Jindabyne Education Campus

Transport Assessment

School Infrastructure NSW

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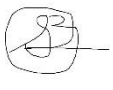
Author signature		Approver signature	
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1. Introduction

1.1 Overview

This accompanies the Environmental Impact Statement (EIS) in support of an application for State Significant Development Application (SSDA) for the new Jindabyne Education Campus (SSD-15788005).

This Transport Assessment accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of an application for a State Significant Development (SSD No 15788005). The SSDA is for a new education campus at Jindabyne, comprising of a new primary and high school, located at 207 Barry Way, Jindabyne NSW.

The proposed Jindabyne Education Campus (the school) will be relocated along Barry Way, approximately 2km from the Town Centre, and adjacent to the Sport and Recreation Centre, see Figure 1, below.

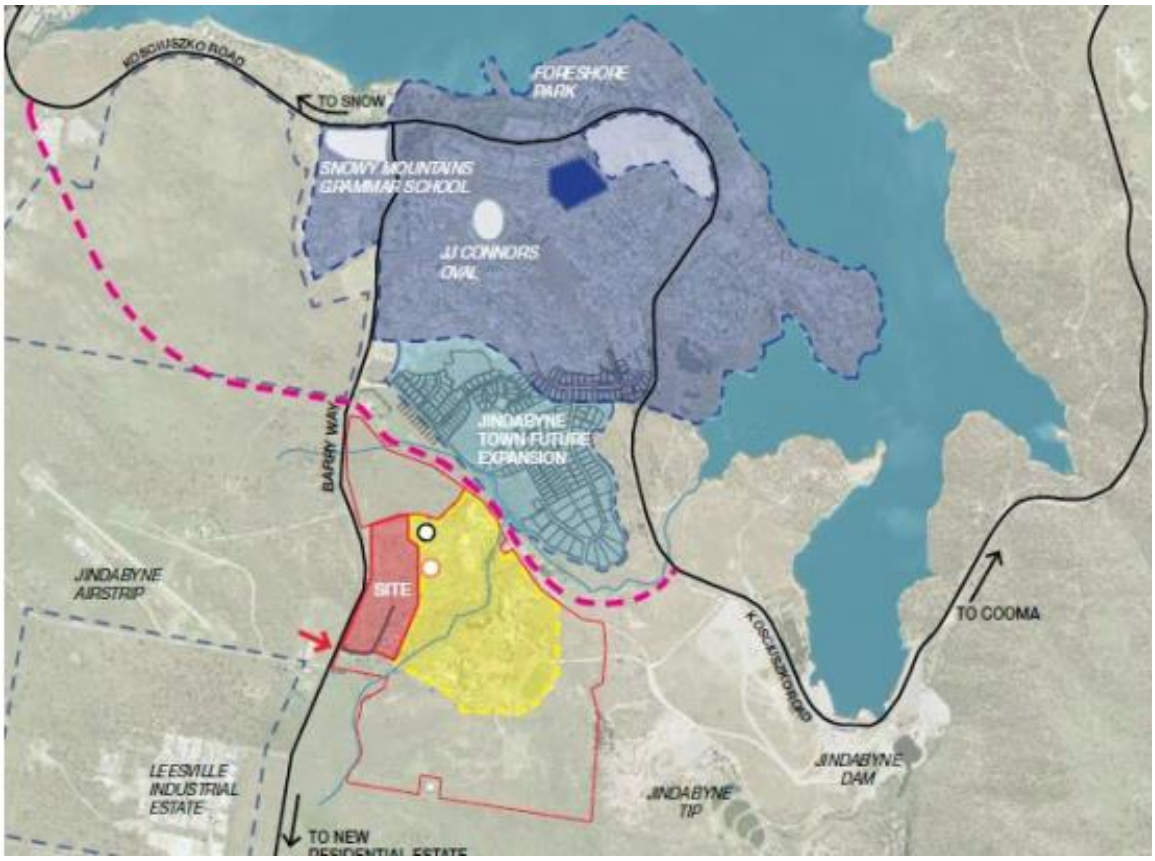


Figure 1: School location (Source: DJRD)

This report addresses the relevant Secretary's Environmental Assessment Requirements (SEARs), as detailed in Section 1.5 of this report. The Transport Assessment provides a comprehensive assessment of the transport and traffic elements of the project on the existing and future road network.

In addition, SINSW have outlined assessments of active transport, travel patterns and demand, which are provided within this report, in conjunction with the Preliminary School Transport Plan, which forms a separate report accompanying the EIS submission.

1.2 The school

The proposed development is for the construction of the Jindabyne Education Campus comprising a new primary school and a new high school at Jindabyne (the proposal). The proposal is located within the JSRC located at 207 Barry Way (the site) and will accommodate approximately 925 students, split between 515 primary school and 410 high school students, with the capacity for expansion in the future.

The new primary school will be located generally in the northern portion of the site whilst the new high school will to the south of the site. While the schools are inherently separate identities, with separate student entries, opportunities for integration are provided in a central shared plaza with co-located school administration facilities. This outdoor learning space is activated by the school canteen (shared) and separate core facilities including the primary school hall and library, and the high school gym and library, and provides opportunities for shared community use.

The new primary school will provide for a Core 21 school. This will comprise of 20 home base units and 2 support learning units, administration and staff facilities, covered outdoor learning area (COLA), hall, staff and student amenities, out of school care facilities, library and special programs. Landscaped areas include active and passive open space play areas, and a games court. The primary school is expected to operate between 9:15am – 3:15pm.

The new high school will provide for a stream 2 high school. This is to comprise of 20 general/specialised learning spaces and support learning units, administration and staff facilities, covered outdoor learning area (COLA), hall, staff and student amenities, library, an agricultural learning unit. Landscaped areas include active and passive open space play areas, a sports field and multipurpose games courts. The high school is expected to operate between 9:10am – 3:20pm.

A new access driveway is proposed off Barry way Road along the western boundary of the site and includes car parking, bus and private vehicle drop-off zones, and delivery zones.

Figure 2, over page, shows the school layout. The proposed development will include the following:

- 9.5 hectares of school space
- Shared path access to and from the school
- 50 bicycle spaces initially, including space for scooter and e-bike parking
- Eight student end of trip facilities (EOT)
- Two staff EOT
- Four bus bays located adjacent to the primary and high school buildings
- Two DDA spaces
- Total of 113 parking spaces
  - 53 Kiss and Drop spaces
  - Four visitor spaces
  - Six spaces for Year 12 student parking
  - 50 staff parking spaces
- Out of School Hours (OOSH) service through a third party provider

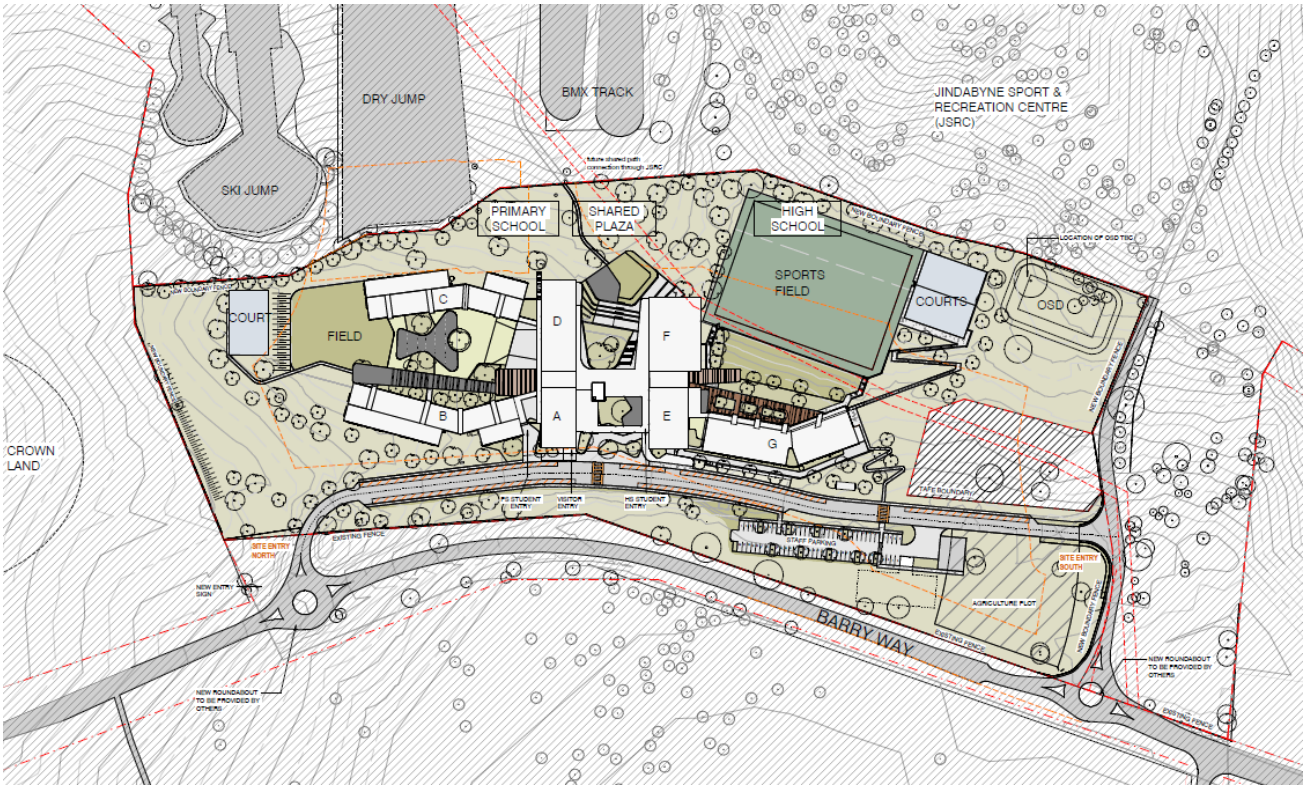


Figure 2: School layout (Source: DJRD)

1.3 2020 enrolment data

The 2020 enrolment at the school shows a total of 762 students, 394 students in primary school and 368 students in high school. Figure 3, below, shows the student distribution map based on enrolment.

A large majority of students, 46%, are from Jindabyne Town Centre, with 13% from East Jindabyne and 15% from the south of the proposed school location, including Grosses Plain, Ingebirah and Moonbah.

3% of students have a residential address in Greater Sydney and ACT, suggesting that there is a small proportion of seasonal students enrolled at Jindabyne Education Campus. Two students have interstate residential address, from South Australia and Western Australia.

Barry Way is a key transport corridor for access to and from the school based on the location of current student enrolment. Kosciusko Road is another key road connecting to Barry Way, and the future Southern Connector Road will also provide an alternative access to and from the school.

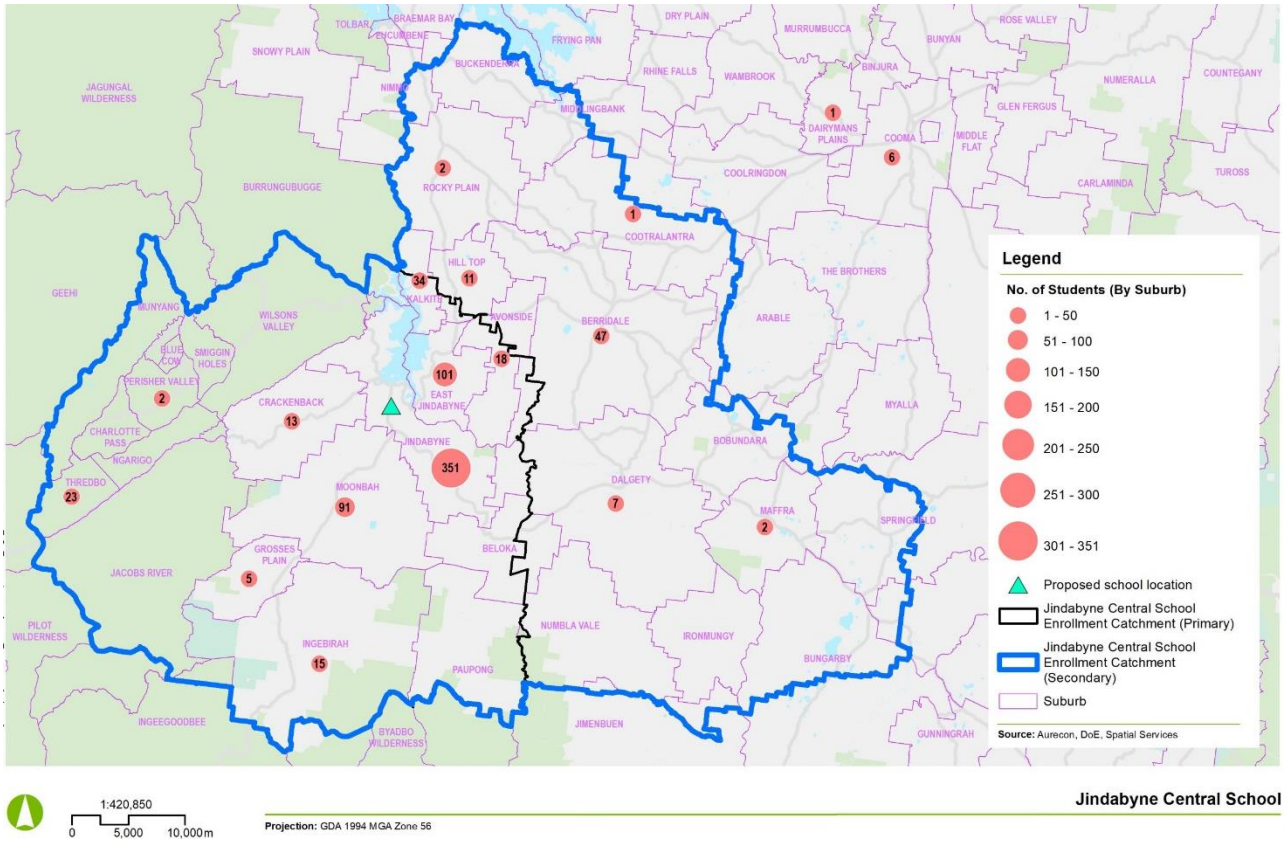


Figure 3: Student distribution map

1.4 Principal's survey

A Principal's survey was undertaken in November 2020 (Rapid Transport Assessment, GHD, 2021) and shows that 76% of primary school students travel to school via walking, cycling and bus. 75% of high school students travel to school via walking, cycling and bus. This is shown in Figure 4, below.

The proportion of primary and high school students being dropped off at school by private vehicle is fairly low, 24% primary school and 20% high school, in comparison to the high private vehicle ownership for Jindabyne.

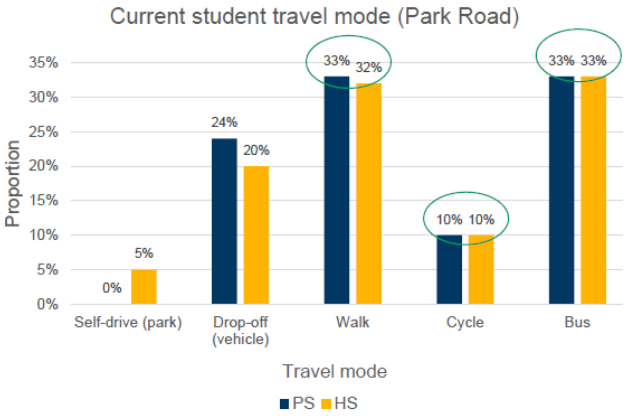


Figure 4: Principal's survey on travel mode (Source: Rapid Transport Assessment, GHD, 2021)

In order to maintain the current high proportion of walking, cycling and bus mode split, high amenity and safe walking and cycling infrastructure is required to connect from Jindabyne Town Centre to the school. Accessible bus services will also encourage more students to take the bus to and from school.

