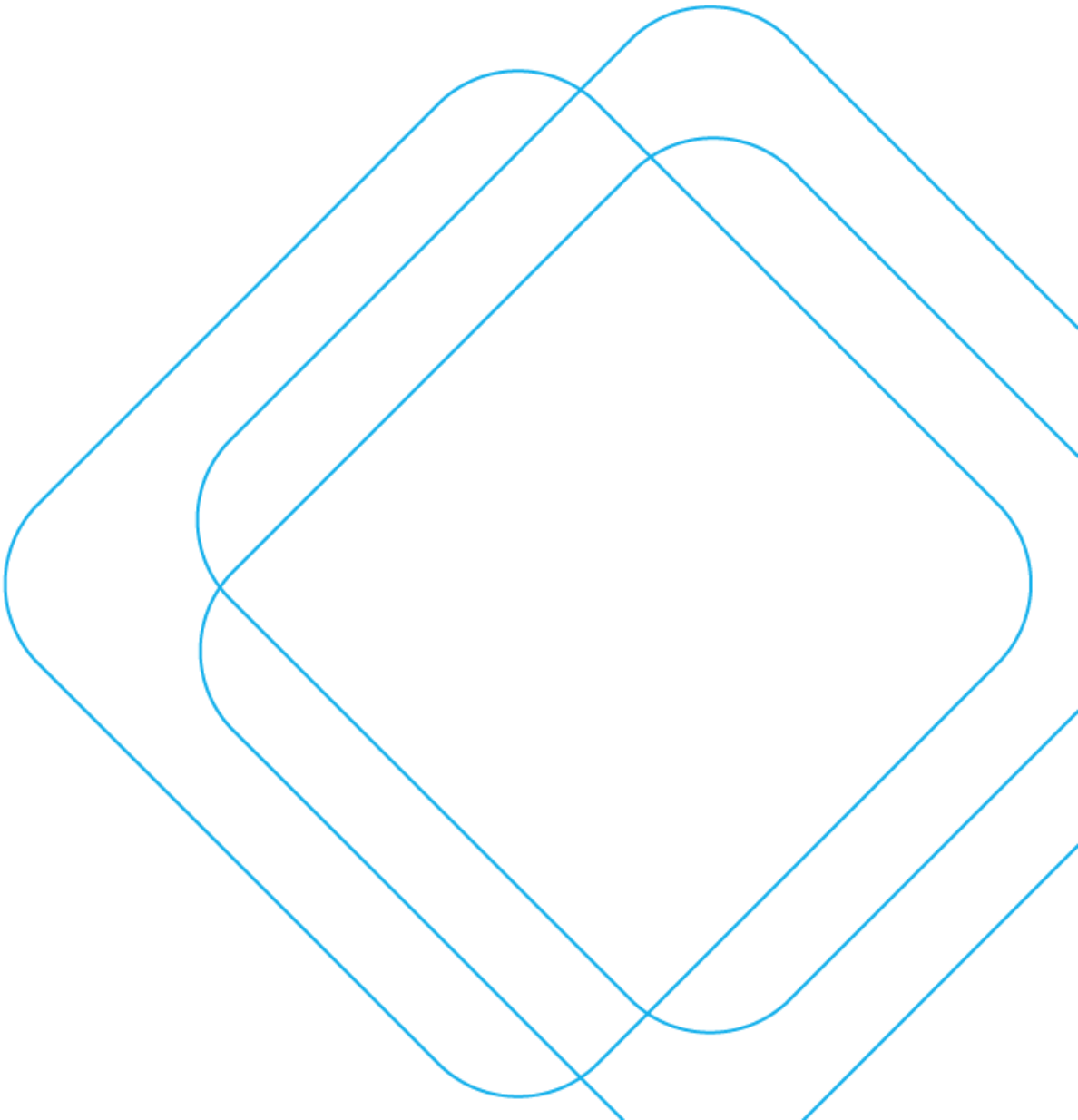
SCT Consulting

GLEDSWOOD HILLS HIGH SCHOOL

Transport Access Impact Assessment

19 DECEMBER 2024

SCT Consulting acknowledges the traditional owners of the lands on which we work.
We pay our respects to Elders past, present and emerging.



Quality Assurance

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Client:	NSW Department of Education	**ABN:**	40 300 173 822
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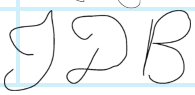
Authoriser:	Jonathan Busch	Associate Director	

Version	Date	Details
1.0	1 October 2024	Draft report
2.0	29 November 2024	Updated to respond to School Infrastructure comments
3.0	13 December 2024	Updated to respond to School Infrastructure comments
4.0	19 December 2024	Final draft report

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Executive Summary

Proposal

This Transport Accessibility Impact Assessment has been prepared by SCT Consulting on behalf of the NSW Department of Education (DoE) to assess the potential environmental impacts that could arise from the activity of the new Gledswood Hills High School (the **Proposal**) at 9 Gregory Hills Drive, Gledswood Hills (the **site**). The works are proposed by the DoE to meet the growth in educational demand in Gregory Hills and Gledswood Hills, and the broader South West Growth Area.

This report has been prepared to assess the transport impacts of the activity and identify mitigation measures.

Summary of the activity

The proposed activity involves the construction and operation of a new high school at the site accommodating 1,000 students, including:

– A series of school buildings along the northern, eastern and southern site boundaries

– A school hall

– An assembly area, sports field and multi sports courts

– Car parking and a Kiss and Drop zone

– Associated on and off-site infrastructure to support the school, including a new pedestrian crossing and relocation of the existing bus stop on Gregory Hills Drive to the site frontage.

The Review of Environmental Factors prepared by Ethos Urban provides a full description of the proposed works.

Site description

The site is located at 9 Gregory Hills Drive, Gledswood Hills, within the Camden Local Government Area (LGA), approximately 60km southwest of the Sydney CBD and approximately 3.5km from Narellan Town Centre. It comprises one lot, legally described as Lot 2 in DP 1262720, that measures approximately 4.15ha in area. The site is bound by Digitaria Drive to the north and Gregory Hills Drive to the south. To the east lies two vacant lots, a childcare centre and a fast food outlet. To the west lies another childcare centre and a vacant lot (which also has approval for a childcare centre).

An aerial image of the site is shown at **Figure E-1**.

Figure E-1 Site location

Source: Nearmap, SCT Consulting, 2024

Existing conditions

The proposed school would front Gregory Hills Drive and Digitaria Drive. Gregory Hills Drive, an arterial road managed by Camden Council. The road has a footpath running along the north and a shared path on the south side. These both link to footpaths and shared paths on Central Hills Drive on the west end of the block and on Hermitage Way to the east. Digitaria Drive has footpaths on both sides that similarly link to Central Hills Drive. There is a shared path that runs through the South Creek reserve providing active transport access to Digitaria Drive and Holborn Circuit from residential dwellings.

There are two bus stops near to the school site located on Gregory Hills Drive:

– Stop 255727 is located on the eastbound side of the road approximately 75m from the school boundary.

– Stop 255730 is located on the westbound side approximately 240m the eastern boundary of the school.

Most students are not eligible for subsided public transport under the School Student Transport Scheme criteria. A hands up transport mode share survey was conducted at Oran Park High School in June 2024 found that public bus travel and private vehicle travel were the most prominent mode of transportation at approximately 36 per cent each. Walking was found to be 22 per cent of all journeys. It is anticipated that travel patterns from nearby Oran Park would be similar for the proposed Gledswood High School. Public transport coverage within the enrolment boundary for the proposed school in Gledswood Hills is reasonable. However, there are gaps in the north and east of the enrolment boundary. Further service frequencies are four per hour.

A kiss ‘n drop area on both sides of Digitaria Drive is proposed to support the school, which would be signposted ‘No Parking’.

Analysis & transport proposals

Future year mode share targets were developed based on existing student travel mode share based on the hands up transport mode share survey from Oran Park High School in June 2024, existing student locations (these have been depersonalised for privacy), future population growth, proposed infrastructure upgrades and transport encouragement programs.

Table E-1 Student mode share targets for 1000 students

Scenario	Metric	Walk	Bicycle/Scoot	Bus	Car
Base case	#	232	47	365	356
	%	23%	5%	37%	36%
Moderate case	#	262	47	365	326
	%	26%	5%	37%	33%
Stretch case	#	262	47	400	291
	%	26%	5%	40%	29%

The upgrades and changes associated with each case are summarised in **Table E-2**.

Table E-2 Description for scenario development – student mode share

Scenario	Description
Base case	– 100% of students within enrolment catchment – Access points: • Gate on the northern boundary • Two gates on the southern boundary
Moderate case	– Base case plus: – Raised threshold zebra crossing on Digitaria Drive to facilitate safe access to the north – Widen footpath (to 2.0m) and provide tree planting for shade along Digitaria Drive southern side to provide sufficient space for students walking
Stretch case	As with moderate case and – Additional Bus stop on southern side of Gregory Hills Drive – Expanded bus offering

Impact

Assessment of traffic impacts based on the moderate future mode share target, for a student population of 1000 was undertaken. Delays increase across all intersections, as a result, but the four intersections examined have capacity to accommodate the additional traffic volumes.

Table E-3 AM and PM peak intersection base year performance

Intersection	Weekday AM peak			Weekday PM peak		
	DOS	Delay	LOS	DOS	Delay	LOS
Digitaria Drive | Holborn Crescent	0.13	5.3s	A	0.14	5.4s	A
Gregory Hills Drive | Holborn Crescent	0.61	33.9s	C	0.75	42.8s	D
Gregory Hills Drive | The Hermitage Way	0.89	32.7s	C	0.81	31.4s	C
Digitaria Drive | The Hermitage Way	0.51	11.2s	A	0.43	9.9s	A

Table E-4 Future enrolment traffic volumes intersection performance

Intersection	Weekday AM peak			Weekday PM peak		
	DOS	Delay	LOS	DOS	Delay	LOS
2027 school opening (with school traffic)						
Digitaria Drive | Holborn Crescent	0.31	14.1s	A	0.20	11.2s	A
Gregory Hills Drive | Holborn Crescent	0.81	49.1s	D	0.89	31.5s	C
Gregory Hills Drive | The Hermitage Way	0.82	38.8s	C	0.86	32.4s	C
Digitaria Drive | The Hermitage Way	0.65	15.8s	B	0.56	12.4s	A
2037 – 10 years post opening (with school traffic)						
Digitaria Drive | Holborn Crescent	0.39	15.8s	B	0.22	11.6s	A
Gregory Hills Drive | Holborn Crescent	0.87	52.6s	D	0.87	37.4	C
Gregory Hills Drive | The Hermitage Way	0.93	55.3s	D	0.91	38.0	C
Digitaria Drive | The Hermitage Way	0.72	20.6s	B	0.61	13.7	A

Conclusions

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed activity, it is determined that:

– The extent and nature of potential impacts are low will not have significant impact on the locality, community and/or the environment.

– Potential impacts can be appropriately mitigated or managed to ensure that there is minimal impact on the locality, community and/or the environment.

The mitigation measures proposed to address the impacts are provided in **Table E-5**. These measures have been discussed and agreed by the TWG.

Table E-5 Mitigation measures

Project Stage Design (D) Construction (C) Operation (O)	Mitigation Measure	Reason for mitigation measure	Relevant section of report
C	Construct a wombat crossing (raised zebra) on Digitaria Drive to facilitate safe access to the north	Pedestrians cannot cross safely from the school to the northern suburbs, resulting in crashes involving pedestrians	Section 3.2
O	Extinguish easement {M} in DP 1262720 as soon as practicable	Lot 8441 or Lot 8442 DP1272530 are redeveloped and seek use of easement {M}, a roadway running along the southern boundary of the site	Section 4.2.1
C	The north-south road should be signposted at the entry locations and at 50m increments along as 20km/h using standard regulatory signage. As this is a private road, this does not require Council or TfNSW approvals.	The roadway running along the eastern boundary of the site has excess vehicle speeds resulting in collisions.	Section 3.2
C	Widen the Digitaria Drive footpath to 2.0m and provide tree planting for shade along Digitaria Drive southern side for the length of the frontage	Pedestrians need to walk on the verge as footpaths are not wide enough.	Section
C	School Zone signage, speed management signage and associated pavement markings must be constructed and approved by TfNSW.	Drivers travel past the school at the current posted speed limit, increasing the risk and severity of harm to students	Section 3.2.1
C	If approved by Camden Council, change traffic signs along Digitaria Drive, southern side, along the frontage of the school to No Parking 8.00-930am and 2.30-4.00pm	Drivers picking up or dropping off students stay too long, creating overspill parking demands.	Section 3.2.1.3
O	Retractable bollards on the western driveway will be raised outside of delivery hours.	Parents or guardians use the western driveway which is intended for deliveries only.	Section 3.2.1.4
C	Construct a carpark with 78 spaces, a loading dock and delivery driveway according to Australian standard AS2890.1, AS2890.2 and AS2890.6.	Staff park on-street, resulting in other drivers unable to park on-street	Section 3.2.1.4
C	Construct 80 bicycle spaces (40-u rails) according to Australian Standard AS2890.3	Promote bicycle use and reduce impacts on the road network.	Section 3.2.1.1

Project Stage Design (D) Construction (C) Operation (O)	Mitigation Measure	Reason for mitigation measure	Relevant section of report
C	If approved by TfNSW and Camden Council, relocate bus stop 25573 (Gregory Hills after Central Hills Dr, Gregory Hills) to the eastern side of Central Hills Drive	Bus use is low, resulting in congestion and delays to other road users	Section 3.2.1.2
O	By Term 2 of the first year of operation appoint a School Travel Coordinator, establish a School Transport Committee, and prepare a Travel Access Guide	The delivery of the school increases traffic in the area, resulting in delays to other road users.	Section 6.6.2
O	Update the School Transport Plan annually for the first two years	The delivery of the school increases traffic in the area, resulting in delays to other road users.	Section 6.5
C	Prior to construction commencing, finalise a Construction Traffic Management Plan to the satisfaction of Camden Council, including preparation of traffic guidance schemes where required.	Construction traffic will have an impact on the surrounding streets, with heavy vehicles impacting on other drivers.	Section 5.0

1.0 Strategic context

1.1 Introduction

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The site is located at 9 Gregory Hills Drive, Gledswood Hills, within the Camden Local Government Area (LGA), approximately 60km southwest of the Sydney CBD and approximately 3.5km from Narellan Town Centre. It comprises one lot, legally described as Lot 2 in DP 1262720, that measures approximately 4.15ha in area. The site is bound by Digitaria Drive to the north and Gregory Hills Drive to the south. To the east lies two vacant lots, a childcare centre and a fast food outlet. To the west lies another childcare centre and a vacant lot (which also has approval for a childcare centre).

An aerial image of the site is shown at **Figure 1-1**.

Figure 1-1 Land boundary of proposed site

Source: SCT Consulting, 2024

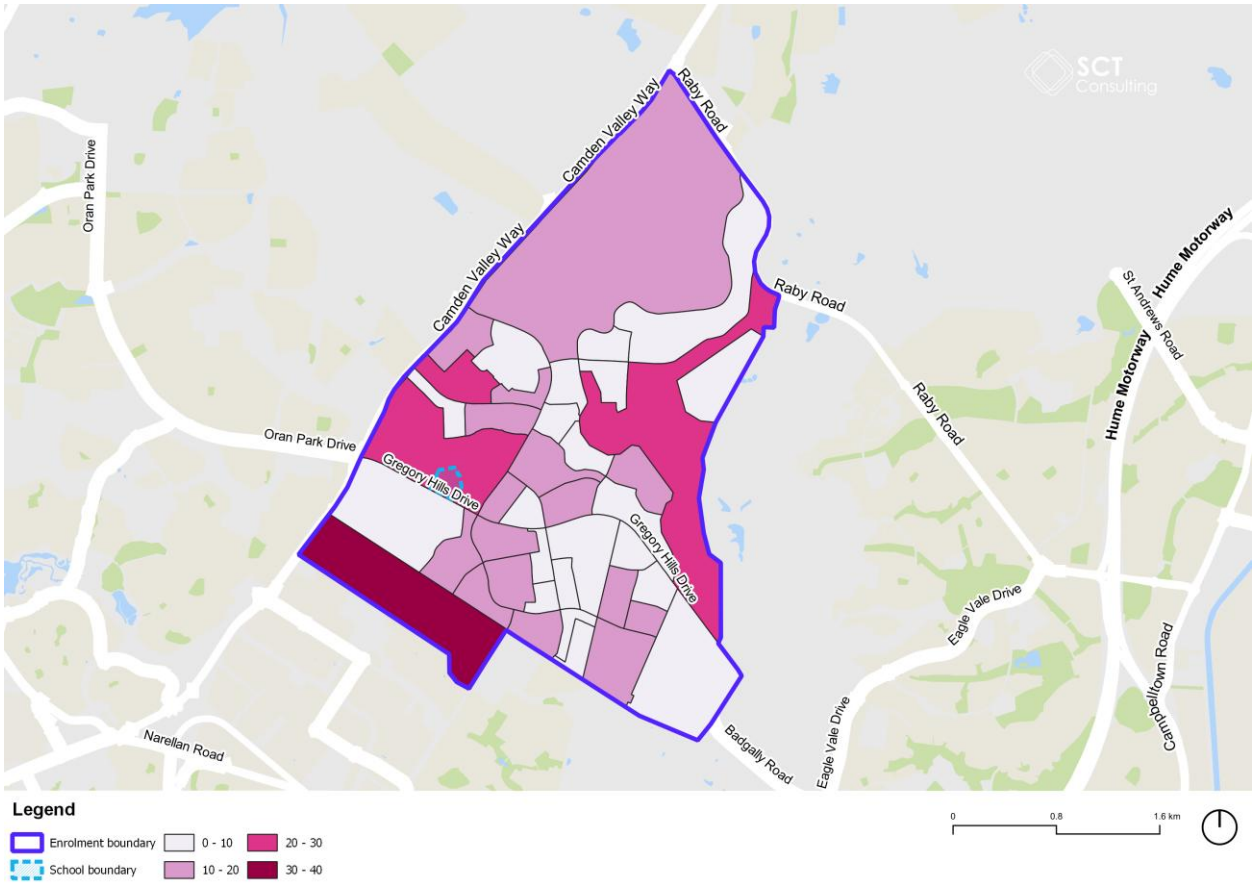
1.4 Concept approval

This report has considered the concept approval (DA/2017/45/1) for a mixed-use development comprising bulky goods premises, business premises, food and drink premises, indoor recreation facilities, two hotels and a cinema. It has been determined potential impacts of the proposed activity on the concept approval can be appropriately mitigated or managed as detailed at **Section 8.0**. An assessment has been conducted in **Section 4.2**.

1.5 School enrolment boundary

The enrolment boundary for the school largely follows the Australian Bureau of Statistics 'Statistical Area 2' of Gledswood Hills and Gregory Hills. It therefore covers the residential areas within the suburbs of Gregory Hills and Gledswood Hills. Anonymised student data provided by School Infrastructure indicates that there are approximately 487 high school aged students currently residing within the proposed enrolment boundary. A further 123 future students have been identified from known development areas within the enrolment boundary. Student population have been grouped into their SA1 statistical areas and are shown in **Figure 1-2**.

Figure 1-2 Enrolment boundary



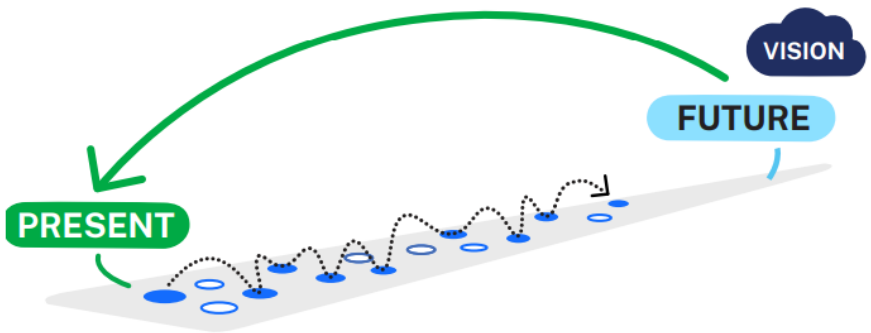
Source: School Infrastructure and SCT Consulting, 2024

1.6 Strategic transport and land use context review

Future Transport Strategy is a strategic document providing future investment, planning, delivery and operational direction focussed on improving New South Wales's transport system. The strategy adopts a customer-first approach based on Transport for New South Wales's (TfNSW) desired outcomes of improving customer connectivity, creating successful places for the community, and supporting economic activity. The strategy also supports the Government's vision for a region of Six Cities which encompasses Gledswood Hills. These six cities will be seamlessly connected and within each of the six cities, customers will be within 30 minutes by public transport to jobs, homes, essential services and social connections.

A 'vision and validate' approach was adopted during the development of the strategy. As shown in **Figure 1-3**, the approach targets a long-term vision and sets out outcomes to ensure the delivery of the vision for the community.

Figure 1-3 The 'vision and validate' approach



Source: TfNSW; 2023

Relevant to schools, the strategy aims to facilitate students' independent mobility by improving safe walking and bike riding options for travel between home and school and integrating active and public transport. Actions targeted at meeting this aim are:

– Provide safer streets that will allow more students to walk or cycle to school

– Students in secondary schools in the Six Cities Region should have good access to reliable, accessible public transport where possible. TfNSW will achieve this by partnering with the Department of Education and key stakeholders to:

  - improve safe walking, cycling and public transport access to schools.
  - develop future transport plans to support sustainable travel for students and young people of all abilities to and from school.

– Improve neighbourhood liveability and reduce road congestion alongside new housing through investments such a new walking connections to schools, and safety infrastructure for people riding bikes.

– Prevent an overprovision of parking by improving parking provision and management to encourage sustainable travel behaviour and improve road productivity.

Implication

The provision of infrastructure should prioritise sustainable travel modes and discourage private vehicle usage.

1.6.1 Road user space allocation policy

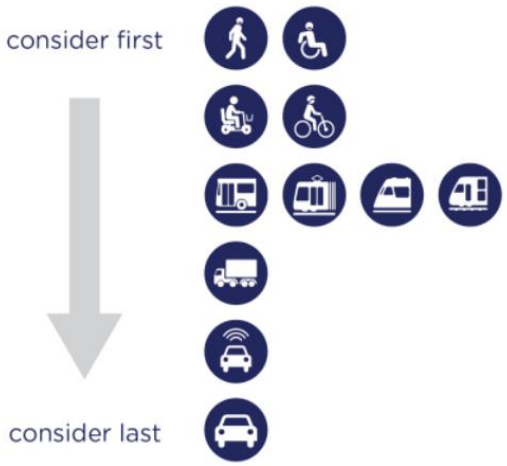
The policy prioritises road user space for different user groups to support road safety, equitable access of space, and to meet place objectives. This allocation can be a physical allocation (for example, a lane delineation) or temporal in nature (e.g. time restricted kerbside use during school peak hours) and considers the following:

– Movement and place function of the road

– Limited road space to accommodate all competing user needs

Accordingly, **Figure 1-4** shows the ideal hierarchy of road users to be used in transport planning processes – consideration should be given to walking first and private cars last.

Figure 1-4 Road space user hierarchy



Source: TfNSW; 2021

Implication

The infrastructure needs and requirements for Gledswood Hills High School have been framed using this policy whereby pedestrians, other active transport, and public transport modes are prioritised before private cars.

1.6.2 TfNSW Active Transport Strategy

The Active Transport Strategy draws on the Future Transport Strategy and outlines TfNSW's commitment towards delivering safe and connected active transport outcomes across New South Wales. It has the vision of doubling the 1.5 billion current walking and biking trips in New South Wales in the next 20 years. To do so, the strategy aims to remove the barriers to safe and equitable participation in active transport by targeting five focus areas of:

– Enable 15-minute neighbourhoods – walkable and connected neighbourhoods will increase the proportion of short trips by foot

– Deliver connected and continuous cycling networks – an additional 1,000 km of cycleways and supporting infrastructure is intended to be delivered

– Provide safer and better precincts and main streets – to halve fatalities and reduce serious injuries by 30 per cent for pedestrians and cyclists

– Promote walking and riding and encourage behaviour change – to double the number of students walking or riding to school

– Support our partners and accelerate change – the delivery of active transport projects should be accelerated.

In the context of schools, approximately 50 per cent of students are driven to school, despite a majority of school students living within a 20-minute bike ride to school. The plan aspires to double the number of students walking or riding to school.

Key actions to be undertaken to encourage more students to walk or cycle to school are:

– Trial Active Travel to School Program in collaboration with Health and Education in more than 50 schools by 2028

– Trial behaviour change interventions including campaigns that encourage sustainable mode shift by 2028

– Work with councils to pilot infrastructure and traffic management initiatives, including temporarily restricting vehicle access on roads adjacent to schools

– Work with Department of Education to provide active transport end-of-trip facilities in schools and ensure safety walking and cycle training are available.

Investigate opportunities for workplace initiatives, incentives and interventions such as e-bike rebates or end-of-trip facilities, to promote active travel to work.

Implication

This Strategy further emphasises the need to encourage more students to walk or cycle to school wherever possible. Accordingly, the transport assessment considers whether existing active transport provisions are adequate and what key actions should be implemented to encourage active transport for Gledswood Hills High School.

1.6.3 TfNSW Walking Space Guide

The Walking Space Guide was published in 2020 that provides a set of standards and tools to assist those responsible for Walking Spaces on streets with the goal of ensuring that sufficient space is provided to achieve comfortable environments which encourage people to walk.

The guide provides a range of footpath types and typical configurations and widths that vary depending on the street environment present. It is important that the footpath arrangement that compliments the school environment and is designed to cater for future movement demands of a growing and evolving community.

Implication

Both Gregory Hills Drive and Digitaria Drive currently do not provide active uses that front the street. Development is predominantly focussed on access by car with internal parking provided.

Footpaths on both street frontages, whilst not in high activity areas, will need to consider the high number of students exiting the school at the same time in the afternoons. Gregory Hills Drive is a busy road – the footpath widths (particularly at the entrance to the school) will need to ensure students can spill out of the school into a safe area / pathway that removes any potential conflict with the road.

1.6.4 Camden Council Pedestrian Access & Mobility Plan

Camden Council prepared and adopted a Pedestrian Access and Mobility Plan (PAMP) in 2014 for their LGA which provides the strategy, ranking methodology and mapping to support the expansion of paths, pedestrian crossings and bicycle infrastructure across the City. Likely due to the low population within Gregory Hills and Gledswood Hills at the time, the PAMP does not propose any active transport to be delivered.

Council's CONNECTING CAMDEN Community Strategic Plan 2036 includes the objective of 'Pedestrian Access' and the action to 'Implement Council's annual footpath program identified from the PAMP.' Furthermore, Council's Delivery Program 2022/26 Operational Plan 2023/24 includes an activity to 'Ensure transport links and options are adequate to meet community needs'' and an operational plan action to 'Deliver works under the Pedestrian Access and Management Plan'.

1.6.5 Camden Development Control Plan, 2019

The site sits within the 'Entertainment Precinct' part of the Turner Road Development Control Plan. The Turner Road DCP states the following about car parking in the Entertainment Precinct, "Car parking is to be designed and allocated to land uses in accordance with Camden Development Control Plan 2006".

The Camden Development Control Plan 2019 sets out the car parking requirements for a range of specified uses. Relevant to this project are off-street parking provisions for educational facilities with a minimum of:

- 1 car parking space per full-time equivalent staff member
- 1 car parking space per 100 students
- 1 car parking space per 5 students in Year 12 (where appropriate)
- On-street car parking cannot be considered as a parking solution
- Adequate space is required for delivery vehicles
- Provision for a drop-off/pick-up area and buses as appropriate.

It should be noted that:

- in certain circumstances Council may accept a monetary contribution pursuant to Section 7.11 of the EP&A Act, in lieu of off-street parking being provided as part of the proposal. Details are set out in the relevant Contributions Plan. The acceptance of a monetary contribution in lieu of off-street parking is not guaranteed and will be at Council's discretion
- The amount of contribution will be in accordance to the rate fixed from time to time in the Contributions Plan

1.6.6 Camden Council Local Strategic Planning Statement

The Local Strategic Planning Statement provides context on the rapid growth within the LGA, purported to be the fastest growing in Australia with the population is expected to increase 199 per cent from 2016 to 2036 to 233,950. This is an annual average growth rate of 5.63 per cent and an increase of 53,331 households. This will increase the number of dwellings in 2036 to 81,250 dwellings. Relevant to this document is the rapid growth in Gregory Hills, that grew from a population of 38 in 2011 to 14,300 in 2021.

Camden Council has outlined four 'Local Priorities' to facilitate the population and household expansion within Camden through the provision of infrastructure, three of which are relevant with regards to transport for this project:

Priority 1 - Align infrastructure delivery with growth

Priority 2 – Connecting Camden through Integrated transport solutions

Priority 4 - Working in partnership to deliver a more liveable, productive and sustainable Camden

The statement also outlines actions to facilitate safer, more efficient and sustainable transport within the LGA:

– Investigate support of freight movement on state and regional roads within the LGA

– Undertake town centre parking strategies

– Advocate for a rapid bus service route to connect key Camden centres with the Western Sydney Airport and Aerotropolis, building on the Western Sydney City Deal Commitment C2.

– Review and update the Pedestrian and Mobility Plan (PAMP) 2014 and Camden Council Bike Plan 1996. In February 2023, **$1.5 million was granted by the state government to deliver the $2.9 million PAMP, aimed at completing missing active transport links to schools.**

– Collaborate with Transport for NSW (TfNSW) to ensure connectivity between Camden's centres and surrounding strategic centres.

– Collaborate with TfNSW to support travel behaviour change programs to manage demand on the transport network and advocate for sustainable transport choices in new developments.

– Prepare a strategy to advocate for key infrastructure to support growth within Camden LGA.

1.7 Summary of engagement

SCT Consulting and School Infrastructure undertook three Transport Working Group meetings with Camden Council and Transport for NSW. Minutes of the meetings are provided in **Appendix D**. A summary of the meetings is provided in **Table 1-1**.

Table 1-1 Transport Working Group meeting summary

Date	Attendees	Purpose & key content	Actions
17 April 2024	Camden Council, Transport for NSW	Presentation of the Rapid Transport Assessment findings and proposed infrastructure.	Update mode share analysis based on Oran Park High School to be relevant to the LGA. Clarify infrastructure proposals
14 August 2024	Camden Council, Transport for NSW	Updated RTA using Oran Park High School mode share benchmarking Confirmation of infrastructure proposals	Need for further clarification of kiss ‘n drop locations noting rain gardens Traffic modelling updates
23 October 2024	Camden Council, Transport for NSW	Updated traffic modelling results	Further traffic modelling updates

During the Transport Working Groups, Camden Council shared details of a project which was requested to be reflected in modelling but not released publicly as the project is not public nor fully funded. Hence the minutes in **Appendix D** have been redacted per Council request.

The following design measures were adjusted based on Transport Working Group feedback:

– Kiss ‘n drop has been limited to along the frontage of the school only

– The proposal to relocate the bus stop to the centre of the school on the Gregory Hills Road frontage was removed

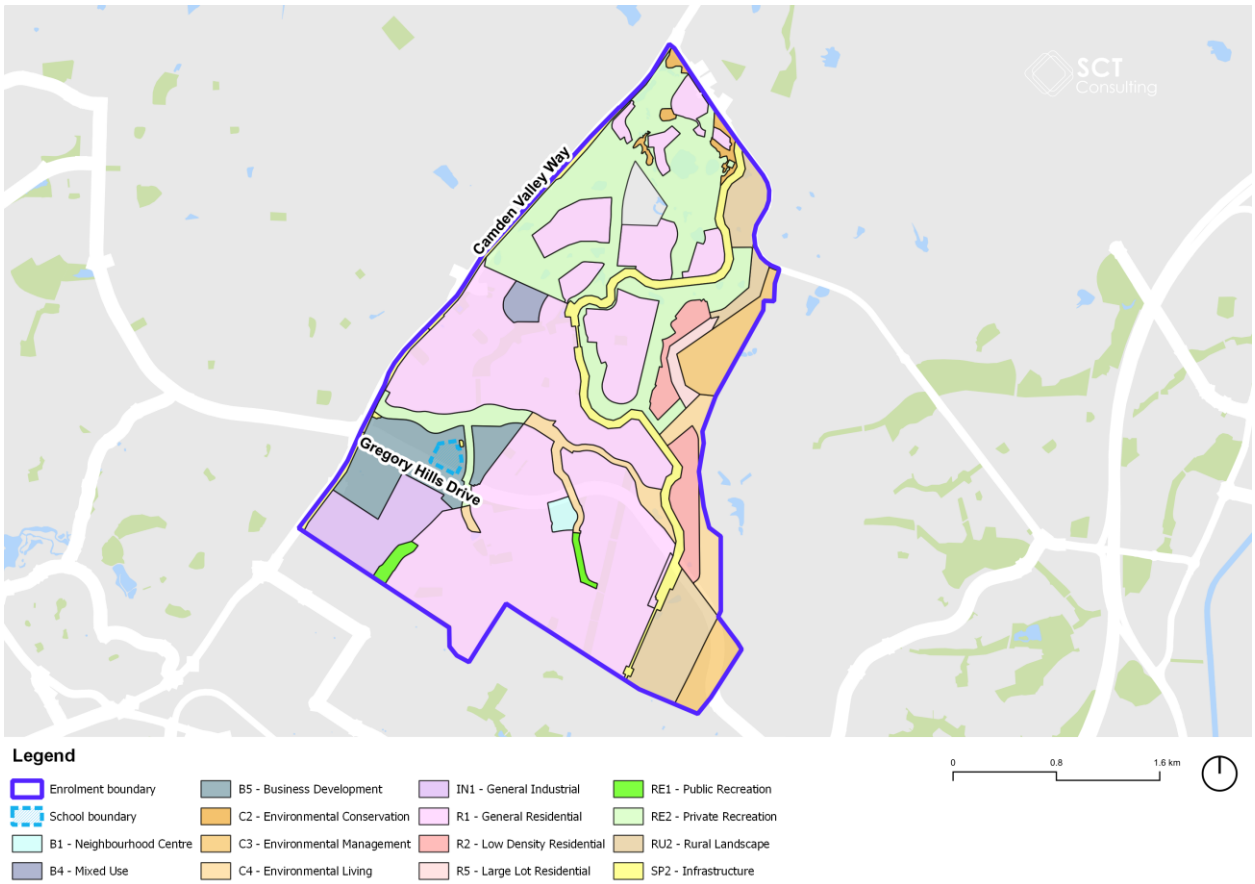
– The proposal to relocate a bus stop on the southern side of Gregory Hills Drive was added.

2.0 Existing conditions

2.1 Site location

The location of the school and landing within the enrolment boundary are shown in **Figure 2-1**, the site is situated within a B5 – Business Development Zone, with a child care centre and health complex to the west and another child care centre to the east. The South Creek Reserve, which features a sealed path connecting to the General Residential area north of the proposed school is located to the north of the school. Residential zoning within the enrolment boundary is characterised by low density detached single dwellings mainly to the north, south and south east of the school.

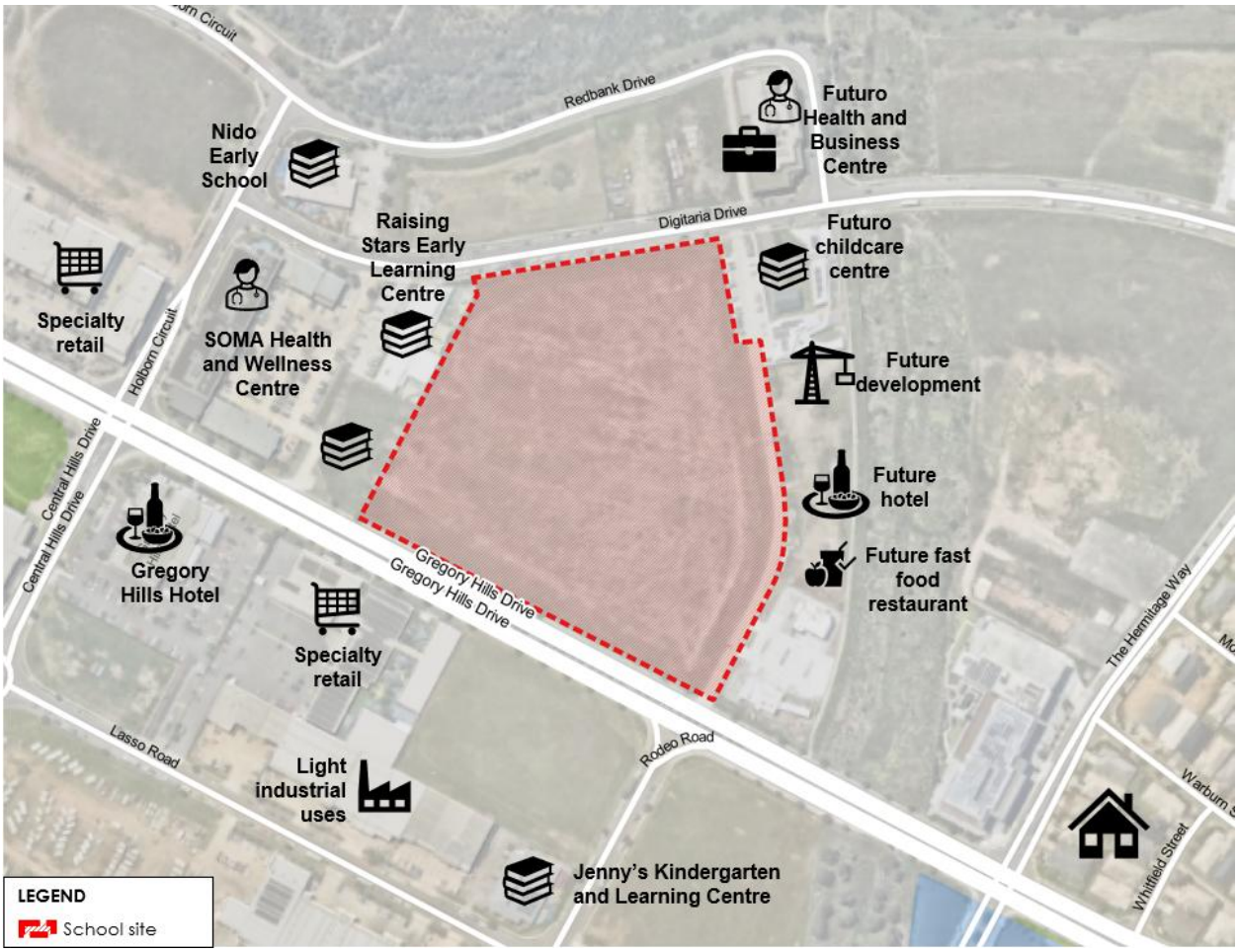
Figure 2-1 Land zoning within enrolment boundary



Source: NSW Department of Planning, 2024

Business and general land use are shown in **Figure 2-2**.

Figure 2-2 businesses and general land use in immediate vicinity of school



Source: SCT Consulting, 2024

Further development will occur along the eastern boundary of the site, using the driveway and easement which runs north-south to access Gregory Hills Drive and Digitaria Drive.

2.2 Transport networks

This section describes the existing transport network around the proposed Gledswood High School.

2.2.1 Transport Overview

The active and public transport infrastructure are shown in **Figure 2-3**

Figure 2-3 Transport context in the vicinity of the school

Source: SCT Consulting, 2024

The school fronts Gregory Hills Drive and Digitaria Drive. Gregory Hills Drive, an arterial road managed by Camden Council, has a footpath running along the north of the road and a shared path on the south side. These both link to footpaths and shared paths on Central Hills Drive on the west end of the block and on Hermitage Way to the east. Digitaria Drive has footpaths on both sides that similarly link to Central Hills Drive. There is a shared path that runs through the South Creek reserve providing active transport access to Digitaria Drive and Holborn Circuit from residential dwellings.

There are two bus stops near to the school site located on Gregory Hills Drive:

– Stop 255727 is located on the eastbound side of the road approximately 75m from the school boundary

– Stop 255730 is located on the westbound side approximately 240m the eastern boundary of the school.

There are further bus stops on Hermitage Way and Holborn Crescent, with that are also well connected with active transport infrastructure to the school.

2.2.2 Pedestrian infrastructure

Some of the key pedestrian facilities and primary walking routes within a 1200m radial distance of the school site are shown in **Figure 2-4**. The Primary walking routes from surrounding residential areas are:

– From the south-east along Donovan Boulevard (shown in purple)

– Along Gregory Hills Drive from the east (shown in white)

– Along residential streets such as Kookaburra Drive and Village Circuit/Mannes Rd (shown in yellow)

– Along Hermitage Way (shown in blue)

– Through residential areas and Gledswood Hills/Fairbank Reserve, through South Creek Reserve and along Digitaria Drive (shown in black).

Figure 2-4 Key walking routes to proposed school site

Source: SCT Consulting, 2024

The signalised intersection at Donovan Boulevarde | The Hermitage Way provides a safe crossing point for students walking to school along Donovan Boulevard, a collector for the intersecting local streets within the residential area southeast of the school. It also provides a crossing point for students taking westbound bus services to the stop just west of Donovan Boulevard.

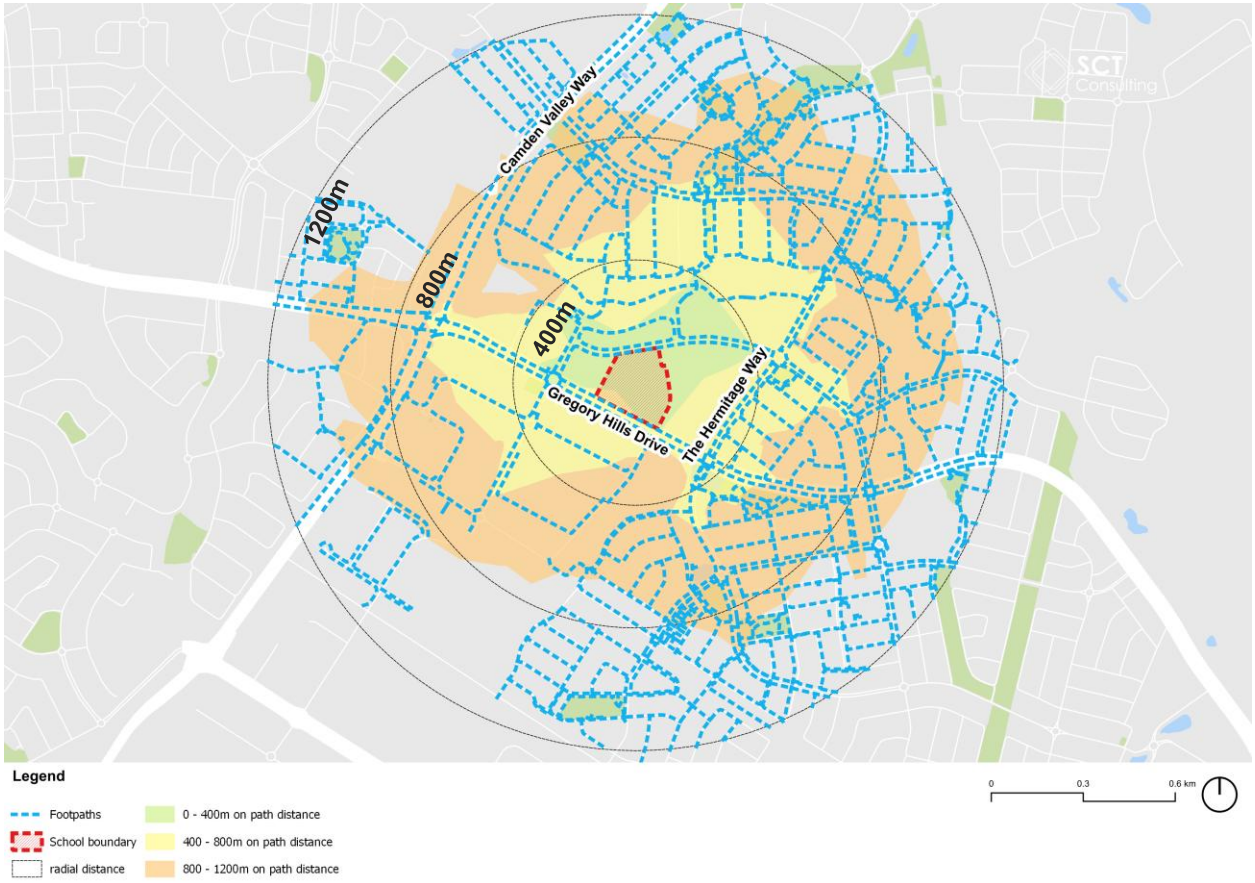
The signalised intersection at Gregory Hills Drive | Holborn Crescent provides a safe crossing point for any students who may use Central Hills Drive as a walking route to school and access the school site on its western end.

The footpaths along both sides of Digitaria Drive provide safe walking routes for students coming from the north and east of the school site, through South Creek Reserve. There is however no safe crossing point across Digitaria Drive.

Kookaburra Drive has footpaths on both sides of the road that link to those on Digitaria Drive. There are however no priority crossings for pedestrians at the intersection with The Hermitage Way. Refuge islands are on each leg of the roundabout at this intersection.

The extent of footpath coverage within a 1200m radial distance of the school site is shown in **Figure 2-5**. 1200m is the trip distance in which walking tends to be the primary transport mode[1]. The footpath coverage is well connected with students able to walk to school on a footpath.

Figure 2-5 Footpath infrastructure within 1200m



Source: SCT Consulting, 2024

There are 305 potential students within the 1200m radial distance of the school and 178 students within a 1200m on path distance to the school. This represents approximately 51 per cent and 30 per cent of the potential student population for the radial and on path distances respectively, indicating that walking for sizable portion of students could be a viable mode of transportation to and from school.

[1] Victoria Integrated Survey of Travel and Activity, 2020

2.2.2.1 Local footpaths

The footpaths on the streets surrounding the school site and their characteristics are described below:

– **Gregory Hills Drive** has a 1.5m wide footpath on its northern side with a 0.5m grass verge. There is a 3.5m wide shared path on its southern side that extends for approximately 3km to Camden Valley Way.

– **Digitaria Drive** has footpaths on both sides along its length which are 1.5m wide with a 0.5m verge.

