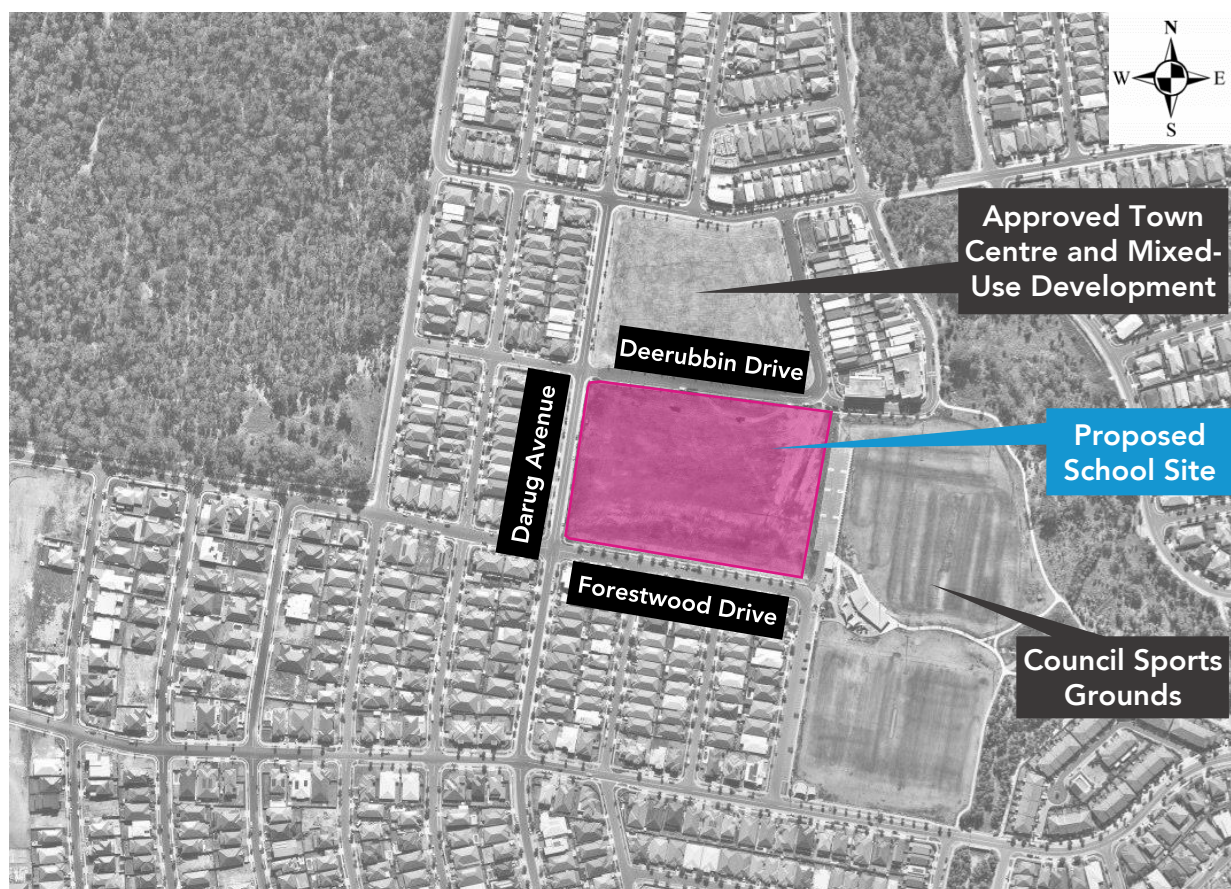


Figure 2 – Aerial View of the Subject Site (Source: Near Map)

## 2.2 Surrounding Land Use

The proposed school site is currently a R1 (General Residential) zone, with the surrounds being predominantly R1 and R2 (Low Density Residential). There are large E1 (National Parks and Nature Reserves) and E2 (Environmental Conservation) zones to the west, a large RU2 (Rural Landscape) zone to the south, a B2 (Local Centre) zone to the north and RE1 (Public Recreation) zones within the vicinity of the site. This is presented in Figure 3.

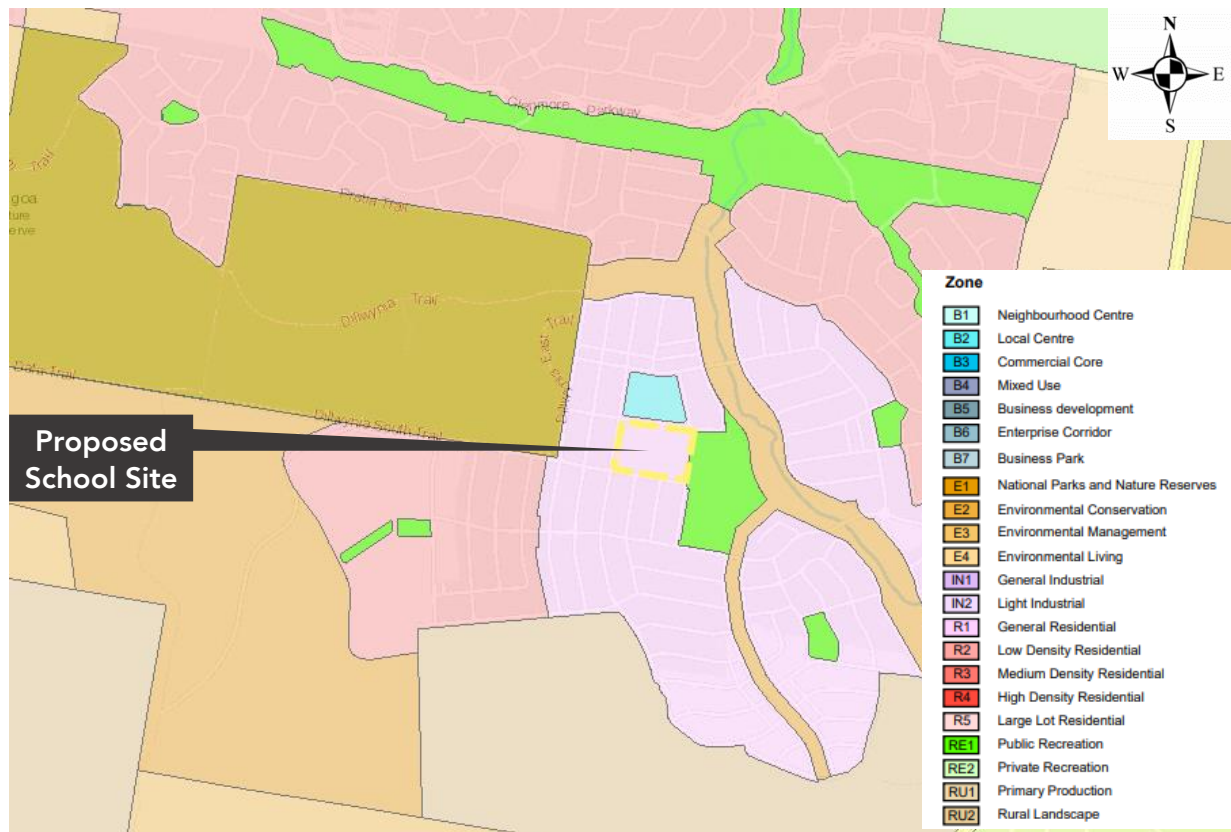


Figure 3 – Local Land Use Map (Source: NSW Planning Viewer)

It is noted that the Rural Landscape zone to the south is currently in the stage of a Planning Proposal for redevelopment of this region to a residential area.



### 3. Development Proposal

The site is currently vacant.

The proposed development will facilitate a Core 21 school with 18 learning spaces (LS) + 2 support classes, with the selected core facilities at Core 35, for the Hall, Library, Staff facilities and Admin. This will Cater for an initial 414 students.

The school has been master planned to facilitate future expansions up to a full 44 learning spaces + 4 support classes should additional demand materialise.

The future development of the primary school will complete the build to a Core 35, facilitating future expansion up to 44 learning spaces and 4 support classes.

The new school will provide the surrounding area community access to the school's core facilities - the communal hall, the library and the outdoor sports court. The school will also provide Outside School Hours Care (OSHC) services to assist dual-working families with parents commuting and working long hours.

The construction of this development is a two-year program. Planning and Statutory approvals undertaken through 2021, with early works for construction commencing in late 2021 and the main build in 2022. This will see the doors open for students in Term 1, 2023.

A site plan of the proposed development in shown in Figure 4.

