



school transport plan

**New Primary School in
Mulgoa Rise**

For SINSW
20 August 2021

**parking;
traffic;
civil design;
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Document Control

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1. Introduction

1.1 Summary

ptc. has been engaged by School Infrastructure NSW (SINSW) to prepare a School Transport Plan that is intended to accompany a State Significant Development Application for the new primary school in Mulgoa Rise.

The report presents measures to promote active and sustainable transport and sets out the transport, pick-up and drop-off and parking management for daily school operations.

The new primary school in Mulgoa Rise (the School) is located at 1-23 Forestwood Drive, Glenmore Park, as shown in Figure 1.



Figure 1 - Aerial View of new Public School in Mulgoa Rise (Source: Near Map)

1.2 Purpose of this Report

1.2.1 SEARs Requirements

Requirements set in the SEARs requested for the SSDA and their responses are summarised in Table 1.

Table 1 - SEARs Requirements

Condition	Reference
Prior to the commencement of operation, a School Transport Plan (STP), must be submitted to the satisfaction of the Planning Secretary. The plan must:	
a.) be prepared by a suitably qualified consultant in consultation with Council and TfNSW;	Section 1.1
b.) include arrangements to promote the use of active and sustainable transport modes, including: <ul style="list-style-type: none"> i. objectives and modes share targets (i.e. Site and land use specific, measurable and achievable and timeframes for implementation); ii. specific tools and actions to help achieve the objectives and mode share targets; iii. details regarding the methodology and monitoring/review program to measure the effectiveness of the objectives and mode share targets, including the frequency of monitoring and the requirement for travel surveys to identify travel behaviours of users of the development; 	Sections 2.2, Section 3, Section 4.4, Section 7
c.) include operational transport access management arrangements, including: <ul style="list-style-type: none"> i. detailed pedestrian analysis including the identification of safe route options to identify the need for management measures such as staggered school start and finish times to ensure students and staff are able to access and leave the Site in a safe and efficient manner during school start and finish; ii. the location of all car parking spaces on the school campuses and their allocation (i.e. staff, visitor, accessible, emergency, etc.); iii. the location and operational management procedures of the drop-off and pick-up parking, including staff management/traffic controller arrangements; iv. the location and operational management procedures for the drop-off and pick-up of students by buses and coaches including staff management/traffic controller arrangements; v. delivery and services vehicle and bus access and management arrangements; vi. management of approved access arrangements; vii. potential traffic impacts on surrounding road networks and mitigation measures to minimise impacts, including measures to mitigate queuing impacts associated with vehicles accessing drop-off and pick-up zones; car parking arrangements and management associated with the proposed use of school facilities by community members; and 	TTA Sections 3.2.1, Section 7 Sections 3.1, Section 4.2.4, Section 4.2.2, Section 4.2.5
d.) measures to promote and support the implementation of the plan, including financial and human resource requirements, roles and responsibilities for relevant employees involved in the implementation of the plan; and	Sections 4.4, Section 5
e.) a monitoring and review program.	Sections 6, Section 7

1.3 School Characteristic

1.3.1 Overview

- 27 school staff
- 414 student enrolments including 14 students with Special Needs
- School bell times (yet to be confirmed):
 - 8:50am in the morning and
 - 2:50pm in the afternoon.
- OSHC provides before and after school as well as vacation care services. The timetable are as follows (yet to be confirmed):
 - Before School: 7:00am-8:50am
 - After School: 2:50pm-6:00pm, and
 - Vacation Care: 7:00am-6:00pm.

1.3.2 Enrolment Catchment

The proposed student enrolment catchment for the School extends to Glenmore Parkway to the north, The Northern Road to the east and Mulgoa Natural Reserve to the west, as presented in Figure 2.

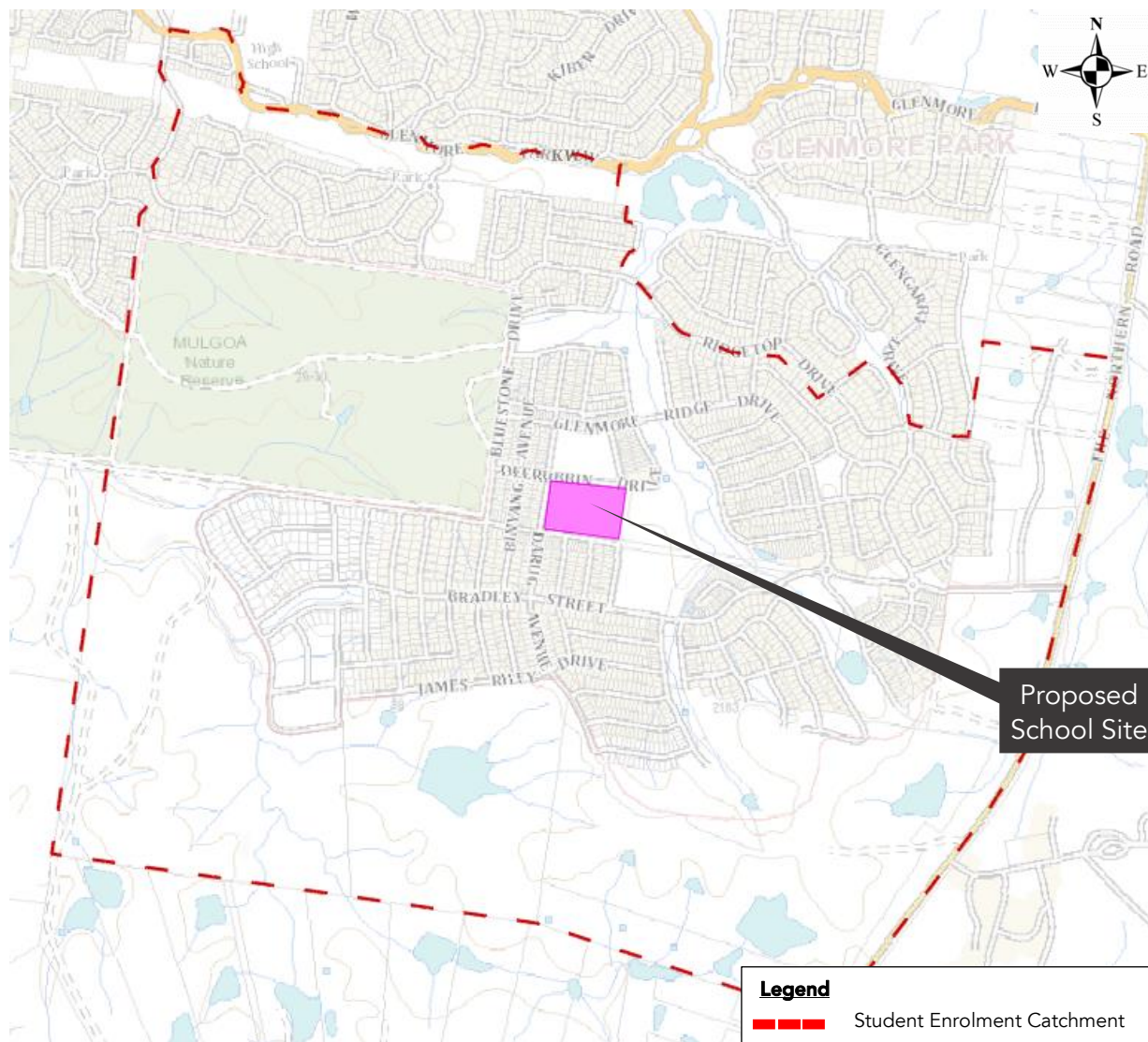


Figure 2 - Student Enrolment Catchment

2. Transport Goals

2.1 School Transport Plan Vision and Objectives

The School's vision and objectives identify items which the school stands for and is willing to promote and advocate for.

The objectives shall be reviewed and amended as required once a principal has been appointed, and then reviewed each year. Sample objectives include:

- Proactively identifying and meeting school travel demand safely, efficiently and sustainably.
- Delivering transport infrastructure to meet school travel demand.
- Maximising the use of active and public transport modes to reduce car traffic before and after school day start and end time.
- Ensuring that the road network does not become congested around the school.
- Reaching a high level of active travel to and from school in a safe transport environment.
- Enhancing connectivity with the neighbourhood and community through safe travel to and from school.
- Empowering children and young people to be safe road users now and into the future.
- Meeting the DoE's duty of care for students which extends beyond the school boundary, if there's foreseeable risk of injury or harm to students as they travel to and from school.
- Reducing the administrative burden on a school principal (managing kiss-and-drop behaviour, parent and community complaints, calling bus companies etc) by reducing the time and effort for schools/principals to coordinate and liaise with Council and TfNSW to create a safe and connected transport environment around their school.

2.2 Mode Share Targets

With reference to the analysis in the TTA, a moderate target scenario has been assumed that has the following characteristics:

- Bell times Start: 8:50am
 Finish: 2:50pm
- Zebra crossings on all frontage roads of the school i.e., across Darug Avenue, Deerubbin Drive and Forestwood Drive.
- Provision for 64 bicycle spaces and 80 scooter spaces for students, which accounts for 15.4% and 19.3% of students respectively.
- Upgraded bus infrastructure, facilities, amendments to routes and services.
- Designated drop-off/pick-up zones, associated pedestrian facilities and parking restrictions.
- Implementation of programs to promote active transport.

Accordingly, based on the above criteria, the following travel mode targets are proposed:

- 15% walking
- 35% cycling or scooting
- 10% taking public transport
- 40% driving

The process used to derive the above targets is documented in the TTA submitted as part of the SSDA, and the relevant parts are attached in Attachment 4.

3. Policies and Procedures

Achieving the goals and objectives of this STP must be underpinned by a school sustainable transport policy that effectively communicates transport expectations to increase active and public transport use to school, reduce rates of driving alone and kiss-and-drop to school, meet ESD / 5-star Green Star requirements and manage risks. Components of this policy and its associated procedures should include:

- Prioritisation of multi-modal transport access
- Staggered start / end times
- Multiple kiss-and-drop locations
- Remote kiss-and-drop
- Parking allocation and location
- Parking management system operations
- School access via pedestrian gate, bicycle cage, driveways and parking at arrival / end times, during OSHC, school day and outside hours

Sub-policies that will be implemented are described in the following sections. Additional policies will be considered when a principal has been appointed and will be reviewed annually

3.1 School Access Policy

A map of the direct surroundings of the school showing access points, car parks, pick-up / drop-off area bicycle amenities and the bus stop locations as shown in Figure 3 will be made easily accessible to students, parents and visitors.

The school site can be accessed via Deerubbin Drive, Darug Avenue and Forestwood Drive. A total of 5 gates has been proposed to access the site. The purpose of each gate is as follows:

Gate 1

- Location: On the northern side of the property off Deerubbin Drive, near the proposed zebra crossing
- Purpose: Pedestrian access for anyone arriving on foot, on scooters, bicycles, cars or by bus. This entry is the main access point for students attending the SSP units. Student and staff bicycle parking spaces are provided just inside of the property.
- Operation:
 - Weekdays: Open between 7:00am – 6:00pm for school and OSHC operation and as required before and/or after school hours for events
 - Weekends: Only upon arrangement with the School for events

Gate 2

- Location: On the north western side of the property off Deerubbin Drive
- Purpose: The main pedestrian access for anyone arriving on foot, on scooters, bicycles, cars or by bus. The students bicycle racks are provided just inside of the property.

- Operation:
 - Weekdays: Open between 7:00am – 6:00pm for school and OSHC operation and as required before and/or after school hours for events
 - Weekends: Only upon arrangement with the School for events

Gate 3

- Location: On the western side of the property off Darug Avenue near the proposed zebra crossing
- Purpose: Pedestrian access for anyone arriving on foot, on scooters, bicycles, cars or by bus. A bus stop is located just outside the gate and the students bicycle racks are provided just inside of the property.
- Operation:
 - Weekdays: Open between 7:00am – 6:00pm for school and OSHC operation and as required before and/or after school hours for events
 - Weekends: Only upon arrangement with the School for events

Gate 4

- Location: On the southern side of the property off Forestwood Avenue
- Purpose: Pedestrian access for anyone arriving on foot or cars. It is operational only during the main pick-up and drop-off times.
- Operation:
 - Weekdays: Open between 8:00-9:30am – 2:30-4:00pm for drop-off and pick-up respectively
 - Weekends: Only upon arrangement with the School for events

Gate 5

- Location: On the south-eastern side of the property off Forestwood Drive
- Purpose: Vehicular access mainly for staff, but also for ambulances and maintenance vehicles
- Operation times:
 - Weekdays: Generally operational between 7:00am – 6:00pm for school and OSHC. Accessible via a staff swipe card or intercom. Also, open as required for emergency, maintenance, deliveries and events.
 - Weekends: Only upon arrangement with the School for deliveries / events

Gate 6

- Location: On the north-eastern side of the property off Deerubbin Drive
- Purpose: Vehicular access for waste / delivery vehicles
- Operation times:
 - Weekdays: Generally, operational before and after school hours for waste collection. Also, open as required for emergency, maintenance, deliveries and events.
 - Weekends: Only upon arrangement with the School for deliveries / events

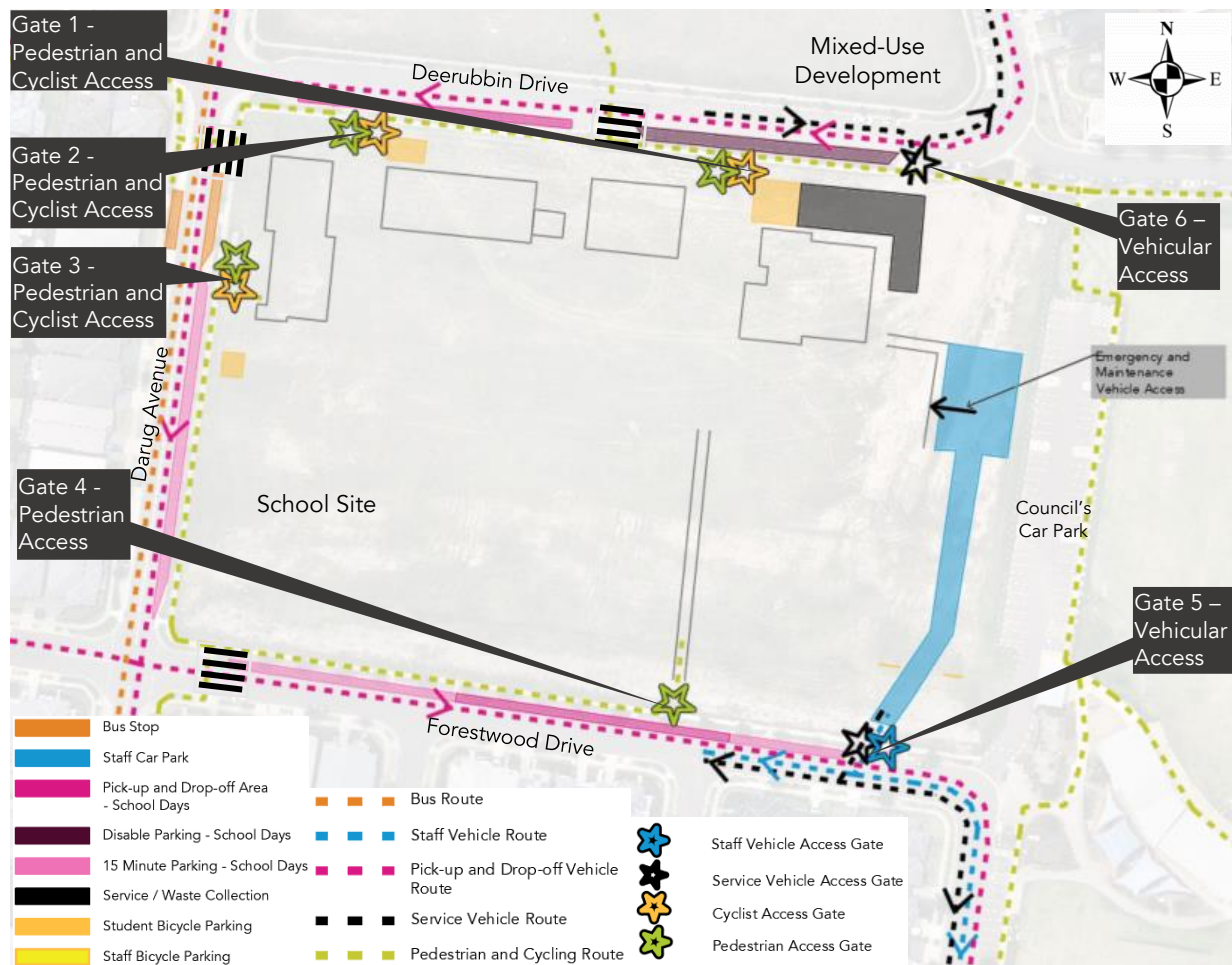


Figure 3 - School Access Map

3.2 Multiple Kiss and Drop Locations

The School has two pick-up and drop-off locations:

- Deerubbin Drive
 - General pick-up and drop-off west of the zebra crossing,
 - SSP pick-up and drop-off east of the zebra crossing
- Forestwood Drive – general pick-up and drop-off



Figure 4 - School Access Plan

- Students arriving from the north of the school shall use the northern pick-up and drop-off along Deerubbin Drive (refer to the orange lines in Figure 5).
- Students arriving from the south of the school shall use the southern pick-up and drop-off along Forestwood Drive (refer to the yellow lines in Figure 5).

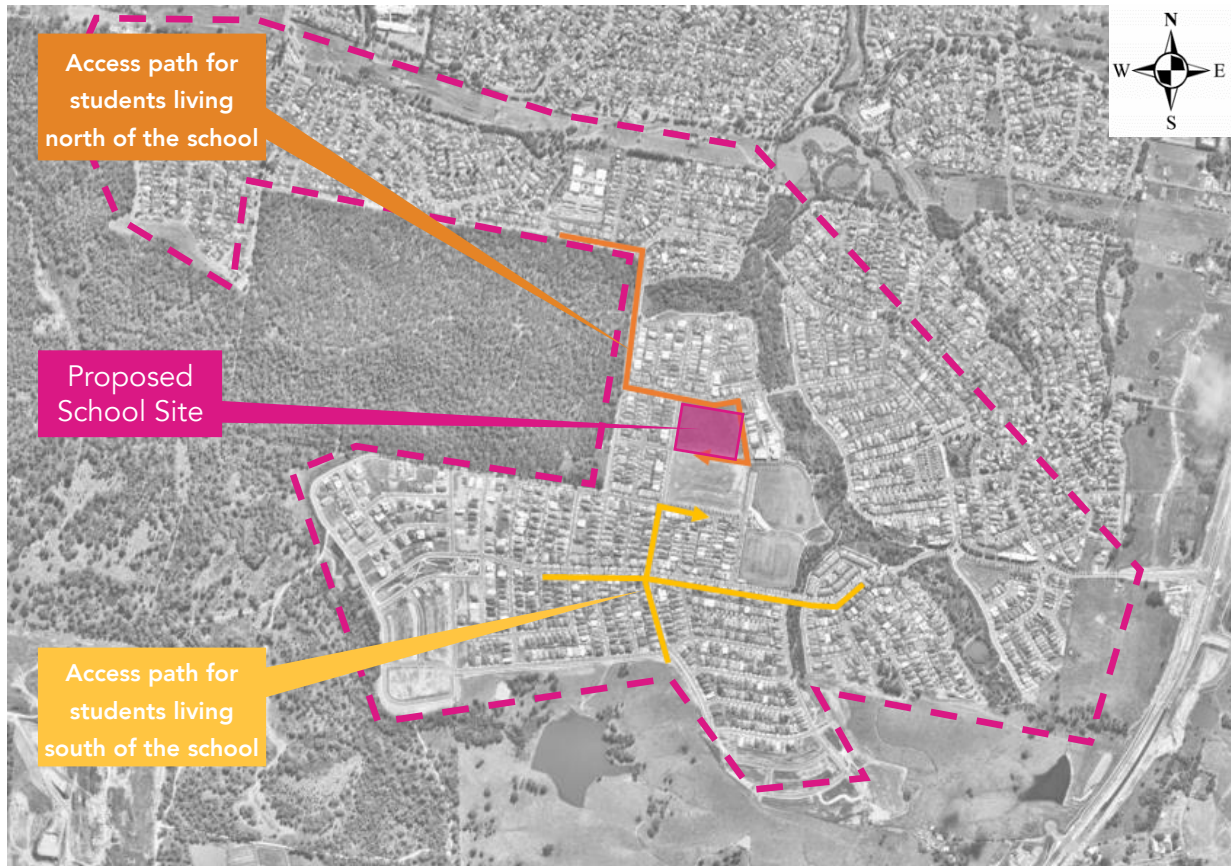


Figure 5 - Pick-up and Drop-off Location

3.3 Share our Space

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.

Share Our Space will be operating at the school during school holiday breaks. Gates will be opened by 8am, and closed from 5pm each day.

The school will have two gates open during Share Our Space:

- Gate 1, for access to the Hall
- Gate 3, for access to the Special Program Units and multipurpose areas collocated with the library.

School toilets will not be open during Share Our Space as per usual policy at participating schools.

Upon prior discussions and arrangements with the school Principal, the school car parking facilities may be used for other purposes such as after school performances or community use in the evenings or on the weekends.

Pedestrian access location and quantity may vary depending on the event. However, Gate 2 will be mostly the main pedestrian access point after hours.

The school caretaker or another person appointed by the Principal will be responsible to unlock and lock gates for events to allow vehicular and pedestrian access. Gate 5 and the chosen pedestrian access points will be opened 1 hour prior and locked 1 hour post the event.

Appropriate temporary / permanent signage shall be installed prior to any events to provide guidance for vehicles and pedestrians.

4. School Transport Operation

4.1 Site Transport Access

Figure 6 shows the transport infrastructure around the School, including access points, pick-up and drop-off areas, bus bays and parking.

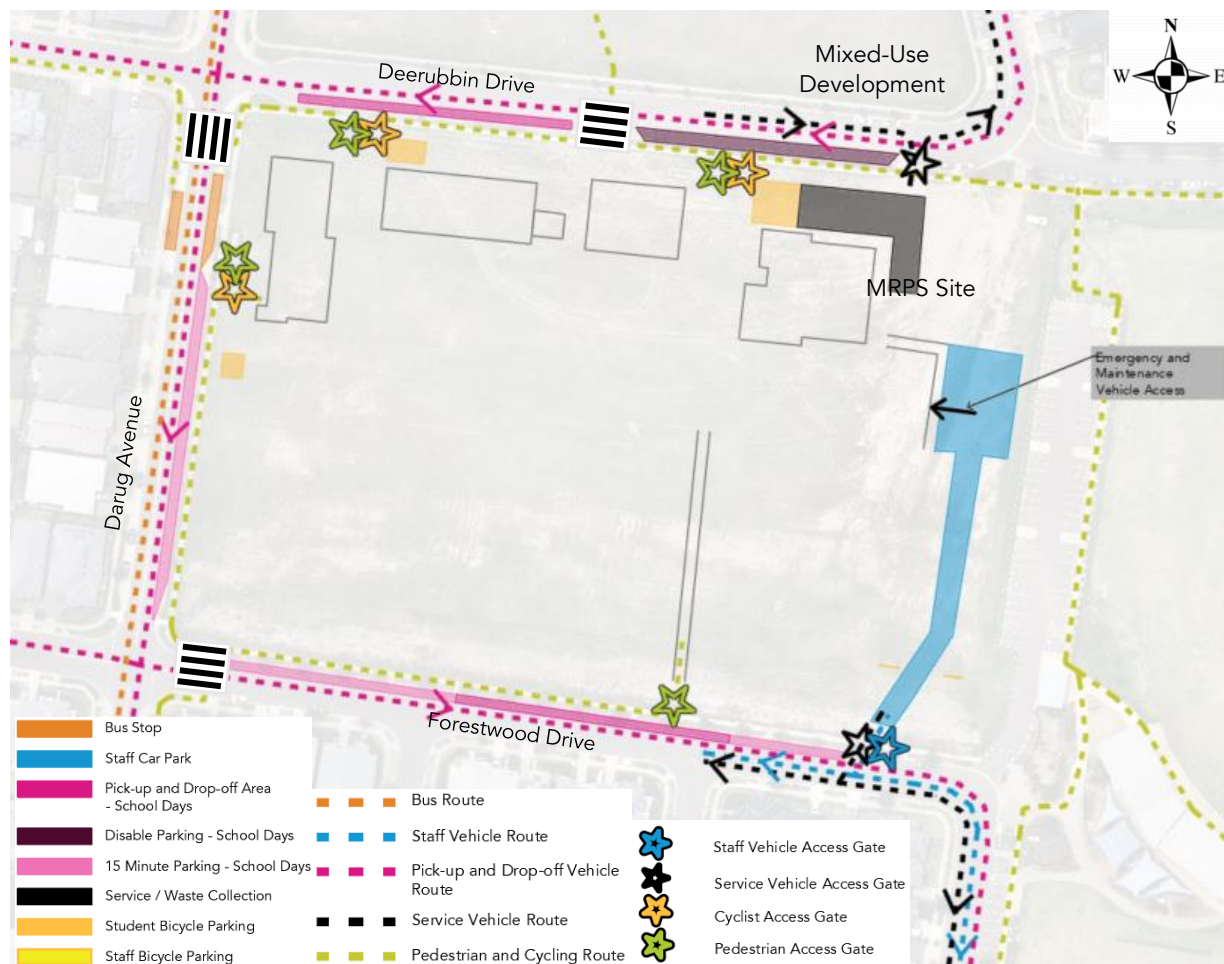


Figure 6 - School Access Map

4.2 Day-to-Day School Operations

This section details operational measures required at the school on a day-to-day basis.

Table 2 - Day-to-Day School Operations

	On-site	Adjacent to site	Management measures
Site entries, pedestrian and vehicle	Y	N	Y
Pick-up and Drop-off including Assisted School Transport Program	N	Y	Y
Buses	N	Y	N
Parking incl carpool, carshare pod	Y	N	Y
Deliveries and service vehicles	Y	Y	Y

4.2.1 Site Entries

Student groups will be directed to use specific gates according to Section 3.1 so that numbers can be monitored and controlled to avoid congestion on footpaths.

4.2.2 Pick-up and Drop-off

A strategy will be communicated to all parents and carers that allows the efficient use of the Drop-off and Pick-up zones during busy times – at the beginning and end of the school day.

Drivers will be directed to pull into the kerb and remains in control of the vehicle while an identified supervising adult from the school community assists students to exit or enter the vehicle.

Pick-up and drop-off are provided on all frontage roads on the school side. Students can access the School via Gate 1, Gate 2, Gate 3 and Gate 4 during pick-up and drop-off times.

The following management measures shall be put in place:

- School caretaker will open the Gate 1, Gate 2, Gate 3 and Gate 4 between 8:00-9:30am and 2:30-4:00pm for drop-off and pick-up respectively.
- 4 staff members will be present during drop-off and 4-5 staff members will be present during pick-up to assist students.
- In the afternoon, students are to be held back behind the access gates until they are called out. This is to ensure a calm and a more managed process.
- Ideally, a stricter management of the pick-up process will be put in place, where parents / guardians have a name / number card in their vehicle and a staff member calls out the appropriate student. This would reduce the quantity of staff required as well as speed up the process and therefore reduce chances of queuing.
- Parents / guardians are not to exit their vehicles to pick up students in order to speed up the process.
- Vehicles are not to undertake U-turns across the local roads. This is to increase safety and to reduce potential queuing.

Staff and parents / guardians should be informed at the beginning of each year and receive a mid-year reminder about the correct pick-up and drop-off behaviour.

4.2.3 Buses

Students are most at risk in the minutes after getting off the bus. Therefore, some ways that these risks can be reduced are:

- Always meeting students at the bus stop. Never on the opposite side of the road, calling them across.
- Wait until the bus has gone, then choose a safe place to cross the road.
- Wait at the bus stop and stand at least one step back from the edge of the road.
- Always wait until the bus has gone, then use zebra crossings to cross.

Students using public buses to travel to school will be dropped off at the bus stop along Darug Avenue. A staff member will be positioned at the bus stop on school side to oversee the process.

In the afternoon, two staff members will be positioned at Gate 2 and Gate 3 to support students getting onto the right buses. Students should be grouped within school grounds according to the buses they need to take to enable a smoother process and shorten the time outside of the school gate.