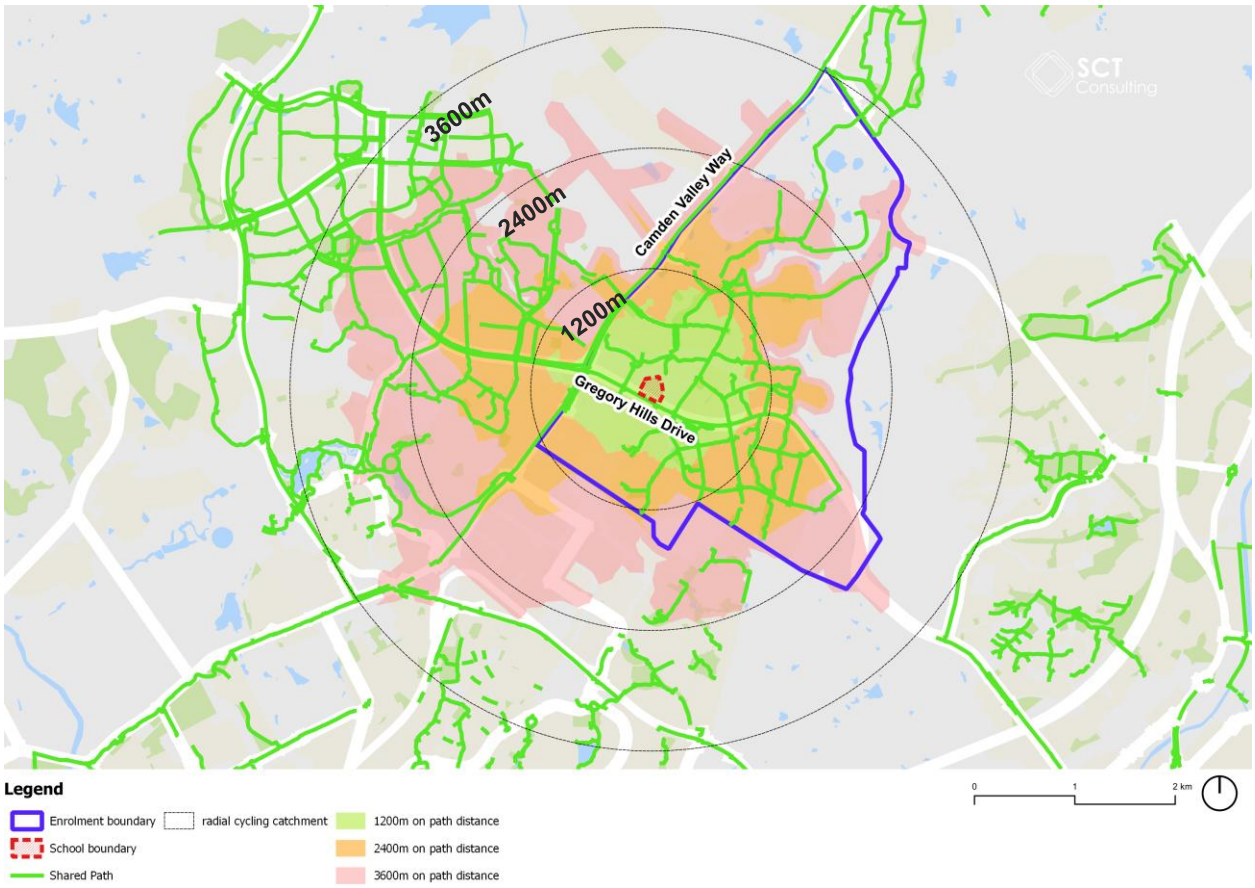
– **The Hermitage Way** has a 2.5m wide shared path along the western side of the road that extends from Gregory Hills Drive past Digitaria Drive and a 1.5m wide footpath along the east side. Both have a 0.5m grass verge abutting the carriageway.

Tree canopy coverage along these footpaths is very low, at about 1 per cent or less from data collected in 2022 for the NSW Government). It is noted that there are trees planted along each street, although it may take some time before they reach maturity.

2.2.3 Cycling network

The cycling network with the enrolment boundary and the surrounds are shown in **Figure 2-6**.

Figure 2-6 Cycling network within 3.6km of the proposed school site



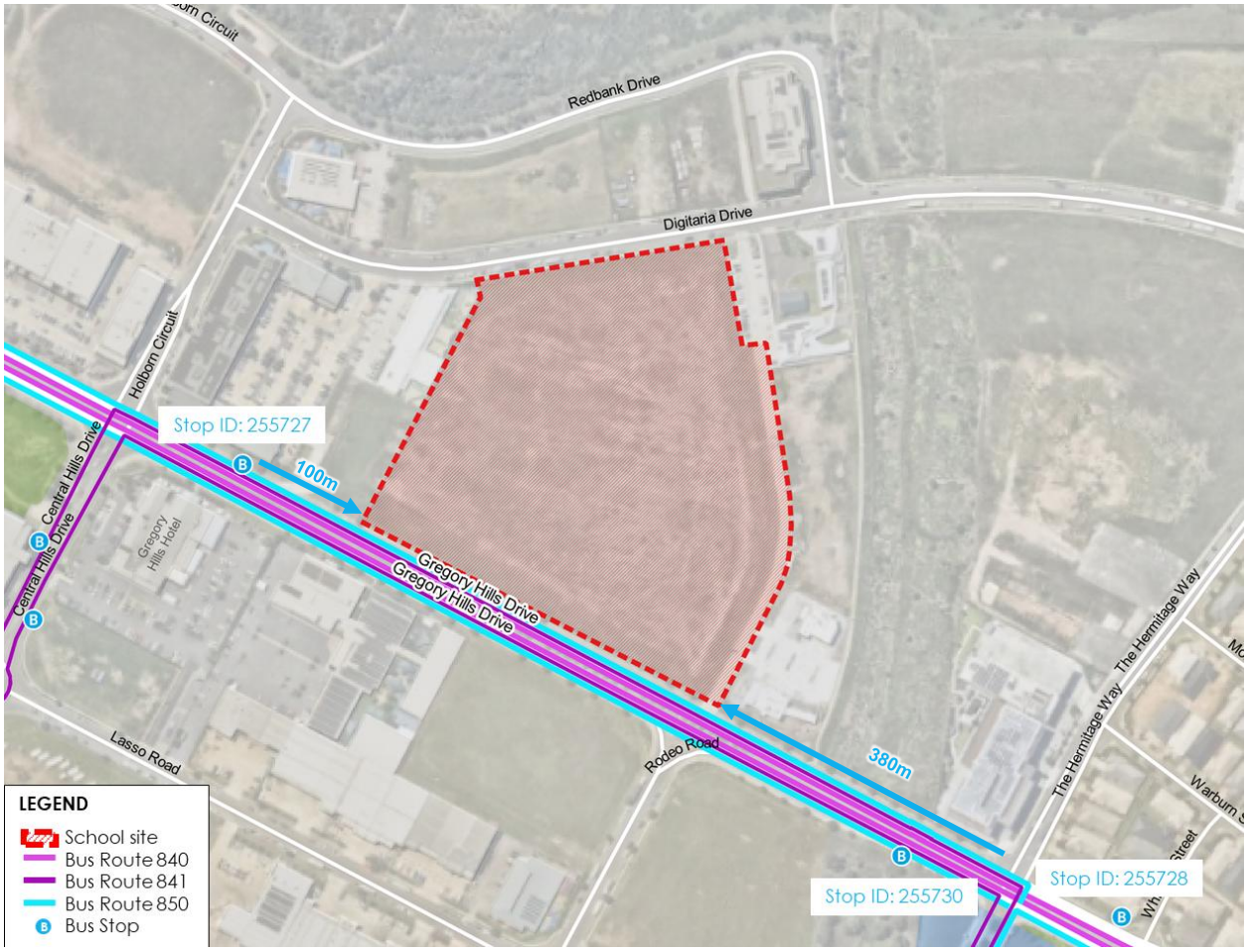
Source: SCT Consulting, 2024

There are 550 current and potential students within a 3.6km on-path distance to the school. Cycling infrastructure within the enrolment boundary is appropriate. There are shared paths running north – south and east – west along key arterial roads that provide the most direct access to the school. There is no dedicated cycling infrastructure within the enrolment boundary or catchments. As discussed in **Section 1.6.4**, the PAMP does not plan to expand to the cycling network in this area.

2.2.4 Public transport

There are three public bus routes that stop within the vicinity of the school – routes 840, 841 and 850. There are three bus stops close to the frontage of the school where these services stop, shown in **Figure 2-7**.

Figure 2-7 Bus stops and routes in the vicinity of the school site



Source: GTFS & TfNSW, 2024

The relevant bus departure and arrival times are provided **Table 2-1**.

Table 2-1 Services frequencies at Stop 255730

Route	AM Stop location	AM Arrival time	PM Stop location	PM Departure time
840	255730 (Gregory Hills Dr after Donovan Blvd)	8.01 am	255727 Gregory Hills Dr Opp Gregory Hills Hotel	3.19 pm
		8.31 am		3.53 pm
841		8.10 am		3.13 pm
		8.21 am		3.45 pm
		8.41 am		-
		8.57 am		-
850		8.23 am		3.12 pm
		8.27 am		3.42 pm
		8.49 am		3.51 pm
		-		3.57 pm

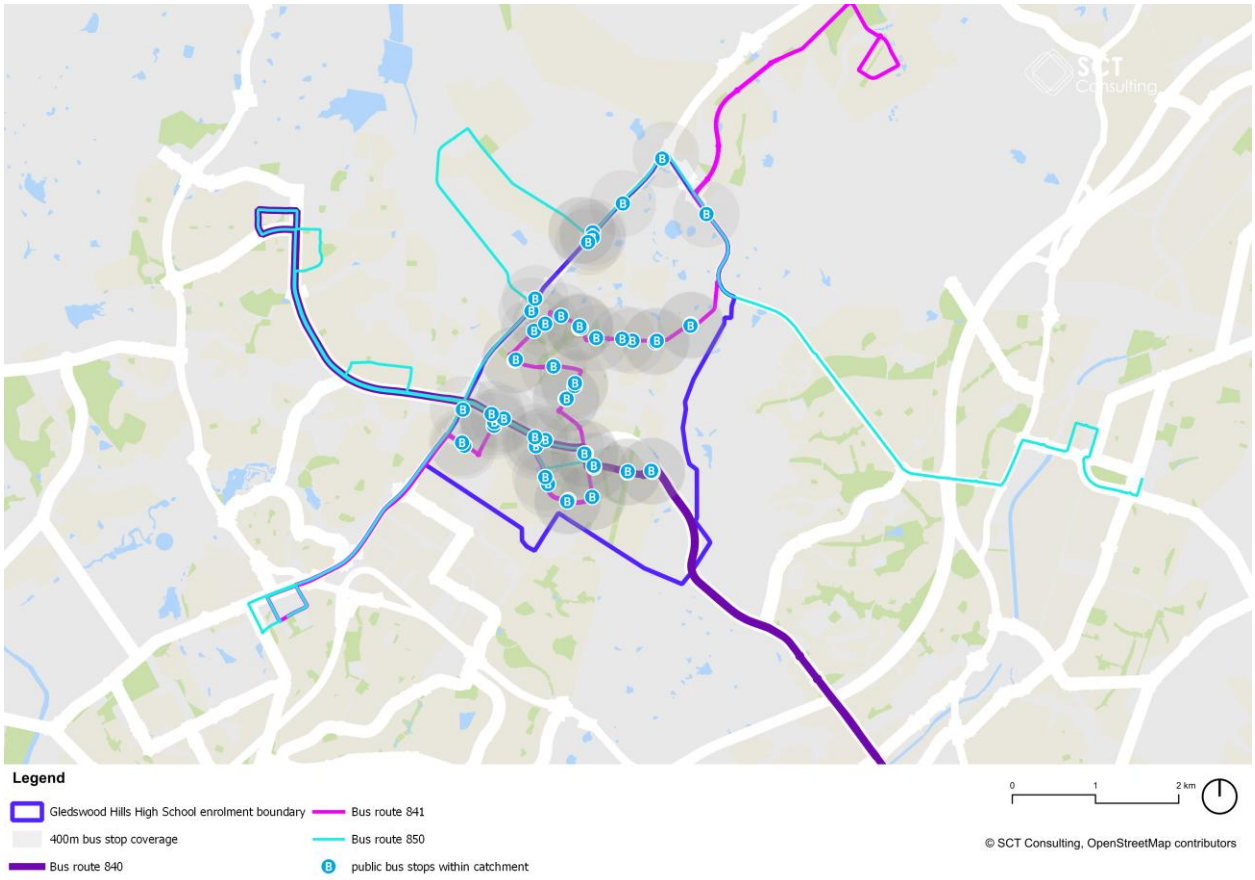
Students travelling on eastbound bus routes stopping at Stop 255727, will need to walk approximately 100m to reach the west side of the frontage on Gregory Hills Drive. Students on westbound services stopping at Stop 255730 will need to walk 380m, crossing Gregory Hills Drive to reach the eastern frontage on Gregory Hills Drive.

Stop 255730 has a shelter and is on the 3m wide shared path on the south side of Gregory Hills. Stop 255727 has a small 1.7m long paved section on the grass verge next to the carriageway, for passengers to board and alight. The footpath width at this point is 1.5m.

The 841 route stops on The Hermitage Way north of Digitaria Drive, however, students would need to walk approximately 600m to reach the school's northern frontage on Digitaria Drive. There are no bus routes that run on Digitaria Drive.

441 students within the enrolment boundary are within a 400m radius of a bus stop. Key gaps are observed in the north and east of the enrolment boundary. The bus stop coverage for the 840, 841 and 850 routes within the enrolment boundary are shown in **Figure 2-8**.

Figure 2-8 Bus stops within enrolment boundary with a 400m radial distance



Source: TfNSW and SCT Consulting, 2024

An eligibility assessment for the School Student Transport Scheme (SSTS) has found that there are about 50 students eligible.

2.2.5 Road network

Key roads that provide access to the school and form part of the transport network that students will use to travel to and from school are Gregory Hills Drive, The Hermitage Way, Digitaria Drive and Holborn Circuit. These roads have the following characteristics:

– **Gregory Hills Drive** is a local sub-arterial road, with two lanes in each direction of travel and a posted speed limit of 60km/h. As mentioned, there are two signalised crossing locations at the intersection of Central Hills Drive to the west and Donovan Boulevard to the east of the school site. The kerbside lanes are predominantly 'No Stopping' with bus zones for the stops shown in **Figure 2-7**. There is a median running between the intersections that widens to approximately 3.9m along the school's frontage.

- **The Hermitage Way** is a local collector road, with one lane in each direction of travel and a posted speed limit of 50km/h. It intersects with Gregory Hills Drive and Digitaria Drive and is likely to be the primary road utilised by the residential areas to the north and south to access the school via car. The intersection with Digitaria Drive is a roundabout with pedestrian refuges on each leg. The is unrestricted kerbside parking on both sides approximately 100m north of the intersection with Gregory Hills Drive that extends to the intersection with Digitaria Drive.
- **Digitaria Drive** is a local road with one lane in each direction of travel and a posted speed limit of 50km/h. the lane widths are 6m wide with unrestricted parking on both sides, along its entire length. Digitaria drive intersects with The Hermitage Way and Holborn Crescent and runs along the entire north frontage of the school.
- **Holborn Crescent** is a local road with one lane in each direction of travel and a posted speed limit of 50km/h. the southbound lane opens up to two short right turn lanes and one through and left lane at the intersection with Gregory Hills Drive. There is unrestricted kerbside parking on certain sections along the westside of the street.

2.2.6 Existing intersection performance

2.2.6.1 Traffic input data

Intersection turning counts and queue length surveys were conducted on 3 September 2024 at the four intersections surround the school site. These are:

- Gregory Hills Drive | Holborn Crescent
- Gregory Hills Drive | The Hermitage Way
- Digitaria Drive | The Hermitage Way
- Digitaria Drive | Holborn Crescent.

Counts were conducted between 8.00am – 9.30am and 2.30 – 4.00pm, to coincide with typical high school start and end times. The layouts of the intersections are shown in **Table 2-2** and **Table 2-3** (overleaf). Video data was also obtained for the time periods mentioned, to verify recorded queue lengths. For each of the intersections was collected Sydney Coordinated Adaptive Traffic System (SCATS) data was obtained from TfNSW for the signalised intersections in **Table 2-2**, collected on the same data as the turning counts.

A site visit was also conducted on Thursday 7 of December 2023 to gather observational data on traffic conditions at four intersections.

Table 2-2 Gregory Hills Drive intersection layouts

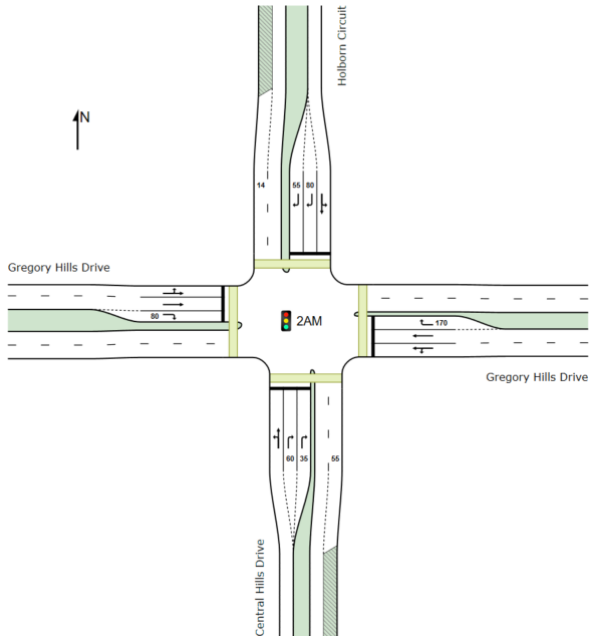
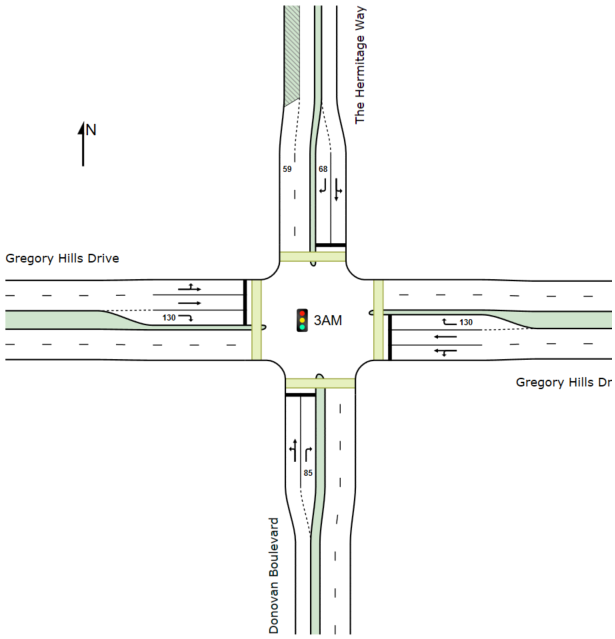
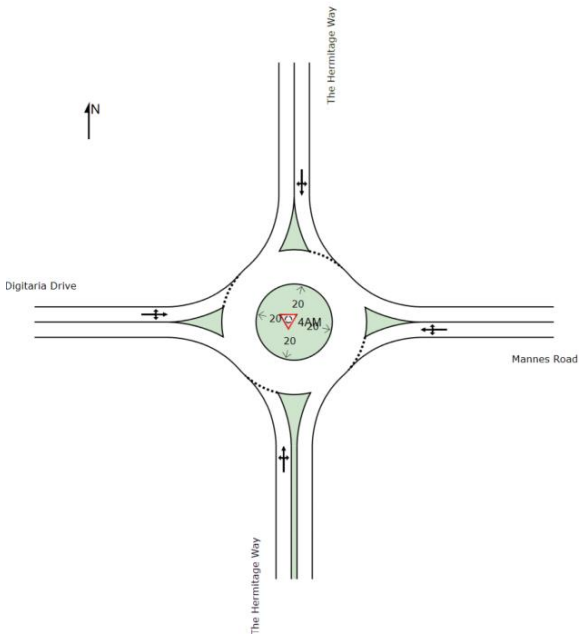
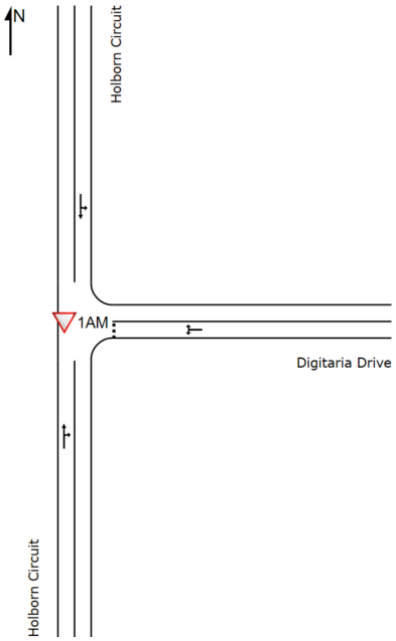
Gregory Hills Drive | Holborn Crescent	Gregory Hills Drive | The Hermitage Way
	

Table 2-3 Digitaria Drive intersection layouts

Digitaria Drive | The Hermitage Way	Digitaria Drive | Holborn Crescent
	

2.2.6.2 SIDRA network development and calibration

The performance of the surveyed intersections was assessed using the SIDRA Intersections traffic analysis tool. This software allows for the evaluation of signalised and un-signalised intersections by modelling separate transport modes such as light and heavy vehicles, as well as pedestrians at an intersection. Outputs from the software include Level of Service (LOS), Degree of Saturation (DOS) and vehicle queue lengths.

Intersection Level of Service (LOS) is a typical measure used by traffic engineers to identify when roads are congested. The Level of Service, as defined in TfNSW Traffic Modelling Guidelines, is provided in **Table 2-4**.

Table 2-4 Level of Service definitions

Level of Service	Average delay per vehicle	Performance explanation
A	Less than 14.5s	Good operation
B	14.5s to 28.4s	Good with acceptable delays and spare capacity
C	28.5s to 42.4s	Satisfactory
D	42.5s to 56.4s	Operating near capacity
E	56.5s to 70.4s	At capacity. At signals incidents will cause excessive delays. Roundabouts require another control method.
F	70.5s or greater	At capacity. At signals incidents will cause excessive delays. Roundabouts require another control method.

Source: Roads and Maritime Services (2002), Traffic Modelling Guidelines

In addition, the following measure of performance is included to complement the Level of Service measure:

– **Degree of Saturation (DOS):** a measure of the volume/capacity for the worst turning movement at the intersection. A DoS of 1.0 implies the turning movement is at capacity.

To ensure the accuracy of the models, models that represent the existing conditions were calibrated to the observed approach queues by comparisons against the modelled 95th percentile back of queues. However, as identified in the TfNSW Modelling Guidelines, observations | surveys of queues are subjective:

> *"Counting or calculating queue lengths is a subjective exercise since queued vehicles will often still be moving slowly and it will not always be clear what criteria should be used to constitute a queue. Also, since*

data is likely to be collected by a number of surveyors it is unlikely that consistent and accurate reporting will be possible across the study area. Additionally, software packages will each calculate queue lengths using different criteria and methodologies which add a further level of complexity. For this reason, RMS does not have mandatory statistical guideline criteria for queue length comparison."

As such, precise exact replication of queues between observed and modelled is impractical, as the models would no longer represent the reported signal timings. A difference of about two to three vehicles (dependent on queue length) is generally an indication of calibration. Queue length validation results and the difference between observed and modelled (*observed – modelled*) are shown in **Table 2-5**. differences of more than three vehicles are shown in red.

Table 2-5 Queue length validation results

Approach	Model AM	Observed AM	Model PM	Observed PM	AM Difference	PM Difference
Gregory Hills Drive | Holborn Crescent						
North	7	7	9	8	0	-1
South	10	12	18	17	2	-1
East	18	16	23	16	-2	-7
West	24	25	20	20	1	0
Gregory Hills Drive | The Hermitage Way						
North	10	12	10	12	2	2
South	23	22	20	21	-1	1
East	19	17	21	15	-2	-6
West	22	21	14	17	-1	3
Digitaria Drive | The Hermitage Way						
North	5	5	4	4	0	0
South	2	4	2	6	2	4
East	3	8	2	6	5	4
West	2	4	2	7	2	5
Digitaria Drive | Holborn Crescent						
North	0	0	0	0	0	0
South	1	3	1	2	2	1
East	1	2	1	3	1	2
West	-	-	-	-	-	-

It is noted that the queue length at the roundabout located at Digitaria Drive | The Hermitage Way during the PM peak has differences on three of the approaches. Video footage showed that queue lengths at the roundabout fluctuated in length, were not consistent and dissipated quickly. Queues tended to form due to platoons of traffic arriving at a particular approach. SIDRA is not suited to capture queues because of platooning arriving from outside the network model at the roundabout.

A difference of seven vehicles was noted for the east approach of Gregory Hills Drive | Holborn Crescent during the PM peak. Attempts to reduce the modelled queues on this approach compromised the calibration of other approaches. The queue length was therefore, left as reported.

A difference of six vehicles was noted for the east approach of Gregory Hills Drive | The Hermitage Way during the PM peak. However, video footage shows that the observed maximum queue length is obscured by buses queuing in the traffic lanes on this approach. It is unclear whether more vehicles join the queue behind the bus.

2.2.6.3 Existing intersection performance

The existing AM and PM peak intersection performances are summarised in **Table 2-6**.

Table 2-6 AM and PM peak intersection performance

Intersection	Weekday AM peak			Weekday PM peak		
	DOS	Delay	LOS	DOS	Delay	LOS
Digitaria Drive | Holborn Crescent	0.13	5.3s	A	0.14	5.4s	A
Gregory Hills Drive | Holborn Crescent	0.61	33.9s	C	0.75	42.8s	D
Gregory Hills Drive | The Hermitage Way	0.89	32.7s	C	0.81	31.4s	C
Digitaria Drive | The Hermitage Way	0.51	11.2s	A	0.43	9.9s	A

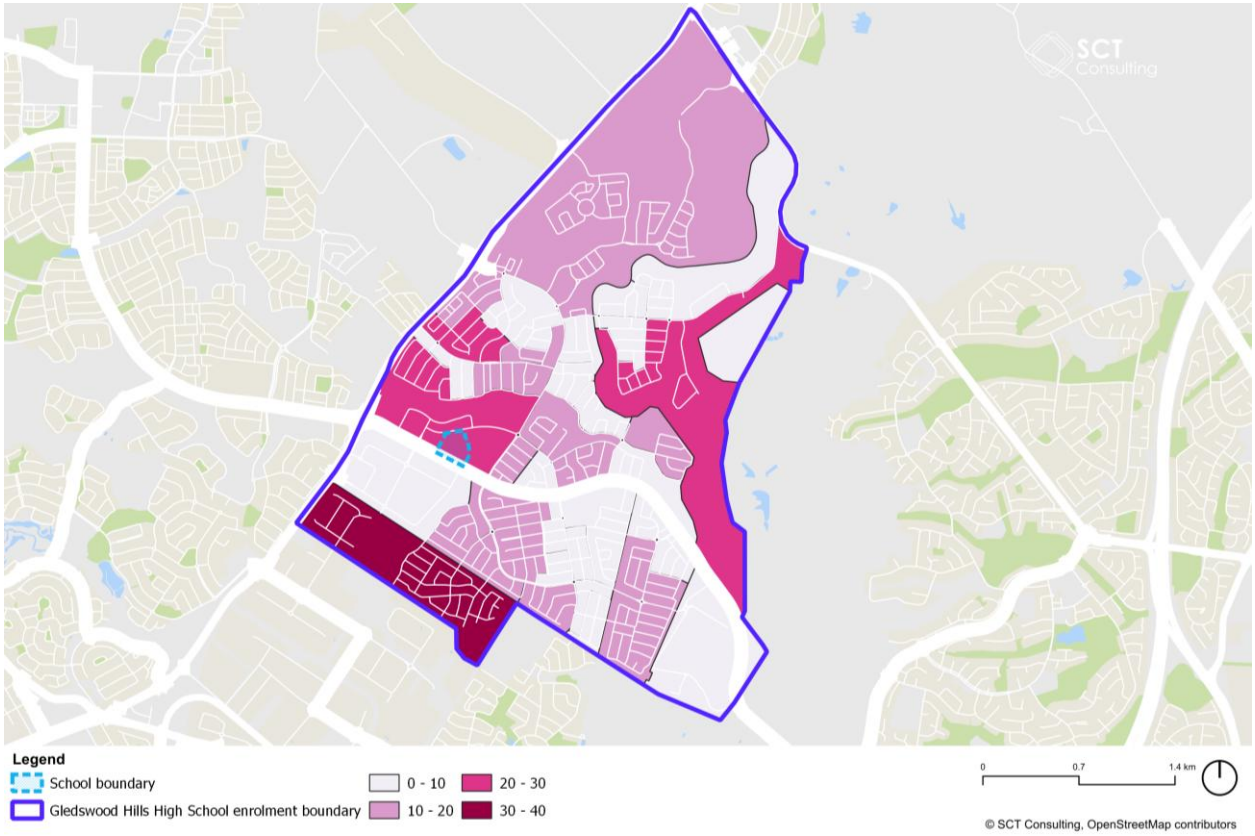
The SIDRA results for the intersections associated with Digitaria Drive indicate minor delays with an LOS of A for both peaks. The DoS is low with a maximum value of 0.51 for the intersection of Digitaria Drive | The Hermitage Way indicating extra capacity associated with intersections along Digitaria Drive. For the intersections along Gregory Hills Drive operate at LOS C and D during the peak periods. The DoS at the intersection of Gregory Hills Drive and The Hermitage Way is 0.89, indicating limited additional capacity. Full intersection analysis results, including traffic surveys and spreadsheet model, are in **Appendix B**.

2.3 Travel demand

2.3.1 Student locations

Figure 2-9 shows the locations of the current 600 high school age students within the enrolment boundary upon opening in 2026, broken up into the Australian Bureau of Statistics (ABS) Statistical Area 1 (SA1) boundaries.

Figure 2-9 Anonymised student locations



The school is being designed to a future total student population of 1000. It is understood that the 1000 students attending the school will come from within the current enrolment boundary.

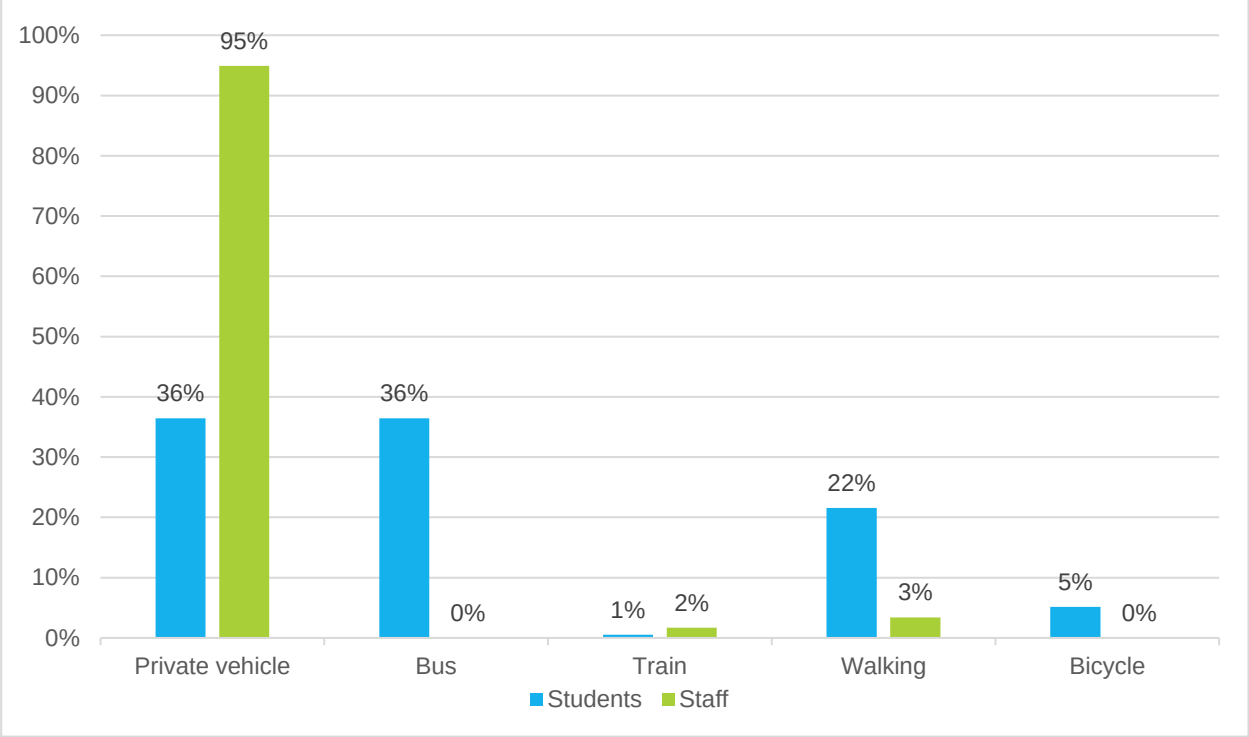
2.3.2 Local travel demand

The enrolment boundary for the proposed school roughly correspond to the Gregory Hills and Gledswood Hills ABS 'Statistical Area 2' boundaries, a larger statistical area that is the aggregate of SA1 zones. SA2 zones contain demographic and Journey to Work (JTW) data. JTW data reflects only those community members travelling to their place of employment (this may include staff of new Gledswood Hills High School who live in the local area), and not high school students who may be able to travel independently. In addition, JTW data from 2021 is unreliable, coinciding with the Covid-19 lockdown and high working from home proportions. JTW data from 2016 is also not reliable as the population of the Gledswood Hills SA2 zone grew from 22 to 6112 in 2021, which is indicative of a significant shift in land use and therefore travel behaviour.

2.3.3 School travel behaviour

A hands up travel survey was carried out at Oran Park High School (OPHS) in June 2024, the closest public high school approximately 5km to the north west. This comprised of 195 students and 59 members of staff. Travel patterns from OPHS are like the future Gledswood Hills High School. The mode share results are shown in **Figure 2-10.**

Figure 2-10 Oran Park High School student and staff mode share



Source: School Infrastructure NSW, 2024

The survey responses indicate that private vehicle and bus mode share are evenly split amongst students. OPHS as for Gledswood Hills High School, has three public bus services stopping in the vicinity of the school the 840, 850 and 858, with similar frequencies. Walking makes up just over 20 per cent of the mode share for students due to the school's proximity to the residential zones in Oran Park. Bicycle mode share is low at 5 per cent for students. Trains make up 1 per cent of the student mode share and likely form part of multimodal trips for students residing outside of the enrolment boundary.

Private vehicle trips are the dominant form of transport for staff, making up 95 per cent of the mode share. Walking makes up just 3 per cent with the remainder being train trips likely from Campbelltown or Leppington.

SCT Consulting consulted with Camden Council who supported use of benchmarking mode share from OPHS to inform the mode share at the new Gledswood Hills High School.

3.0 Analysis of strategic context and existing transport network/demands

3.1 Testing school transport targets

3.1.1 Student mode share scenarios

Gledswood Hills High School is proposed to be constructed to an initial capacity of 1,000 students.

The mode share analysis was based on the indicative locations of future students, which were developed using anonymised locations of students within the proposed enrolment boundary, future year enrolment targets, and future residential growth areas in the enrolment boundary. As a new school, there are no existing travel mode shares for STHS and its base case mode share was calibrated against Oran Park High School's 2024 travel survey results. Oran Park High School is a suitable benchmark for Gledswood Hills High School as it is within the same Local Government Area, a short distance from the school and has similar context.

The base case mode share scenario was set to be equivalent to Rouse Hill High School based on its similarity to the school. Rather than just adopt the mode share, **an accessibility-propensity method** was used. The accessibility-propensity method:

– School Infrastructure provides anonymised student location data, which SCT Consulting grouped into levels of transport **accessibility** (1-400m walk, 400-800m walk, 800-1,200m walk, eligible for the School Student Transport Scheme, and everyone else).

– It is assumed that students within each of these accessibility groups have a certain **propensity** to pick walking, cycling, public transport and driving. It is assumed that propensity to walk drops over distance, cycling initially rises then falls, and public transport rises with distance.

– As there is no existing mode share for the school, the mode share was set to that of Rouse Hill High School and the propensities solved for.

Future mode share forecasts are based on the number of students who benefit from proposed infrastructure.

Three scenarios are assessed:

– **Base case:** the delivery of the school with no offsite upgrades

– **Moderate case:** the delivery of the school with the proposed mitigation measures, enabling the assessment of the mode share benefits of the proposed initiatives compared to the base case

– **Stretch case:** the delivery of the school with the proposed mitigation measures plus mitigation measures that are to be delivered by others (and therefore not able to be able to be guaranteed under the assessment).

Three scenarios were assessed as detailed in **Table 3-1**.

Table 3-1 Description for scenario development – student mode share

Scenario	Description
Base case	– 100% of students within enrolment catchment – Access points: • Gate on the northern boundary • Two gates on the southern boundary
Moderate case	– Base case plus: – Raised threshold zebra crossing on Digitaria Drive to facilitate safe access to the north – Widen footpath (to 2.0m) and provide tree planting for shade along Digitaria Drive southern side to provide sufficient space for students walking
Stretch case	As with moderate case and – Additional Bus stop on southern side of Gregory Hills Drive – Expanded bus offering

Table 3-2 summarises the mode share targets for the three scenarios.

Table 3-2 Student mode share targets

Scenario	Metric	Walk	Bicycle/Scoot	Bus	Car
Base case	#	232	47	365	356
	%	23%	5%	37%	36%
Moderate case	#	262	47	365	326
	%	26%	5%	37%	33%
Stretch case	#	262	47	400	291
	%	26%	5%	40%	29%

3.1.1.1 Base case

As Gledswood Hills High School is a proposed school, there are no existing travel mode shares for the school and Oran Park High School's hands up travel survey mode shares (2024) were adopted. Oran Park High School is a suitable benchmark as it is a neighbouring school with similar travel environments. Its enrolment boundary also includes part of Gledswood Hills High School's proposed enrolment boundary.

Table 3-3 outlines the mode shares and allocations for the future base case. This table is based on the following assumptions:

– No investment in transport infrastructure.

– Assumed access points:

  - Gate on the northern boundary
  - Two gates on the southern

The future base case would generate:

– 356 cars per pick up/drop off session (0.36 vehicles per student). However, the road network needs to accommodate double the number of trips per hour with inbound and outbound trips generated during pick up/drop off. These are student-only trips.

– It is assumed that 90 per cent of students will arrive within the peak hour and all staff will arrive outside the peak hour. This results in a peak period traffic generation of 321 vehicles in the peak hour.

– The daily traffic generation for the school is 712 trips.

Table 3-3 Future base case scenario

Accessibility group	Notional (as the crow flies)		Actual (on path)		Students in accessibility group	Propensity to pick each mode			
	#	%	#	%		Walk	Bicycle	Bus	Car
1-400m	10	1%	0	0%	0	90%	6%	0%	4%
400-800m	190	19%	75	13%	75	80%	7%	0%	13%
800-1,200m	290	29%	222	37%	222	50%	8%	5%	37%
Not eligible for SSTS but beyond 1,200m walk	413	41%	607	101%	607	10%	4%	48%	38%
Eligible for SSTS	97			16%	97	0%	0%	65%	35%
Number of students predicted by mode						**232**	**47**	**365**	**356**
Proportion of students predicted by mode						**23%**	**5%**	**37%**	**36%**

3.1.1.2 Moderate case

A moderate case was developed based on a list of potential interventions to encourage mode shift towards more sustainable transport modes. The improvements are focussed around active transport on Digitaria Drive, including the widening of the footpath to 2m, providing tree planting shade on the southern side, and providing a wombat crossing (raise threshold crossings) to facilitate safe access for students living north of Digitaria Drive.

Table 3-4 summarises the likely impact of these proposed initiatives on the mode share. The assumptions for this assessment was:

– Site entrances are retained

– Adequate bus services are provided by TfNSW to meet student demand

The moderate case will generate:

– 326 cars per pick up/drop off session (0.33 vehicles per student). However, the road network needs to accommodate double the number of trips per hour with inbound and outbound trips generated during pick up/drop off. These are student-only trips.

– During the peak hour, it is assumed that 90 per cent of students will arrive within the hour and all staff will arrive outside the peak hour. This results in a peak period traffic generation of 294 vehicles in the peak hour.

– The daily traffic generation for the school is 652 trips.

Table 3-4 Moderate case scenario – change in mode share per intervention

Intervention	Type	Walk	Cycle	Bus	Car	# students potentially benefited
Raised threshold zebra crossing on Digitaria Drive to facilitate safe access to the north	Infrastructure	25			-25	465
Widen footpath (to 2.0m) and provide tree planting for shade along Digitaria Drive southern side to provide sufficient space for students walking	Infrastructure	5			-5	465
Net change in number		**30**	**0**	**0**	**-30**	
Future base case number		**232**	**47**	**365**	**356**	
Future base case mode share		**23%**	**5%**	**37%**	**36%**	
Moderate case projected number		**262**	**47**	**365**	**326**	
Moderate case projected mode share		**26%**	**5%**	**37%**	**33%**	

3.1.1.3 Stretch case

The stretch case applies all the interventions in the moderate case with additional interventions to target bus mode share. Student enrolment has also increased to 1,000 students in the stretch case. Limited impact on bus mode shares is expected as most students will be living within the SSTS eligibility area.

Table 3-5 summarises the likely impact of these proposed initiatives on the mode share. The assumptions made were:

– Site entrances are retained

– Following interventions from moderate case also in place:

  - Raised threshold zebra crossing on Digitaria Drive to facilitate safe access to the north
  - Widen footpath (to 2.0m) and provide tree planting for shade along Digitaria Drive southern side to provide sufficient space for students walking

The stretch case will generate:

– 291 cars per pick up/drop off session (0.29 vehicles per student). However, the road network needs to accommodate double the number of trips per hour with inbound and outbound trips generated during pick up/drop off. These are student-only trips.

– During the peak hour, it is assumed that 90 per cent of students will arrive within the hour and all staff will arrive outside the peak hour. This results in a peak period traffic generation of 262 vehicles in the peak hour.

– The daily traffic generation for the school is 582 trips.

Table 3-5 Stretch case scenario – change in mode share per intervention

Intervention	Type	Walk	Cycle	Bus	Car	# students potentially benefited
Relocated bus stop on southern side of Gregory Hills Drive	Infrastructure			10	-10	307
Increased bus frequency	Infrastructure			25	-25	307
Net change in number		**0**	**0**	**35**	**-35**	
Moderate case number		**262**	**47**	**365**	**326**	
Moderate case mode share		**26%**	**5%**	**37%**	**33%**	
Stretch case projected number		**262**	**47**	**400**	**291**	
Stretch case projected mode share		**26%**	**5%**	**40%**	**29%**	

-

3.1.2 Staff mode share scenario

It is estimated there are 78 staff members. Proposed staff numbers are based on the following assumptions from School Infrastructure:

– One principal

– 5.4 teachers and 1 teacher member per 16.9 students

– 3.7 School Administration Staff (SAS) and 1 SAS per 120 students

Table 3-6 summarises the proposed mode share for staff, which was benchmarked against Oran Park High School staff travel mode shares.

Table 3-6 Staff mode share targets

Scenario	Metric	Walk	Bicycle/Scoot	Bus	Car
Base case	#	1	0	2	74
	%	1%	0%	3%	95%
Moderate case	#	1	1	2	73
	%	1%	1%	3%	94%
Stretch case	#	1	1	8	69
	%	1%	1%	10%	88%

The staff mode share is based on the following assumptions:

– Base case
  - No infrastructure improvements or travel encouragement initiatives.

– Moderate case
  - Raised threshold zebra crossing on Digitaria Drive
  - Widened footpath and tree planting for shade on southern side of Digitaria Drive
  - Use of carpooling and carsharing
  - Workplace walking/cycling group.

– Stretch case
  - As with moderate scenario plus:
    - Additional bus stop on southern side of Gregory Hills Drive
    - Increased bus frequency.

3.2 Supporting scenarios with infrastructure, operations, policies & programs

This section describes the infrastructure, public transport provisions, and transport encouragement programs that are proposed to meet the target mode share.

Table 3-7 summarises the infrastructure and operational requirements across the moderate and stretch case scenarios. All transport upgrades and operational initiatives are proposed to be implemented within the first year of school operations, or otherwise agreed with Council and TfNSW.

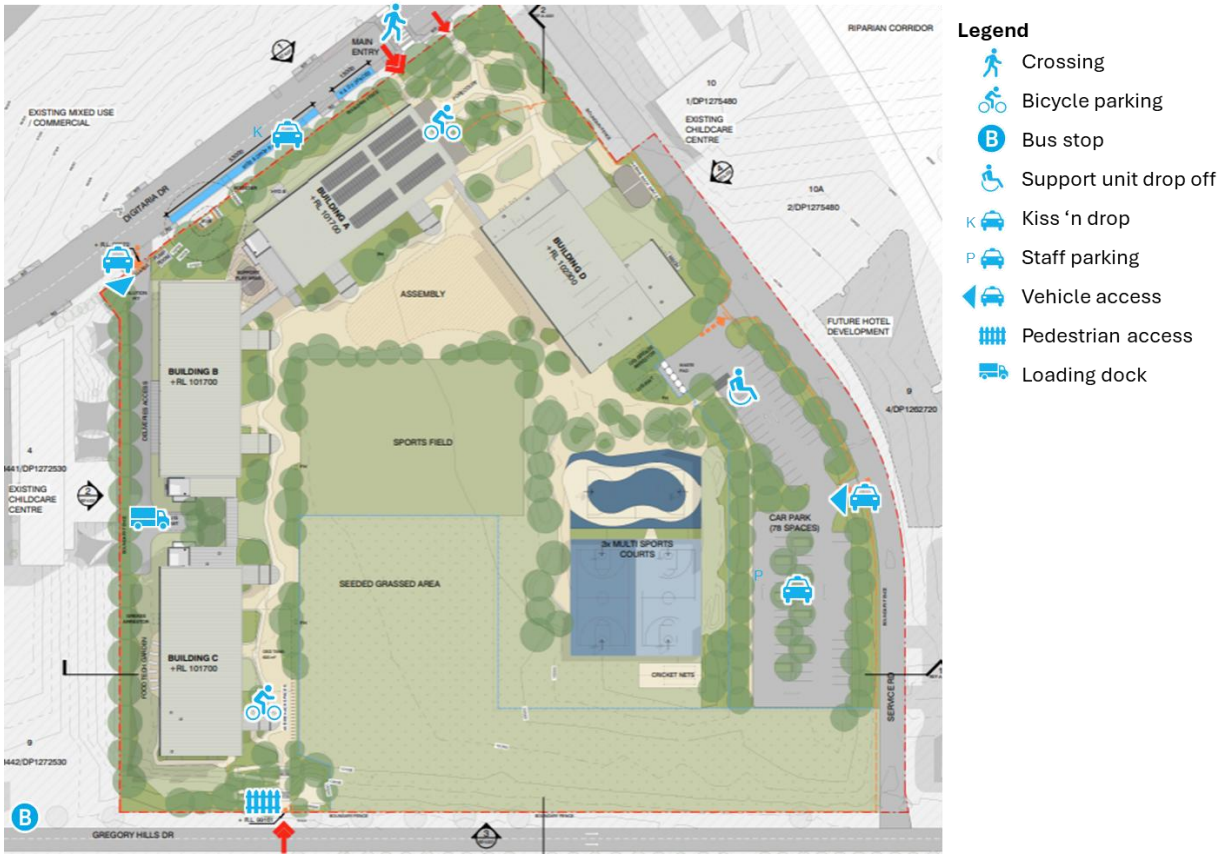
Table 3-7 Infrastructure and operational requirements

Category	Moderate case	Stretch case	Owner
Infrastructure	– Raised threshold zebra crossing on Digitaria Drive to facilitate safe access to the north – Widen footpath (to 2.0m) and provide tree planting for shade along Digitaria Drive southern side to provide sufficient space for students walking	As with moderate case plus: – Additional Bus stop on southern side of Gregory Hills Drive – Expanded bus offering	School Infrastructure
Operations, policies & programs for **students**	– Travel Coordinator – School Transport Committee – Travel Access Guide – NSW Police road safety training	Same as the moderate case	School Infrastructure & School
Operations, policies & programs for **staff**	– Travel Coordinator – School Transport Committee – Travel Access Guide – Use of carpooling and carsharing – Workplace walking/cycling group	Same as the moderate case	School Infrastructure & School

3.2.1 School transport infrastructure

Figure 3-1 summarises the key transport infrastructure for the school, including access points, kiss 'n drop, parking, crossings and loading docks. These key transport infrastructure provisions are expected to be implemented within the first year of school operation (unless otherwise agreed with Council and TfNSW), alongside transport encouragement initiatives.