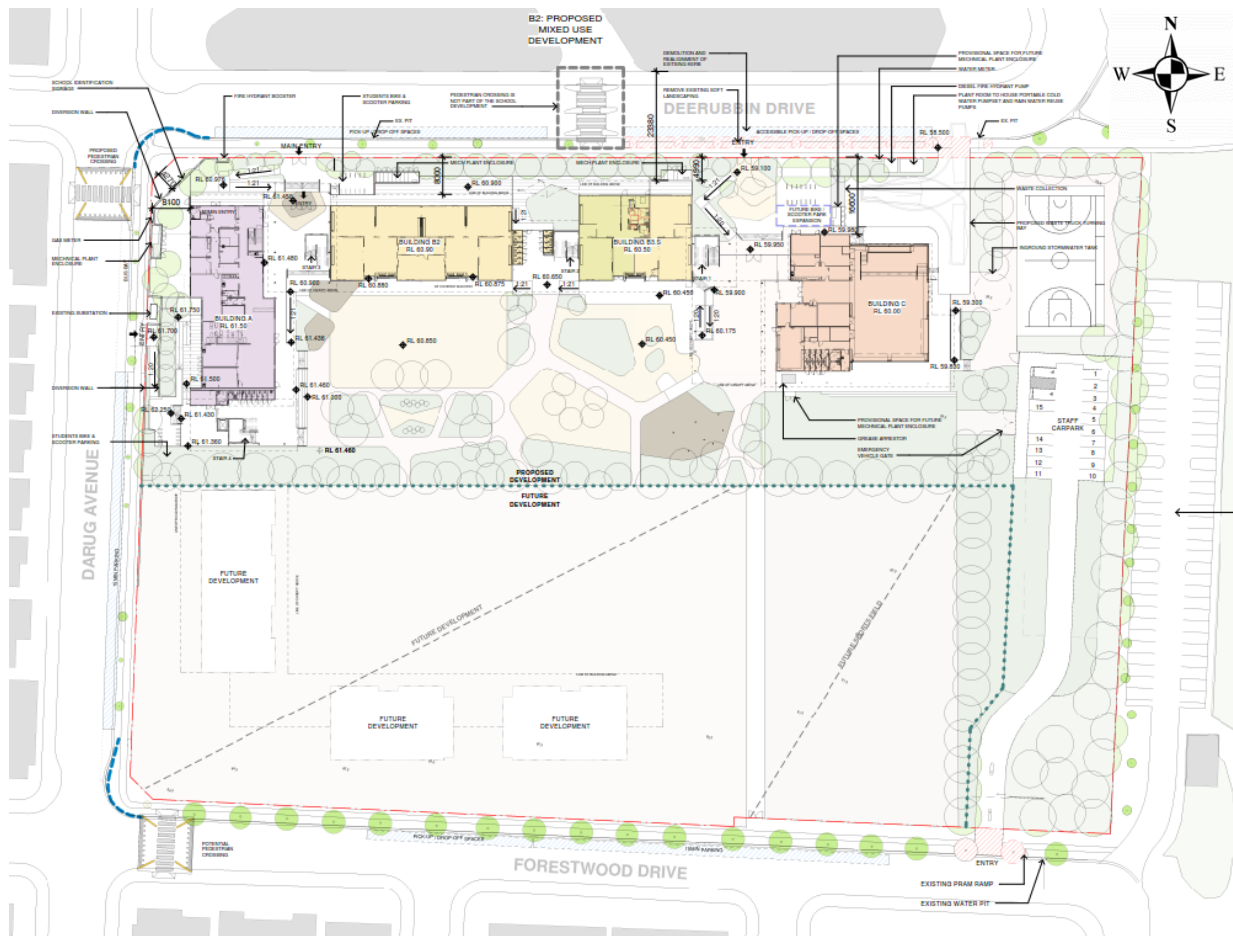


Figure 4 – Development Proposal Site Plan

The School will cater for years K-6, with the following traffic relevant parameters:

- Student capacity: 414
  - 400 students can be accommodated within general home bases
  - 14 students can be accommodated within SST bases
- Staff: approximately 27 full time equivalents (FTE)
- OSHC spaces

## 4. Existing Transport Facilities

### 4.1 Road Hierarchy

The subject site is located in the suburb of Glenmore Park and is primarily serviced by local roads including Deerubbin Drive to the north, Forestwood Drive to the south and Darug Avenue to the west.

A summary of the State, Regional and Council managed local roads serving the site is presented in Figure 5 and the following tables.

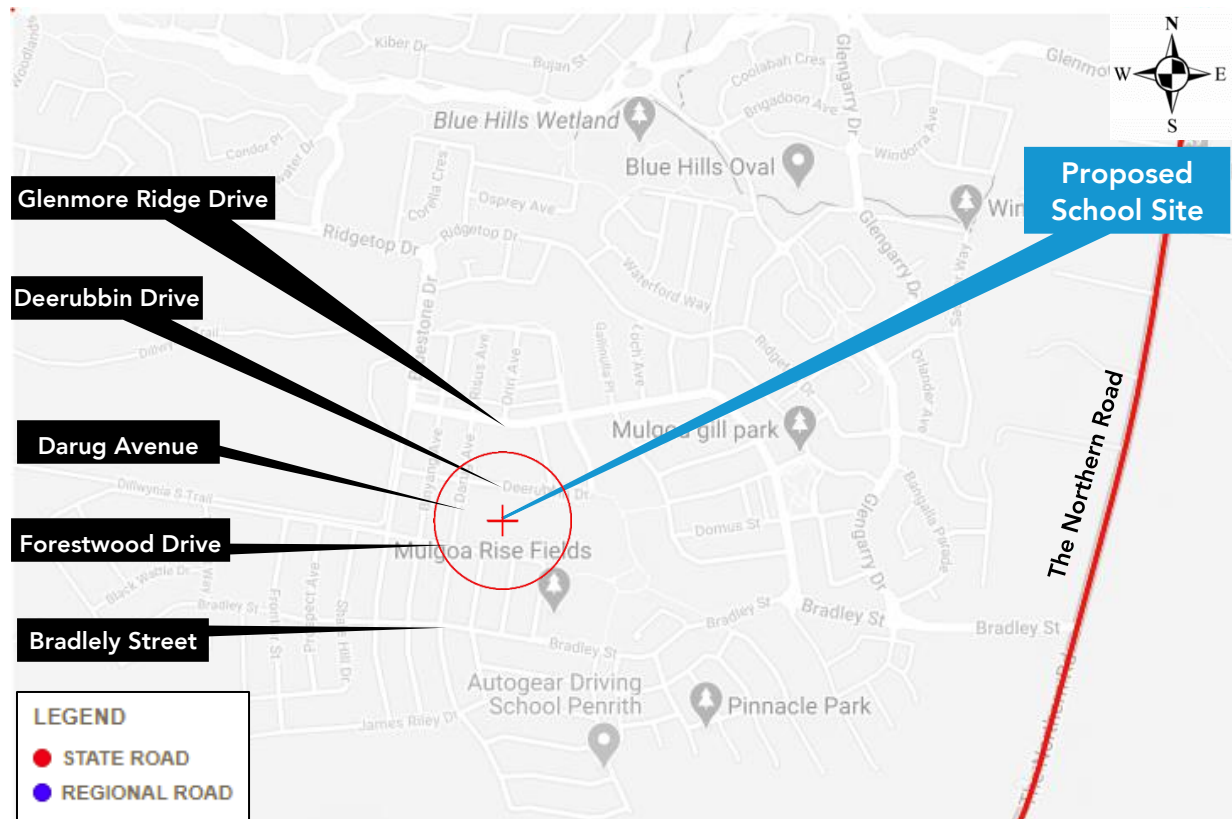


Figure 5 – Surrounding Road Network (Source: RMS Road Hierarchy)

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

- State Roads** - Freeways and Primary Arterials (RMS managed)
- Regional Roads** - Secondary or Sub Arterials (Council managed, partly funded by the State)
- Local Roads** - Collector and Local Access Roads (Council managed)

Table 1 – The Northern Road

The Northern Road	
Road Classification	State Road
Alignment	North-South
Number of Lanes	Varies, typically 1 lane in each direction. Road widens to 3 lanes southbound and 2 lanes northbound in the vicinity of the site
Carriageway Type	Undivided
Carriageway Width	Varies, typically 15m in section with 1 lane in each direction. Approximately 21m in widest section near the vicinity of the site
Speed Limit	80km/h
School Zone	No
Parking Controls	No parking
Forms Site Frontage	No

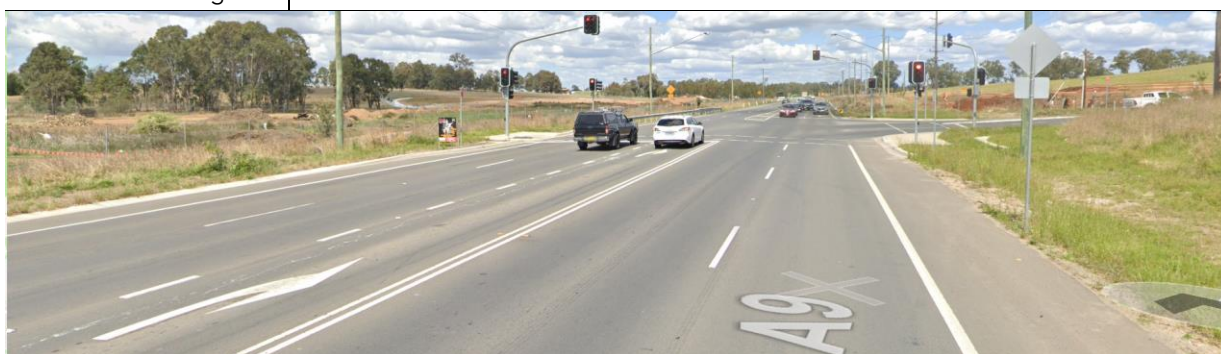


Figure 6 – The Northern Road – Southbound towards Bradley Street

Table 2 – Glenmore Ridge Drive

Glenmore Ridge Drive	
Road Classification	Collector Road
Alignment	East-West in the vicinity of the site
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	12m
Speed Limit	50km/h
School Zone	No
Parking Controls	Unrestricted Parking
Forms Site Frontage	No



Figure 7 – Glenmore Ridge Drive – Westbound towards Darug Avenue

Table 3 – Bradley Street

<b>Bradley Street</b>	
Road Classification	Collector Road
Alignment	East - West
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	12m
Speed Limit	50km/h
School Zone	No
Parking Controls	Unrestricted
Forms Site Frontage	No



Figure 8 – Bradley Street – Westbound towards Parkway Avenue

Table 4 – Darug Avenue

<b>Darug Avenue</b>	
Road Classification	Local Road
Alignment	North - South
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	12m
Speed Limit	50km/h
School Zone	No, but will be in the future
Parking Controls	Unrestricted
Forms Site Frontage	Yes



Figure 9 – Darug Avenue – Southbound towards Forestwood Drive

Table 5 – Deerubbin Drive

Deerubbin Drive	
Road Classification	Local Road
Alignment	East - West
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	12m
Speed Limit	50km/h
School Zone	No, but will be in the future
Parking Controls	Unrestricted
Forms Site Frontage	Yes



Figure 10 – Deerubbin Drive – Westbound towards Darug Avenue

Table 6 – Forestwood Drive

Forestwood Drive	
Road Classification	Local Road
Alignment	East - West
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	11m
Speed Limit	50km/h
School Zone	No, but will be in the future
Parking Controls	Unrestricted
Forms Site Frontage	Yes



Figure 11 – Forestwood Drive – Eastbound towards Yerrang Avenue

## 4.2 Public Transport

The locality of the site has been assessed in the context of available forms of public transport that may be utilised by prospective staff and students. When defining accessibility, the *NSW Planning Guidelines for Walking & Cycling (2004)* suggests that 400m-800m is a comfortable walking distance to access public transport and local amenities.