1.5 School objectives

As part of the Premier's Priorities, five key pillars support the ability for students to walk, ride and use public transport to travel to school, which reduces the reliance on Kiss and Drop car travel to school, and decongests the local road network.

The five pillars are outlined below and over page.

Safe

- To minimise pedestrian and vehicle conflict
- To ensure a safe, accessible environment for people attending or visiting the school
- To identify and implement new transport and safety measures as required

Efficient

- To reduce local traffic congestion and parking impacts
- To ensure required infrastructure and operations are delivered prior to occupancy
- To adopt, implement and communicate context-sensitive transport policies and programs
- To resolve issues early in the school master planning, functional design and business cases

Sustainable

- To increase sustainable transport mode share to school
- To minimise car parking and kiss-and-drop provision on-site and near site
- To integrate the school transport facilities within the nearby community

Collaborative

- To identify opportunities to work with state and local government transport agencies
- To share identified travel demand and transport opportunities early in the process
- To inform transport agencies about (and seek to rectify) existing transport deficiencies

Replicable

- To gauge the utility of this process and the efficacy policies and programs
- To inform subsequent school master planning, the ESFG transport requirements, this practice note/ reporting requirements

This report has been developed to address three key objectives – Safe, Efficient and Sustainable travel to the new school location.

Students and families will be encouraged to walk or cycle to and from school. There will be appropriate walking and cycling infrastructure provided to assist safe walking and cycling to and from the school. Where walking and cycling is difficult, students will be encouraged to use public transport. If demand for bus travel grows, additional routes and services can be developed to accommodate the grown in bus travel.

These practices will assist to decongest the local road network and reduce the number of Kiss and Drop parking required.

1.6 SEARs requirement

This Transport Assessment will highlight the existing transport infrastructure adjacent to the site and the potential traffic movement impact attributed to the operation of the school. Table 1.1, below, outlines the SEARS requirements and the reference section of this report addressing the requirement.

Table 1.1: SEARs Requirements

SEARs Requirement	Relevant Section
Analysis of the existing transport network to at least the existing or proposed enrolment boundary, including: ■ Road hierarchy ■ Pedestrian, cycle and public transport infrastructure ■ Details of current daily and peak hour vehicle movements based on traffic surveys and / or existing traffic studies relevant to the locality ■ Existing transport operation for 1hr before and after (existing or proposed) bell times such as span of service, frequency for public transport and school buses, pedestrian phasing for signals ■ Existing performance levels of nearby intersections utilising appropriate traffic modelling methods (such as SIDRA network modelling)	3.0 – 3.7, 5.2, Appendix A

SEARs Requirement	Relevant Section
Details of the proposed development, including: ■ A map of the proposed access which identifies public roads, bus routes, footpaths and cycleways ■ Pedestrian site access and vehicular access arrangements, including for service and emergency vehicles and loading/unloading, including swept path analysis demonstrating the largest design vehicle entering and leaving the site and moving in each direction through intersections along the proposed transport routes ■ Car and motorcycle parking, bicycle parking and end-of-trip facilities ■ Drop-off / pick-zone(s) and arrival/departure bus bay(s) ■ Pedestrian, public transport or road infrastructure improvements or safety measures	6.0 – 6.5, Appendix B
Analysis of the impacts due to the operation of the proposed development, including: ■ Proposed modal split for all users of the development including vehicle, pedestrian, bicycle riders, public transport, school buses and other sustainable travel modes ■ Estimated total daily and peak hour vehicular trip generation ■ A clear explanation and justification of the: – Assumed growth rate applied – Volume and distribution of proposed trips to be generated – Type and frequency of design vehicles accessing the site ■ Details of performance of nearby intersections with the additional traffic generated by the development both at the commencement of operation and in a 10-year time period (using relevant network modelling) ■ Cumulative traffic impacts from any surrounding approved development(s) ■ Adequacy of pedestrian, bicycle and public transport infrastructure and operations to accommodate the development ■ Adequacy of car and motorcycle parking and bicycle parking provisions when assessed against the relevant car / bicycle parking codes and standards ■ Adequacy of the drop-off / pick-up zone(s) and bus bay(s), including assessment of any related queuing during peak-hour access ■ Adequacy of the existing / proposed pedestrian infrastructure to enable convenient and safe access to and from the site for all users	3.2 – 3.4, 4.4, 4.5, 5.2
Measures to ameliorate any adverse traffic and transport impacts due to the development based on the above analysis, including: ■ Travel demand management programs to increase sustainable transport (such as a Green Travel Plan / School Transport Plan) ■ Arrangements for the Travel Coordinator roles ■ Governance arrangements or relationships with state and local government transport providers to update roads safety ■ Infrastructure improvements, including details of timing and method of delivery	This is provided in the Preliminary School Transport Plan, a separate report.
A preliminary school transport plan detailing an operational traffic and access management plan for the site, pedestrian entries, the drop-off / pick-up zone(s) and bus bay(s).	This is provided in the Preliminary School Transport Plan, a separate report.

SEARs Requirement	Relevant Section
Analysis of the impacts of the traffic generated during construction of the proposed development, including: ■ Construction vehicle routes, types and volumes ■ Construction program (duration and milestones) ■ On-site car parking and access arrangements for construction, emergency and construction worker vehicles ■ Cumulative impacts associated with other construction activities in the locality (if any) ■ Road safety at identified intersections near the site due to conflicts between construction vehicles and existing traffic in the locality ■ Measures to mitigate impacts, including to ensure the safety of pedestrian and cyclists during construction	7.0 – 7.11
A preliminary Construction Traffic and Pedestrian Management Plan.	7.0, 7.1

1.7 Stakeholder engagement

Over the course of the development of this Transport Assessment, consultation with key stakeholders have occurred. Key stakeholders include:

- School Infrastructure NSW
- Transport for NSW
- Snowy Monaro Regional Council
- NSW Sports and Recreation
- TAFE NSW
- Cooma Coaches
- Alpine Charters.

The following stakeholder engagements have occurred:

- 9 June 2021 – School Infrastructure NSW
- 24 June 2021 – School Infrastructure NSW
- 1 July 2021 – Transport Working Group
- 5 July 2021 – Cooma Coaches
- 7 July 2021 – Alpine Charters
- 15 July 2021 – Transport Working Group

2 Strategic Context

A review of the following local and state transport plans highlights the transport impacts and initiatives that will affect school travel demand.

2.1 Future Transport 2056 Strategy

Future Transport 2056 Strategy is a 40 year strategy for Sydney and regional NSW. The strategy plans for a future transport network that is customer focused, creates successful places and strong economy, provides accessible services and, is sustainable.

Future regional transport networks will be planned around a hub and spoke model within a strategic framework of servicing principles, including:

- Connectivity, flexibility and efficiency
- Access and equity
- Legibility and timeliness
- Provision of accurate information
- Safety

Future Transport 2056 Strategy acknowledges the importance of the Snowy Mountains region for attracting tourism and notes that private vehicles are the main source of transportation to the region. The strategy commits to investigating new options for transport to safely accommodate growing visitor numbers within the region throughout the year.

2.2 NSW Movement and Place Framework

Movement and Place is a cross-government framework for planning and managing our roads and streets across NSW. The framework delivers on NSW policy and strategy directions to create successful streets and roads by balancing the movement of people and goods with the amenity and quality of places.

The school is identified as a place. Transport infrastructure surrounding the school should reflect the place intensity and function.

2.3 Snowy Monaro Local Strategic Planning Statement

The Snowy Monaro Local Strategic Planning Statement provides detailed investigation into the plans for the Snowy Monaro community over the next 20 years. The 12 planning priorities support local economic and tourism growth and improved liveability for Jindabyne residents, workers and visitors.

The Planning Statement supports the provision of enhanced connections to open space and walking trails. Communities want to have improved and accessible public transport connections to Jindabyne Town Centre and the rest of the region.

The 12 planning priorities are:

1. Promote, grow and protect agricultural production and industry
2. Maximise potential for business growth and efficiency
3. Support development of the Snowy Mountains as Australia's premier year-round alpine destination
4. Use appropriate evidence-based planning controls to respond to a diverse region
5. Provide a variety of housing options throughout the Snowy Monaro

6 Identify and integrate transport corridors and connections with the right types and levels of development

7 Foster resilient, enduring and safe local communities using land use planning controls which address local and regional natural hazards

8 Capitalise on growth and change by preparing for new business and population

9 Protect and enhance the cultural and built heritage of the Snowy Monaro

10 Protect and enhance the scenic landscape of the region

11 Identify protect and encourage restoration of specific areas of environmental values of the Snowy Monaro Region

12 Move towards a carbon neutral future

Actions identified in the Snowy Monaro Local Strategic Planning Statement for future strategy and policy development include:

- Develop and implement a Pedestrian Access and Mobility Plan
- Develop and implement a Regional Integrated Transport and Access Strategy
- Develop and implement a Foot and Shared Paths Strategy
- Support the implementation of public transport for isolated communities

2.4 Go Jindabyne Mobility and Connectivity Study

The Go Jindabyne Mobility and Connectivity Study looks at transport access within these key communities – East Jindabyne, Tyrolean Village, Jindabyne, Leesville Estate, Lakewood Estate and Cobbin Creek Estate.

The study identified the following gaps:

- Lack of adequate separation between cyclists and vehicles along Kosciusko Road, Barry Way and Alpine Way, especially considering speed limits of 60km/h and above
- A lack of cycling facilities within Jindabyne Town Centre
- A lack of walking and cycling connectivity between Jindabyne, East Jindabyne, Sport and Recreation Centre, Leesville Estate, and Cobbin Creek Estate
- Inconsistent walking and cycling path treatments and widths, as well as crossing facilities
- High disconnect between existing shared paths and cycling infrastructure
- Current transport conditions do not encourage public transport use

2.5 South East and Tablelands Regional Plan 2036

The South East Tablelands Regional Plan 2036 is a 20 year blueprint to develop the Snowy Mountains into Australian's premier year round alpine destination. The plan aims to provide strategic transport links and access to the region.

2.6 Snowy Mountains Special Activation Precinct Draft Master Plan

The Snowy Mountains Special Activation Precinct draft master plan outlines a 40 year vision for the area as a year round tourist destination with new business opportunities, services and community infrastructure for the people that live, work and visit the region.

The draft Master Plan notes the relocation of the school within the new Sports and Education Precinct, shown below in Figure 5. The school will be bound between Barry Way and Southern Connector Road, with new shared path and cycleway connectivity connecting both the school and Sport and Recreation Centre to the Town Centre and other key activity areas within the region. The draft Master Plan also proposes a new pedestrian and bicycle bridge across the Southern Connector Road, for school student access.

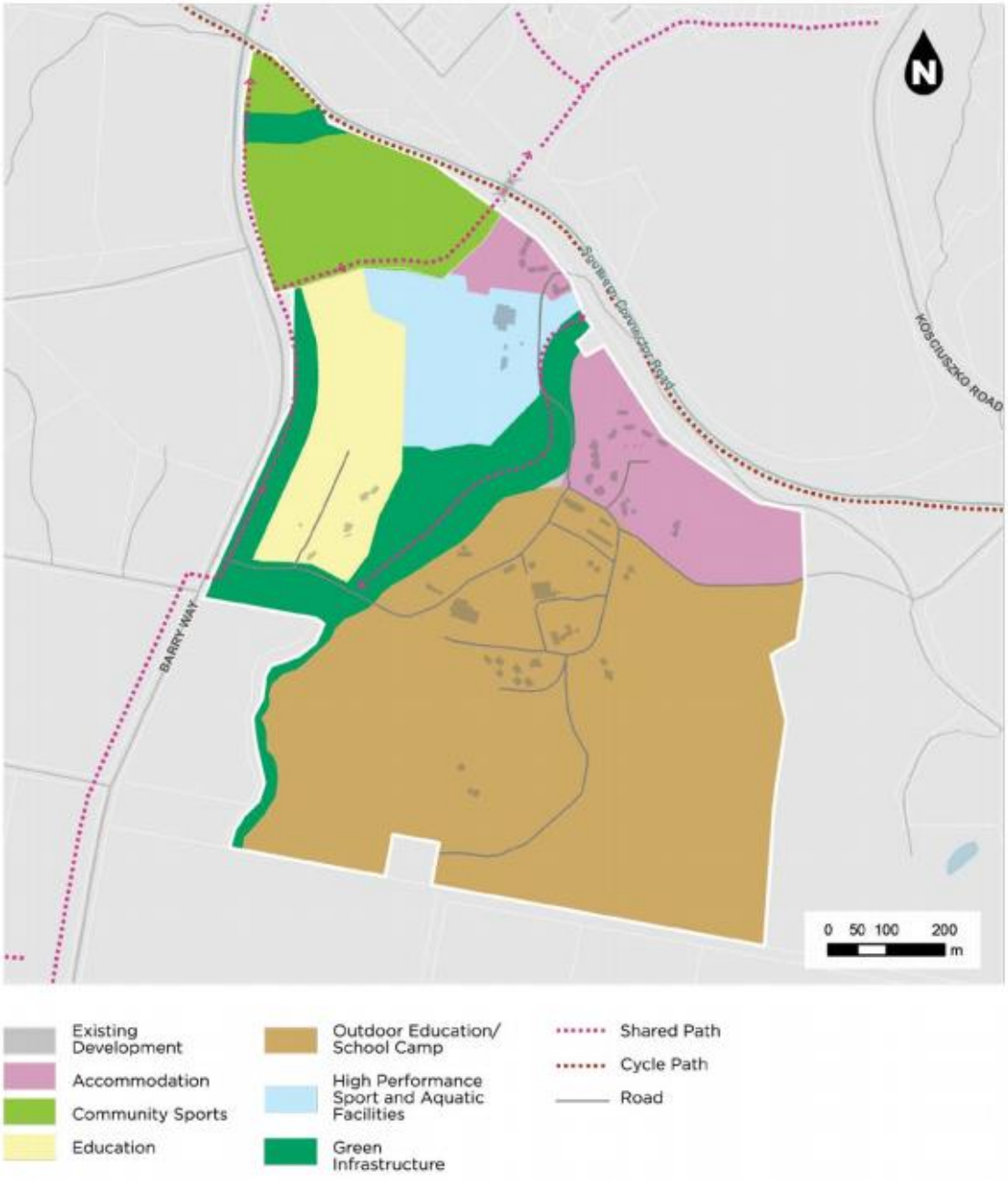


Figure 5: Walking and cycling access (Source: Snowy Mountains SAP Draft Master Plan, DPIE, 2021)

2.7 Snowy Mountains Special Activation Precinct Structure Plan

The Structure Plan is a key input to the draft Master Plan, where it identifies and guides the key areas of growth and change, to deliver on the vision for Jindabyne and the Snowy Mountains as Australia's Alpine capital.

The Structure Plan shows the school will be surrounded by Community Sport to the north, Green Infrastructure to the west and south, Sport and Recreation to the south, depicted in Figure 6, below. The Structure Plan supports the redevelopment of the precinct into a hub that caters for school use, community use, visitors and high-performance sport use.