4.2.4 Parking

Drivers must park safely and legally, even if it means walking further to the school gate. Parking signs are planned with children's safety in mind and all vehicles must slow down to 40km/h in the school zone and stay aware of crossings.

Drivers must always park and turn legally around the school and never double park as it puts children at risk.

Manoeuvres such as U-turns and three-point turns are dangerous and should not be made. Parking in the bus zones should not occur and the rear footpath side door should be used to get in and out of the car.

The staff car park is located on the south-eastern side within the site, with access via Gate 5 off Forestwood Drive. A total of 17 car spaces are proposed in the staff car park. Staff can enter via footpath adjacent to the car park.

The location of the facility is shown in Figure 7. The following car park management measures shall be put in place:

- Staff members shall be provided with a swipe card to enable access to the car park.
- Staff shall arrive and depart outside of the pick-up and drop-off peak times to reduce conflicts parents / guardians. Ideally, staff should not travel between 8:00-9:30am and 2:30-4:00pm.
- Staff should be informed of these measures at the beginning of each year and shall be reminded throughout the year as required.

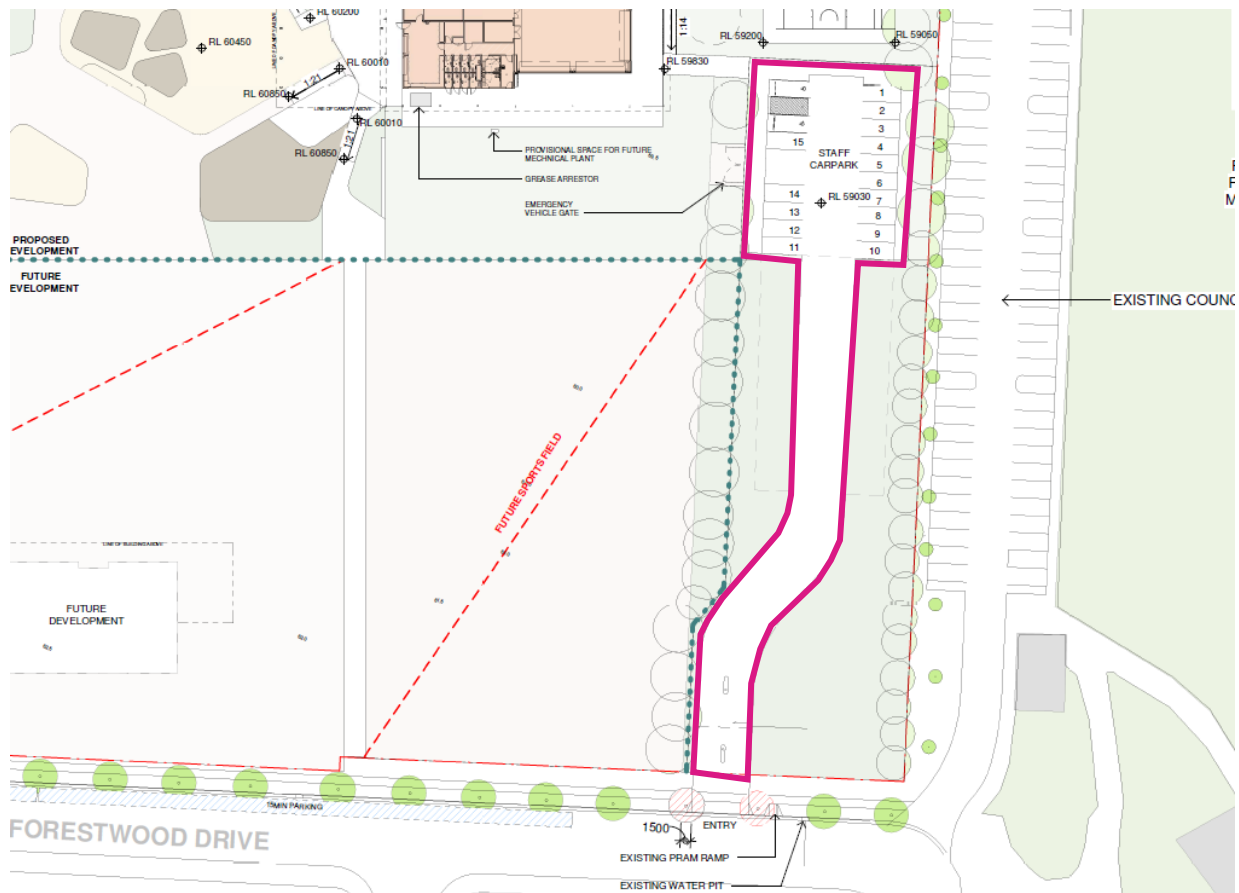


Figure 7 - Car Parking Location and Access

4.2.5 Deliveries and Service Vehicles

Waste collection / service vehicle area is located adjacent to the staff car park on the southern end within the site. This area is accessed via Gate 6 off Forestwood Drive as shown in Figure 8. A turning area is provided adjacent to the service vehicle area.

The purpose is to provide general waste collection and small / medium deliveries in vans / small trucks.

Waste collection and larger truck deliveries shall be provided outside of school and OSHC hours-before 7:00am and/or after 6pm during the week - in order to eliminate potential conflicts between pick-up / drop-off and other service vehicles.

Any changes need to be discussed with the School and recorded in this document. Access to the waste storage area will be provided by the School caretaker.

Before 7:00am and/or after 6:00pm during the week, upon prior arrangement with the School access for large vehicles via Gate 6 will be provided by the School caretaker.

Small deliveries can occur throughout the day, upon prior arrangement with the School. Delivery vehicles can use parking space along the internal road.

A sign stating delivery hours and a phone number of the School caretaker shall be placed on Gate 6.

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4.3 Event Transport Operations

Buses of varying sizes may be used to transport students to and from excursions. The following management measures shall be implemented:

- Buses will arrive at the School 15 minutes prior to student pick-up and depart 5min after the drop-off is completed. This is to eliminate potential conflicts between buses and students. The additional time needs to be considered upon booking of the bus.
- Small buses (up to 22 passengers) will park on the pick-up and drop-off area on Deerubbin Drive.
- Large buses (more than 22 passengers) will park at the bus stop along Darug Avenue. The public bus timetable needs to be considered to ensure that the bus stop is unobstructed throughout the pick-up / drop-off of students.
- At least two staff members will accompany the group of students to ensure that buses have arrived on time and that students board the buses in a good manner.

The transport procedure shall be explained to staff at the beginning of each year and documented in a controlled, easily accessible policy.

4.4 Transport Encouragement Programs

4.4.1 Walking

Short-term Strategy: Road Safety program, current and localised

Why	Allows students to be more informed about any dangers of being a pedestrian and provides ease of mind to parents/carers.
How	Pedestrian safety can be taught during class and reinforced by teachers and parents. Information can also be provided in the 'information pack'. Excursions around the schools could be organised to show potential dangers and ways to behave on a local example.
Who	Teachers and TP Coordinator
When	After completion of the development with reinforcement every 6 months to a year.
Resources	Information pack, brochures, excursions

Short-term Strategy: Education and Environmental programs

Why	Motivates students and staff to use active transport
How	Environmental programs can be toughed at school assembly and information can be provided in the 'information pack'
Who	TP Coordinator, teachers
When	Every 6 months
Resources	Assembly, information pack and brochures

Short-term Strategy: Scooter training

Why	Reaches out to students who would like to participate in scooting
How	Providing courses to teach how to ride a scooter and traffic rules
Who	TP Coordinator, teachers
When	Courses starting twice a year
Resources	Information packs, scooters

Short-term Strategy: Implement scooter parking and wayfinding

Why	To navigate the scooter users and provide safe and secure place to leave their scooters while at school/work.
How	Including additional scooter spaces on an "as required basis" in an easily accessible space with passive surveillance. Provide clear wayfinding signage.
Who	SINSW and TP Coordinator
When	Within the first year of operation and completion of the development and as required in the future
Resources	Directional signage and scooter parking spaces

Short-term Strategy: Provide sufficient storage for bulky goods (for staff)

Why	To provide storage for staff to reduce the requirement of carrying bulky goods home
How	Implementation of storage facilities in a convenient location such as staff or classrooms
Who	SINSW
When	Within the first year of operation and completion of the development
Resources	Storage facilities

Short-term Strategy: Provide options to work at school after school hours (for staff)

Why	To let the staff finish their work at school and avoid carrying work/bulky items home
How	Provide an after school hour working area, arrange for after hours entry / exit for staff
Who	TP Coordinator and SINSW
When	Upon analysis of the staff work demand
Resources	Working space

Long/Medium-term Strategy: Seek dialogue with Council

Why	To provide a pedestrian crossing across frontage roads, ideally as a raised zebra crossing and a crossing supervisor. This is to create a safe environment for students to cross the frontage roads. (refer to Attachment 4 for recommended upgrades)
How	Meetings and communication via email and phone
Who	TP Coordinator, Steering Committee
When	Discussions should commence immediately
Resources	Discussions

Long/Medium-term Strategy: Seek dialog with Council

Why	To implement comprehensive pedestrian infrastructure within the new school's catchment area (refer to Attachment 4 for recommended upgrades)
How	Meetings and communication via email and phone
Who	TP Coordinator, Steering Committee
When	Discussions should commence immediately and should continue throughout the development of the Glenmore Park area
Resources	Discussions

Long/Medium-term Strategy: Pedometer based programs

Why	To promote active transport and healthy competition
How	Providing a cheap pedometer for each student and recording each student total for a month. Can be introduced as part of Steptember. Can be run on a participation basis for individual students or pedometer based for entire classes / years
Who	Teachers, TP Coordinator
When	For example, during the month of Steptember, but also choosing a different month to the 'classroom competitions' action to encourage students and staff all year round.
Resources	Pedometer and a progress board to tally the progress of each class.

Long/Medium-term Strategy: WWW - Walk and Wheel Wednesday

Why	Promote active transport
How	Announcements through posters and newsletters
Who	Teachers, TP Coordinator
When	One Wednesday per month
Resources	Promotional material

Long/Medium-term Strategy: Classroom competitions

Why	Promote healthy competition between students.
How	Classroom with the most children (can include the teacher) who take sustainable forms of transport will win an incentive. Should be done as a tally over a month as children can decide to take the "greener option". Can also be combined with Strategy: WWW – Walk and Wheel Wednesday and Strategy: Pedometer-based walking competition.
Who	Teachers, TP Coordinator
When	A program will be conducted every 3 to 6 months.
Resources	Information sheets and a progress board to tally the progress of each class.

Long/Medium-term Strategy: Scooter Club (for students)

Why	Motivates students to use active transport more often by offering fun and social activities
How	Regular meetings for excursions on scooters and fun activities to motivate students to use scooters
Who	TP Coordinator, teachers
When	Weekly
Resources	Excursions, fun activities

Long/Medium-term Strategy: Walking Bus

Why	To motivate students to walk to school
How	Prepare walking bus routes and coordinate with students and parents
Who	TP Coordinator
When	Review the routes every six months
Resources	Student residential data

4.4.2 Cycling

Short-term Strategy: Provide weather protection over the bicycle spaces

Why	To protect bicycles from weather and therefore, to promote bicycle use
How	Provide roof structure over bicycle spaces
Who	TP Coordinator and SINSW
When	Within the first year of operation
Resources	Roof structure

Short-term Strategy: Implement wayfinding

Why	To navigate way to on-site bicycle parking spaces and EOTF
How	Provide clear wayfinding signage
Who	TP Coordinator and SINSW
When	Within the first year of operation
Resources	Directional signage

Short-term Strategy: Road safety program, current and localised

Why	Allows students to be more informed about any dangers of being a cyclist and provides ease of mind to parents/carers.
How	Cycle safety can be taught during class and reinforced by teachers and parents. Information can also be provided in the 'information pack'.
Who	Teachers and TP Coordinator
When	After completion of the development with reinforcement every 6 months to a year.
Resources	Information pack and brochures

Short-term Strategy: Bike training

Why	Reaches out to students who would like to participate in cycling
How	Providing courses to teach how to ride a bike and traffic rules
Who	TP Coordinator
When	Courses starting each term
Resources	Bike activities, some bicycles for those that do not own one yet

Long/Medium-term Strategy: Seek dialogue with Council

Why	To improve and develop existing cycling infrastructure within the Glenmore Park area for primary school children (refer to Attachment 3 for recommended upgrades)
How	Meetings and communication via email and phone
Who	TP Coordinator and Steering Committee
When	Discussions should commence immediately
Resources	Discussions

Long/Medium-term Strategy: Seek dialogue with Council

Why	To ensure that satisfactory cycling infrastructure is provided within the new development areas to enable students to cycle safely to and from school (refer to Attachment 3 for recommended upgrades)
How	Meetings and communication via email and phone
Who	Steering Committee
When	Discussions should commence immediately and should continue throughout the development of the entire Glenmore Park area
Resources	Discussions

Long/Medium-term Strategy: Implement more and secure bike parking

Why	To promote cycling when the demand increases
How	Provide weather protected bike parking
Who	TP Coordinator, SINSW
When	Upon analysis of the yearly cycling demand
Resources	Travel Questionnaire, bike racks

Long/Medium-term Strategy: Implement E-charging stations

Why	To promote the use of electric bicycles
How	Provision of charging stations
Who	SINSW
When	After completion of the development
Resources	Charging stations

Long/Medium-term Strategy: Implement Bike Club (for students)

Why	Motivates people to use active transport more often
How	TP Coordinator should organise regular meetings for excursions on bicycles and fun activities to motivate students to cycle
Who	TP Coordinator
When	Weekly
Resources	Excursions, fun activities

Long/Medium-term Strategy: Buddy Scheme (for students)

Why	Motivates people to use active transport more often
How	TP Coordinator should buddy up students that live close by.
Who	TP Coordinator
When	Sent out every term to accommodate new students, review after 6 months
Resources	Student residential data

Long/Medium-term Strategy: Vouchers from a local bike shop

Why	To promote the use of bicycle and provide a discounted service for students
How	Liaise with local bicycle shops and discuss potential discounts for students
Who	TP Coordinator
When	Every six months
Resources	Promotional brochures and vouchers

Long/Medium-term Strategy: "RideScore" program

Why	To support and enable more children and young people to scoot and ride a bike to school
How	<i>"students will receive a personal sensor (beacon) that is attached to their bicycle or scooter. The school bicycle storage facility is fitted with a Bluetooth reader that detects the signal from the sensor, and immediately sends a notification to the nominated contact that the student has arrived at, or departed the school gate."</i>
Who	TP Coordinator
When	Sent out an invitation every term to accommodate new students and staff
Resources	Personal sensor (beacon) and a Bluetooth reader

4.4.3 Public Transport

Short-term Strategy: Seek dialogue with TfNSW and the local bus operator

Why	To implement additional bus services during the school bell times, so that the connection is convenient for staff, students and parents which would allow staff and students/parents to commute to school via bus instead of private transport (refer to Attachment 4 for recommended upgrades)
How	Communication with TfNSW and the bus service provider
Who	TP Coordinator
When	After completion of the development, review demand yearly
Resources	Discussions

Short-term Strategy: Seek dialogue with the local bus operator

Why	To provide school buses (refer to Attachment 4 for recommended upgrades).
How	Discussion with the bus operator
Who	TP Coordinator, Steering Committee
When	After completion of the development
Resources	Discussions

Short-term Strategy: Seek dialogue with the local bus operator and TfNSW

Why	To implement additional bus routes to travel to the major employment areas and railway stations in the nearby suburbs during the school bell times, so that the connection is convenient for parents to commute to work after dropping off / before picking up the students (refer to Attachment 4 for recommended upgrades)
How	Discussion with the bus operator
Who	TP Coordinator, Steering Committee
When	After completion of the development
Resources	Discussions

Short-term Strategy: Access free / discounted bus passes

Why	To encourage more students to use public transport
How	Issuing a brochure within the 'Information Pack'. The brochure will show 1-seat trip routes and bus stops and explain the process of applying for the free / discounted bus pass
Who	TP Coordinator
When	At the beginning of each year an email or a physical copy should be provided to parents and students. A copy should also be found on the school website
Resources	Brochure

Short-term Strategy: Dynamic and passive timetables on the site

Why	Provides information on approaching buses. Can be used in combination with providing distinct waiting areas for passengers of different buses
How	Provide electronic information boards with live arrival / departure data
Who	TP Coordinator
When	Within the first year of operation
Resources	Electronic boards, travel app (e.g. Trip View)

Long/Medium-term Strategy: Free / discounted travel for teachers

Why	To encourage staff to use public transport over private vehicle
How	Collaboration with TfNSW and / or SINSW
Who	TP Coordinator
When	Commence discussions immediately
Resources	Discussions

Long/Medium-term Strategy: Review demand and provision of public transport

Why	Ensure that public vehicles are sufficient and satisfactory to cater for proposed staff and students
How	Questionnaire mid-year to ask about the satisfaction of public transport provision and seek ideas how the services / availability can be improved. Then, seek discussion with the bus operator and adjust bus services if needed
Who	TP Coordinator
When	Once a year
Resources	Discussions and provision of additional services if and when required

4.4.4 Car Share / Car Pooling**Short-term Strategy: Organise potential carpooling matches**

Why	Motivates people who live in close proximity to use carpooling services
How	Analyse residential data and buddy up students and staff
Who	TP Coordinator
When	Sent out once a year to accommodate new students and staff, review after 6 months
Resources	Residential data

5. Communication Plan

5.1 Channels

The school will utilise a combination of communication channels to send different messages to parents. The channel that is used will depend on the type of message and how often the message needs to be repeated. The following channels will be implemented:

- Starter kit – Parents will receive a starter kit at the beginning of each year. This kit will include formal information on transport options to/from the school, including bus route maps and timetables, information on how to obtain an Opal Card, information on appropriate behaviour during pick-up and drop-off etc.
- Schoolbiz Newsletter – to provide up-to-date information on transport and send reminders of programs
- Skoolbag app – as a communication tool. Can be used to individually target students / parents to promote public transport or carpooling options.
- School website – will include comprehensive information on transport options to the school, with focus on active and public transport. Shall be updated every six months or sooner if required
- Facebook Group – as a promotional channel to remind parents of public and active transport options and of transport programs organised by the school
- P&F and P&C meetings – regular meetings with the community to discuss issues and ways to resolve them

5.2 Messages

The school will regularly distribute information using a combination of the above channels to inform parents of the following:

- School start and end times, OSHC start end-times
- Principal's message about transport goals and expectations
- Transport access modes with links for more information
 - BNSW insurance and membership,
 - Discounts e.g. 99 bikes 10% off
 - Road Safety,
 - Signing up for the SSTS and School Term Bus Pass,
 - On-site transport access, incl bicycle / scooter parking areas,
- Correct behaviour at pick-up and drop-off
- How to report transport issues using Send Snap Solve
- Contacting the governance committee

5.3 Travel Access Guide

A Travel Access Guide will be prepared upon commencement of the School (template is shown in Attachment 1). It will be distributed on the school website, school inductions (new starters, returning students), print and e-newsletters and will communicate the following:

- Transport policies
- Transport access (footpaths, separated bicycle infrastructure, public transport, local and regional road network)
- Encouragement programs (transport encouragement programs)
- Issue reporting to Send Snap Solve or school transport email address
- Monitor the Transport.JSPS@det.nsw.edu.au email address (or similar) and transmit issues to external stakeholders

Maps showing entries, footpaths, bicycle/scooter parking, public transport, school bus stops and stations, bus routes and train lines, including transport infrastructure at school (on-site and adjacent-to-site) including:

- Ped scooter parking
- Bicycle parking
- PUMP tracks
- Carpool parking
- Parking management
- End-of-trip facilities (staff)
- Flexible and reconfigurable spaces
- Provision of bubblers and taps to encourage water drinking and less waste

Sample messages for parents / carers:

- Get involved in using active and public transport to school with your student
- Help your student practice the active and public transport they are learning (try for part trip or whole trip)
- Speak to staff and government transport stakeholders about travel to school programs and infrastructure
- Use active and public transport from school drop-off to work
- Report transport issues as the concern arises (eg Send Snap Solve app, Council@ email, phone number)
- Improved quality of life (increased healthy lifestyles, wellbeing, physical activity)
- Life-long learning opportunities
 - Transport as a learning and resilience building opportunity
 - Additional learning opportunities
 - Educational opportunities for parents and community
 - Joint/community use for transport programs

6. Data Collection and Monitoring

6.1 Data Collection

To verify travel behaviours and travel demand, the following will be undertaken:

- An online Journey to School survey (e.g. Survey Gizmo) for staff and students, once a year, with questions outlined in Attachment 2
- Analysis of the transport access and use (audits, program participation rates, counts, observations, hit rate on web- based communication strategies etc).
- Analysis of the transport catchment.

This would assist with developing and reviewing travel planning schemes and how the existing facilities can be improved around the site area and beyond. It would help contribute towards the School's vision to encourage more sustainable modes of transport.

6.2 Program Evaluation

After the data collection from each travel survey, subsequent changes may be made to initiatives or to the targets. The review of the data will consider the following questions:

- Are the targets still realistic? Are they still ambitious? Should they be updated? – existing targets will be compared to the responses obtained from the survey.
- Are there difficulties in achieving particular targets? What are the likely reasons for this? – if there is no or only minor shift in a particular transport mode despite a high potential reach, an analysis of challenges will be undertaken. Subsequent questionnaires may be required to ask more specific questions.
- Are there any gaps with regards to actions? – review of processes, information and marketing will be undertaken to implement any potential improvements. Participation in programs will be analysed, which will be used as a basis for decision of any changes to specific programs are required.
- What is preventing further improvement on mode share and how can this be addressed? – this can vary from additional pedestrian crossings to new bus routes. An analysis of the infrastructure and consultation with authorities will be required.

6.3 Reporting Findings

A report outlining the findings and recommendations will be presented to Council by SINSW and the TP Coordinator after each annual review for a recommended period of five years after the issue of the Occupation Certificate (OC) the school Principal for distribution to SINSW, Council. Agreed changes to the STP or actions resulting from the findings will be implemented in an appropriate and timely manner.

7. Monitoring and Evaluation

The STP does not only outline actions and strategies, but also ensures monitoring and evaluating of those initiatives. This is a crucial part of the travel planning process as it ensures maximum benefits are gained. A review of the mode share and targets will be undertaken after 3 months of day one, term one, followed by yearly tracking and reassessment. There may be cases that new initiatives may need to be implemented or new targets may need to be set if they are exceeded or too ambitious.

The overall success of the STP is dependent on good communication between various entities such as the SINSW, the TP Coordinator, Principle, P&F, Council and TfNSW. The TP coordinator must ensure all parties including students and staff are well informed about reasons for adopting the plan, promote the benefits and provide information about alternatives and initiatives. It is also important to receive feedback through the annual travel surveys (refer to Attachment 2) to ensure staff, and students and their parents/carers are understanding and realising the benefits.

The ongoing review process will ensure reasons for travelling are considered and understood. Any barriers to changes in their behaviour will be considered as it will help decide for the most effective actions to be identified. This review process is also an opportunity to communicate progress to the school community which can encourage more change from feedback of the results.

To ensure that school community understands the benefits of sustainable travel, key elements to development and implementation must be practiced. These include:

- Communication – It is necessary to explain the reason for adopting the plan and all the benefits. Information on alternatives must also be readily available so it is easier for people to make the change.
- Commitment – The TP coordinator must ensure consistent action to help change established habits. Using communication and the provision of necessary resources impetus for commuters can be provided to switch from using private vehicles.
- Consensus – Broad support is necessary for the introduction of the TP. If it is not received well by the school community the targets will not be achieved.

Progress of the STP will be presented to council by SINSW and TP Coordinator after each annual review for a recommended period of five years after the issue of the Occupation Certificate (OC) and include:

- Number of students and staff
- Details of mode split (annual survey results)
- Progress towards the average mode split stated in the Council's LSPS and the progress towards any new targets
- Success of strategies as listed below, and
- Details of any rectification measures proposed.

A summary of all monitoring and evaluation strategies are presented below:

Strategy: Form an advisory committee involving staff and P&F members

Why	Monitor the progress of the STP
How	Email invitation for expression of interest
Who	TP Coordinator
When	Completion of the redevelopment
Resources	Emails

Strategy: Annual Survey

Why	Monitor, review and evaluate the progress towards the travel mode targets
How	Online surveys to all staff and students. Can be included as part of the information pack.
Who	Steering Committee and TP Coordinator
When	Beginning or end of each year
Resources	Email and letters

Strategy: Regular meetings

Why	Discuss the effectiveness of initiatives
How	In person meeting at a specified location within the school
Who	Steering Committee
When	Every 6 months
Resources	Meeting agenda and action plan

Strategy: Update all noticeboards

Why	Ensuring all information is accurate and up to date for those travelling through active and public transport
How	Updating information on boards
Who	Steering Committee
When	Every month (or more frequently if necessary)
Resources	Information boards

Strategy: Review and update of STP

Why	Evaluate the success of the STP implementation and to add any new objectives.
How	Meetings with advisory committee and SINSW to suggest any changes
Who	TP Coordinator
When	Every year for a 5-year period
Resources	STP objectives, targets and progress checklist

Strategy: Presentation of annual monitoring review results to council

Why	To present to Council the progress of the STP target and objectives
How	Submit monitoring report to Council
Who	TP Coordinator
When	Every year for a 5-year period
Resources	STP objectives, targets and progress checklist.

Attachment 1 Travel Access Guide



[Insert school name]

Travel Access Guide

[Insert date/month/year]

Project overview

Insert project description from project page on SINSW website.

safety messaging: <https://education.nsw.gov.au/teaching-and-learning/curriculum/learning-across-the-curriculum/road-safety-education/safe-travel>

Active ways to get to school



Walking is an active and healthy way to get to school

- Include safety tips for local students.



Ride your bike

- Include safety tips for local students.



Ride your scooter

- Include safety tips for local students.

Message from your Principal

- Insert text from Principal that lets the school community know they are becoming an active travel school.
- Principal message to include relevant safety information.
- Principal message may include their own commitment to active travel.
- Include Principal photo and signature block.

Message from your P&C President

- Insert text from P&C President that outlines their support for becoming an active travel school.
- P&C message may include information about how changing the way you get to school even one day per week can make a 20% difference to local traffic congestion.
- Include P&C President photo and signature block.

Kiss and drop expectations

- Reflect anything agreed in the School Transport Plan.
- Ensure consistency with NSW Education's road

For more information contact:

School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

Local map: Active Travel

Must be included

- Graphic map of the school, showing all school entry points.
- Emphasise accessible entry points.
- Use icons to show which entry points are most suitable for walking, riding bikes and riding scooters.
- Show the 5, 10, 15, 20+ minute walk to school with single line rings of different colours (not shading).
- Include footpaths near the school, on both sides of all roads and near pedestrian crossings.
- Include pedestrian crossings and crossings with signals or Lollipop staff.
- Include nearby bus stops and bus routes, if relevant.

Map details

- North is up.
- Include a scale, in metres.
- Show bike and scooter parking within the school grounds.
- Show steps and stairs that may make entrances harder to access.



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School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

Breakout boxes to fill empty spaces

Something broken on the way to school?

Use the Snap Send Solve app or website to report issues to the people who can fix them.

Things like abandoned trolleys, broken footpaths or water leaks can all be reported in the app.

Download it today from the App Store or Google Play. Or visit www.snapsendsolve.com

Discounts, offers or initiatives for students and parents

- Include information about bike insurance, discounts, courses or car share pods, as relevant.

For more information contact:

School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au



[Insert school name]

Travel Access Guide

[Insert date/month/year]

Project overview

Insert project description from project page on SINSW website.

Using public transport to get to school

School buses and public buses



- Include route numbers and nearest bus stop locations.
- Include safety tips for local students.



Trains | Ferries | Light Rail

- Include nearest station or wharf locations.
- Include safety tips for local students.

Apply for a School Opal Card | School Term Bus Pass

- Include information about how to apply for any subsidised public transport programs available for students at this school.
- Student code of conduct
- Include information about expectations for students on public transport, for example offering seats to adults, no swearing or fighting, etc.

Message from your Principal

- Insert text from Principal that lets the school community know they are becoming a public transport school.
- Principal message to include relevant safety information.
- Principal message may include their own commitment to public transport.
- Include Principal photo and signature block.

Message from your P&C President

- Insert text from P&C President that outlines their support for becoming a public transport school.
- P&C message may include information about how changing the way you get to school even one day per week can make a 20% difference to local traffic congestion.
- Include P&C President photo and signature block.