Figure 12 illustrates 400m and 800m catchments from the proposed School site, together with the public transport options and network, which are available in the vicinity of the site. Details of public transport options available are outlined in the following sections.

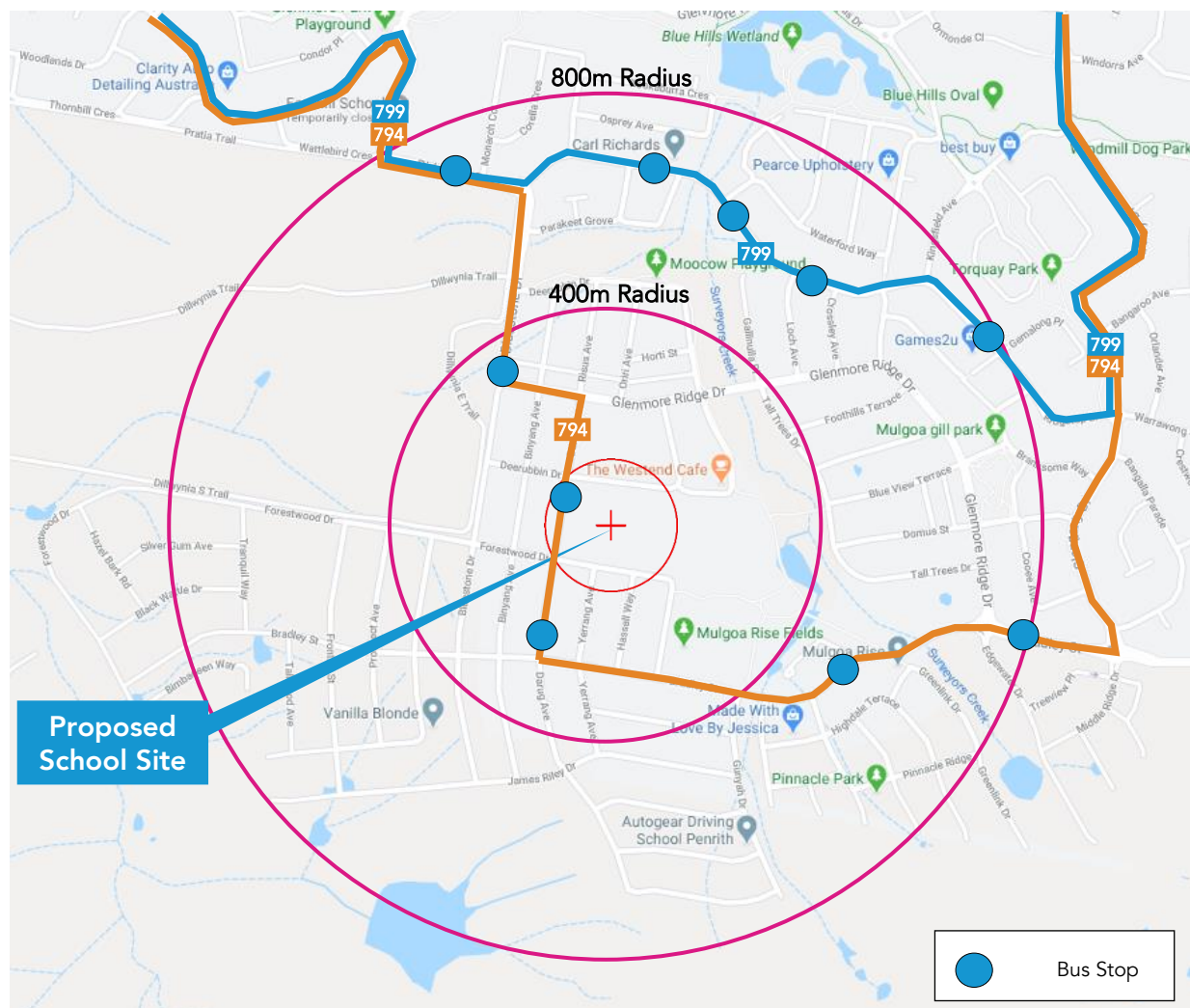


Figure 12 – 400m and 800m radius of the subject site

### 4.2.1 Bus Stops

As shown in Figure 12, there are a few bus services within the 400m and 800m catchment. The closest existing bus stop is located within 400m catchment along Darug Avenue, and serviced by 794 bus.

The closest bus stops and their relation to pedestrian gates of the proposed school are shown in Figure 13.

Currently, there is no pedestrian crossing connecting the school with the bus stop located on the western side of Darug Avenue.

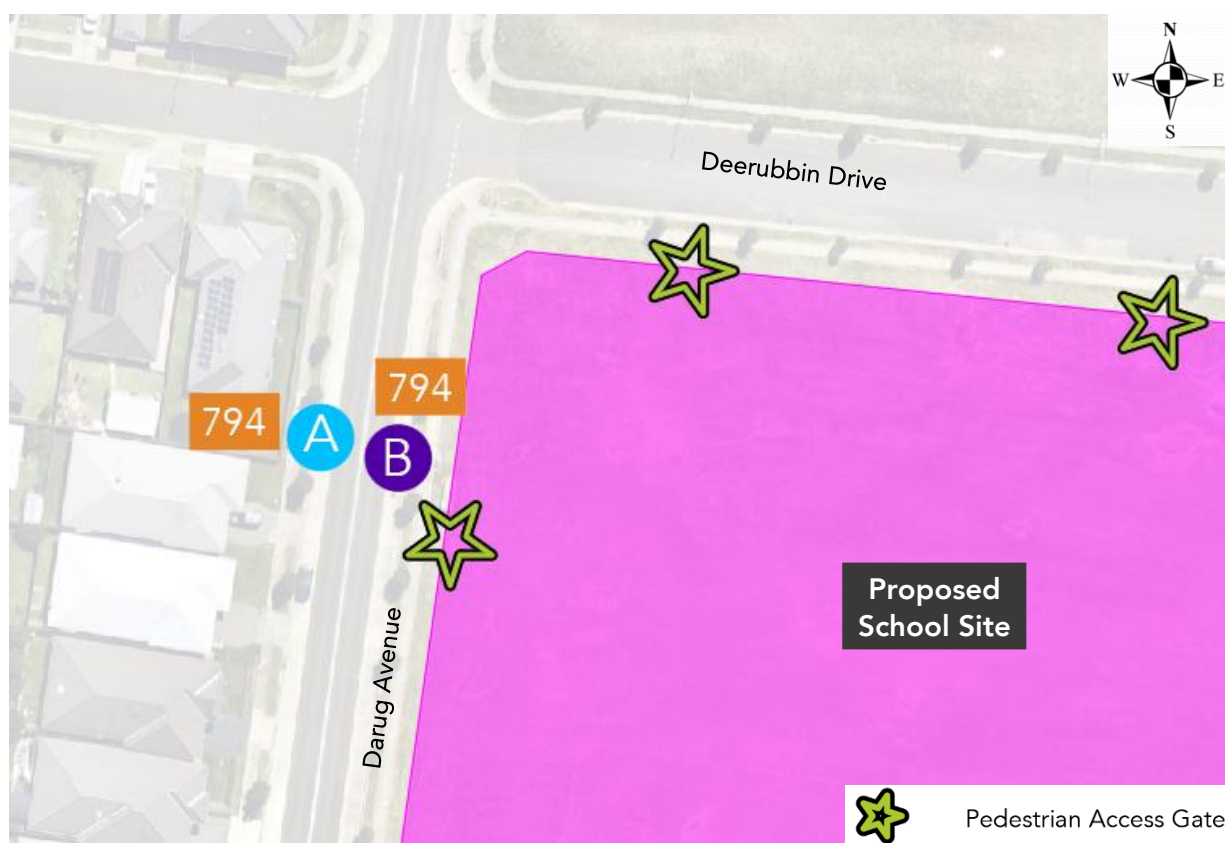


Figure 13 – Nearest Bus Stops

#### 4.2.2 Bus Services

Bus services, including coverage, approximate operation times and frequency during school peak hours are presented in Table 7.

Table 7 – Bus Service Summary (Source: Transport NSW)

Bus Route	Coverage	Bus Stop	Morning Peak	Bus Stop	Afternoon Peak
794	Penrith to Glenmore Park via The Northern Road	A	7:57, 8:35, 9:27	A	14:34, 15:47, 16:17
	Glenmore Park to Penrith via The Northern Road	B	7:51, 8:18, 8:54, 9:42	B	13:46, 15:07, 16:10

Considering potential construction times, the 794 bus timetable does not provide convenient services for workers.

The development is poorly serviced by bus, with services every 18 to 69 minutes throughout the day on weekdays, and therefore is not a reliable mode share option for staff.



### 4.3 Active Transport

Penrith Council’s DCP Part E7B indicates that footpaths and shared paths are provided within the vicinity of the school, as shown in Figure 14.