Vehicle access into the school is shown along Barry Way, with a future northern and southern access into the school, in addition to a future Southern Connector Road access which can also be accessed by the Sports and Recreation Centre.

The shared paths for walking and cycling access along Barry Way, across the pedestrian and cycle bridge, and through the green infrastructure zone into the school, are also supported in this plan.

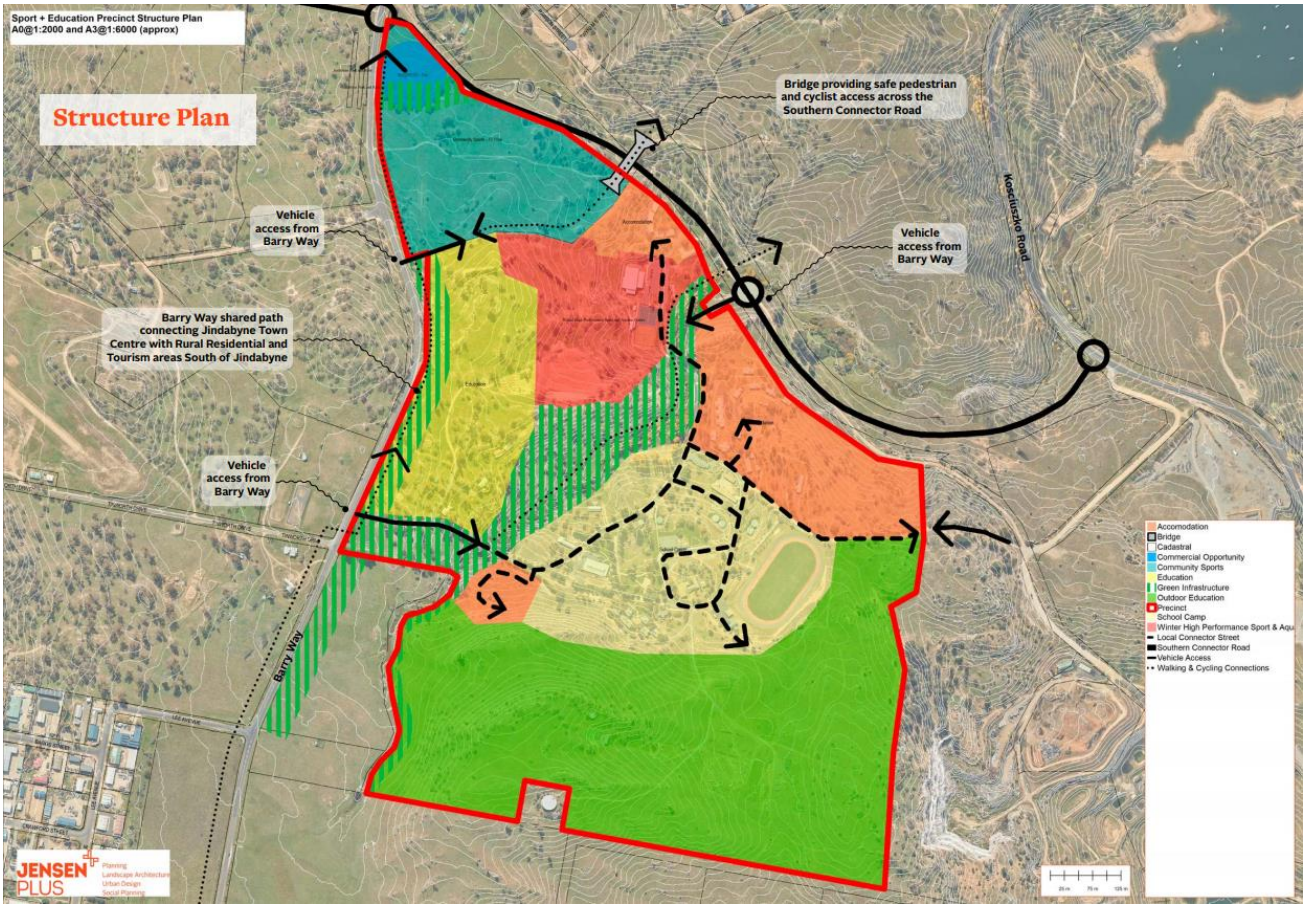


Figure 6: Vehicle access to site (Source: Snowy Mountains SAP Structure Plan – Part 1, Jenson Plus, 2021)

2.8 Snowy Monaro 2040 Community Strategic Plan

The Snowy Monaro 2040 Plan provides a framework for the region's future based on thorough consultation with the community. The document outlines objectives for the region and high level strategies to enable delivery in four key themes – Community, Economy, Environment and Leadership.

Two key transport strategies include:

- Transport corridors throughout the region are to be improved and maintained
- Transport initiatives are aligned to state and neighbouring local government area plans

2.9 Snowy River Local Environmental Plan 2010

The current LEP promotes sustainable transport by reducing car us and increasing the use of walking, cycling and public transport.

This aligns with the transport access for the school.

2.10 Snowy River Development Control Plan 2013

The Snowy River Development Control Plan (DCP) provides guidelines, objectives, and controls for development. The DCP controls will be used to inform transport infrastructure provision for the new school.

3 Transport Access

3.1 Site Description

The site of the proposed new education campus at Jindabyne is located within the western extent of the existing JSRC at 207 Barry Way (101 DP1019527). The site is located within the Snowy Monaro Regional Council local government area and is approximately 2.2km south of the Jindabyne town Centre.

The site is approximately 9ha in size, containing a former golf course and three existing workers cottages which were occupied during the construction of the Snowy Hydro Scheme. The majority of the site is undeveloped and contains maintained grasslands and scattered trees. Much of the surrounding land comprises remnant grassland, woodland and agricultural land. There are gradient issues within and on access to the site, which will need to be resolved through further design.

As identified above, the site is within the existing JSRC which is a high performance and community sport centre located directly east of the site. The JSRC has a range of sporting facilities including a synthetic running track, cycling track, netball and tennis courts, fitness and indoor sports centres, and sporting ovals, as well as other services and accommodation facilities. The newly constructed BMX track is located directly east of the site with the new ski jump currently under construction to the northeast. An existing access from the Sport and Recreation Centre can connect into the southern end of the school site.

Examples of the current school site is shown over page in Figure 7.

TAFE NSW have recently lodged a development application for a Connected Learning Centre (CLC) and Mobile Training Unit (MTU) which is proposed to the south of the site. The CLC and MTU will utilise interactive, digitally enabled, flexible, and multipurposed learning environments to provide high-quality training and learning experiences accommodating a maximum of 20-25 students and 3 teachers.

The surrounding locality is generally rural in character with other land uses also including the Jindabyne Aero Club located to the west of the site on Tinworth Drive, an industrial area to the southwest and the Jindabyne Community recycling centre is located east of the JSRC.

Approaching the school site, looking southbound

Looking eastbound into the proposed school site

Existing Sport and Recreation Centre access, looking eastbound

Figure 7: Site images (Source: Google Streetview)

Based on the images above, there is currently no walking and cycling infrastructure to and from the proposed site. There are no adequate street lighting, shelter and pedestrian crossings from the Town Centre connecting to the school.

There is a lack of current public transport access and no bus stops along Barry Way from the Town Centre to the proposed school site.

The speed limit, currently 100km/h, is not appropriate for the school. The current function of Barry Way is identified as a movement corridor, and will need to be re-classified as a place, with a reduced speed of 50km/h. Once the school is in operation, during the peak AM (8:00am to 9:30am) and PM (2.30pm to 4:00pm) period, the operation of Barry Way adjacent to the school, will need to be 40km/h.

3.2 Walking catchment access

Based on the enrolment data showing student catchment in Section 1.2, Figure 8 shows the walking catchment of the proposed school site within a 5, 10 and 15 minute walking distance. The 5, 10 and 15 minute walking catchment are shown by the 400m, 800m and 1,200m distance isochrones relative to the school site.

A comparison of crow flies and existing infrastructures shows the following:

- 15% of primary school students are within the 15 minute walking catchment when additional walking infrastructure is provided to access the school from the Town Centre. This includes various shared path options along Barry Way and within the Town Centre, connecting to the school
- 5% of primary school students are within the 15 minute walking catchment when only a shared path is provided along Barry Way linking the Town Centre to the school
- 14% of high school students are within the 15 minute walking catchment when additional walking infrastructure is provided
- 4% of high school students are within the 15 minute walking catchment when only a shared path is provided along Barry Way linking the Town Centre to the school

Table 3.1, below, details the number of students captured within the crow flies walking catchment.

Table 3.1: Crow flies walking catchment analysis

Walking Catchment (Crow Flies)	400m (5min)	800m (10min)	1200m (15min)
Primary School Students	1	19	60
High School Students	0	19	53

Direct and safe walking infrastructure connecting the Town Centre to the school is required to encourage students to walk to the proposed school site.

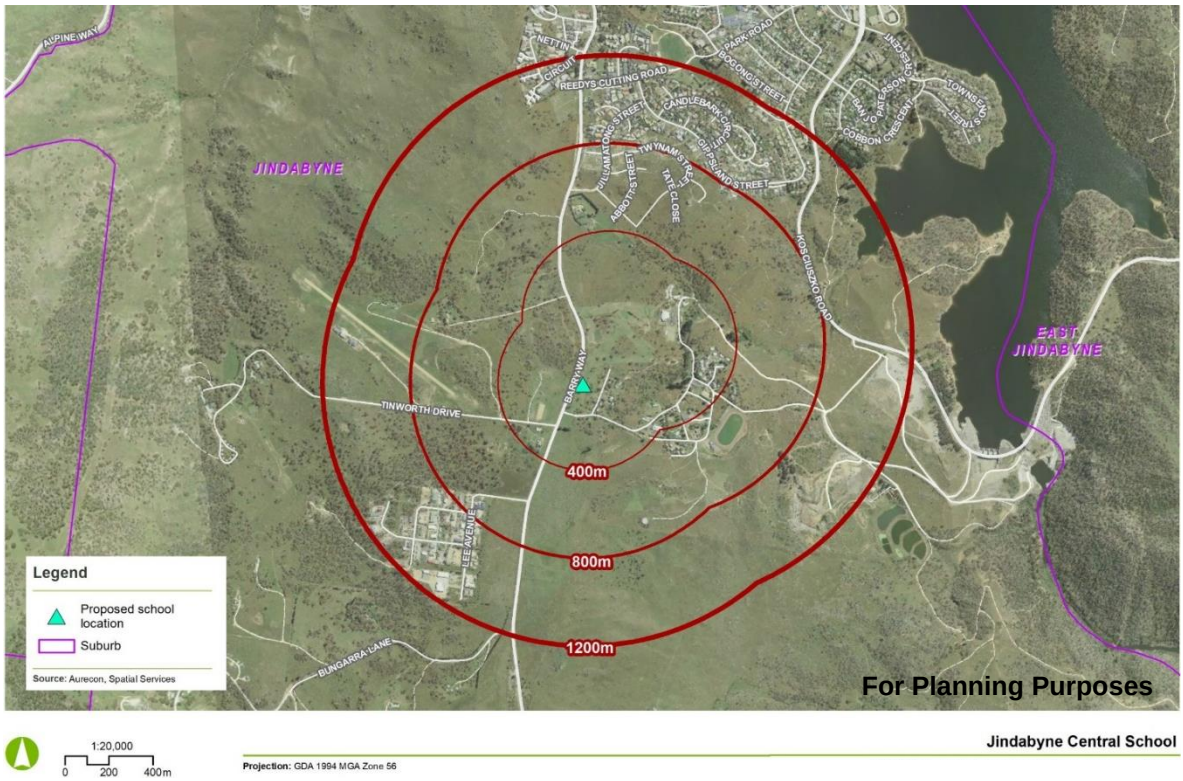


Figure 8: Walking catchment

3.3 Cycling catchment access

Figure 9, below, shows the bicycle catchment for 5, 10, 15 and 20 minute cycling distance, reflective of 1,200m, 2,400m, 3,600m and 4,800m distance to the school site. The cycling duration limit for primary school students is 15 minutes, and the cycling duration limit for high school students is 20 minutes.

A comparison of crow flies and existing infrastructures shows the following:

- 52% of primary school students are within the 15 minute bicycle catchment when additional safe cycling infrastructure is provided to access the school from the Town Centre. This includes various shared path options along Barry Way and within the Town Centre, connecting to the school
- 34% of primary school students are within the 15 minute bicycle catchment when only a shared path is provided along Barry Way linking the Town Centre to the school
- 52% of high school students are within the 20 minute bicycle catchment when additional safe cycling infrastructure is provided
- 31% of high school students are within 20 minute bicycle catchment when only a shared path is provided along Barry Way linking the Town Centre to the school
- Lakewood Estate, south of the school site, is within a 10 minute cycle. Based on the enrolment student catchment, there are 18 primary school students and 23 high school students, who could be encouraged to cycle to and from the school, if additional cycling infrastructure is provided south of Barry Way

Direct and safe cycling infrastructure connecting the Town Centre to the school is required to encourage students to cycle to the proposed school site.

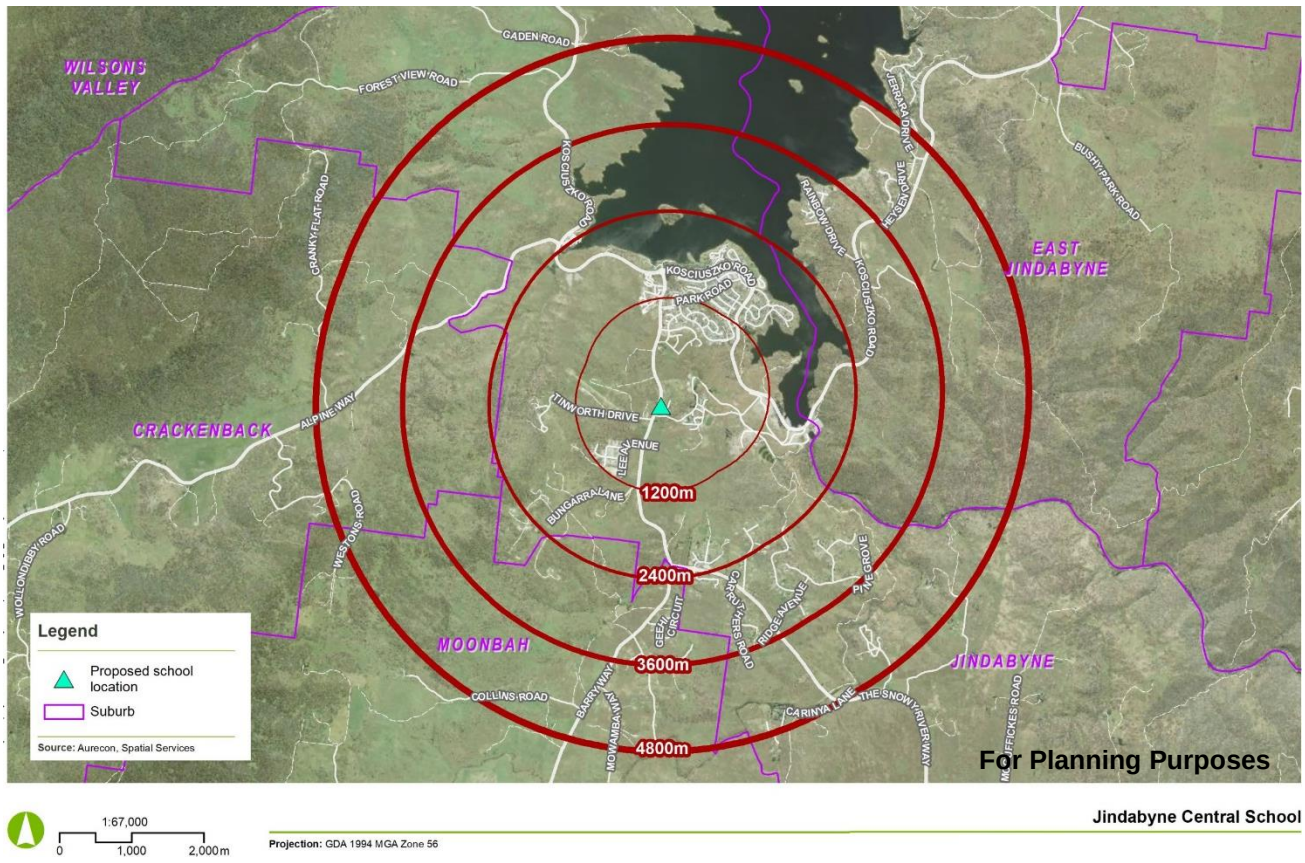


Figure 9: Bicycle catchment

Table 3.2, below, shows the crow flies bicycle catchment analysis split between primary and high school students. Within a 15 minute cycle journey, 206 primary school students are able to cycle to school. 192 high school students are able to cycle to school within a 20 minute cycle journey.