Kiss and drop code of conduct

- Reflect anything agreed in the School Transport Plan.
- Ensure consistency with NSW Education's road safety messaging.

For more information contact:

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Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

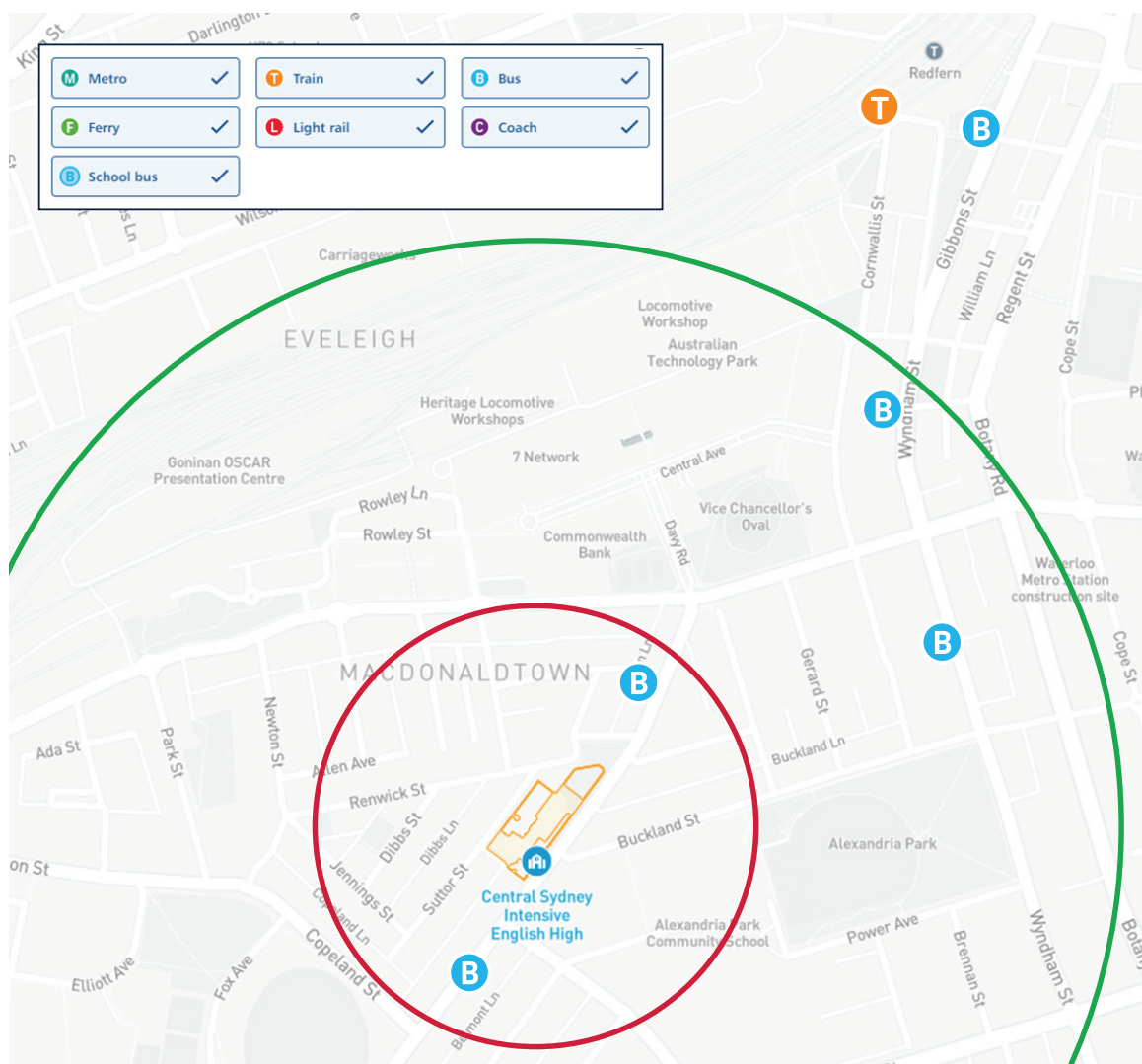
Local map: Public transport

Must be included

- Graphic map of the school, showing all school entry points.
- Use icons to show the nearest bus, train, ferry and light rail stops to the school. Only use Transport for NSW icons for each type of transport.
- Show routes using colours to match the Transport for NSW icon colours, for example, orange for trains, blue for buses.
- Differentiate morning and afternoon stop locations.
- Show the 5, 10, 15, 20+ minute walk to school with single line rings of different colours (not shading).
- Show the walk to school from public transport stops.

Map details

- North is up.
- Include a scale, in metres.
- Emphasise accessible entry points.
- Show steps and stairs that may make entrances harder to access.
- Show bike and scooter parking within the school grounds.
- Include footpaths near the school, on both sides of all roads and near pedestrian crossings.
- Include pedestrian crossings and crossings with signals or Lollipop staff.



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Breakout boxes to fill empty spaces

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Use the Snap Send Solve app or website to report issues to the people who can fix them.

Things like abandoned trolleys, broken footpaths or water leaks can all be reported in the app.

Download it today from the App Store or Google Play. Or visit www.snapsendsolve.com

Discounts, offers or initiatives for students and parents

- Include information about bike insurance, discounts, courses or car share pods, as relevant.

Tap on and tap off every time

Use your School Opal card every time you catch public transport to school.

It tells us how many people are using public transport to help us plan buses, trains and ferries to suit you.

Plan your trip to school

You can plan ahead to make sure you get to school on time!

Visit transport.info or download an app to help:

- Trip View
- Next There

For more information contact:

School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

Attachment 2 Travel Survey Questions

The following questions should be asked at a minimum; Adjustments may be required.

- Are you a staff member, student, or parent / carer of a student?
- How do you generally travel to school and what is the distance of travel?
 - Walk / run
 - Bicycle / scooter
 - Bus; provide number
 - Train; provide number
 - Ferry; provide service
 - Combination of bus and train; provide bus / train number
 - Car (Driver)
 - Car (Passenger)
 - Other _____
- If you drove, how many other students were with you in the car? (students / parents only)
- If you drove, please answer the following:
 - Did you park on site today? If so, where?
 - Did you park on-street? If so, where?

Were you dropped off by private vehicle? If so, where?

- If you drove / were dropped-off, what other purpose is the car used for? (e.g. dropping off or collecting children from school/childcare, shopping on the way home, health reasons, worried about safety, convenience etc.)
- What time do you usually arrive at the school in the morning and how long is the trip?
- What time do you leave the school in the afternoon and how long is the trip?
- Which measures would encourage you to walk or ride a bicycle more? If you already walk or ride a bicycle - what measures would you like to see more? (e.g. lower speed roads, more bicycle / helmet storage, shower / change rooms, information on safe routes etc.)
- Which measures would encourage you to use public transport? If you already use public transport, what would you like to see more? (e.g. cheaper public transport, more frequent services, improved waiting area, better connections, information about public transport etc.)
- Have you heard of car share? Do you know where the nearby car share locations are? If yes, would you use it?
- If not, what are the barriers to you using car share to travel to and from the school?

- What would make you consider using car share as a form of transportation? (e.g. free / reduced parking cost, help finding someone to carpool etc.)
- What is the postcode / suburb of your place of residence?
- Do you have any suggestion/recommendations to encourage sustainable modes of transport?

Attachment 3 STP Guide for the TP Coordinator & SINSW

Steering Committee

- The formation of a Steering Committee will be coordinated by the PT Coordinator and SINSW upon opening the redevelopment
- The Steering Committee will assist in the progress and monitoring of the STP; and
- The Committee will ensure the notice board is updated regularly (monthly or when necessary) with up-to-date information on sustainable transport

SINSW / TP Coordinator

- Distribute information on sustainable transport options to students and staff (i.e. Transport Access Guide)
- Contribute to the promotion of car share and carpooling services
- Workshops to implement and modify initiatives on regular basis, and
- Incentives may be issued to students and staff to encourage public transport use (e.g. competition prizes)

Information Pack

- Annual Survey – via URL link
- Transport Access Guide
- Information on platforms/apps including sustainable transport information (i.e. TripView, etc), and
- Information on sustainable transport facilities available on-site and in the vicinity of the site (i.e car share (GoGet), carpool (CoHop), bicycle parking, etc)

Annual Survey

- An initial survey should be done 3 months after completion of the redevelopment to track progress. This can be done through websites such as Survey Gizmo. (<https://www.surveygizmo.com/>), and
- An annual survey should be conducted by the TP Coordinator to collect information on new travel patterns.

Regular Meetings

- Regular meeting should be held every 6 months involving SINSW, the TP Coordinator and the Advisory Committee members, and
- Sustainable transport is to be discussed including feedback from the initial survey data.

Attachment 4 Transport and Traffic Assessment (part)

The following is an extract of the relevant sections of the Transport and Traffic Assessment report submitted with the SSDA for the proposed new primary school.

2. Site Context

This section provides an overview and discussion about the suitability of the existing state and local transport plans and identifies any gaps in these plans and strategies in view of the proposed school.

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 4.

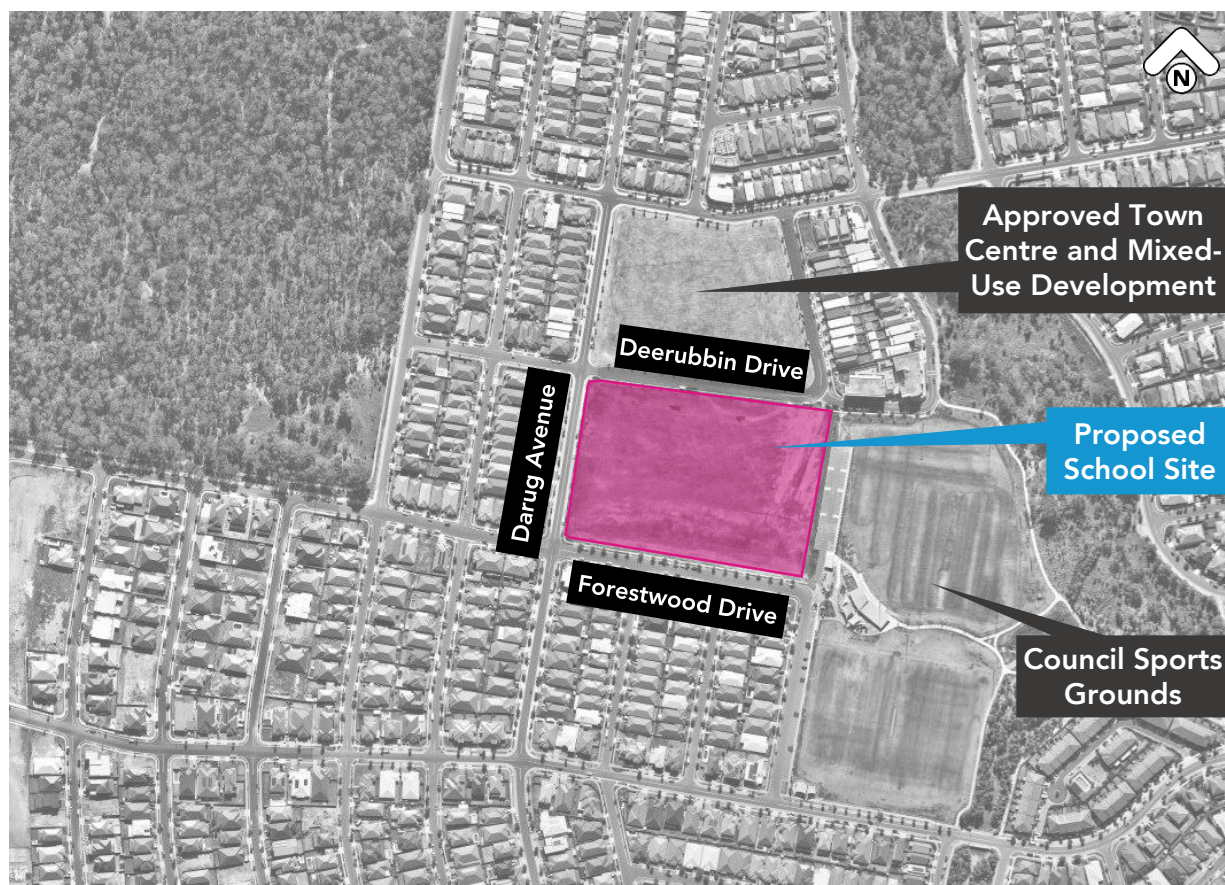


Figure 4 - Aerial View of the Subject Site (Source: Near Map)

2.2 Local Transport Plans

2.2.1 Pedestrian Access and Mobility Studies

Penrith City Council's *Business Paper Ordinary Meeting* dated 2 April 2001 discusses the potential preparation and implementation of the Pedestrian Access and Mobility Plan (PAMP) - Footpath Improvement Program. This report informs Council of findings and recommendations of the Penrith LGA Access and Mobility Plan. The plan prioritises the revised outstanding footpaving projects, based on: - proximity to pedestrian generators; estimated traffic volume; nature of predominant users (young, old, disabled, parents with prams, etc); and evidence of wear. The priority list was prepared to help in the selection of footpaving projects as part of the annual project evaluation and footpath selection process.

It is noted that this document is 20 years old and it appears that the PAMP has not been prepared / implemented.

Although the above document is not strictly relevant for this project, it is recommended that footpath upgrades are part of Council's annual review and maintenance program and that a PAMP for the entire LGA be prepared.

2.2.2 Bicycle Plans

Penrith Accessible Trails Hierarchy Strategy 25 June 2012 (PATHS) project focuses on delivering a plan and strategic links with some localised recreational loops integrated into the Strategy.

The major intention of PATHS project is to enhance the safety of the trails network by planning off-road shared pathway and enhance the safety of the on-road sections by implementing clear line marking and bike lanes in order to benefit all people with diverse abilities who want to use the trails network to access a destination.

PATHS is presented in Figure 9. The project shows potential upgrades of trails within the vicinity of the site, which appear to have been constructed.

No update of this strategy is required.

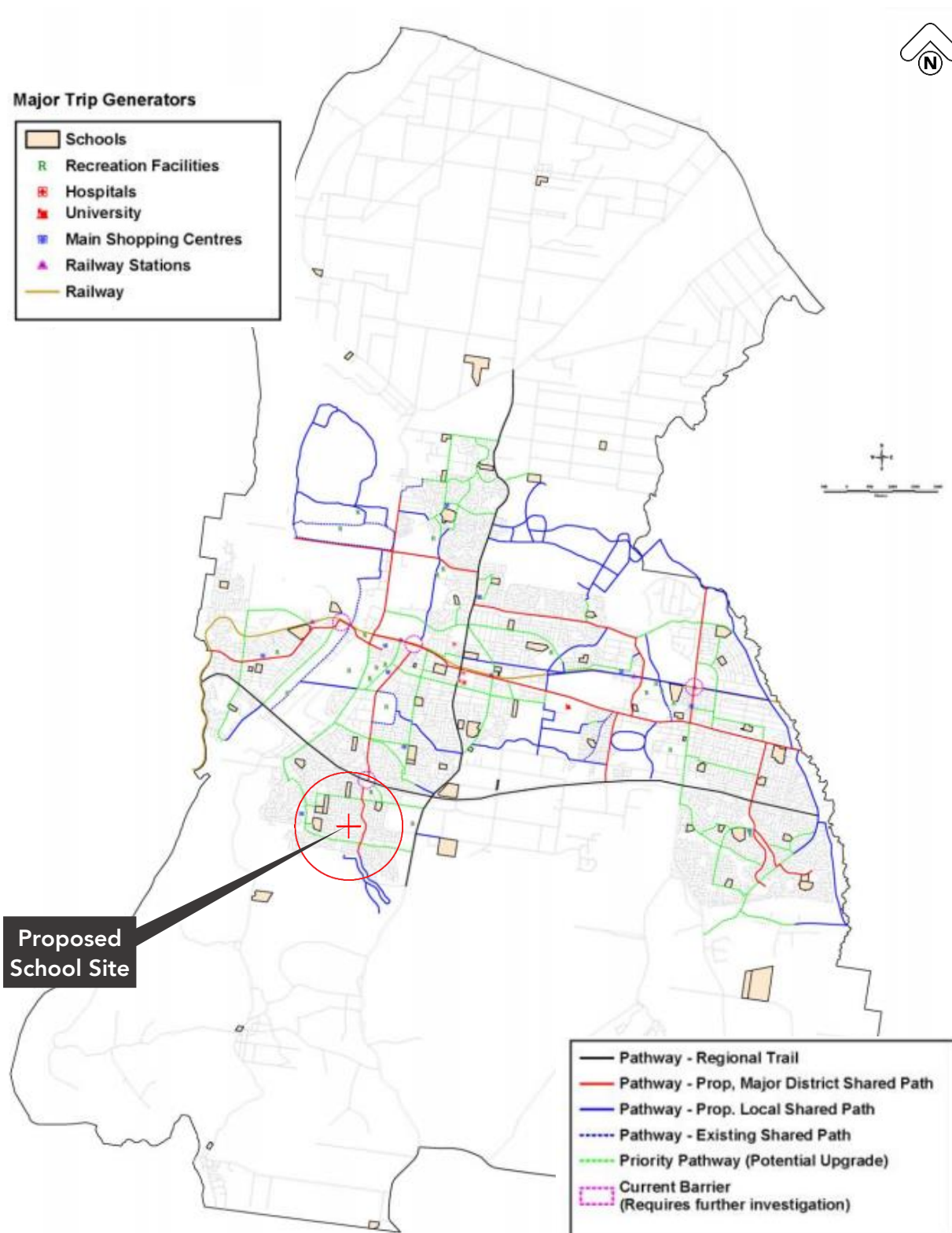


Figure 5 - Penrith Accessible Trails Hierarchy Strategy

2.2.3 Integrated Transport Strategies or TMAPs for the area

Penrith City Council's *Integrated Transport and Land Use Strategy 2008* draft report states that the Penrith Integrated Transport and Land Use Strategy (PITLUS) action plan includes a series of short, medium and long term measures implemented by Council and partnership agencies.

The action plans are city wide including land use planning, road management, active transport, public transport, parking, Travel Demand Management / Educational or Local Action Plan including suburban, rural, Penrith City Centre, St Marys Town Centre, Residential Urban Release Area and Employment Urban Release Area.

The strategy is 13 years old, focuses more on town centres and makes mention of Glenmore Park Stage 2 only as an urban release area; No update to this document is required.

2.2.4 Local Area Traffic Management (LATM) Plans

Penrith City Council's *Integrated Transport and Land Use Strategy 2008* draft report states that in order to reduce the severity and number of accidents occurring in Penrith LGA and improve the overall safety for all road users, it is recommended that the Council implements its Road Safety Plan including the local area traffic management study for crash analysis and speed and volume surveys.

The strategy is 13 years old, focuses more on town centres and makes mention of Glenmore Park Stage 2 only as an urban release area; No update of this document is required.

2.2.5 Parking Management Strategies or Kerb Management Plans

Penrith City Council's Penrith City Centre Car Parking Strategy 2011 outlines actions to improve the access around the City Centre by walking, cycling, public transport and private cars. This strategy provides a framework for future actions and initiatives identified across short, medium and long-term horizons. Managing parking and improving access strategy includes understanding access and transport issues within Penrith, plan for improved access to the City Centre and review car parking provision.

The strategy is already 10 years old and concentrates on the Penrith city centre. Therefore, it is not relevant to the school development.

2.2.6 Mode Specific Transport Plans

No documents have been found relating to Council or localised Green Travel Plans or any active and public transport target initiatives. However, Penrith City Council's *Penrith Development Control Plan 2014* informs that Council seeks to promote and facilitate walking and cycling within transit oriented precincts by establishing and maintaining high levels of amenity, safety and permeability in the urban form. The DCP also encourages bicycle use by providing sufficient number of secure and accessible bicycle parking spaces within new developments. The following is listed regarding cycle facilities:

1. Cycleways

- a) *All cycle routes and facilities are to be consistent with the relevant requirements of "Austroads Cycling Aspects of Austroads Guides" and Roads and Maritime Services' "Bicycle Guidelines" including line-marking, signage and logos and Council policies regarding bicycle access.*
- b) *The minimum width of off-street shared cycle and pedestrian pathways is to be 2.5m on local routes with a minimum of 3m on major connector routes.*

- c) *Pedestrian and cycle routes and facilities in public spaces are to encourage way finding and be convenient, safe, well lit, clearly defined, functional and accessible to all.*
- d) *Shared paths and pedestrian refuge islands are to be designed to be fully accessible by all in terms of access points and gradients, in accordance with Australian Standard 1428:1-4.*

2. *Provision of Bicycle Parking Spaces*

- a) *For commercial developments providing employment for 20 people or more, bicycle parking is to be in secure and accessible locations, and provided with weather protection, in accordance with AS2890.3:1993 Bicycle Parking Facilities.*
- b) *The following associated facilities are to be provided:*
 - i) *Change and shower facilities for cyclists are to be conveniently located close to the bicycle storage areas; and*
 - ii) *Where the building is to be strata-titled, the bicycle storage facilities and shower/change facilities are to be made available to all occupants of the building.*
- c) *Applicants should comply with the suggested bicycle parking provision rates for different land use types in the document 'Planning Guidelines for Walking and Cycling' (NSW Government 2004).*

3. *Design of bicycle spaces*

- a) *Bicycle parking spaces must:*
 - i) *Be provided in accordance with AS2890.3:1993 Bicycle Parking Facilities;*
 - ii) *Be located to provide convenient access from surrounding bicycle routes and main building entrances;*
 - iii) *Not interfere with reasonable access to doorways, loading areas, access covers, furniture, services and infrastructure; Not cause a hazard; and*
 - iv) *Be adequately lit during periods of use.*
- b) *A bicycle compound or a bicycle locker must:*
 - i) *Be located to provide convenient access to other bicycle facilities including showers and change rooms;*
 - ii) *Be fully enclosed;*
 - iii) *Be able to be locked; and*
 - iv) *If outside, provide weather protection for the bicycle.*

These principles are in accordance with the *Austroads Guide to Road design Part 6a: Paths for Walking and Cycling*, and therefore no update is required. However, it is noted that many of the older roads do not comply with these newer standards. While it is acknowledged that retrospective construction may be expensive, upgrades to the pedestrian and cycle infrastructure should be considered and undertaken regularly to provide better connectivity.

2.2.7 Public Transport Networks

Penrith City Council's *Local Strategic Planning Statement - March 2020* states that Council has established planning priority to provide a safe, connected and efficient local network supported by frequent public transport options. The document states that the city-shaping infrastructure will connect Penrith with Greater Sydney more easily and quickly. This proposed infrastructure includes:

- *The new North South Rail Link from St Marys to the Western Sydney Aerotropolis (to be operational by the time the airport opens in 2026).*
- *The M9/Outer Sydney Orbital road and freight corridor that connects the south west to the north west (for investigation in the next 10-20 years).*
- *Rapid Bus Connections between Penrith and the Western Sydney International (Nancy-Bird Walton) Airport (for investigation in the next 10 years).*
- *The Western Sydney Freight Line, providing a freight rail connection to Western Sydney*

The plan focuses on development of a public transport connection between Penrith, the Western Sydney Airport and St Mary's in a broader concept and does not facilitate the area in the vicinity of the school site.

2.3 State Transport or Infrastructure Plans

2.3.1 Future Transport 2056

The Greater Sydney City Shaping Network 2056 is aimed to provide high capacity and high frequency services to the metropolitan centres.

This project does not directly affect the existing arrangements, but the potentially improved frequency of trains would serve staff who live within the wider area of Sydney to commute to school.

No amendments are required to this plan.

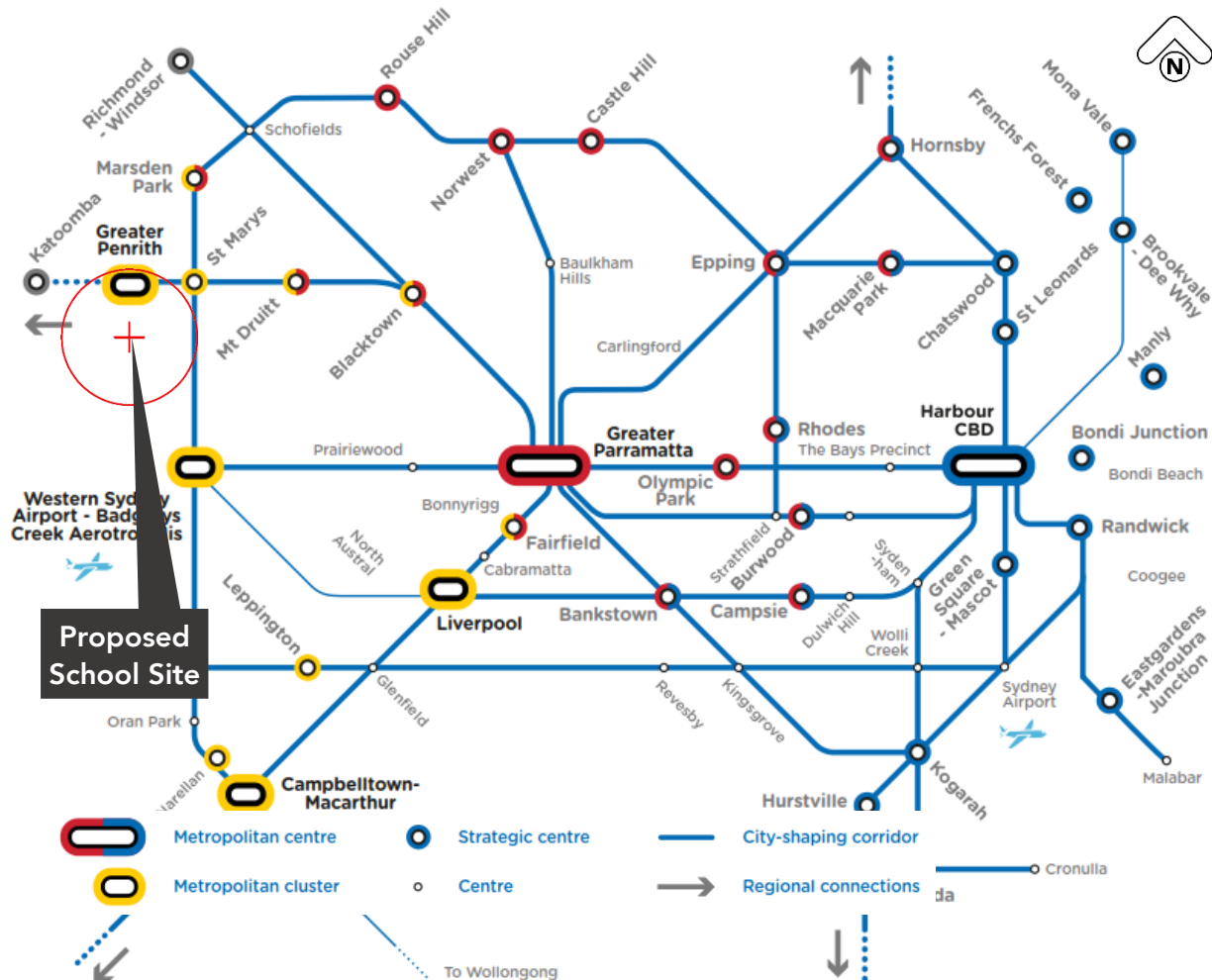


Figure 6 - Greater Sydney Mass transit / train network (visionary) (Source: Future Transport 2056 Strategy)

The Future Transport 2056 Strategy has the vision to construct a safe cycleway network within 10km of Greater Penrith area. This document appears to address a broader vision and is aimed to provide connectivity on a larger scale. This plan, if implemented, may benefit teachers and staff who live outside Glenmore Park.

An update to this strategy is not seen as required, as the majority of students live in a localised area.

Growing Sydney's visionary bicycle network is shown in Figure 9.