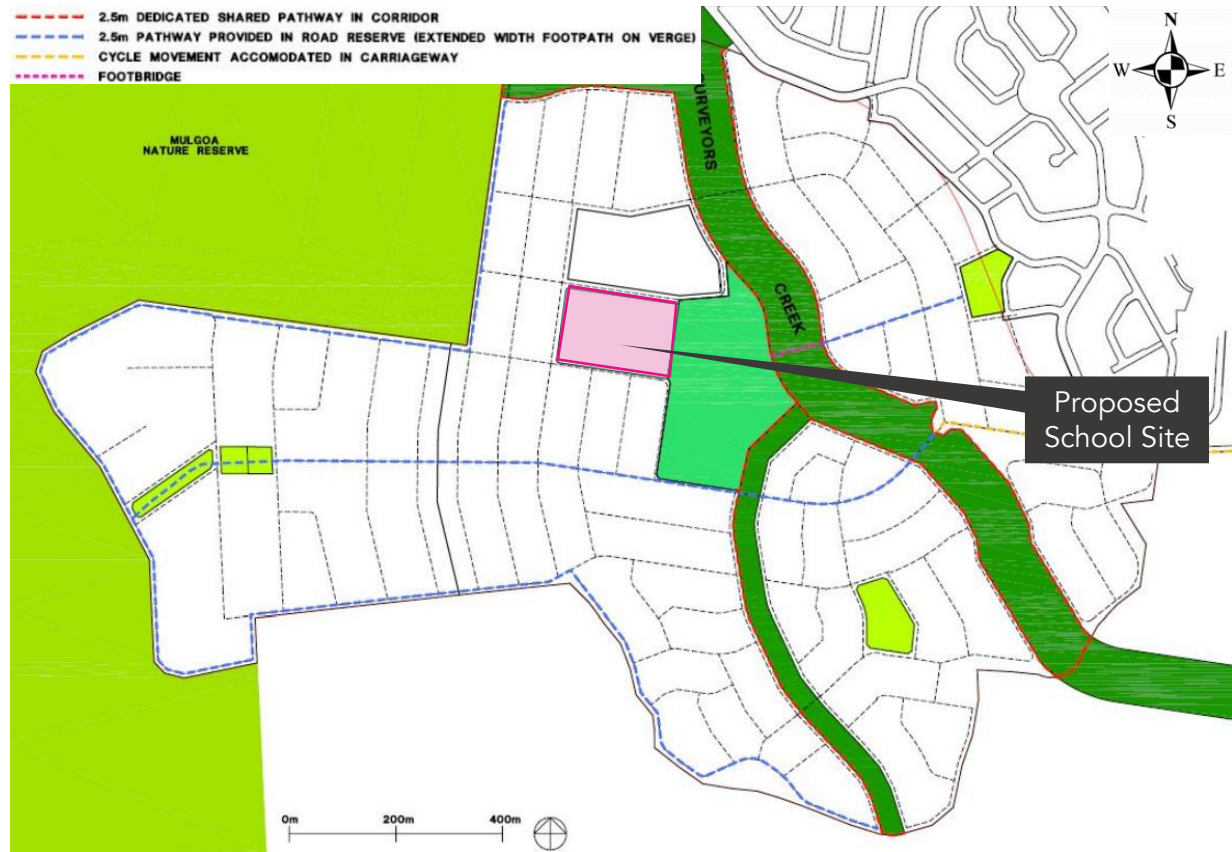


Figure 14 – Pedestrian and Cycle Network (Penrith Council DCP 2014)

Upon review of *nearmap* imagery it is known that footpaths and shared paths have been provided along major roads, biodiversity corridors and parklands, as per Council’s DCP.

#### 4.3.1 Cycling

As shown in Figure 14, the surrounding locality within the vicinity of the proposed site has some dedicated bicycle paths along Derrubin Drive and Tall Trees Drive.

#### 4.3.2 Walking

Walking is viable transport option for distances under one kilometre (approximately 15-20min) and is often quicker for short trips door to door. Walking is also the most space efficient mode of transport for short trips and presents the highest benefits. Co-benefits where walking replaces a motorised trip include improved health for the individual, reduced congestion on the road network and reduced noise and emission pollution.

The pedestrian network in the locality of the proposed School site has been assessed to provide a reasonably high level of amenities within the vicinity of the school. Almost all roads in the vicinity of the site have footpaths on both sides. Pram ramps are generally provided at each end of the footpaths; however, there is a lack of formalised crossings in the vicinity of the site.

---

## 5. Concept Construction Traffic and Pedestrian Management Plan

### 5.1 Objective

The traffic management plan associated with the construction activity aims to ensure the safety of all workers and road users within the vicinity of the construction site and following are the primary objectives:

- To minimise the impact of the construction vehicle traffic on the overall operation of the road network;
- To ensure continuous, safe and efficient movement of traffic for both the general public and construction workers;
- Installation of appropriate advance warning signs to inform users of the changed traffic conditions;
- To provide a description of the construction vehicles and the volume of these construction vehicles accessing the construction site;
- To provide information regarding the changed access arrangement and also a description of the proposed external routes for vehicles including the construction vehicles accessing the site; and
- Establishment of a safe pedestrian environment in the vicinity of the site.

### 5.2 Hours of Work

All works associated with the project will be restricted to time periods stipulated by the Conditions of Consent. At this stage these hours are not known and therefore we have assumed the following working hours associated with the construction activity:

- Monday to Saturday 7:00am to 5:00pm; and
- Sunday, Public Holidays No works to be undertaken without prior approval.

### 5.3 General Requirements

In accordance with Transport for NSW (TfNSW) requirements, all vehicles transporting loose materials will have to be entirely load covered and / or secured to prevent any large items, excess dust or dirt particles depositing onto the roadway during the travel to and from the site. All subcontractors must be inducted by the lead contractor to ensure that the procedures are met for all vehicles entering and exiting the construction site. The lead contractors will monitor the roads leading to and from the site and take all necessary steps to rectify any road deposits caused by site vehicles.

Vehicles operating to, from and within the site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration. No tracked vehicles will be permitted or required on any paved roads. Public roads and access points will not be obstructed by any materials, refuse skips or the like, under any circumstances. No construction vehicles are permitted to double park, or park on the public road. No building materials, work sheds, vehicles, machines or the like shall be allowed to remain in the road reserve area without the written consent of Penrith City Council.

Spoil shall be exported from site as progressively as the works occur. Spoil shall not be stockpiled and exported from the site in bulk.

The applicant / contractor is required to follow and abide by the specific standard requirements for construction management as set out by the Department of Planning, Industry and Environment in any consent issued for the project.

## **5.4 Construction Staging**

The construction is planned to commence in November 2021 and finish in January 2023. The exact dates for construction works are to be confirmed (TBC) at construction stage.

The works will involve the following:

- The buildings have been designed with consideration to hybrid of conventional and factory made prefabricated component method of construction.
- Construction of a car park to accommodate 17 parking spaces including 2 accessible parking spaces.

## **5.5 Construction Vehicle Types**

The construction will involve the use of a number of different vehicle types in relation to the various tasks involved. A 20m long Articulated Vehicle (AV) is the largest vehicle anticipated to be used for all material removal and deliveries.

Any oversized vehicle that is required to access the development site will be dealt with separately, with the submission of required permits to and subsequent approval by Penrith City Council.

## **5.6 Construction Vehicle Routes and a Swept Path Assessment**

The site is located in the suburb of Glenmore Park and the proposed construction vehicle routes have regard for the surrounding traffic arrangements in the vicinity of the site. No queuing or marshalling of trucks is permitted on any public road and all loading and unloading of materials will be undertaken within the site.

All vehicle routes to the site are constrained to existing public roads that have the physical geometry to accommodate the turning movements. Approaching the site, some vehicle movements will entail the assistance of traffic controllers to manage a two-way flow along the surrounding roads. For signage and controls requirements in these cases refer to Section 5.7 and Section 5.9.

All vehicles will enter the site via a temporary construction access on Darug Avenue, approximately 70m to the north of the intersection with Forestwood Drive (refer Section 5.6.2 for further detail). Vehicles travelling from the north, east or west will approach the site southbound via The Northern Road, turn right into Bradley Street, continue straight on Bradley Street, turn right into Darug Avenue and then turn right into the site.

Vehicles travelling from the south will approach the site northbound via The Northern Road, turn left into Bradley Street, continue straight on Bradley Street, turn right into Darug Avenue and then turn right into the site.

All vehicles will exit the site via Darug Avenue in the southbound direction, turn left into Bradley Street and then turn left on The Northern Road to travel north, east and west or turn right on The Northern Road to travel south.

The vehicle routes as shown in Figure 15.

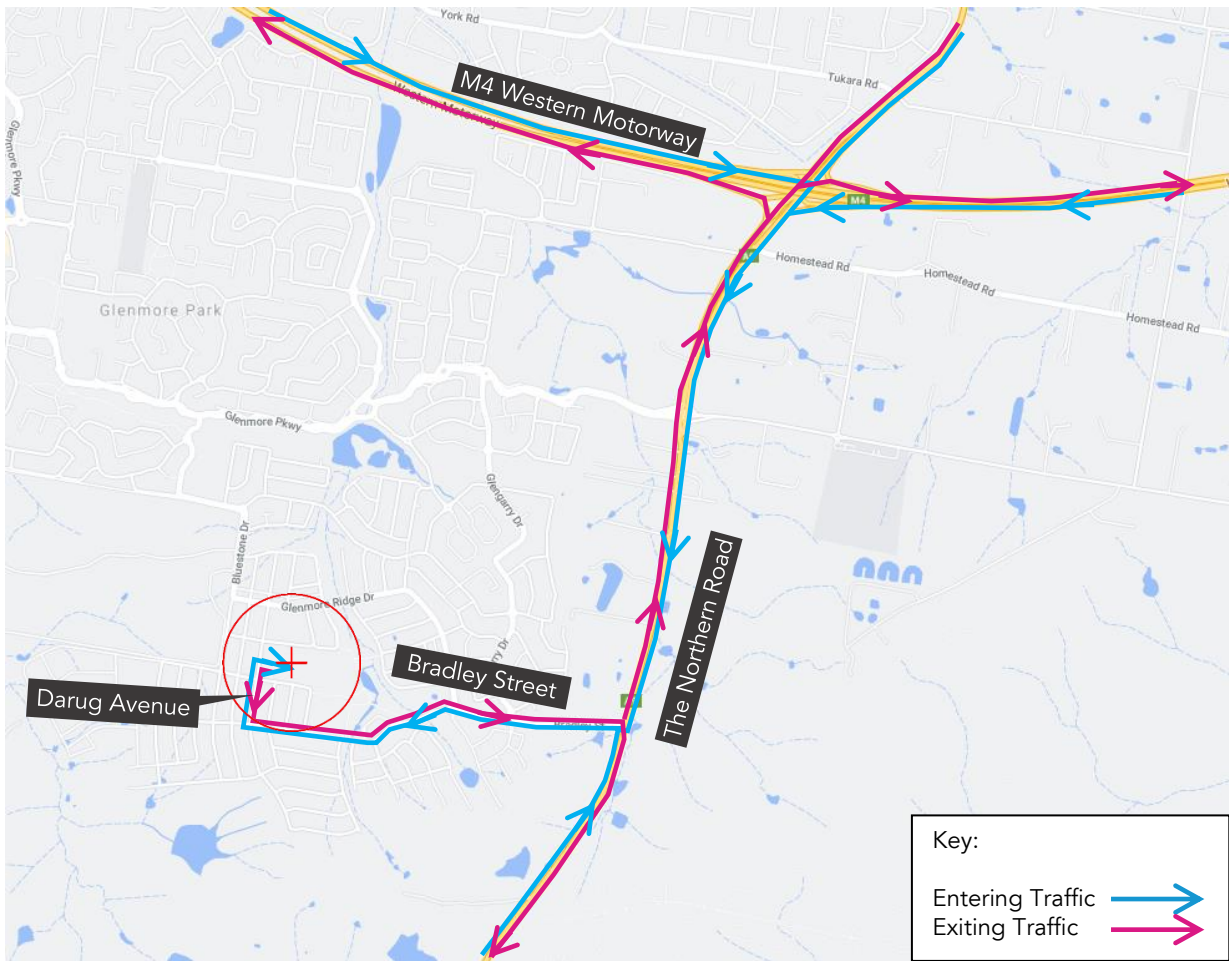


Figure 15 – Constructon Vehicle Routes

### 5.6.1 Key Intersections

The key intersections for the proposed School site are based on the construction vehicle routes. The key intersections in the vicinity of the site and their characteristics are listed below and shown in Figure 16.