Table 3.2: Crow flies bicycle catchment analysis

Walking Catchment (Crow Flies)	1200m (5min)	2400m (10min)	3600m 15min)	4800m (20min)
Primary School Students	60	150	206	-
High School Students	53	126	175	192

3.4 Public transport catchment access

35% of primary school students are within the 2,300m catchment. This means that 65% of primary school students are eligible for the School Student Transport Scheme (SSTS), which provides subsidised travel for students. 36% of high school students are within the 2,900m catchment. 64% of high school students are eligible for SSTS. This is shown in Figure 10, below.

There is likely to be an overlap between cycling and using public transport. Due to the lack of safe cycling infrastructure connecting to the school site, a reduction in cycle demand from both primary and high school students may occur, with those students likely to shift to public transport use.

To encourage more students to catch the bus to school, high frequency services and a priority bus stop outside the school will likely increase bus travel mode. Taking advantage of students' good access to public transport, programs should be targeted to encourage school bus use.

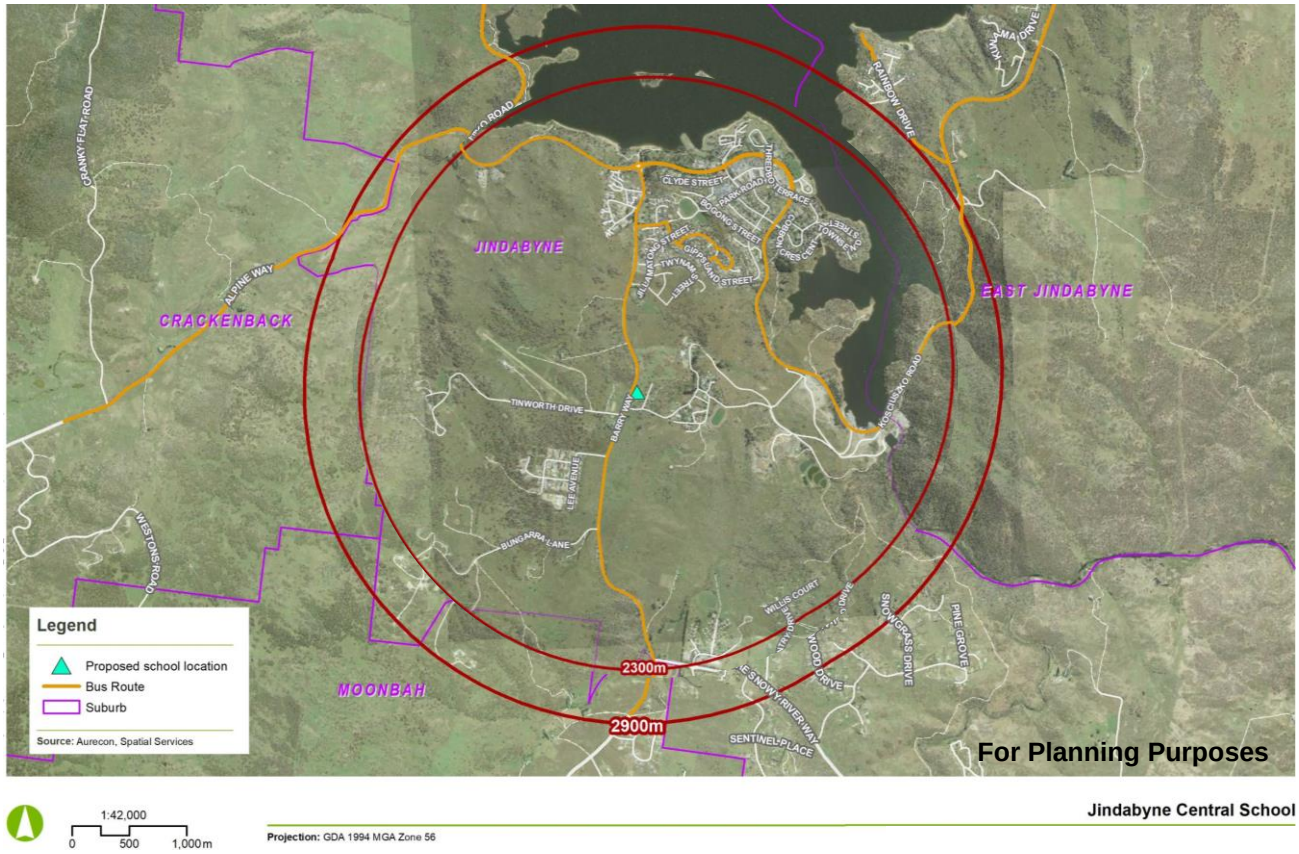


Figure 10: Public transport catchment

Table 3.3: Public transport student catchment within 800m of bus network

Public Transport Catchment (Crow Flies)	2300m	2900m
Primary School Students	136	-
High School Students	-	131

3.4.1 Existing public transport access

Public transport services are limited in the Snowy Mountain region. Current school bus services are provided by Alpine Charters and Cooma Coaches. Based on the existing school bus usage data, one third of students use the bus to travel to school (Rapid Transport Assessment, GHD, 2021).

Current bus capacity is approximately 85 students. The same capacity buses will be used to transport students to the proposed school site.

Table 3.4, below, shows the current school bus services for the AM drop off and PM pick up. For the AM drop off period, there is a total of 10 bus services, and 12 bus services for the PM pick up.

Table 3.4: Bus time table for the existing school site

Operator	Time Arriving at the School Site	No. of in-bound bus	No. of out-bound bus
Alpine Charters	8:31am	1	
	8:47am	1	
	3:35pm		1
Cooma Coaches	8:37	1	
	8:40	1	
	8:43	2	
	8:45	1	
	8:46	1	
	8:54	1	
	9:02	1	
	3:25		2
	3:35		6
	3:45		2
	3:46		1

In consultation with Alpine Charters and Cooma Coaches, it is understood that currently buses arrive for drop off and pick up in platoons of three buses, due to the limited bus bay space on Kalkite Street. The nature of the platoon movement means that if a bus has finished loading or unloading students, it will need to wait until the other two buses have finished, before leaving the school bus bay. This causes unnecessary delay for the individual bus.

There are also reported issues with bus layovers occurring on Park Road, as noted in the Principal's survey. This is currently due to the platooning issue.

3.5 Vehicle access

The proposed school site is accessible via Barry Way, which is classified as a regional road with two trafficable lanes in each direction, which currently has a posted speed of 60 km/h until Nettin Circuit (north), and then returns to a posted speed of 100 km/h to Snowy River Way (south).

The following key safety issues should be noted:

- Freight access from Leesville Industrial Estate (approximately 450m south west of the school site) is likely to generate the movement of heavy vehicles
- As identified in the Go Jindabyne Mobility and Connectivity Study (GTA, 2019), heavy vehicles account for between 7% and 14% of the daily traffic on Barry Way
- During the ski season, significant congestion occurs in Jindabyne, including at the intersection of Kosciuszko and Alpine Road, within the town centre
- Lack of separation between cyclists and vehicles along Barry Way particularly in areas with speeds greater than 60km/h
- Lack of walking paths along Barry Way
- Barry Way is currently classified as a Movement corridor facilitating efficient movement of people and goods between regions and strategic centres

The current access to the Sport and Recreation Centre via Barry Way is a priority-controlled intersection with a 5m wide side access road south of the proposed school site as shown in Figure 11, below.

Figure 11: Jindabyne Sport and Recreation Centre (Source: Bing Maps**)**

At the existing school site, there is currently a lack of walking and cycling infrastructure to facilitate safe walking and cycling to school. There is also a lack of public transport service to this location.

Two roundabouts, one to the northern access of the school and one roundabout to replace the existing access to the Sport and Recreation Centre will need to be provided to enable dual access into the school internal road. This is detailed in Section 6.0.

3.6 Road network

The location of the Jindabyne Education Campus is adjacent to Barry Way, a regional road, see Figure 12.

Access to the school will be off Barry Way, via local roads. The northern access will be via a new internal school driveway, and the southern access will be shared with the Sport and Recreation Centre.

Figure 13 shows the proposed local road access and is explored in detail in Section 6.0.

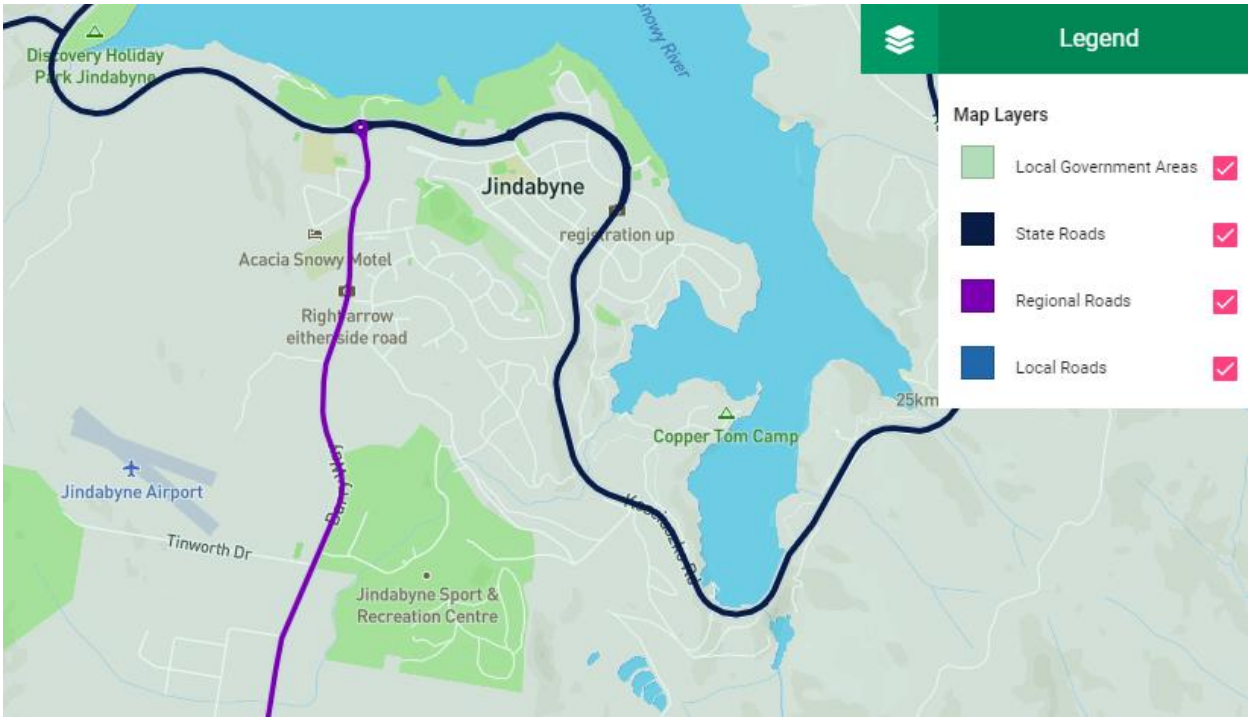


Figure 12: Road network (Source: RMS Road Hierarchy)

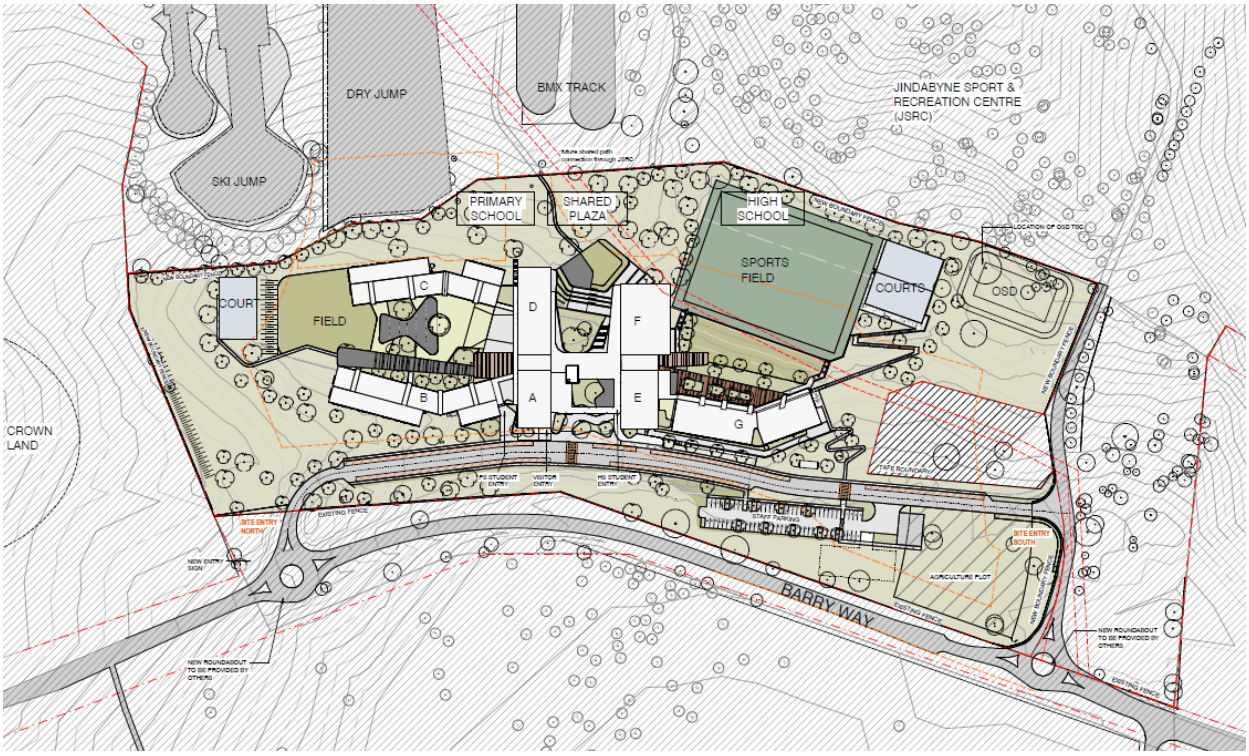


Figure 13: Access into the school (Source: DJRD)

3.7 Transport mode share

Based on the 2016 Census data in Jindabyne (State Suburbs) 31.4% of people were attending an educational institution. Of these, 23.0% were in primary school, 22.4% in secondary school and 15.8% in a tertiary or technical institution.