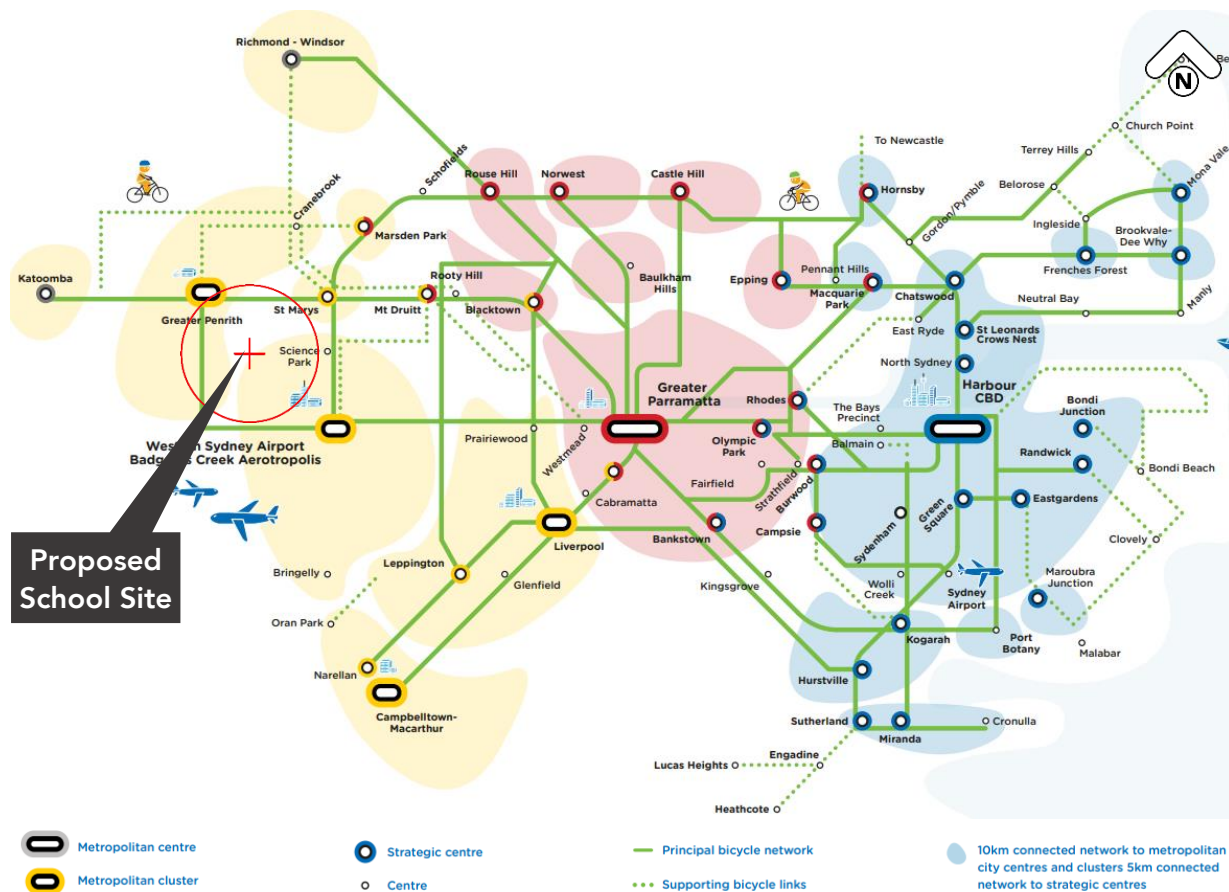


Figure 7 - Growing Sydney's bicycle network (visionary) (Source: Future Transport 2056 Strategy)

2.3.2 Future Western Sydney Corridor – NSW Government

A rail line is proposed between St Mary's and Western Sydney Airport. The updates to transport line and tunnels will improve the north-south connectivity within the western suburbs.

The corridor project will not have a direct impact on the proposed school site, although it may serve potential teachers and staff who live outside Glenmore Park and Penrith.

An update to this strategy is not seen as required, as the majority of students live in a localised area.

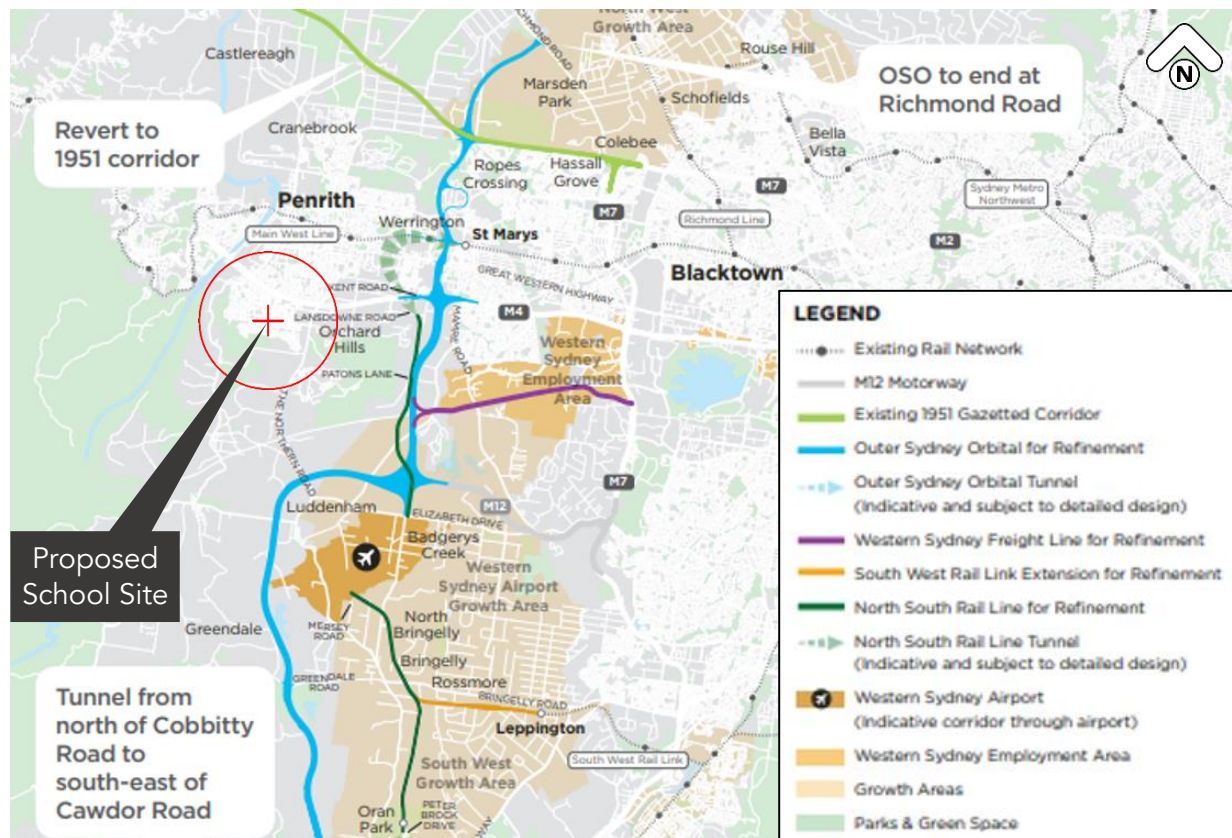


Figure 8 - Future Western Sydney Corridors Map (Source: NSW Government)

2.3.3 Greater Sydney Commission – Western City District Plan

This document states the following regarding improvement of walking and cycling:

*'Walking is a fundamental part of the transport system and most journeys start and end with walking. Creating pleasant and safe environments for walking and cycling contribute to great places. Prioritising safe cycling for short trips to centres, transport interchanges and local services such as schools and health services will free capacity for people who need to travel further by road and public transport. Transport for NSW is establishing a bicycle network hierarchy in collaboration with councils. The Principal Bicycle Network will establish high quality, high-priority routes to facilitate safe and direct connections to centres. **This network will form the transport layer of the Greater Sydney Green Grid. Regional and local routes identified in local government bike plans, will connect to the Principal Bicycle Network to facilitate a seamless and connected network within urban areas.** Local streets will connect to these routes to provide door-to-door access for cycling. Secure bicycle parking and end-of-trip facilities should be provided in centres to support cycling throughout the District.'*

While this policy does not address the surroundings of the proposed site per se, it highlights the necessity to connect local areas to the greater bicycle network. This may benefit teachers and staff who live outside Penrith.

An update to this strategy is not seen as required, as the majority of students live in a localised area.

2.4 Local Land Use Planning

2.4.1 LEP

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 9.

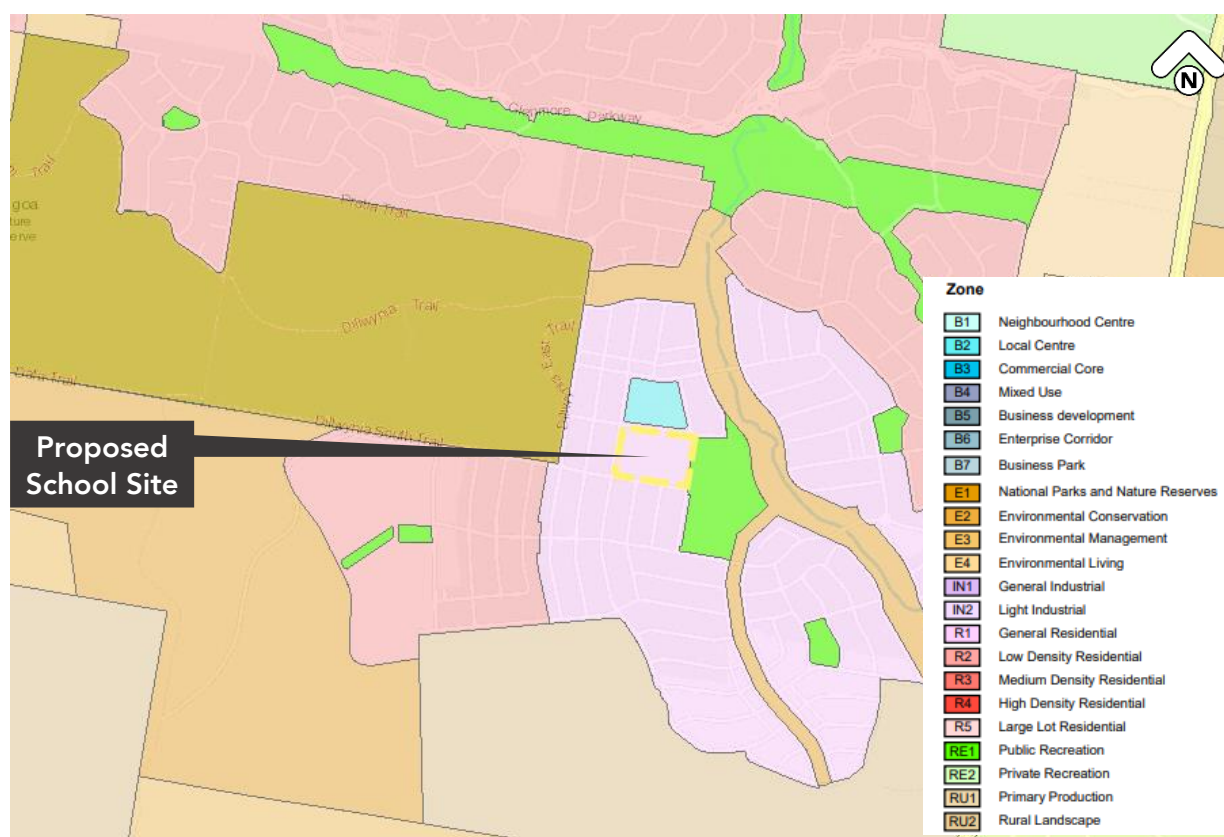


Figure 9 - Local Land Use Map (Source: NSW Planning Viewer)

While the proposed site lies within a residential zoning, it is allocated for an educational facility in Council's documents.

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.

2.4.2 Penrith City Council's DCP 2014, Part E7B, Glenmore Park Stage 2 – Pedestrian and Bicycle Network

While this document addresses pedestrian and cycle connectivity, it is noted that there is no direct bicycle link from the west and from the south-west to the proposed school location as shown in black arrows in Figure 10.

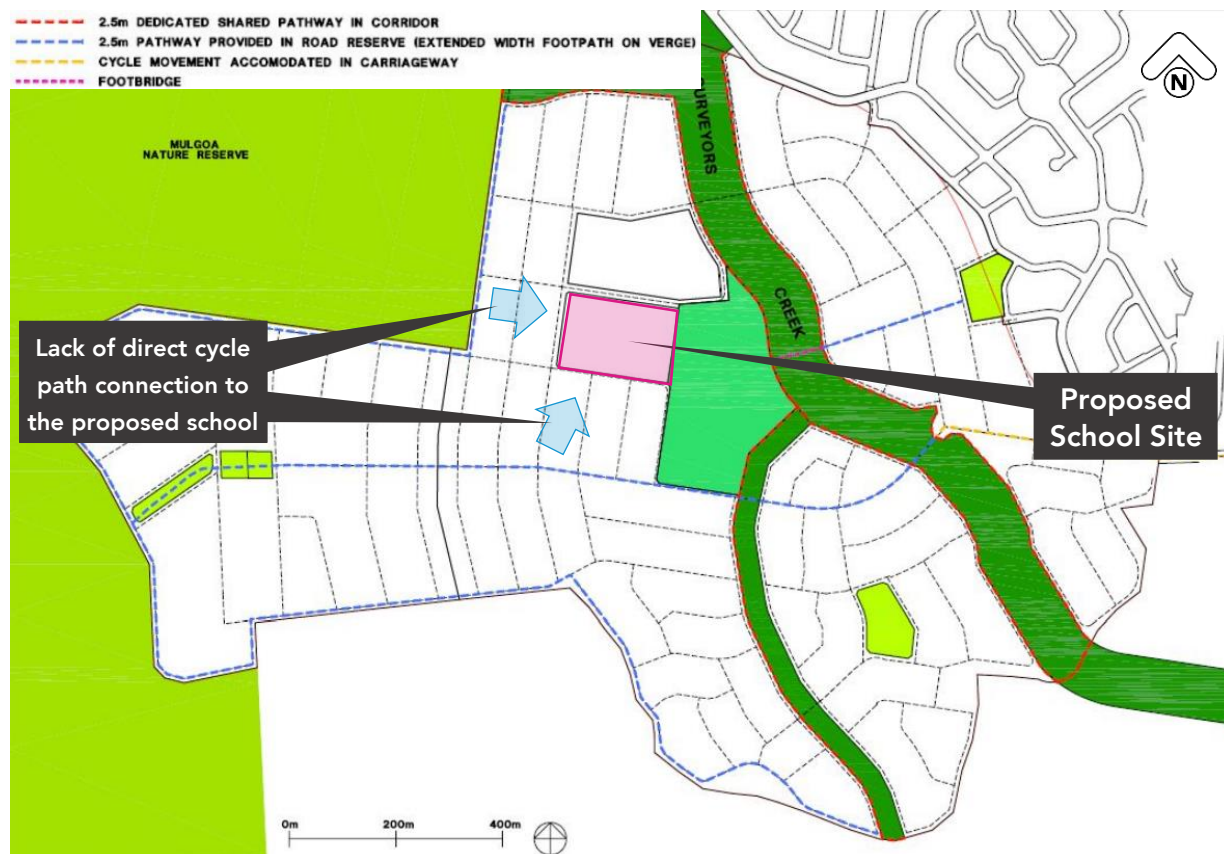


Figure 10 - Pedestrian and Cycle Network (Source: Penrith Council DCP 2014)

2.4.3 Penrith City Council's DCP 2014, Part E7B, Glenmore Park Stage 2 – Public Transport

Public transport principles have generally been addressed in this document. Figure 11 shows the public transport principles near the vicinity of the School; Figure 12 shows the existing public transport facilities and 400m walking catchments from the bus stops. It is noted that only 794 bus services the school site.



Figure 11 - Public Transport Principles (Source: Penrith Council DCP 2014)

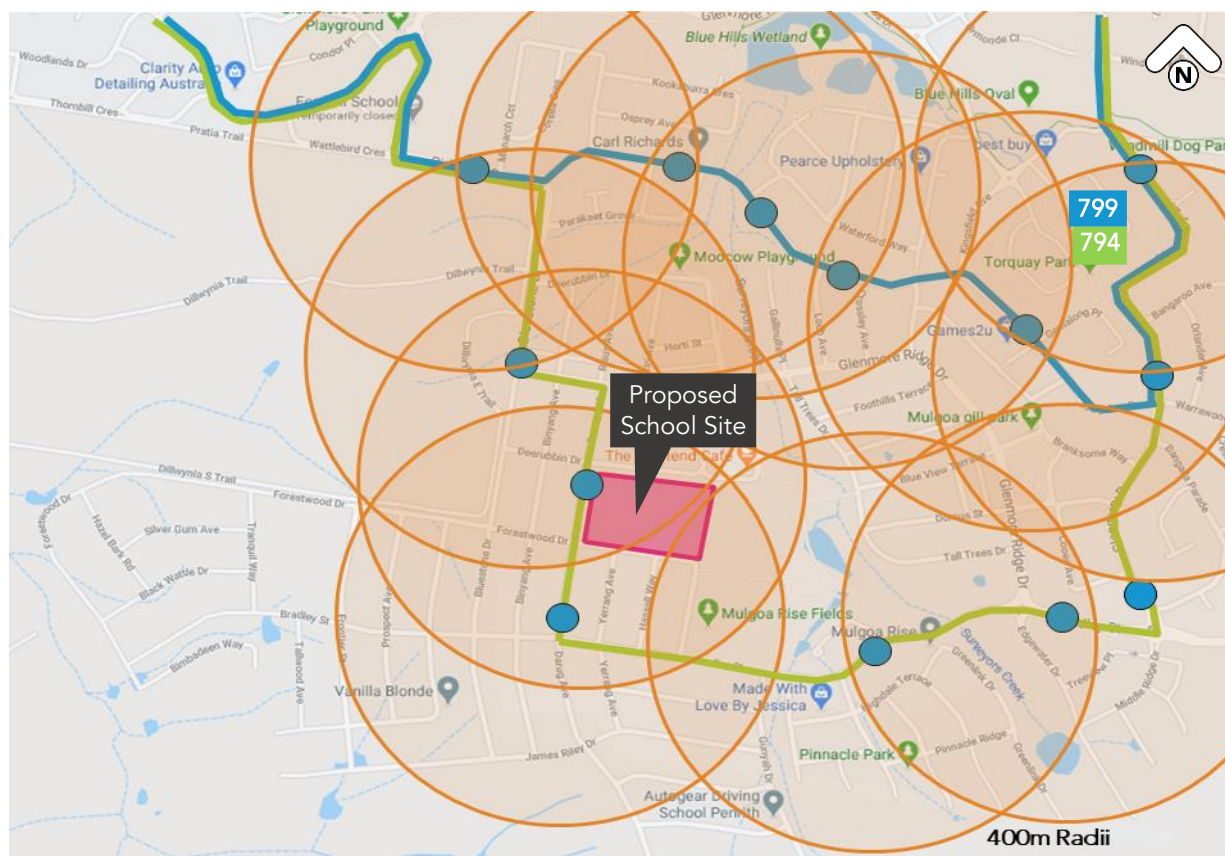


Figure 12 - Existing Public Transport

2.4.4 Open space plans

Penrith City Council's Development Control Plan 2014 states that open space is crucial to the landscape design. Public open spaces should be provided to meet the recreation needs and community facilities. This document also states that open space contributes to the dual use which is for recreation and stormwater drainage.

2.5 Programs

2.5.1 Sustainability Strategy 2015-21

This strategy does not provide any information on sustainability in form of transport modes.

2.5.2 Subsidised School Transport Scheme and School Term Bus Pass

Figure 13 presents the enrolment catchment and the SSTS exclusion zone. Almost the entire school enrolment catchment lies within the SSTS zone, meaning that almost no students are eligible for the free or subsidised school travel pass.

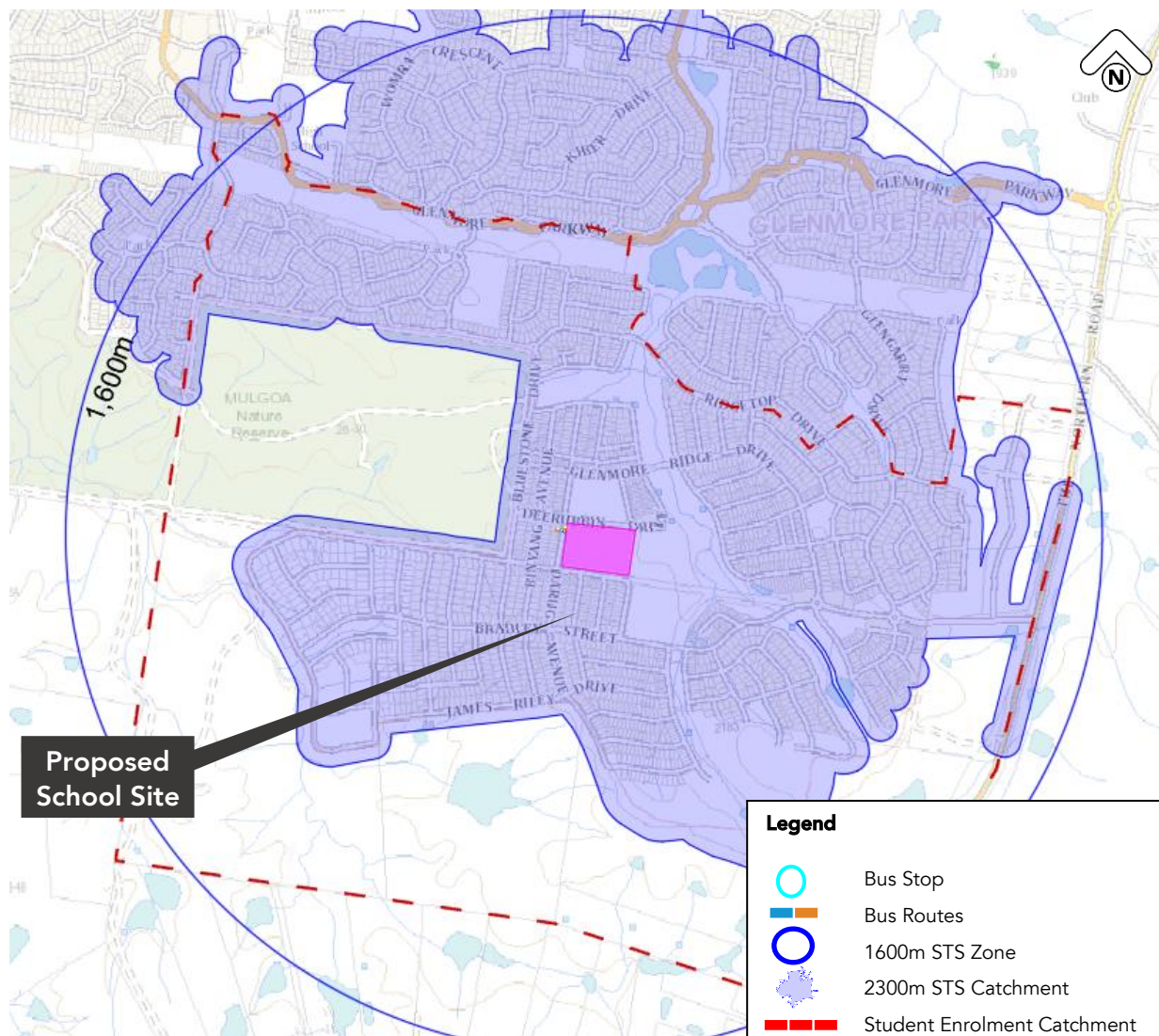


Figure 13 - SSTS Exclusion Zone

2.6 Mixed-Use Development

A mixed-use development has been approved north of Deerubbin Drive at 90-98 Glenmore Ridge Drive, Glenmore Park, opposite the proposed School. A screenshot of the location plan /site plan (Job no: J18429D, DA 1005, Revision C FOR 90-98 prepared by CDARCHITECTS) is shown in Figure 14.

Under the DA19/0348, the development has been conditioned to provide a pedestrian facility on Deerubbin Drive, as shown in Figure 14. However, it is unclear what type of facility will be provided.

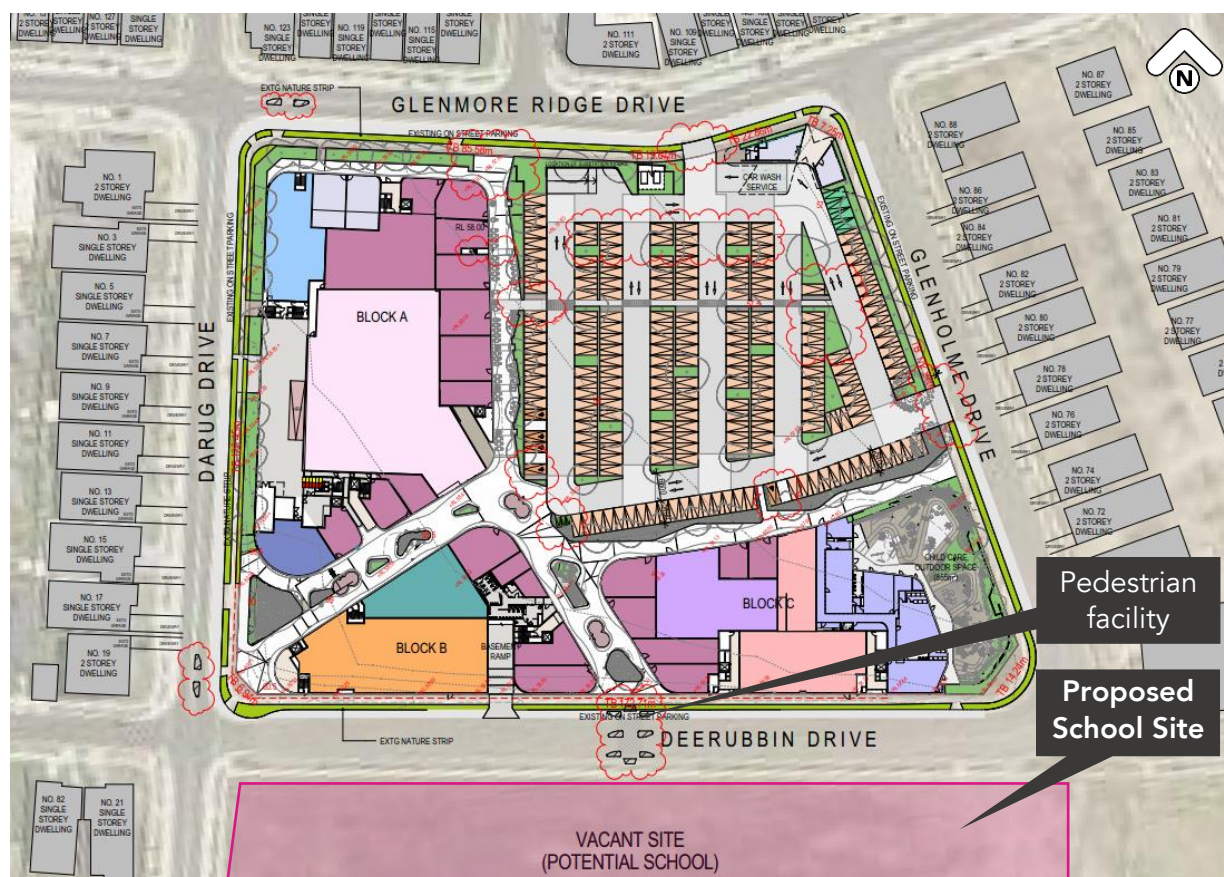


Figure 14 - Site Plan - Mixed Use Development at 90-98 Glenmore Ridge Drive (Source: ADARCHITECTS)

Section 3.6, Document Set ID: 9176045, Version: 1, Version Date: 15/06/2020 from the approved TIA for the mixed-use development states the following:

- *The pedestrian refuge proposed on Deerubbin Drive will align with the southern pedestrian entrance to the site and will also provide for sufficient width for future conversion to a pedestrian crossing. The provision of a pedestrian crossing shall be assessed against the relevant warrants outlines in RMS Australian Standard Supplement – Manual of Uniform Traffic Control Devices 1742 – Part 10 – Pedestrian Control and Protection.*

Condition No. 79 from Document Set ID: 9563715, Version: 1, Version Date: 27/04/2021 from the DA conditions states the following:

- Provision of a raised threshold on Deerubbin Drive where the main pedestrian thoroughfare to/from the shopping centre is located. The raised threshold shall incorporate splitter islands, pram ramps and pedestrian fencing on both sides of the road and shall be designed to accommodate a potential zebra crossing in the future.*

Following conversations with Council, it is understood that the mixed-use developer will construct a raised zebra crossing.

It is recommended that a zebra crossing be provided on Deerubbin Drive to facilitate both the School and the approved mixed use development.