Figure 3-1 Gledswood Hills High School – Transport Access



Source: djrd Architects with annotations by SCT Consulting; 2024

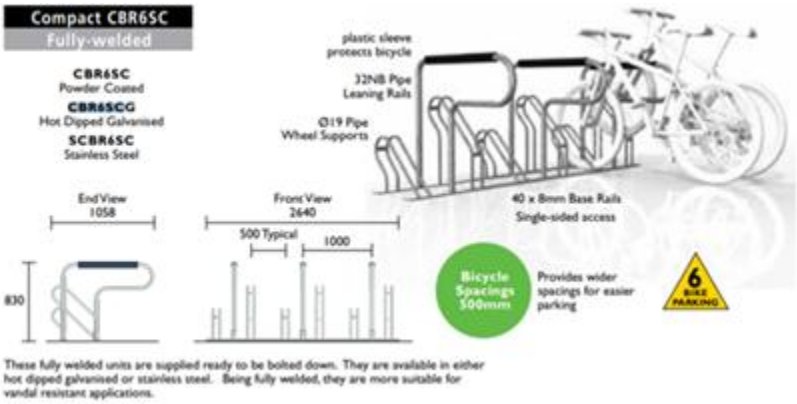
School zone signage will need to be installed as required by Transport for NSW.

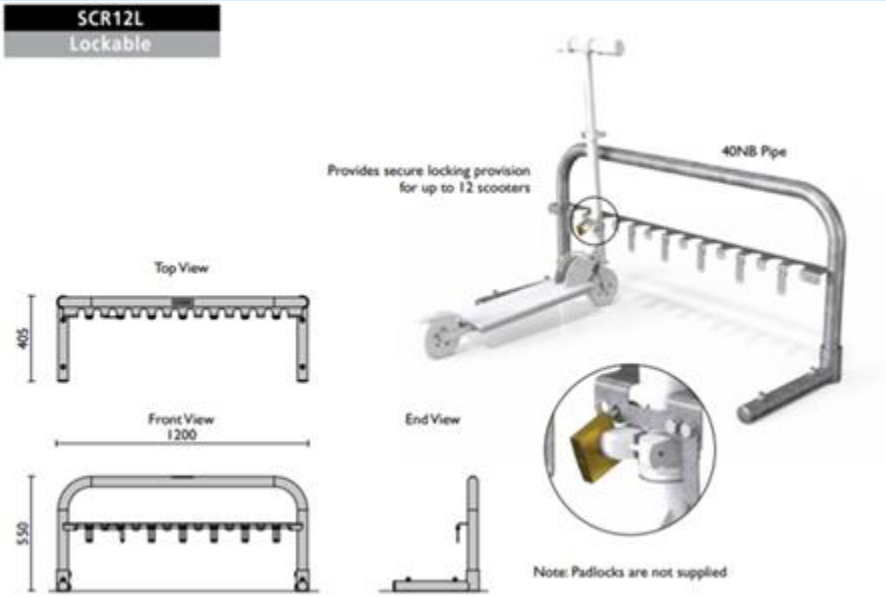
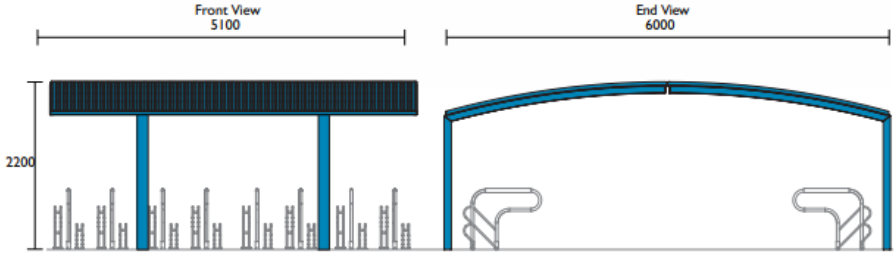
3.2.1.1 Bicycle / rideable parking and end of trip facilities

80 bicycle parking spaces are provided at the north-eastern and south-western side of the campus respectively (40 at each). Having facilities located close to entrances along Digitaria Drive and Gregory Hills Drive makes it convenient for students to access bicycle parking regardless of which direction they travel from. Multiple bicycle parking locations also reduces the need to cycle within the school compound to access parking, which could be a hazard for other students.

The facilities will be designed to the requirements summarised in **Table 3-8**.

Table 3-8 Bicycle and scooter parking design standards

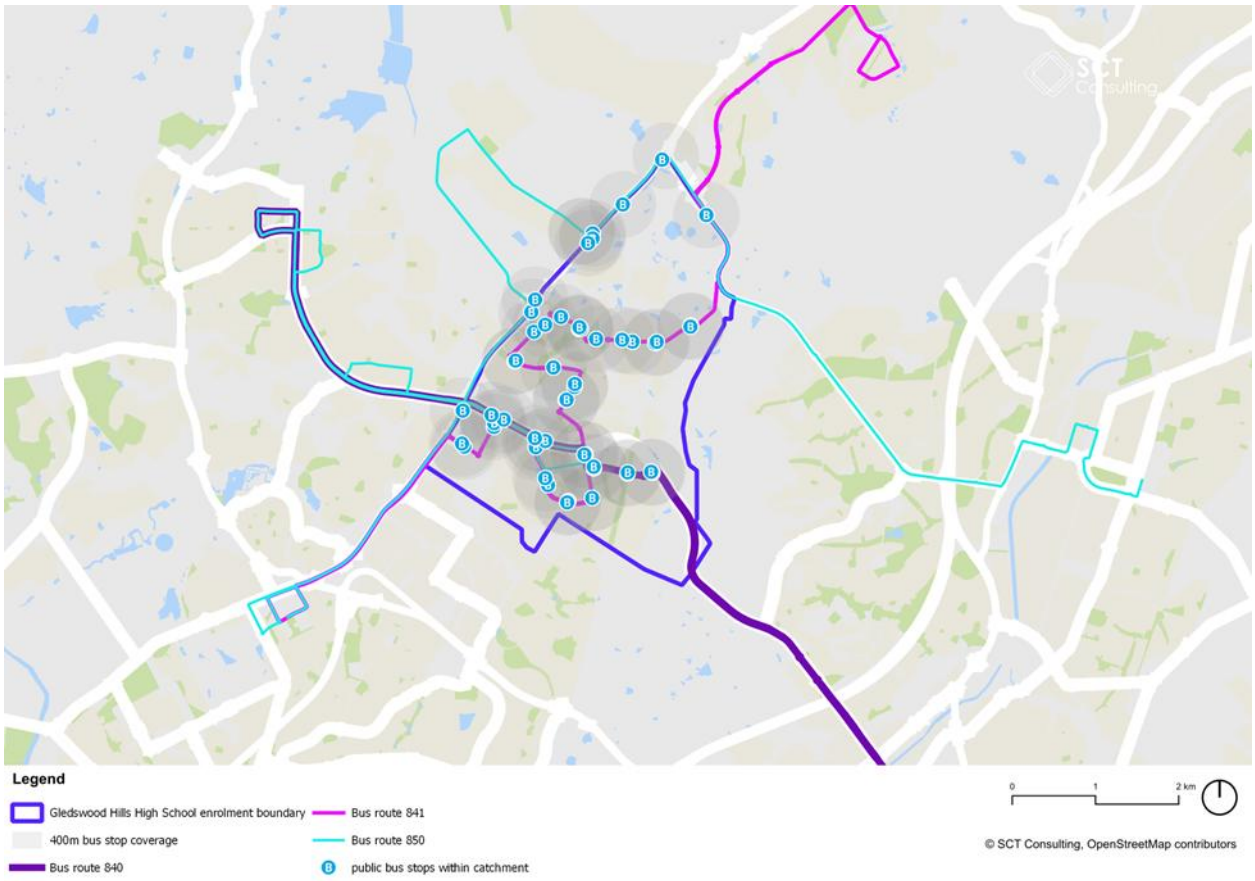
Element	Design
Access to bike racks	AS 2890.3 recommends a minimum width of 1500mm for a one-way access path and a width of 2500mm for a two-way access path. Due to the temporal flow of typical day school pedestrian traffic (towards the school in the morning, and out of the school in the afternoon), we can make the argument that the path would generally operate as one way (1500 mm). However, there may be some use cases where the access way would need to cater for bidirectional traffic. Where possible, it would be recommended to have sections of 2500 mm width for passing, like what is done in tight street network passing bays. Bike ramps should also not exceed 1:12 and not contain stairs.
Bicycle racks	The EFSG does not provide specifications for bicycle racks. A recommended rack is the following: 
Scooter racks	The EFSG does not provide specifications for scooter racks. A recommended rack is the following:

Element	Design
	
Spatial design requirements	Aisle widths must be 2.0m between racks as these would be considered “multi-tier” (AS2890.3 Table 2.1). Aisles are one-way during school operations, so the 2.0m can drop to 1.5m. The total aisle dimensions are 6m from the extremity of one track to the extremity of another.  There are no Australian Standards for scooters. From product brochures, a scooter rack plus a scooter takes indicatively 0.7-0.8m. An aisle width of 1.2m is recommended, which is the minimum aisle width for accessible access.

3.2.1.2 Bus access and service frequency

Existing bus services service a significant proportion of the residential areas surrounding the school as illustrated in **Figure 3-2**.

Figure 3-2 Existing bus routes



Three bus services (840, 841, 850) currently stop in the vicinity of the site. The existing bus schedules are summarised in **Table 3-9**.

Table 3-9 Existing bus schedules

Route	AM stop	AM arrival	PM stop	PM departure
840	Gregory Hills Dr after Donovan Blvd (across site)	8:01 AM	Gregory Hills Dr opposite Gregory Hills Hotel (adjacent to site entrance)	**3:19 PM**
		8:31 AM		3:53 PM
841	Gregory Hills Dr after Donovan Blvd (across site)	8:10 AM	Gregory Hills Dr opposite Gregory Hills Hotel	**3:13 PM**
		8:21 AM		3:45 PM
		8:41 AM		-
		8:57 AM		-
850	Gregory Hills Dr after Donovan Blvd (across site)	8:23 AM	Gregory Hills Dr opposite Gregory Hills Hotel	**3:12 PM**
		8:27 AM		3:42 PM
		8:49 AM		3:51 PM
		-		3:57 PM

Source: TfNSW, 2024

Route 841 services a majority of the enrolment boundary and is the main route servicing through the north side of the enrolment boundary. Route 850 also provides a north-south connection but largely operates along the fringes of the enrolment boundary. Route 840 services a minor east-west section of the enrolment boundary

There is a gap in bus services for students living outside of walking distance to the school in the north, south-east and east of the enrolment boundary (about 15 per cent).

It is assumed that students will arrive and depart within 30 minutes of school bell times at 9am and 3pm (existing services within 30 minutes of bell times are bolded in **Table 3-9**), and that each bus can hold 30 students on average. With 365 to 548 students in the future base and moderate case, and 400 to 600 students in the stretch case expected to take the bus, it is estimated that the following number of services are required:

– **Base case and moderate case (365 students expected):** 12 buses needed (+8 buses in the AM, +9 buses in the PM from existing services). As TfNSW regularly monitors and revises bus frequencies as needed, it is assumed that the appropriate number of buses will be provided to meet the base and moderate case bus demands.

– **Stretch case (400 students expected):** 13 buses needed (+9 buses in the AM, +10 buses in the PM from existing services).

Based on the route coverage of existing bus services, **Table 3-10** summarises the additional bus services recommended.

Table 3-10 Additional buses needed in AM and PM peak hour

Route	Enrolment boundary coverage	Additional buses for base and moderate case		Additional buses for stretch case	
		AM	PM	AM	PM
840	15%	1	1	1	2
841	15%	6	6	6	7
850	70%	1	1	1	2
Total	**100%**	**8**	**9**	**9**	**10**

It was agreed with Camden Council that stop 25573 (Gregory Hills after Central Hills Dr) would be relocated to the east of Central Hills Drive to reduce travel distance for students. Any bus stop relocation would be subject to TfNSW agreement.

3.2.1.3 Kiss ‘n drop

The proposed kiss ‘n drop will be provided on the southern side of Digitaria Drive along to the northern school boundary. There will be 10 spaces on the south side of Digitaria Drive directly fronting the school. It is expected that there will be an overflow demand on the northern side of four spaces across the school on the northern side of Digitaria Drive. School Infrastructure originally proposed no parking restrictions on the northern side of Digitaria Drive, however Camden Council requested these be removed with the recognition that there would be some overflow demand, but a no parking zone was too impactful on other road users. These 14 spaces are sufficient to meet the kiss ‘n drop needs from moderate mode share case through to the stretch case.

There are also two accessible parking spaces at the carpark (entry along eastern service road) that can be used for picking up and dropping off for students with additional needs.

3.2.1.4 Parking and loading dock

The site sits within the ‘Entertainment Precinct’ part of the Turner Road Development Control Plan. The Turner Road DCP states the following about car parking in the Entertainment Precinct, “Car parking is to be designed and allocated to land uses in accordance with Camden Development Control Plan 2006”. **Table 3-11** summarises Camden Council Development Control Plan (DCP) parking requirements and compares it to the proposed car parking spaces.

Table 3-11 Camden Council DCP Carpark requirements

DCP requirement	DCP requirements	Proposed
1 car parking space per full time equivalent staff member	78	78
1 car parking space per 100 students	10	0
1 car parking space per 5 students in Year 12 where appropriate	34	0
Total	**132**	**78**

In line with intentions to encourage more sustainable travel, fewer car parking spaces are proposed to be provided than recommended in the DCP. No parking spaces will be provided for students as access to the school is supported by good public transport and walking facilities in the vicinity. Additionally, in the stretch case, a combination of infrastructural improvements and travel encouragement initiatives would have resulted in a mode shift away from car use for staff (estimated mode share in **Section 3.1.2**).

Camden Council was consulted on the number of parking spaces and did not raise any concerns.

The carpark will be designed according to the requirements laid out in AS2890 car park requirements and the Education Facilities Standards and Guidelines (EFSG). A detailed audit is provided in **Appendix E** demonstrating compliance.

Delivery access is along Digitaria Drive. Retractable bollards will be installed at the access point, which will be raised outside of delivery hours. Waste collection is via the eastern carpark access. Delivery and waste collection must occur outside of school operating and peak hours to reduce disturbance to students (before 8am or after 4pm)

4.0 Impacts and mitigation measures

4.1.1 Cumulative background growth

As outlined, the new Gledswood Hills High School is planned for a future capacity of 1000 students. Applying the target mode share of 33 per cent (moderate target in **Section 3.1**) equates to 330 students using private vehicles. An average vehicle occupancy of 1.7 passengers (typical for school trips), corresponds to 195 vehicles on the local road network during the AM and PM peak periods doing pick up and drop, off once the student population target is reached. The 195 vehicles are equivalent to 390 vehicle movements per hour, as each vehicle must enter and then exit the precinct.

4.1.2 Traffic modelling assumptions

Key assumptions for the future traffic modelling are outlined below:

- 38% of future students were assumed to reside south of Gregory Hills Drive while 62% of students reside north of Gregory Hills Drive. This is based on the anonymised student location data provided by School Infrastructure. Pick up and drop off will only occur on Digitaria Drive to examine the performance of its intersections under a 'full use' demand scenario. This is a conservative assumption as high school students may be dropped further afield. All vehicle trips were modelled as 'drop offs', meaning vehicles return to their place of origin within the peak period. This was due to the lack of reliable JTW data and to examine the performance of the intersection under a 'worst case' scenario. Additional pedestrian volumes crossing the roads, generated by students walking or taking the bus were considered.
- The current student population within the proposed enrolment boundary would have been captured in the traffic counts collected in September 2024 travelling to nearby high schools such as OPHS. These trips were redirected to travel to Gledswood High School and considered as part of the 390 vehicles per hour.
- Signal phases were based on the Sydney Coordinated Adaptive Traffic System phase plans for the two signalised intersections that were modelled.
- Practical Cycle Times as well as User Given Phase Times were used to optimise intersection performance. Phase arrangements for the intersections can be seen in **Appendix C**.

4.1.3 Future year intersection performance with cumulative background growth

The impact of the 195 vehicle trips during the AM and PM peaks is summarised in **Table 4-1**.

Table 4-1 Future enrolment traffic volumes intersection performance

Intersection	Weekday AM peak			Weekday PM peak		
	DOS	Delay	LOS	DOS	Delay	LOS
2027 school opening						
Digitaria Drive | Holborn Crescent	0.31	14.1s	A	0.20	11.2s	A
Gregory Hills Drive | Holborn Crescent	0.81	49.1s	D	0.89	31.5s	C
Gregory Hills Drive | The Hermitage Way	0.82	38.8s	C	0.86	32.4s	C
Digitaria Drive | The Hermitage Way	0.65	15.8s	B	0.56	12.4s	A
2037 – 10 years post opening						
Digitaria Drive | Holborn Crescent	0.39	15.8s	B	0.22	11.6s	A
Gregory Hills Drive | Holborn Crescent	0.87	52.6s	D	0.87	37.4	C
Gregory Hills Drive | The Hermitage Way	0.93	55.3s	D	0.91	38.0	C
Digitaria Drive | The Hermitage Way	0.72	20.6s	B	0.61	13.7	A

4.1.3.1 2027 school opening modelling results

The intersection of Digitaria Drive | Holborn Crescent sees an increases in delay during both peaks but remains at LOS A. Gregory Hills Drive | Holborn Crescent sees an increase in delay during the AM peak, going from LOS C for the existing traffic volume scenario (**Table 2-6**) to LOS D. The PM peak sees a reduction in delay from LOS D to LOS C. This is due to a 'practical' cycle time being applied for the signal phases, which provides greater phase time for Holborn Crescent, in contrast to the current SCATS phasing. Using a practical cycle time less than 140 seconds is support by Transport for future year modelling scenarios.

Gregory Hills Drive | The Hermitage Way remains at LOS C for both peaks with a small increase in delay of approximately six seconds during the AM peak.

Digitaria Drive | The Hermitage Way also sees an increase in delay, with LOS going from A to B during the AM peak.

4.1.3.2 2037 – 10 years post opening modelling results

Digitaria Drive | Holborn Crescent 10 years from the school opening goes from LOS A to LOS B in the AM peak with an increase in less than two seconds. Gregory Hills Drive | Holborn Crescent remains reasonably consistent at LOS D and C respectively for the AM and PM peaks. The PM peak sees an increase in delay of just under six seconds. There is a notable increase in delay at Gregory Hills Drive | The Hermitage Way during the AM peak. Delay increases by approximately 17 seconds and DOS increases to 0.93. A DOS of 0.93 indicates the intersection at this time would be nearing its capacity to accommodate additional traffic demand. Digitaria Drive | The Hermitage Way remains at LOS B and LOS A for the AM and PM peaks respectively.

4.1.4 Operational impacts

Intersection performance from **Table 4-1**indicates that the intersection of Gregory Hills Drive | Holborn Crescent will experience the largest increase in delay of 15.2 seconds when the school is projected to open in 2027. However, delay is in the lower range for LOS D and DOS is 0.81 during the AM peak when the largest delay increase occurs. This delay increase is reasonably minor with the DOS indicating that the school is not going to cause capacity issues on the road network.

10 years post opening the intersection of Gregory Hills Drive | The Hermitage Way sees an increase in delay to 55.3 seconds and a DOS of 0.93. The delay remains at LOS D; however, the DOS indicates that the intersection cannot accommodate much further growth in traffic.

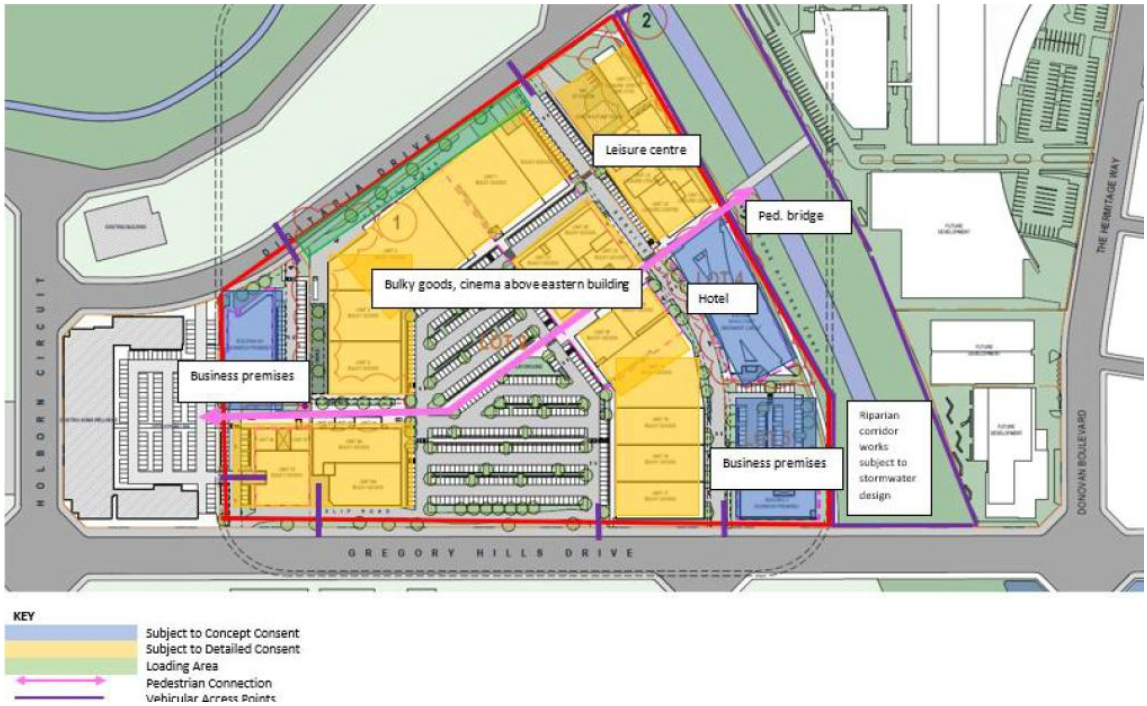
The modelling results indicate that the current road network can accommodate the traffic generated by the new school with background growth in traffic volumes. Therefore, no additional upgrades to the road network are proposed.

4.2 Impacts on concept approval and easements

The land on which the site sits is subject to a concept approval (DA/2017/45/1) for a mixed-use development comprising bulky goods premises, business premises, food and drink premises, indoor recreation facilities, two hotels and a cinema.

The new Gledswood Hills High School is located in the central portion of the concept approval as shown in **Figure 4-1**. This figure is an overlay on a Site Plan from Mod 5, which are the only plans the project team have access to. Notwithstanding, the general layout of the site is largely the same as the original Concept layout.

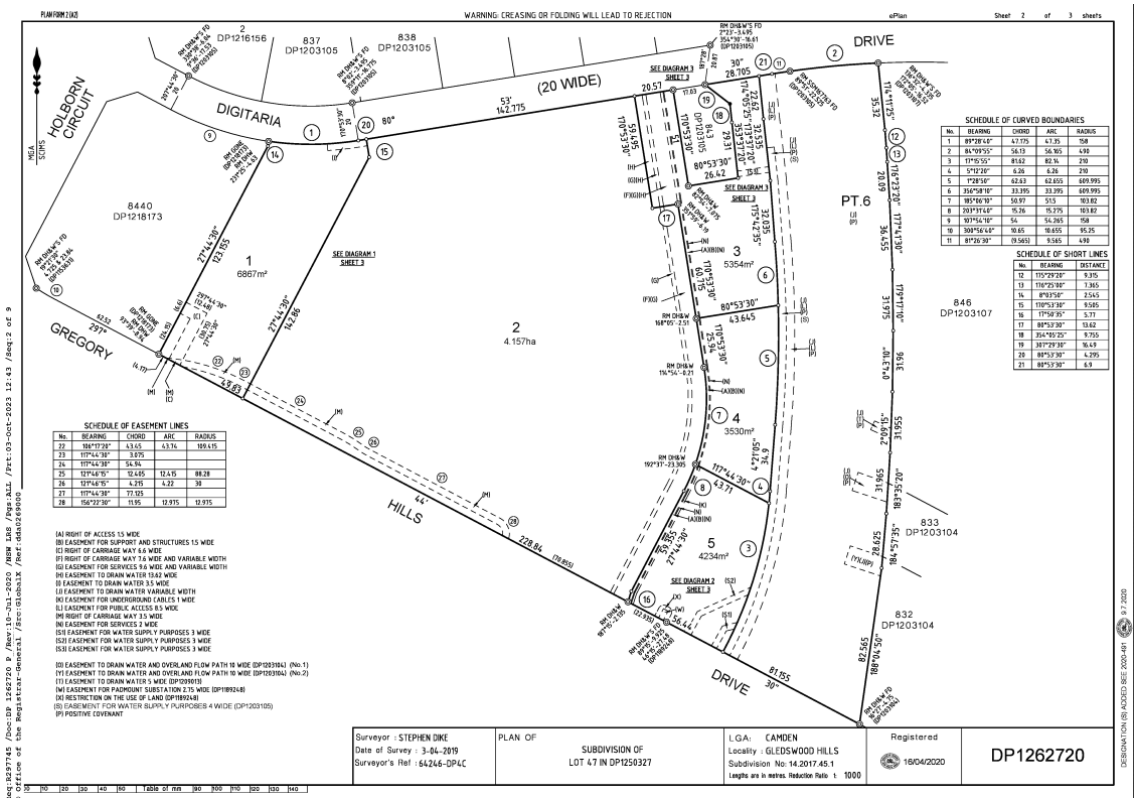
Figure 4-1 Notional Concept DA layout



Source: SOMA Lifestyle Precinct

This concept development application is supported by several easements on site, which are shown in **Figure 4-2**.

Figure 4-2 Site easements



Source: Deposited Plan

The two easements which have traffic importance are:

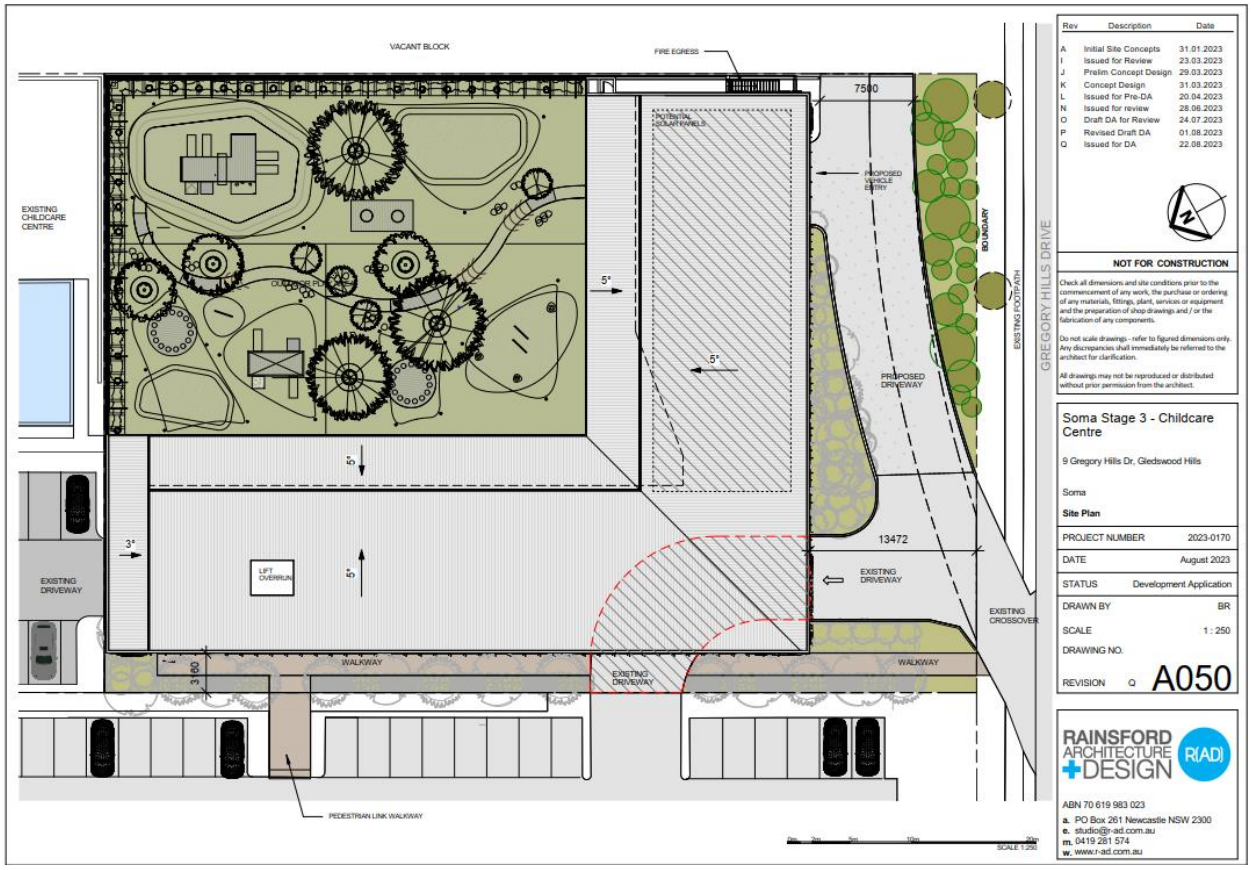
– {F}, a “RIGHT OF CARRAIGEWAY 7.6 WIDE AND VARIABLE WIDTH”

– {M}, a “RIGHT OF CARRIAGEWAY 3.5 WIDE”.

{F} is a constructed driveway which benefits Lots 2, 3, 4, and 5 in DP 1262720 as well as Lot 843 DP1203105. Where the driveway sits within the subject site (Lot 2 DP 1262720).

{M} has not been constructed within the site, only a limited extent within Lot 8442 DP1272530 (9 Gregory Hills Drive). The driveway proposed is for an entry from Gregory Hills Drive, which heads eastbound (**Figure 4-**).

Figure 4-3 Architectural plan – Lot 8442 DP1272530



Source: Rainsford Architecture + Design, 2023

Easement {M} is a slip road which re-joins Gregory Hills Drive, running eastbound only. Lot 8442 DP1272530s design proposes only site entries from {M}. Lot 8441 DP1272530 (the SOMA Health & Wellness Centre) also has only an entry proposed at this location. As there are no exits proposed for Lot 8441 or Lot 8442 DP1272530 and it is not possible for drivers to head westbound along {M}, only the subject site would benefit from the extension of {M} within the site.

The new Gledswood Hills High School sits fully within Lot 2, which was proposed to cater for the following land uses:

– 16,925m^2 GFA Bulky Goods

– 220m^2 GFA Business Premises

– A Cinema of 1,380 seats.

The traffic generated by these uses is shown in **Table 4-2**.

Table 4-2 Traffic generation of concept DA

	Land Use	Size	Unit	Multi-Purpose Use Factor	AM Trip Rate	PM Trip Rate	Unit	AM Traffic Generation (vph)	PM Traffic Generation (vph)
Lot 1	Café	436	sqm GFA	20%	0.6	1	Trips per 100m^2	1	1
	Business Premises	4239	sqm GFA	100%	1.6	1.2	Trips per 100m^2	68	51
	Bulky Goods	835	sqm GFA	80%	0.504	2	Trips per 100m^2	4	14
	Subtotal							*73*	*66*
Lot 2	Bulky Goods	16925	sqm GFA	80%	0.504	2	Trips per 100m^2	69	271
	Business Premises	220	sqm GFA	100%	1.6	1.2	Trips per 100m^2	4	3
	Café	72	sqm GFA	20%	0.6	1	Trips per 100m^2	1	1
	Cinema	1380	seats	80%	25%	25%	Turnover rate	42	69
	Subtotal							*116*	*344*
Lot 3	Unconfirmed Leisure	2166	sqm GFA	80%	0.09	1.84	Trips per 100m^2	2	32
	Subtotal							*2*	*32*
Lot 4	Hotel	135	rooms	80%	0.064	0.32	Trips per unit	7	35
	Subtotal							*7*	*35*
Lot 5	Business Premises	3637	sqm GFA	100%	1.6	1.2	Trips per 100m^2	59	44
	Subtotal							*59*	*44*
Total								*257*	*521*

Source: 369626-TPIS-ADD02, 6 February 2020

4.2.1 Easement impacts

As shown in **Section 4.2**, the only site that benefits from easement {M} within the subject site is the subject site. It is proposed that this easement be abandoned to avoid there being an entitlement in future for a carriageway should there be redevelopment on Lot 8441 or Lot 8442 DP1272530. This is identified as a mitigation measure in **Table 8-1**.

The site plan is compatible with the ongoing use of easement {F}. There is no car parking proposed directly on the driveway, which could cause delays to other users (violating the right of carriageway). There is an entry and exit to a car park proposed on the driveway. This is consistent with the concept plan, which has two connection points from Lot 2 DP1262720 (the subject site) onto the driveway.

4.2.2 Traffic generation impacts

The traffic generation of the new Gledswood Hills High School is compared to the concept DA in **Table 4-3**.

Table 4-3 Comparison of traffic generation of concept DA land uses and new high school

Context	AM peak hour	PM peak hour
Concept DA	116 veh/h	344 veh/h
Gledswood Hills High School	388 veh/h	388 veh/h
Net increase	**+272 veh/h**	**+44 veh/h**

The most significant impact is in the morning peak hour, where traffic generated by the subject site would increase by 272 vehicles per hour, while in the evening peak, the traffic generated only increases by 44 vehicles per hour. The infrastructure for the precinct would have been designed to meet the evening peak demands, which is the largest of the two peak hours (**Table 4-2** AM peak is 257 veh/h and the PM peak is 521 veh/h). Hence the more important scenario of the afternoon peak only increases by a small margin. The increase in the traffic generated in the morning peak takes advantage of the greater spare capacity in the morning. This is consistent with the findings of **Section4.1.3**, which shows there is no significant impact for the precinct. The intersection performance assessment shows that there is no broader impact to the road network. The main increase in delay is associated with background growth.

This additional traffic would not enter the site as it relates to student travel. The concept development application therefore is not significantly impacted by the additional traffic generated by the site.

4.2.3 Parking impacts

The car parking for Lot 2 to 4 of DP1262720 is shown in **Table 4-4** for the concept DA.

Table 4-4 Parking provision by lot (2 to 4)

Area	Total Car Parking Requirement	Total Car Parking Provision	Difference
Lot 2	507	646	139
Lot 3	16	54	38
Lot 4	128	128	0

Source: 369626-TPIS-ADD02, 6 February 2020

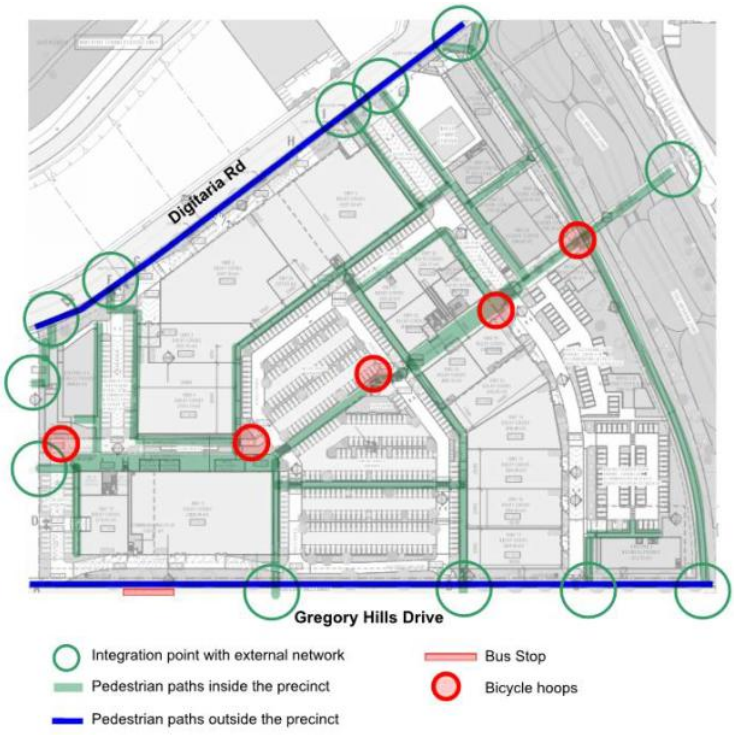
The parking provision shows that each lot is self-sufficient and not reliant on parking within other lots. This is further evidenced by the lack of easement related to car parking on Lot 2 DP1262720 (the subject site). Should there be a deficiency in parking on other sites which was expected to be made up by parking within the subject site, this would need to be enforced using an easement, otherwise there would be no guarantee that the spaces would remain available.

Hence, the delivery of the school would not impact on the ability for other lots to achieve compliant car parking provision.

4.2.4 Walking and cycling corridor impacts

The concept DA sought to provide an east-west walking and cycling corridor, which would connect Central Hills Drive in the west to the riparian corridor in the east (**Figure 4-**).

Figure 4-4 Concept DA site connectivity



However, in the implementation of the concept plan, this has not been implemented:

– SOMA Health & Wellness Centre does have a through site link located on Central Hills Drive

– Lot 8441 and 8442 in DP1272530 do not provide an east-west walking corridor. Lot 8441 constructs up to the boundary. Lot 8442 proposes to build up to the boundary also (**Figure 4-**).

Hence the east-west connectivity has already been abandoned. Pedestrians heading east-west would need to use Digitaria Drive or Gregory Hills Drive.

Providing a through site link within the school is not workable as it does not meet the security needs of the school and student protection. In lieu of this east-west connection, the footpath along Digitaria Drive is proposed to be widened and tree canopy to be provided. Given that pedestrians would have already had to use Digitaria Drive to head east, there is no meaningful difference in their experience heading east arising from the site not providing an east-west connection. The impact of the lack of east-west connection is therefore not considered significant.

4.2.5 Impacts on north-south driveway

The driveway which runs along the eastern boundary of the lot has been constructed for vehicular traffic but does not include any footpath infrastructure. This is broadly consistent with **Figure 4-4**, which does not propose pedestrian connectivity along the length of the road. There are limited sections which have footpaths. This is consistent with the development of Lot 1 DP 1275480, which has a footpath running alongside the car park, but this does not connect through to Lot 2 DP 1275480. Similarly, Lot 5 DP 1262720 has no footpath running along the north-south driveway. As a result, there is no expectation that a north-south pedestrian spine be provided for access to adjacent private development as it has not been delivered on the northern and southern lots which use the driveway.

The school does not require pedestrian access along the driveway as pedestrian access points are provided along Gregory Hills Drive and Digitaria Drive which are more appropriate access points. Hence a footpath is not proposed along this driveway.

5.0 Preliminary Construction Traffic Management Plan

This section summarises the construction methodology, approach, and potential traffic impacts and mitigation.

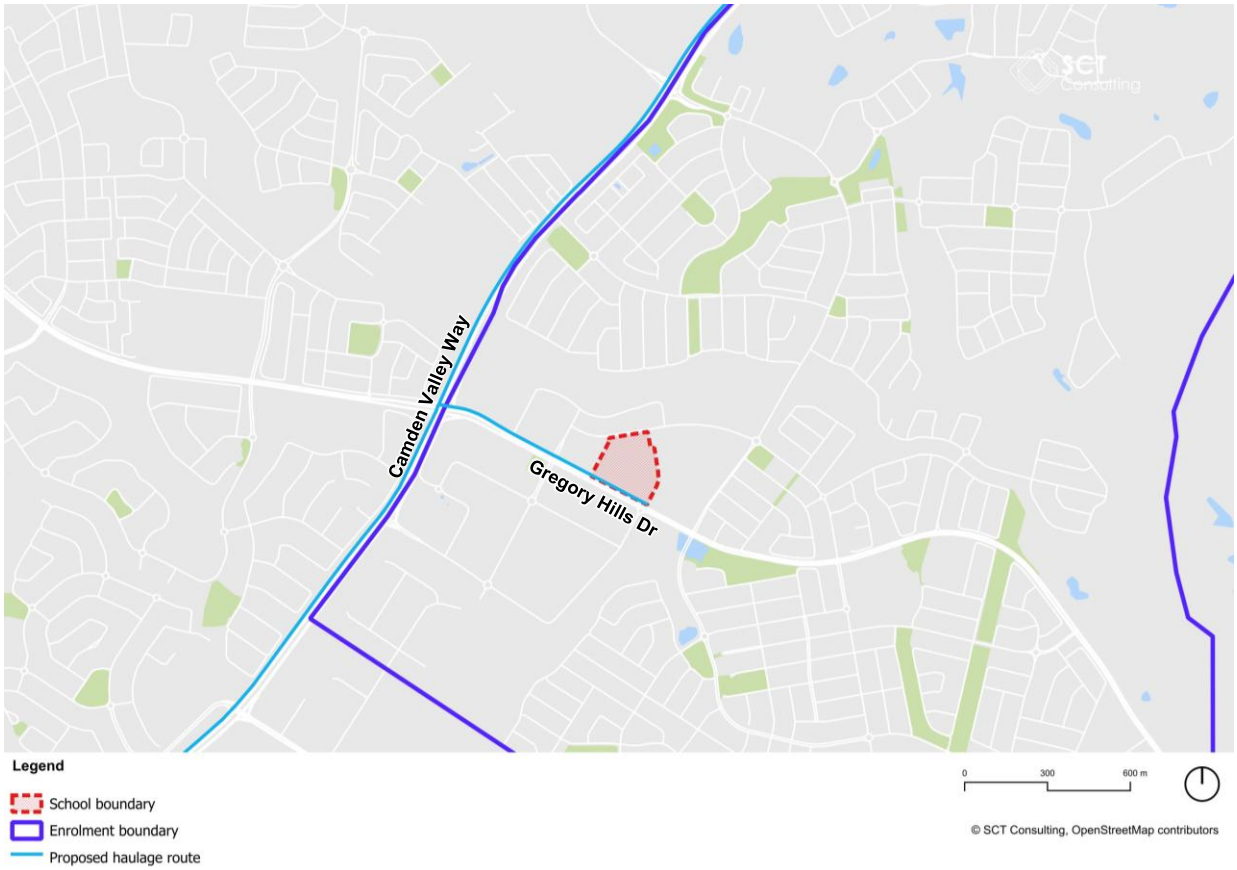
5.1 Preliminary construction management approach

The contractor overseeing the delivery of the modules and building parts will have to prepare a detailed construction traffic management plan (CTMP), which could be subject to relevant authority approval prior to the commencement of construction. Key components of the CTMP include Temporary Traffic Management Plans (TTMP) and a Driver's Code of Conduct.

As oversized vehicles will be used to deliver building parts and modules, delivery will need to be organized outside of peak travel hours. This is to ensure little to no impact to the broader traffic network and to reduce the risk of damage to the parts.

It is assumed that heavy vehicles will use Gregory Hills Drive and the north-south driveway to enter and exit the site. As seen in **Figure 5-1**, the proposed haulage route from the state road network to the site is proposed to be Camden Valley Way > Gregory Hills Drive > north-south driveway. Digitaria Drive may also be used.

Figure 5-1 Construction haulage routes to/from site

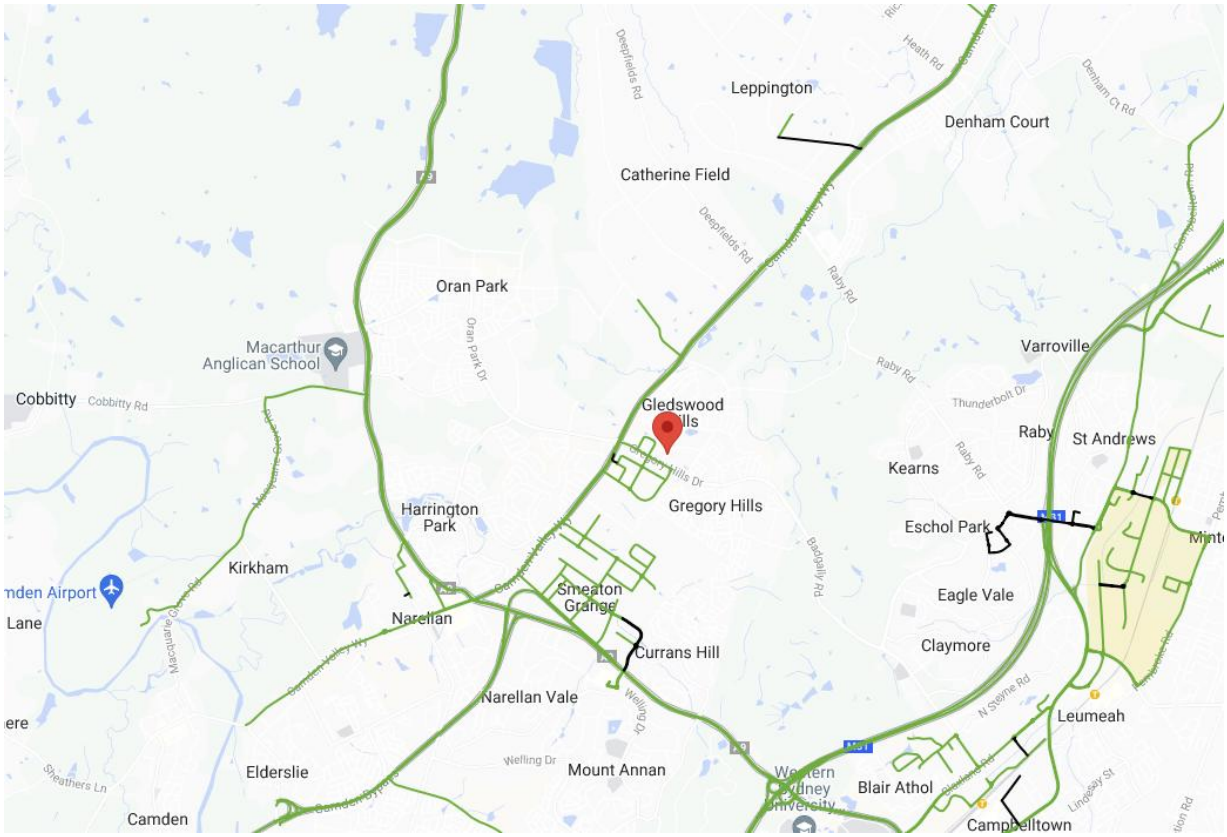


Swept path assessment should be undertaken of key turns prior to construction for the design heavy vehicle.