The most common methods of travel to work for employed people are detailed below and shown in Figure 14:

- Car, as driver – 55.3%
- Walked only – 9.2%
- Car, as passenger – 8.8%
- Worked at home – 5.2%
- Train, car as driver – 1.4%
- Used public transport – 4.9%

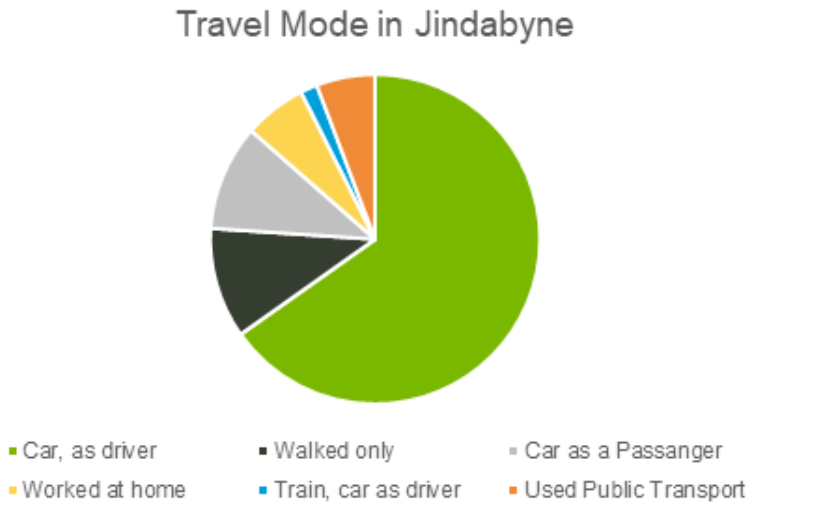


Figure 14: Travel to Work Mode in Jindabyne (Source: Census 2016)

3.7.1 Snowy Mountains Special Activation Precinct Upgrades

The Snowy Mountains Special Activation Precinct draft Master Plan proposes a shared path along Barry Way and through the green infrastructure zone east of the school. These two proposed shared paths will connect the school to the Town Centre, providing eastern and western access for students and staff. It is currently unknow when this shared path will be constructed. However it is a strong recommendation that these two shared paths are provided prior to the school opening.

There is also the provision of a dedicated pedestrian and cycle bridge, connecting Highview Estate to the Sport and Recreation Centre northern access, across the proposed Southern Connector Road. This bridge will be implemented prior to Day 1 2023, and will be critical in facilitating student walking and cycling access to the school.

No other transport measures are currently proposed which will impact access to the school.

4 Travel Demand

4.1 Travel mode scenarios

Taking into account of the current school travel scenario, and the existing transport infrastructure at the proposed school site, Table 4.1 outlines the three scenarios:

- Scenario 1 – Day 1. This scenario assumes that on Day 1 of school opening, only bus and vehicle access is available. This scenario assumes no walking and cycling infrastructure is provided for students, connecting the Town Centre to the school site
- Scenario 2 – Post Special Activation Precinct infrastructure. This scenario assumes that the Snowy Mountains SAP transport infrastructure is provided, creating accessible and safe walking and cycling connectivity from the Town Centre and key residential estates, connecting directly to the school site to promote walking and cycling
- Scenario 3 – Maximise walking and cycling access to school. This scenario aims to maintain current school travel modes, with more incentives for students to walk and cycle to school

The three scenarios have been workshopped with the School Infrastructure NSW project team and presented to the Transport Working Group for consultation.

Table 4.1: Travel mode scenarios

	Walk	Cycle	Bus	Vehicle
Scenario 1 – Day 1	-	-	30%	70%
Scenario 2 – Post SAP Infrastructure	5%	10%	30%	55%
Scenario 3 – Maximise Walking and Cycling	15%	20%	30%	35%

A further Worst Case scenario of 100% vehicle mode share access to the proposed school site has been undertaken, to show the likely traffic congestion impacts if Alpine Charters and Cooma Coaches were not able to organise adequate bus services for students.

This Worst Case scenario was presented to the Transport Working Group, with the key highlights:

- Worst Case occurs during the afternoon school pick up
- Assume pick-up is 1.2 students per vehicle based on future school demand of 925 students
- This results in 38 vehicles queuing outside the school
- This equates to 228m of queue, which is likely to extend onto Barry Way
- Significant queuing and congestion on Barry Way will have significant safety implications and will likely cause significant traffic delays for all vehicles travelling along Barry Way

In order to mitigate this Worst Case scenario, walking and cycling infrastructure, and bus services are required to support alternative modes of travel to the proposed school site.

4.2 Student travel mode

Student mode share targets are shown in Table 4.2, below. These targets are based on Scenario 3, which maximises walking and cycling access to school.

Regular travel mode surveys should be undertaken once the school is in operation, to establish a baseline figure for monitoring travel mode. Incentives should also be established to encourage students to walk, cycle or take the bus to school.

Table 4.2: Student mode share targets

Travel Mode	Student
Walk	15%
Cycle	20%
Public transport	30%
Car (as driver)	1% (this will only be Year 12 students)
Car (as passenger)	34%

4.3 Staff travel mode

Staff are encouraged to walk, cycle or car share to work. High amenity EOT facilities will be provided for staff. Additional transport incentives could be offered to staff to encourage walking, cycling, public transport and car share options.

Staff mode share targets are shown below in Table 4.3.

Table 4.3: Staff mode share targets

Travel Mode	Staff
Walk	15%
Cycle	20%
Public transport	-
Car share/ Car (as passenger)	15%
Car (as driver)	50%

4.4 Walking and cycling infrastructure improvements

To meet the travel mode targets outlined in Section 4.1, walking and cycling infrastructure is required to drive mode share towards active transport and achieve mode share targets for students and staff.

An analysis of shared path connectivity from Town Centre to the school site was undertaken, looking at three potential shared path options, shown in Figure 15, over page.

- Route A is a shared path along Barry Way, from Kosciusko Road to the school site
- Route B is a shared path following Park Road, Gippsland Road, to the Southern Connector Road pedestrian and cycle bridge, and connecting into the school site
- Route C is a shared path following Gippsland Road (on the eastern side of the Town Centre), to the Southern Connector Road pedestrian and cycle bridge, and connecting into the school site

Route B and C are split into two parts, before and after the Southern Connector Road bridge, to understand the uptake of students.

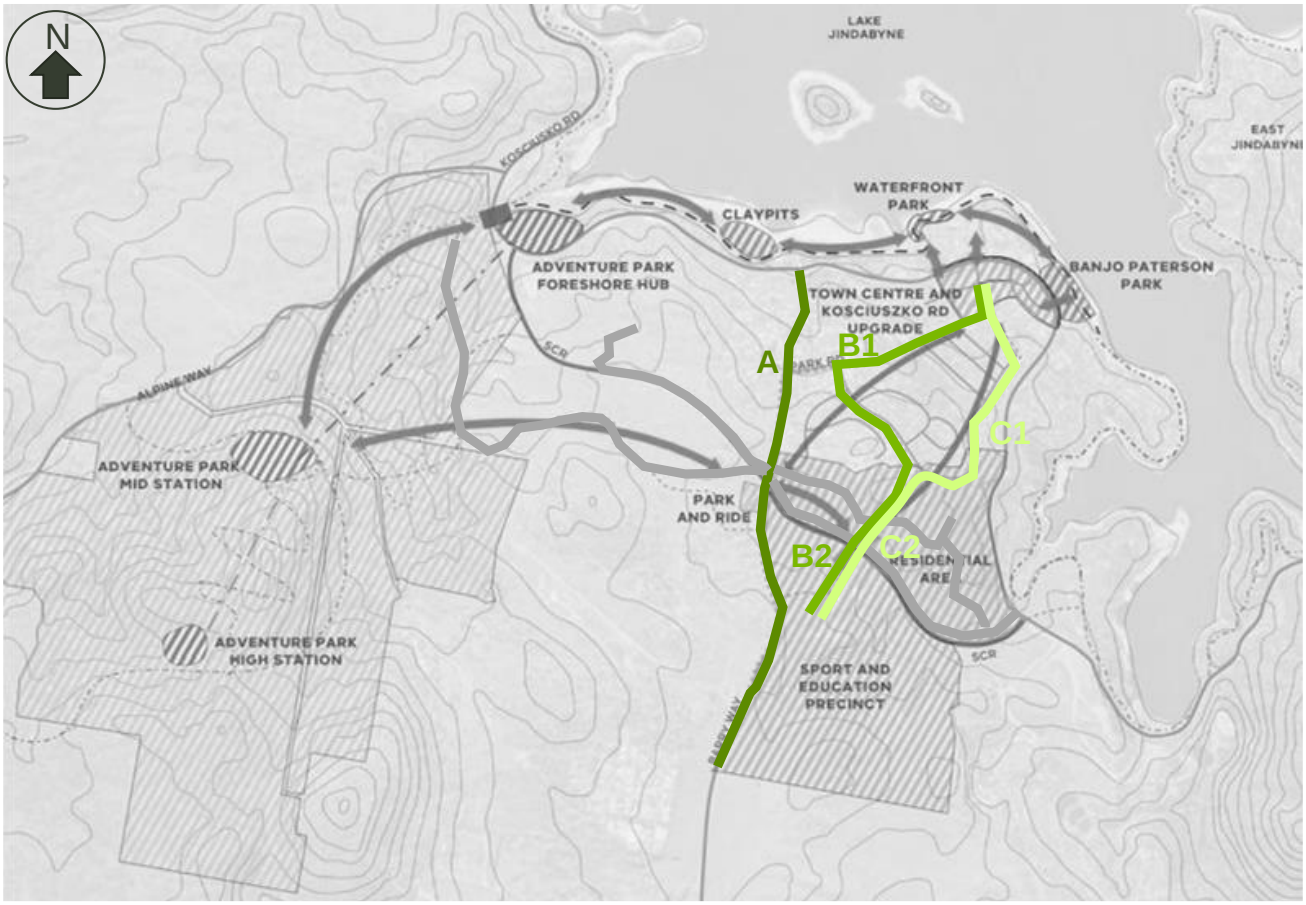


Figure 15: Shared path assessment

A 400m walking catchment along each route is assessed, with the results shown in Table 4.4.

Route B and Route C show higher student catchment demand. The provision of these two routes from the Town Centre to the school site will further encourage students to walk and cycle to school. These two route options are also located in existing residential areas, providing passive surveillance and safety for students walking and cycling to school.

Safe, signalised pedestrian crossings should be provided if students are required to cross high-volume intersections. Adequate street lighting and shelter should also be provided for student travel.

Table 4.4: Shared path 400m catchment assessment

	Route A	Route B1	Route C1	Route B2/C2
Primary School Students	31	98	90	40
High School Students	20	65	62	34
Total Students	51	163	152	74

The proposed Route B and C shared paths will need to be provided as part of the Snowy Mountains Special Activation Precinct or as part of future planning. These proposed shared paths will need to be constructed and in operation prior to the opening of the school, Day 1 2023.

4.5 Bus service improvements

Consultation with Alpine Charters and Cooma Coaches to assess bus capacity and optimised services has shown that there is capacity in current bus services to accommodate additional student bus use from the Town Centre.

The five key directions for student bus travel are shown in Figure 16, below.

- Cooma, Berridale and East Jindabyne (east)
- Perisher (northwest)
- Thredbo (southwest)
- Ingebirah and Moonbah (south)
- Lakewood Estate (southeast)

A possible bus service option is for Cooma, Berridale and East Jindabyne (east) bus services to loop around the Town Centre and pick up more students before arriving at the proposed school site. Buses from Ingebirah and Moonbah (south) and Lakewood Estate (southeast) can drop students at the school first, before looping around the Town Centre to pick up late students.

These options can be further developed as part of the School Transport Plan, once student enrolment and bus service demand are better understood.

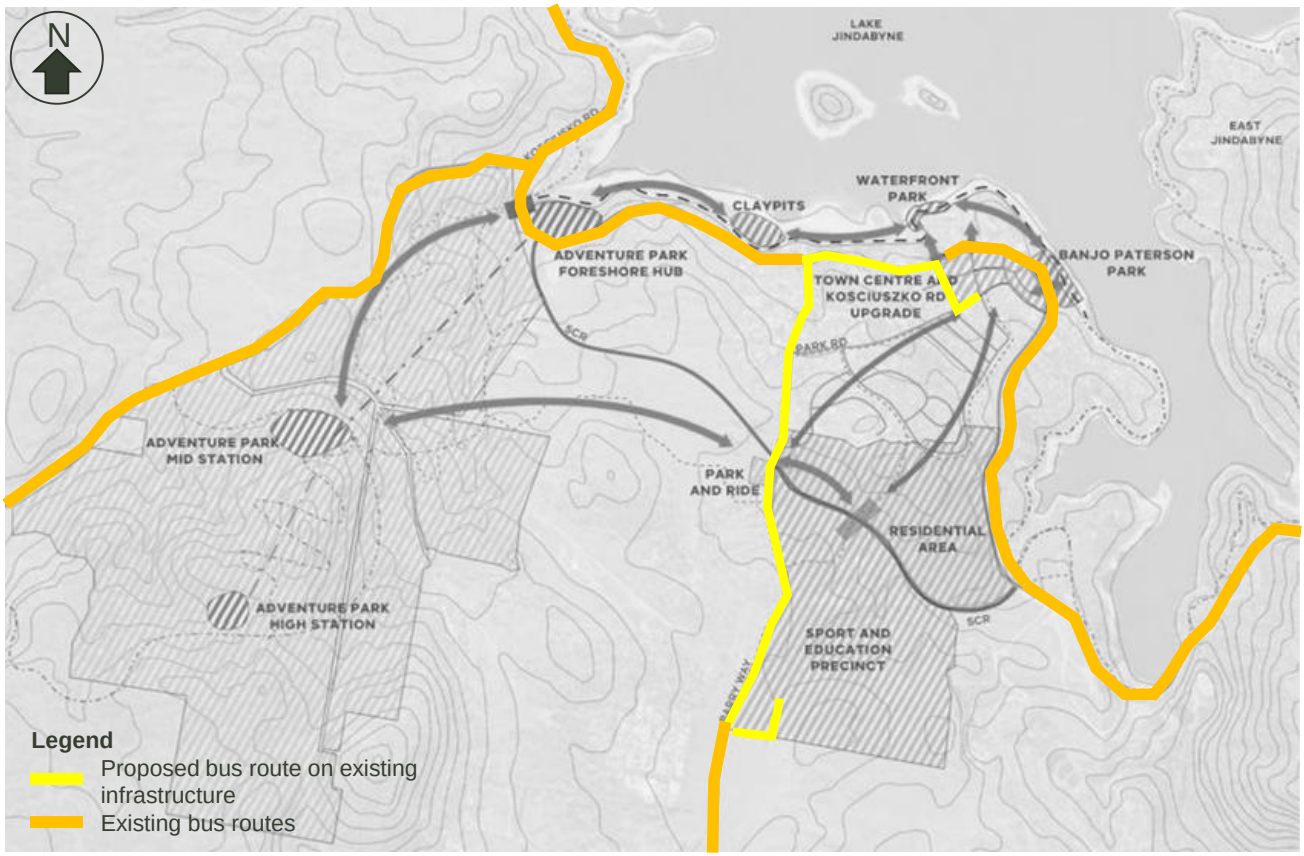


Figure 16: Proposed bus connectivity

Based on the 2020 student enrolment mapped against the a 800m bus route catchment, 216 students within the Town Centre may need to use the bus to travel to school. Assessment of the likely bus capacity for the five key bus directions is shown in Table 4.5, over page.