2.7 Existing Nearby Public Schools

The Glenmore Park SCG is undergoing significant housing development and population growth resulting from large infrastructure projects (Western Sydney Airport as an example). The increasing number of students have only four schools located on the northern border of the SCG (refer to Figure 15), leaving many students having to travel larger distances to school. With the proposed new school located in Mulgoa Rise, students residing in this developing suburb will live closer to, which will reduce travel times and therefore support the use of active travel i.e. walking and cycling.

The existing catchment areas of nearby schools have been modified to accommodate a new primary school.

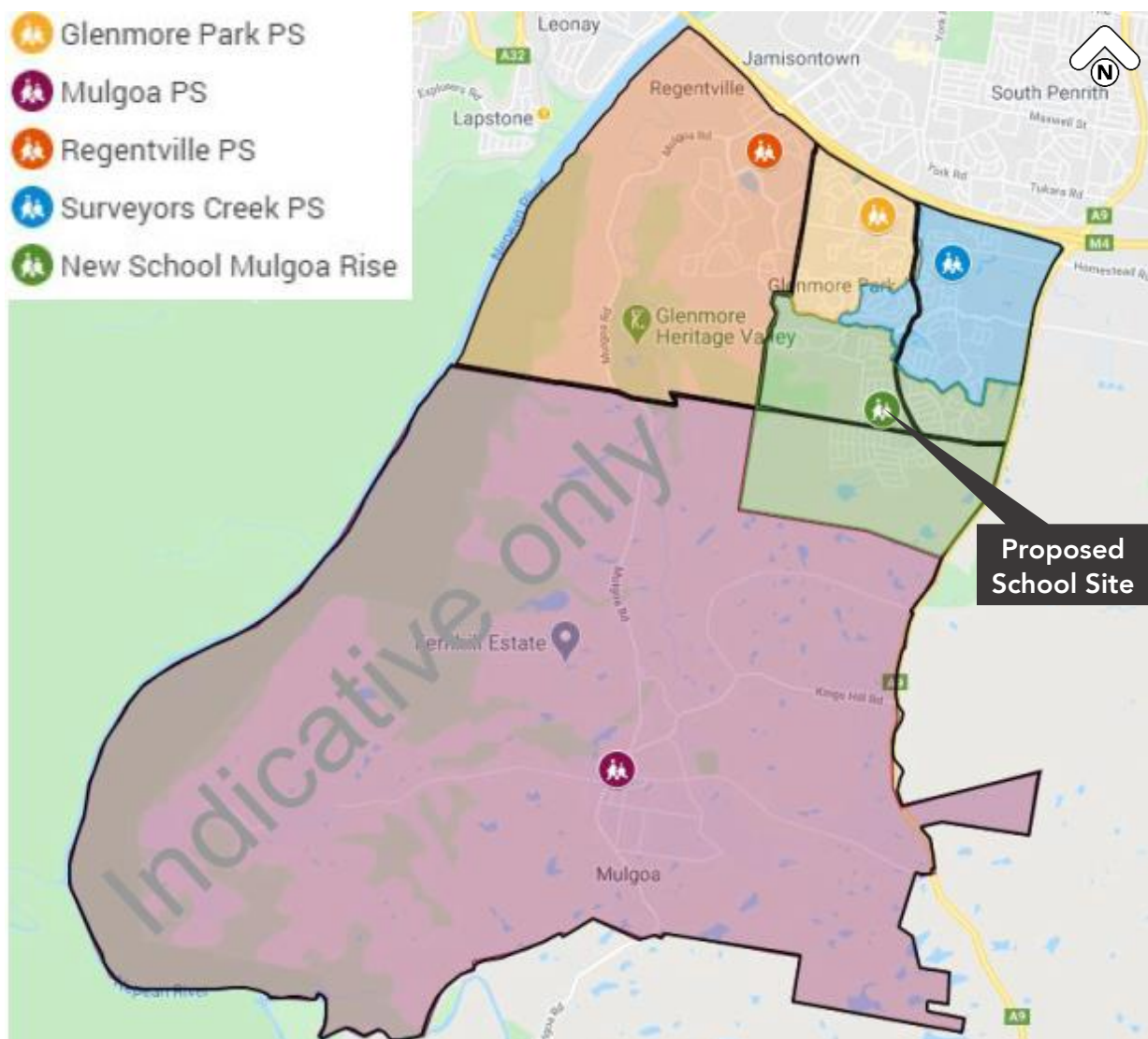


Figure 15 - Nearby Schools (Source: NSW Department of Education)

Other schools nearby the proposed new school and the catchment areas are presented in Figure 15. The black lines represent the current catchments of Glenmore Park Public School, Mulgoa Public School, Regentville Public School and Surveyors Creek Public School. The new primary school in Mulgoa Rise shown as a green area would take some students from Glenmore Park Public School, Surveyors Creek Public School and a small portion of Mulgoa Public School. The proposed School will reduce the need for demountable teaching spaces required in the nearby schools.

3. Transport Networks and Operations

3.1 School Access

The school has a frontage to Darug Avenue, Deerubbin Drive and Forestwood Drive.

There are 4 pedestrian and cycling gates: two off Deerubbin Drive in the north, one off Darug Avenue in the west and one off Forestwood Drive in the south.

The car park access is in the southeast of the site off Forestwood Drive, combined with a maintenance and emergency driveway.

Service and waste collection vehicle access is provided on the northeast of the site off Deerubbin Drive.

Bus stops are located on either side of the Darug Avenue carriageway just south of the intersection with Deerubbin Drive.

A map showing the access points, car park, pick-up / drop-off areas, bicycle amenities and the bus stop locations is illustrated in Figure 16.

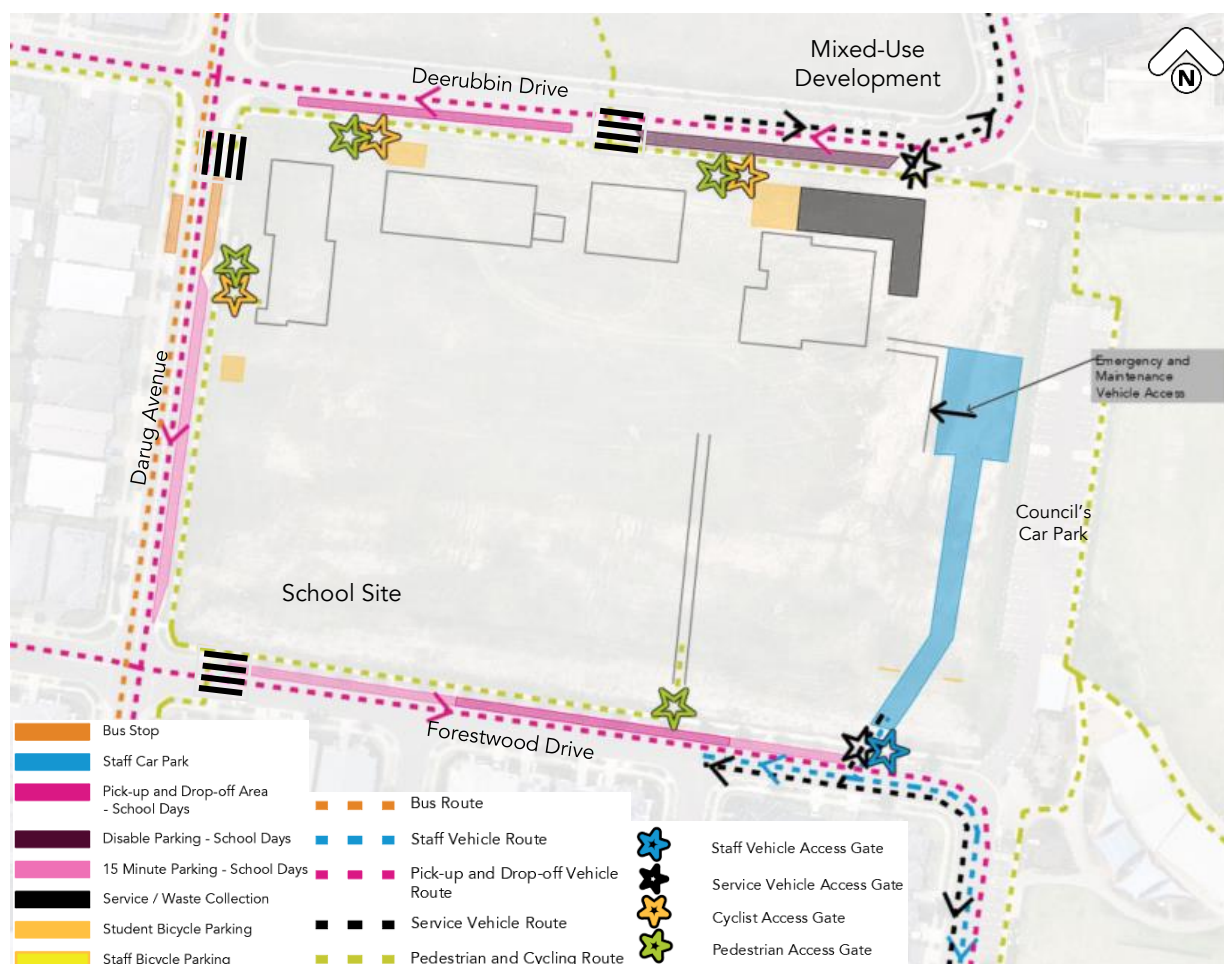


Figure 16 - School Access Plan

3.2 Active Transport

The locality was reviewed for features that would attract active transport trips (walking and cycling), with reference to the NSW Guidelines for Walking and Cycling (2004). The NSW Guidelines to Walking & Cycling (2004) suggests that 400-800m is a comfortable walking distance when considering the distance to public transport, which equals a 5-10 minute walk. A 15 minute walk, or 1.2km distance is seen as acceptable if walking is the only mode of transport.

The comfortable cycling distance is defined by the Guide to be between 800m-1.5km, which equals a 5-10 minute cycle. Distances of up to 2.4km and 3.6km are seen as acceptable if cycling is the only mode of transport for primary and secondary school students, respectively.

The following sections describe the existing pedestrian and cycling infrastructure within the proposed school enrolment catchment. Based on these findings, a gap analysis has been undertaken and ways to improve walkability and cyclability are suggested.

3.2.1 Walking

Walking is a viable transport option for distances at around one kilometre (approximately 15min walk) 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.

Figure 17 shows the “as crow flies” and the actual 400m, 800m and 1200m walking catchments from the proposed school.

Considering that Glenmore Park has recently undergone major development, pedestrian network in the locality of the proposed school site provides a reasonable level of amenities. Most of the roads within the School catchment have footpaths on both sides of the carriageway; However, some roads towards the north and east lack footpaths on either one or both sides of the road (refer to Figure 18). While it is acknowledged that these areas are residential in nature and traffic volumes are likely to be minor, at least one footpath on one side should be provided.

Pram ramps are generally provided at each end of a footpath; however, there is a lack of formalised crossings within the enrolment catchment of the school, making walking and cycling inconvenient and less safe.

Infrastructure which would benefit the prospective students is shown in Figure 19 and Figure 21.



Figure 17 - 400m, 800m and 1200m Walking Catchment

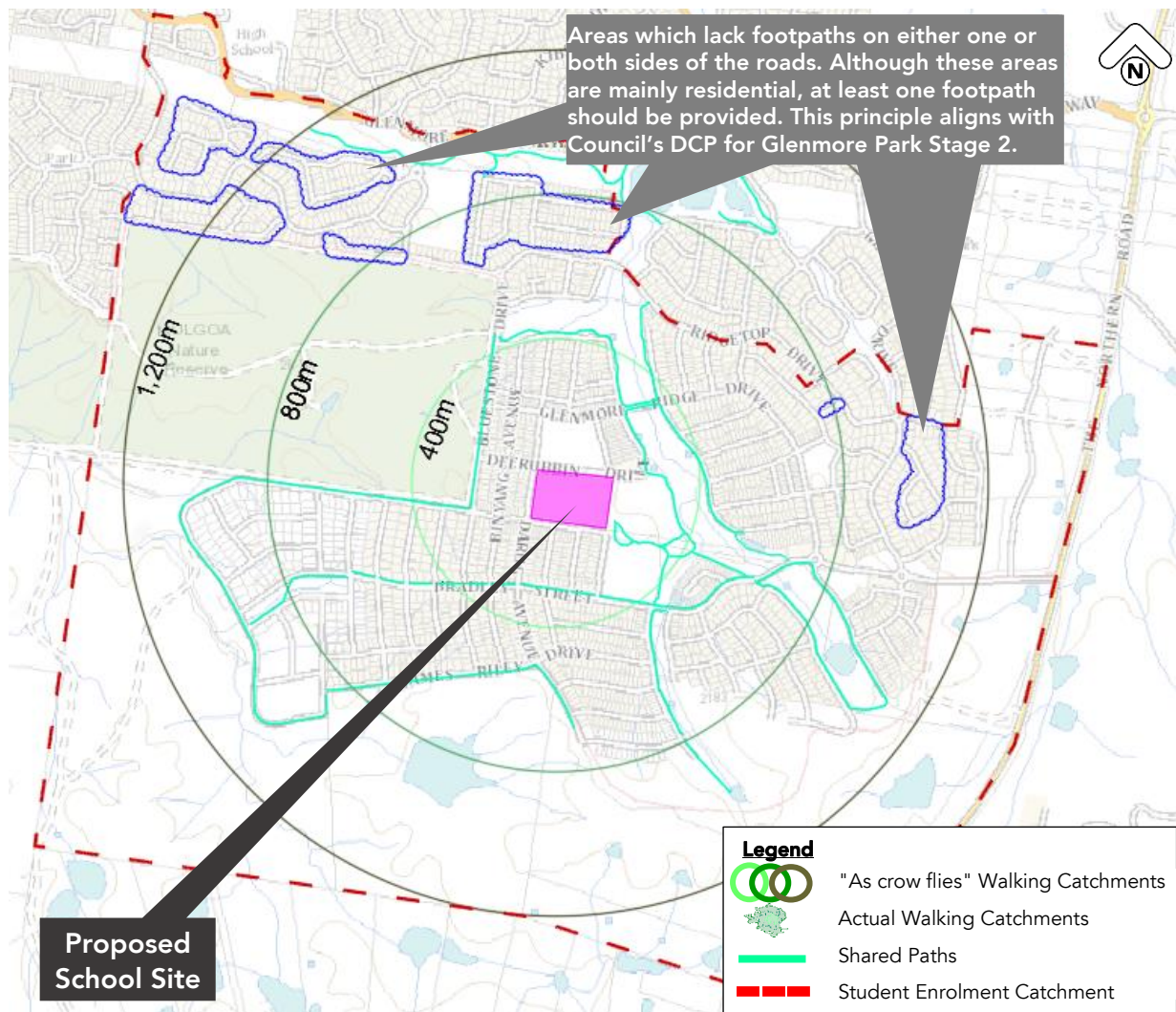


Figure 18 - Pedestrian Infrastructure within School Catchment

As shown in Figure 19, the following pedestrian links would be beneficial to provide better pedestrian connectivity to the school:

- A path between Deerubbin Drive and Parakeet Grove to shorten walking distance and divert the pedestrian link from the main road. This would involve the construction of a pedestrian path across the grassland, which is zoned as Environmental Conservation. While this measure does not provide a significant quantitative improvement in terms of the number of students addressed, it does reduce the walking distance, and, more importantly, it provides a safer passage between the area circled in blue and the school.

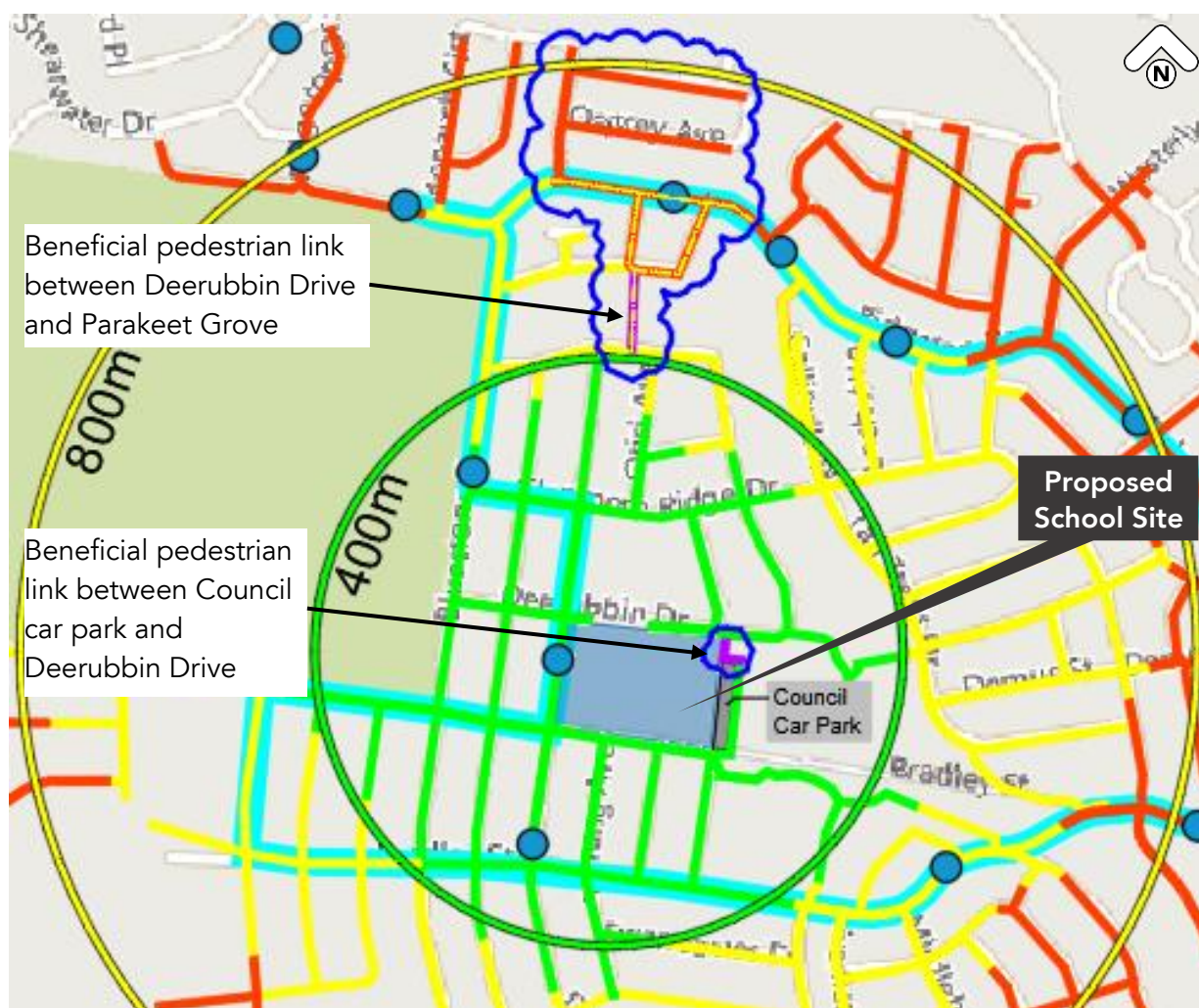


Figure 19 - Recommended Pedestrian Paths



Figure 20 - Pedestrian Path between Council Car Park and Deerubbin Drive

Considering the general lack of formal pedestrian crossings within the enrolment catchment, ideally some form of crossings would benefit students wishing to walk or cycle to school. Locations of crossings along the main pedestrian links and across larger roads are shown in Figure 21.

Ideally, all crossings would be constructed as raised zebra crossings; however, an analysis of warrants and swept paths would be required to determine the viability of these measures.

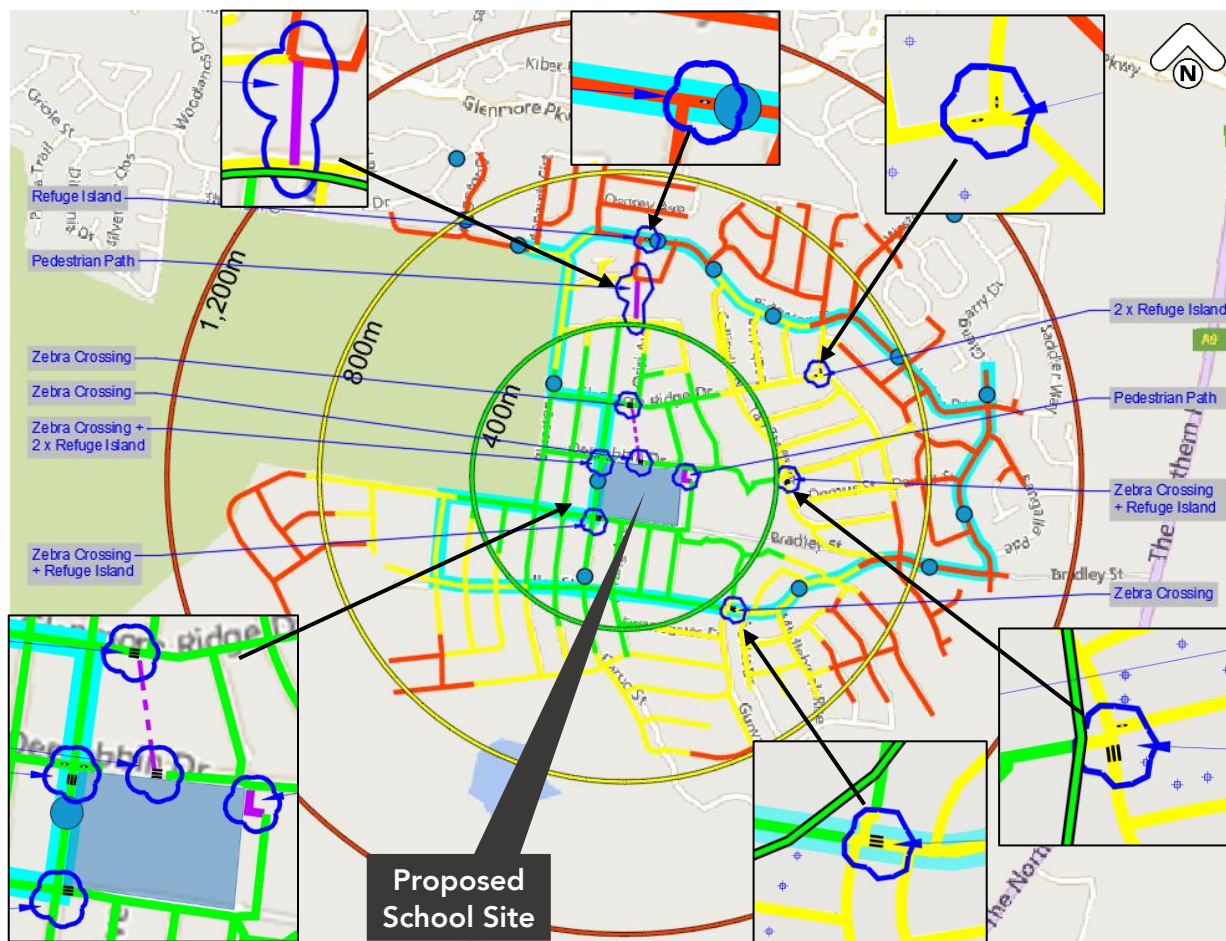


Figure 21 - Recommended Pedestrian Crossings and Infrastructure

3.2.2 Cycling

Two sources have been analysed regarding cycling infrastructure, the Open Data website and Council's DCP.

Based on the Open Data website a limited amount of cycling infrastructure is provided within the enrolment catchment of the proposed school, and some on-road cycling paths and shared paths are provided along the northern boundary of the School catchment (refer to Figure 22). The data does not provide any information on any proposed future bicycle paths in the area.

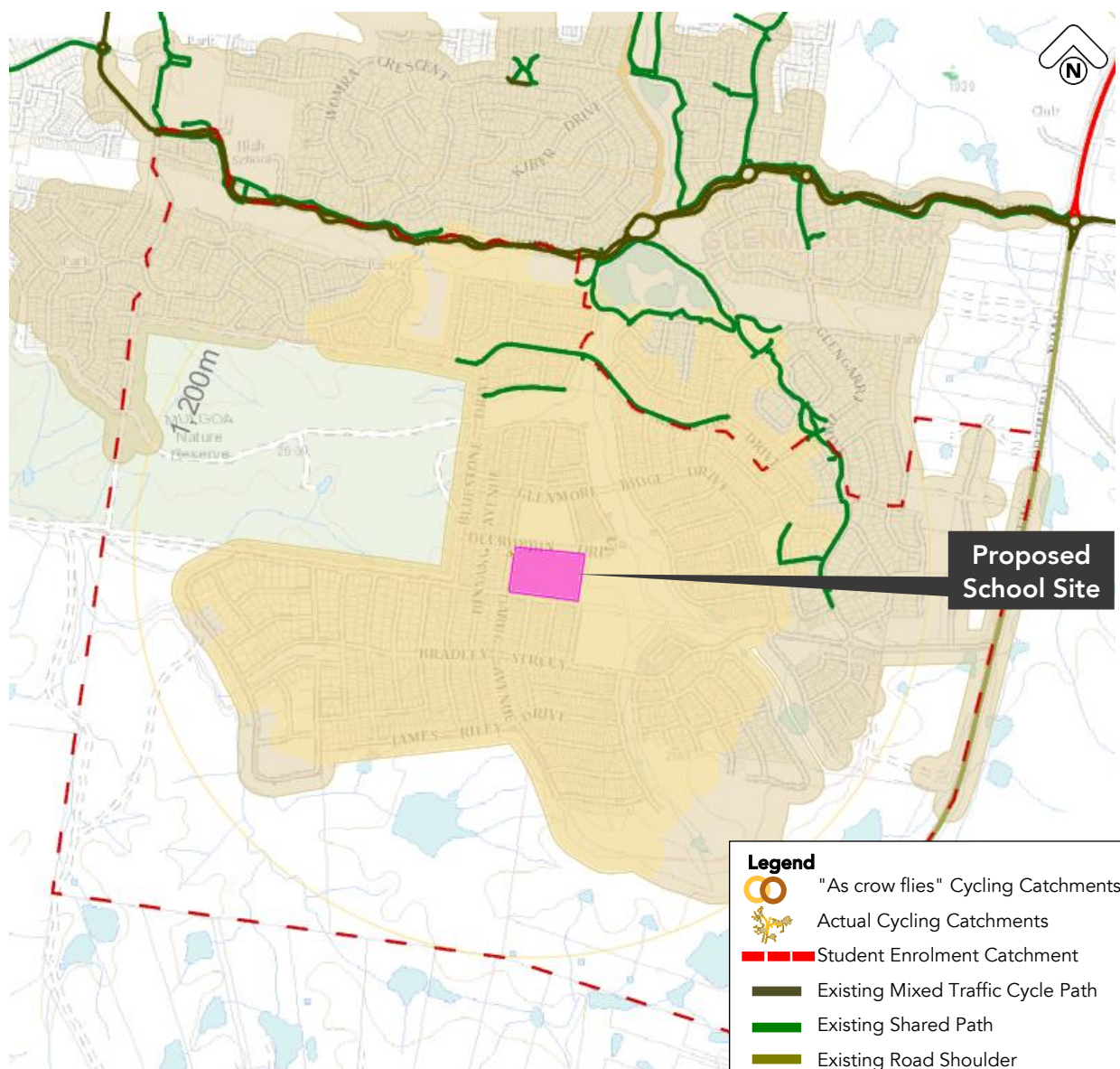


Figure 22 - Existing Cycling Infrastructure

Penrith Council's DCP Part E7B indicates that shared paths would be provided within the vicinity of the school, as shown in Figure 23.