– **Figure 5-2** (overleaf) shows the approved B-double routes on the General Mass Limit (GML), Concessional Mass Limit (CML) network. **Figure 5-3** (overleaf) shows the approved B-double routes and short combination routes on the Higher Mass Limits (HML) network.

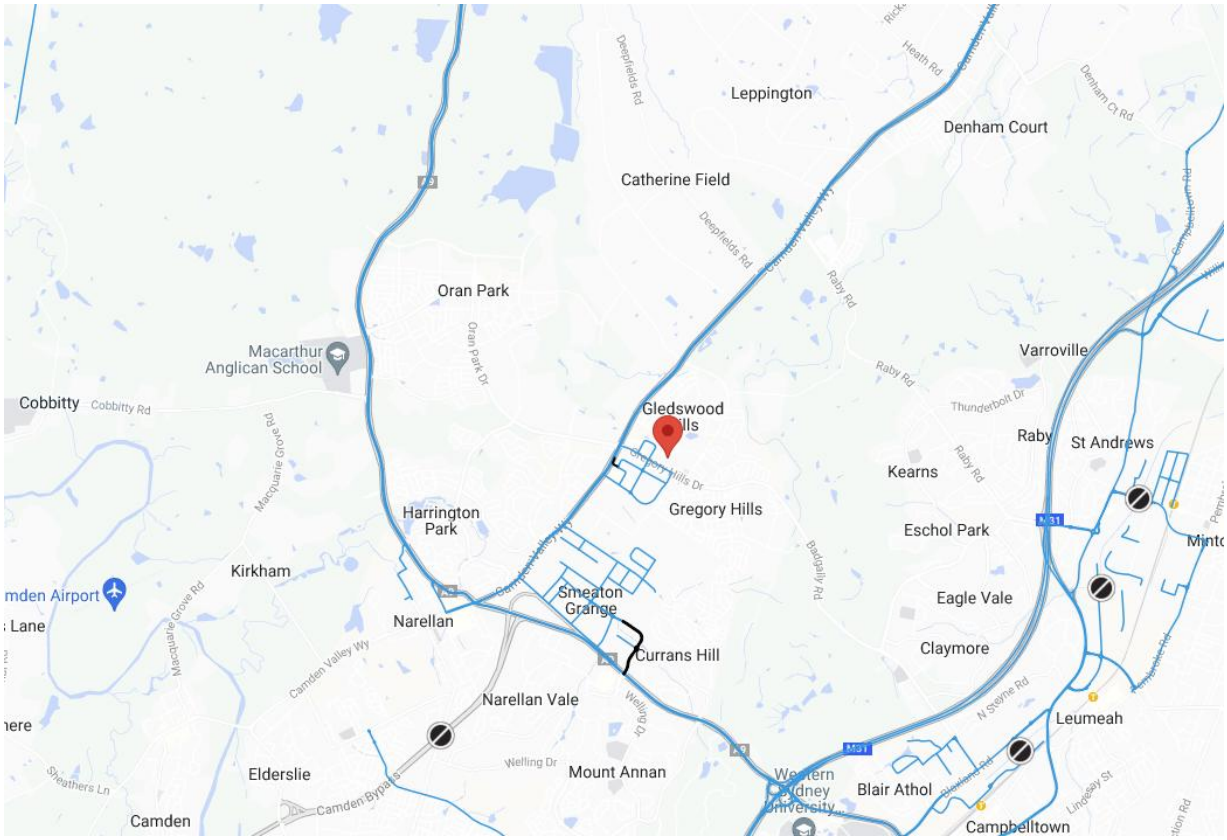
– Digitaria Drive is not approved for higher mass limits or oversized vehicles. Gregory Hills Drive and Camden Valley Way are approved for heavy vehicles under the General Mass Limit (GML), Concessional Mass Limit (CML), and Higher Mass Limit (HML) network. This is inclusive of 25/26m B-double routes and short combination routes.

Figure 5-2 Approved B-double routes (25/26m) on the GML and CML network around Gledswood Hills HS



Source: TfNSW, 2024

Figure 5-3 Approved B-double (25/26m) and short combination routes on the HML network around Gledswood Hills HS



Source: TfNSW, 2024

5.2 Road safety considerations

Traffic management will require approval from Camden Council. It is expected that traffic management measures will only be required within the suburbs of Gledswood Hills and Gregory Hills. Traffic management requirements need to be defined to ensure all users of the site, including students, staff, parents, and users of the general transport network can access the site safely.

Road safety measures must also be considered during the construction phase to exclude pedestrian and vehicle conflicts during unloading of materials and parts. In addition, delivery and unloading must be carried out outside of peak commuter periods to minimise risks to vehicles and congestion arising from deliveries. Temporary diversions to footpaths need to provide safe crossing facilities, clear sightlines for vehicles and pedestrians, and even footpaths of at least the width of the footpath replaced. Where this is not achievable in the same corridor, diversions should be proposed in the construction traffic management plan, prepared in consultation with Council.

5.3 Construction program

The current approximate milestones for the construction program for the project is shown in **Table 5-1**.

Table 5-1 Estimated construction milestone program summary

Milestone	Estimated completion date
Construction Contract Awarded	June 2025
Construction commencement onsite	**June 2025**
Anticipated construction completion	**December 2026**
School operational	Day 1 Term 1 2027

5.4 Construction traffic impacts and mitigation

The estimated peak workforce is approximately up to 50 full-time equivalent (FTE) workers. Due to the proximity of the site to public transport, and in consideration of the surrounding statistical travel zone's overall public transport mode share, it is estimated that:

– Approximately 20 per cent of workers (10 workers) would arrive on site by public transport (train or bus).

– Of the remaining 80 per cent, a vehicle occupancy of 2.0 is assumed (typical of construction sites).

– Based on an estimated 50 full-time site workers, the maximum number of cars during the peak hours generated by the site is 20 light vehicles per day.

– It has been assumed that approximately 10 heavy vehicles will enter and exit the site for construction purposes throughout the day.

– It is assumed that the 20 light vehicles generated can park on site (outside of school operating hours), or on-street on the surrounding road networks. Most work will occur outside of school hours and workers would generally start earlier and end earlier than the commuter peak periods and would likely not coincide with the school or road network periods.

Workers with heavy tools can drop it off at the school's loading dock before parking longer term on the recommended street. Final construction vehicle numbers are still being confirmed. At the submission of this draft, a preliminary estimate of 10 heavy vehicle truck movements are anticipated on a typical day.

The DfMA construction approach is expected to require traffic management measures such as full/partial road closures. Closure would be short compared with traditional construction approaches.

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

– Signage on gates for delivery drivers

– No concrete pumping from street

– North south driveway will be the entry and exit

- Construction workers will be discouraged from parking in residential areas. Given that the surrounding streets are not residential, this is low risk of occurrence.
- Truck loads would be covered during transportation off-site.
- Neighbouring properties would be notified of construction works and timing. Any comments would be recorded and taken into consideration when planning construction activities.
- All activities, including the delivery of materials, would not impede traffic flow along local roads.
- Materials would be delivered, and spoil removed during standard construction hours.
- Avoidance of idling trucks alongside sensitive receivers.
- Deliveries would be planned to ensure a consistent and minimal number of trucks arriving at the site at any one time.

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

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

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

It is not expected that there will be other major concurrent construction activities. A further review of potential concurrent construction should occur as part of the construction traffic management plan to ensure that this remains the case or that mitigations are proposed.

6.0 Draft School Transport Plan

This draft School Transport Plan (STP) is written as if the school has been delivered in accordance with the TAIA and plans, so uses present tense for all initiatives.

As this school is a new school, there are several differences in the preparation of the STP compared to a plan for a school that has been in operation for a long time:

– Staff have not yet been appointed to their roles

– The Parents and Community group has not been established

– There are no baseline mode shares, only forecast mode shares.

– After the school commences operation, it will need to accept this STP and identify the people responsible for each action.

6.1 Vision

6.1.1 Vision and objectives

The purpose of a STP is to promote the use of active and sustainable transport modes. It seeks to support the delivery of infrastructure, policy, and programs to meet school travel demand in a way that enhances connectedness to the neighbourhood and community, increases the safety of the journey to school, maximises the use of active and public transport, and reduces car traffic and congestion on the road networks.

The effect of a well-implemented STP should empower students and young people to be safe road users, reduce the administrative burden on schools and meet the Department of Education's duty of care of students which extends beyond the school boundary.

School Transport Vision

The Gledswood Hills High School will be a sustainable travel school with students and staff choosing to walk, cycle or take public transport to access the school. The catchment is small and walkable, multiple bus services presents an opportunity to have a higher sustainable transport mode share.

The objectives for this STP are:

– **Objective 1:** staff have information about the sustainable ways of accessing the school

– **Objective 2:** students and their parents/guardians are aware that kiss 'n drop will be congested

– **Objective 3:** students and their parents/guardians are aware of sustainable modes of access to school.

These objectives are reflective of the school being a new facility – the first priority is establishing a good information about how to travel to school sustainably so students can make sustainable choices.

6.1.2 Mode share targets

Transport catchment analysis of the student population guided by benchmarking against other high schools was conducted in the Transport Accessibility Impact Assessment (TAIA) that align with the **Section 3.1.1.2**.

Table 6-1 Mode share target for students

Mode	Student target	Staff target
Walking	26%	1%
Cycle / Scoot	5%	1%
Bus (including from rail)	37%	3%
Car	33%	94%

These targets should be achieved prior to full occupancy of the school of 1,000 students.

The monitoring and review process identified in **Section 6.5**, documents how the STP will be updated over time, which includes checking on progress towards mode share goals.

As the mode share targets cannot yet be baselined, interim targets have not been set. If there is a significant difference between the travel behaviour of students and the objectives as observed after school opening, the update process needs to consider mechanisms to address shift to more sustainable modes of transport.

6.1.3 Specific tools and actions

In order to achieve the targeted mode share, transport encouragement initiatives to be implemented are identified in

Table 6-2 Tools and actions to achieve the targeted mode share

Activity	Description and target outcomes	Frequency	Responsibility
School Travel Coordinator	A School Travel Coordinator (STC) will be engaged in the first year of operations to promote travel behaviour change for all school stakeholders (students, parents/carers, and all staff). The role of an STC goes beyond just improving access to the school via infrastructural measures, but also involves communication of the availability and benefits of sustainable modes of transport. The STC is responsible for organising programs and events to encourage sustainable travel via: – Implementing transport programs to achieve travel behaviour change – Driving communication of transport options to raise awareness of sustainable transport modes – Monitoring and evaluate the progress of the school in reaching its target mode shares – Processing feedback and recommendations from the school community on transport-related matters – Coordinating initiatives and events to promote mode shift away from cars – Working closely with the Green Travel Plan (GTP) Committee and Parents' Community Association (PCA) to identify the needs of the school community – Reporting data collection and evaluation to stakeholder groups.	Ongoing role.	STC
Coordinate a STP Committee	A STP Committee (chaired by the School Travel Coordinator (STC)) performs the role of promoting sustainable school transport initiatives identified in the STP. The STP Committee ensures multi-party input and fair distribution of allocated tasks and would be important at the inception of any new project as they provide the required leadership, resources, and attentiveness for initiatives to be realised. The STP Committee liaises with both internal and external stakeholders such as TfNSW and NSW Police to inform them of any school initiatives which require their respective expertise and/or funding. The committee meets once a quarter and will comprise of members of the Parents and Citizens Association (PCA), and representatives from Council and NSW Department of Education.	Quarterly	The STC is be appointed by School Infrastructure in the first term of the school opening. The STC works with the school to coordinate appropriate members of the STP Committee

Activity	Description and target outcomes	Frequency	Responsibility
	All initiatives are promoted through newsletters, both internal and external, on the school website and in the classroom.		
Provision of a Travel Access Guide (TAG)	A TAG is a pamphlet provided to staff parents and students that provides information about how to access the school safely and efficiently, in alignment with this STP. The TAG provides maps of the school and surrounding area, noting the location of entrances to the school site, local bus routes and stops, the local train station, and pedestrian and cycling infrastructure. The TAG is used to discuss the location of pickup/drop-off points for the walking school bus or used in future consultation with TfNSW regarding public and school bus routes. The TAG is provided on the school website for staff and parents to easily find. The TAG also forms part of new starter orientation and handbooks.	The TAG has been completed as part of the STP process and should be reviewed and updated as necessary.	The school updates to the TAG as they are required.
Transport information on the website	The school website provides an easily accessible, logical location for all school transport information. Providing clear and easily accessible information allows for wide distribution among the intended audience creating a level of understanding and acceptance. The information is provided either under its specific header on the school website page or found under the 'Location and Transport' sub-header. The information on the website gives an overview of active transport initiatives, a TAG, and rules and expectations regarding car parking and kiss and drop routines.	Information on the website will remain topical and relevant as it is updated periodically by the STC.	The STC coordinates updates to content and work with the NSW Department of Education website team to ensure the updates are made online.
NSW Police Road Safety Training	STHS liaises with NSW Police, the Department of Education, and other external facilitators to introduce ad-hoc road safety sessions (e.g. how to cycle safely) as required.	Annually.	The STC communicates with the NSW Police to coordinate this event.
Bicycle check-up	A bicycle check-up station is hosted by an accredited external organisation to demonstrate to staff and students how to best take care of their bikes. The STC promotes the event through the school website, newsletter, and social media. The school may choose to re-promote other active transport initiatives as part of the day to encourage and reinforce a shift away from car travel to and from the school. These days are supported by road safety education and could be tied in with the timing of the PDHPE curriculum content on safe walking. Funding is available through the Sporting Schools and Premier Sports Challenge Programs. Successful funding applications may expect to receive an average of $1,500-$3,500 per term over three consecutive terms.	The bicycle check-up will be arranged to occur annually or more periodically in conjunction with other sustainable transport initiatives.	The STC will seek funding, promote and coordinate the event. The school supports its success by tying the event in with the PDHPE curriculum.
Walk Safely to School Day	Walk Safely to School Day and National Ride Day are Australia-wide coordinated efforts to encourage walking or cycling to school on one day of the year.	Annual	The STC promotes the event through the school

Activity	Description and target outcomes	Frequency	Responsibility
and/or National Ride Day	The Walk Safely to School Day is organised by the Pedestrian Council of Australia. Their website provides free downable resources and advice to enable schools to host successful events. The event occurs in May each year. The National Ride Day is coordinated by the Bicycle Network in NSW, the charity encourages schools to register to join a community of other schools taking part in the event. The charity provides free downloadable resources, activities as well as advice on how best to deliver the day and what can be done to maintain momentum. The school may choose to re-promote other active transport initiatives as part of the day to encourage and reinforce a shift away from car travel to and from the school. These days are supported by road safety education and will be tied in with the timing of the PDHPE curriculum content on safe walking. Free resources and advice (potentially funding) are provided on the Bicycle Network website for hosting a National Ride. The STC will be required to coordinate with the council and police and may wish to register the school with the charity. A competition with a suitable prize is used to encourage more students to cycle to school where possible. A suggested way to organise the competition is described below: – During a selected competition period (e.g. a week), a teacher will ask students during class who arrived by bicycle or scooter that day – Each student will be provided one entry into a raffle for each day they cycled to school – Three winners will be selected at the end of the competition period randomly. This initiative requires funding for prizes.		website, newsletter, and the Parents and Community Association social media. It is important to communicate with the local Council, as the local NSW Police unit to ensure the road rules are correctly followed by cars when interacting with students riding, scooting, or walking to the site.
Workplace walking / cycling group	Staff members who live within walking or cycling distance of the school are invited to walk or cycle together to work. Walking or cycling to work in a group could make the daily commute a more enjoyable and safer experience, which would encourage a higher uptake of sustainable travel. A prize is awarded to those who consistently walk or cycle to work. The STC coordinates with other staff on their interest levels and to organise prizes.	Ongoing	STC
Workplace car pooling group	It is not feasible to expect all staff to commute via public or active transport as it is likely that they live outside of active travel distances or public transport is inconvenient. Carpooling or carsharing is an important alternative whereby staff who live close together commute together. To encourage staff to carpool, designated parking can be reserved for those who carpool in the staff carpark. The STC gathers interest from other staff and to organise the carpooling groups based on staff locations.	Ongoing	STC

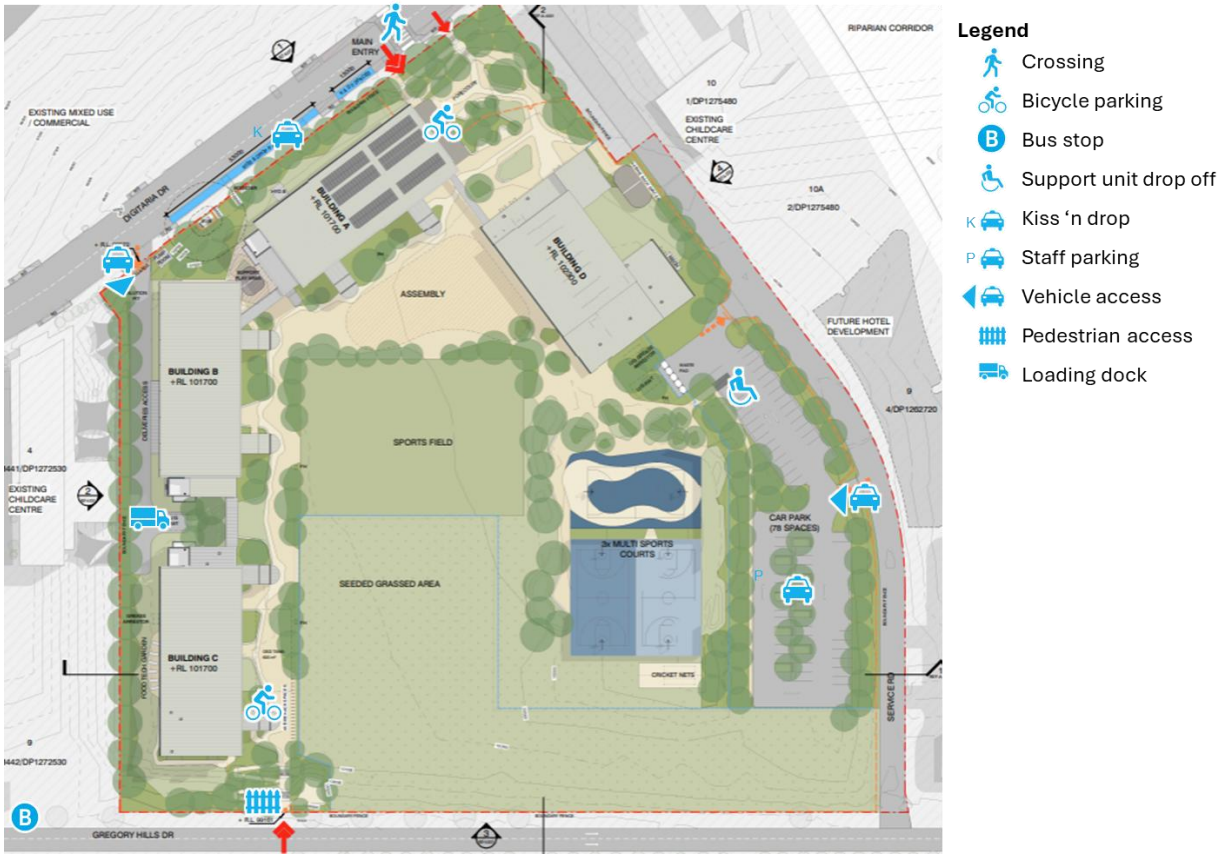
Activity	Description and target outcomes	Frequency	Responsibility
NSW PDHPE syllabus	The NSW PDHPE syllabus includes content on “healthy, safe and active communities” (or similar) in stages 1 through 5. This includes suggested content on road safety for each stage. In the delivery of the curriculum, teachers emphasise safe transport network behaviours through classroom teaching, excursions, assessments, and homework.	Teacher and classroom time are required to deliver curriculum content on road safety. Timing/frequency of delivery will differ depending on teacher approach.	Teachers deliver the content. The STC and willing volunteers also able aid in the delivery of the syllabus.

6.2 School transport operations

6.2.1 Site transport access

The site has two public road frontages – one on Gregory Hills Drive to the south and second on Digitaria Drive to the north. A summary of transport access is provided in **Figure 6-1**.

Figure 6-1 Site transport access



Source: djrd with SCT Consulting annotations, 2024

There are three primary gates (pedestrian access) to Gregory Hills High School:

– **Digitaria Drive main entry:** located on the north-east corner of the site, located south of the proposed wombat crossing, this entrance provides access to the school’s admin building.

– **Digitaria Drive secondary entry:** located further north of the primary entrance, this gate provides entrance to the forecourt area in the north-east corner of the site.

– **Gregory Hills Drive secondary entrance:** this provide entrance to the site off Gregory Hills Drive along the southern frontage, located near Building C.

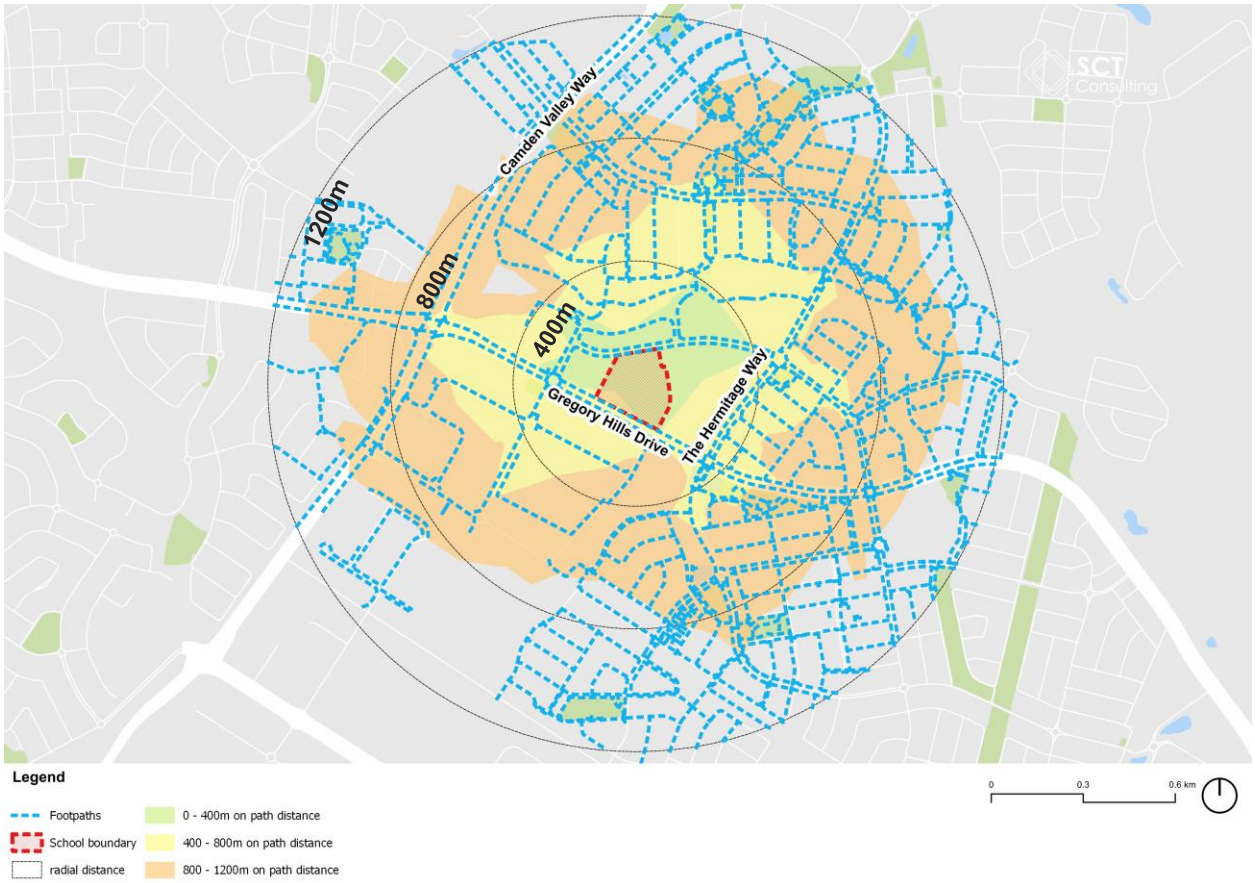
6.2.2 Pedestrian access

The footpaths along both sides of Digitaria Drive provide safe walking routes for students coming from the north and east of the school site, through South Creek Reserve. There is however no safe crossing point across Digitaria Drive.

Kookaburra Drive has footpaths on both sides of the road that link to those on Digitaria Drive. There are however no priority crossings for pedestrians at the intersection with The Hermitage Way. Refuge islands are on each leg of the roundabout at this intersection.

The extent of footpath coverage within a 1200m radial distance of the school site is shown in **Figure 6-2**.

Figure 6-2 Footpath infrastructure within 1200m

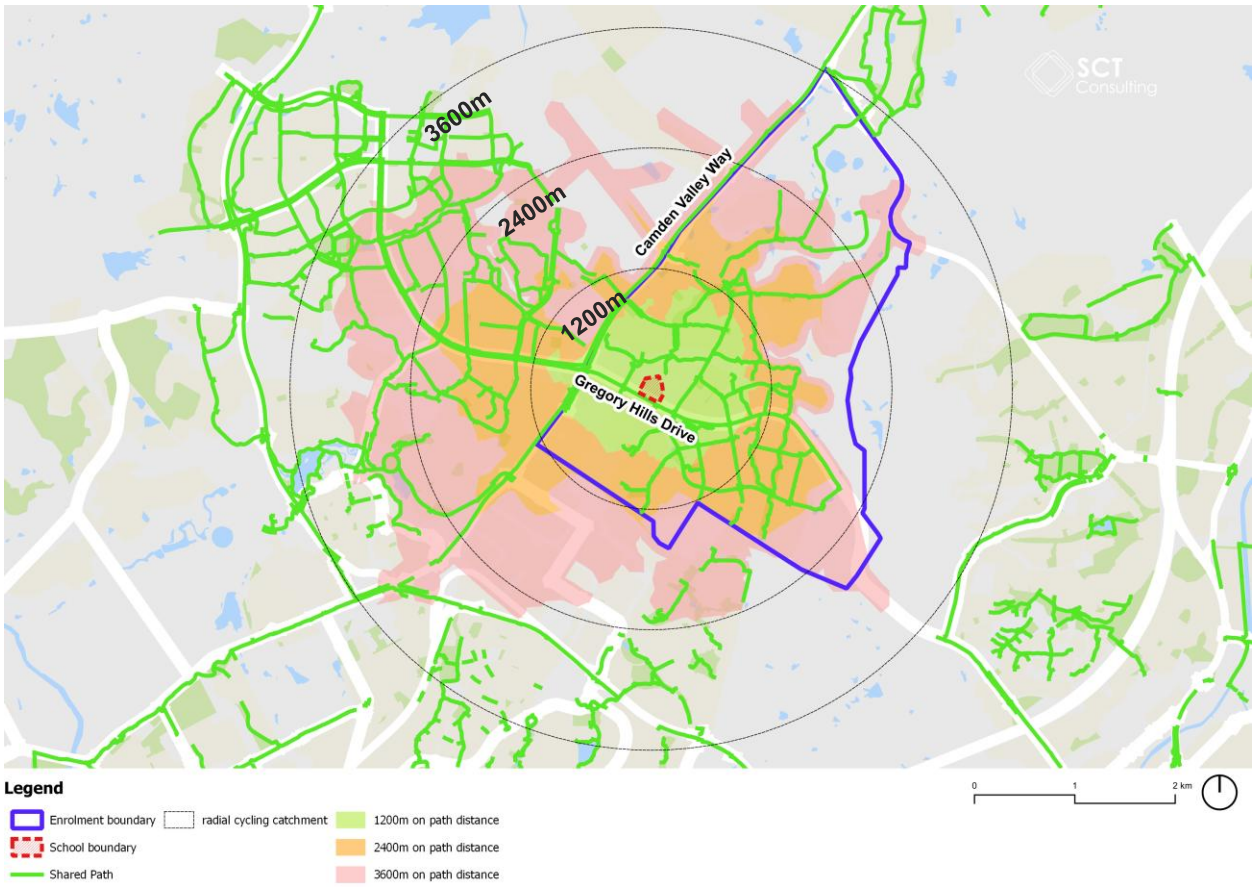


A gate is provided on both Digitaria Drive and Gregory Hills Drive, enabling students, staff and visitors to access the school from any direction.

6.2.3 Cycling/ridable access

The cycling network with the enrolment boundary and the surrounds are shown in **Figure 6-3**.

Figure 6-3 Cycling network within 3.6km of the proposed school site



There are shared paths running north – south and east – west along key arterial roads that provide the most direct access to the school.

80 bicycle parking spaces are provided at the north-eastern and south-western side of the campus respectively (40 at each). Having facilities located close to entrances along Digitaria Drive and Gregory Hills Drive makes it convenient for students to access bicycle parking regardless of which direction they travel from.

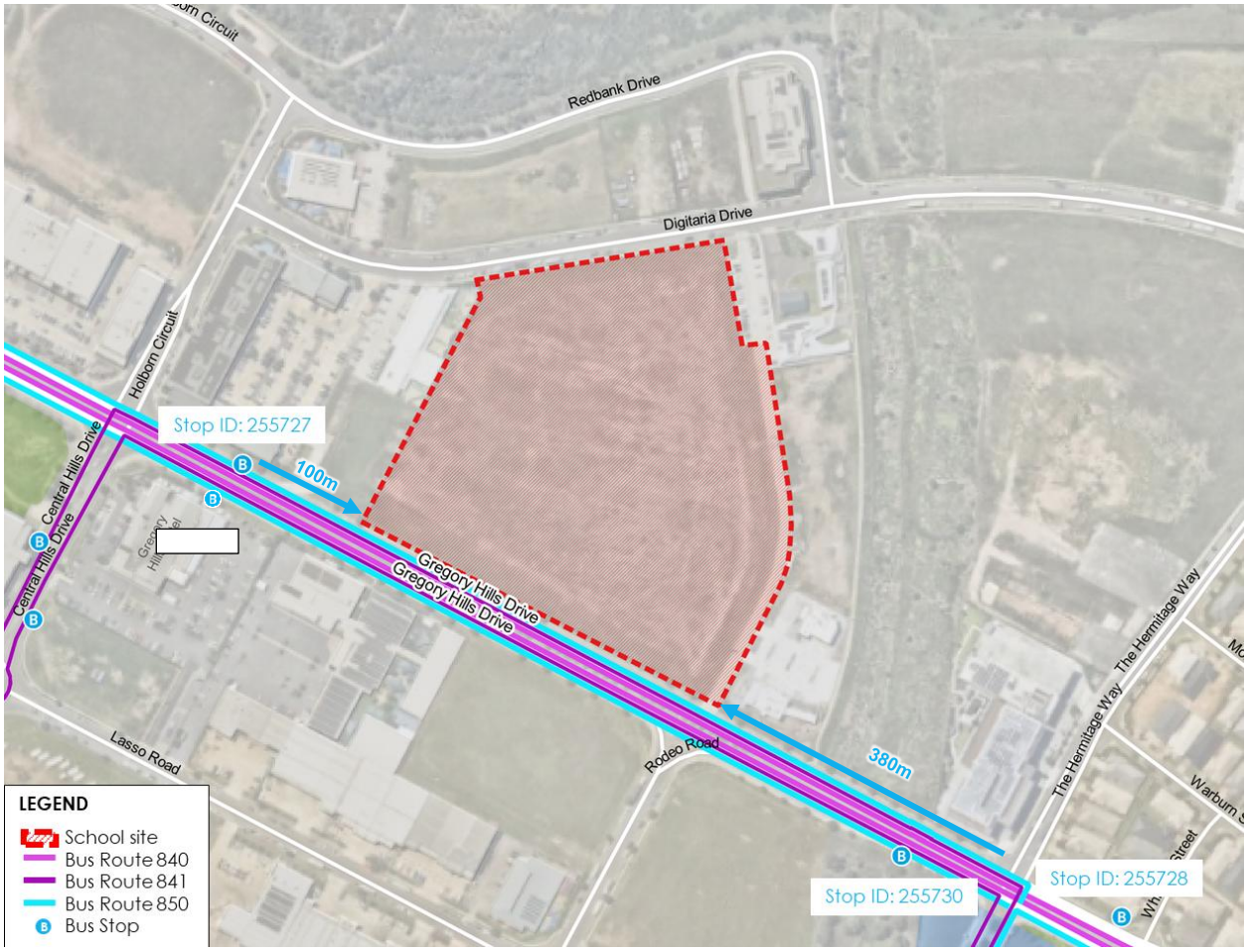
For staff, two showers and change rooms are provided as end of trip facilities. These are within a staff-only area and not accessible to students.

The school has change rooms that are able to be used by students as an end of trip facility.

6.2.4 Bus access

There are three public bus routes that stop within the vicinity of the school – routes 840, 841 and 850. There are three bus stops close to the frontage of the school where these services stop, shown in **Figure 2-7**.

Figure 6-4 Bus stops and routes in the vicinity of the school site



Source: GTFS & TfNSW, 2024

Bus users should refer to the TfNSW timetable for up to date route and stop times.

6.2.5 Kiss 'n drop

The kiss 'n drop is located on the southern side of Digitaria Drive along to the northern school boundary. The kiss 'n drop is signposted with a No Parking zone (8.00 – 9.30am and 2.30 – 4.00pm). During this time, drivers must only stay for two minutes and may not leave their vehicles.

6.2.6 Staff car parking

78 staff parking spaces are provided in the staff car park, which is located on the eastern side of the school. The staff car park may be accessed from Digitaria Drive or Gregory Hills Drive. Access from Gregory Hills Drive is a left-in left-out, meaning that staff may only access the car park when heading in an eastbound direction.

Two spaces within the staff car park are designated as accessible parking spaces.

6.2.7 Waste collection

Waste collection will occur within the staff car park. The car park has been designed to cater for a 10.5m long waste collection vehicle, which is the dimensions of the typical Council garbage truck used for domestic waste collection (Waste Management Guideline, Table 8).

Waste collection to occur between 5am – 7am and not during times when students are at school.

6.2.8 Deliveries

Deliveries may occur on the Digitaria Road frontage of the school or within the staff car park. The waste loading area is an appropriate stop to park a commercial vehicle as it has been designed for a 10.5m long waste vehicle. Deliveries may also be provided using the western driveway for wood and metalwork, which has been designed for a Medium Rigid Vehicle (8.8m).

6.2.9 Emergency vehicles

Emergency vehicles may park in any location they deem appropriate under the road rules. Digitaria Drive provides on-street parking, which is a no parking zone during the morning and afternoon peaks. This location would be suitable for emergencies during these hours. The staff car park is also a suitable location for emergency vehicles to stop. The staff car park has been designed to cater for waste vehicle access so would be suitable for a General Fire Appliance also.

6.2.10 Day to day operations

Day to day operations and policies are laid out in **Table 6-3**.

Table 6-3 Day to day operations by mode

Mode	Where provided	Parents / Carers	School
Walking and riding	Footpaths and crossing facilities are shown in **Figure 6-1**	**Walking** – Parents/carers are responsible for the student's safety travelling to and from school. **Riding** – Students who wish to ride to school should always wear a helmet. – Students riding to school should avoid riding on the road and be cautious of vehicle conflict when crossing driveways. – Children under 16 years of age can ride on a footpath. An adult rider who is supervising a bicycle rider under 16 may also ride with the young rider on the footpath. Children aged 16 or 17 can ride on the footpath when accompanied by a child under 16 and a supervising adult. Children aged 16 or 17 can ride on the footpath when accompanied by a child under 16 and a supervising adult.	– For the school, learning activities that reinforce being a safe pedestrian are part of the NSW 7-12 PDHPE syllabus. – The school publishes a TAG (**Appendix A**) which is a visual guide advising staff and parents/carers which are the safer routes to the school and the location of road crossings.
Public transport	Offsite bus stops in the locations shown in **Figure 6-1**	– Parents/carers are responsible for the student's safety travelling to and from school.	– The school provides links to the NSW Department of Education's 'Safe Travel' page on their website to inform and advise parents/carers what is expected of them. – **Appendix A** is a TAG indicating the location of bus stops and routes close to the school site.
Driving and Kiss and drop	Along Digitaria Drive as shown in **Figure 6-1**	– Parents/carers are responsible for the student's safety travelling to and from school. – Parents/carers are advised by NSW DoE and TfNSW to drive cautiously around schools, park legally, and not perform U-turns or three-point turns next to a school. – Parents/carers will be expected to follow the school's instruction regarding kiss and drop.	– Camden Council imposes time limits on the duration of car parking to prevent congestion around the school which could potentially lead to unsafe parking. – Staff supervise the kiss and drop to ensure students safely enter the school and to discourage unsafe driving practices. – The school should provide links to the NSW Department of Education's 'Safe Travel' page on their website to inform and advise parents/carers what is expected of them.
Staff parking	Staff parking of 78 spaces provided, two of which are an accessible space	N/A	– Staff to be encouraged to car pool by STC.

Mode	Where provided	Parents / Carers	School
Deliveries and service vehicles	Waste servicing and deliveries should use the loading facility within the staff car park and the western driveway of the school.	N/A	– Waste collection to occur between 5am – 7am and not during times when students are at school. – Low impact deliveries, such as mail or small goods may be delivered at any time. Large or hazardous materials should be delivered at a time when there is no conflict with students, such as between 5am and 7am or after school hours.

6.3 Event operations

There are limited events which occur in the school calendar that have a transport impact. The end of year assembly is expected to have the most significant impact. There may infrequent small scale events which only involve one year group.

Events will be managed by:

– Communicating with parents and guardians in advance that there is no on-site parking available and that the car parks surrounding the school are privately operated and should not be parked in. Drivers should park on-street.

– Send the Transport Access Guide so that parents and guardians have access to information about non-car options for the event.

Events are not expected to have a significant impact as the surrounding land uses are generally commercial premises which are not in operation after 5pm, when large scale events would generally occur. An increase in car parking after 5pm is unlikely to impact their operations. Other sites also have off-street parking, so impact to on-street parking should not impede business activities.

6.4 Communications plan

6.4.1 Channels

Good communication of the available transport modes, infrastructure and the benefits of sustainable transport options is critical for building uptake of walking, cycling and public transport. The following are channels and strategies through which transport information is communicated.

6.4.1.1 Transport information on the website

The aim of providing transport information on the school website is to ensure all staff and parents know where transport relating to the school can be accessed. The information is provided at XXX **(to be confirmed after school commences)** and includes an overview of active transport initiatives, the TAG and rules and expectations regarding car parking and kiss and drop activities.

The information is updated periodically by the STC so the information on the website remains topical and relevant.

6.4.1.2 New starter orientation

The new starter orientation provides new staff, students, and parents of students with information regarding public transport routes and times, safe walking routes to the school, and expectations surrounding parking on site. The TAG provided in **Appendix A**(and also available on the school website) is provided to all new starting staff and students as part of the new starter orientation pack.

New starters will be directed to the transport information on the school website and be provided with a physical copy of transport information in the staff handbook. The new starter orientation pack also provides a map of the school site, including the location of bicycle parking and end of trip facilities.

6.4.1.3 Parent and Community Association social media

Buy-in from the Parent and Community Association (P&C) is a major factor for encouraging more sustainable modes of transport, particularly as the travel mode of a student is often the decision of their parents or carers.

Social media channels are used to promote active and public transport modes. The P&C raises awareness of the available alternatives to car use and their benefits, while at the same time improving safety of these modes by increasing awareness of these user groups.

6.4.1.4 School newsletters / official communication from the principal

The school provides weekly newsletter updates to parents and staff that highlight various events and notable information during the school year. Newsletter articles that promote and detail the benefits, provision and safety of active and public transport modes will be drafted by the STC and included regularly at least once per quarter in newsletter updates.

This will also be shared the schools' social media channels (outlined above).

6.4.1.5 Classroom content

The NSW PDHPE syllabus includes content on "healthy, safe and active communities" (or similar) in stages 1 through 5. This includes suggested content on road safety for each stage.

In the delivery of the curriculum, teachers emphasise safe transport network behaviours and encourage active transport through classroom teaching, excursions, assessments, and homework.

6.4.1.6 Awareness days and initiatives

A minimum of three days during the school year are set aside to host and participate in activities that encourage walking or cycling to school. Events such as National Ride or Walk to School Day, or Bicycle check-up days raise awareness of active transport alternatives and encourage mode shift away from car travel to and from the school.

The school also plans a short period during the school day for all students to complete a "Journey to School" survey to collect travel data for planning and monitoring purposes.

6.4.1.7 Assemblies

School assemblies are a core part of school-wide communications and occur regularly in the school timetable. This is a great forum to present information on the benefits of active and public transport options. Assembly segments include interviewing students or teachers who walk or ride to school.

6.4.1.8 Provision of a Transport Access Guide

A TAG is a pamphlet showing school locality and the wider area and provides staff, parents, and students with useful information about how to access the school safely and efficiently. The TAG is provided in **Appendix A**.

6.4.2 Messages

Messages issued by the STC aims to inform students, parents, and staff about the active and public transport options available to them and their associated benefits. To this end, the following are suggested examples that can be followed:

Message	
Walking to school safely Walking to school with your child is the best way to teach them about safe pedestrian behaviours. Consider accompanying your student to school until they are comfortable (or too embarrassed) to have you join them.	
We must not be complacent! Children are most likely to be injured close to home, often in their street or their driveway. Children can often talk about keeping safe long before they can behave safely. Accidents can occur at any time, anywhere and to anyone. **As adults, we are responsible for young children's safety around traffic whether they are pedestrians, passengers, or playing.**	
DO ✓ – Look out for cars entering or leaving driveways – Take your time whenever you're crossing a road – Keep an eye on drivers	DON'T ✗ – Use your mobile phones while walking with your child – Cross the road in unsafe places
Bike safely for you and your children – Children under 16, and one supervising adult, are allowed to ride on the footpath – Always wear a helmet, even when it is a short ride – Watch out for cars entering or leaving driveways – Take extra care near busy roads like the Gregory Hills Drive	

Message

You and your kids can incorporate more walking into your daily travel to school. Consider:

- Encourage your children to walk rather than being dropped off
- Get to know the bus route, timetable and pick routes with spare seats
- If you must drive, park the car a few blocks away from the school – they can walk the rest of the way
- Active kids are healthy kids! Regular exercise reduces the chances of a multitude of health problems including heart disease, obesity, and diabetes.

Make walking to school fun!

Here are a couple of ways to make the walk to school a bit more fun:

- Organise for your children to walk/cycle/scoot to school with some of their friends
- Reward – the right incentives might be all it takes!
- Make it a competition. See if you or your children can do more steps each day.

Walking is great exercise

Did you know that more than 80% of the world's adolescent population is not active enough (World Health Organisation)? Children between 5 to 17 years need several hours of light exercise a week – like walking!

Walking can work wonders. It can help prevent heart disease, stroke, type 2 diabetes, and high blood pressure. It increases energy levels, strengthens your immune system, and improves mood.

We could all benefit from more steps each day.

School speed zones

The dates below are the gazetted school days for *YEAR* so please make sure you're observing the 40km/h speed limit:

Term 1: XX January to XX April, 2027
Term 2: XX April to XX July, 2027
Term 3: XX July to XX September, 2027
Term 4: XX October to X December, 2027

Message

- On average, up to 30,000 people across NSW have their tickets checked every day
- While most people pay the correct fare, some people don't do the right thing
- The chances of getting caught are high because officers will be travelling across the whole transport network and at different times of the day

When everyone pays their fares, it means there is more money to spend on extra services and new infrastructure, and we can better plan for future services and develop accurate real-time information for you.

It's now easier than ever to pay for public transport because contactless payments are available on all public transport in NSW.

Remember, it is an offence to travel on public transport in NSW without being in possession of a valid ticket.

Tap on every time to avoid a hefty $200 fine (maximum fine amount of $550).

Tap on and off every time

If you forget to tap on or to tap off with the same card or device:

- You will be charged the default fare for an incomplete trip which is the maximum possible fare for that service, based on your Opal card type.
- You will miss out on Opal benefits
- You could also be fined for travelling without a valid ticket.

Transport for NSW uses Opal data to determine where new services should be funded. If you don't tap on and off our school might miss out on new services.

Driving and parking safely near the school

Help your children be safe by:

- You can pick up or drop off your student on Digitaria Drive
- Never call out to them from across the road - it is very dangerous
- Always take extra care in 40km school zones
- Follow all parking signs - these help keep your child as safe as possible
- Park responsibly even if it means you have to walk further to the school gate
- Never double park - it is illegal and puts children at risk
- Never do a U-turn or a three-point turn outside the school as it puts children at risk of harm
- Model safe and considerate pedestrian and driver behaviours to your child
- Always give way to pedestrians, particularly when entering and leaving driveways.

Kiss 'n Drop

To reduce congestion and to ensure the safe collection of your child:

- Limit driving to the school
- Always have a clear plan about where you will collect your child
- Communicate with your child about which side of the road they should expect you on
- Wait in your car for your student to arrive.

6.5 Data collection and monitoring

6.5.1 Data collection

Data collection is important to monitor the successful implementation of sustainable transport targets. Data collection ambitions must not be overly complex or time consuming, and able to be run by volunteers in the case where a STC is no longer funded. An annual Journey to School questionnaire for staff and parents (or students) will be organised by the STC, and include questions on:

– Mode of transport used to get to school

– What would encourage mode shift to public transport or walking and cycling

– Any suggestions on how to improve the journey to school

– Participation and feedback on specific transport awareness events if applicable.

The questionnaire will also identify the suburb of residence so that the data can be paired with student location data for transport catchment and demographic analysis. The survey is to be implemented on a set day (such as National walk/ride to school day) to encourage participation and raise awareness of sustainable transport modes.

The STC will also include observations of travel behaviour to complement the mode share survey, such as the number of filled bicycle racks each day over a week.