- The Northern Road / Bradley Street: 3-arm signalised intersection
- Bradley Street / Glengarry Drive / Middle Ridge Drive: 4-arm roundabout intersection
- Bradley Street / Glenmore Ridge Drive / Edgewater Drive: 4-arm roundabout intersection
- Bradley Street / Darug Avenue: 4-arm give way intersection

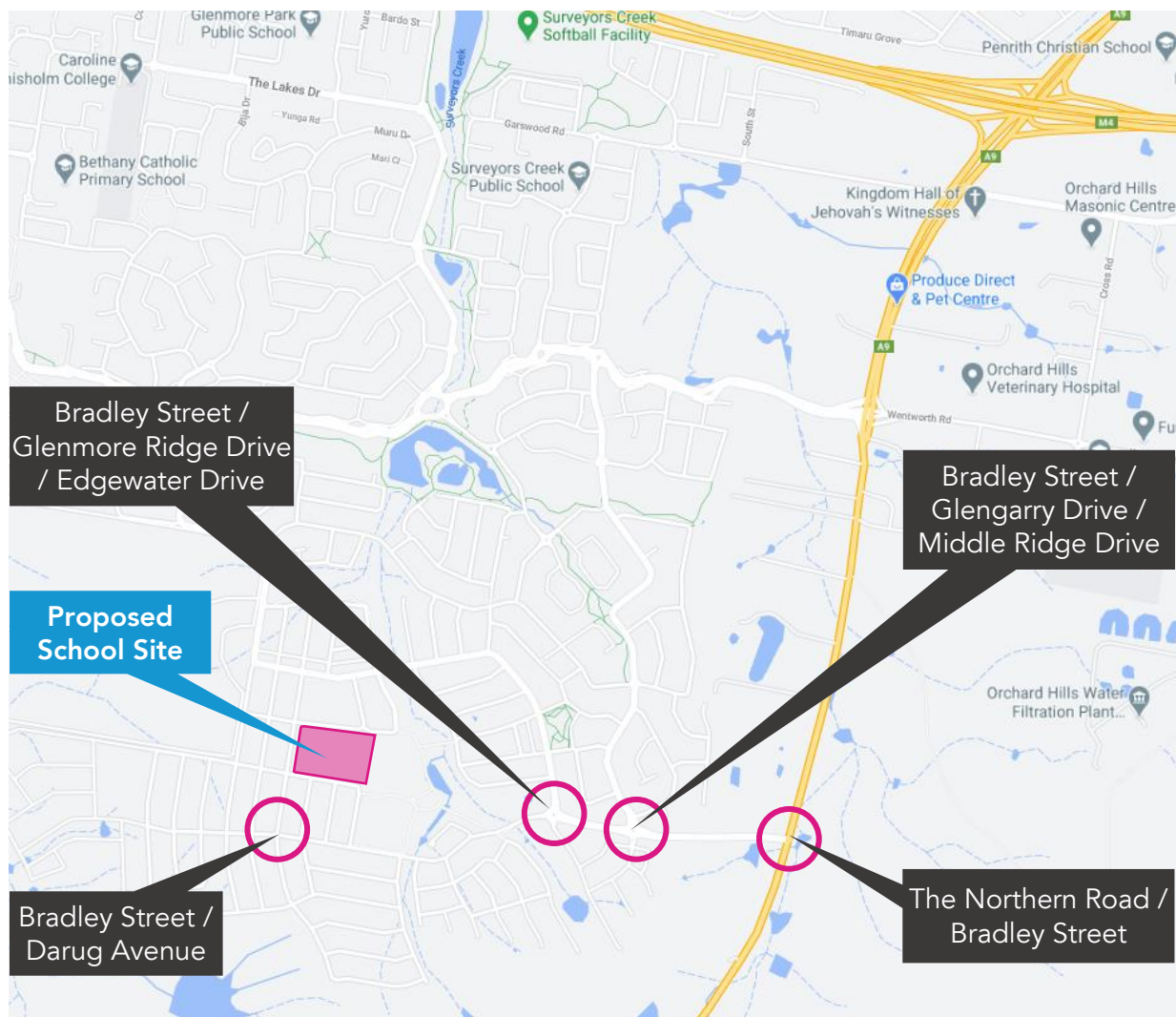


Figure 16 – Key Intersections

### 5.6.2 Swept Path Assessment

As discussed in Section 5.5, the largest anticipated vehicle approaching the site will be an AV. The construction trucks are to enter and exit the site via Darug Avenue. A temporary driveway and gate need to be constructed on Darug Avenue. A single driveway / gate will be used by entering and exiting trucks. The gate and driveway need to be at least 8 and 9 metres wide respectively to accommodate an AV. A swept path assessment of an AV entering and exiting the site via Darug Avenue is shown in Figure 17.

There is a bus Zone on Darug Avenue north of the proposed temporary driveway, which needs to be maintained throughout the construction process. The temporary driveway does not affect the operation of the bus stop.

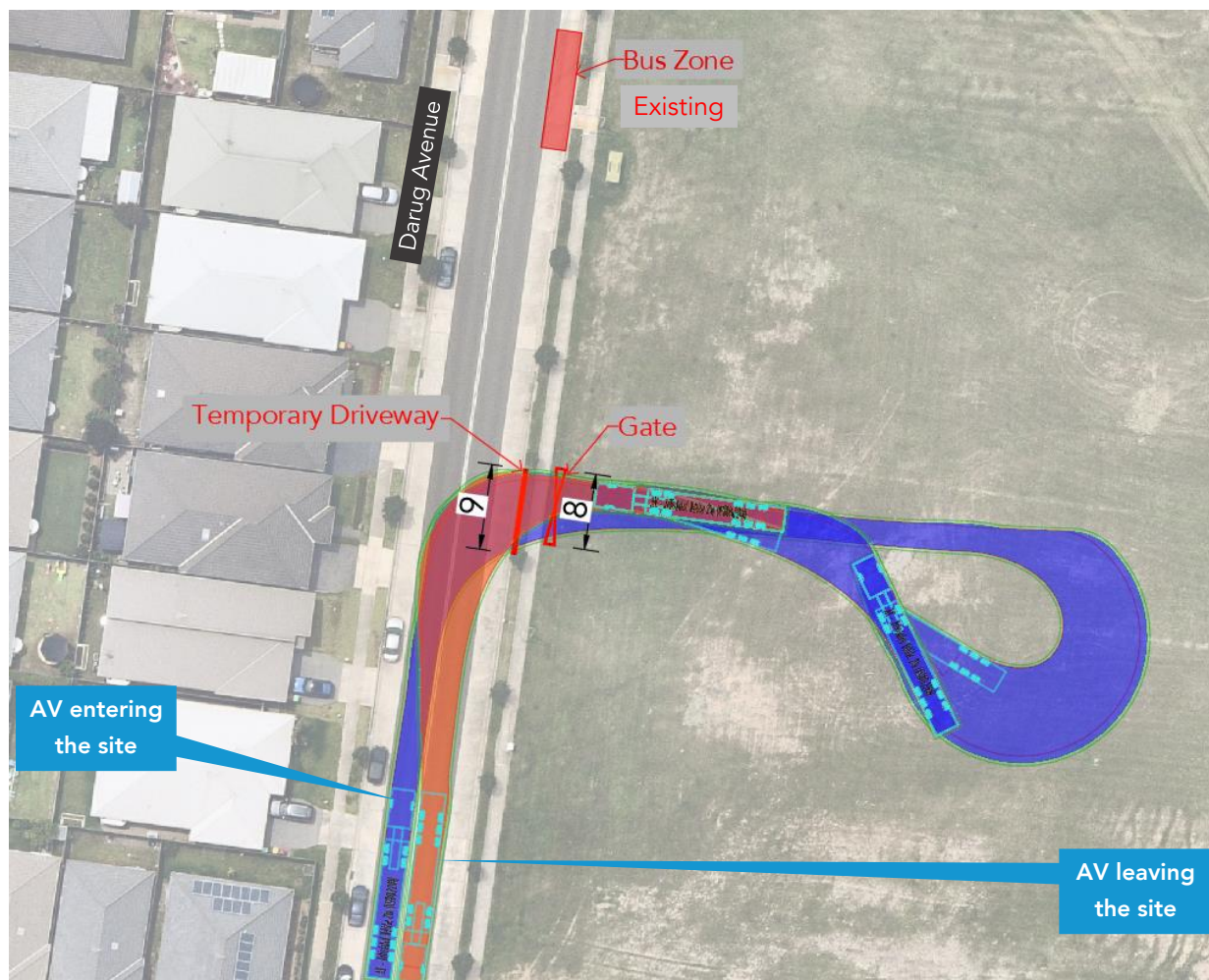


Figure 17 – AV entering and exiting the site via Darug Avenue

When entering and exiting the site the vehicles need to use the surrounding road network and intersections. For this reason, a swept path assessment has been undertaken to confirm that all required vehicle movements are possible. The following figures show AV movements at the key intersections as described in Section 5.6.1.

Any control measures are described in Section 5.7 and Section 5.9.