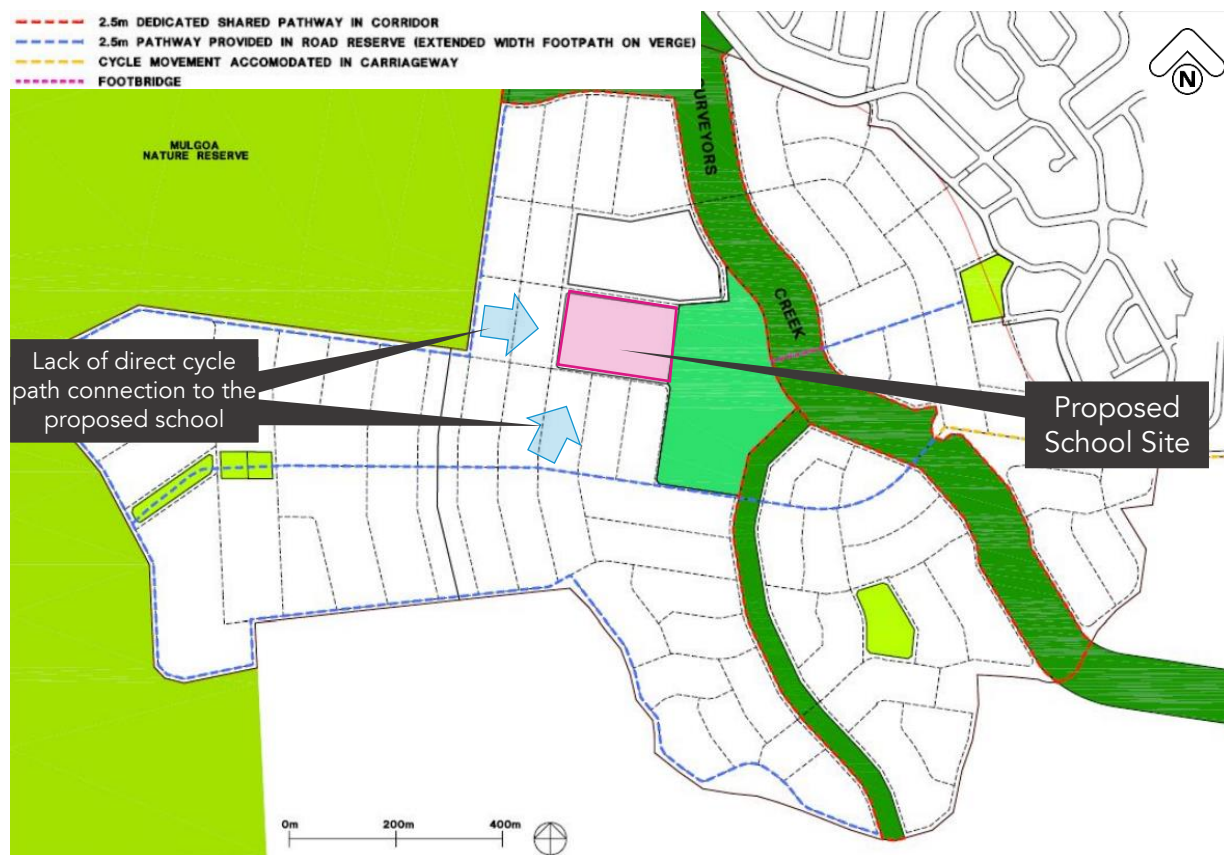


Figure 23 - Pedestrian and Cycle Network (Penrith Council DCP 2014)

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

Although the shared paths do not directly connect to the school, it is noted that children up to the age of 15 are legally allowed to cycle on footpaths. Nevertheless, an investigation into upgrading some of the footpath into shared paths would not only benefit the school, but also the mixed-use development north of Deerubbin Drive.

3.3 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.

3.3.1 Eligibility and Potential Usage

Figure 24 illustrates the SSTS exclusion catchment from the proposed School site, which covers the entire enrolment catchment. This means that none of the prospective School students are eligible for a free or discounted student travel pass.

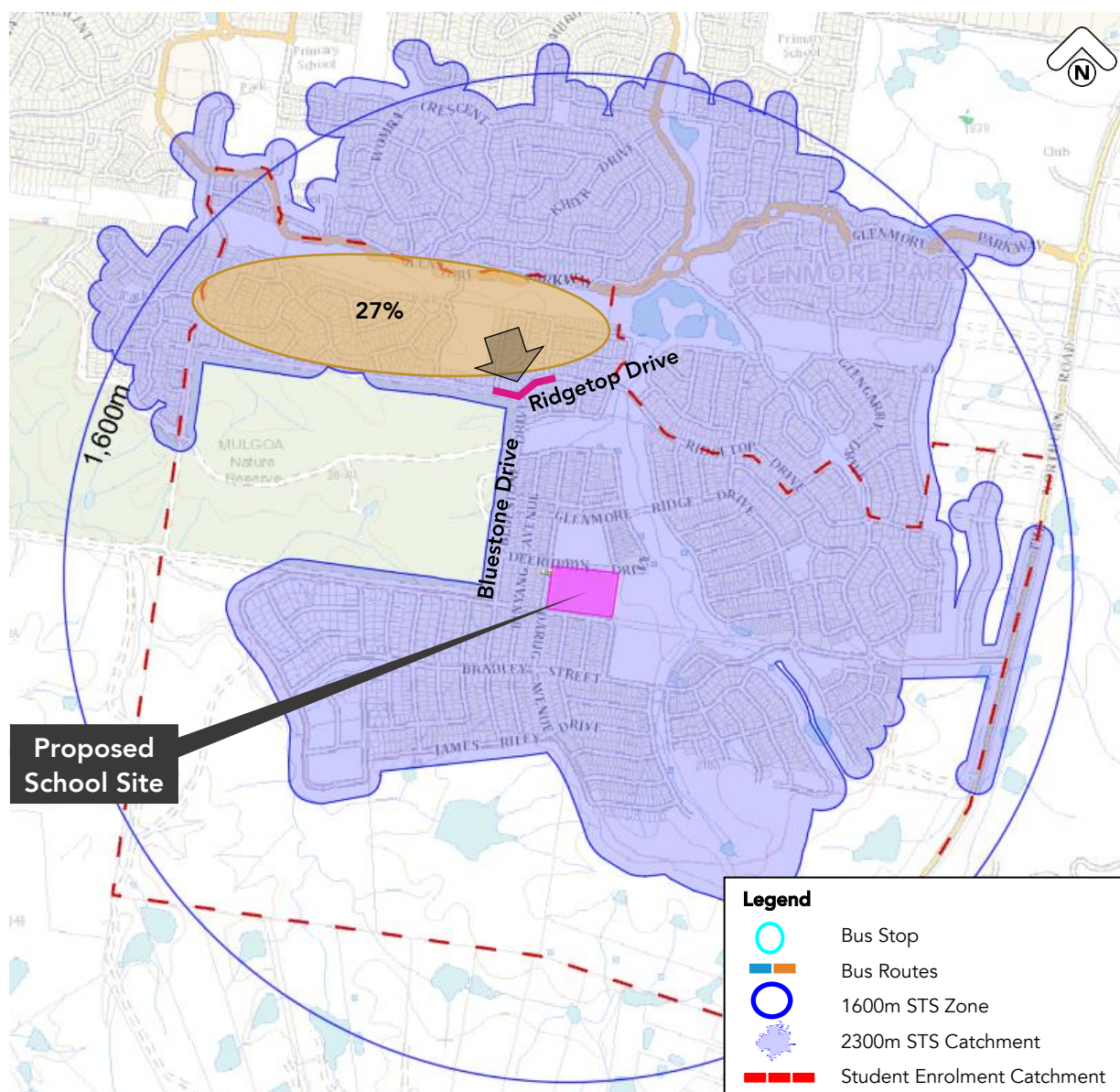


Figure 24 - SSTS Exclusion Zone and Barriers

The area highlighted in orange in Figure 24 represents 27% of students who are more likely to be reliant on either public or private transport. This is because the area is not equipped with footpaths on each side of the carriageways and pedestrian connectivity across Ridgetop Drive (highlighted by the pink line in Figure 24) is not ideal.

For this reason, convenient public transport connectivity would be beneficial for these students.

3.3.2 Existing Bus Network

Figure 25 illustrates public transport options and network available within the enrolment catchment of the school.

Only one bus route provides direct services to the proposed site.

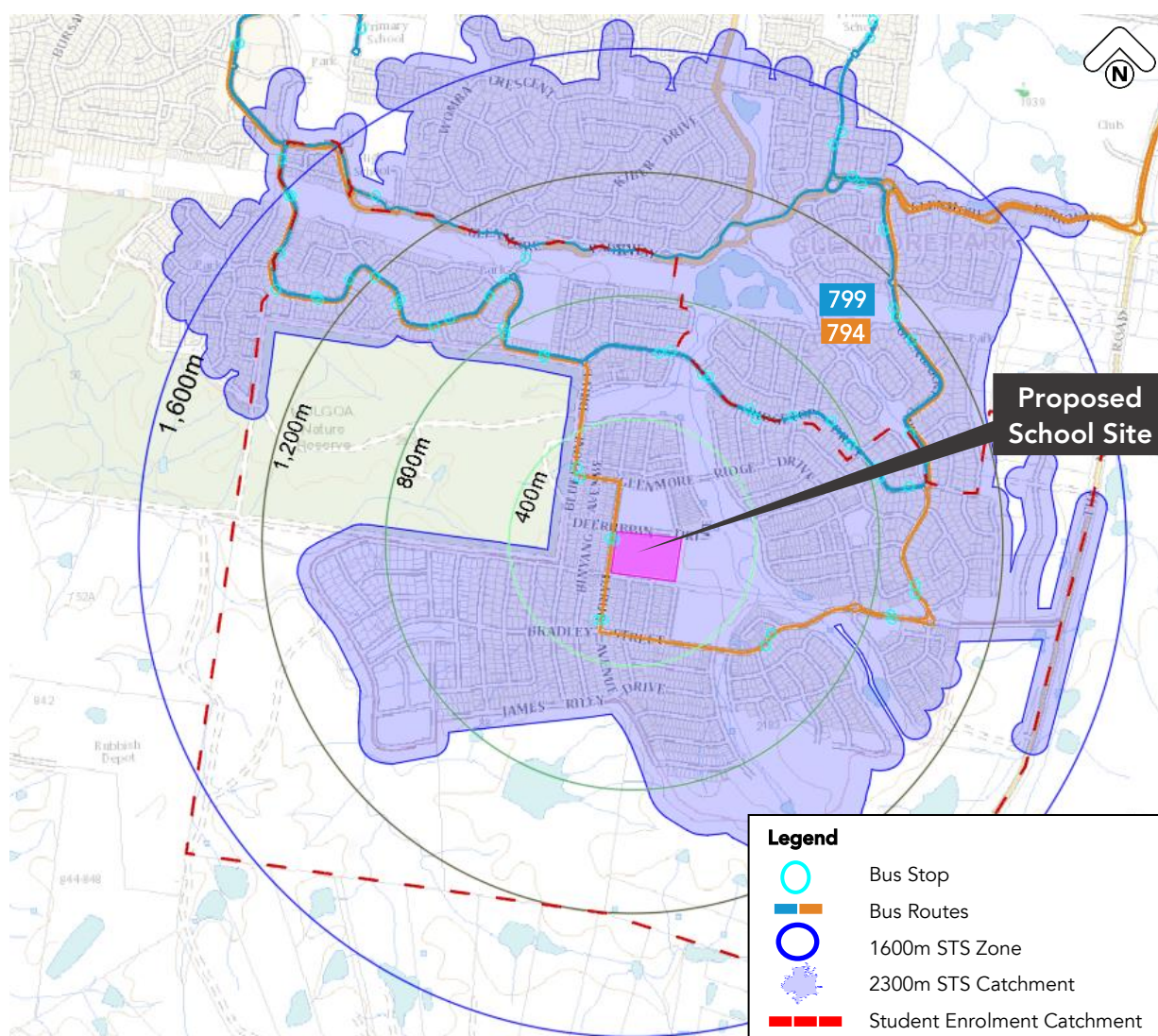


Figure 25 - Public Transport within Enrolment Catchment

For consideration of parent onward journey, Journey to Work data has been analysed. Approximately 26% of residents of the Glenmore Park area travel to Penrith and nearby suburbs for work. 85% of the population residing in Glenmore Park area drive to work, which can be attributed to the area currently being serviced by buses 794 and 799 only, which appear to not provide a conveniently direct route to the employment areas.

It takes approximately 30-40 minutes to travel by bus between the School and Penrith, compared to 15 minutes by car.

It is therefore recommended that more direct bus services be provided to the nearby employment areas i.e., Penrith, South Penrith, Kingswood and St Marys to reduce car usage. Likewise, a direct and convenient bus service to nearby railway stations would also facilitate working population travelling to greater Sydney area by bus and train. The pink arrows in Figure 26 show the recommended direct bus routes to nearby employment areas and railway stations.

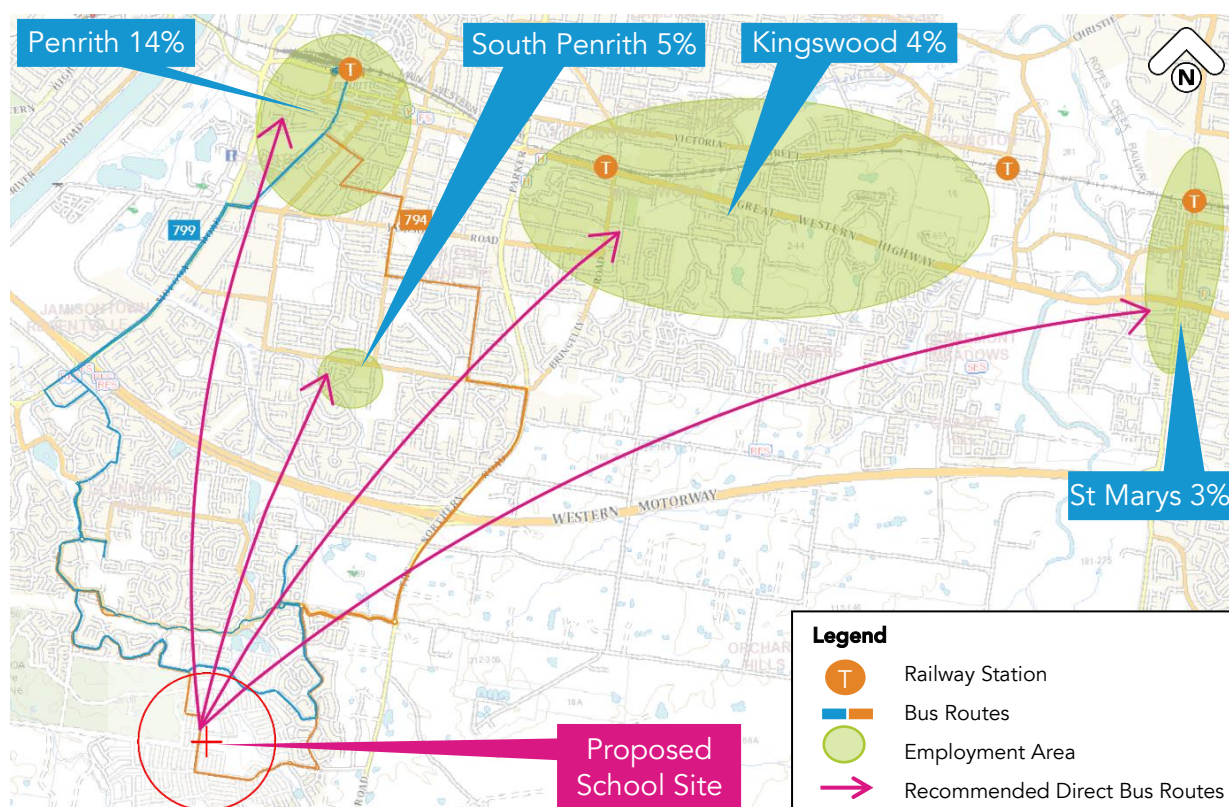


Figure 26 - Recommended Direct Bus Routes

3.3.3 Bus Stops at the School

The closest bus stops and their relation to pedestrian gates of the proposed school are shown in Figure 27.

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

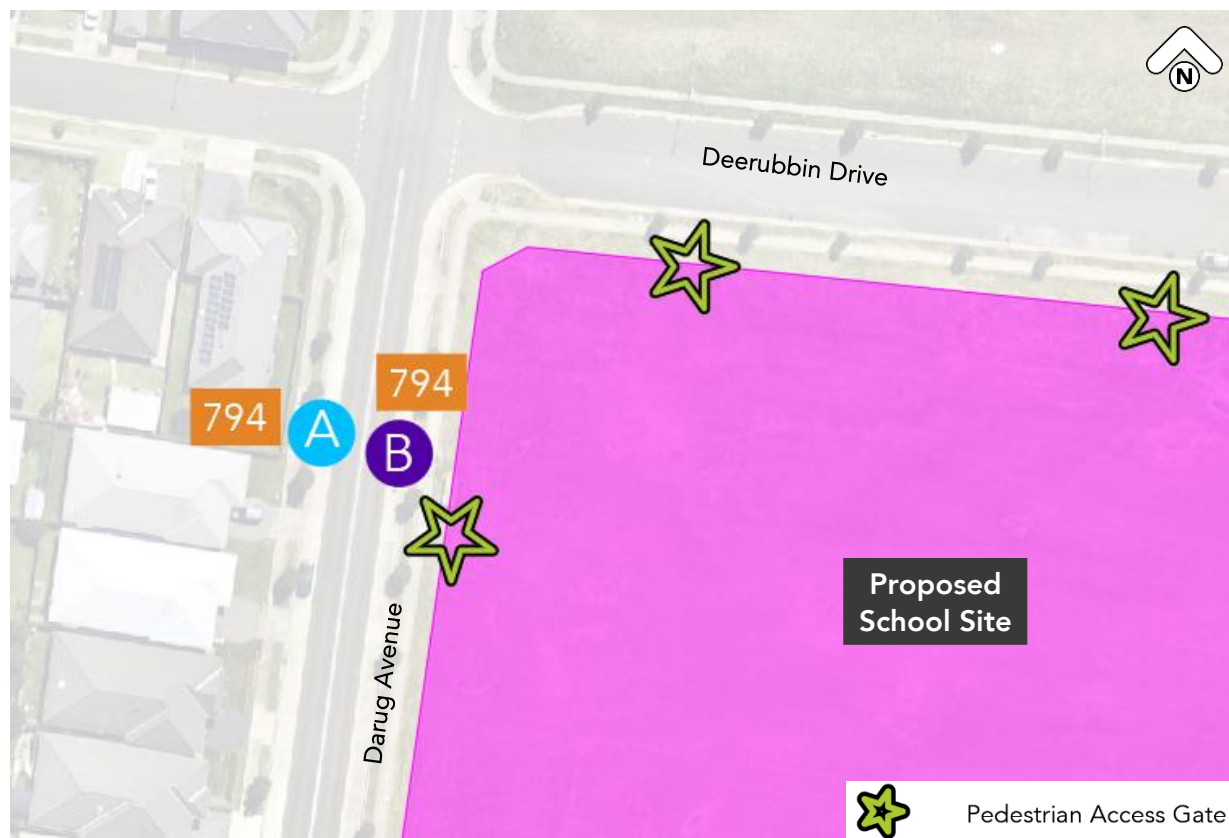


Figure 27 - Nearest Bus Stops

3.3.4 Bus Services

Bus services, including coverage, approximate operation times and frequency during school peak hours are presented in Table 1.

Table 1 - 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 school bell times at 8:50am in the morning and 2:50pm in the afternoon, the 794 bus timetable does not provide convenient services for students, parents or staff. Additional bus services would be required to provide an attractive alternative mode of transport.

As a way of determining a convenient timetable, the following has been considered:

- In the morning:
 - Students need to arrive at the school bus stop before the morning bell time with sufficient time for offboarding and approaching the school. With a bell time at 8:50am, the buses from both northwest and east should arrive at approximately 8:40am.
 - Parents can either continue on the same bus to go to their employment location or disembark the bus and accompany their child to school. In the latter case, parents need to be able to catch a bus as part of their onward journey following child's drop-off. This means that a bus departing the school needs to be made available approximately 10-15 minutes after the arrival of the first bus.
 - The above is visualised in Figure 28.

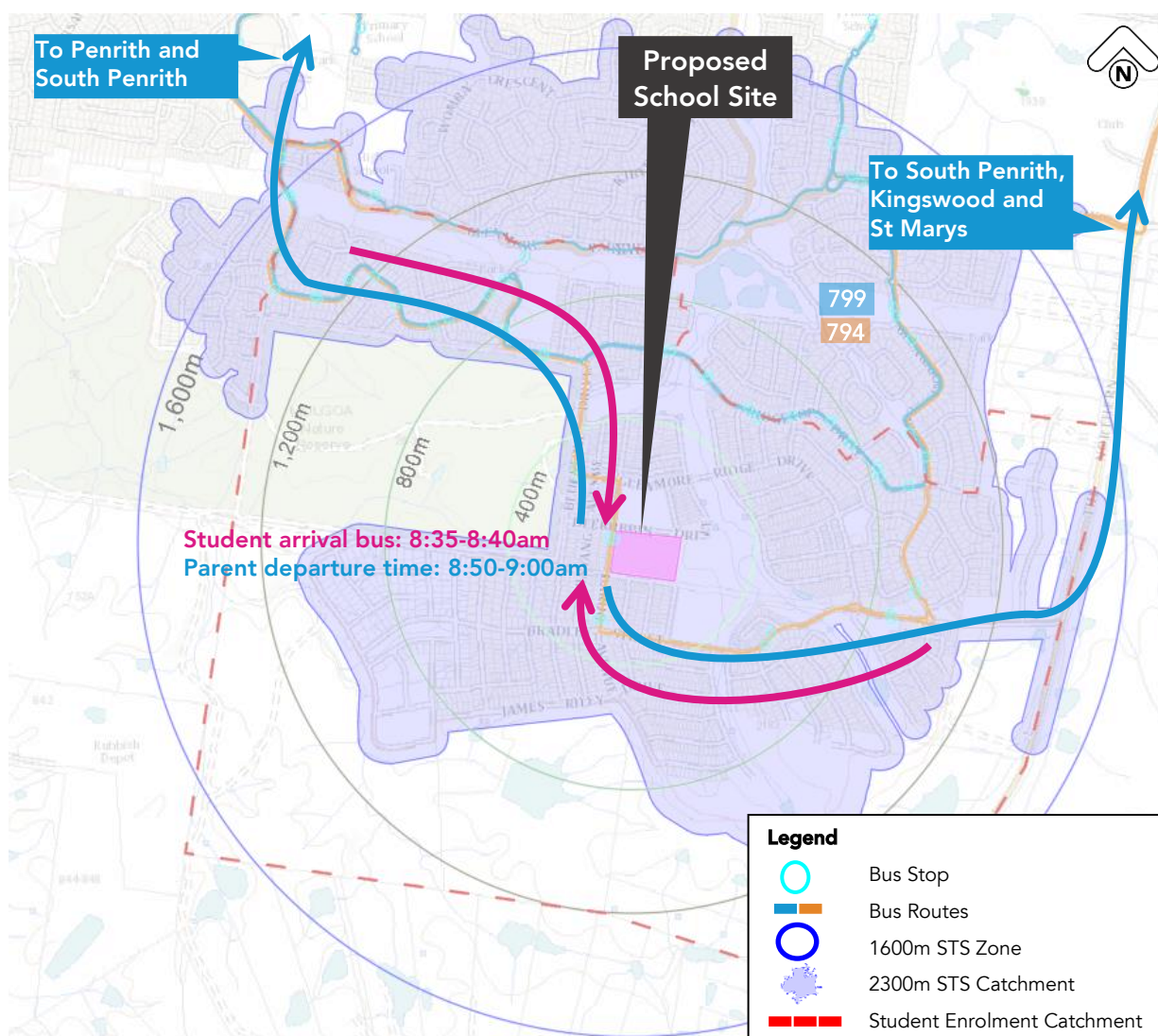


Figure 28 - Proposed Bus Arrival / Departure Times – AM

- In the afternoon:
 - Parents need to be able to arrive at the school prior to or at the bell time.
 - A bus needs to leave the school bus stop with sufficient buffer for students to leave the school, while taking in consideration the age of the prospective students.
 - The above is visualised in Figure 29.

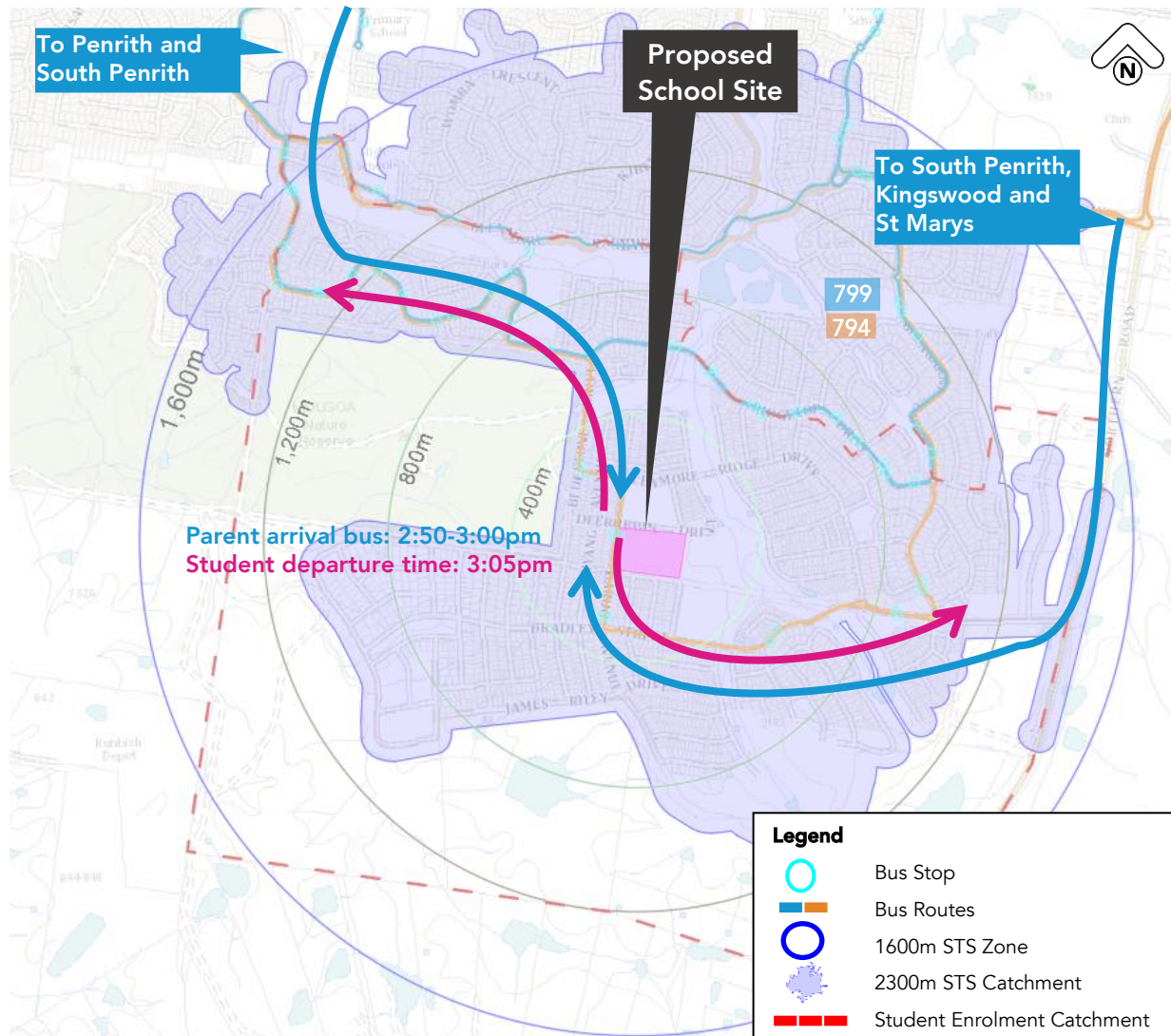


Figure 29 - Proposed Bus Arrival / Departure Times – PM

In addition to the above considerations, additional services should be provided to enable parent onward journey for students attending OSHC.

A recommended bus timetable for an 8:50am and 2:50pm bell times is illustrated in Table 2.

Table 2 - Recommended Bus Services

Coverage	Bus Stop	Morning Peak	Bus Stop	Afternoon Peak
Glenmore Park to / from: Penrith South Penrith Kingswood St Marys	A	OSHC Services 7:35-7:40 – arrival bus for students residing east of the school, 7:50-8:00 – departure time for parents who wish to accompany their child to school School Services 8:35-8:40 – arrival bus for students residing east of the school, 8:50-9:00 – departure time for parents who wish to accompany their child to school	A	School Services 2:50-3:00 – arrival bus for parents, 3:05 – departure bus for students residing northwest of the school OSHC Services 3:50-4:00 – arrival bus for parents, 4:05 – departure bus for students residing northwest of the school 4:50-5:00 – arrival bus for parents, 5:05 – departure bus for students residing northwest of the school 5:50-6:00 – arrival bus for parents, 6:05 – departure bus for students residing northwest of the school
	B	OSHC Services 7:35-7:40 – arrival bus for students residing northwest of the school, 7:50-8:00 – departure time for parents who wish to accompany their child to school School Services 8:35-8:40 – arrival bus for students residing northwest of the school, 8:50-9:00 – departure time for parents who wish to accompany their child to school	B	School Services 2:50-3:00 – arrival bus for parents, 3:05 – departure bus for students residing east of the school OSHC Services 3:50-4:00 – arrival bus for parents, 4:05 – departure bus for students residing northwest of the school 4:50-5:00 – arrival bus for parents, 5:05 – departure bus for students residing northwest of the school 5:50-6:00 – arrival bus for parents, 6:05 – departure bus for students residing northwest of the school

3.4 Road Network

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 30 and the following tables.