Based on current bus capacity of 85 passengers, an additional three buses are required to transport all 216 students from the Town Centre to the school. Based on the capacity of the existing bus services, it is likely that some buses can make an additional stop within the Town Centre to pick up students.

Table 4.5: Bus demand

	Town Centre	Cooma/ Berridale/ East Jindabyne	Ingebirah/ Moonbah	Lakewood Estate	Thredbo	Perisher
Primary School Students	126	78	40	25	12	3
High School Students	90	69	59	14	10	0
Total Students	216	147	99	39	22	3
Bus Demand	3	3	2	1	1	1

Detailed bus services and routes will be assessed as part of the School Transport Plan.

4.6 TAFE CLC Demand

As the DA for the TAFE CLC has recently been lodged, the transport characteristics of the development has been assessed based on DA documentation and the cumulative impact of the CLC and the proposed school development considered.

The CLC will be located to the south of the proposed site A single vehicular access driveway is proposed off the School Access road, which provides vehicle access to Barry Way. The CLC is expected to house approximately three staff and have a maximum of 25 students, with 11 on-site car parking plus one accessible car parking space provided. The following assumptions have been made to determine trip demand of the CLC development:

- TAFE will be operational by 2023 and operate at max capacity from year of opening
- TAFE mode share will match the mode share assumed of the proposed school. Therefore, the TAFE will generate:
  - Three staff at 80% car mode share, resulting in three additional trips in the AM and PM peaks
  - 25 students at 70% car mode share, resulting in 18 additional trips in the AM and PM peaks.
- Given the provision for 12 on-site parking spaces, it has been assumed that of the 21 additional trips generated in each peak:
  - 12 trips will arrive in the AM peak and leave in the PM peak (teachers and students driving to site)
  - Nine trips will arrive and leave in both AM and PM peaks (students being picked up and dropped off)

5 Transport Assessment

The below transport assessment findings are based on Scenario 1, Day 1, which provides a conservative performance of the school entrances from Barry Way, with 70% Kiss and Drop vehicle traffic and 30% bus mode share. Scenario 2 and 3 have reduced Kiss and Drop vehicle traffic mode share, which would result in better intersection performance.

5.1 Site transport infrastructure

5.1.1 Kiss and Drop

Based on Scenario 1, 70% of students are likely to use Kiss and Drop. The following assumptions have been made to assess Kiss and Drop demand:

- Assessment is based on future student demand, a total of 925 students
- Assume a capacity of 1.5 students per vehicle for pick up and drop off
- Assume Kindergarten and Year 1 students will require 15 minutes for pick up and drop off (assume 80 students based on 2020 enrolment data)
- All other students will require two minutes for Kiss and Drop

This results in the following:

- 26 spaces for 2 minute Kiss and Drop
- 27 spaces for 15 minute Kiss and Drop

A minimum total of 53 Kiss and Drop spaces are required. Recommend that the 15 minute Kiss and Drop spaces be located closer to the primary school area, as this is primarily used for Kindergarten and Year 1 students. Appropriate 15 minute signage is required to differentiate the longer Kiss and Drop spaces.

5.1.2 Year 12 and visitor parking

According to the DCP requirement of one bay for every ten Year 12 students a minimum of five spaces for Year 12 parking is required. This is based on the assumption that the average demand of Year 12 students is approximately 50 students. Due to the layout arrangement of Year 12 student parking, a total of six spaces will be provided.

Four spaces are provided for Visitor parking. Outside of the pick up and drop off peak times, visitors are able to park in the Kiss and Drop spaces.

5.1.3 Bicycle parking

Scenario 2 will require 93 bicycle spaces and Scenario 3 will require 185 spaces for students. A staged approach for bicycle spaces is recommended. This will enable the provision for bicycle parking to expand and meet demand, where required.

On Day 1 2023, recommend to provide 50 bicycle racks, with the additional bicycle racks to be provided as demand increases. Scooter and e-bike parking will be accommodated within the bicycle parking area.

EOT are recommended on site. The following provisions are recommended:

- Provide lockers to secure bike gear
- Bathroom and change rooms are required to include the following: toilet, wash basin and one shower per seven bicycle parking spaces. The proposed EOT is as follows:
  - Eight student showers and change rooms

- Two unisex staff showers and change rooms

- The EOT and bicycle parking should be installed near other facilities and be well connected to the cycling infrastructure within the school site

5.1.4 Bus bay

Based on optimised bus scheduling, and allowing for one contingency bus bay, a total of four bus bays are proposed. Each bus bay will be 20 metres long, and allow independent bus movement, which removes the need for bus platooning. This offers greater flexibility in bus movement.

The large majority of current school buses are run by Cooma Coaches (11 buses) and Alpine Charters has one bus service. The Cooma Coaches depot is located at Leesville Estate, which is approximately a 2 minute drive south from the school. Based on this proximity, there is a reduced need to provide further bus layover spaces at the school, thus reducing the total number of bus bays. The close proximity of the Cooma Coaches bus depot allows buses to be better coordinated from leaving the depot and arriving at the school for pick-up, which will be the worst case of bus bunching movement.

5.1.5 Staff parking

The proposed school design allows for 50 staff parking on site. This is more than the 20 staff parking spaces at the current school location.

With the additional high amenity walking and cycling infrastructure, it is likely that some staff will shift to active transport as their preferred mode choice to access the school. Staff will also be encouraged to car share with each other, which further reduces the need to provide parking spaces and achieves the Green Star rating.

5.2 Intersection performance

The school will be accessed via two roundabouts from Barry Way, shown in Figure 17 below:

- Northern roundabout connecting Barry Way and the internal school access road

- Southern roundabout at Barry Way and the internal school access road. The existing access into the Sport and Recreation Centre will be converted into a roundabout access

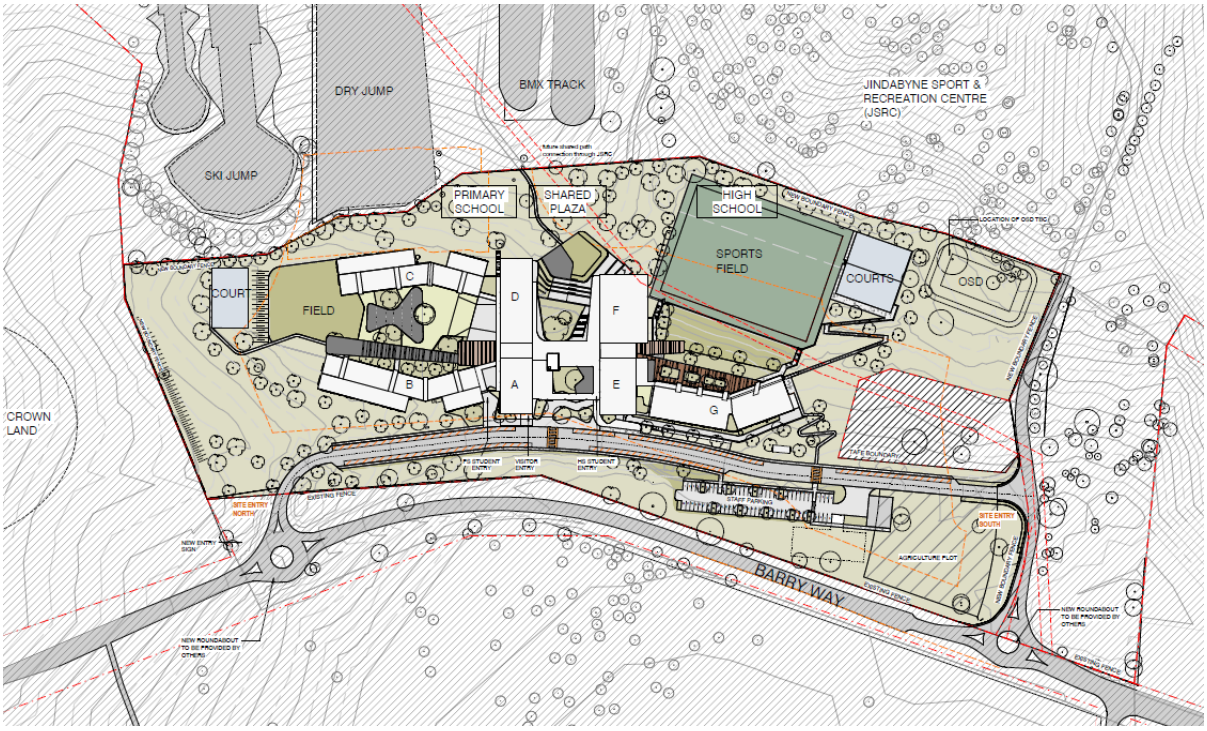


Figure 17: Intersection surrounding the site (Source: DJRD)

To ensure the proposed intersections are operating efficiently with the increased school traffic, intersection performance analysis was undertaken using SIDRA (version 9). All two key intersections are assessed.

SIDRA is a vehicle and model parameter software, used to assess vehicle movement and the performance of the intersection, according to industry standard guidelines for intersection queuing and congestion. Level of Service (LOS) criteria, as per the Highway Capacity Manual definition, are used to access the performance of each intersection, with LOS A being a low level of delay, to LOS F being a high level of delay.

Barry Way traffic volumes and the wider network traffic volumes yearly growth used in the SIDRA model were based on Snowy Mountain SAP Concept Design Operational Traffic Model Traffic and Transport Assessment Report (GTA 2021), all other assumptions on traffic growth, generation and distribution are outlined below in Table 5.1.

The traffic volumes used for the traffic growth factors for Barry Way were sourced from Snowy Mountain SAP Concept Design Operational Traffic Model Traffic and Transport Assessment Report, developed by GTA in June 2021.

Traffic generated by the TAFE CLC development, as derived in Section 4.6, have been considered additively onto network traffic from the year 2023 onwards. Traffic generated by the CLC will be via the southern roundabout between Barry Way and internal school access road, and are subject to the same distribution patterns outlined in Table 5.1.

Table 5.1: SIDRA transport modelling assumptions

Assumptions
10%of the Barry Way traffic stream are Heavy Vehicles
Opening year 2023
Students and staff numbers remain unchanged for the opening year and the future year 2033
70% of students get dropped off and picked up
80% of staff drive there and back in their own vehicle
50% of entering traffic comes from north
50%of exiting traffic leaves to north
50%of entering traffic comes from south
50% of exiting traffic leaves to south

5.2.1 Existing intersection

Barry Way has approximately 3,000 vehicles per day based on traffic survey conducted in July 2019 at the intersection of Barry Way/ Nettin Circuit. Table 5.2, over page, shows the peak hour volumes on Barry Way during the peak season (July 2019) and off season (May 2019).

Based on midblock lane capacity, as a two lane road, Barry Way has a capacity of 3,400 vehicles per hour (1,700 pcu, per hour per lane based on Highway Capacity Manual 2016). The July 2019 peak hour volume during the peak season is under 800 vehicles per hour. There is sufficient capacity within Barry Way to accommodate future school traffic.

There are no intersections on Barry Way within the vicinity of the school site apart from the T-intersection to the existing Sport and Recreation Centre. Due to the low traffic volumes generated by the side road, no Base Model was created for the intersection. A SIDRA assessment was carried out for the proposed intersections for the opening year (2023) and a future ten years, 2033.

Table 5.2: Barry Way peak hours traffic volumes

	May 2019		July 2019	
	AM Peak	PM Peak	AM Peak	PM Peak
Barry Way Northbound	228	167	468	242
Barry Way Southbound	113	211	140	478

5.2.2 2023 and 2033 intersection performance

Each intersection was assessed during the AM peak and PM peak for the opening year 2023 and future year of 2033. The results of the analysis show that both intersections are operating to LOS A/ B under the 2023 and 2033-year scenario.

Summary of the results is shown below in Table 5.3 for the 2023 year assessment, and

Table 5.4, over page, for the 2033 year assessment.

Table 5.3: 2023 SIDRA transport modelling results summary

Intersection	Approach	Degree of Saturation		Average Delay (s)		Level of Service		Queue (m)	
		AM	PM	AM	PM	AM	PM	AM	PM
Northern Roundabout	**S**	0.336	0.405	4.1	4.3	LOS A	LOS A	18.1	24.2
	E	0.285	0.377	0.9	2.7	LOS A	LOS A	13.7	18.8
	N	0.208	0.201	6.0	5.0	LOS A	LOS A	11.1	10.7
	Overall	0.336	0.405	4.0	4.2	LOS A	LOS A	18.1	24.2
Southern Roundabout	**S**	0.513	0.564	14.1	13.3	LOS B	LOS B	34.8	41.4
	E	0.377	0.515	2.4	5.6	LOS A	LOS A	21.2	34.3
	N	0.340	0.556	6.0	7.2	LOS A	LOS A	18.0	38.9
	Overall	0.513	0.564	8.7	9.3	LOS A	LOS A	34.8	41.4

Table 5.4: 2033 SIDRA transport modelling results summary

Intersection	Approach	Degree of Saturation		Average Delay (s)		Level of Service		Queue (m)	
		AM	PM	AM	PM	AM	PM	AM	PM
Northern Roundabout	**S**	0.353	0.431	4.2	4.4	LOS A	LOS A	19.4	26.7
	E	0.290	0.390	1.0	3.0	LOS A	LOS A	14.0	19.5
	N	0.208	0.223	5.9	4.9	LOS A	LOS A	11.1	12.3
	Overall	0.353	0.431	4.0	4.3	LOS A	LOS A	19.4	26.7
Southern Roundabout	**S**	0.530	0.582	13.8	12.9	LOS B	LOS B	36.9	43.7
	E	0.383	0.515	2.6	5.6	LOS A	LOS A	21.5	34.2
	N	0.354	0.550	6.0	7.0	LOS A	LOS A	19.0	38.0
	Overall	0.530	0.582	8.7	9.1	LOS A	LOS A	36.9	43.7

Appendix A details the SIDRA performance of each intersection.

5.3 Road safety

A review of the Transport for NSW Centre for Road Safety database has been undertaken to establish the crash history within the immediate vicinity of the school site over a five year period between 2014 to 2019. This is shown in Figure 18, below.

In 2019, there was one fatal crash during the day time. Along Barry Way, minor, moderate and non-casualty crashes have been reported over the five year period.