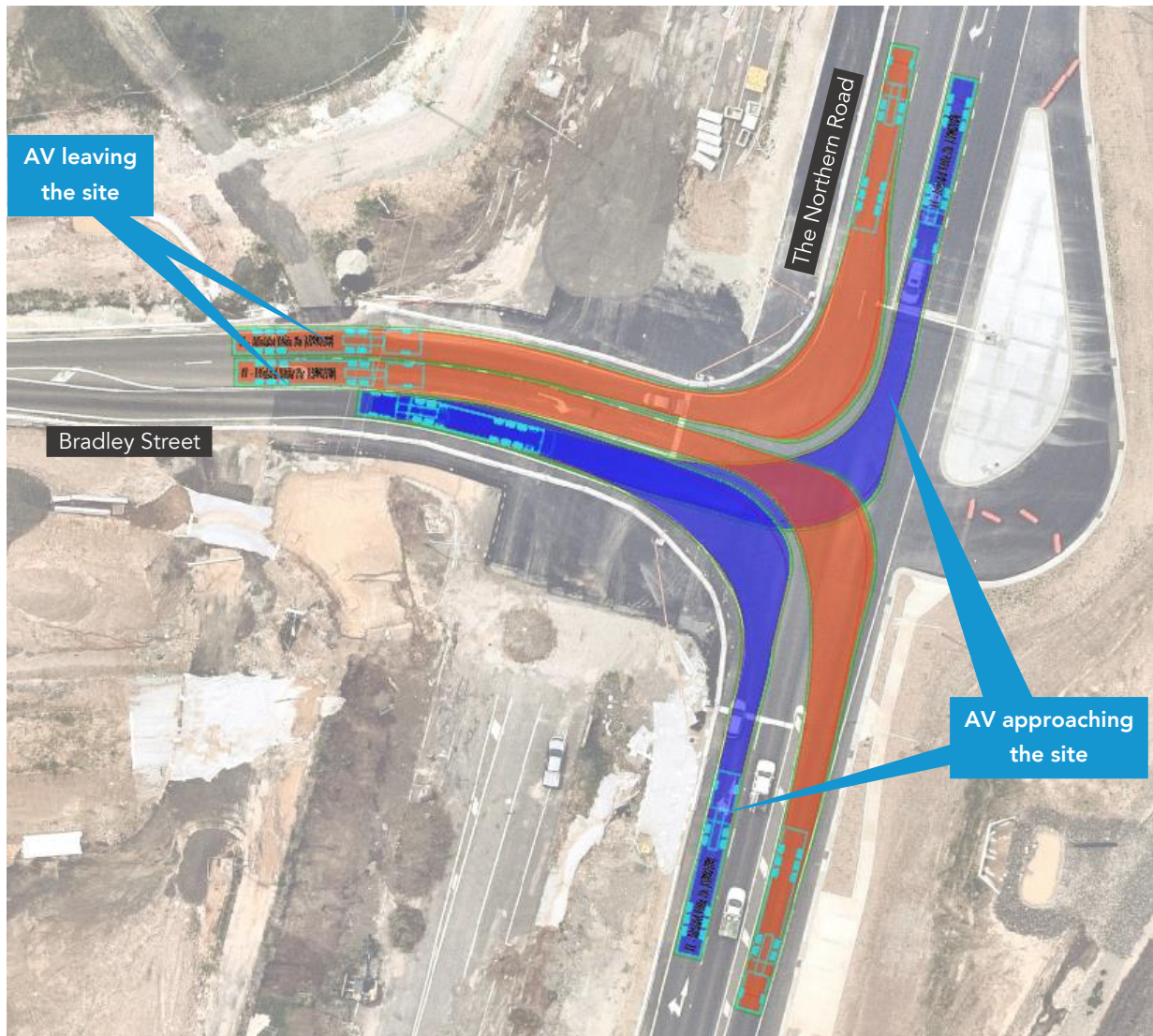


Figure 18 – AV at The Northern Road / Bradley Street intersection

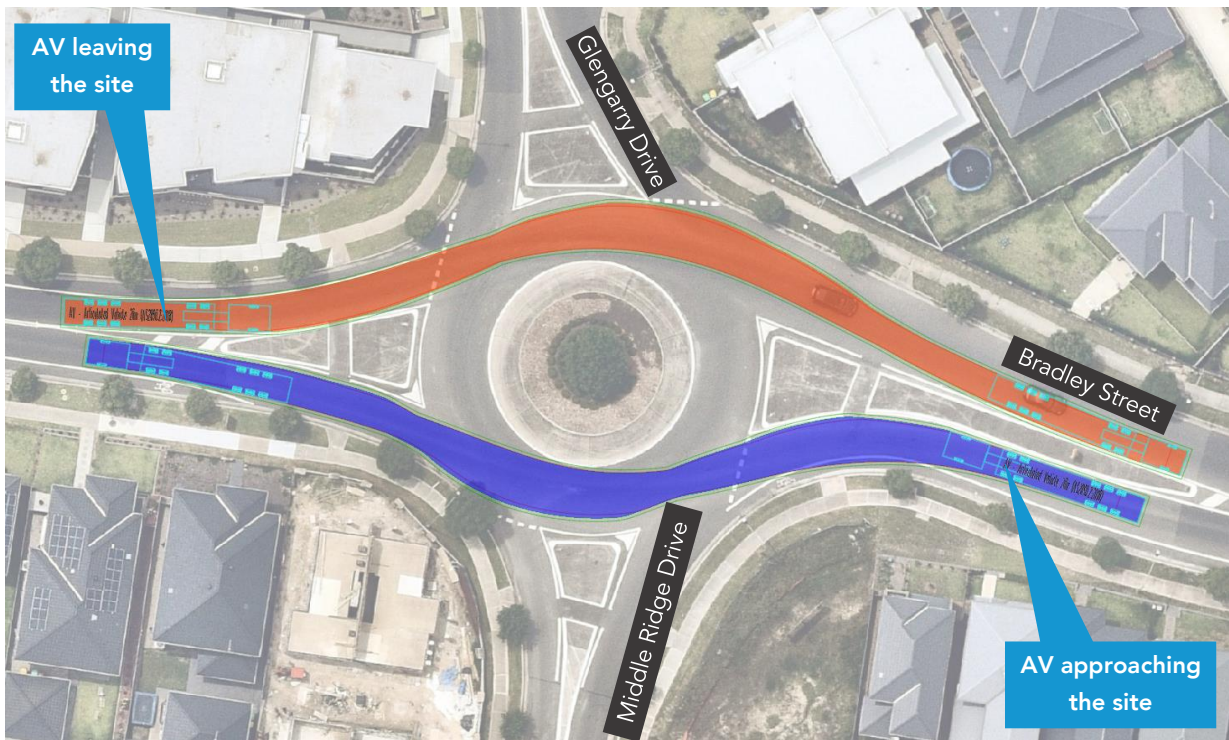


Figure 19 – AV at the Bradley Street / Glengary Drive / Middle Ridge Drive intersection

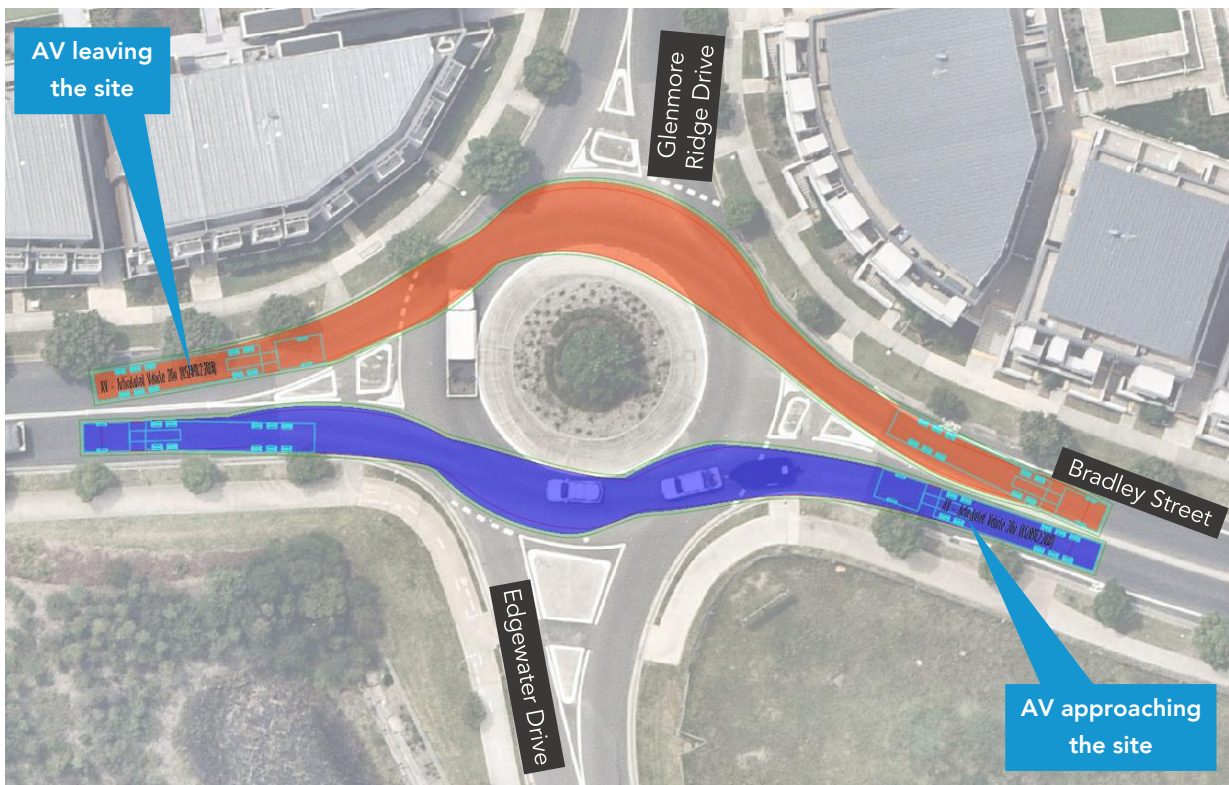


Figure 20 – AV at the Bradley Street / Glenmore Ridge Drive / Edgewater Drive intersection