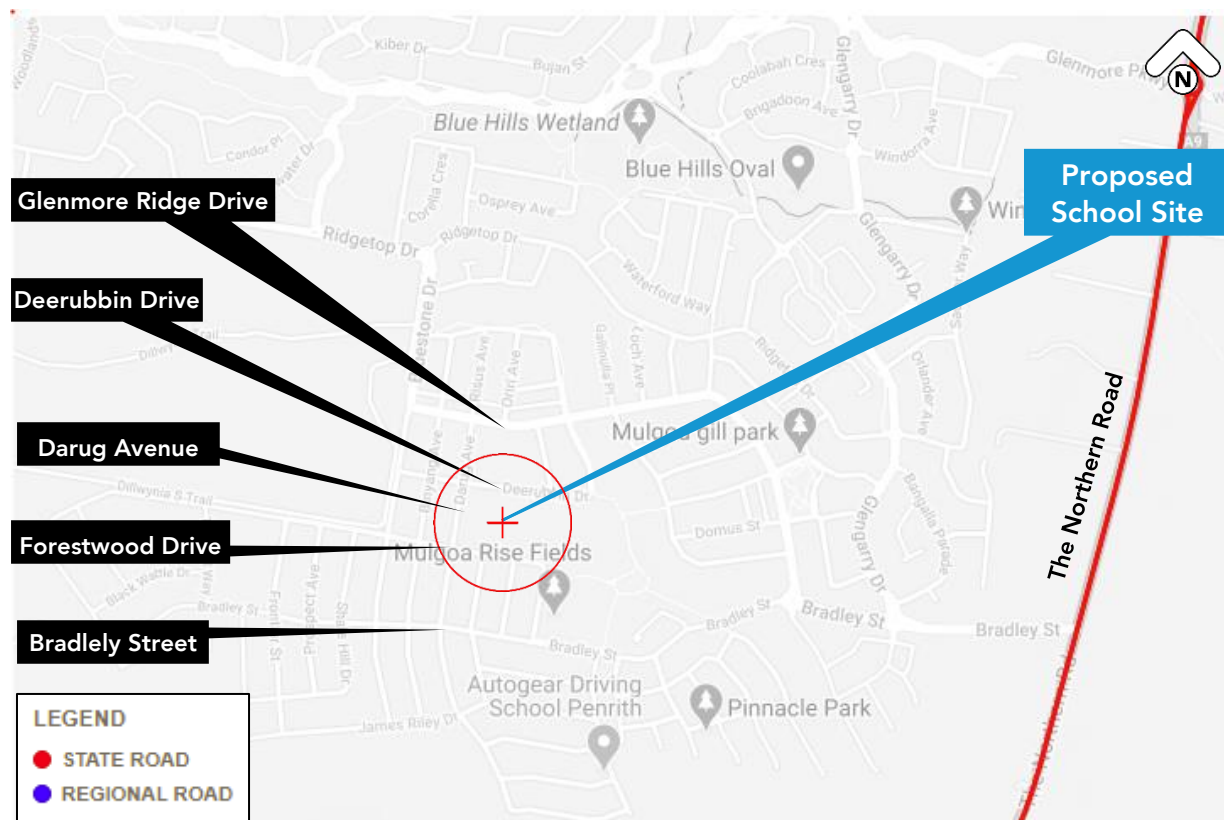


Figure 30 - Surrounding Road Network (Source: RMS Road Hierarchy)

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 3 - 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

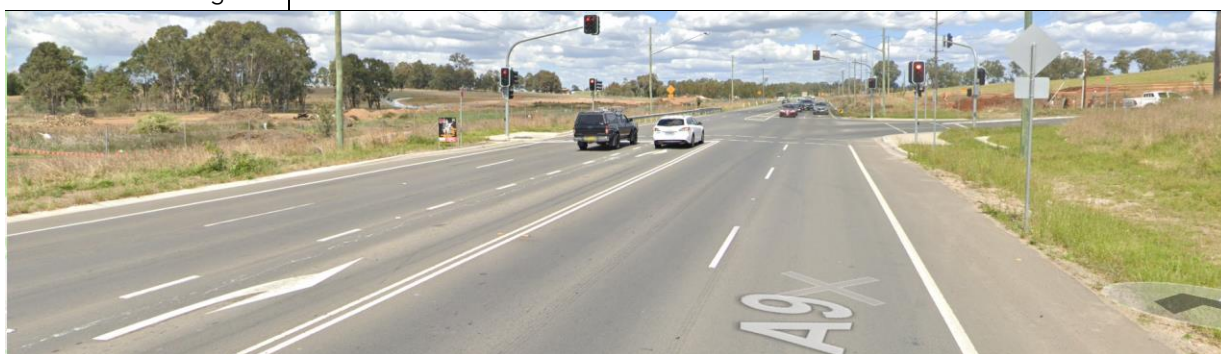


Figure 31 - The Northern Road – Southbound towards Bradley Street

Table 4 - 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 32 - Glenmore Ridge Drive – Westbound towards Darug Avenue

Table 5 - Bradley Street

Bradley Street	
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 33 - Bradley Street – Westbound towards Parkway Avenue

Table 6 - Darug Avenue

Darug Avenue	
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 34 - Darug Avenue – Southbound towards Forestwood Drive

Table 7 - 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 35 - Deerubbin Drive – Westbound towards Darug Avenue

Table 8 - 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 36 - Forestwood Drive – Eastbound towards Yerrang Avenue

4. Travel Patterns and Travel Demand

4.1 Transport Base Line

The proposed development is a new school in a still developing suburb, hence no surveys have been undertaken to determine current travel patterns. Therefore, an analysis of the Journey to Work data has been undertaken.

Based on the Australian Bureau of Statistics Journey to Work Data, 85% of people residing in Glenmore Park area drive to work, 11% travel on public transport and 1% use active transport.

Out of all residents travelling from the Glenmore Park area to work, 14% travel to Penrith, 5% to Sydney CBD, 5% to South Penrith, 4% to Kingswood and 3% to St Marys, as visualised in Figure 37.

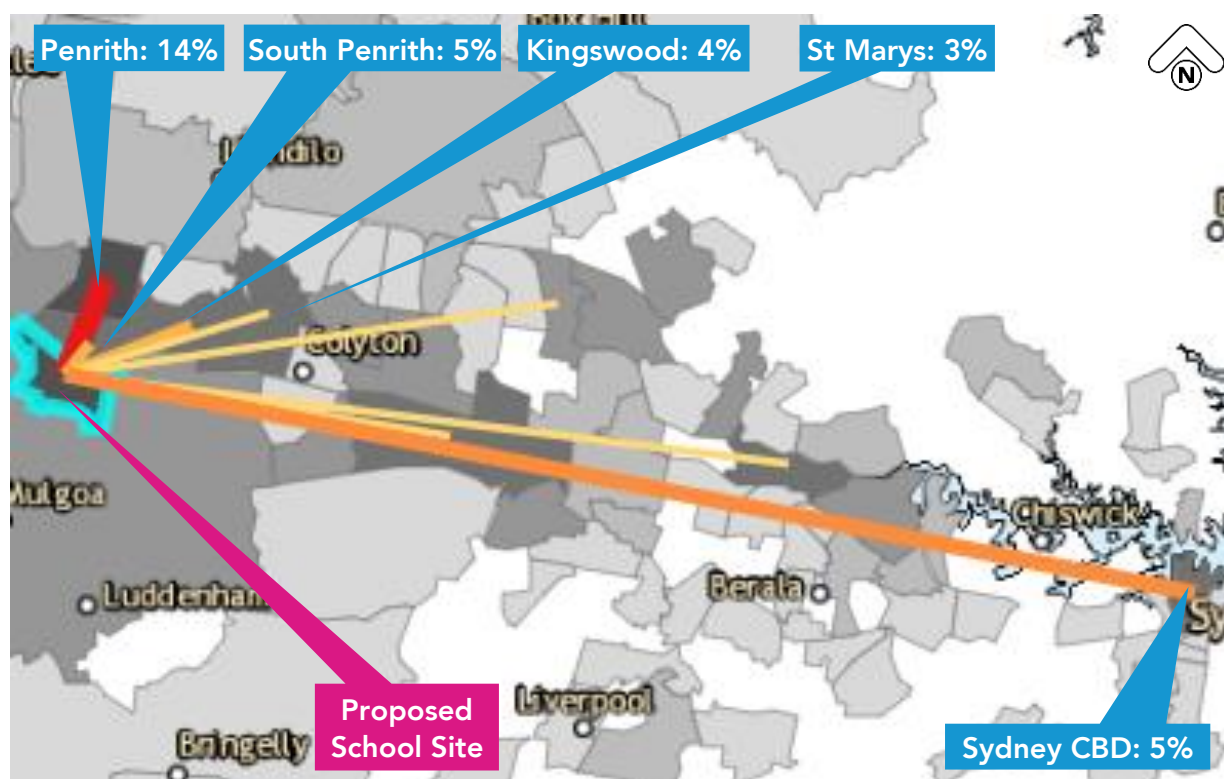


Figure 37 - Journey to Work from Glenmore Park Area

4.2 Potential Achievements

This section presents potential walking, cycling, public transport and car utilisation in an ideal scenario, where everybody would utilise only alternative transport modes.

4.2.1 Walking

"As crow flies" and actual 400 / 800 / 1200m walking catchments are presented in Figure 38.

Within the enrolment catchment, 14% of students reside within the 400m walking catchment, 21% within the 401m - 800m catchment and 40% within the 801m - 1200m catchment.

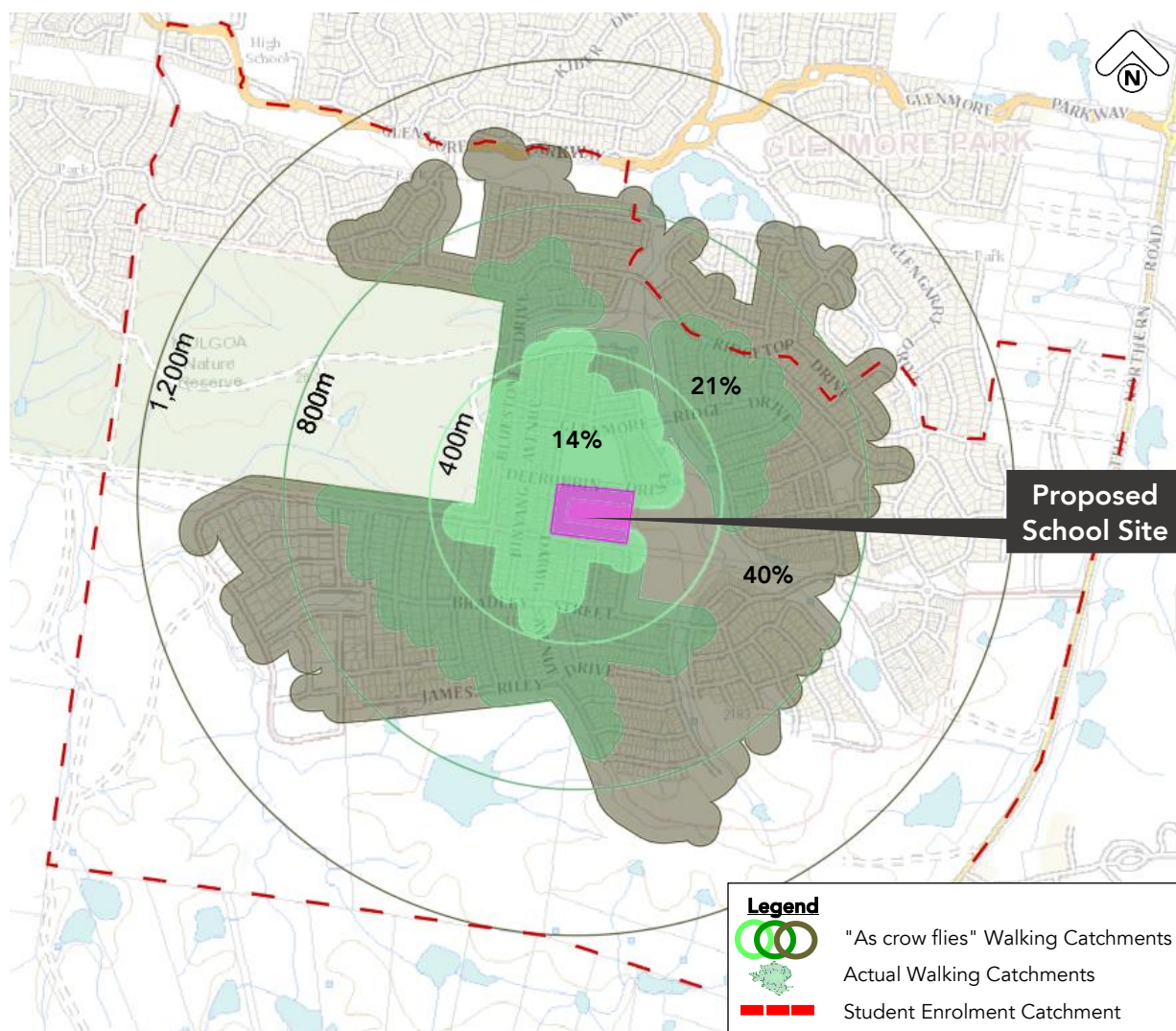


Figure 38 - Walking Catchment and Student Population

4.2.2 Cycling

"As crow flies" and actual 1200m / 2400 cycling catchments are presented in Figure 39.

Within the enrolment catchment, 75% students reside within the 1200m walking / cycling catchment and 25% students reside within the 1201m - 2400m cycling catchment.

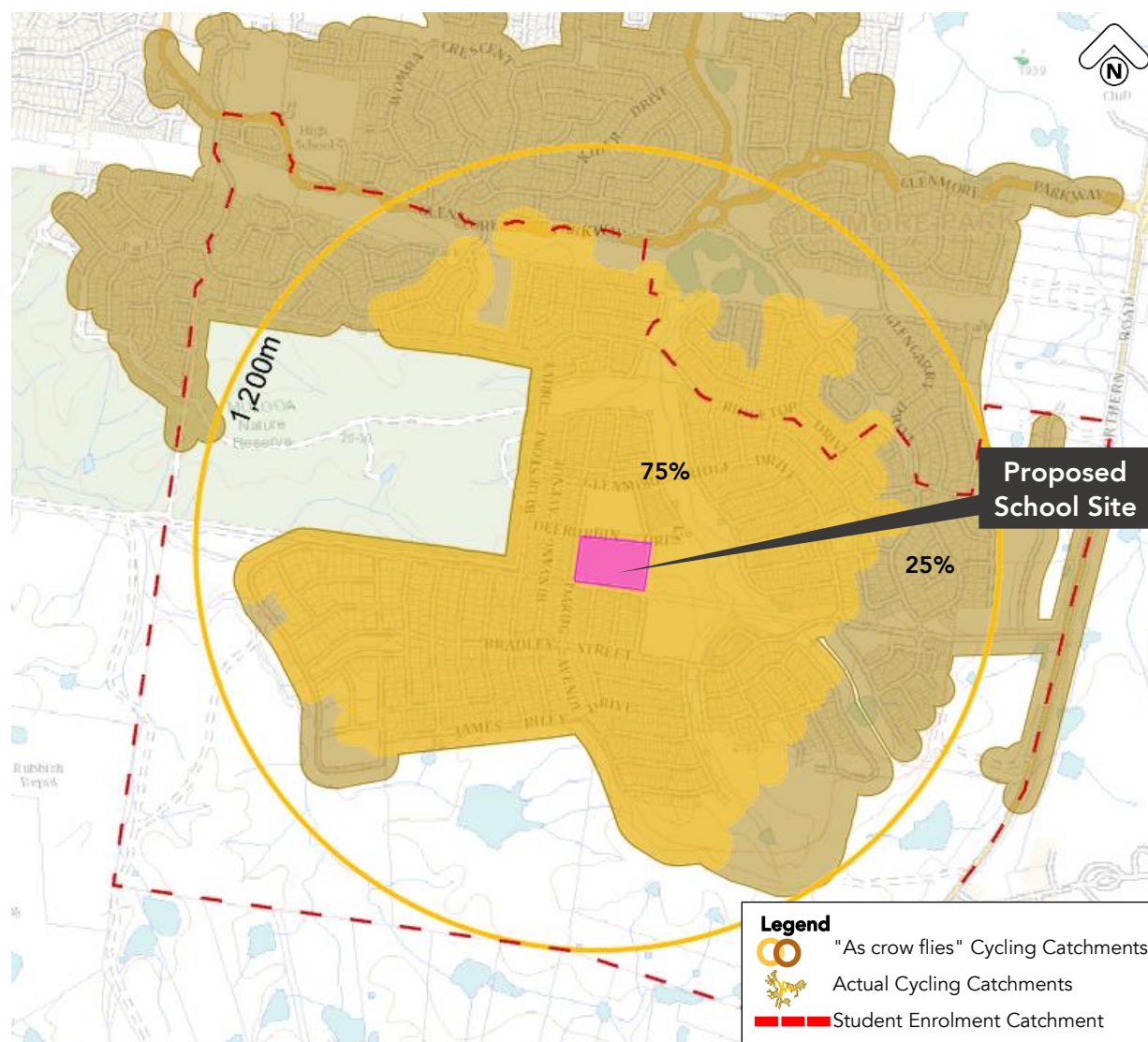


Figure 39 - Cycling Catchment and Student Population

4.2.3 Public Transport

"As crow flies" 1600m and actual 2300m SSTS exclusion zones are presented in Figure 40.

All students live within the SSTS exclusion zone and therefore, no students are eligible for a free or discounted bus pass. However, it is possible that some students may take the bus. Figure 40 shows that 27% of students living north and 27% students living east of the school reside within a 400m walking catchment from bus stops.

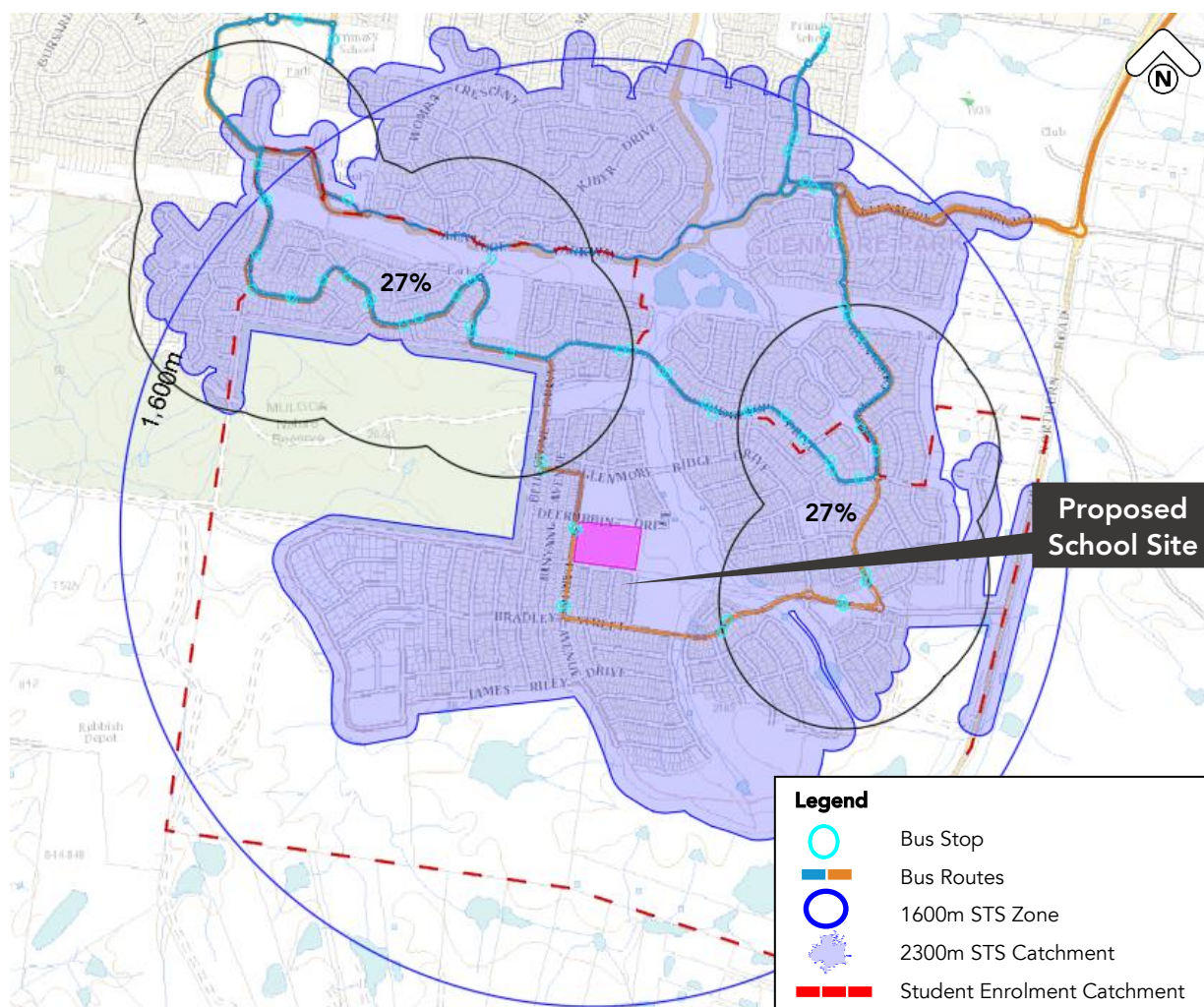


Figure 40 - Public Transport Catchment and Student Population

4.2.4 Summary

Table 9 - Potential Transport Mode

Catchment Analysis	Actual (on path / using road network as a proxy)	
	#	%
1 - 400m (5-min walk)	58	14%
401 - 800m (10-min walk)	87	21%
801 - 1200m (15-min walk)	166	40%
1 - 1200m (Walking)	311	75%
1201 - 2400m (Cycling)	103	25%
1 - 1600m / 2300m (excl. from SSTS Primary)	414	100%
# inside SSTS zone, with PT option	224	54%
OSHC placements	Yet to be decided	
Total student enrolments	414	

5. School Transport Scenarios

This section presents a discussion on the required and provided / proposed transport facilities for three different school transport scenarios based on mode share utilisation:

- Base case scenario shows provision requirements for mode share utilisation based on the transport base line discussed in Section 5.1, in which data obtained through Journey to Work was used.
- Moderate / target scenario discusses measures proposed by the project, which are expected to lead to a reduction in car usage and an increase in alternative mode shares compared to the base case scenario.
- Ideal scenario outlines provision requirements for if all students were to use alternative transport modes.

5.1 Base Case Scenario

Considering that the proposed development is for a new school, existing travel characteristic could not be obtained through surveys. Therefore, Journey to Work data was analysed which shows that in the suburb of Glenmore Park 85% of people travel to work by car.

An analysis based on Poisson distribution has been conducted to determine potential provision requirement for pick-up and drop-off for if 85% of students were driven to / from school. The following parameters have been adopted:

- 30 minutes interval for pick-up and drop-off¹ - reflects the peak time interval over which pick-up/drop-off activity occurs for a typical school
- 30 seconds dwell time for drop-off²
- 210 seconds dwell time for pick-up² - The shorter service time in the AM peak is due to the fact that drop-off activity is usually shorter in duration than the afternoon pick-up activities where parents need to stop temporarily to wait for their child.
- Car occupancy of 1.2 students/car³ - to determine the number of vehicles travelling to/from the site. This number varies significantly based on school's accessibility and cultural influences, with the occupancy ranging between 1.2 - 2 students per car.

Table 10 shows the pick-up and drop-off space requirement for the base case scenario.

Table 10 - Pick-up and Drop-off Queuing Analysis for Base Case Scenario

Total Number of students	Vehicle Utilisation	Number of students being driven	Car Occupancy	Number of Vehicles Arriving	Poisson Distribution - Modelled No of Spaces (Length)
414	85%	352	1.2	293	50 (300m)

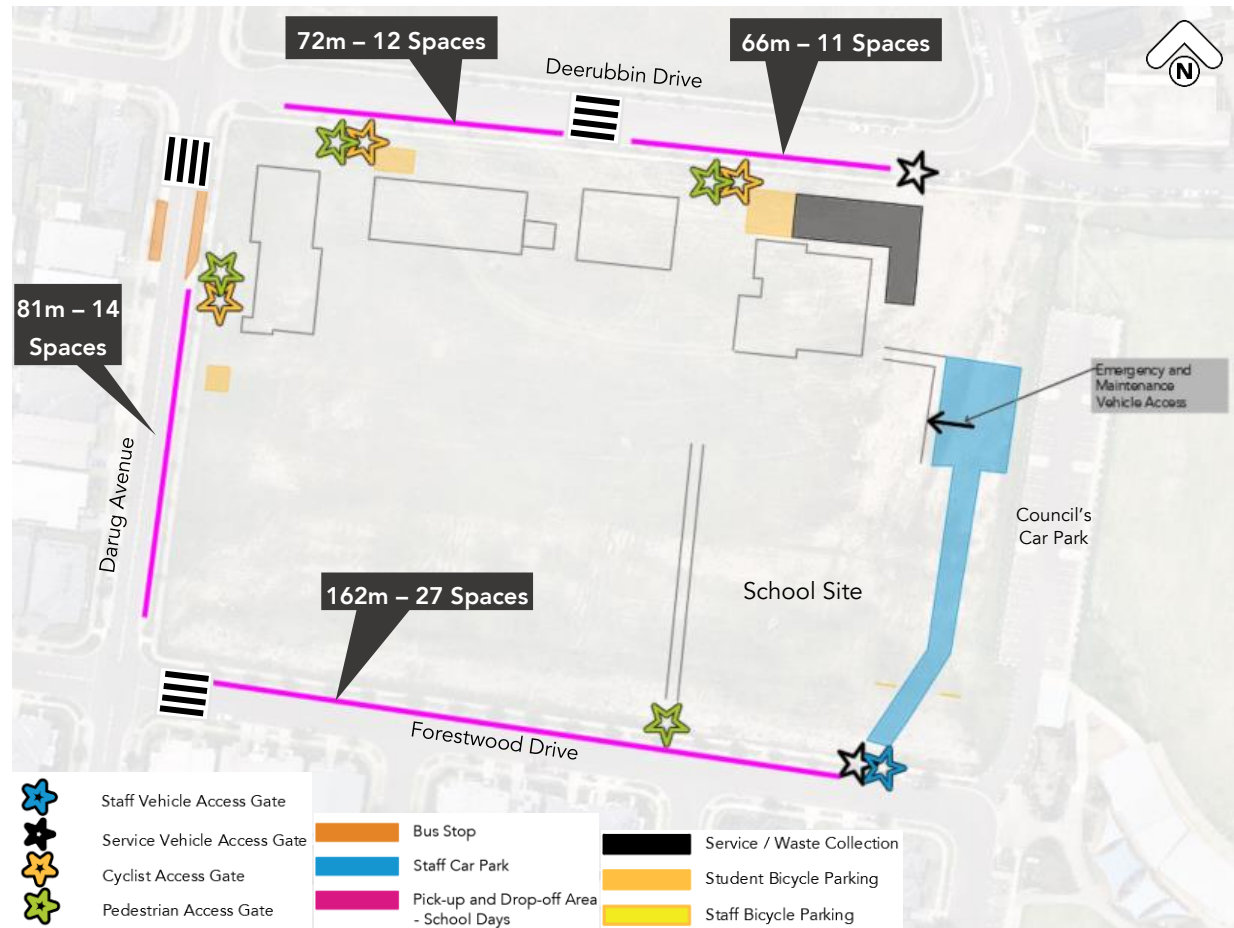
¹ Assumption based on ptc.'s past experience and site observations of school pick-up/drop-off areas.

² Approximate dwell time taken for a vehicle to pull into a bay, drop-off or pick-up the student and drive away (based on past experience and observation).