These actions will be undertaken annually. A typical weekday should be selected for the observations, which should be a normal school day (with no excursions). The number of bicycle racks should be observed ten minutes after the last morning bell announcing commencement of classes.

TfNSW is responsible for the management of bus occupancy and will monitor the occupancy of routs to determine if additional services are required. The school is responsible to encourage students to tap on and off every time to ensure that bus occupancy data is accurate and provide evidence to justify route expansions (should this be required).

Bus occupancy data is available on TfNSW open data page https://opendata.transport.nsw.gov.au/dataset/boam-bus-opal-assignment-model which is used to suggest new services.

6.5.2 Program evaluation

The effectiveness of the transport plan will be monitored by the STC or the STP Committee as well as the P&C. The STC will monitor progress on initiatives and suggest if amendments are required. The findings of the evaluation will be published on the school website for members of the wider school community to assess progress for themselves.

Results from the annual Journey to School questionnaire will be analysed to produce an annual school mode share. This mode share will be compared to the school target as a measure of performance, and recommendations will be produced from the feedback received in the questionnaire.

The overarching goal of the STP is to achieve safe travel and mode share targets identified in **Section 0**. In order to reach the targets, it is important that the school provide encouragement, information and support for students, parents and staff to ensure that active and public transport modes are preferred ways to travel to school.

In addition to the above, the STC will review of the adequacy of school bus services (based on questionnaires, hands up surveys and general feedback) to cater for school demand. The STC will consult with TfNSW should changes to bus services be required to meet demand.

6.5.3 Report findings

The STC will report the findings of the STP evaluation to the school and will also make it available for School Infrastructure. Recommendations that can be implemented internally, such as improvements to events and communication will be actioned internally, while recommendations that require additional funding or state intervention will be presented to Department of Education for consideration. The responsibilities of each stakeholder group are presented in **Table 6-4**.

Table 6-4 Reporting responsibilities by stakeholder group

STC	Students / parents	School Infrastructure	State / local government
– Annual update of Journey to School mode share. – Consideration of suggestions and recommendations from the annual questionnaire. – Evaluate the performance of STP in achieving target mode share. – Implement or refer to recommended actions because of the evaluation.	– Reporting of transport-related issues to the STC. – Reporting of Journey to School data and suggestions during annual questionnaire.	– Receive future STPs including survey results. – Receive travel evaluation reports.	– Consideration of issues. – Review school and public transport network and service.

The STC will work collaboratively with School Infrastructure, Council and TfNSW to implement measures to improve mode share as required.

6.6 Governance framework

6.6.1 Governance structure

The proposed governance framework for the STP Committee and the initiatives identified in this plan is outlined in **Table 6-5**.

Table 6-5 Internal and external governance

STP Committee	Transport Working Group	School Infrastructure / Department of Education
– STC. – P&C volunteers. – Council representative. – Department of Education representative and/or school representative.	– Representatives from Council. – Representatives from TfNSW. – STC. – School Infrastructure.	– Principal. – Road Safety Education Officer.

As the school has not yet commenced operation, individual names and responsibilities have not been assigned for each action.

6.6.2 STC roles and responsibilities

The role of the STC will be as follows:

– Implementing transport programs to achieve travel behaviour change, as listed in **Section 6.1.3**

- Driving communication of transport options to raise awareness of sustainable transport modes
- Monitor and evaluate the progress of the school in reaching its target mode shares
- Processing of feedback and recommendations from the school community on transport-related matters
- Coordinate initiatives and events to promote mode shift away from cars
- Working closely with the STP Committee and the P&C to identify the needs of the school community
- Reporting of data collection and evaluation to stakeholder groups.
- School Infrastructure will appoint a STC to implement the STP in the first 4 terms of the schools' operation.

6.6.3 Internal school

The STC and the STP Committee provides insight into all school travel matters. Representatives from Council and the Department of Education will consult internally regularly to inform the STC and STP Committee accordingly.

6.6.4 External state and local transport

External state and local transport organisations will be invited, where appropriate, to help facilitate planning around the school site.

6.6.5 Funding arrangements

The School Travel Coordinator is funded for the first year of operation and this role will be handed over to the Department of Education for one of the Asset Management Officers to continue in the role on an ongoing basis.

7.0 Conclusion

In summary, this document has assessed the traffic impact of the school upgrade. Key findings for the transport assessment include:

– The walking network supporting the school is extensive, with the surrounding suburbs having footpath coverage on all important streets and higher order streets have footpaths on both sides of the road.

– There are 550 current and potential students within a 3.6km on-path distance to the school. Cycling infrastructure within the enrolment boundary is appropriate. There are shared paths running north – south and east – west along key arterial roads that provide the most direct access to the school.

– Bus stops are available on the southern frontage of the school site – Gregory Hills Drive. 9 services arrive between 8-9 am and 8 services depart between 3-4pm. The bus network has good initial coverage and capacity for the school but will likely need to expand over time to meet increasing patronage.

– Mode shares for the future school were benchmarked from Oran Park High School, which suggested a baseline mode share of 36% car, 36% public transport, 22% walk, 5% bicycle.

– The traffic assessment has highlighted that a student population of 1000 can be accommodated by the local road network. However, delays at all four of the intersections examined do increase. Travel behaviour will likely towards bus travel and active transport if private vehicle travel times increase as a result of a larger student population.

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed activity, it is determined that:

– The extent and nature of potential impacts are low and will not have a significant impact on the locality, community and/or the environment.

– Potential impacts can be appropriately mitigated or managed to ensure that there is minimal impact on the locality, community and/or the environment.

8.0 Mitigation measures

The impacts of the proposed school are considered acceptable and able to be mitigated by the transport infrastructure proposed (refer **Table 8-1**). These measures have been discussed and agreed by the TWG.

Table 8-1 Mitigation measures

Project Stage Design (D) Construction (C) Operation (O)	Mitigation Measure	Reason for mitigation measure	Relevant section of report
C	Construct a wombat crossing (raised zebra) on Digitaria Drive to facilitate safe access to the north	Pedestrians cannot cross safely from the school to the northern suburbs, resulting in crashes involving pedestrians	Section 3.2
O	Extinguish easement {M} in DP 1262720 as soon as practicable	Lot 8441 or Lot 8442 DP1272530 are redeveloped and seek use of easement {M}, a roadway running along the southern boundary of the site	Section 4.2.1
C	The north-south road should be signposted at the entry locations and at 50m increments along as 20km/h using standard regulatory signage. As this is a private road, this does not require Council or TfNSW approvals.	The roadway running along the eastern boundary of the site has excess vehicle speeds resulting in collisions.	Section 3.2
C	Widen the Digitaria Drive footpath to 2.0m and provide tree planting for shade along Digitaria Drive southern side for the length of the frontage	Pedestrians need to walk on the verge as footpaths are not wide enough.	Section
C	School Zone signage, speed management signage and associated pavement markings must be constructed and approved by TfNSW.	Drivers travel past the school at the current posted speed limit, increasing the risk and severity of harm to students	Section 3.2.1
C	If approved by Camden Council, change traffic signs along Digitaria Drive, southern side, along the frontage of the school to No Parking 8.00-930am and 2.30-4.00pm	Drivers picking up or dropping off students stay too long, creating overspill parking demands.	Section 3.2.1.3
O	Retractable bollards on the western driveway will be raised outside of delivery hours.	Parents or guardians use the western driveway which is intended for deliveries only.	Section 3.2.1.4
C	Construct a carpark with 78 spaces, a loading dock and delivery driveway according to Australian standard AS2890.1, AS2890.2 and AS2890.6.	Staff park on-street, resulting in other drivers unable to park on-street	Section 3.2.1.4
C	Construct 80 bicycle spaces (40-u rails) according to Australian Standard AS2890.3	Promote bicycle use and reduce impacts on the road network.	Section 3.2.1.1
C	If approved by TfNSW and Camden Council, relocate bus stop 25573 (Gregory Hills after Central Hills Dr, Gregory Hills) to the eastern side of Central Hills Drive	Bus use is low, resulting in congestion and delays to other road users	Section 3.2.1.2
O	By Term 2 of the first year of operation appoint a School Travel Coordinator,	The delivery of the school increases traffic in the area,	Section 6.6.2

Project Stage Design (D) Construction (C) Operation (O)	Mitigation Measure	Reason for mitigation measure	Relevant section of report
	establish a School Transport Committee, and prepare a Travel Access Guide	resulting in delays to other road users.	
O	Update the School Transport Plan annually for the first two years	The delivery of the school increases traffic in the area, resulting in delays to other road users.	Section 6.5
C	Prior to construction commencing, finalise a Construction Traffic Management Plan to the satisfaction of Camden Council, including preparation of traffic guidance schemes where required.	Construction traffic will have an impact on the surrounding streets, with heavy vehicles impacting on other drivers.	Section 5.0

APPENDIX A

TRAVEL ACCESS GUIDE

Gledswood Hills High School

Travel Access Guide

September 2024

Project overview

Welcome to your new school! This guide summarises your public and active transport options to school.

Using public transport to get to school

School buses and public buses

- Public bus routes to Bankstown are routes 840 (Oran Park to Campbelltown) , 841 (Leppington to Narellan) and 850 (Minto to Narellan), available on Gregory Hills Drive.
- Plan ahead and allow plenty of travel time so you can get to class on time.
- Be wary of vehicles on the road, always use footpaths and always cross safely at designated crossings along Gregory Hills Drive. You may be in a car's blind spot – don't use your phones while walking.
- Use your School Opal card when you catch the bus to school. It tells us how many people use public transport to help us plan buses, trains and ferries to suit you.

Apply for opal card | school term bus pass

School Opal cards provides free school travel and can be used as a School Term Bus Pass, for travel within the Opal network. Visit transportnsw.info/school-travel-apply to see if you are eligible.

Students are expected to be courteous and responsible, and follow the school student's code of conduct when travelling on public transport.

Message from your Principal

We are thrilled to welcome to your new school! Let's start the new school term right by making safe and sustainable travel choices. Our school is supported by a frequent and connected bus network. The extensive footpath network and crossing opportunities close to school make it easy for those living nearby to walk to school.

Thank you for choosing to travel by public or active transport. You are not only helping to reduce congestion but also doing your part to reduce carbon emissions around the school.

Safe travel is everyone's responsibility, Stay on the footpaths, do not run across the road and look before you cross to ensure that you are visible to oncoming traffic as you are cross the road.

Let's all do our part to make our community safer and more sustainable!

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

NSW GOVERNMENT

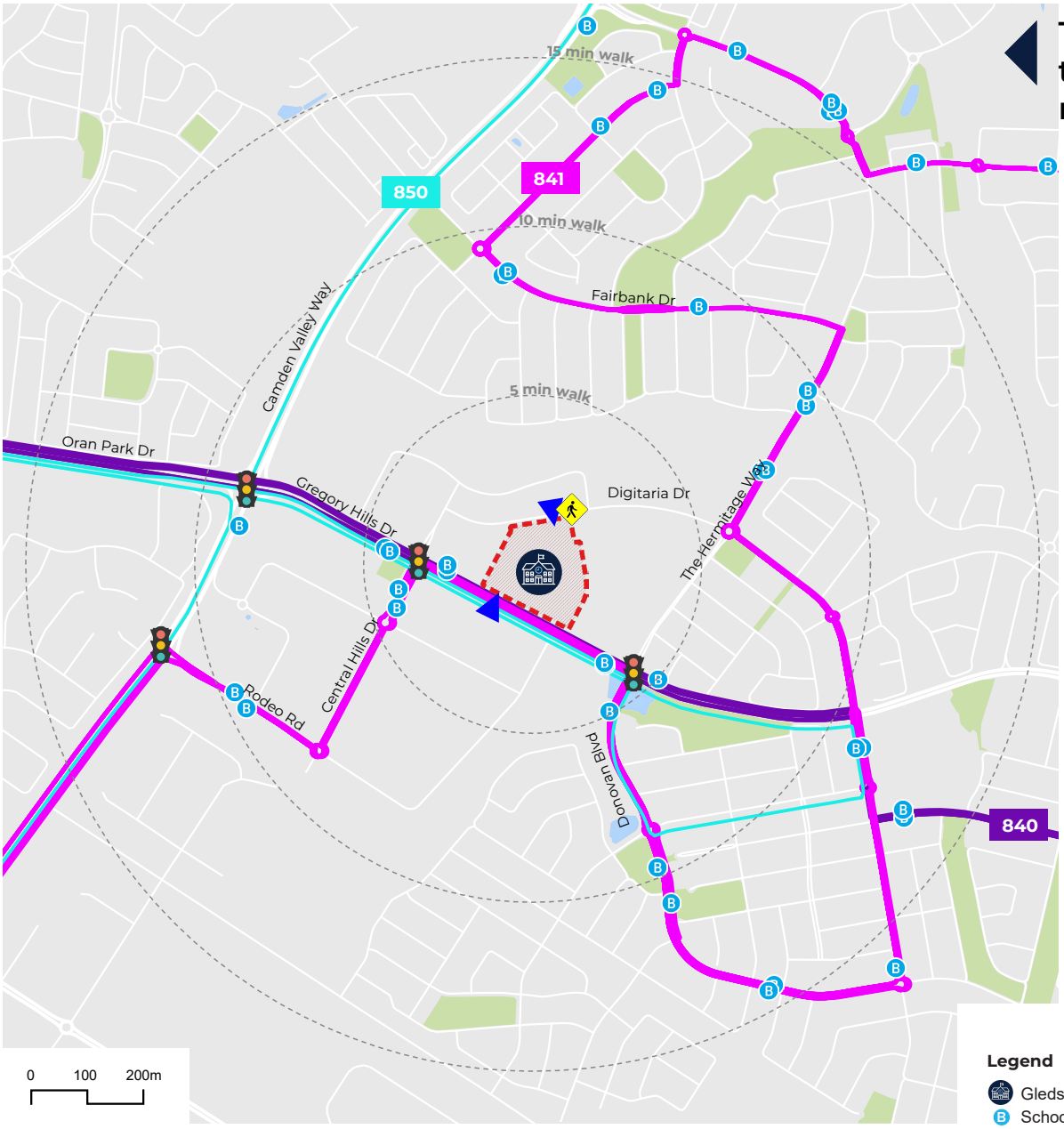
Where possible, **we encourage students to travel to school via public transport**. We can do our part to improve road traffic and pollution conditions by choosing not to drive to school.

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

The public transport network



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Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

NSW GOVERNMENT

NSW Department of Education – School Infrastructure

Active travel options to school

Walking is a healthy, active way to get to school

- Look out before you step out – you might be in a car's blind spot. Always check before you cross.
- Walk the extra distance to designated pedestrian crossings, such as the crossing on Third Avenue.

Ride your bike or scooter

- Always wear a helmet when you ride your bike.
- Take special care at driveways where vehicles may be driving in or out.
- Where possible, ride away from roads.

Kiss and drop code of conduct

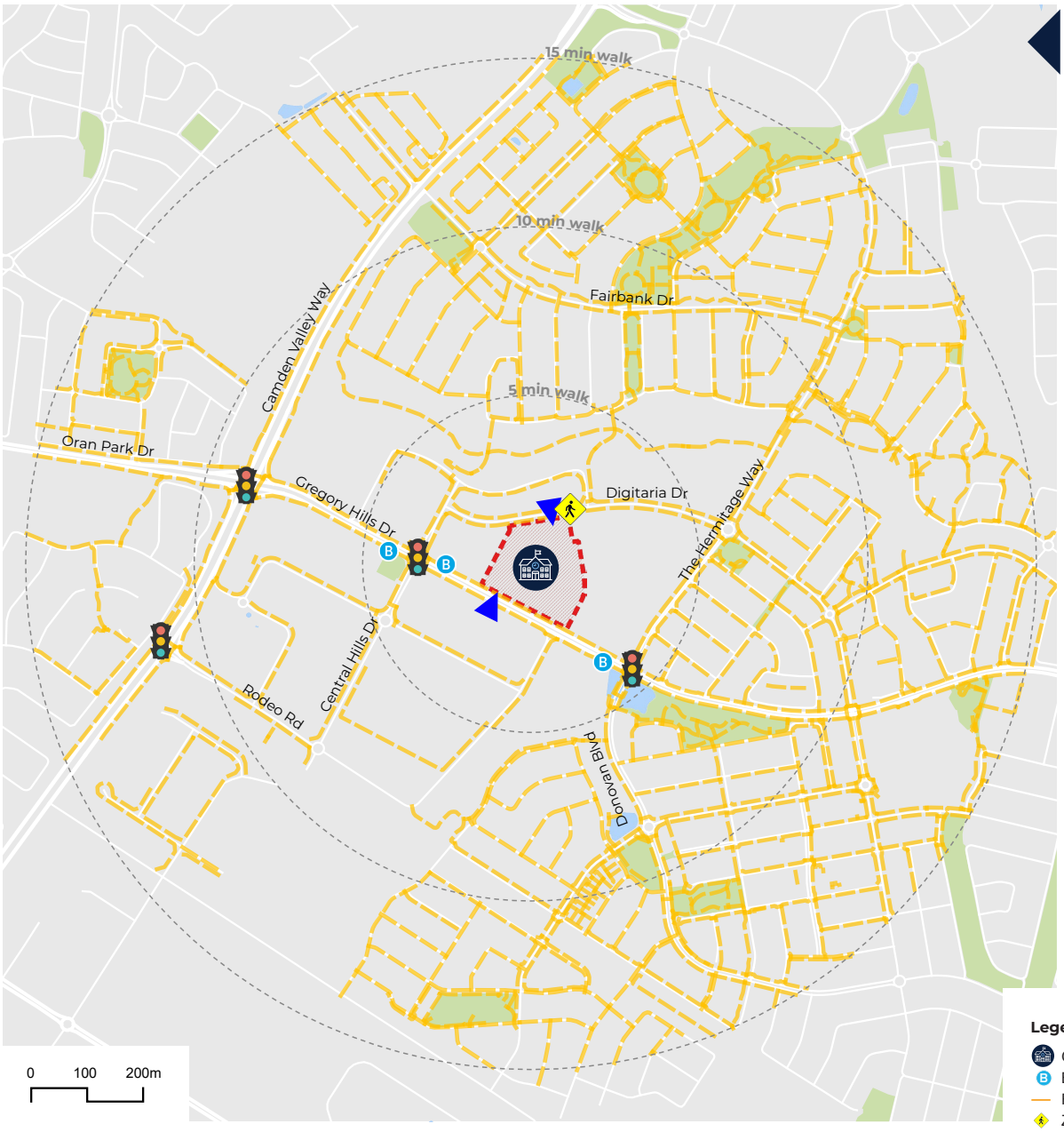
- Always take extra care when driving in school zones and be considerate about where you park during school pick up and drop off.
- Be careful of traffic and only cross when it is safe.

Spot something unsafe on the way to school?

Let other people know! Head to BikeSpot and share what you know to make your travel to school safer.

https://bikespot.crowdspot.com.au/17/-33.82460/151.07870

The active transport network



For more information contact:

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

APPENDIX B

TRAFFIC SURVEYS AND DISTRIBUTION

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Digitaria Dr and Holborn Cct, Gledswood Hi

GPS -34.020844, 150.766084

Date:	Tue 03/09/24
Weather:	Overcast
Suburban:	Gledswood Hills
Customer:	SCT

North:	Holborn Cct
East:	Digitaria Dr
South:	Central Hills
West:	N/A

Survey Period	AM:	7:30 AM-9:30 AM
	PM:	2:30 PM-5:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	2:45 PM-3:45 PM

All Vehicles

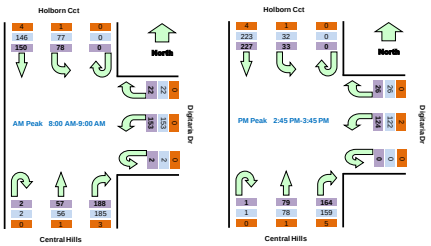
Time		North Approach Holborn Cct			East Approach Digitaria Dr			South Approach Central Hills			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:30	7:45	0	15	8	0	0	21	0	33	9		
7:45	8:00	0	22	10	0	3	34	0	37	14		
8:00	8:15	0	23	7	0	4	23	0	32	3	652	Peak
8:15	8:30	0	41	24	0	3	46	0	46	17		
8:30	8:45	0	43	24	1	4	40	2	52	15		
8:45	9:00	0	43	23	1	11	44	0	58	22		
9:00	9:15	0	35	22	0	11	51	0	59	19		
9:15	9:30	0	48	16	0	10	41	1	50	18		
14:30	14:45	0	70	13	0	3	28	3	28	15		
14:45	15:00	0	55	5	0	5	25	0	26	20	654	Peak
15:00	15:15	0	68	10	0	11	31	0	46	14		
15:15	15:30	0	52	9	0	5	34	1	54	25		
15:30	15:45	0	52	9	0	5	34	0	38	20		
15:45	16:00	0	43	9	0	3	36	2	50	16		
16:00	16:15	0	61	13	0	8	27	1	42	18		
16:15	16:30	0	49	18	0	6	33	1	52	20		
16:30	16:45	0	85	10	2	5	41	0	34	20		
16:45	17:00	0	68	16	0	7	33	0	51	21		

652

Peak Time		North Approach Holborn Cct			East Approach Digitaria Dr			South Approach Central Hills			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
8:00	9:00	0	150	78	2	22	153	2	188	57	652
14:45	15:45	0	227	33	0	26	124	1	164	79	654

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic: Total / Light / Heavy



Light Vehicles

Time		North Approach Holborn Cct			East Approach Digitaria Dr			South Approach Central Hills		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:30	7:45	0	15	8	0	0	20	0	32	9
7:45	8:00	0	21	10	0	3	33	0	37	14
8:00	8:15	0	22	7	0	4	23	0	32	3
8:15	8:30	0	39	24	0	3	46	0	46	16
8:30	8:45	0	42	23	1	4	40	2	49	15
8:45	9:00	0	43	23	1	11	44	0	58	22
9:00	9:15	0	34	22	0	11	51	0	58	18
9:15	9:30	0	47	15	0	10	41	1	48	17
14:30	14:45	0	70	13	0	3	28	3	28	15
14:45	15:00	0	54	4	0	5	25	0	24	20
15:00	15:15	0	65	10	0	11	30	0	44	13
15:15	15:30	0	52	9	0	5	34	1	54	25
15:30	15:45	0	52	9	0	5	33	0	37	20
15:45	16:00	0	43	9	0	3	36	1	47	16
16:00	16:15	0	60	13	0	8	26	1	39	17
16:15	16:30	0	49	17	0	6	33	1	51	20
16:30	16:45	0	82	10	1	5	41	0	34	18
16:45	17:00	0	68	16	0	7	33	0	50	21

Peak Time		North Approach Holborn Cct			East Approach Digitaria Dr			South Approach Central Hills			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
8:00	9:00	0	146	77	2	22	153	2	185	56	643
14:45	15:45	0	223	32	0	26	122	1	159	78	641

Heavy Vehicles

Time		North Approach Holborn Cct			East Approach Digitaria Dr			South Approach Central Hills		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:30	7:45	0	0	0	0	0	1	0	1	0
7:45	8:00	0	1	0	0	0	1	0	0	0
8:00	8:15	0	1	0	0	0	0	0	0	0
8:15	8:30	0	2	0	0	0	0	0	0	1
8:30	8:45	0	1	1	0	0	0	0	3	0
8:45	9:00	0	0	0	0	0	0	0	0	0
9:00	9:15	0	1	0	0	0	0	0	1	1
9:15	9:30	0	1	1	0	0	0	0	2	1
14:30	14:45	0	0	0	0	0	0	0	0	0
14:45	15:00	0	1	1	0	0	0	0	2	0
15:00	15:15	0	3	0	0	0	1	0	2	1
15:15	15:30	0	0	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	1	0	1	0
15:45	16:00	0	0	0	0	0	0	1	3	0
16:00	16:15	0	1	0	0	0	1	0	3	1
16:15	16:30	0	0	1	0	0	0	0	1	0
16:30	16:45	0	3	0	1	0	0	0	0	2
16:45	17:00	0	0	0	0	0	0	0	1	0

Peak Time		North Approach Holborn Cct			East Approach Digitaria Dr			South Approach Central Hills			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
8:00	9:00	0	4	1	0	0	0	0	3	1	9
14:45	15:45	0	4	1	0	0	2	0	5	1	13

Queues

Time		North	East		South
Period Start	Period End		North Lane	South Lane	
7:30	7:35	0	0	0	0
7:35	7:40	0	0	0	0
7:40	7:45	0	0	0	0
7:45	7:50	0	1	1	0
7:50	7:55	0	1	1	1
7:55	8:00	0	0	1	0
8:00	8:05	0	1	0	0
8:05	8:10	0	1	0	0
8:10	8:15	0	0	0	1
8:15	8:20	0	0	1	2
8:20	8:25	0	0	1	0
8:25	8:30	0	2	1	1
8:30	8:35	0	1	1	0
8:35	8:40	0	1	1	1
8:40	8:45	0	0	0	1
8:45	8:50	0	1	1	2
8:50	8:55	0	1	0	4
8:55	9:00	0	1	2	1
9:00	9:05	0	2	1	2
9:05	9:10	0	1	1	1
9:10	9:15	0	1	2	3
9:15	9:20	0	2	2	1
9:20	9:25	0	1	0	1
9:25	9:30	0	1	2	1
14:30	14:35	0	1	1	1
14:35	14:40	0	0	1	0
14:40	14:45	0	1	1	1
14:45	14:50	0	1	1	0
14:50	14:55	0	1	1	3
14:55	15:00	0	0	0	0
15:00	15:05	0	1	2	1
15:05	15:10	0	1	0	1
15:10	15:15	0	1	0	3
15:15	15:20	0	2	2	0
15:20	15:25	0	1	0	2
15:25	15:30	0	1	1	3
15:30	15:35	0	1	0	1
15:35	15:40	0	0	0	0
15:40	15:45	0	0	2	1
15:45	15:50	0	0	0	3
15:50	15:55	0	0	1	0
15:55	16:00	1	1	0	0
16:00	16:05	0	1	1	2
16:05	16:10	0	1	0	1
16:10	16:15	0	1	2	0
16:15	16:20	0	1	0	4
16:20	16:25	0	1	1	2
16:25	16:30	0	1	2	5
16:30	16:35	0	1	1	1
16:35	16:40	0	0	0	3
16:40	16:45	0	1	1	2
16:45	16:50	0	2	0	2
16:50	16:55	0	2	0	2
16:55	17:00	0	0	3	5

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY trafficsurvey.com.au

Intersection of Gregory Hills Dr and Central Hills , Gledswood Hills

GPS -34.021926, 150.765327

Date:	Tue 03/09/24
Weather:	Overcast
Suburban:	Gledswood Hills
Customer:	SCT

North:	Central Hills
East:	Gregory Hills Dr
South:	Central Hills
West:	Gregory Hills Dr

Survey	AM:	7:30 AM-9:30 AM
Period	PM:	2:30 PM-5:00 PM
Traffic	AM:	8:00 AM-9:00 AM
Peak	PM:	2:45 PM-3:45 PM

All Vehicles

Time		North Approach Central Hills				East Approach Gregory Hills Dr				South Approach Central Hills				West Approach Gregory Hills Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:30	7:45	0	28	7	5	0	9	134	8	0	33	10	20	1	27	225	18		
7:45	8:00	0	39	15	5	0	19	140	16	0	38	15	17	0	43	207	20		
8:00	8:15	0	37	8	3	0	6	169	18	0	42	11	20	0	39	272	12	2769	Peak
8:15	8:30	0	55	26	12	0	32	177	17	0	36	7	36	0	64	231	31		
8:30	8:45	0	62	18	10	0	21	189	19	0	45	16	28	0	53	204	34		
8:45	9:00	0	57	16	5	0	18	174	22	0	52	23	32	0	51	205	54		
9:00	9:15	0	73	23	6	0	31	107	24	0	53	12	28	0	65	154	29		
9:15	9:30	0	63	17	9	0	18	109	21	0	43	17	28	0	46	122	27		
14:30	14:45	0	76	13	7	0	11	140	14	0	58	14	54	0	43	128	18		
14:45	15:00	0	76	15	13	0	20	165	25	0	60	10	48	0	36	147	14	2747	Peak
15:00	15:15	0	79	17	12	0	12	150	11	0	71	21	44	0	42	134	26		
15:15	15:30	0	47	25	11	0	28	245	21	0	54	25	48	0	44	200	28		
15:30	15:45	0	65	25	18	0	17	192	19	0	74	26	49	1	58	163	16		
15:45	16:00	0	59	20	13	0	24	191	23	0	79	19	53	0	52	173	23		
16:00	16:15	0	68	18	13	0	14	197	12	0	97	25	53	1	38	140	19		
16:15	16:30	0	60	22	13	0	15	218	17	0	67	20	37	0	59	164	36		
16:30	16:45	0	99	23	13	0	13	216	25	0	84	20	49	0	39	144	13		
16:45	17:00	0	61	22	14	0	20	203	21	0	64	22	44	0	60	183	23		

Peak Time		North Approach Central Hills				East Approach Gregory Hills Dr				South Approach Central Hills				West Approach Gregory Hills Dr				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	211	68	30	0	77	709	76	0	175	57	116	0	207	912	131	2769
14:45	15:45	0	267	82	54	0	77	752	76	0	259	82	189	1	180	644	84	2747

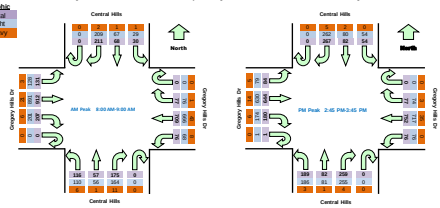
Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total

Light

Heavy



Light Vehicles

Time		North Approach Central Hills				East Approach Gregory Hills Dr				South Approach Central Hills				West Approach Gregory Hills Dr			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:30	7:45	0	28	6	4	0	9	124	8	0	31	10	17	1	26	215	17
7:45	8:00	0	37	14	5	0	19	134	15	0	33	15	17	0	41	196	20
8:00	8:15	0	37	8	2	0	6	160	16	0	39	11	16	0	36	267	12
8:15	8:30	0	54	25	12	0	31	168	15	0	32	7	34	0	62	223	31
8:30	8:45	0	61	18	10	0	21	182	16	0	44	15	28	0	53	200	32
8:45	9:00	0	57	16	5	0	18	156	21	0	49	23	32	0	50	201	53
9:00	9:15	0	72	23	6	0	29	98	23	0	50	12	27	0	62	149	29
9:15	9:30	0	62	17	9	0	17	102	19	0	39	16	26	0	44	117	27
14:30	14:45	0	76	12	7	0	10	137	14	0	57	14	53	0	39	121	18
14:45	15:00	0	74	15	13	0	20	157	25	0	59	10	47	0	35	144	12
15:00	15:15	0	76	17	12	0	11	145	11	0	69	21	44	0	42	134	24
15:15	15:30	0	47	24	11	0	26	233	21	0	54	25	47	0	42	192	28
15:30	15:45	0	65	24	18	0	17	182	19	0	73	25	48	1	55	160	15
15:45	16:00	0	58	20	13	0	24	188	20	0	77	19	51	0	52	168	19
16:00	16:15	0	66	18	13	0	14	187	12	0	94	23	52	1	35	137	17
16:15	16:30	0	60	22	13	0	15	217	17	0	66	20	37	0	57	155	36
16:30	16:45	0	97	23	13	0	12	209	22	0	81	20	49	0	38	141	12
16:45	17:00	0	61	22	14	0	20	197	18	0	61	22	44	0	58	178	21

Peak Time		North Approach Central Hills				East Approach Gregory Hills Dr				South Approach Central Hills				West Approach Gregory Hills Dr				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	209	67	29	0	76	666	68	0	164	56	110	0	201	891	128	2665
14:45	15:45	0	262	80	54	0	74	717	76	0	255	81	186	1	174	630	78	2669

Heavy Vehicles

Time		North Approach Central Hills				East Approach Gregory Hills Dr				South Approach Central Hills				West Approach Gregory Hills Dr			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:30	7:45	0	0	1	1	0	0	10	0	0	2	0	3	0	1	10	1
7:45	8:00	0	2	1	0	0	0	6	1	0	5	0	0	0	2	11	0
8:00	8:15	0	0	0	1	0	0	9	2	0	3	0	4	0	3	5	0
8:15	8:30	0	1	1	0	0	1	9	2	0	4	0	2	0	2	8	0
8:30	8:45	0	1	0	0	0	0	7	3	0	1	1	0	0	0	4	2
8:45	9:00	0	0	0	0	0	0	18	1	0	3	0	0	0	1	4	1
9:00	9:15	0	1	0	0	0	2	9	1	0	3	0	1	0	3	5	0
9:15	9:30	0	1	0	0	0	1	7	2	0	4	1	2	0	2	5	0
14:30	14:45	0	0	1	0	0	1	3	0	0	1	0	1	0	4	7	0
14:45	15:00	0	2	0	0	0	0	8	0	0	1	0	1	0	1	3	2
15:00	15:15	0	3	0	0	0	1	5	0	0	2	0	0	0	0	0	2
15:15	15:30	0	0	1	0	0	2	12	0	0	0	0	1	0	2	8	0
15:30	15:45	0	0	1	0	0	0	10	0	0	1	1	1	0	3	3	1
15:45	16:00	0	1	0	0	0	0	3	3	0	2	0	2	0	0	5	4
16:00	16:15	0	2	0	0	0	0	10	0	0	3	2	1	0	3	3	2
16:15	16:30	0	0	0	0	0	0	1	0	0	1	0	0	0	2	9	0
16:30	16:45	0	2	0	0	0	1	7	3	0	3	0	0	0	1	3	1
16:45	17:00	0	0	0	0	0	0	6	3	0	3	0	0	0	2	5	2

Peak Time		North Approach Central Hills				East Approach Gregory Hills Dr				South Approach Central Hills				West Approach Gregory Hills Dr				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	2	1	1	0	1	43	8	0	11	1	6	0	6	21	3	104
14:45	15:45	0	5	2	0	0	3	35	0	0	4	1	3	0	6	14	5	78

Queues

Time		North			East			South			West		
Period Start	Period End	West Lane	Middle Lane	East Lane	North Lane	Middle Lane	South Lane	East Lane	Middle Lane	West Lane	South Lane	Middle Lane	North Lane
7:30	7:35	3	5	2	1	7	8	5	5	5	3	1	2
7:35	7:40	3	4	2	2	8	6	2	2	6	3	1	3
7:40	7:45	1	5	1	1	3	6	2	7	3	3	2	1
7:45	7:50	4	5	3	3	13	5	5	4	4	7	11	4
7:50	7:55	4	4	7	1	7	5	4	3	5	3	15	2
7:55	8:00	3	5	7	2	10	8	3	2	4	3	4	4
8:00	8:05	3	2	1	1	10	8	4	4	4	4	20	21
8:05	8:10	4	3	3	2	8	13	4	4	7	2	22	23
8:10	8:15	3	5	4	1	14	8	5	6	8	4	22	16
8:15	8:20	3	3	4	6	9	6	3	5	4	9	26	22
8:20	8:25	5	3	4	3	14	13	2	3	9	6	24	19
8:25	8:30	4	4	8	5	10	7	3	2	7	4	18	10
8:30	8:35	6	6	5	4	12	10	5	6	9	4	9	8
8:35	8:40	5	3	6	5	9	9	3	3	8	5	13	9
8:40	8:45	4	7	3	2	9	11	4	4	5	12	3	7
8:45	8:50	3	3	6	2	13	9	5	4	14	11	8	7
8:50	8:55	6	5	3	2	11	9	5	8	15	7	4	4
8:55	9:00	6	7	2	6	7	9	5	5	6	3	7	8
9:00	9:05	8	7	7	7	4	2	5	5	5	11	8	5
9:05	9:10	5	7	4	3	2	11	2	4	8	9	6	3
9:10	9:15	2	4	3	4	7	5	4	7	5	11	6	6
9:15	9:20	6	6	7	6	7	6	4	4	6	7	9	9
9:20	9:25	7	6	2	3	4	8	5	5	9	6	11	9
9:25	9:30	5	7	4	2	9	6	5	2	6	5	3	3
14:30	14:35	6	7	2	0	6	3	5	5	8	5	6	3
14:35	14:40	7	4	3	3	3	9	5	3	9	4	13	11
14:40	14:45	8	6	3	3	10	7	5	7	9	6	17	11
14:45	14:50	8	4	4	4	14	12	3	3	7	7	12	6
14:50	14:55	4	5	3	4	9	8	5	5	8	4	4	5
14:55	15:00	3	6	3	3	11	10	3	3	12	2	8	4
15:00	15:05	7	7	6	2	6	5	5	4	7	3	9	6
15:05	15:10	5	6	3	1	5	7	5	9	17	5	9	7
15:10	15:15	6	6	4	2	6	2	5	9	8	12	9	8
15:15	15:20	2	3	3	5	7	7	3	5	11	11	10	10
15:20	15:25	3	4	7	3	11	9	5	7	9	4	19	15
15:25	15:30	4	7	5	2	12	12	4	6	11	7	18	19
15:30	15:35	5	7	6	3	5	7	5	9	16	13	21	9
15:35	15:40	4	4	8	1	4	8	4	11	15	13	9	10
15:40	15:45	4	7	3	2	3	9	4	3	9	6	18	12
15:45	15:50	9	5	4	3	5	8	5	7	14	9	17	16
15:50	15:55	4	4	3	2	8	5	5	10	8	13	13	10
15:55	16:00	6	5	7	3	4	9	4	8	13	13	9	6
16:00	16:05	6	8	4	1	10	7	5	7	12	4	3	3
16:05	16:10	5	3	4	1	11	10	5	9	14	8	13	9
16:10	16:15	4	7	5	1	4	9	5	6	8	8	19	14
16:15	16:20	8	6	8	3	9	11	5	8	8	10	15	15
16:20	16:25	3	5	4	1	4	5	4	5	10	10	16	14
16:25	16:30	7	5	8	2	8	8	5	7	11	12	10	14
16:30	16:35	10	7	6	2	6	7	5	11	8	4	2	3
16:35	16:40	8	9	6	2	7	14	5	11	15	5	17	15
16:40	16:45	6	7	5	1	5	3	4	3	15	8	3	3
16:45	16:50	4	4	2	3	8	8	5	11	11	6	19	19
16:50	16:55	10	6	6	2	7	6	3	7	9	11	20	19
16:55	17:00	4	7	6	2	8	6	3	4	8	9	17	18

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY trafficsurvey.com.au

Intersection of Gregory Hills Dr and The Hermitage Way, Gledswood

GPS -34.024434, 150.770744

Date:	Tue 03/09/24
Weather:	Overcast
Suburban:	Gledswood Hills
Customer:	SCT

North:	The Hermitage Way
East:	Gregory Hills Dr
South:	Donovan Blvd
West:	Gregory Hills Dr

Survey	AM:	7:30 AM-9:30 AM
Period	PM:	2:30 PM-5:00 PM
Traffic	AM:	8:00 AM-9:00 AM
Peak	PM:	2:45 PM-3:45 PM

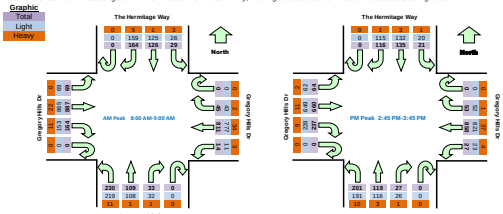
All Vehicles

Time		North Approach The Hermitage Way				East Approach Gregory Hills Dr				South Approach Donovan Blvd				West Approach Gregory Hills Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:30	7:45	0	33	16	2	0	8	152	3	0	6	19	52	0	22	240	10		
7:45	8:00	0	22	26	3	0	10	143	1	0	7	29	57	0	28	198	14		
8:00	8:15	0	31	17	4	0	12	165	2	0	13	15	60	0	45	275	16	2681	Peak
8:15	8:30	0	41	30	7	0	14	220	5	0	10	27	64	0	38	218	14		
8:30	8:45	0	54	40	9	0	10	200	4	0	6	42	62	0	39	201	18		
8:45	9:00	0	38	39	9	0	9	226	3	0	4	25	44	0	42	193	21		
9:00	9:15	0	35	21	6	0	13	137	5	0	4	19	55	0	47	164	14		
9:15	9:30	0	31	14	0	0	7	140	4	0	3	15	34	1	29	119	14		
14:30	14:45	0	17	17	4	0	9	145	10	0	9	36	35	0	46	132	21		
14:45	15:00	0	26	27	6	0	10	175	1	0	3	32	44	0	52	150	13	2518	Peak
15:00	15:15	0	40	48	4	0	9	167	9	0	7	32	35	0	42	150	12		
15:15	15:30	0	26	28	3	0	15	301	7	0	7	27	62	0	61	170	20		
15:30	15:45	0	24	32	8	0	19	215	10	0	10	28	60	0	82	190	19		
15:45	16:00	0	38	35	6	0	7	228	0	0	8	28	55	0	55	178	27		
16:00	16:15	0	31	36	7	0	6	224	6	0	7	18	34	0	50	168	24		
16:15	16:30	0	38	43	10	0	10	270	11	0	4	24	28	0	43	160	21		
16:30	16:45	0	30	32	5	0	9	252	5	0	10	19	37	0	55	178	12		
16:45	17:00	0	36	36	2	0	20	229	6	0	6	21	40	0	58	175	18		

Peak Time		North Approach The Hermitage Way				East Approach Gregory Hills Dr				South Approach Donovan Blvd				West Approach Gregory Hills Dr				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	164	126	29	0	45	811	14	0	33	109	230	0	164	887	69	2681
14:45	15:45	0	116	135	21	0	53	858	27	0	27	119	201	0	237	660	64	2518

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic
Total
Light
Heavy



Light Vehicles

Time		North Approach The Hermitage Way				East Approach Gregory Hills Dr				South Approach Donovan Blvd				West Approach Gregory Hills Dr			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:30	7:45	0	32	14	2	0	8	146	2	0	6	18	48	0	18	231	10
7:45	8:00	0	21	26	2	0	10	139	1	0	7	29	55	0	26	183	14
8:00	8:15	0	30	17	3	0	11	160	2	0	12	14	56	0	42	269	16
8:15	8:30	0	40	30	7	0	14	209	2	0	10	27	63	0	35	210	14
8:30	8:45	0	52	39	9	0	9	195	4	0	6	42	60	0	37	197	18
8:45	9:00	0	37	39	7	0	9	213	3	0	4	25	40	0	39	189	21
9:00	9:15	0	34	21	6	0	12	128	5	0	4	19	53	0	44	159	14
9:15	9:30	0	30	14	0	0	7	130	4	0	3	13	30	1	27	112	14
14:30	14:45	0	17	16	3	0	9	141	9	0	9	35	34	0	45	126	21
14:45	15:00	0	26	27	6	0	10	171	1	0	3	30	41	0	50	148	13
15:00	15:15	0	39	48	3	0	8	160	7	0	7	32	33	0	40	148	11
15:15	15:30	0	26	28	3	0	15	287	6	0	7	27	58	0	58	166	20
15:30	15:45	0	24	29	8	0	19	203	9	0	9	27	59	0	80	187	18
15:45	16:00	0	37	34	5	0	7	222	0	0	8	28	52	0	53	174	27
16:00	16:15	0	31	36	7	0	5	215	5	0	7	18	34	0	47	163	24
16:15	16:30	0	36	42	10	0	10	268	10	0	4	24	28	0	39	155	21
16:30	16:45	0	30	32	5	0	9	243	5	0	10	19	36	0	54	173	12
16:45	17:00	0	36	36	2	0	20	222	6	0	6	20	37	0	55	170	17

Peak Time		North Approach The Hermitage Way				East Approach Gregory Hills Dr				South Approach Donovan Blvd				West Approach Gregory Hills Dr				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	159	125	26	0	43	777	11	0	32	108	219	0	153	865	69	2587
14:45	15:45	0	115	132	20	0	52	821	23	0	26	116	191	0	228	649	62	2435

Heavy Vehicles

Time		North Approach The Hermitage Way				East Approach Gregory Hills Dr				South Approach Donovan Blvd				West Approach Gregory Hills Dr			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:30	7:45	0	1	2	0	0	0	6	1	0	0	1	4	0	4	9	0
7:45	8:00	0	1	0	1	0	0	4	0	0	0	0	2	0	2	15	0
8:00	8:15	0	1	0	1	0	1	5	0	0	1	1	4	0	3	6	0
8:15	8:30	0	1	0	0	0	0	11	3	0	0	0	1	0	3	8	0
8:30	8:45	0	2	1	0	0	1	5	0	0	0	0	2	0	2	4	0
8:45	9:00	0	1	0	2	0	0	13	0	0	0	0	4	0	3	4	0
9:00	9:15	0	1	0	0	0	1	9	0	0	0	0	2	0	3	5	0
9:15	9:30	0	1	0	0	0	0	10	0	0	0	2	4	0	2	7	0
14:30	14:45	0	0	1	1	0	0	4	1	0	0	1	1	0	1	6	0
14:45	15:00	0	0	0	0	0	0	4	0	0	0	2	3	0	2	2	0
15:00	15:15	0	1	0	1	0	1	7	2	0	0	0	2	0	2	2	1
15:15	15:30	0	0	0	0	0	0	14	1	0	0	0	4	0	3	4	0
15:30	15:45	0	0	3	0	0	0	12	1	0	1	1	1	0	2	3	1
15:45	16:00	0	1	1	1	0	0	6	0	0	0	0	3	0	2	4	0
16:00	16:15	0	0	0	0	0	0	1	9	1	0	0	0	0	0	3	5	0
16:15	16:30	0	2	1	0	0	0	2	1	0	0	0	0	0	0	4	5	0
16:30	16:45	0	0	0	0	0	0	0	9	0	0	0	1	0	1	5	0
16:45	17:00	0	0	0	0	0	0	7	0	0	0	1	3	0	3	5	1

Peak Time		North Approach The Hermitage Way				East Approach Gregory Hills Dr				South Approach Donovan Blvd				West Approach Gregory Hills Dr				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	5	1	3	0	2	34	3	0	1	1	11	0	11	22	0	94
14:45	15:45	0	1	3	1	0	1	37	4	0	1	3	10	0	9	11	2	83