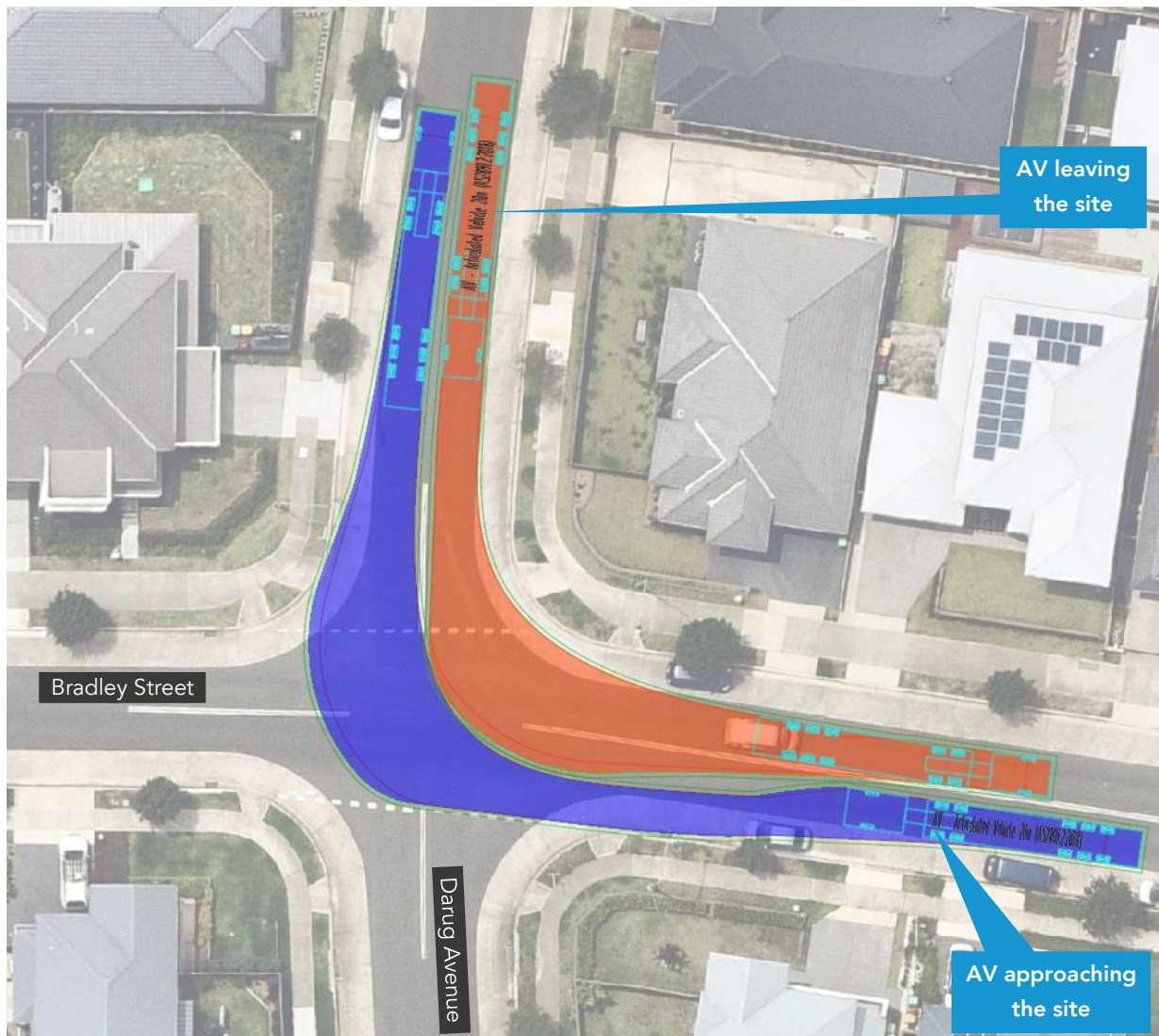


Figure 21 – AV at the Bradley Street / Darug Avenue intersection

## 5.7 Traffic Control Measures

Traffic Control Plans (TCP) outline proposed traffic management measures to inform road users of the changed traffic conditions in the vicinity of the works site.

The TCPs have been set out in accordance with the RMS Traffic Control at Works Site.

These specific TCPs will be provided by the traffic management contractor prior to commencement of works and submitted to Council / TfNSW for approval.

The TCPs required during different stages of work are described in the following sub-sections.

### 5.7.1 TCP along Darug Avenue

TCP 195 will be required along Darug Avenue in both directions to inform road users of large turning vehicles in and out of the proposed temporary driveway.

An AV occupies the opposite side of the road while exiting the site. Therefore, TCP 77 will be required on the southern side of Darug Avenue to inform other road users of the potential requirement to stop while the trucks are exiting the site.

Considering the above, TCP 195 along the northern side of Darug Avenue and combined TCPs 195 and 77 along the southern side of Darug Avenue will be required, as shown in Figure 22 and Figure 23 respectively.



Figure 22 – Traffic Control Plan on the northern side of Darug Avenue



Figure 23 – Traffic Control Plan on the southern side of Darug Avenue

### 5.7.2 TCP along Bradley Street

An AV occupies the opposite site of the road while turning left from Darug Avenue into Bradley Street. Therefore, TCP 77 will be required on the eastern side of Bradley Street to inform road users travelling in the westbound direction of the potential requirement to stop while the trucks are turning left. The required signage layout is shown in Figure 24.

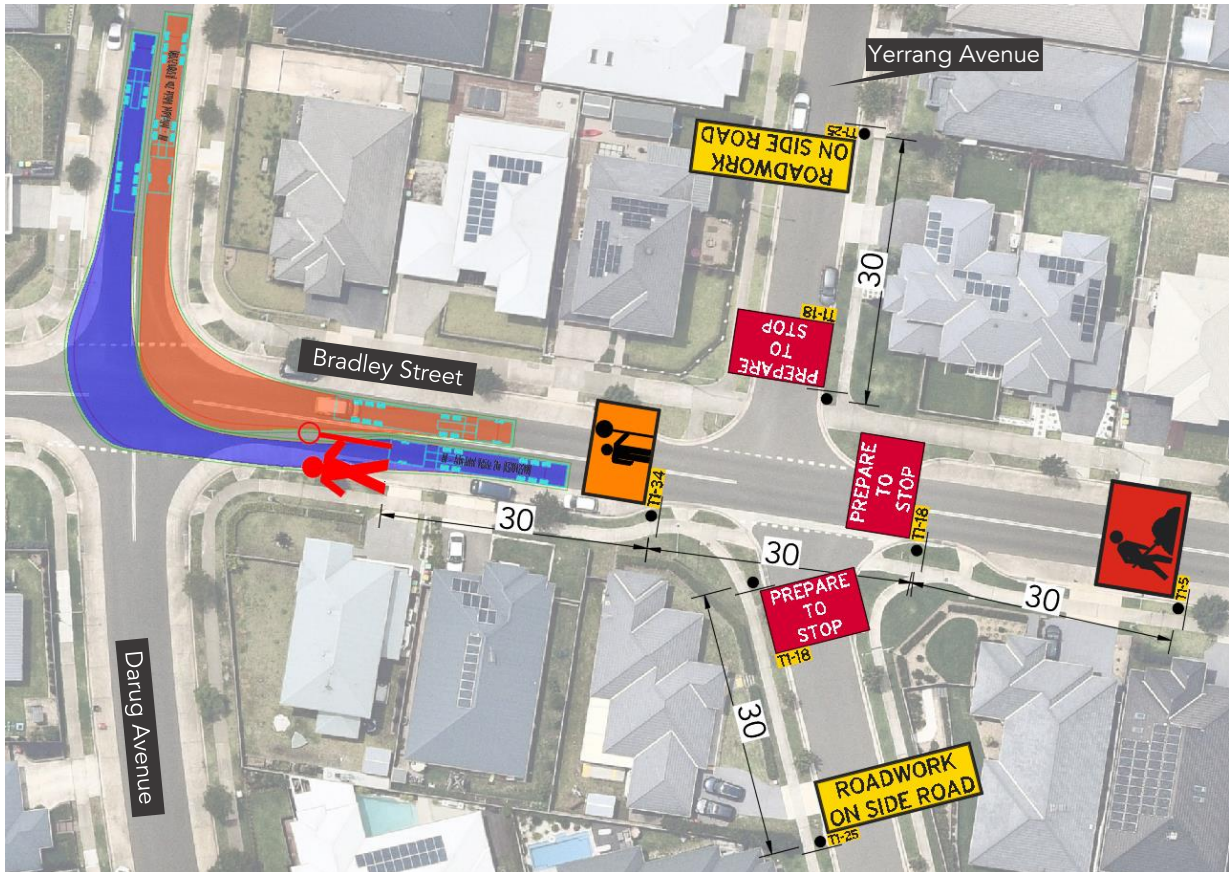


Figure 24 – Traffic Control Plan along Bradley Street

## 5.8 Work Zone

No work zones are proposed during the construction of the school, as all construction activities will be undertaken within the site.

## 5.9 Parking Controls

### 5.9.1 Parking Controls along the Temporary Driveway

Currently, there are no parking restrictions along Darug Avenue. An AV exiting the site by turning left into Darug Avenue occupies a parking space on the southern side of the temporary driveway. Therefore, "No Parking" will be required on both sides of the temporary driveway to prohibit parking of vehicles within the truck route. As shown in Figure 25, "No Parking" sign should be positioned between the northern side of the temporary driveway up to a distance of 6m towards the southern side.