³ Based on previous travel surveys undertaken at public primary schools

With no improvements to the nearby infrastructure and facilities, the development would likely require 50 car spaces to accommodate the pick-up and drop-off activities.

The School site frontage roads are able to accommodate 64 cars in total as shown in Figure 41.



5.2 Moderate / Target Scenario

As part of the development of the proposed school various measures have been considered and implemented to enable better active and public transport utilisation.

The proposed site layout and facilities plan of the School is illustrated in Figure 42.

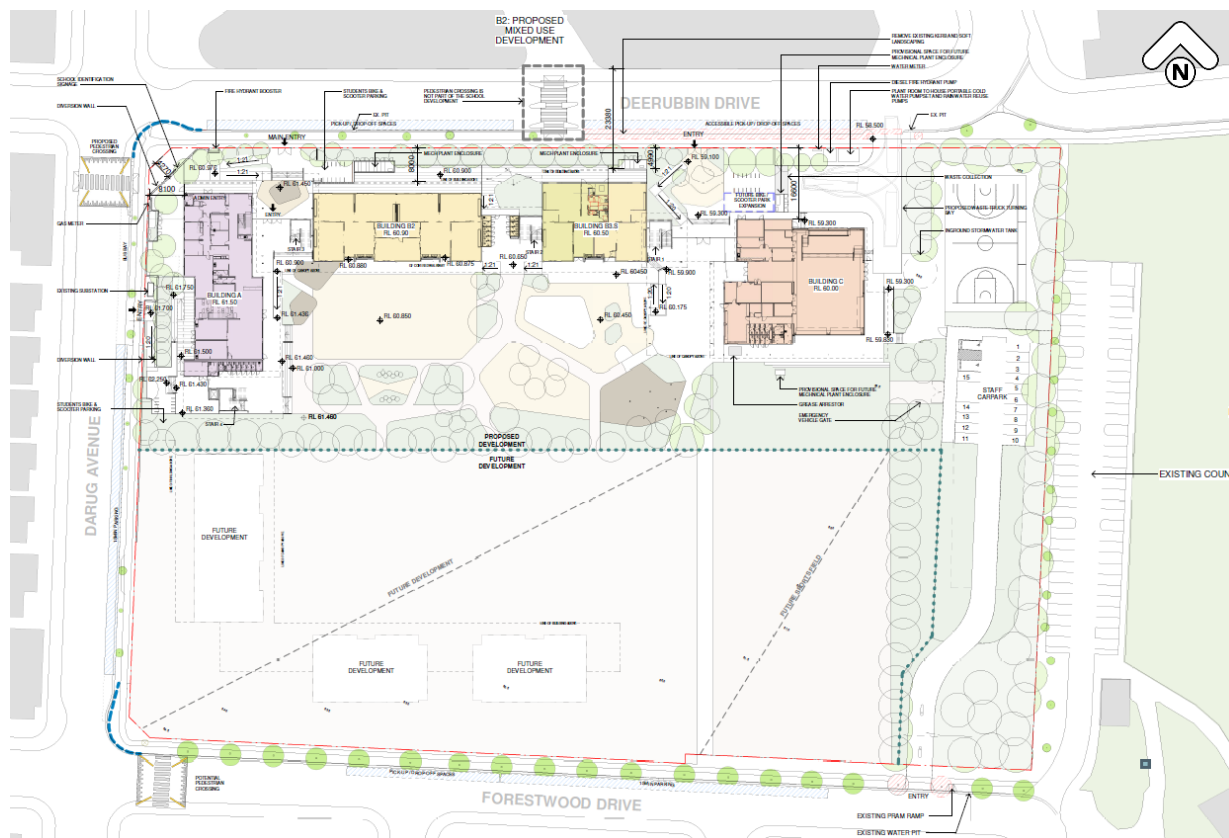


Figure 42 - Development Proposal Site Plan (Source: NBRIS)

The physical measures and their potential impact on travel behaviours are discussed in detail in the following sections. Operational measures are discussed in the School Transport Plan.

5.2.1 Bell Times

Ideally, bell times of neighbouring schools would be offset to distribute traffic demand. Therefore, an analysis of the start and finish times of the nearby primary schools has been undertaken and a bell time for the new School has been proposed, as shown in Figure 43.

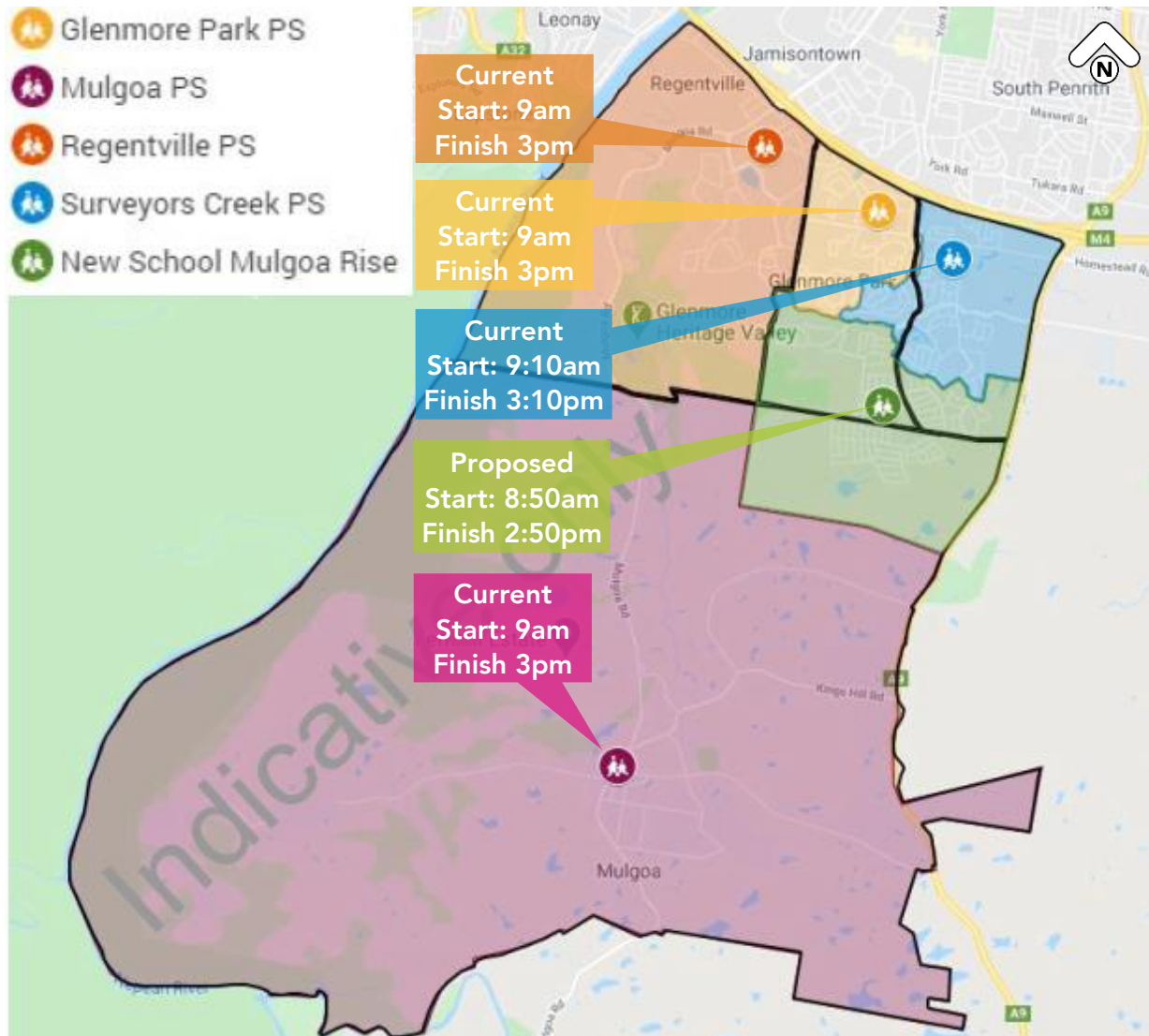


Figure 43 - Existing and Proposed Bell Times

5.2.2 Pedestrian Infrastructure

Zebra crossings on all frontage roads are seen as required to increase student safety. The project is proposing to provide zebra crossings on Darug Avenue and Forestwood Drive while understanding that the mixed-use development will be providing a zebra crossing on Deerubbin Drive. The following considerations have been made:

- Zebra crossings should be provided on all approaches to enable walking and cycling from each direction.
- The northern crossing is aligned with the main access to the mixed-use development to the north of the school, and this is the preferred path for students living north of the school. This is because it is deemed

more convenient and safer for students to walk within a pedestrianised area rather than along a footpath which features access to a loading dock (refer to Figure 44).

- The northern crossing point has already been approved / conditioned as part of the mixed-use development; the type of facility that will be provided is unclear. Ideally, this crossing should be built as a zebra crossing, hence the project is in communication with the developer and Council to ensure that the best possible facility will be provided.
- The western crossing provides access for students and parents to / from the bus stop located on the western side of Darug Avenue and for students residing west and southwest from the school by foot / on bicycles. In addition, the amenity will act as a traffic calming device, which is particularly beneficial along the main road.
- The southern zebra crossing enables access for students coming from the south and southwest. This crossing is required because Forestwood Avenue will be used for pick-up and drop-off and as access to the car park.
- Multiple pedestrian gates have been implemented to provide access for students arriving from all directions.

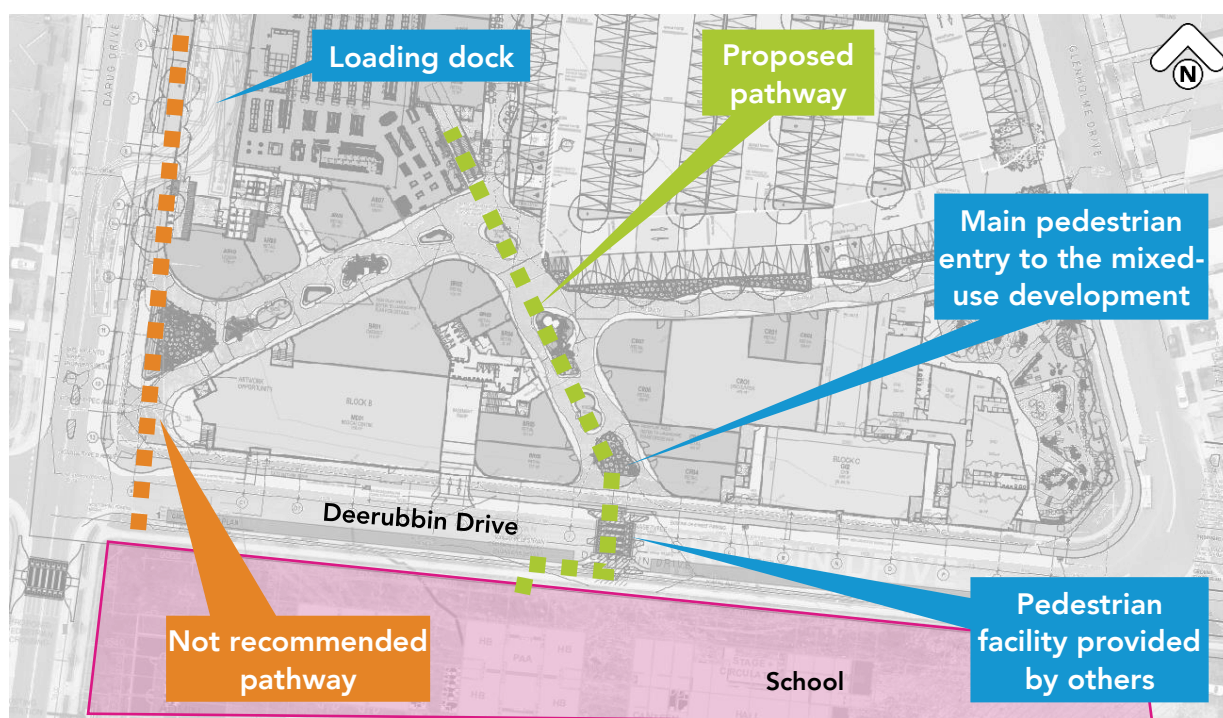


Figure 44 - Northern Crossing – Considerations

5.2.3 Bicycle and End of Trip Facilities

The development proposes to provide 64 bicycle spaces and 80 scooter spaces for students, which accounts for 15.5% and 19.3% of students respectively. The racks have been distributed between three access points: the two entries off Deerubbin Avenue and one off Darug Avenue, refer to Figure 45 for the numerical distribution and to Figure 42 for the location.

The site has been designed to allow space for additional bike / scooter spaces for potential demand growth in the future.

The development also proposes to provide enclosed bicycle parking spaces for staff; A shower and a change room are provided in close proximity to the staff room. Lockers are provided within the staff room.

Location	Bike Racks (2 bikes per rack)	Scooter Racks (10 scooter per racks)	Total No of racks
Darug Ave	8 racks	2 racks	10 racks
Deerubbin Drv (Main Entry)	12 racks	4 racks	16 racks
Deerubbin Drv (After Hour Entry)	12 racks	2 racks	14 racks
	32 racks (64 bikes)	8 racks (80 Scooters)	40 racks

Figure 45 - Bicycle and Scooter Rack Distribution (Source: NBRS Architecture)

5.2.4 Public Transport

As discussed in Section 3.3, the proposed School site is currently serviced by 1 bus route only (794 bus route) and the existing bus timetables do not align with school peaks. It is proposed that additional bus services are provided along the nearby bus stops (bus stop A and B as shown in Figure 46) along Darug Avenue so that parents can accompany their children to School and continue on a bus to their place of work.

As part of improving the potential public transport utilisation by the school community, the project is proposing measures described in the following subsections.

5.2.4.1. Public Transport Facilities

There are two bus stops located along Darug Avenue, as shown in Figure 46. The project is proposing to provide a zebra crossing across Darug Avenue to enable safer access to bus stop A.

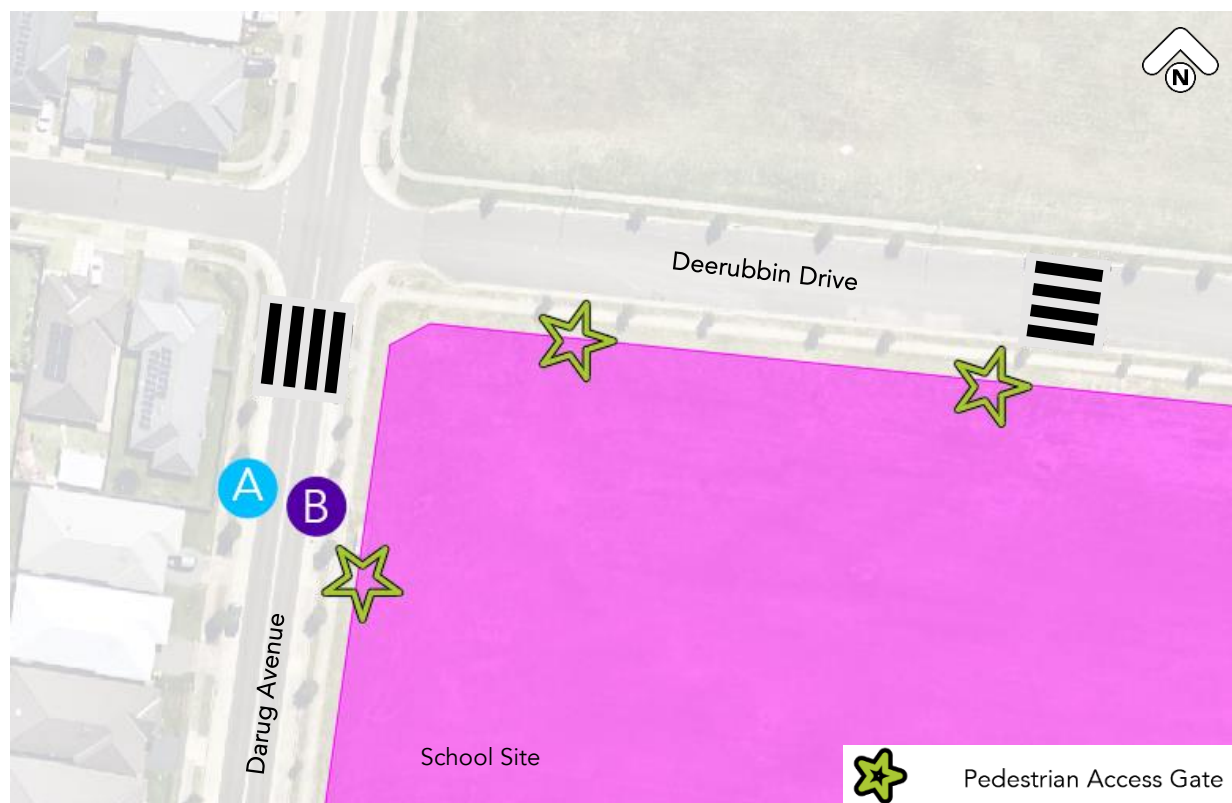


Figure 46 - Nearby Bus Stops

5.2.5 Pick-up and Drop-off Location

The following considerations have been made regarding the pick-up and drop-off locations:

- It is important to provide convenient and sufficient pick-up and drop-off facilities, as otherwise carers may undertake illegal manoeuvres (double parking for example) or stop across the road of the school, thus making the students cross the road in non-dedicated locations.
- It is not ideal to locate the general pick-up and drop-off along a main road as there would be increased activity along this road, which can potentially lead to conflicts with through traffic and buses.
- It is beneficial to disperse the pick-up and drop-off location to reduce the number of vehicles arriving / leaving at the same time in a concentrated area. Considering the residence of students within the enrolment catchment, the following has been considered:
 - For those living to the north of the school it is proposed to provide the pick-up and drop-off on the northern side of the school along Deerubbin Avenue (refer to the orange lines in Figure 48).
 - For those living south of the school it is more convenient to pick-up / drop-off on the southern side of the school, as otherwise they would need to loop around the mixed-use development or park illegally (refer to the yellow lines in Figure 48).

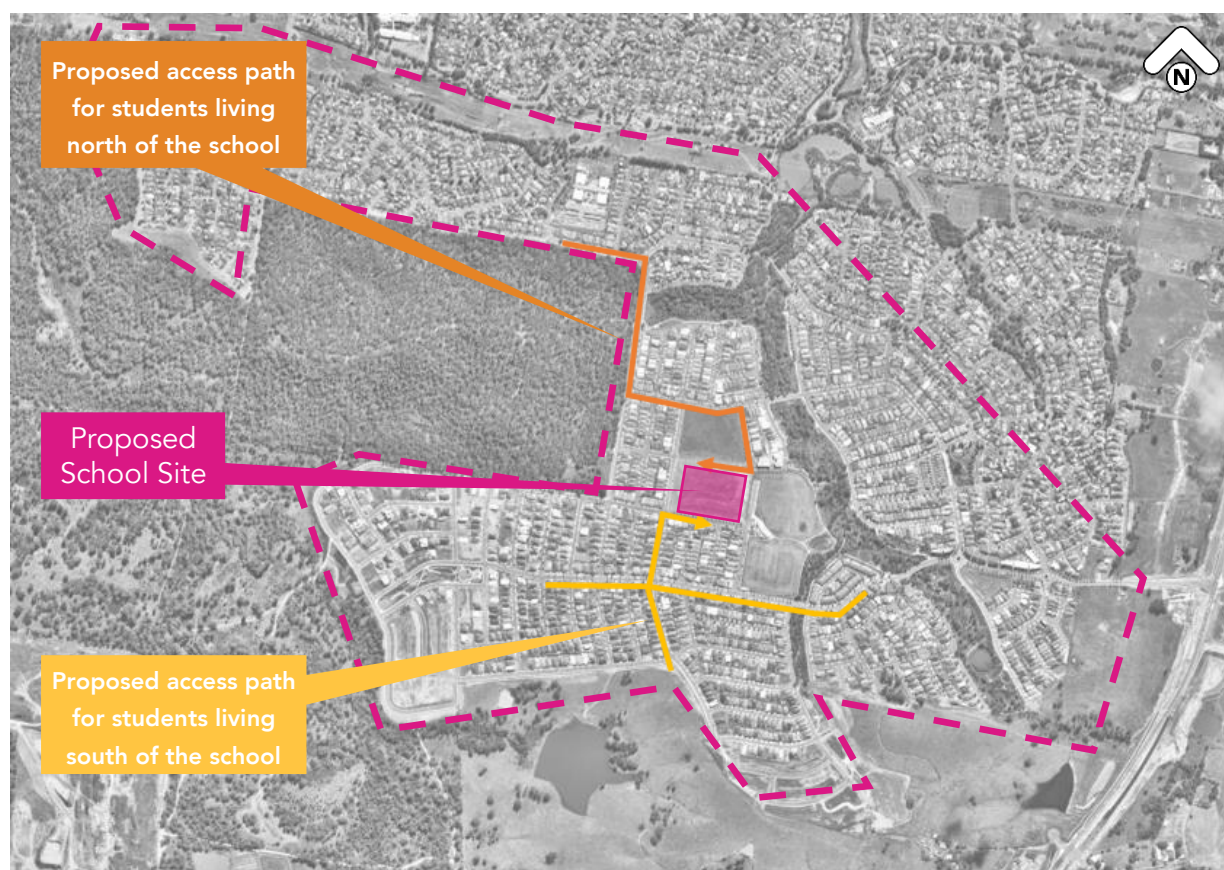


Figure 48 - Pick-up and Drop-off Distribution

- Based on the above considerations, it is proposed to locate the general pick-up and drop-off along Deerubbin Drive west of the zebra crossing and along Forestwood Drive starting at the pedestrian entry gate, as shown in Figure 59.
- The SUH pick-up and drop-off has been located along Deerubbin Drive east of the zebra crossing, directly at the eastern entry gate to provide direct access to the SUH unit.
- The pick-up and drop-off for students attending the SUH units will be constructed in line with the Australian Standards as 3.2m wide parallel accessible parking spaces with pram ramps.
- Gates are generally provided at the front of a pick-up and drop-off lane. This is because parents tend to want to stop as close to an entry as possible. If a gate is located at the end of a pick-up and drop-off lane, parents often do not utilise the entire facility, thus causing congestion and potentially double park.

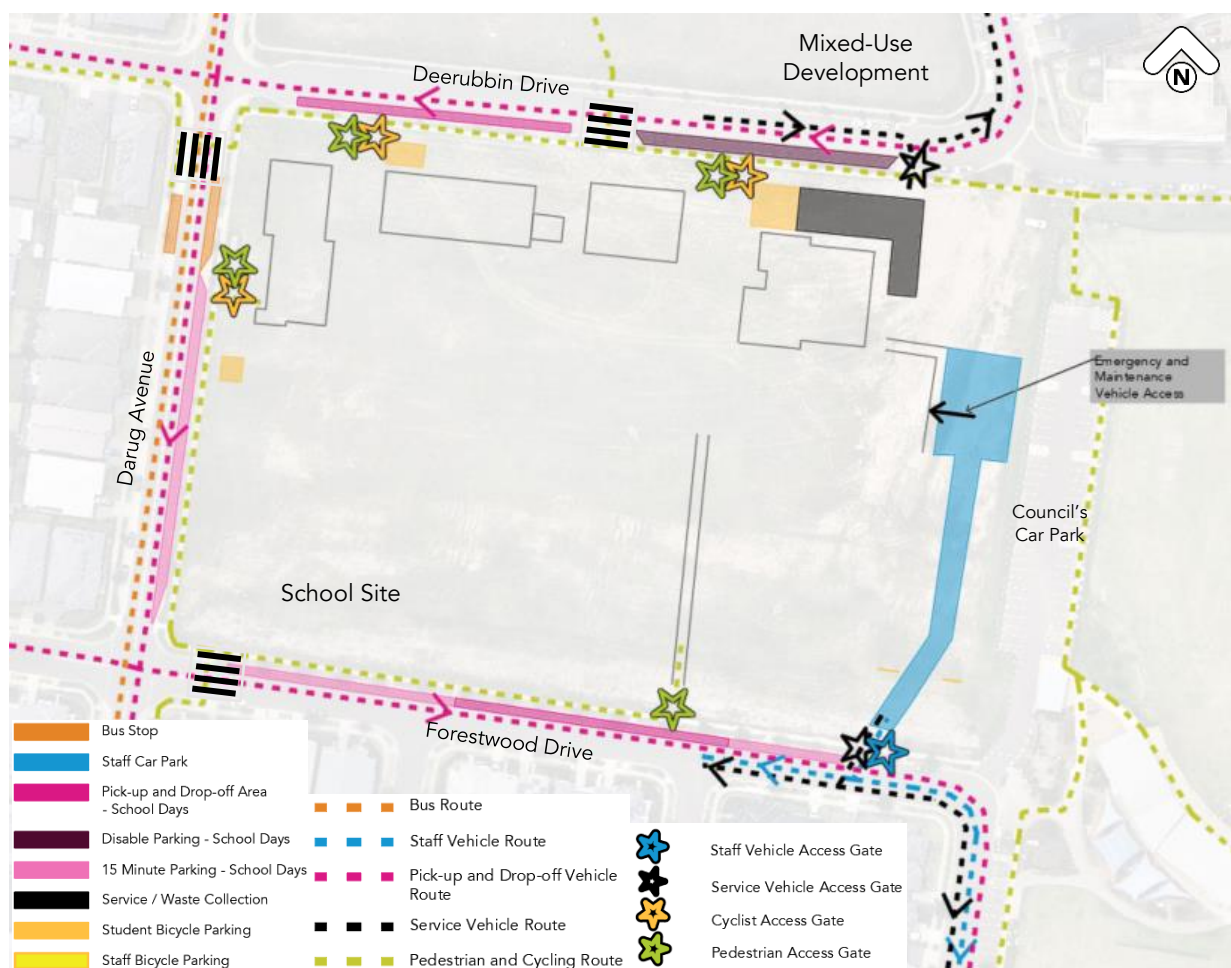


Figure 49 - School Access Plan

5.2.6 Transport Operations, Encouragement Programs and Staffing

In order to achieve higher active and public transport mode share targets, appropriate encouragement programs need to be implemented such as a "Walking Bus", "Walk to School Day", etc. These are further described in the School Transport Plan.

5.2.7 Target Travel Mode

When defining potential travel modes, the following has been taken into consideration:

- Potential achievements discussed in Section 4.2 and gaps discussed in Section 3
- Proposed infrastructure improvements and proposed active and public transport provisions / changes presented in the above sections
- Some parents will choose to drive regardless of the infrastructure and facilities provided. The further the distance between the School and the place of residence, the more likely it is that parents will drive.

The following target travel modes are proposed:

- 15% walking
- 35% cycling or scooting
- 10% taking public transport
- 40% driving

5.2.8 Pick-up and Drop-off Quantity

Based on the proposed target travel mode share and Poisson distribution assumptions made in Section 5.1, the proposed School will likely require the following number of pick-up and drop-off spaces:

Table 11 - Pick-up and Drop-off for Moderate / Target Scenario

Number of students	Vehicle Utilisation	Number of students being driven	Car Occupancy	Number of Vehicles Arriving	Poisson Distribution Modelled No of Spaces (Length)
414	40%	166	1.2	138	24 (144m)

5.3 Ideal Scenario

Based on the travel analysis shown in Section 4.2, 75% of students live within walking and 25% students within cycling catchment. Therefore, in an ideal scenario, all of these students would walk or cycle to school.

In this scenario, up to 200 bike / scooter parking spaces would be required.

No pick-up and drop-off spaces would be required.

50% of students (~200) could benefit from a bus ride; With a bus capacity of approximately 50 passengers and the potential for parents to want to accompany their children, this would require a provision of up to 8 buses.

5.4 Travel Modes – Comparison of Transport Scenarios

A comparison of the three school transport scenarios is shown in Table 12.

Table 12 - School Transport Scenario Comparison

Mode Share	Base Case		Moderate Case				Ideal Case	
	%	#	%	#			%	#
Walking	0.8%	3	15%	62			75%	311
Cycling and Scooting	0.2%	1	35%	144			25%	103
Public Transport – Bus + Train	11.4%	47	10%	41			(~50%)*	(~200)*
Private Vehicles	80.2%	332	33%	40%	137	166	-	-
Carpooling	5.2%	22	7%		29		-	-
Other	2.2%	9	-	-			-	-

* Represents students that could benefit from public transport, although they live within the walking and cycling catchments.