Queues

Time		North		East			South		West		
Period Start	Period End	West Lane	East Lane	North Lane	Middle Lane	South Lane	East Lane	West Lane	South Lane	Middle Lane	North Lane
7:30	7:35	5	1	2	7	6	1	13	2	7	6
7:35	7:40	6	1	1	5	4	1	10	0	5	6
7:40	7:45	7	2	1	1	6	1	11	2	3	5
7:45	7:50	4	3	2	11	7	1	14	8	14	7
7:50	7:55	4	4	5	3	4	2	16	3	6	6
7:55	8:00	4	4	1	1	6	1	16	7	14	10
8:00	8:05	7	3	2	10	11	3	13	3	8	7
8:05	8:10	2	4	2	5	6	2	7	5	19	22
8:10	8:15	8	4	2	9	8	2	9	3	19	20
8:15	8:20	5	7	3	13	9	3	22	7	10	7
8:20	8:25	10	7	4	8	14	2	15	3	3	6
8:25	8:30	13	5	2	17	13	2	15	3	7	6
8:30	8:35	9	8	2	14	12	1	18	5	20	11
8:35	8:40	10	13	2	10	9	3	21	4	10	7
8:40	8:45	6	4	0	16	19	1	22	5	10	7
8:45	8:50	8	5	1	14	13	2	22	7	10	10
8:50	8:55	5	9	1	15	14	1	10	6	13	9
8:55	9:00	7	8	1	11	12	0	11	5	18	8
9:00	9:05	5	4	2	7	12	1	12	6	13	14
9:05	9:10	4	5	2	4	9	1	15	4	13	10
9:10	9:15	8	1	4	7	10	1	13	5	6	9
9:15	9:20	5	5	1	3	3	1	6	2	4	4
9:20	9:25	3	2	1	5	8	1	7	2	3	1
9:25	9:30	5	2	1	5	5	1	4	7	4	3
14:30	14:35	2	3	2	7	4	1	6	4	2	3
14:35	14:40	4	3	3	7	7	2	8	5	14	8
14:40	14:45	3	6	1	7	9	1	8	10	5	4
14:45	14:50	7	6	1	7	4	0	11	8	5	3
14:50	14:55	4	4	1	12	12	1	18	7	7	10
14:55	15:00	6	3	2	7	8	2	7	2	11	8
15:00	15:05	6	15	1	8	11	1	8	6	8	5
15:05	15:10	6	12	2	8	5	1	9	5	5	4
15:10	15:15	7	5	2	11	10	1	11	7	11	8
15:15	15:20	7	11	1	12	13	1	19	10	13	16
15:20	15:25	3	5	2	16	14	3	22	9	13	12
15:25	15:30	2	2	2	7	7	1	15	16	15	13
15:30	15:35	4	9	2	12	11	2	16	25	14	15
15:35	15:40	5	3	5	14	13	1	10	12	16	15
15:40	15:45	8	7	2	5	5	2	10	8	8	6
15:45	15:50	7	11	0	4	4	1	13	7	16	9
15:50	15:55	4	5	1	3	5	1	12	6	10	4
15:55	16:00	9	4	1	17	14	3	12	6	9	11
16:00	16:05	6	8	2	17	15	1	6	9	5	7
16:05	16:10	5	5	1	12	8	1	8	5	7	6
16:10	16:15	5	7	2	17	17	1	9	4	6	6
16:15	16:20	4	13	1	15	11	1	7	7	12	5
16:20	16:25	3	9	4	8	10	2	9	3	4	7
16:25	16:30	10	10	2	7	9	2	11	9	11	11
16:30	16:35	5	3	1	2	5	1	9	8	5	6
16:35	16:40	5	5	2	5	11	1	11	7	13	15
16:40	16:45	4	12	4	12	11	2	7	3	13	12
16:45	16:50	5	6	0	7	8	1	10	8	8	14
16:50	16:55	6	6	2	7	10	2	12	4	12	19
16:55	17:00	3	6	3	9	9	1	8	7	3	5

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Mannes Rd and The Hermitage Way, Gledswood Hills

GPS -34.021433, 150.773322

Date:	Tue 03/09/24
Weather:	Overcast
Suburban:	Gledswood Hills
Customer:	SCT

North:	The Hermitage Way
East:	Mannes Rd
South:	The Hermitage Way
West:	Digitaria Dr

Survey Period	AM:	7:30 AM-9:30 AM
	PM:	2:30 PM-5:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	2:45 PM-3:45 PM

All Vehicles

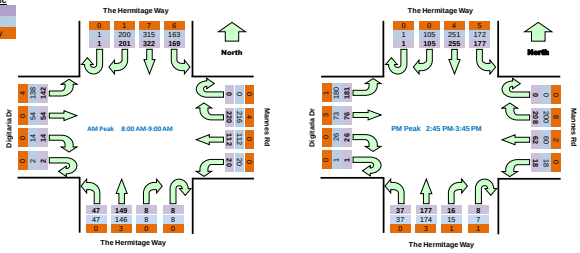
Time		North Approach The Hermitage Way				East Approach Mannes Rd				South Approach The Hermitage Way				West Approach Digitaria Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:30	7:45	0	23	48	34	0	33	12	4	2	2	21	10	2	2	8	22		
7:45	8:00	2	32	39	37	0	33	19	2	2	2	22	13	1	1	13	21		
8:00	8:15	1	35	46	36	0	51	22	5	2	2	23	9	0	7	11	29	1469	Peak
8:15	8:30	0	59	83	42	0	56	30	4	0	2	38	10	0	4	14	35		
8:30	8:45	0	45	95	41	0	73	39	8	2	2	49	18	2	1	14	38		
8:45	9:00	0	62	98	50	0	40	21	3	4	2	39	10	0	2	15	40		
9:00	9:15	0	31	50	30	0	44	21	3	3	3	27	13	5	16	24	27		
9:15	9:30	2	28	26	19	0	18	17	8	3	3	22	7	1	6	9	36		
14:30	14:45	0	20	29	23	0	42	13	4	1	2	53	10	0	4	16	40		
14:45	15:00	0	19	58	41	0	57	18	6	0	6	39	4	0	7	15	34	1348	Peak
15:00	15:15	1	27	84	55	0	45	10	2	4	2	40	6	0	8	19	39		
15:15	15:30	0	29	55	42	0	48	23	6	3	3	45	16	1	5	24	53		
15:30	15:45	0	30	58	39	0	58	11	4	1	5	53	11	0	6	18	55		
15:45	16:00	1	33	71	38	0	47	19	7	5	6	46	11	2	9	19	46		
16:00	16:15	1	19	60	28	0	42	16	10	2	3	38	11	0	13	19	63		
16:15	16:30	0	37	83	58	0	40	15	8	3	3	37	13	0	12	21	56		
16:30	16:45	1	25	66	36	0	49	12	5	2	3	30	9	2	10	30	49		
16:45	17:00	0	27	73	41	0	58	25	4	2	4	45	12	2	5	25	67		

Peak Time		North Approach The Hermitage Way				East Approach Mannes Rd				South Approach The Hermitage Way				West Approach Digitaria Dr				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	1	201	322	169	0	220	112	20	8	8	149	47	2	14	54	142	1469
14:45	15:45	1	105	255	177	0	208	62	18	8	16	177	37	1	26	76	181	1348

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



Light Vehicles

Time		North Approach The Hermitage Way				East Approach Mannes Rd				South Approach The Hermitage Way				West Approach Digitaria Dr			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:30	7:45	0	23	45	33	0	32	12	4	2	2	20	10	2	2	8	21
7:45	8:00	2	32	37	34	0	32	18	2	2	2	22	13	1	1	13	21
8:00	8:15	1	34	44	35	0	50	22	5	2	2	21	9	0	7	11	29
8:15	8:30	0	59	82	40	0	55	30	4	0	2	38	10	0	4	14	35
8:30	8:45	0	45	93	39	0	72	39	8	2	2	48	18	2	1	14	35
8:45	9:00	0	62	96	49	0	39	21	3	4	2	39	10	0	2	15	39
9:00	9:15	0	31	50	28	0	44	21	3	3	3	26	13	4	16	24	27
9:15	9:30	2	28	25	18	0	17	17	8	3	3	20	7	1	5	9	34
14:30	14:45	0	20	28	22	0	42	13	4	1	2	53	10	0	4	16	40
14:45	15:00	0	19	58	40	0	54	17	6	0	6	37	4	0	7	15	34
15:00	15:15	1	27	83	54	0	44	10	2	3	2	39	6	0	8	17	38
15:15	15:30	0	29	54	41	0	47	23	6	3	3	45	16	1	5	23	53
15:30	15:45	0	30	56	37	0	55	10	4	1	4	53	11	0	6	18	55
15:45	16:00	1	32	68	37	0	45	19	7	5	6	45	11	1	9	19	43
16:00	16:15	1	19	59	28	0	41	16	10	2	3	38	10	0	13	18	63
16:15	16:30	0	36	81	55	0	38	15	8	3	3	37	13	0	11	21	54
16:30	16:45	1	25	66	36	0	48	12	5	2	3	30	9	1	10	30	47
16:45	17:00	0	27	73	38	0	57	25	4	2	4	44	12	1	5	24	67

Peak Time		North Approach The Hermitage Way				East Approach Mannes Rd				South Approach The Hermitage Way				West Approach Digitaria Dr				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	1	200	315	163	0	216	112	20	8	8	146	47	2	14	54	138	1444
14:45	15:45	1	105	251	172	0	200	60	18	7	15	174	37	1	26	73	180	1320

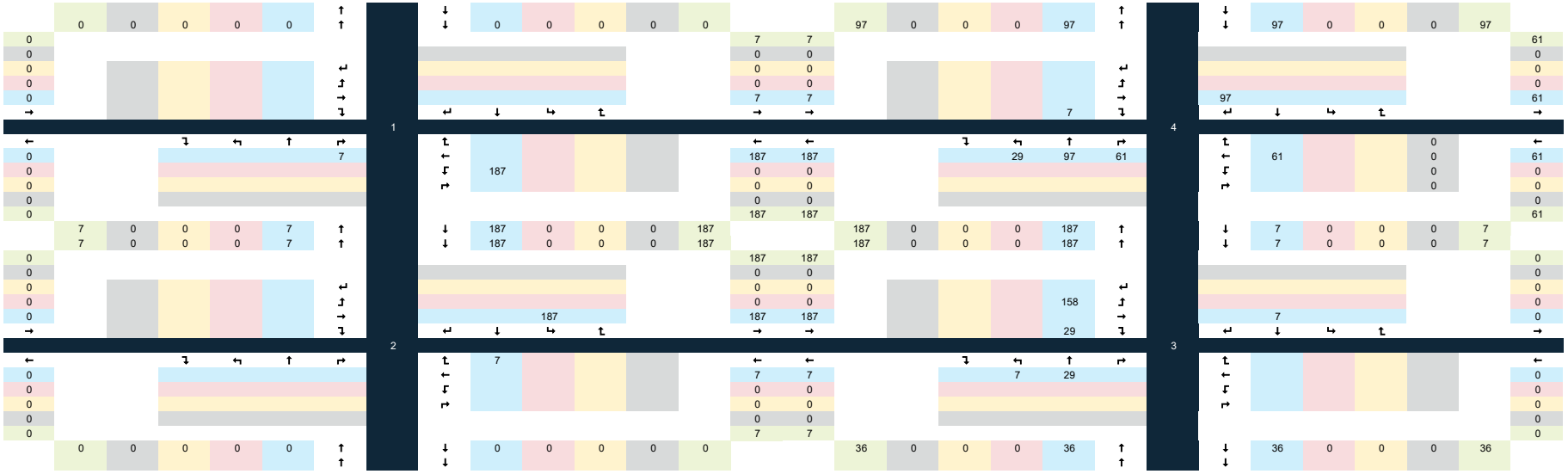
Heavy Vehicles

Time		North Approach The Hermitage Way				East Approach Mannes Rd				South Approach The Hermitage Way				West Approach Digitaria Dr			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:30	7:45	0	0	3	1	0	1	0	0	0	0	1	0	0	0	0	1
7:45	8:00	0	0	2	3	0	1	1	0	0	0	0	0	0	0	0	0
8:00	8:15	0	1	2	1	0	1	0	0	0	0	2	0	0	0	0	0
8:15	8:30	0	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0
8:30	8:45	0	0	2	2	0	1	0	0	0	0	1	0	0	0	0	3
8:45	9:00	0	0	2	1	0	1	0	0	0	0	0	0	0	0	0	1
9:00	9:15	0	0	0	2	0	0	0	0	0	0	1	0	1	0	0	0
9:15	9:30	0	0	1	1	0	1	0	0	0	0	2	0	0	1	0	2
14:30	14:45	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
14:45	15:00	0	0	0	1	0	3	1	0	0	0	2	0	0	0	0	0
15:00	15:15	0	0	1	1	0	1	0	0	1	0	1	0	0	0	2	1
15:15	15:30	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1	0
15:30	15:45	0	0	2	2	0	3	1	0	0	1	0	0	0	0	0	0
15:45	16:00	0	1	3	1	0	2	0	0	0	0	1	0	1	0	0	3
16:00	16:15	0	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0
16:15	16:30	0	1	2	3	0	2	0	0	0	0	0	0	0	1	0	2
16:30	16:45	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
16:45	17:00	0	0	0	3	0	1	0	0	0	0	1	0	1	0	1	0

Peak Time		North Approach The Hermitage Way				East Approach Mannes Rd				South Approach The Hermitage Way				West Approach Digitaria Dr				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	1	7	6	0	4	0	0	0	0	3	0	0	0	0	4	25
14:45	15:45	0	0	4	5	0	8	2	0	1	1	3	0	0	0	3	1	28

Queues

Time		North	East	South	West
Period Start	Period End				
7:30	7:35	0	2	1	0
7:35	7:40	0	2	0	1
7:40	7:45	1	2	0	1
7:45	7:50	1	1	1	1
7:50	7:55	1	1	2	0
7:55	8:00	0	3	2	1
8:00	8:05	3	6	2	2
8:05	8:10	0	4	1	1
8:10	8:15	3	2	1	2
8:15	8:20	2	6	1	2
8:20	8:25	2	3	2	2
8:25	8:30	6	7	5	1
8:30	8:35	0	7	3	2
8:35	8:40	4	9	3	4
8:40	8:45	4	6	2	3
8:45	8:50	2	4	2	2
8:50	8:55	4	5	2	2
8:55	9:00	0	1	1	1
9:00	9:05	2	4	1	1
9:05	9:10	2	1	2	3
9:10	9:15	3	4	4	5
9:15	9:20	2	0	0	0
9:20	9:25	0	1	0	0
9:25	9:30	0	2	4	2
14:30	14:35	3	1	1	1
14:35	14:40	1	3	1	3
14:40	14:45	2	1	6	4
14:45	14:50	2	2	1	1
14:50	14:55	2	4	2	2
14:55	15:00	3	5	2	3
15:00	15:05	4	3	5	2
15:05	15:10	3	1	2	0
15:10	15:15	3	1	1	4
15:15	15:20	4	1	3	3
15:20	15:25	3	7	3	1
15:25	15:30	4	3	1	7
15:30	15:35	3	0	3	1
15:35	15:40	2	0	2	3
15:40	15:45	4	4	6	7
15:45	15:50	2	3	3	4
15:50	15:55	2	2	3	1
15:55	16:00	5	2	3	1
16:00	16:05	1	1	1	2
16:05	16:10	0	1	2	1
16:10	16:15	5	1	5	6
16:15	16:20	3	2	0	0
16:20	16:25	1	3	1	2
16:25	16:30	3	2	5	3
16:30	16:35	1	1	1	0
16:35	16:40	3	3	3	5
16:40	16:45	3	5	2	3
16:45	16:50	5	5	5	2
16:50	16:55	4	6	5	2
16:55	17:00	4	6	2	2

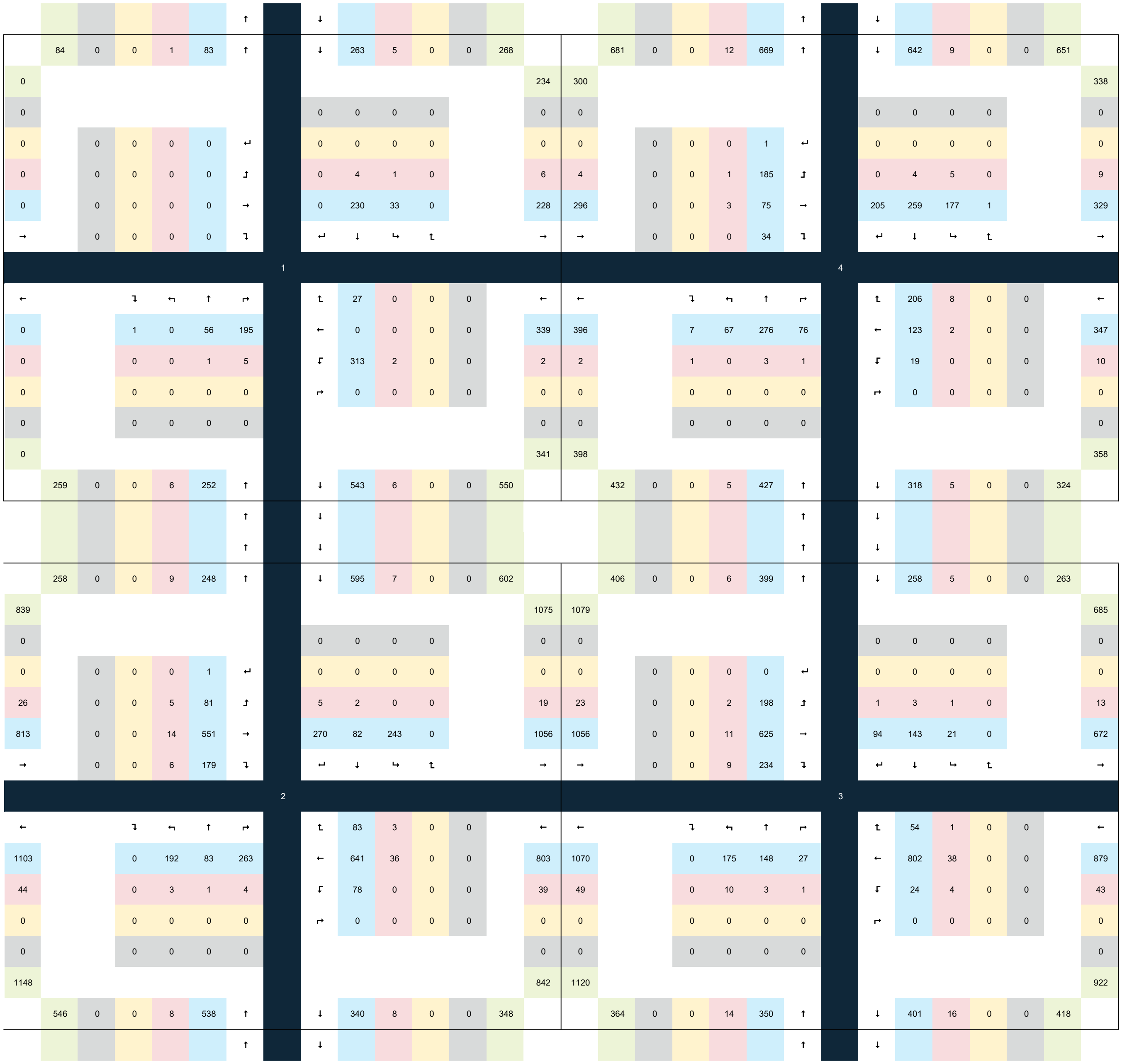


School trip generation

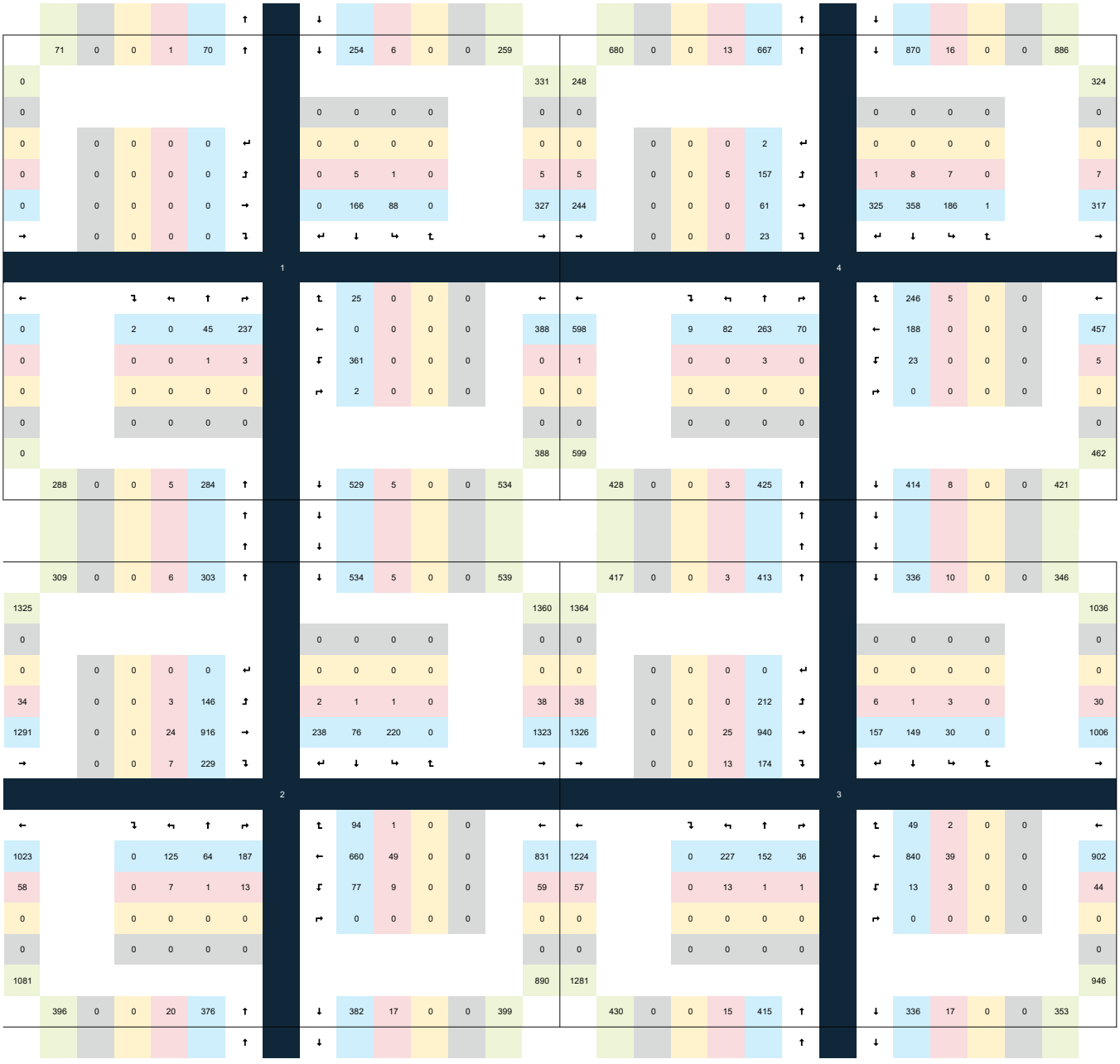
2027 AM School opening

						↑		↓														↑		↓						
	64	0	0	1	63	↑		↓	230	5	0	0	235			625	0	0	11	613	↑		↓	797	14	0	0	811	
0														301	226														299
0								0	0	0	0			0	0								0	0	0	0			0
0		0	0	0	0	↵		0	0	0	0			0	0		0	0	0	2	↵		0	0	0	0			0
0		0	0	0	0	↴		0	4	1	0			4	4		0	0	4	142	↴		1	7	6	0			6
0		0	0	0	0	→		0	150	79	0			297	222		0	0	0	56	→		303	325	168	1			293
→		0	0	0	0	↴		↵	↓	↳	↰			→	→		0	0	0	22	↴		↵	↓	↳	↰			→
							1																						4	
←			↴	↳	↑	↱		↰	23	0	0	0		←	←			↴	↳	↑	↱		↰	223	4	0	0		←
0			2	0	40	215		←	0	0	0	0		369	559			8	77	248	69		←	176	0	0	0		419
0			0	0	1	3		↲	345	0	0	0		0	1			0	0	3	0		↲	21	0	0	0		4
0			0	0	0	0		↦	2	0	0	0		0	0			0	0	0	0		↦	0	0	0	0		0
0			0	0	0	0								0	0			0	0	0	0								0
0														369	560														424
	262	0	0	4	258	↑		↓	497	4	0	0	501			405	0	0	3	402	↑		↓	375	7	0	0	382	
						↑		↓														↑		↓						
						↑		↓														↑		↓						
	280	0	0	5	275	↑		↓	501	4	0	0	505			392	0	0	3	389	↑		↓	302	9	0	0	311	
1190														1240	1243														934
0								0	0	0	0			0	0								0	0	0	0			0
0		0	0	0	0	↵		0	0	0	0			0	0		0	0	0	0	↵		0	0	0	0			0
31		0	0	3	132	↴		2	1	1	0			34	34		0	0	0	205	↴		5	1	3	0			27
1159		0	0	22	820	→		215	69	217	0			1206	1209		0	0	23	847	→		139	136	27	0			907
→		0	0	6	207	↴		↵	↓	↳	↰			→	→		0	0	11	157	↴		↵	↓	↳	↰			→
							2																						3	
←			↴	↳	↑	↱		↰	86	1	0	0		←	←			↴	↳	↑	↱		↰	44	2	0	0		←
917			0	113	58	169		←	588	44	0	0		744	1099			0	203	140	33		←	756	35	0	0		812
53			0	6	1	11		↲	70	8	0	0		54	52			0	11	1	1		↲	11	3	0	0		40
0			0	0	0	0		↦	0	0	0	0		0	0			0	0	0	0		↦	0	0	0	0		0
0			0	0	0	0								0	0			0	0	0	0								0
969														797	1151														852
	359	0	0	19	340	↑		↓	346	15	0	0	362			390	0	0	13	376	↑		↓	304	15	0	0	320	
						↑		↓														↑		↓						

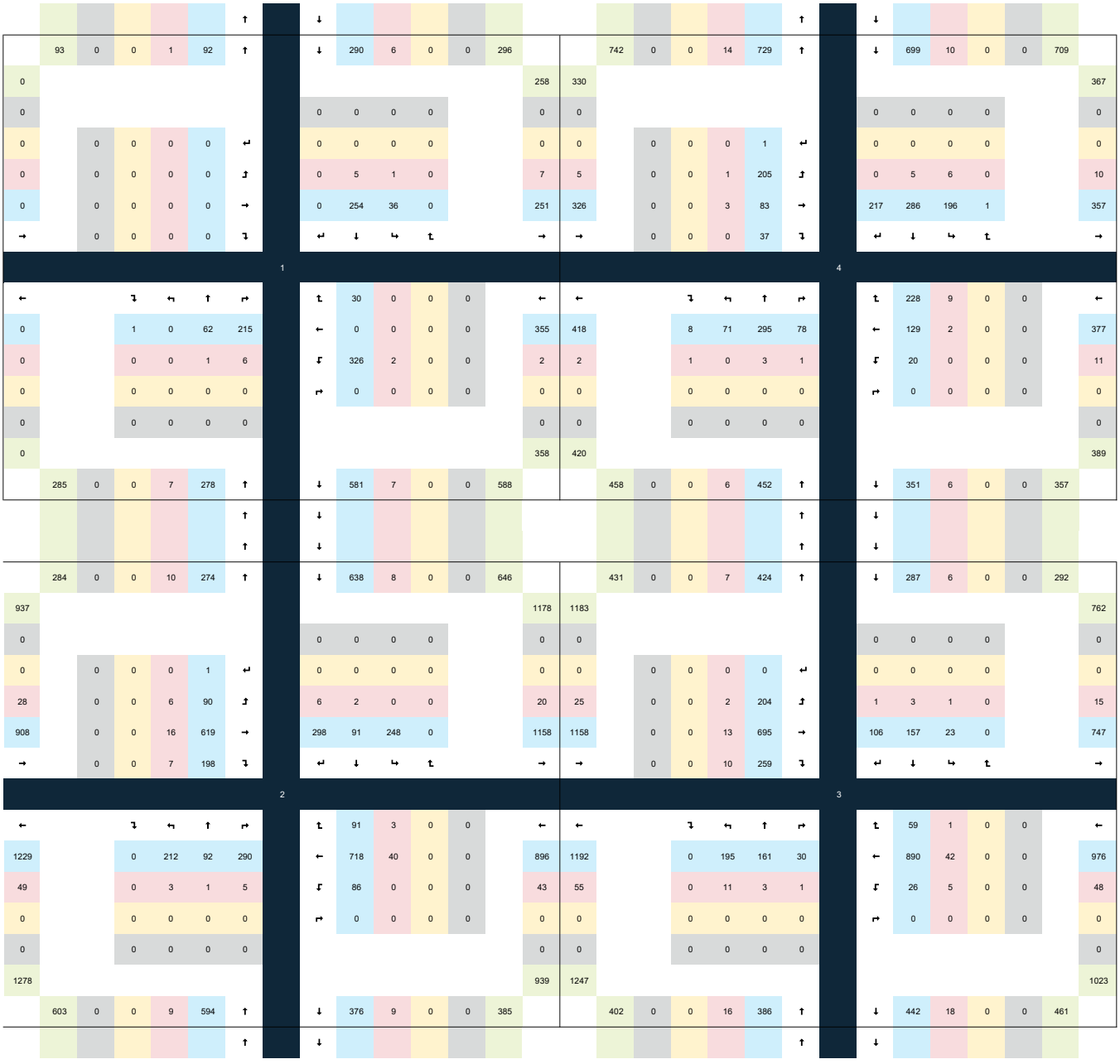
2027 PM School opening



2037 AM 10 years post school opening



2037 PM 10 years post school opening



APPENDIX C

SIDRA OUTPUTS

Table 8-2 1 SCATS phasing arrangement

Gregory Hills Drive | Holborn Crescent	Gregory Hills Drive | The Hermitage Way
	

APPENDIX D

TRANSPORT WORKING GROUP MEETING MINUTES

Meeting agenda:

Gledswood Hills new High School

Meeting Information			
Project Name	Gledswood Hills new High School		
Project Number	SCT_00517		
Client	School Infrastructure NSW		
Date	17 April 2024	**Time**	1.00 – 2.00 pm
Venue	MS Teams		
Subject	Transport Working Group #1		
Attendees	Rebecca Lehman (RL) (SINSW) Kamoru Adetunmbi (SINSW) Ryan Thoroughgood (RT) (SINSW) Barry Hayes (BH) (SINSW) Shay Bergin (SB) (SINSW) Chloe Kennedy (CK) (SINSW)		Tom Allen (TA) (Camden Council) Michelle Kramer (MK) (Camden Council) Roy El Kazzi (RK) (Camden Council) Shayal Singh (SS) TfNSW Jonathan Busch (JB) (SCT Consulting)

	Minutes	Action
	Presentation of school transport planning	
1.1	JB and BH presented the attached presentation, which included context, information about the project, transport network analysis, mode share analysis and proposals to support sustainable transport.	Note
1.2	TA noted that the precinct has been designed for bulky goods, not a school. It has been designed for large vehicles, but not pedestrian intersections.	Note
1.3	MK noted that because the north-south running driveway along the eastern boundary was on private property, Council would not be able to provide any enforcement, which would be the responsibility of the landowner.	Note
1.4	TA noted that runoff is managed through rain gardens, which are spaced approximately every 30m along the boundary. The location of rain gardens may have an impact on operations.	Note
1.5	JB requested if the settlement pattern was consistent with Council's expectation. TA noted that the layout of where residential development is anticipated can be obtained from the Turner Road development control plan (DCP) and the El Caballo Blanco DCP. JB to confirm consistency with analysis.	JB
1.6	TA noted that Camden Council is considering some treatments at Holborn Circuit, which are unfunded. About 30-40m of footpath is needed, possibly requires a boardwalk. This is a key connection for pedestrians.	Note
1.7	MK noted that any new pedestrian crossing would need to ensure it can cater for 26m long vehicles, which the remainder of the roads have been designed for.	JB
1.8	TA noted that having a centrally located bus stop would be beneficial, given the long distances between stops (600m). An additional stop could also be located on the southern side of Gregory Hills Drive, outside of the hotel.	JB
1.9	TA asked for clarity whether a shared path could be provided on the north side of Gregory Hills Drive. JB to respond during next TWG.	JB
2.0	TA noted that Oran Park High School is the closest school and has similar characteristics. A mode share survey should be conducted at OPHS to inform benchmarking.	JB

Minutes		Action
2.1	TA noted that car park option #1 was preferred as having new driveway connections onto Gregory Hills Drive was not a good safety outcome. TA was also comfortable with the proposal to remove the easement for the driveway along the southern frontage of the site.	Note
2.2	The TWG has no objections to the proposed location of the kiss and drop on Digitaria Drive.	Note
2.3	TA noted that offsite car parking locations were not likely to be acceptable as Council already receives complaints about insufficient parking.	Note

List of attachments:

Attachment 1: TWG #1 slides

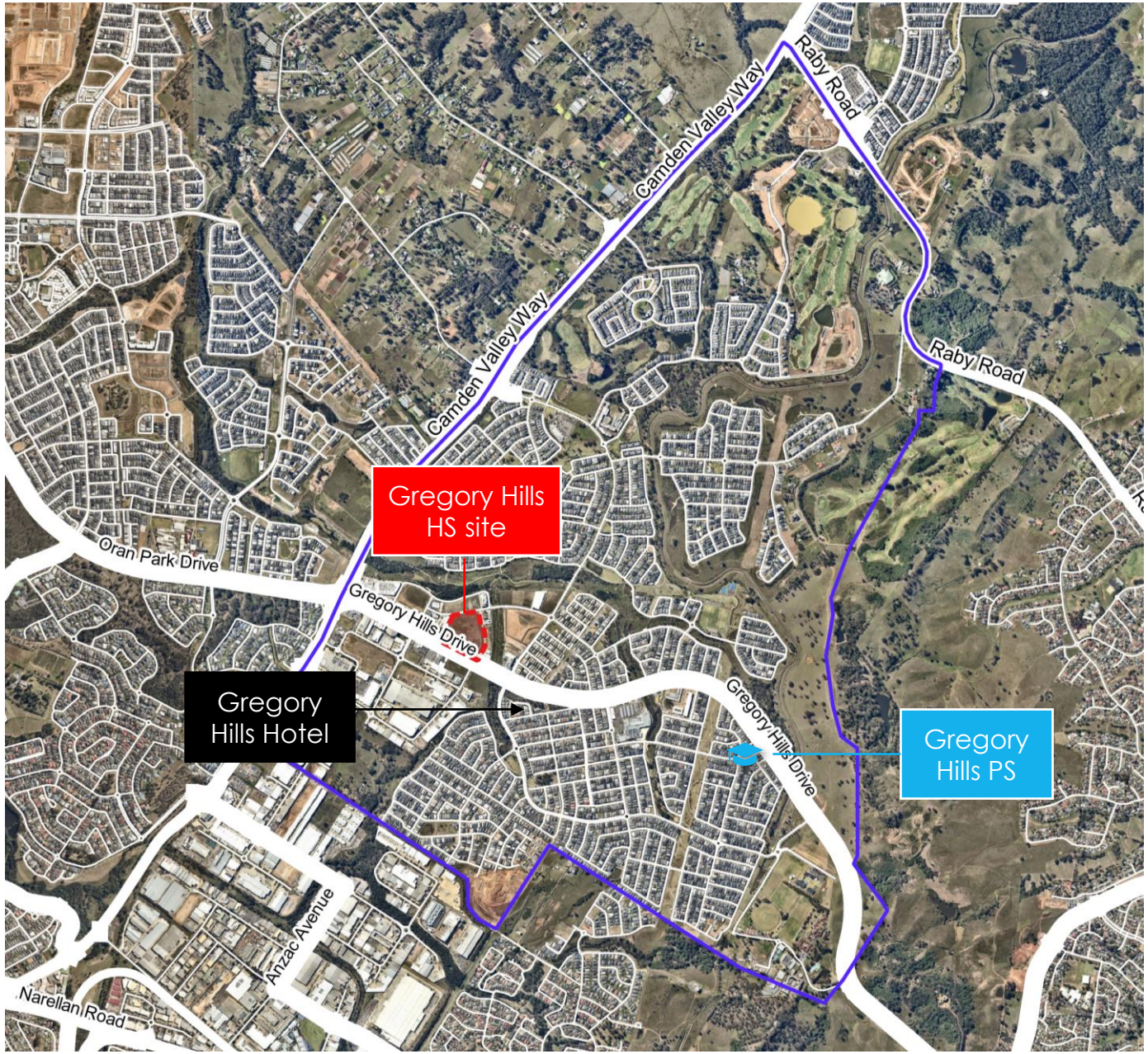
Gregory Hills High School

Transport Working Group #1

24 April 2024

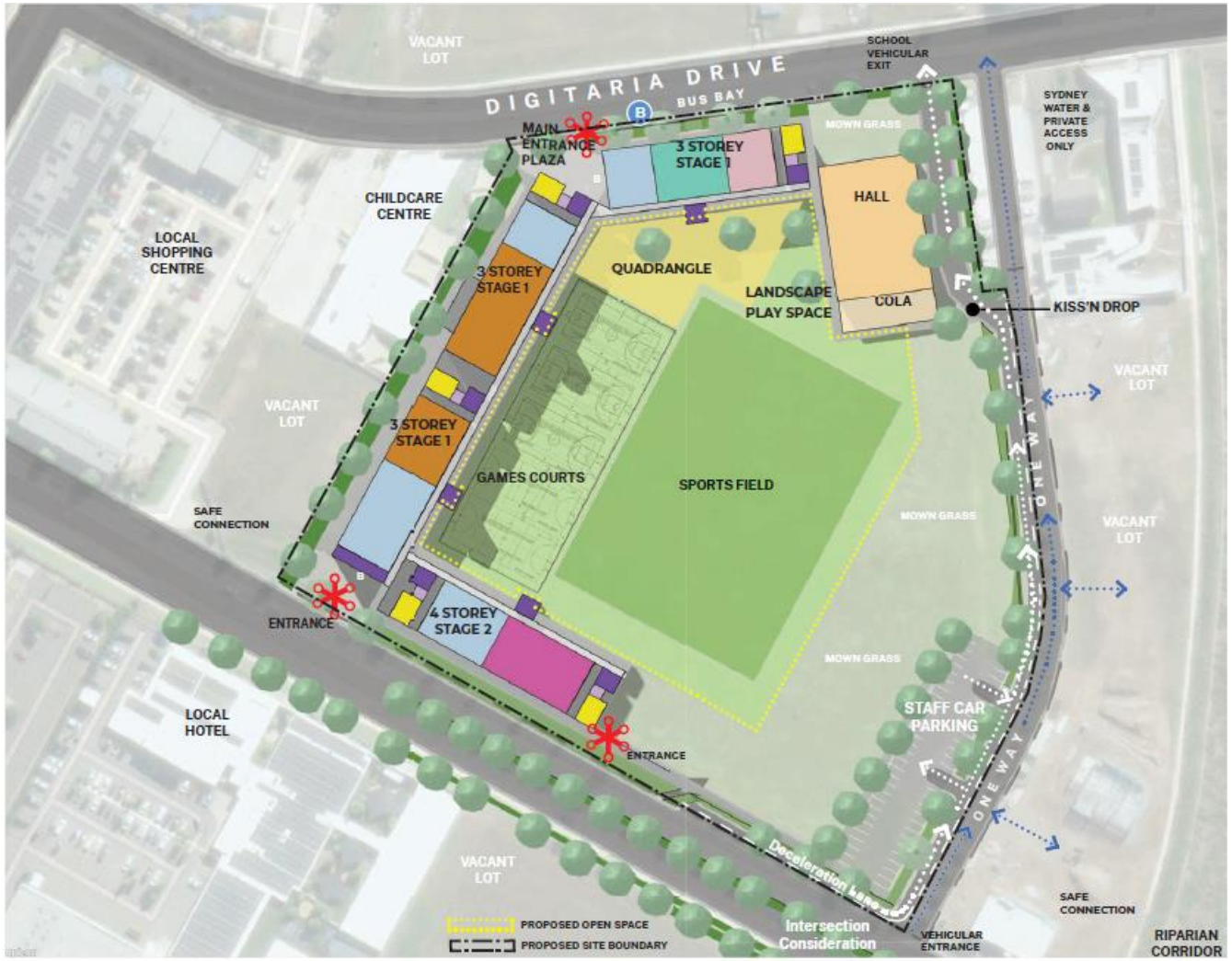
Context

- A new high school is proposed at Gregory Hills to cater for the communities of Gledswood and Gregory Hills.
- The site is located on Gregory Hills Drive, 2km to the west of Gregory Hills PS, opposite the Gregory Hills Hotel.
- The site is located on Gregory Hills Drive, 2km to the west of Gregory Hills PS, opposite the Gregory Hills Hotel.



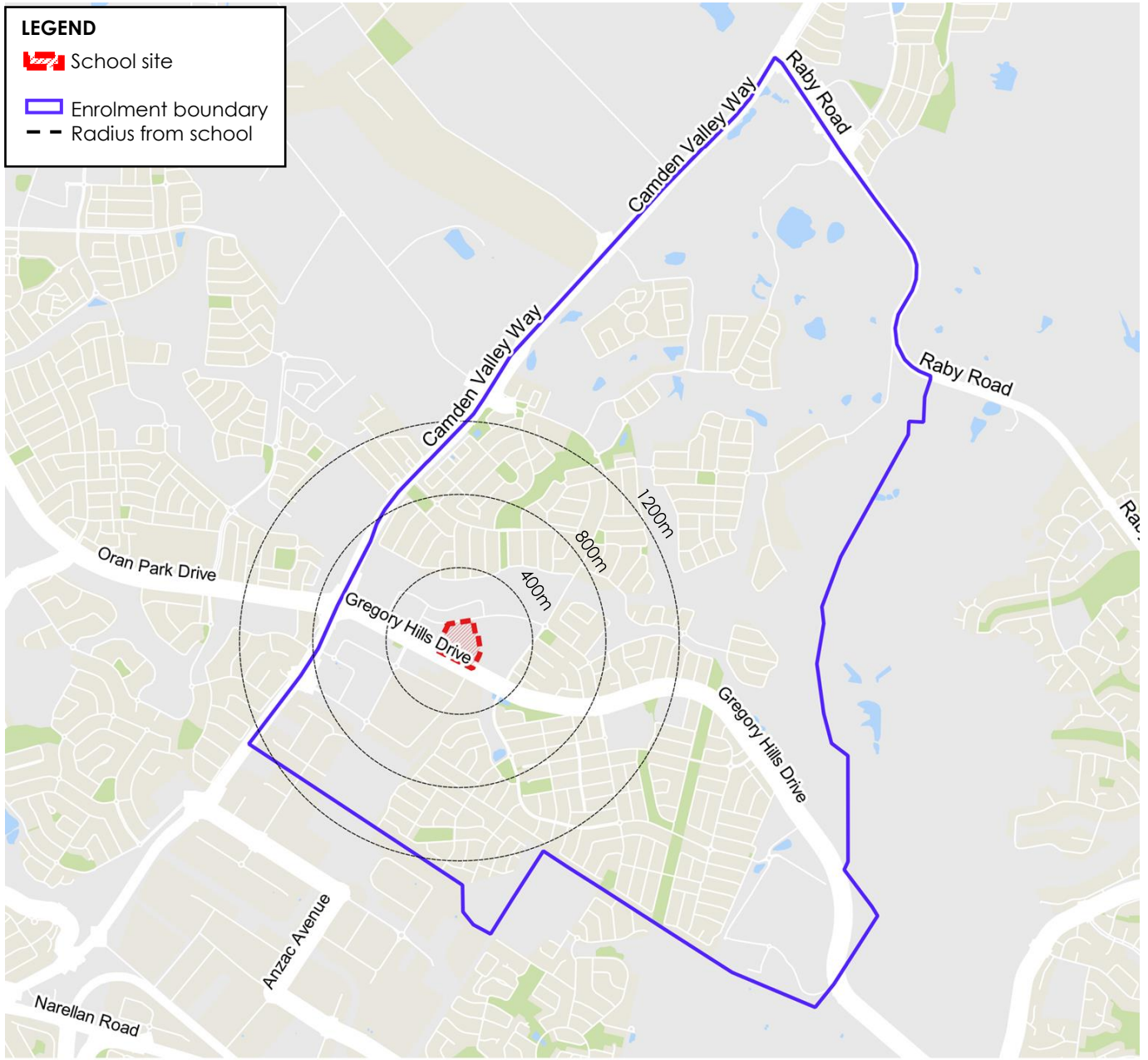
Site master plan

- The new school would provide capacity for up to 1,000 students by 2041
- Based on our understanding, there is minimal planned residential growth within the enrolment boundary.
- The initial student demand could be as low as 130 students in 2025, 260 students in 2026 and 400 in 2027.



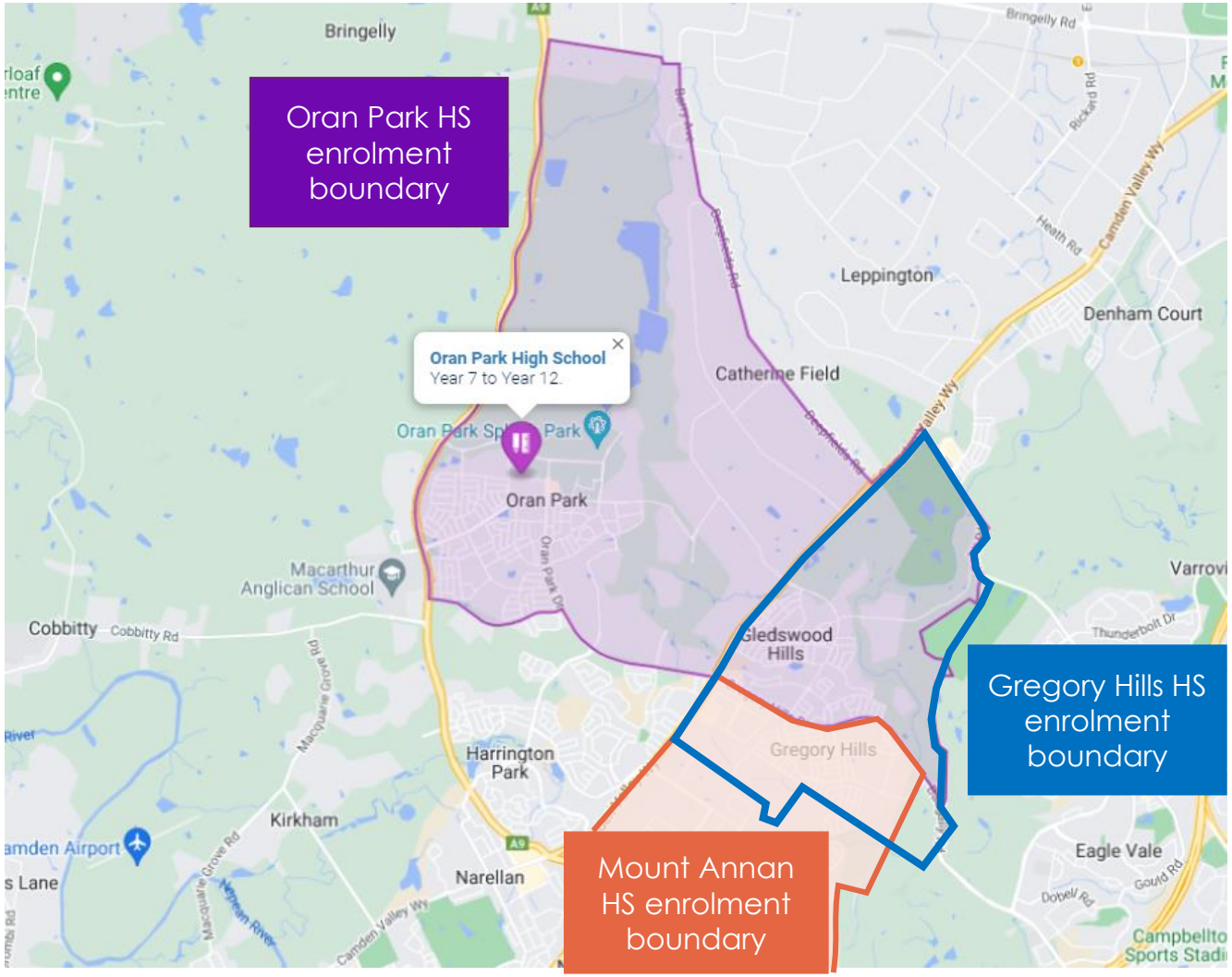
Enrolment boundary

- As the school is new, there is no existing enrolment boundary for the school.
- The new enrolment boundary aligns with the 2021 ABS ‘SA2’ geography
- Based on 2023 data, the boundary covers the residential location of 481 students who attended Oran Park Primary School
- There is potential for additional future students within recent/yet to be developed land parcels (58 additional students).