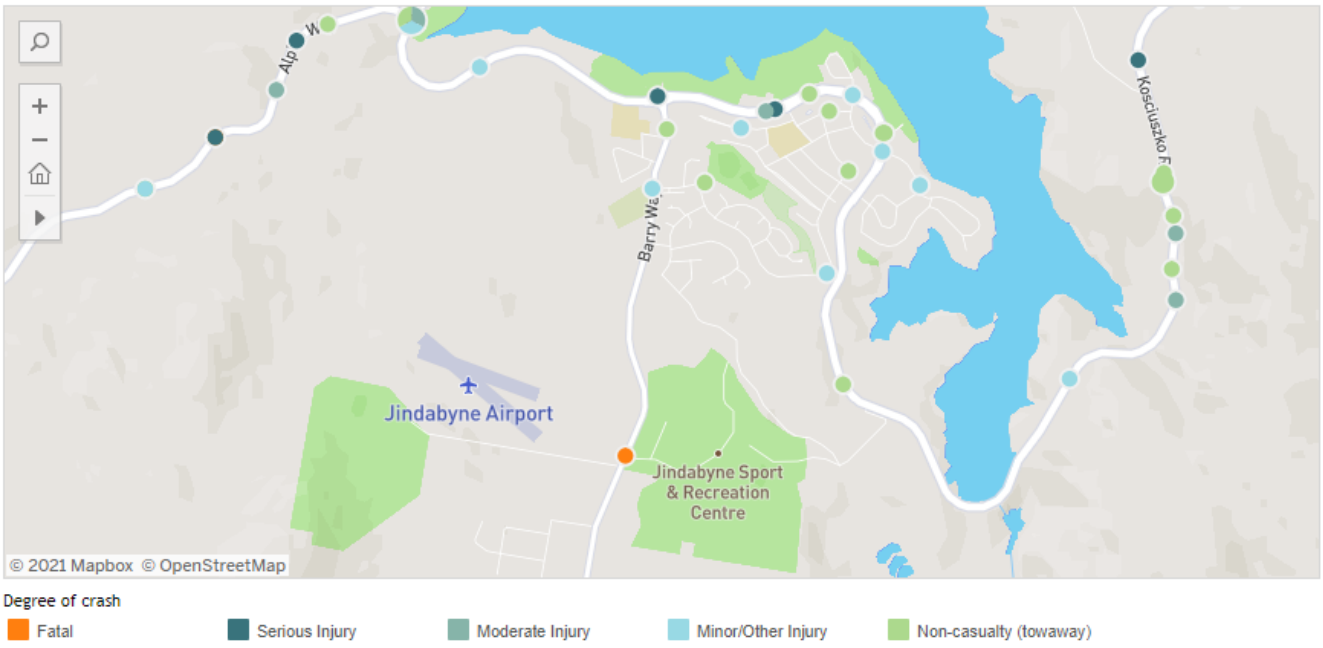


Figure 18: Snowy Monaro crash map (Source: Centre for Road Safety, Transport for NSW)

6 School Site Layout

6.1 Active transport

A safe and attractive shared path will directly connect the Town Centre into the school. The shared path will be accessible from Highview Estate, using the pedestrian and cycle bridge over the future Southern Connector Road, and through the Sports and Recreation Centre. Students and staff will enter the school via the eastern side. The shared path will connect directly to the bicycle, scooter and e-bike parking facilities.

The internal school road will have a posted 10km/h speed limit and there will be two raised pedestrian crossings to assist children to safely cross the road.

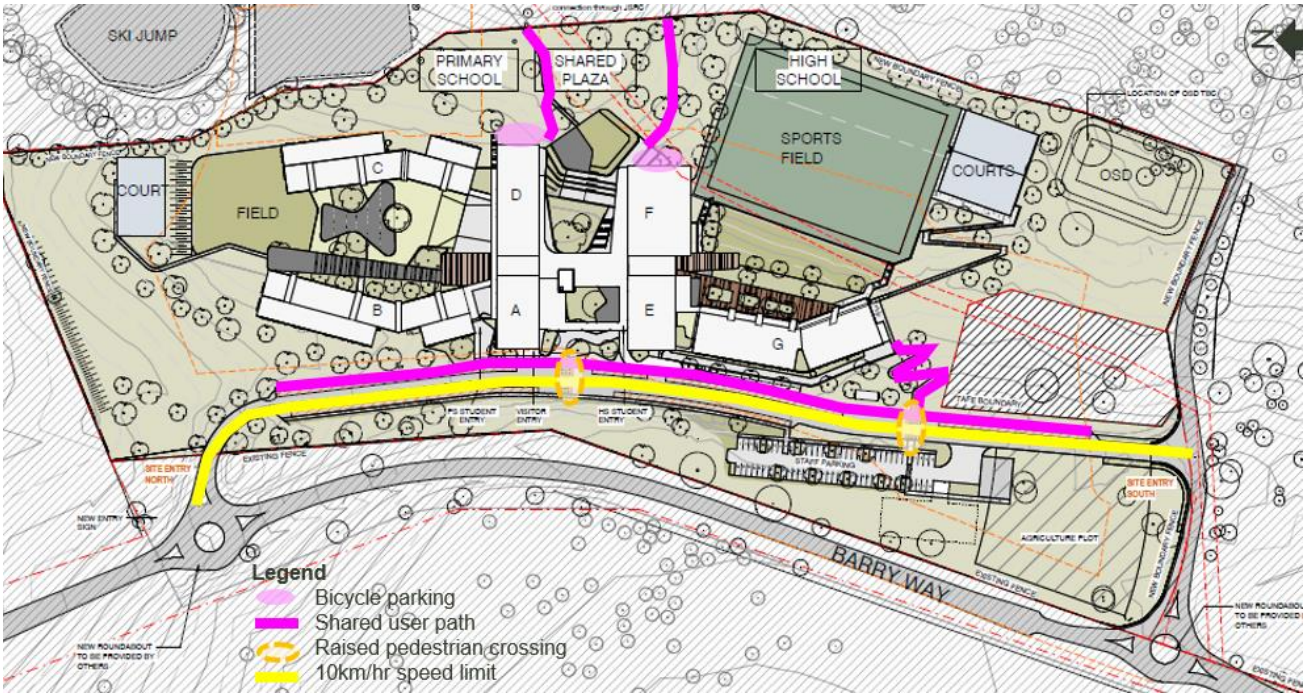


Figure 19: Active transport site access

6.2 Public transport

Four bus bays will be located directly outside the front of the school, within close proximity to the primary school and high school building. This provides a home door to school door service for students taking the bus to school.

Buses will enter into the school from the northern roundabout and exit via the southern roundabout. This one directional movement will provide priority for buses. This is shown in Figure 20, below.

Bus stops will have bus shelters and seating, to cater for students waiting for the bus under all types of weather conditions.

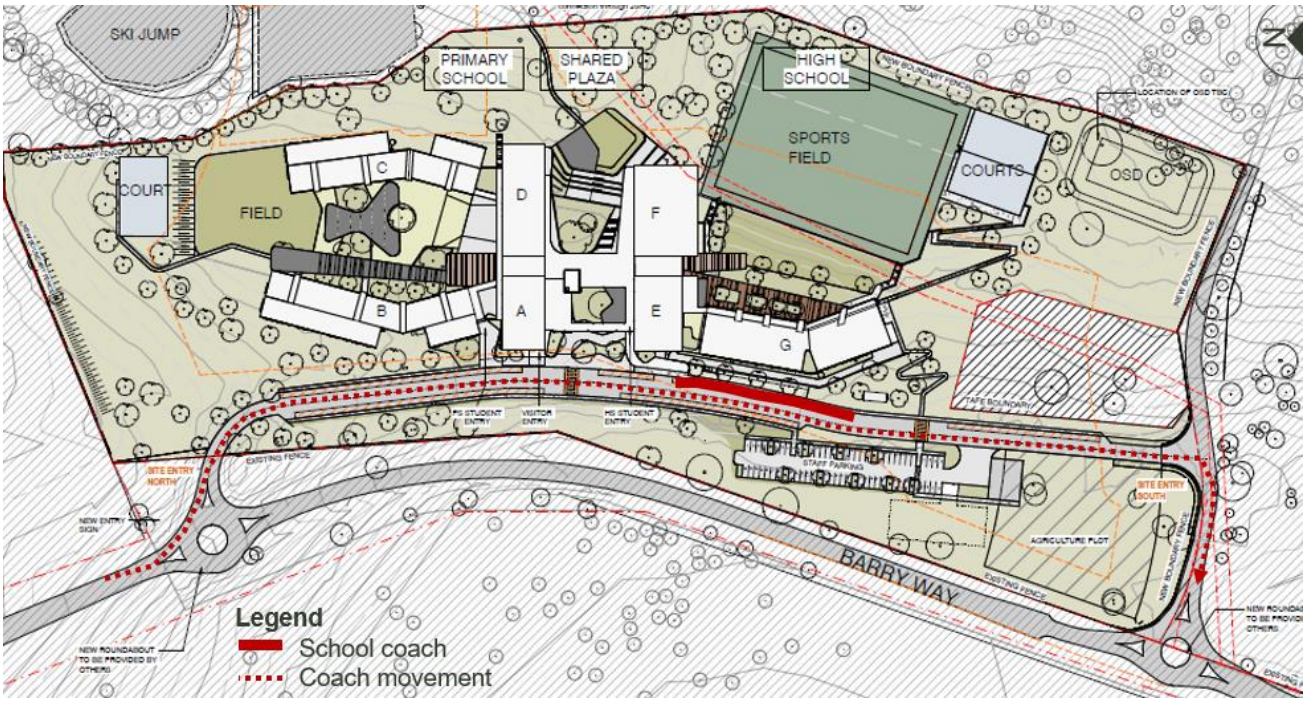


Figure 20: Public transport access

6.3 Vehicle access

Vehicles will enter into the school from one of two roundabouts along Barry Way – one roundabout to the north of the school site and one roundabout to the south of the school site.

Figure 21, over page, shows the vehicle access and Kiss and Drop for the proposed school site and internal access road.

- 53 Kiss and Drop spaces will be provided on both sides of the internal school road
  - Spaces for Kindergarten and Year 1 students will be provided closest to the main school entry
- Visitor parking is provided near the School Administration building, just before the bus bays. Of the four Visitor Spaces provided, two spaces will have EV charging facilities
  - EV spaces will give priority use to EV vehicles, but will not be only limited for EV vehicle use
- Two DDA spaces located directly outside the School Administration Office
- Staff parking is provided in a separated location away from the internal school road. Total of 50 staff spaces provided with four spaces fitted with EV charging facilities
  - EV spaces will give priority to staff EV vehicles, but will not only be limited for EV vehicle use

- Year 12 student parking is provided adjacent to the staff parking

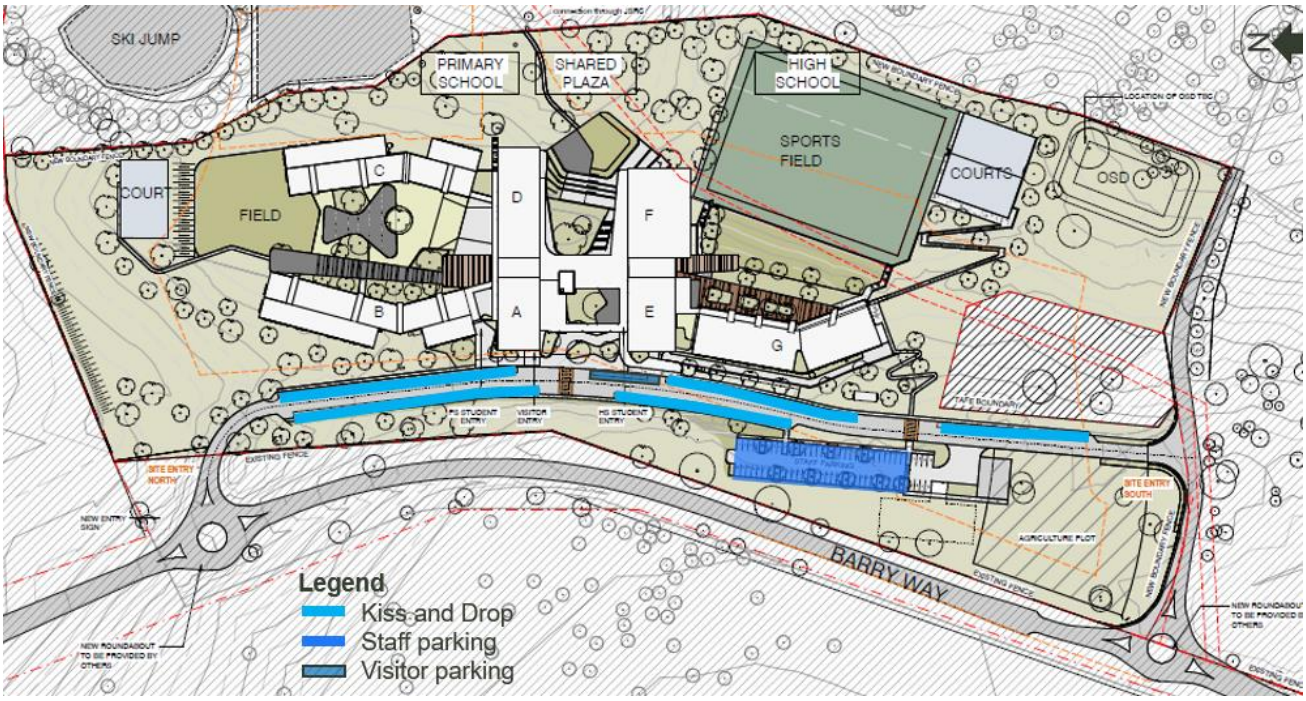


Figure 21: Vehicle access and internal school road parking layout

The design vehicle for the proposed school access is Class 9 vehicle as classified in Austroads Guide for Road Design. A swept path analysis has been undertaken for the following vehicles. There are no access issues for these vehicle types within the internal school road and at the roundabouts.

- 12.5m school bus
- 8.8m waste vehicle
- 5.2m private car

Detailed swept path assessment is shown in Appendix B. Refer to the Operational Waster Management Plan (Elephant's Foot Recycling Solutions, July 2021) and the Preliminary School Transport Plan for detailed understanding of waste vehicle movement.

6.4 Other transport infrastructure considerations

As highlighted earlier in this report, the Sport and Recreation Centre will sit to the east of the school site. The TAFE is also proposed to sit southeast of the school site. Both the Sport and Recreation Centre and the TAFE will share the southern Barry Way roundabout access with the school.

Given the different peak operation times for the Sport and Recreation Centre and the TAFE, it is unlikely that the traffic generated from these two sites will significantly impact the peak AM and PM school drop off and pick up traffic.

6.5 Transport encouragement programs

To increase the uptake of walking, cycling and public transport access to school for students, the following are recommended transport encouragement programs:

- SSTS tap on
- New starter kit with transport policies, transport access options for student induction (prep and mid-term new starters)

- Independent travel training to walk/ ride or travel with a buddy (after Year 4)
- Walk to School day and Walk Part Way to School programs
- Ride to School day
- Walk and Wheel Wednesdays (an example from City of Sydney)
- RideScore (an example from We Ride Australia and Sunshine Coast Council)
- GoGet sign up
- Carpool matching app/ incentives
- Remote car parking
- Remote kiss-and-drop
- Road safety
- A working group with school leadership, Road Safety Education Officer, students, teachers, parents/ carers and neighbours (PRG generated programs)

6.5.1 Communication plan

A communication plan is required to model best practice, access systems, outline operational methodology, provide civic participation opportunities, and grow local community responsibility. It is important that this communication plan is well communicated with the local community and has buy-in support from stakeholders.

6.5.2 Data collection and monitoring

Regular data collection and monitoring is recommended, especially to achieve the student and staff mode share targets. This will be key to realise the transport goals and objectives and enable policy implementation to occur to mitigate unplanned behaviour or mode share.

Regular monitoring will also allow mode share targets to evolve and complement technology. Buy in and endorsement from parents and the surrounding community will likely increase successful mode share target achievement.