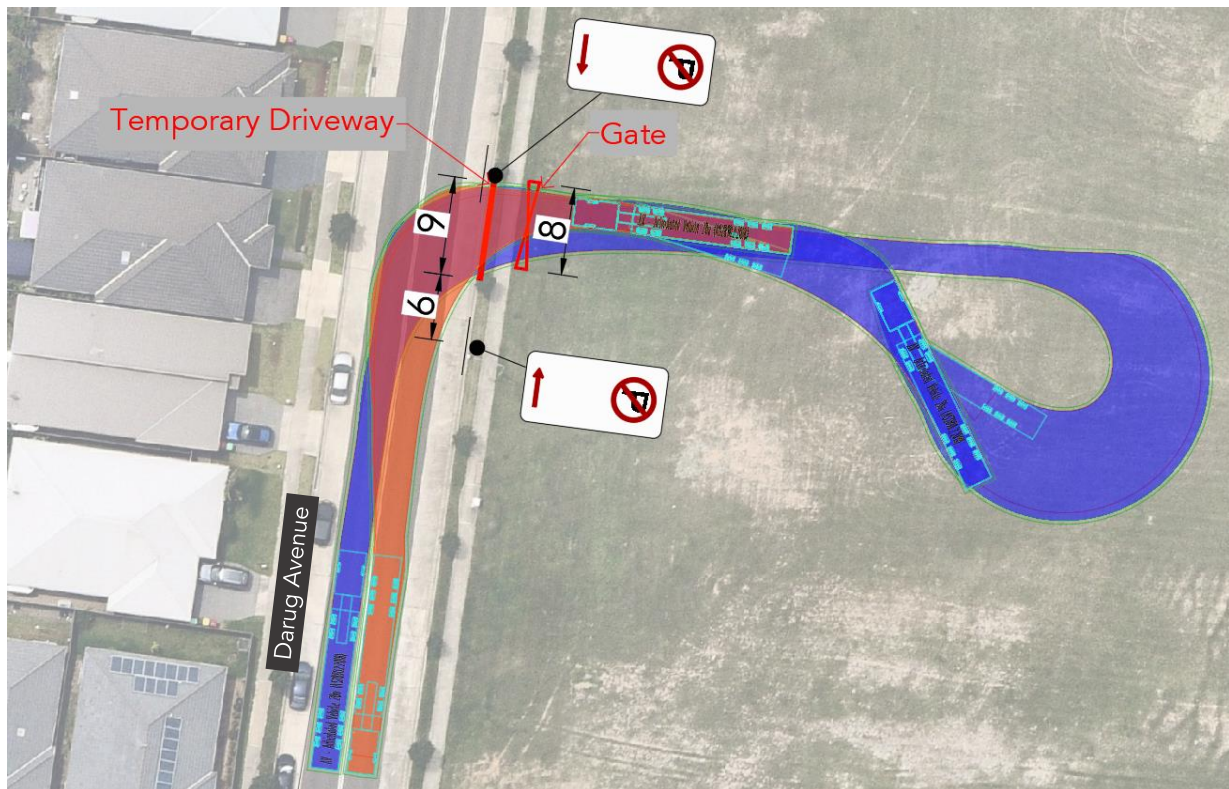


Figure 25 – Parking Controls along the temporary driveway on Darug Avenue Bradley Street

### 5.9.2 Parking Controls on Bradley Street / Darug Avenue Intersection

An AV turning right from Bradley Street into Darug Avenue occupies both traffic and parking lanes at the Bradley Street / Darug Avenue intersection. Although road rules prohibit parking in close proximity of intersections, there are currently no signs installed near the intersection, which may increase the potential for vehicles parking along the AV path. Therefore, to avoid the conflict between turning and parked vehicles, "No Stopping" signs are to be installed on the southern side at the eastern arm of Bradley Street and on the western side at the northern arm of Darug Avenue, as shown in Figure 26

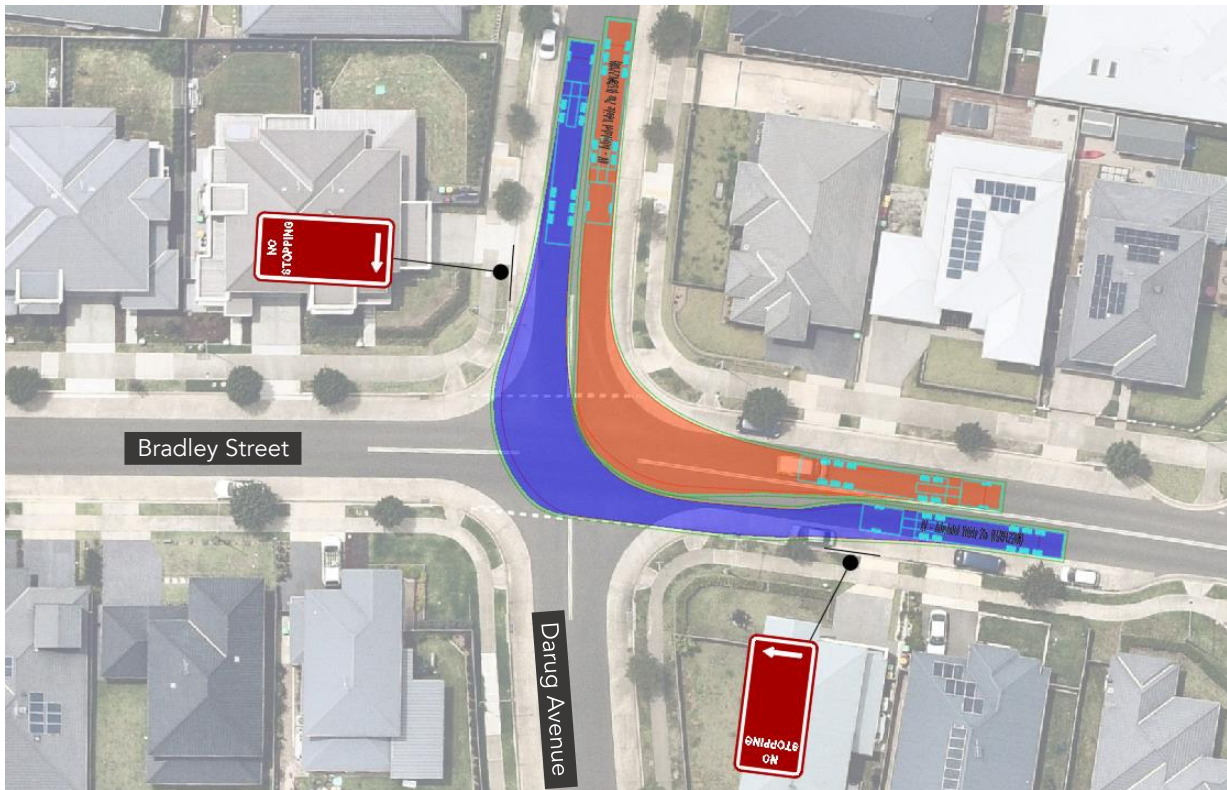


Figure 26 – Parking Controls on Bradley Street and Darug Avenue

## 5.10 Pedestrian Management

Pedestrian access to and around the site is to be maintained at all times.

The entire site (and any remote work areas when applicable) will be physically separated via A-Class fencing. The access points to the site will be securely locked even when the construction activities are not occurring.

The fencing will be established immediately following site possession and fitted with appropriate public directional signage. The access points to the site will be securely locked even when construction activities are not occurring.

## 5.11 Cumulative Effect of Adjacent Developments

During the construction stage, liaison with adjacent developments, i.e. the mixed-use development on the northern side of Deerubbin Drive, will be undertaken to mitigate the cumulative effect of the concurrent works. This will include the coordination of truck movements to prevent the combined impact of construction activities.

### **5.12 Special Deliveries**

Whilst not anticipated, any oversized vehicle that is required to travel to the site will be dealt with separately, with the submission of required permits to and subsequent approval by Penrith City Council prior to any delivery.

### **5.13 Staff Parking**

Areas for contractor parking are to be determined as part of a detailed CTMP.

### **5.14 Work Site Security**

Where necessary, construction fencing around the site will be erected to provide security to the work site and protection to the general public. Prior to commencement of works the contractor will facilitate a Safety Workshop where any stakeholders shall be invited to identify site specific safety and security initiatives.

All access points are to be securely locked when construction activities are not in progress. The exact location of fences is to be agreed on site, prior to commencement of the works.

### **5.15 Staff Induction**

All staff and subcontractors engaged on site will be required to undergo a site induction. The induction will include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, OH&S, driver protocols and emergency procedures. Additionally, the lead contractor will discuss TMP requirements regularly as a part of toolbox talks and advise workers of public transport and car-pooling opportunities.

### **5.16 Emergency Vehicle Access**

The proposed traffic control arrangements do not propose closure of any local roads. Any emergency vehicles requiring access to the project site will do so via Darug Avenue or Deerubbin Drive.

A detailed Emergency Management Plan will be further developed by the contractor prior to site establishment works.

### **5.17 Access to Adjoining Properties**

Access to all adjoining properties will be maintained throughout the works. The adjacent land owners will be notified of works via letter box distribution and road signage to advised of anticipated truck movements in operation with access to adjoining properties being maintained at all times.

### **5.18 Occupational Health and Safety**

Any workers required to undertake works or traffic control within the public domain shall be suitably trained and will be covered by adequate and appropriate insurances. All traffic control personnel will be required to hold TfNSW accreditation in accordance with Section 8 of Traffic Control at Worksites.

The comprehensive Work Health & Safety Management Plan will be provided by the Builders and shall be constantly reviewed as the design and construction methodology progress.

### **5.19 Method of Communicating Traffic Changes**

Traffic control plans in accordance with Australian Standards (AS 1742.3 – Traffic Control Devices for Works on Roads) and RMS Traffic Control at Worksites manual will advise motorists of upcoming changes in the road network.

During construction the contractor shall each morning, prior to work commencing, ensure all signage is erected in accordance with the TCP and clearly visible. Each evening, upon completion of work, the contractor is to ensure signage is removed as required.

Any variation to the layout of the TCP on site is to be recorded and certified by authorised TfNSW accredited personnel. The associated TCP road signage will inform drivers of works activities in the area including truck movements in operation.

### **5.20 Contact Details for On-Site Enquiries and Site Access**

The principal contractor is yet to be appointed and contact details of a Site Manager will be provided at a later stage.

### **5.21 Maintenance of Roads and Footpaths**

The roads and footpaths along the route of travel will be kept in a serviceable state at all times. Any damage arising as a result of the proposed truck movements will be treated / repaired by the principal contractor at no cost to Council.



## 6. Summary

This PCTPMP has been prepared to outline the construction traffic measures to improve site safety to the public and workers during the construction process.

With the measures described in the PCTPMP in place, the construction activity is anticipated to have minimal disruption to the daily activities within the vicinity of the site.

It is envisaged that this document will be reviewed during the construction stage and amended if required, due to changes in design, TfNSW, Councils or any other authority requirements.