Enrolment boundary

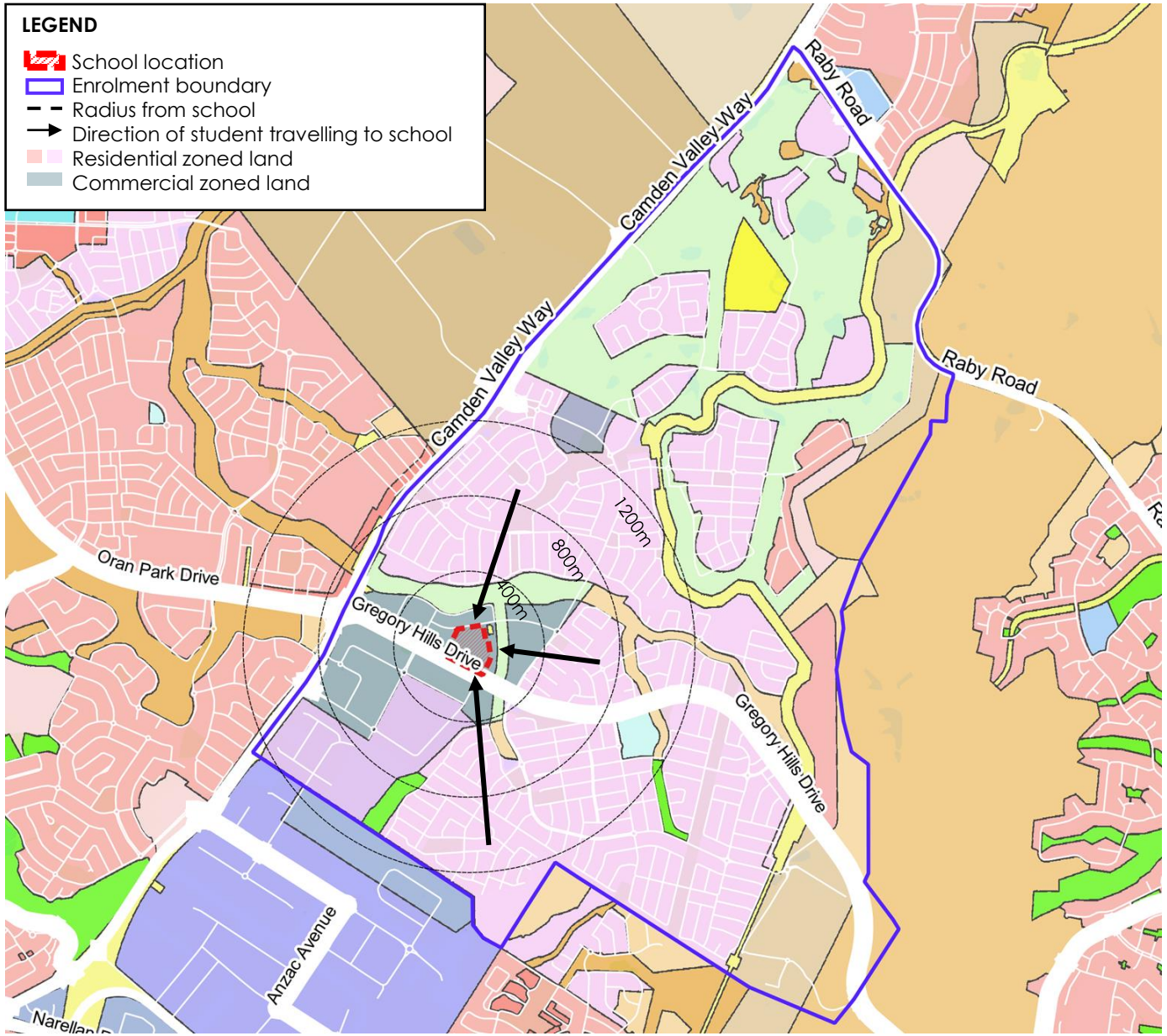
- The new Gregory Hills HS enrolment boundary will include a portion of students currently within the Oran Park HS boundary and, also Mount Annan HS boundary
- The project will therefore reduce pressure on Oran Park HS and Mount Annan High School
- The new school will be closer to home, and a shorter commute, for the students within the enrolment boundary



Context and land use

- The school site is surrounded by commercial zoned land.
- Students enrolled from within the boundary will reside to the north (on the opposite side of South Creek), and to the east (on both sides of Gregory Hills Drive).
- Based on available data, there is minimal residential growth planned within the enrolment boundary.

Is Council aware of any residential growth occurring that we have not considered?



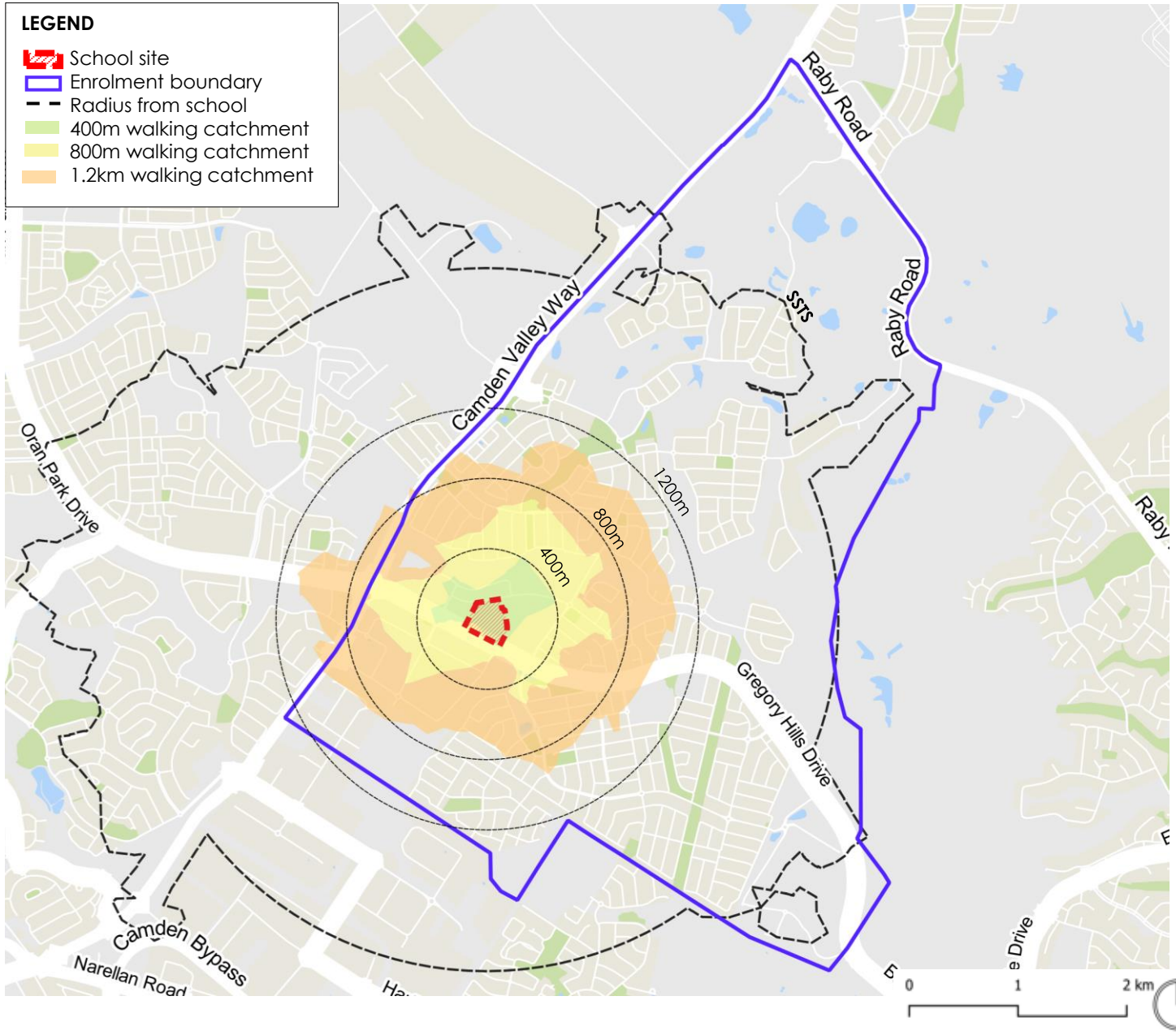
Walking catchment

The walking catchment for the new Gregory Hills HS has been defined based on walkable paths that surround the site.

Footpath coverage between residential areas and the school site is good – there are very few roads without a footpath on at least one side.

Walking distance	No. of students*	No. of additional students^
0-400m	0	0
400-800m	44	2
800-1200m	128	6

**location of students who attended Oran Park PS in 2023*
^future student locations

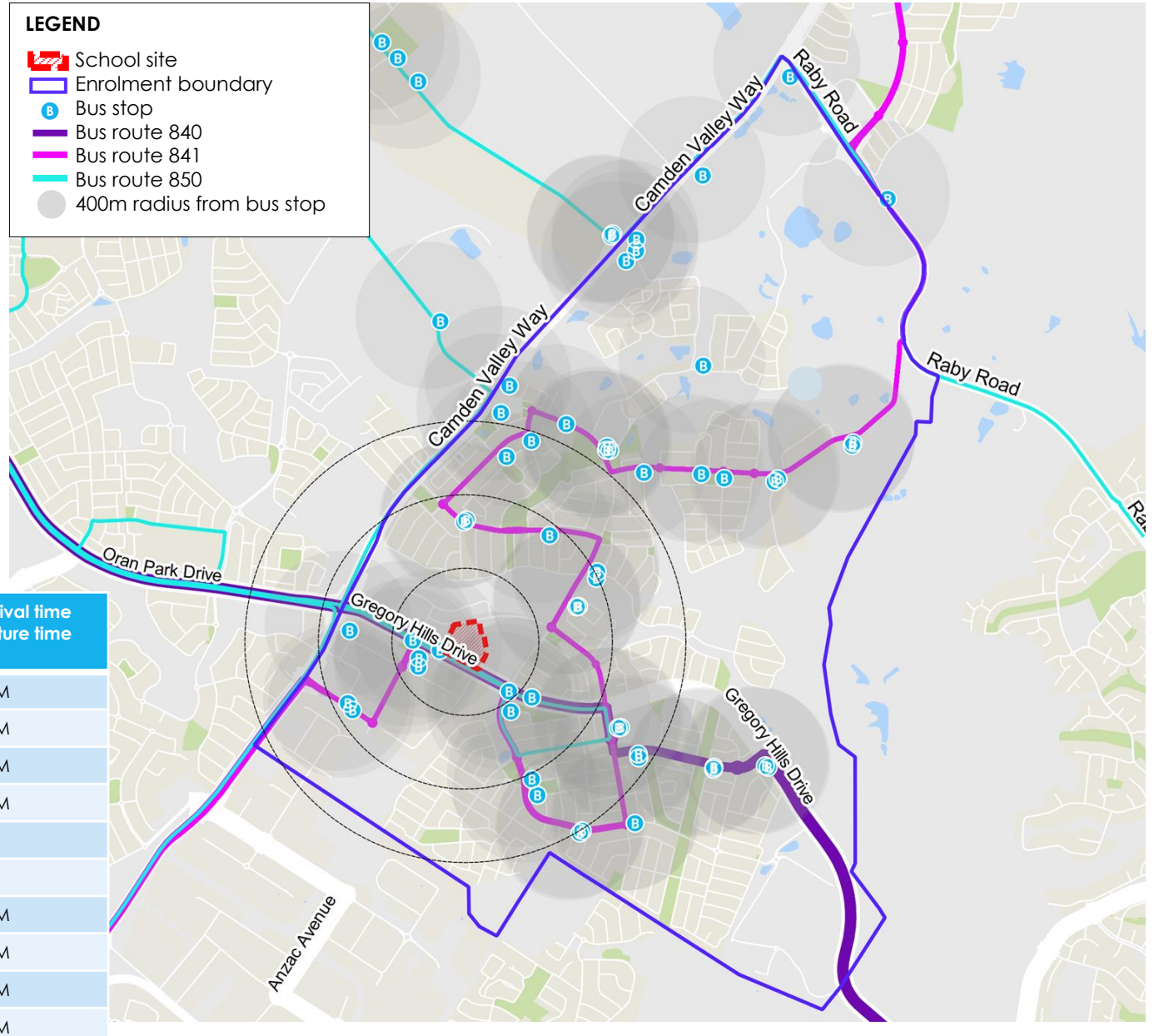


Public transport access

Public transport access to the school is by bus.

Bus stops serviced by the 840, 841 and 850 routes are shown in the figure adjacent with a 400m buffer to illustrate public transport coverage within the enrolment boundary.

400 current high school aged students within the enrolment boundary are located within 400m (radial distance) of a bus stop.



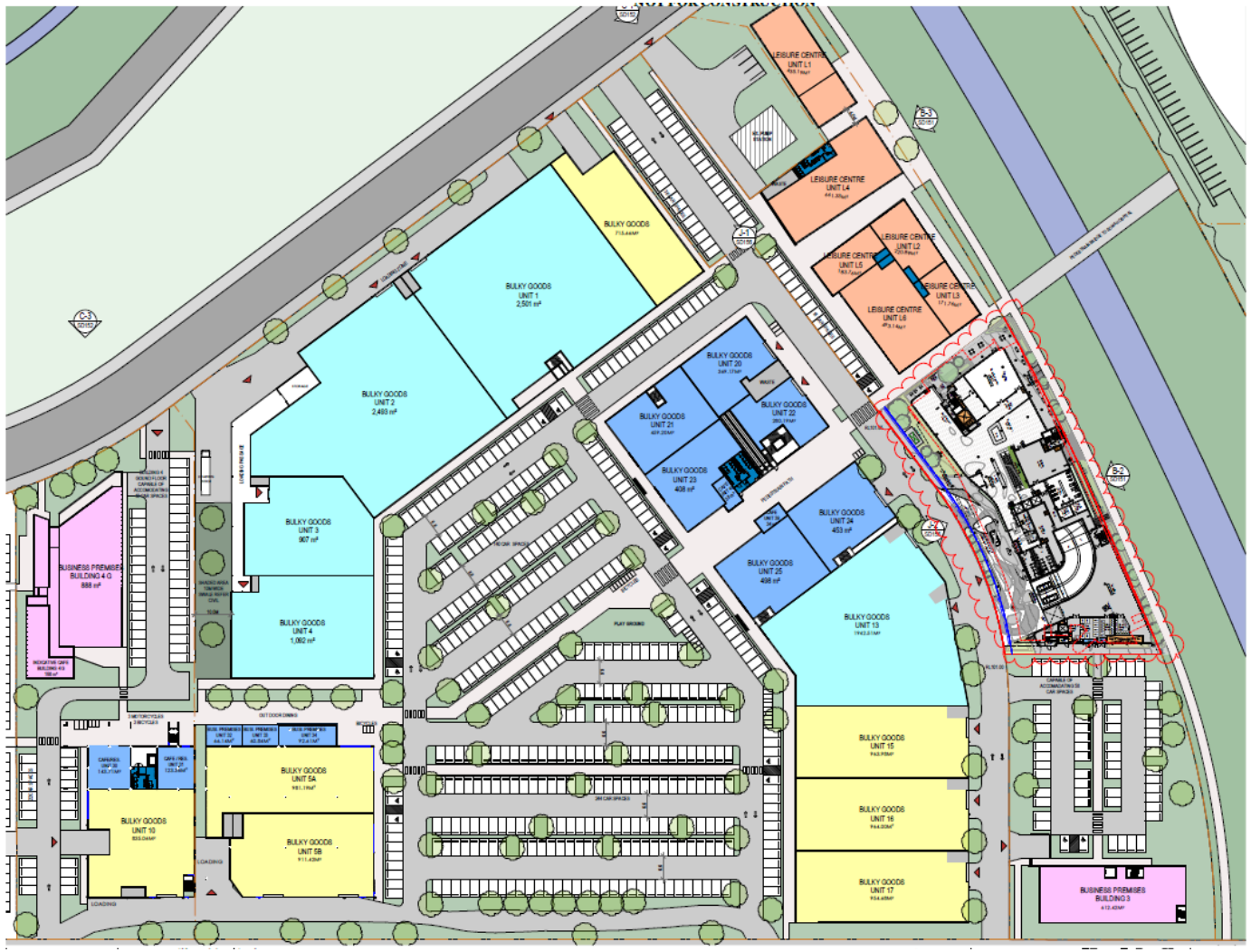
The current bus frequency would be sufficient up until around 400 students are enrolled at the school (indicatively 2027).

Route	AM Stop location	AM Arrival time Departure time	PM Stop location	PM Arrival time Departure time
840	255730	8:01 AM	255727	3:19 PM
	255730	8:31 AM	255727	3:53 PM
841	255730	8:10 AM	255727	3:13 PM
	255730	8:21 AM	255727	3:45 PM
	255730	8:41 AM	255727	-
	255730	8:57 AM	255727	-
850	255730	8:23 AM	255727	3:12 PM
	255730	8:27 AM	255727	3:42 PM
	255730	8:49 AM	255727	3:51 PM
	255730	-	255727	3:57 PM

Site concept plan

The site was subject of a concept approval for the 'SOMA Lifestyle Precinct' in 2017. The site included various business, bulky goods, hotel, leisure centre uses.

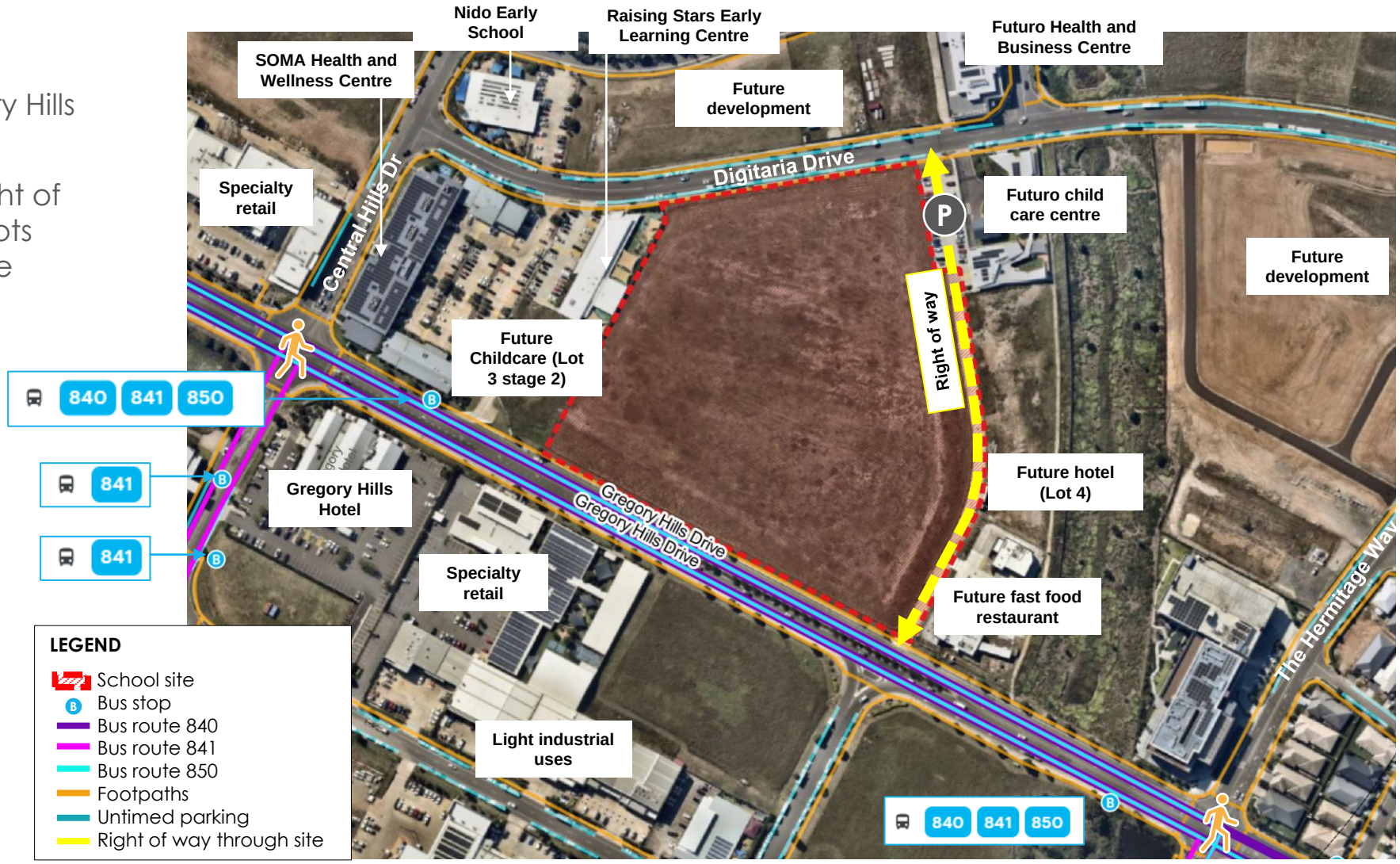
It has been subject of 12 modifications since the original approval. Several sites have been approved for construction under the concept.



Site and surrounds

The site:

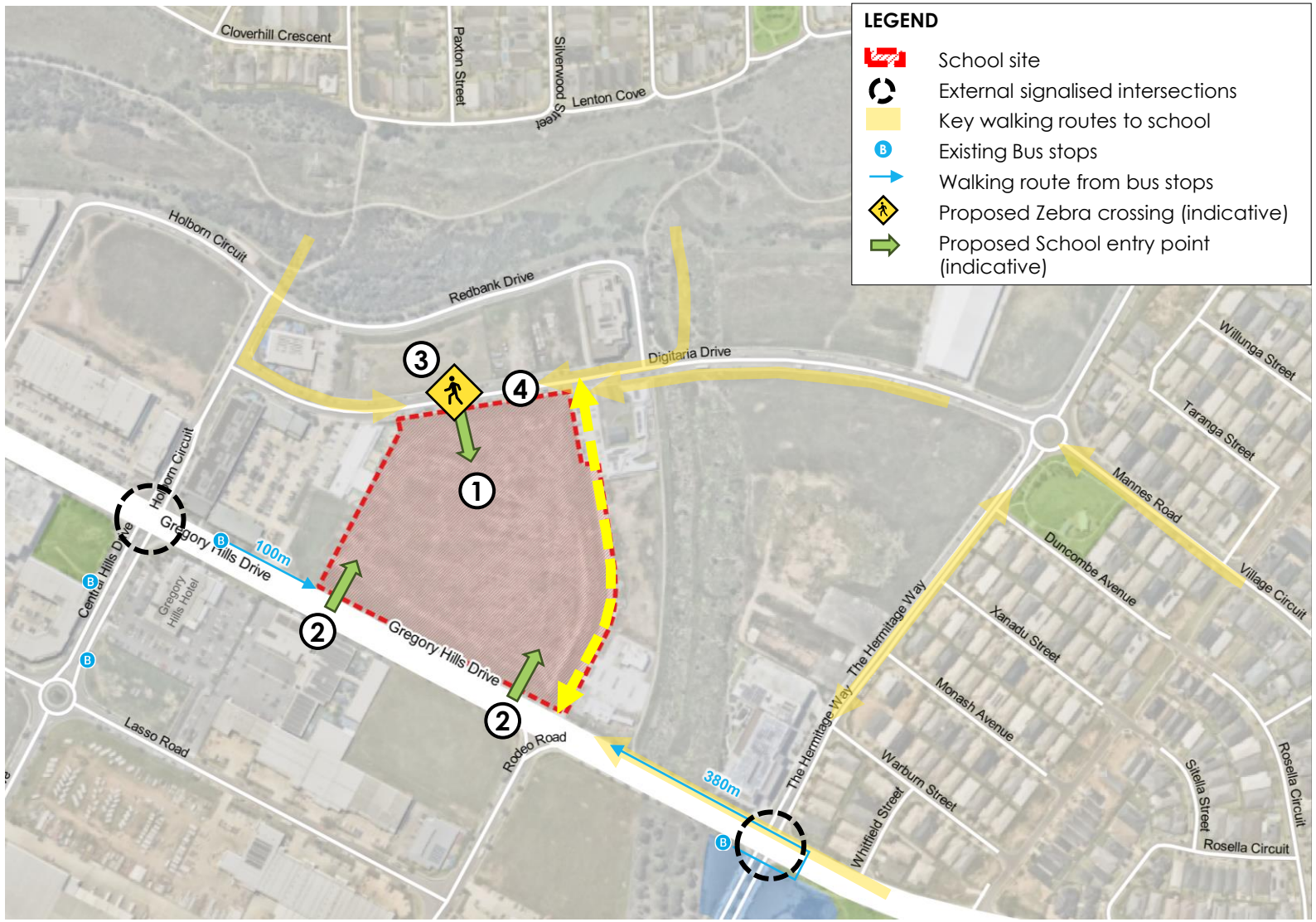
- has two road frontages (Gregory Hills Drive and Digitaria Drive)
- is legally bound to provide a right of carriageway for access to the lots along the eastern side of the site
- can be safely accessed by pedestrians from the south via two signalised crossings over Gregory Hills Drive at The Hermitage Way and Central Hills Drive
- is serviced by bus stops on either side of Gregory Hills Drive



Public domain plan

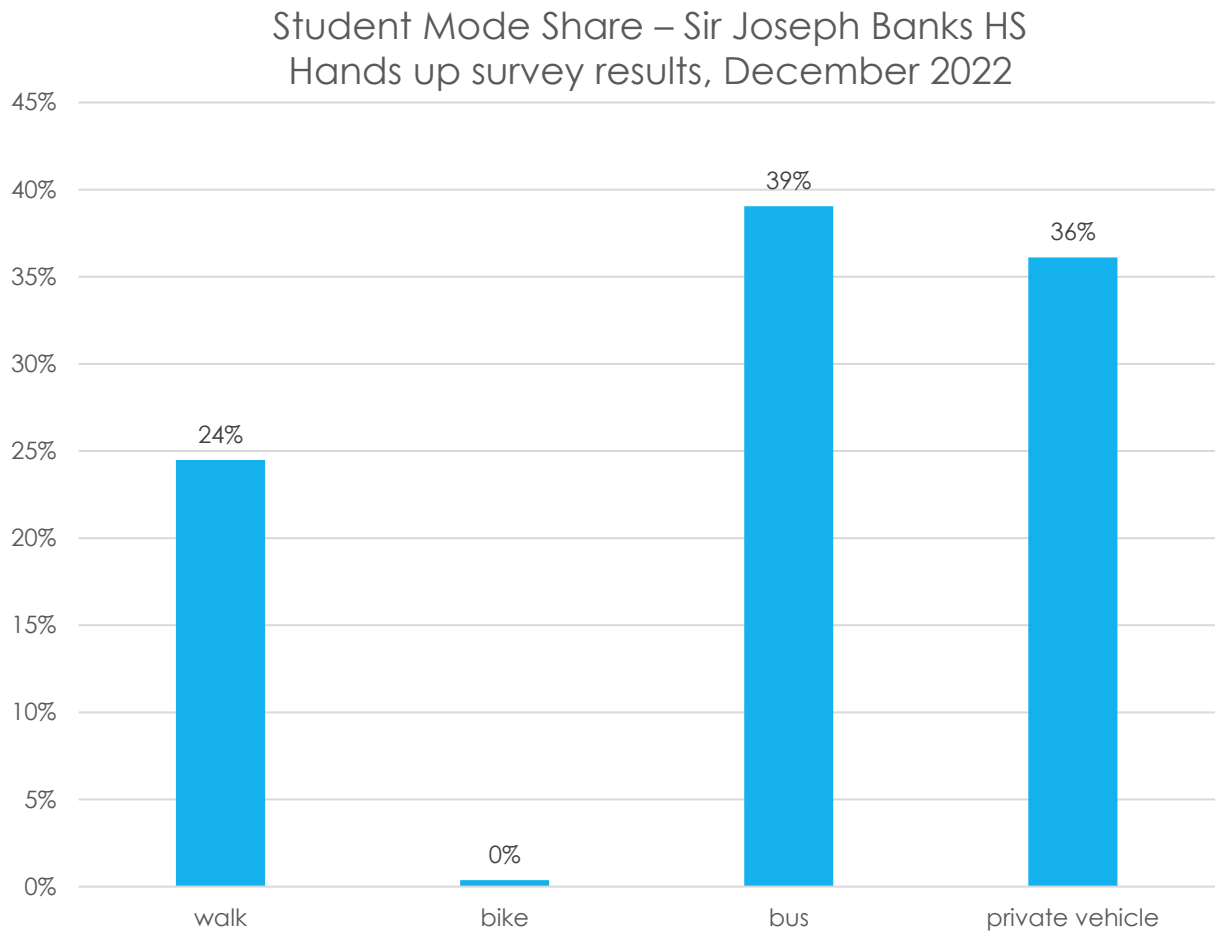
The following initiatives have been identified to improve the access to Gregory Hill HS:

1. Provide a school entry point on the northern boundary to allow easy access for students travelling from the north.
2. Provide two plaza style entries on Gregory Hills Drive to reduce bottle necks and disperse exiting students. Two boundaries will also reduce travel distances for students travelling from bus stops and walking and cycling from the east and south-east.
3. Provide a raised threshold zebra crossing on Digitaria Drive to facilitate safe access to/from the north.
4. Widen footpath to 2.0m and provide tree planting for shade along Digitaria Drive southern side to provide sufficient space for students walking – along site frontage.



Methodology – benchmarking mode share

- Mode share calculations (base case, moderate & stretch) have been based on anonymised student locations and appropriately factored up to the proposed scale
- The mode share of the future Gregory Hills High School is based on benchmarking of similar schools including Sir Joseph Banks High School, Galston High School and Condell Park High School
- **Current mode share and propensities by access level were applied to the different student distribution in Gregory Hills High School, then updated to reach a target of approximately 40% car mode share for the base case**
- The original mode share forecasting for Sir Joseph Banks High School was based on a hands-up mode share survey



Mode share summary

Scenario	Walk	Cycle/scoot	Bus	Car
Base	35% (350)	4% (40)	21% (21)	40% (400)
Moderate	39% (390)	4% (40)	21% (21)	36% (360)
Stretch	39% (390)	4% (40)	24% (24)	33% (330)

*based on 1,000 students

Base:

1. A gate on the northern boundary
2. Two gates on the southern boundary with a plaza style entrance of approximately 6 metres in width
4. Widen footpath (to 2.0m) and provide tree planting for shade along Digitaria Drive southern side

Moderate = base plus:

3. Raised threshold zebra crossing on Digitaria Drive to facilitate safe access to the north

Stretch = moderate plus:

5. Expanded bus frequencies

Site layout, public domain interface – Option 1

① A right of way (driveway/lane) will run along the eastern boundary (this is not optional). This driveway can't be gated. There is no functional change in the driveway's use, so a deceleration bay should not be required. The driveway must be bidirectional.

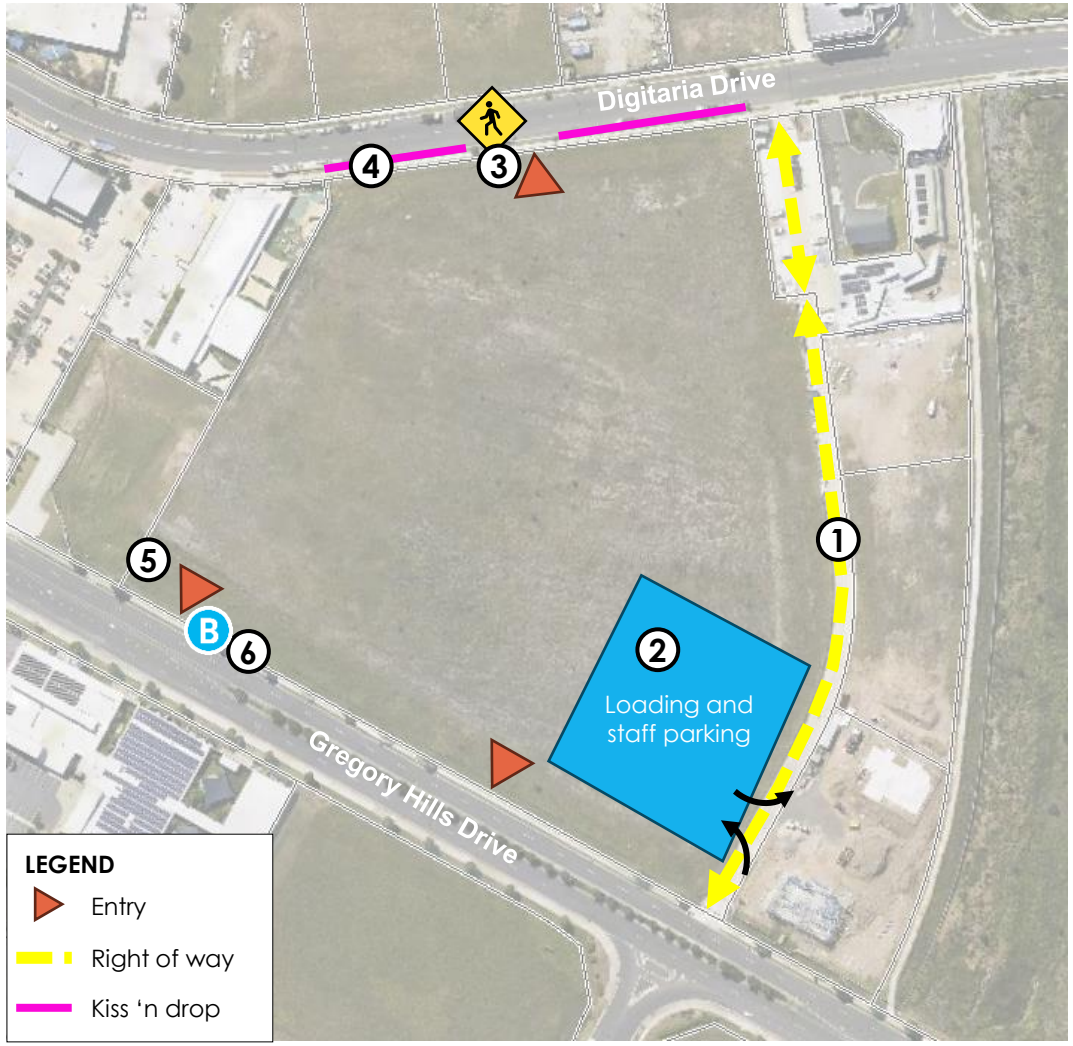
② Staff car park and loading facilities access off the driveway. This reduces the need for additional driveways, which may impact student safety by creating new conflict across paths.

③ A pedestrian crossing may be provided on Digitaria Drive. This will result in the loss of about 36m of kerbside space on each side.

④ The remaining frontage on Digitaria Drive should be kiss 'n drop (~105m or 16 spaces). This is more than the 15 spaces required by the DCP.

⑤ Discontinue driveway/remove easement onto site as not required.

⑥ Potential to relocate bus stop TSN 255727 to allow for greater storage of buses and minimise walking distance for students.

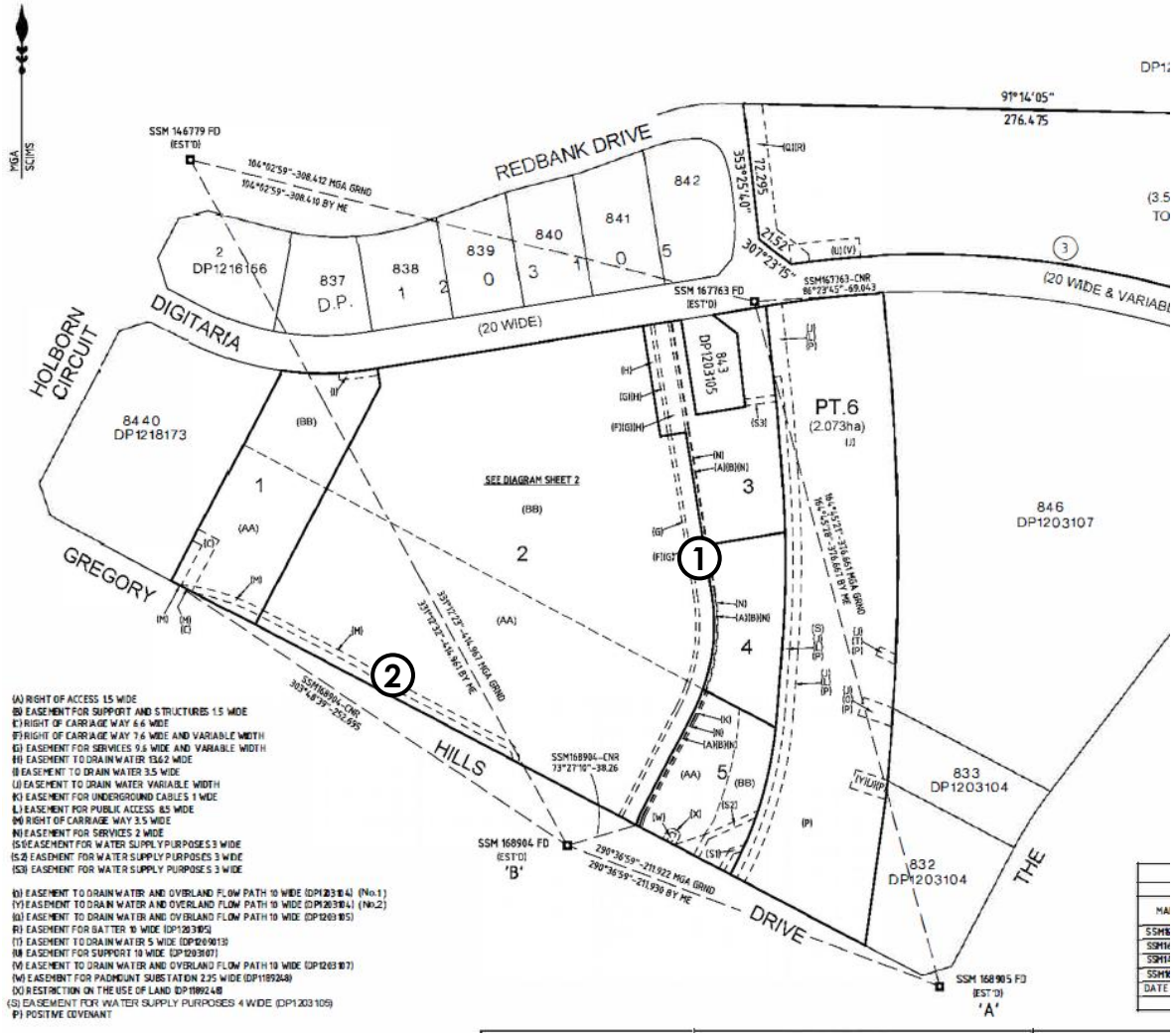


Site easements

① A right of carriage way (7.6m wide) runs along the eastern boundary of the site, providing access from Digitaria Drive to Gregory Hills Drive. It provides access to lots 3, 4 and 5.

② A right of carriageway runs within the site, parallel to Gregory Hills Drive (3.5m wide). It would only be appropriate for one way traffic, eastbound.

- The approved DA's on Lot 1 only use the entry from Gregory Hills Drive as an entry and do not propose an egress onto easement ②. Therefore, there would be no impact to these landowners if easement ② is removed. We are advised that this would require their written consent from the landowners.



Site layout, public domain interface – Option 2

① A right of way (driveway/lane) will run along the eastern boundary (this is not optional). This driveway can't be gated. There is no functional change in the driveway's use, so a deceleration bay should not be required.

② Staff car park and loading facilities access off Gregory Hills Drive. May cause safety issues for students exiting the school from the southern gates to access buses. Left in/out from GHD may also pose traffic safety concerns due to sudden deceleration for access.

③ A central pedestrian crossing should be provided on Digitaria Drive. This will result in the loss of about 36m of kerbside space on each side.

④ The remaining frontage on Digitaria Drive should be kiss 'n drop. It is unlikely that the 15 spaces required by the DCP will be able to be achieved in this location.

⑤ Relocate bus stop TSN 255727 to allow for greater storage of buses

Site layout, public domain interface – Other options

- Shared staff parking arrangement (offsite)? Still requires some disabled parking and loading onsite.

SCT Consulting

Thank you

sctconsulting.com.au

SCT Consulting

Meeting minutes:

Gledswood Hills High School

Meeting Information			
Project Name	Gledswood Hills High School		
Project Number	SCT_00517		
Client	School Infrastructure		
Date	14 August 2024	**Time**	1.00 – 2.00 pm
Venue	Microsoft Teams		
Subject	Camden School (Gledswood Hills High School) Infrastructure NSW Transport Working Group		
Attendees	Chloe Kennedy, SINSW (CK) Kamoru Adetunmbi, SINSW (KA) Shay Bergin, SINSW (SB) Krista McMaster, SCT Consulting (KM) Nicholas Bradbury, SCT Consulting (NB) Michelle Kramer, Camden Council (MK) Tom Allen, Camden Council (TA) Roy Elkazzi, Camden Council (RE) John Broady, TfNSW (JBr) James Waugh, TfNSW, (JW) Mathilde Ho, TfNSW (MH) Shivani Dabhi, TfNSW (SD)	Lydia Luo, TfNSW (LL) Wade Mitford, TfNSW (WM) Santi Botross, SINSW (SB) Rahath Islam, TfNSW (RI) Pahee Rathan, TfNSW (PR) Daryl Ninham, TfNSW (DN) James Douglas, TfNSW (JD) Rosie Selby, TfNSW (RS) Matthew Riemann, TfNSW (MR) Shayal Singh, TfNSW (SS) Raymond Tran, TfNSW (RT) Mardi Christian, TSA Riley (MC)	
Apologies	Jonathan Busch, SCT Consulting (JBu)		

Matters discussed or arising		Action
1.0	**Item 1 Modelling**	
1.1	Transport for New South Wales has raised the potential need to include the intersection of Camden Valley Way & Gregory Hills Drive. TfNSW to confirm whether modelling at this location is required. SCT Consulting is of the position that traffic modelling at this location is not required as vehicle trips originating north of the site would predominantly use Fairbank Drive and The Hermitage Way. Therefore, school vehicles trips using Camden Valley would account for a very minor proportion of demand on this road	KM
1.2	TA from Camden Council has stated [redacted] KM agreed that traffic modelling will reflect [redacted]	KM
2.0	**Item 2 Bicycle parking**	
2.1	TA from Camden Council has noted that Bicycle parking for other schools within the LGA has underutilised bike parking for students because of it being placed in areas that are less accessible or not as visible to students.	KM
3.0	**Item 3 Student mode share**	
3.1	TA from Camden Council has raised that they would like to see the mode share proportion of students driving themselves to and from school with regards to the	

Matters discussed or arising		Action
	data acquired from Oran Park High School, citing issues on local streets from students driving themselves and others to school and parking in the surrounding streets. KM agreed that this will be provided in the TAIA. However, no off-street parking for students is proposed and there is no legal framework to compel students not to use local streets, as mentioned by council.	KM
4.0	**Item 4 Bus stop location**	
4.1	JBr from Transport for New South Wales have suggested placing a bus stop/s on Digitaria Drive, flagging the possibility for students to cross at the mid-block on Gregory Hills Drive to avoid having to walk to the crossing at Gregory Hills Dr & Central Hills Dr and then walk east to the new proposed bus stop opposite the Gregory Hills Hotel. To be confirmed by TfNSW and SINSW. However, as noted allocation for a bus stop on Digitaria Drive could be constrained due to Kiss n' Drop, on street parking, rain gardens and driveways.	KM
5.0	**Item 5 Kiss n' drop**	
5.1	TA from Camden Council has noted that Kiss n' drop location could be tricky given the 'rain gardens' along the kerb. KM agreed that this would be considered when design commences, noting rain gardens may affect kiss n' drop capacity	KM

List of attachments:

Attachment 1: Presentation

Meeting minutes:

Gledswood Hills High School

Meeting Information			
Project Name	Gledswood Hills High School		
Project Number	SCT_00517		
Client	School Infrastructure		
Date	23 October 2024	**Time**	1.00 – 2.00 pm
Venue	Microsoft Teams		
Subject	Camden School (Gledswood Hills High School) Infrastructure NSW Transport Working Group		
Attendees	Kamoru Adetunmbi, SINSW (KA) Jonathan Busch, SCT Consulting (JB) Malcom Taylor (TSA Riley) Sam Bush (TSA Riley) Nicholas Bradbury, SCT Consulting (NB) Tom Allen, Camden Council (TA) Roy Elkazzi, Camden Council (RE)		Santi Botross, SINSW (SB) Rosie Selby, TfNSW (RS) Shayal Singh, TfNSW (SS) Rory Wynbergen, SINSW (RW)
Apologies	Chloe Kennedy, SINSW (CK) Shay Bergin, SINSW (SB) Michelle Kramer, Camden Council (MK) John Broady, TfNSW (JBr) James Waugh, TfNSW, (JW) Mathilde Ho, TfNSW (MH) Shivani Dabhi, TfNSW (SD)Lydia Luo, TfNSW (LL) Krista McMaster, SCT Consulting (KM)		Wade Mitford, TfNSW (WM) Rahath Islam, TfNSW (RI) Pahee Rathan, TfNSW (PR) Daryl Ninham, TfNSW (DN) James Douglas, TfNSW (JD) Matthew Riemann, TfNSW (MR) Raymond Tran, TfNSW (RT) Mardi Christian, TSA Riley (MC) Shivani Dabhi, TfNSW (SD) Greta Barkl, TSA Riley (GB)

Matters discussed or arising		Action
1.0	**Item 1 JB presents traffic modelling results and outcomes**	
1.1	TA notes that R[redacted]	JB to update model to reflect advice from TA.
1.2	TA noted that plans for [redacted] are preliminary and therefore, not intended to be released into the public domain.	JB to remove reference [redacted]
1.3	JB shared the overall performance that the Level of Service based on the development was that the intersection level of service was D or better. No concerns were raised.	

APPENDIX E

AS2890 AUDIT

Technical Advisory Note

Project	Gledswood Hills new high school	**Project Number**	SCT_00517
Client	School Infrastructure New South Wales		
Document Name	AS2890 carpark and loading area review		
Version	2.0	**Date**	25 November 2024
Author	Nicholas Bradbury	Consultant	
Reviewer	Jonathan Busch	Associate Director	
Authoriser	Jonathan Busch	Associate Director	

Background

School Infrastructure New South Wales is proposing a new high school in the suburb of Gledswood Hills. The site (DP 4285737) for the proposed has frontage on Gregory Hills Drive and Digitaria Drive in the suburb of Gledswood Hills in the Camden Local Government Area. As part of the school, a staff car park with a waste area and a service/delivery area for deliveries with a separate access road located on the opposite side of the site is proposed.

The largest vehicle expected to access the carpark is a Camden Council Waste Vehicle, which is 10.5m in length. The Camden Council Waste Management Guideline specifies that designs should be made for a 12.5m long and 3m wide vehicle. A vehicle of this size is not road legal and does not conform to standard vehicle types in AS2890. Swept paths to test the suitability of the proposed design were therefore carried out using a Camden Council Waste Vehicle.

The largest vehicle expected to use the service area is a Medium Rigid Vehicle (MRV) which is 8.8m in length.

Plans used for AS2890 design review

The following architectural plans were used for the review issued by DRJD Architects:

– ***GHHS-DJRD-00-XX-M3-A-0000_SITE - Sheet - DR-A-0101 - SITE PLAN.dwg***

– ***GHHS-DJRD-00-00-DR-A-0340(B)_SITE WORKS PLAN - CAR PARK PLAN.pdf***

The following civil plans were used for the review issued by Taylor Thompson Whiting on 13 November 2024:

– ***241458-TTW-10-DR-CI-00404.dwg***

Actions that need to be undertaken by the design team

– The boundary fence on the western side obstructs sight distance. The fence needs to be pulled into the site to avoid the dashed line on SCT_00517_Gledswood Hills HS_CAD_Audit_v6.0.pdf page 5.

– In future design stages, consider the items in yellow in following tables.

AS2890.1:2004 Off-street car parking review

AS2890.1:2004 requirements are reviewed in **Table 1**.

Table 1 Review against AS2890.1:2004

AS2890.1 section	Consistent	Comment
2.3.2 parking angle	Yes	90-degree angle parking is proposed. Parking aisles for 90-degree parking shall be designed for two-way movement even though one-way movement may need to be imposed in some instances.
2.3.3 Parking aisle length	Yes	Parking aisles are less than 100m and therefore do not require traffic control devices
2.4.1 Angle parking spaces	Yes	90-degree parking spaces that are proposed comply layout requirements. Parking spaces are 2600mm wide and 5400m in length. Staff parking spaces can be reduced to 2400mm if required.
2.4.2 Angle parking aisle	Yes	User Class 1A (Staff parking spaces) are 90 degrees. Parking aisle widths are 5800mm and therefore compliant.
2.4.5 Physical controls	No (to be undertaken in future design as minor issue)	The ends of parking spaces require a wheel stop if the drop distance is between 150mm and 600mm. Wheel stops are 2000mm in width and are not compliant wheel stops are to be 1650mm wide. Wheel stop offset to kerb to is 620mm and compliant under the following conditions: – Front-in parking spaces – For 100mm high wheel stops and kerb height less than 150mm. Reverse-in parking manoeuvres are still acceptable if encroachment on the verge between the parking space and walking path does not create any safety risks for drivers or pedestrians.
2.4.6 Gradients within parking modules	Yes	Gradients measured at any other direction other than parallel to the parking spaces are less than 6.25%. Gradients measured parallel to the direction of the parking spaces are less than 5%. Gradients within the parking module (i.e. the area comprising parking spaces and aisles) should be a minimum of 1:200.
2.5.2 Layout design of circulation roadways and ramps	Yes To be undertaken in future design	Entrance roadway is greater than 3m in width and therefore compliant. The Roadway connecting the north and south sections of the carpark is compliant along its straight and curved sections. Swept paths show that at internal intersections two B99 vehicles can pass one another. Kerbs along circulating roads (i.e. any internal road that doesn't have parking along it) are to have kerbs of a 150mm maximum height and a minimum of 300mm wide.
2.5.3 Circulation roadway and ramp grades	Yes	Straight ramps up to 20m has a maximum grade of less than 25% for staff vehicles. Grade transitions are appropriate
3.2 Access driveways – width and location	Yes	Access facility category for a staff carpark with 78 spaces, fronting a private/local road is 'Category 1' Driveway entries and exits comply with minimum width requirements. This is confirmed by the swept paths provided. Not including sight lines ped flare because private road
3.3 Gradients of access driveways	Yes	The slope at the entry and exit driveway is at the maximum gradient of 5% between frontage road and the property line.

AS2890.1 section	Consistent	Comment
4.1 Pedestrian service	Yes	Pedestrian entrances and exits shall be separate from vehicle entrance and exits.
4.3 Signposting	To be undertaken in future design	Signposting to be used to indicate direction of travel on circulating roads and parking aisles as well as at vehicle conflict points and intersections. Signposting for accessible spaces shall such that they can be easily located. Signs should not be placed at any location where they may obstruct sight lines.
4.4 Pavement markings	To be undertaken in future design	General parking spaces (i.e. non accessible spaces) shall be delineated using white or yellow lines 80mm to 100mm wide
4.7 Lighting	To be undertaken in future design	Parking areas and circulation areas, together with pedestrian pathway is including those used by people with disabilities shall be adequately lit. Minimum lighting levels for open air car parks should be as is specified in AS/NZS 1158.3.1.
4.8 Landscaping	To be undertaken in future design	Sight distances shall not be compromised by shrubs or landscaping.
4.9 Humps	N/A	Not required as the maximum aisle length is 100m.

AS2890.2:2018 Off-street commercial vehicles review

AS2890.2:2018 requirements for the Camden Council Waste Vehicle accessing the waste area via the staff carpark are reviewed in **Table 2.**

Table 2 Camden Council Waste Vehicle Staff carpark review against AS2890.2:2018

AS2890.2 section	Consistent	Comment
3.3.1 Width	Yes	The largest expected design vehicle is a Camden Council Waste Vehicle (CWV). Swept paths indicate that a CWV can manoeuvre on the internal roads to reach the waste area. To enter the waste pad area, the CWV will need to reverse from the exit driveway. This may cause a potential vehicle conflict between a reversing waste vehicle and other car park users due to visibility issues.
3.3.3.2 Maximum roadway and ramp grades	Yes	All gradients are less than the maximum gradient change permissible.
3.3.4 Maximum rates of change of grade on circulation roadways	Yes	Swept paths show services vehicles can enter and exit the driveway in a forward direction and can turn entirely within the kerbside lane. The maximum grade for the access driveway shall be 5% for distance extending from the property of at least 6m.
3.4.3 (driveway) layout design requirements	Yes	Entrance and exit driveways are proposed to be separate. Swept paths show that a CWV can manoeuvre into the carpark and exit the carpark via the two driveways with some overlap of the 600mm horizontal buffer.
3.4.5 Sight distance requirements	No	**The driveway is obstructed by fencing. Fencing should be located further within the school line to avoid obstructing the view of drivers. Refer SCT_00517_Gledswood Hills HS_CAD_Audit_v6.0.pdf for details.**

AS2890.2 section	Consistent	Comment
4.1 (Service areas) General	Yes	The waste pad/service area complies with the design provisions
4.2 dimensions of service bays	Yes	Service bay dimensions are sufficient and compliant

AS2890.2:2018 requirements for an MRV accessing the delivery area via the staff carpark are reviewed in **Table 3**. It is expected that only one MRV will be using the internal roads and service area at any one time. With deliveries managed by the school to avoid overlap and potential conflict.

Table 3 MRV service road and service/delivery area review against AS2890.2:2018

AS2890.2 section	Consistent	Comment
3.3.1 Width	Yes	The largest expected design vehicle is a Medium Rigid Vehicle (MRV). Swept paths show that an MRV can manoeuvre on the internal roads to reach the delivery area. To enter the delivery area, the MRV will use the turning area at the end of the service road. Road widths are sufficient for a single vehicle using the service road at any one time. Deliveries vehicles will be infrequent and not coincide with one another.
3.3.3.2 Maximum roadway and ramp grades	Yes	All gradients are less than the maximum gradient change permissible.
3.3.4 Maximum rates of change of grade on circulation roadways	Yes	Swept paths show services vehicles can enter and exit the driveway in a forward direction and can turn entirely within the kerbside lane. The maximum grade for the access driveway shall be 5% for distance extending from the property of at least 6m.
3.4.3 (driveway) layout design requirements	Yes	The entry and exit are proposed to use the same driveway. Swept paths show that a MRV can manoeuvre into the driveway and exit it with some overlap of the 600mm horizontal buffer.
3.4.5 Sight distance requirements	No	**The driveway is obstructed by fencing. Fencing should be located further within the school line to avoid obstructing the view of drivers. Refer SCT_00517_Gledswood Hills HS_CAD_Audit_v6.0.pdf for details.**
4.1 (Service areas) General	Yes	The delivery area complies with the design provisions
4.2 dimensions of service bays	Yes	Service bay dimensions are sufficient and compliant

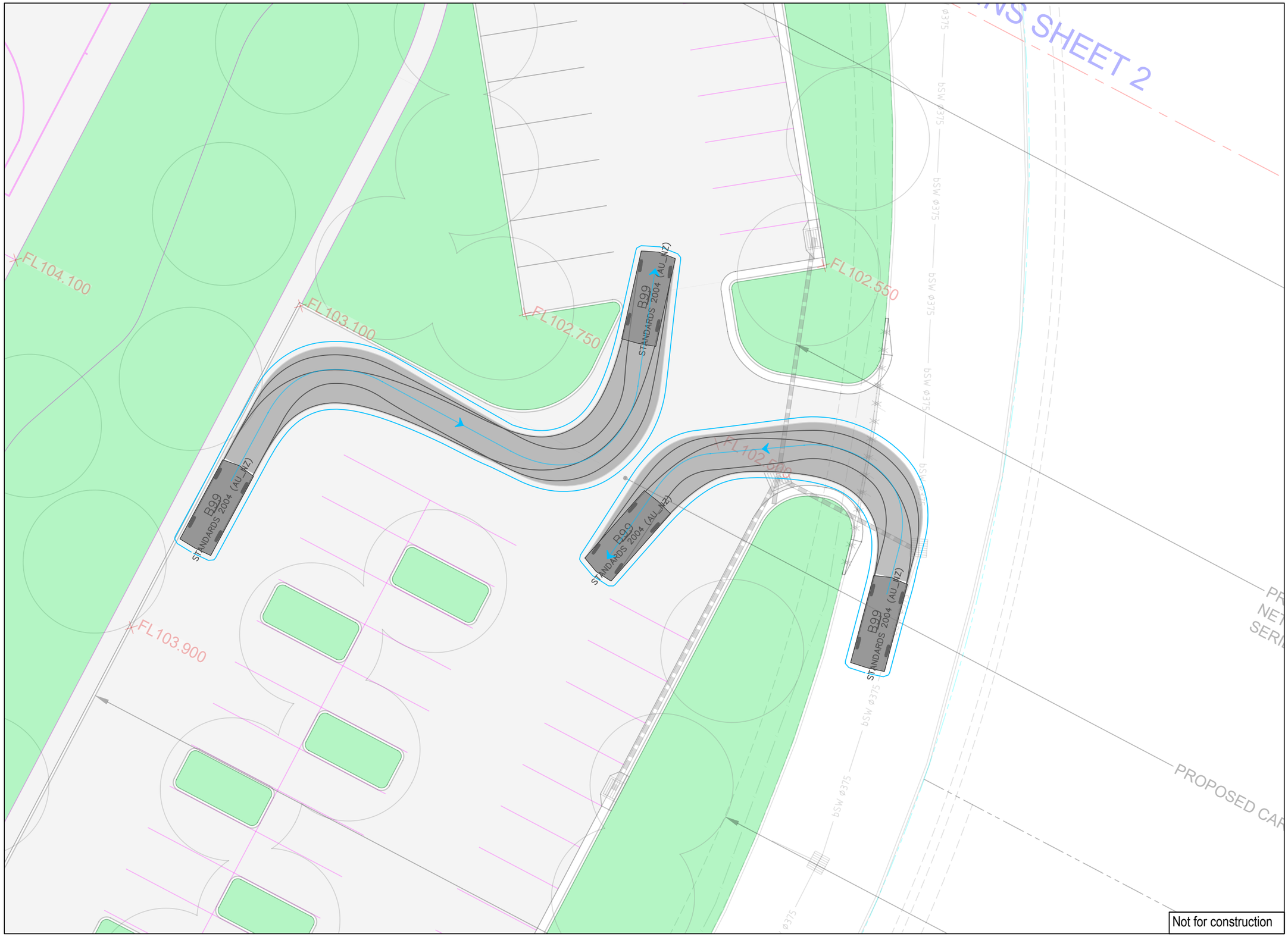
AS2890.6:2022 Off-street parking for people with disabilities review

Two accessible parking spaces are proposed. AS2890.6:2022 requirements are reviewed in **Table 4**.

Table 4 Review against AS2890.6:2022

AS2890.6 section	Consistent	Comment
2.2 Location of accessible spaces	Unsure	Assumed to be assessed by the access consultant.
2.3.1 Shared area	Yes	Shared area locations comply.
2.3.2 Side of vehicle	Yes	Shared area is provided on one side.
2.3.3 Rear of vehicle	Yes	Shared area at rear of parking spaces is greater than the minimum of 2400mm. Posted speed limit should be no greater than 10km/h
2.4 Zone for bollard, post and columns	To be undertaken in future design	A bollard/post shall be placed within the shared area to prevent vehicles using the area for parking. This shall be placed a minimum of 750mm and maximum of 1750mm from the end of the shared area closest to the parking aisle
2.5.1 Angled parking spaces	Yes	Accessible parking spaces are compliant with the minimum width and lengths. Width of parking space and shared zone can be reduced to 2400mm if required.
2.6 Pavement slope and surface	To be undertaken in future design	Parking spaces and the shared area shall not exceed 1/33 if the surface is a bituminous seal. A suitably qualified individual shall assess accessibility requirements for surfaces.
2.8 Kerb ramps	To be undertaken in future design	Where kerb ramps are to be provided, they shall serve the shared area which is located adjacent to the parking space. Where a kerb ramp is provided within the shared area, it shall intrude no further than 1200 mm into the shared area.
3.1.1 Non residential space identification	To be undertaken in future design	Each accessible space shall be identified by means of a white symbol of access in accordance with AS 1428.1, between 800 mm and 1000 mm high placed on a blue rectangle with no side more than 1200 mm, and placed as a pavement marking in the centre of the space between 500 mm and 600 mm from its entry point.
3.2.1 General	To be undertaken in future design	Space delineation and shared area pavement markings shall be yellow and have a slip-resistant surface. Raised pavement markers shall not be used for space delineation.
3.2.2 Pavement markers for accessible spaces	To be undertaken in future design	Accessible parking spaces shall be outlined with unbroken lines 80 mm to 100 mm wide on the long edge of an angled parking space and the short edge of a parallel parking space (except where any side is delineated by a kerb, barrier or wall). Where defined by line marking, all measurements shall be taken from the centre of the marked lines.
3.2.3 Pavement markers for accessible spaces	To be undertaken in future design	Walkways within or partly within a shared area shall be marked with unbroken longitudinal lines on both sides of the walkway (except where any side is delineated by a kerb, barrier or wall). Shared areas shall be marked with unbroken lines 80 mm to 100 mm wide on all sides and marked with diagonal stripes 150 mm to 200 mm wide with spaces 200 mm to 300 mm between stripes. The stripes shall be at an angle of 45 degrees± 10 degrees to the side of the space.

AS2890.6 section	Consistent	Comment
3.2.4 Pavement markings	To be undertaken in future design	A suitably qualified individual shall assess accessibility requirements for pavement markings on surfaces.



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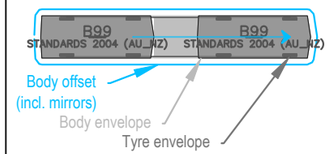
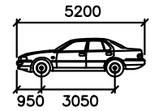


This swept path assessment is based on:

- 300mm body offset
- Vehicle speed of 5-10km/h
- A B99



B99

	mm
Width	: 1940
Track	: 1840
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

Not for construction

V	Description	Date
6.0	For coordination	18/11/2024

SCT Consulting

Prepared for:
School Infrastructure New South Wales

Quality information	
Date	11/24
Prepared	N.B
Reviewed	J.B
Authorised	J.B

Scale @ A3
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Scale 1:200

Project
Gledswood Hills New High School
Vehicle Swept paths

Title
B99 vehicle
Passing manoeuvre

Project Number
SCT_00517_CAD_Gledswood Hills New High School

Sheet number
01

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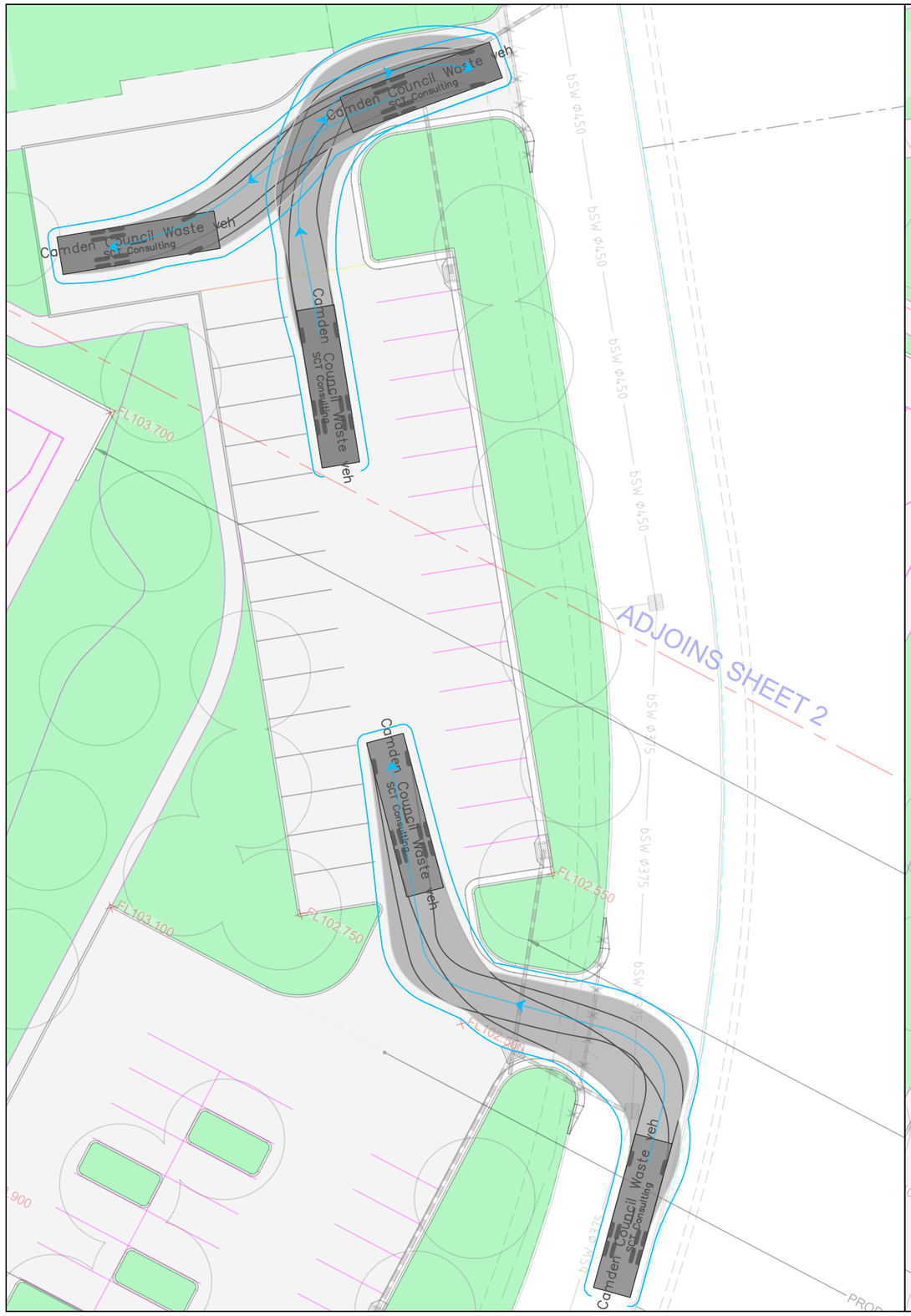

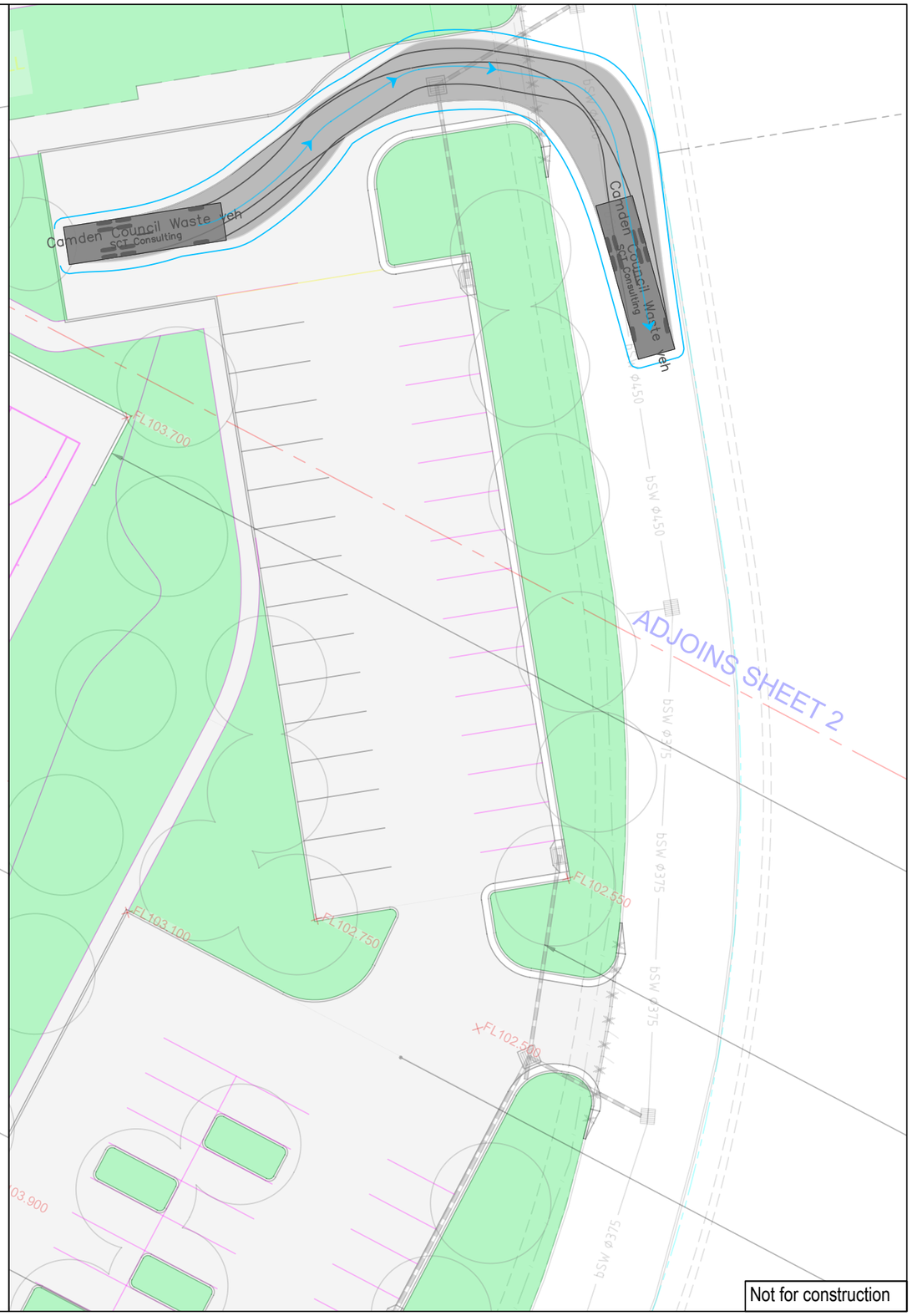

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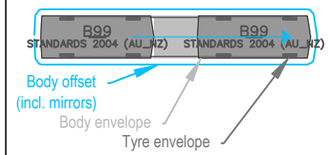
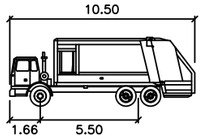


This swept path assessment is based on:

- 600mm body offset
- Vehicle speed of 5-10km/h
- A Camden Council waste vehicle



Camden Council Waste veh

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 35.4

SCT Consulting

V	Description	Date
6.0	For coordination	18/11/2024

Prepared for:
School Infrastructure New South Wales

Quality information	
Date	11/24
Prepared	N.B
Reviewed	J.B
Authorised	J.B

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0 3 6
Scale 1:300

Project
Gledswood Hills New High School
Camden waste vehicle swept paths

Title
Entry manoeuvre and reverse movement into waste pad (LEFT)
Exit manoeuvre from waste pad (RIGHT)

Project Number
SCT_00517_CAD_Gledswood Hills New High School

Sheet number
02

A3

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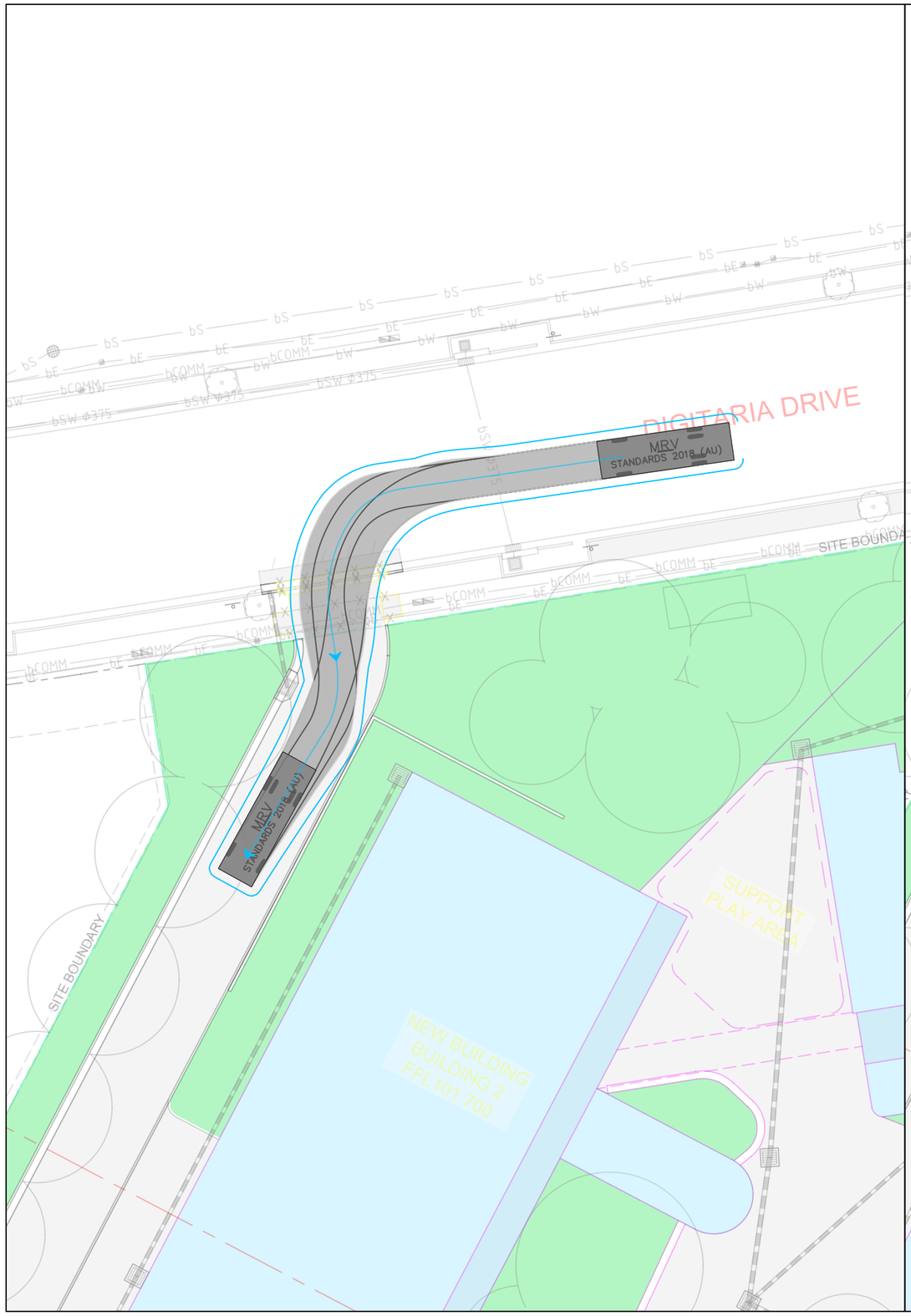

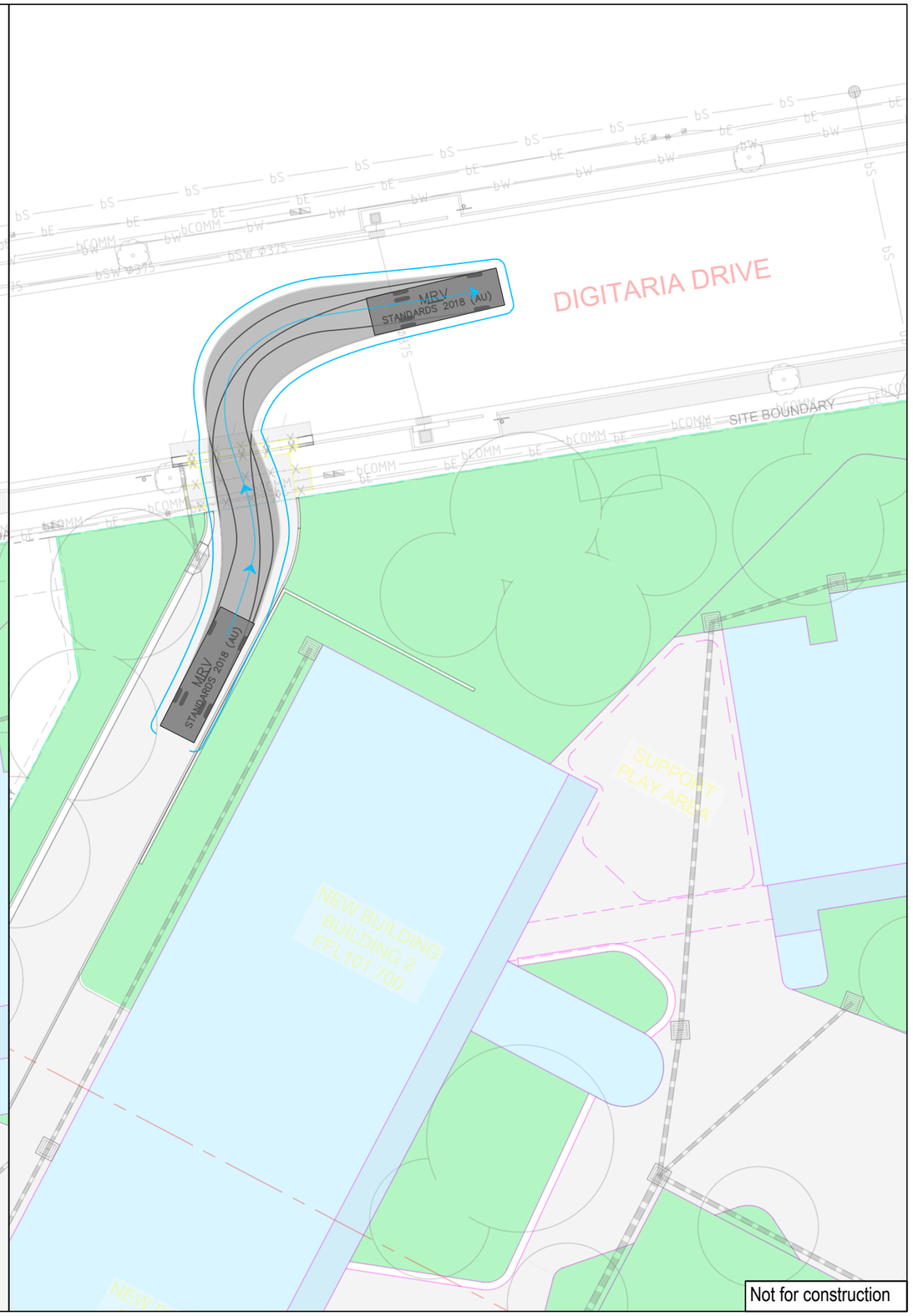

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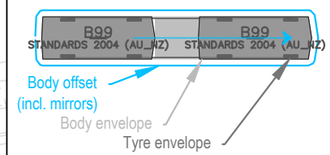
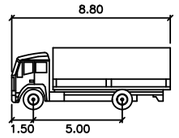


This swept path assessment is based on:

- 600mm body offset
- Vehicle speed of 5-10km/h
- An MRV



MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

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V	Description	Date
6.0	For coordination	18/11/2024

Prepared for:
School Infrastructure New South Wales

Quality information	
Date	11/24
Prepared	N.B
Reviewed	J.B
Authorised	J.B

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Scale 1:300

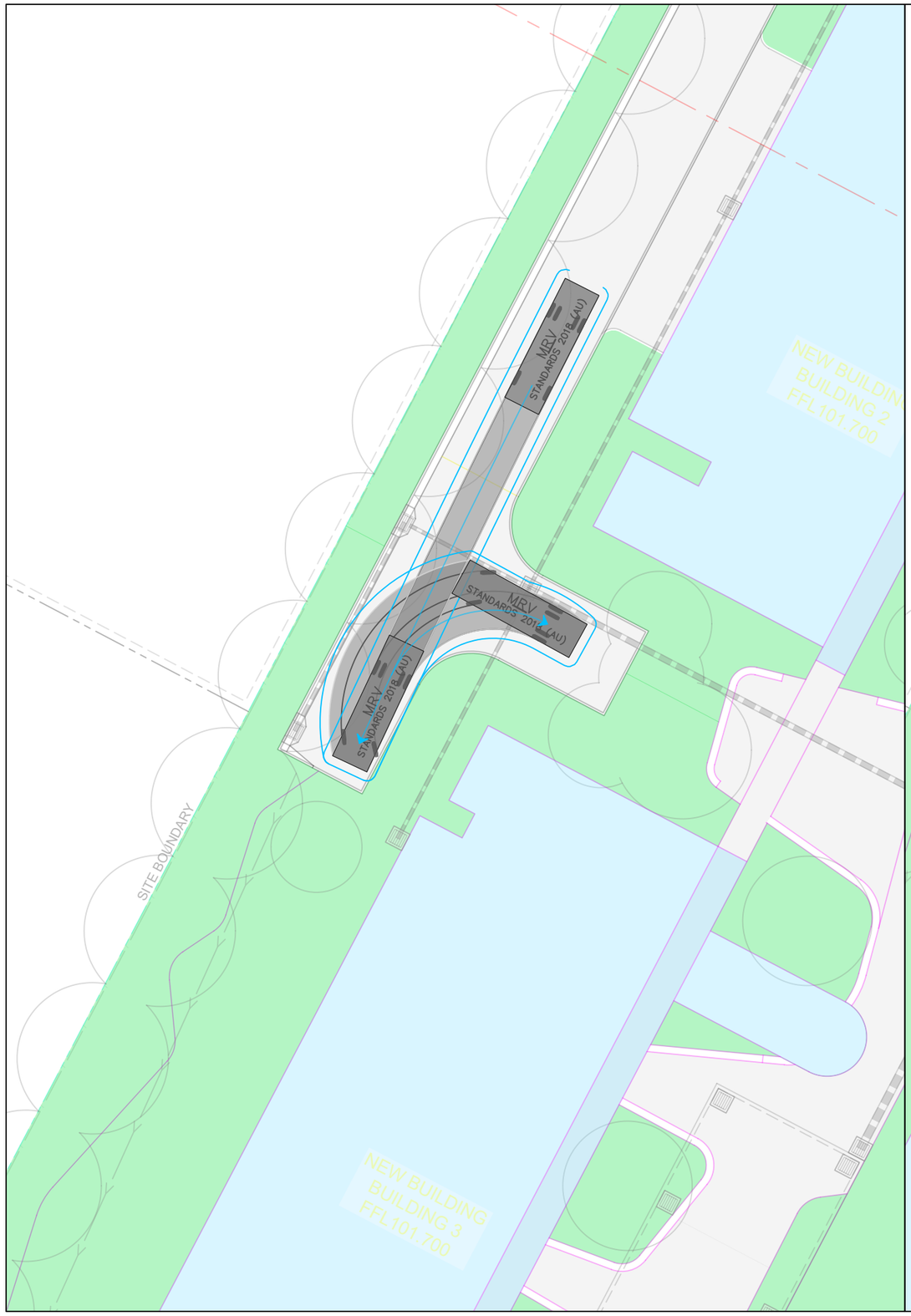
Project
Gledswood Hills New High School
MRV swept paths

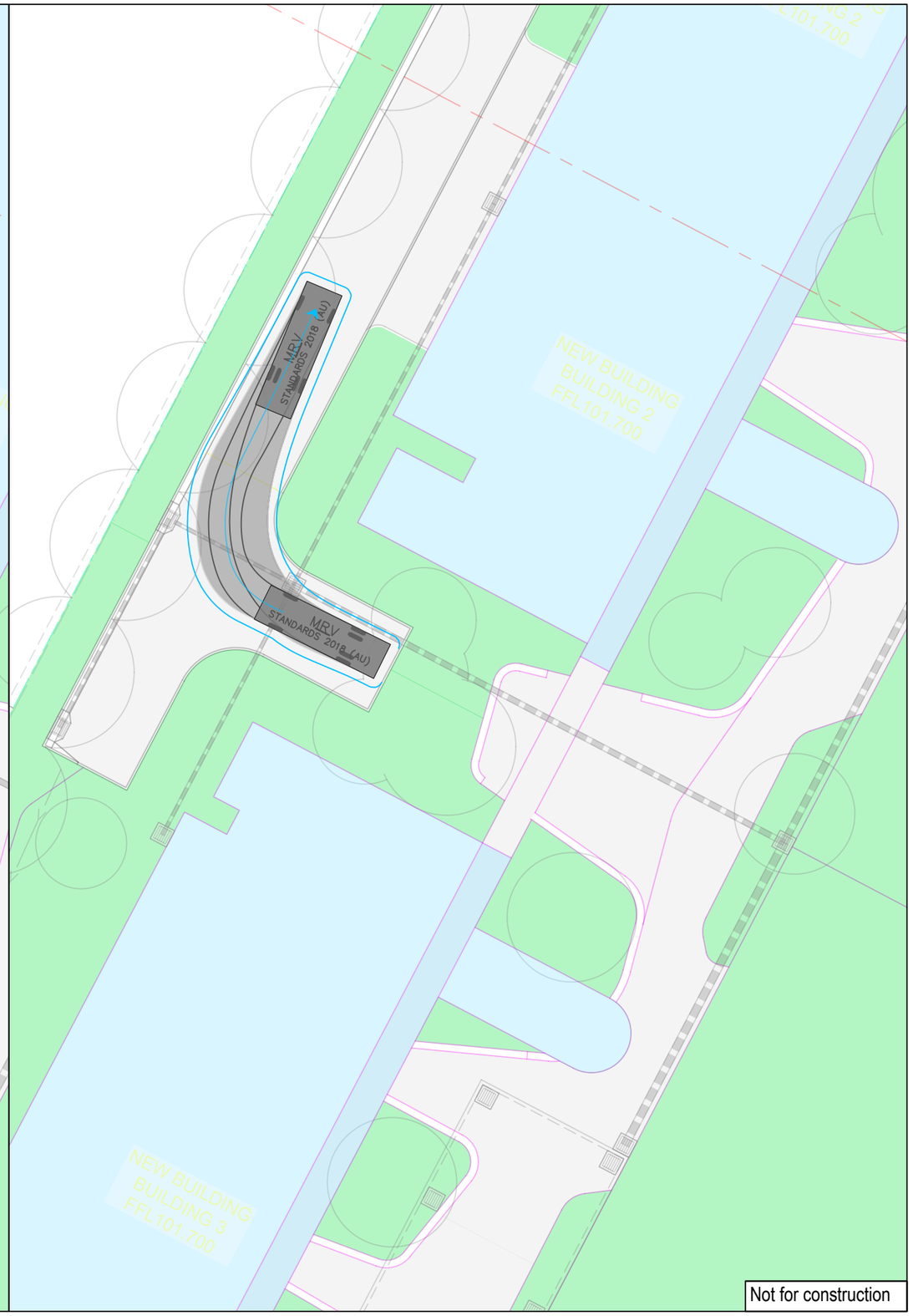
Title
Entry manoeuvre (LEFT)
Exit manoeuvre (RIGHT)

Project Number
SCT_00517_CAD_Gledswood Hills New High School

Sheet number
03

A3





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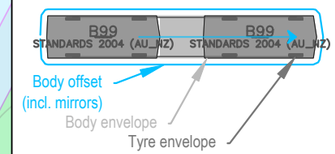
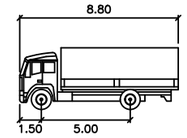


This swept path assessment is based on:

- 600mm body offset
- Vehicle speed of 5-10km/h
- An MRV



MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

SCT Consulting

V	Description	Date
6.0	For coordination	18/11/2024

Prepared for:
School Infrastructure New South Wales

Quality information	
Date	11/24
Prepared	N.B
Reviewed	J.B
Authorised	J.B

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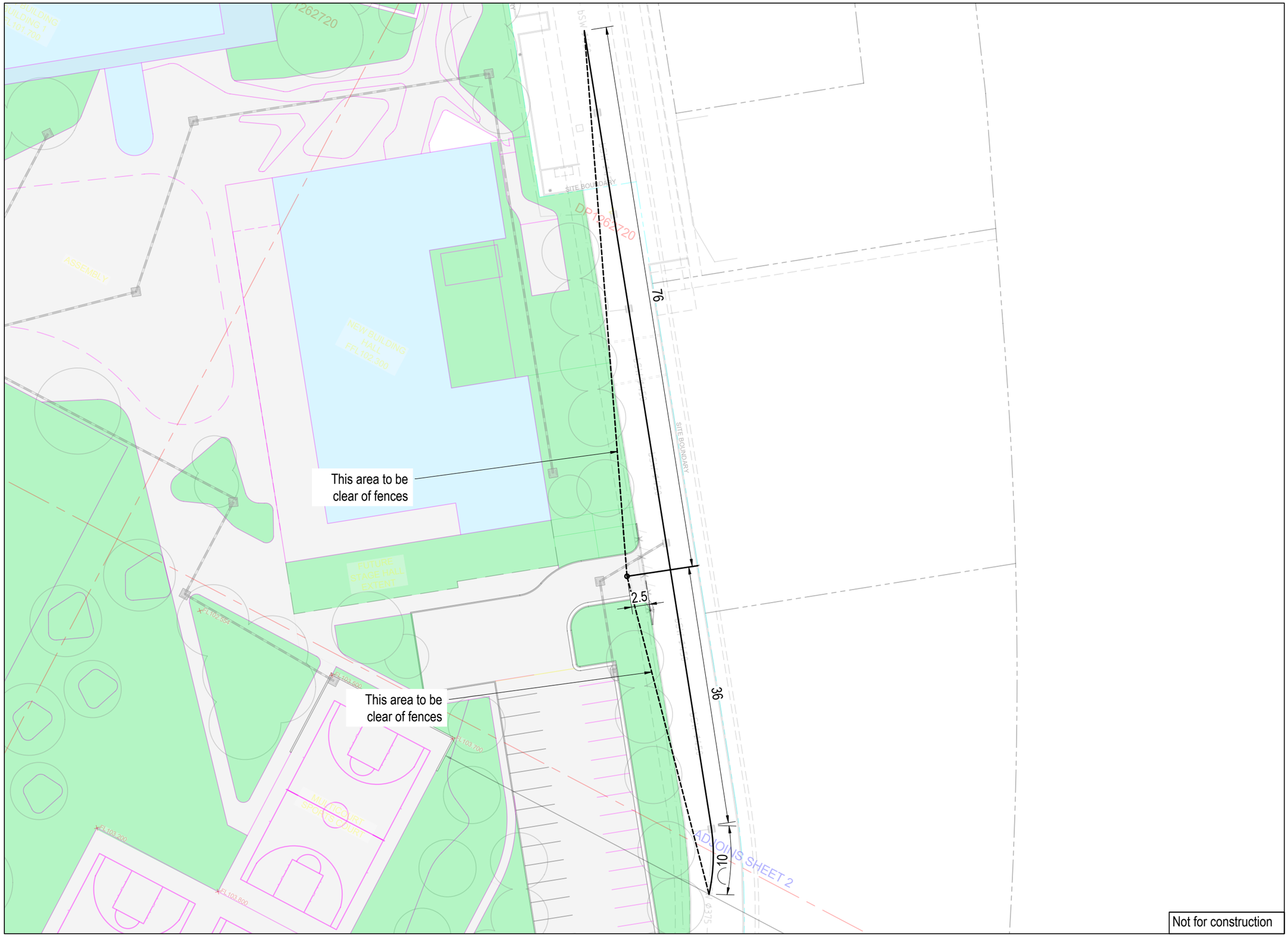
Scale 1:300

Project
Gledswood Hills New High School
MRV swept paths

Title
Entry manoeuvre into service area (LEFT)
Exit manoeuvre from service area (RIGHT)

Project Number
SCT_00517_CAD_Gledswood Hills New High School

Sheet number
04
A3



V	Description	Date
6.0	For coordination	18/11/2024

Prepared for:
School Infrastructure New South Wales

Quality information	
Date	11/24
Prepared	N.B
Reviewed	J.B
Authorised	J.B

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Project
Gledswood Hills New High School
Driveway sight distance checks

Title

Project Number
SCT_00517_CAD_Gledswood Hills New High School

Sheet number
01

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