The data collection for this school site can be established by:

- Staff and student travel demand and transport use (annual Journey to School questionnaires)
- Transport access and use audit. It is recommended to conduct the first audit after three months as the site is new and the user travel behaviours will stabilise within the three months

7 Preliminary Construction Traffic Management Plan

This Preliminary Construction Traffic Management Plan (Preliminary CTMP) outlines principles that shall be adopted by the appointed contractors for the project and is subject to a detailed Construction Traffic Management Plan (CTMP) that forms part of a Construction Management Plan (CMP) to be prepared and commissioned by the incumbent contractor.

The proposed construction program is 12 months.

7.1 Principles of construction traffic management

The overall principles of traffic management during construction activities include:

- Minimising the impact on pedestrian and cyclist safety and movements
- Maintaining appropriate public transport and school bus access
- Minimising the impact to existing traffic on adjacent roads and intersections
- Minimising the loss of on-street parking
- Maintaining access to / from adjacent properties
- Restricting construction vehicle movements to designated routes to / from the site
- Managing and controlling construction vehicle activity near the site
- Ensuring construction activity is carried out in accordance with Council's approved hours of work

7.2 Contractor parking

Limited on-site parking will be available to construction contractors on the south-west corner of the school site.

The incumbent contractor will be required to ensure contractors working on the project are aware of the limited on-site parking. Where possible, car share for construction workers is encouraged.

7.3 Proposed work hours

The construction work will vary depending on the phase of construction and associated activities. Construction works however will be undertaken during standard construction-working hours listed below.

- Monday to Friday: 7:00am to 6:00pm
- Saturday: 8:00am to 1:00pm
- Sunday and Public holidays: No planned work

There may be necessary to undertake night works or obtain additional road occupancy licences for Barry Way. If this is required, it is the responsibility of the contractor to obtain approval from Snowy Monaro Council.

7.4 Staging and duration

The proposed construction program is 12 months. This will involve the following construction activities:

- Earthworks
- Service infrastructure
- Prefab DFMA erecti9on on site
- Convention construction for the school hall and library
- Fitout, landscaping and internal driveway

The incumbent contractor will provide a detailed construction staging program.

7.5 Worker induction

All workers and subcontractors engaged on-site would be required to complete a site induction. The induction should include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, work, health and safety (WHS), driver protocols and emergency procedures.

Any workers required to undertake works or traffic control within the public domain would be suitably trained and covered by adequate and appropriate insurances.

7.6 Authorised traffic controller

If there is a requirement for authorised traffic controllers to be present throughout the demolition, and construction stages of the project, there responsibilities include:

- Pedestrian and cyclist management, to ensure that adverse conflicts between vehicle movements and pedestrians do not occur
- Supervision of all vehicle movements
- Supervision of all loading and unloading of construction materials during the deliveries in the construction phase of the project

7.7 Construction traffic volumes

Construction traffic will generally involve prime movers and low loaders up to 26 metres and semi-trailers and Truck and Dog up to 20 metres, for the removal of spoil and transportation of material.

Barry Way is an approved Oversize Overmass load carrying vehicle route, Figure 22, over page. There will be no issues with the proposed construction traffic using Barry Way to access the school site. If additional road occupancy permits are required, additional permits are to be approved by Snowy Monaro Council.

The maximum number of trucks access the site is estimated to be between four to 12 trucks per hour, depending on the works undertaken and type of material required on-site. This will be confirmed by the engagement of the incumbent contractor.

It is anticipated that there will be an average of 50 workers on-site during peak construction activities. Workers will be advised that there is limited on-site parking and encouraged to car pool with other workers. Where practical, it is the responsibility of the contractor to provide shuttle bus services for the workers due to limited on-site parking.

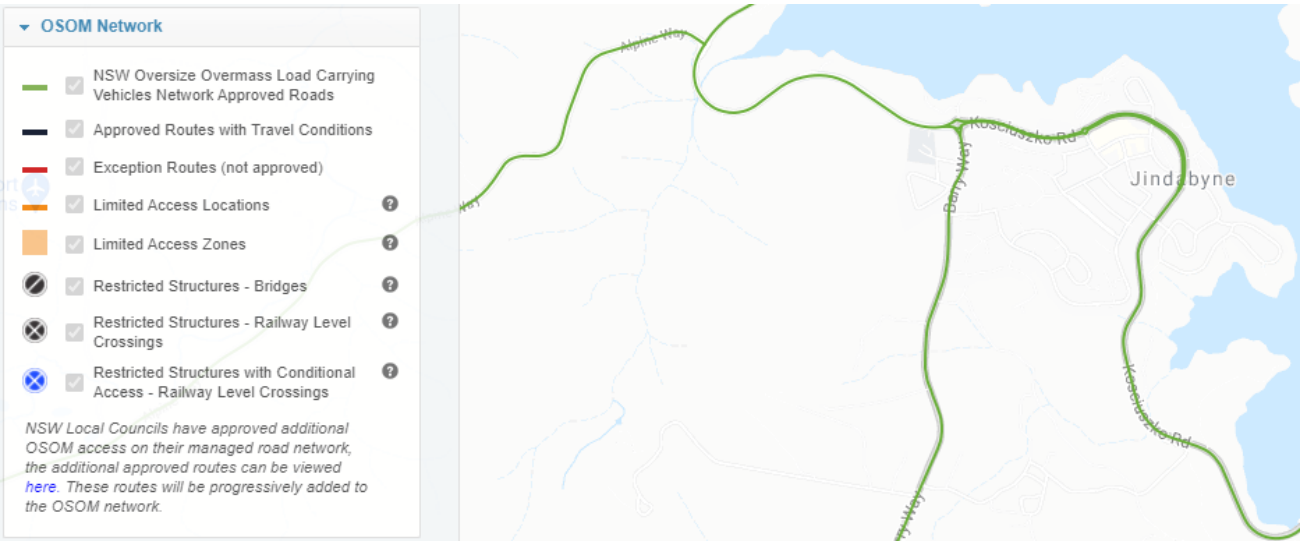


Figure 22: NSW Oversize Overmass route (Source: Transport for NSW)

7.8 Site access

Construction vehicles accessing the site are expected to travel in a forward-in and forward-out direction using the Sport and Recreation Centre road and exiting onto Barry Way.

7.9 Construction mitigation measures

Construction activities described above is likely to generate moderate increase in traffic on the surrounding road network. In this regard, the following measures should be undertaken to minimise the impacts of the construction activities:

- A construction fence will be provided along Barry Way adjacent to the site and off of the shared road with the Sport and Recreation Centre
- The construction fence will consist of a chain wire fencing along the site boundaries, that will be maintained for the duration of the construction program
- It is expected that the construction fencing is to be located as close as possible to the property boundary
- Traffic control may be required to manage and regulate traffic movements into and out of the site during construction, with pedestrian priority provided during peak hour periods at the Sport and Recreation Centre, to reduce any conflict between pedestrians and construction vehicles
- Disruption to road users would be kept to a minimum by scheduling intensive delivery activities outside of peak network hours
- Supervised traffic control will be required where two-way flow is restricted over any length of the shared roadway with the Sport and Recreation Centre

7.10 Pedestrian and cyclist management

There is very limited pedestrian and cyclist activity at the construction site, as a result of no available walking and cycling paths connecting to the site.

However, since the construction site is adjacent to the Sport and Recreation Centre, traffic controllers may be required to monitor any potential conflicts between construction vehicles and pedestrians and cyclists during peak Sport and Recreation Centre times.

Construction fencing will be provided around the perimeter of the site and shall be documented in the Project's Construction Management Plan.

If required, traffic controllers will be present at the site accesses to manage pedestrian and vehicular traffic to ensure public safety while construction vehicles enter and exit the site. Traffic controls would need to be in accordance with AS1742.3 and RMS 'Traffic Control at Worksites' manual at all times.

Should any unforeseen activities require the temporary closure of any existing pedestrian access to the Sport and Recreation Centre, a traffic guidance scheme (TGS) should be developed and implemented by the contractor to ensure a safe alternative for pedestrians traversing these routes in the vicinity of the site.

7.11 Truck routes

It is proposed that construction vehicles enter and exit the construction site via Barry Way and the Sport and Recreation access road, shown by the blue lines in Figure 23, below. A copy of the truck route maps shall be provided to all drivers prior to attending the construction site.

The access and egress routes are to be utilised by all construction vehicles associated with the site and represents the shortest route between the local and regional road network – hence minimising the impacts of the construction process. No trucks are to be queued on local roads. Mobile phones and two-way radios will be used to coordinate truck arrivals.

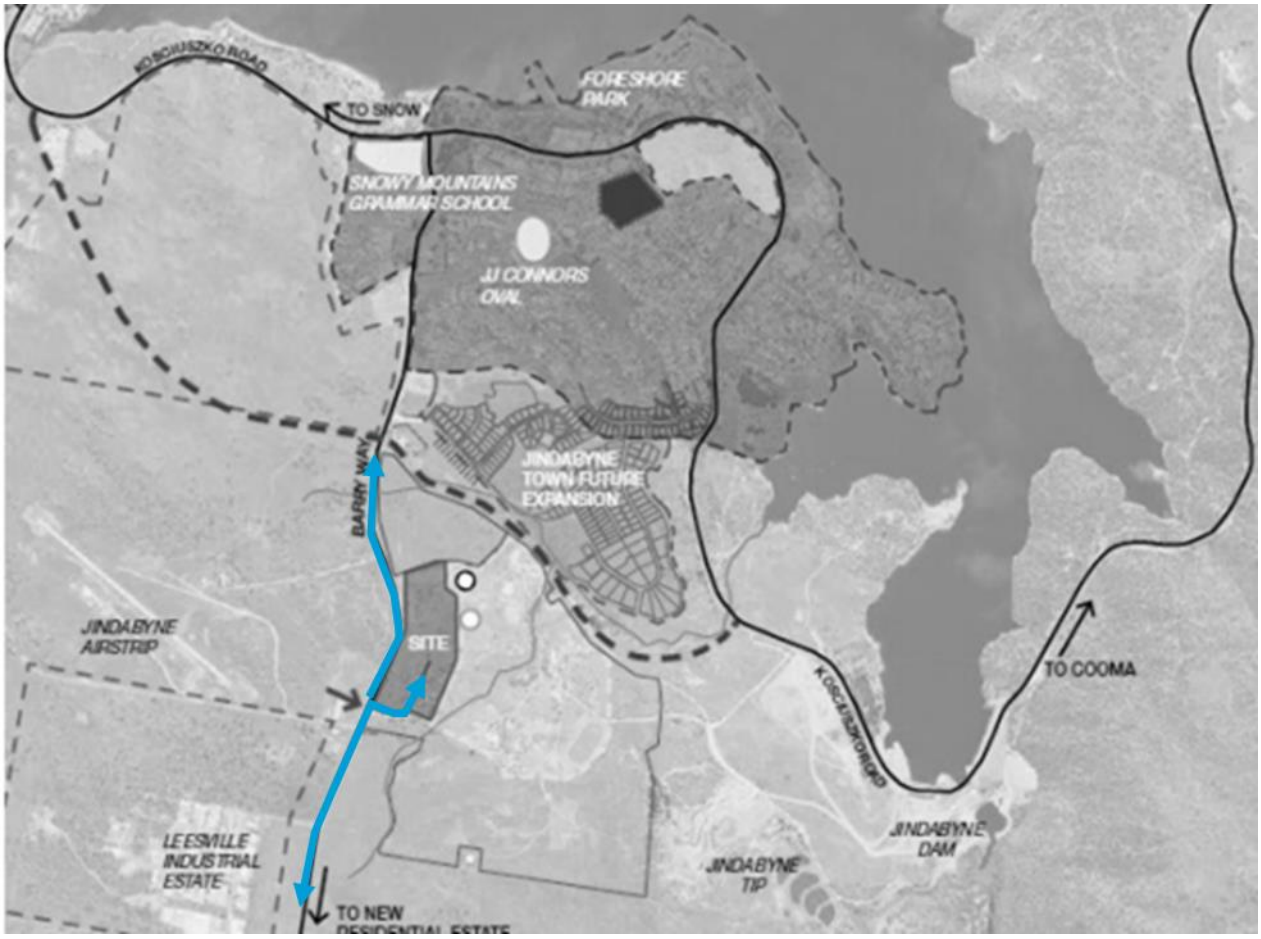


Figure 23: Construction vehicle route map

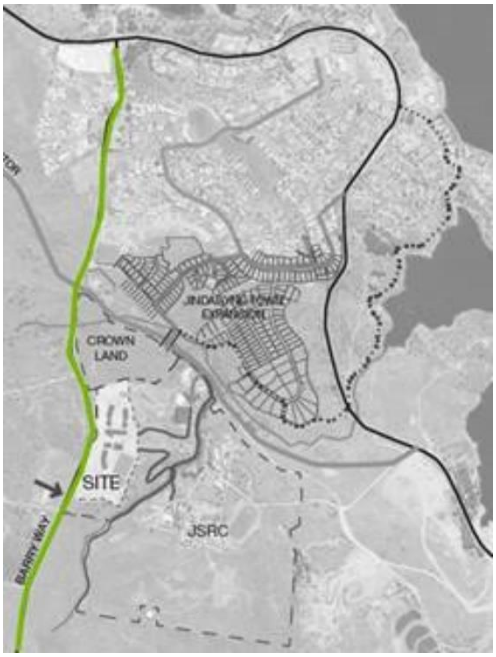
8 Infrastructure to be Delivered by Other Public Authorities

The Snowy Mountains SAP proposes a number of new and upgrades to existing transport infrastructure in order to support the Snowy Mountains SAP vision and master plan.

SINSW has been working in collaboration with the Department of Regional NSW, the Regional Growth Development Corporation (RGDC) and the Department of Planning Industry and Environment (DPIE) to ensure transport infrastructure to be delivered under the Snowy Mountains SAP is sufficient for the needs of the education campus.

The following transport infrastructure is necessary to provide safe access to the education campus for students and the community. These works are to be delivered separately to this EIS by the public authorities outlined in the table below prior to the opening of the education campus in 2023.

Table 8.1: Infrastructure to be delivered by other public authorities

Item	Required Infrastructure	Image	Responsibility
1	**Shared Path along Barry Way** A 3.0m wide shared path connecting the Town Centre to the school, from the north, and from Snowy River Way to the school, from the south, is required to provide access for students and school staff. The shared path will need to be safely located along Barry Way, preferrable with at least 1.0m of separation and will require the speed of Barry Way to be reduced to 50km/h. Approximate length of shared path is 4.5km. The intersection of Barry Way and the future Southern Connector Road is recommended to be a signalised intersection, to allow students to safely cross the intersection and access the school. Appropriate lighting and passive surveillance is required along the shared path to provide safety to students.		Snowy Mountains Special Activation Precinct – this is in the master plan.

Item	Required Infrastructure	Image	Responsibility
2	**Pedestrian and Cycle Bridge** A pedestrian and cycle bridge connecting the Town Centre and Highview Estate to the school is required to allow student and school staff access into the school. Adequate lighting and shelter is required along the bridge and leading up to the bridge.		Snowy Mountains Special Activation Precinct – this is in the master plan.
3	**Shared Path from Sports and Recreation Centre into the School** A 3.0m shared path along the north of the Sports and Recreation Centre, connecting east into the school is required. Approximate length of shared path is 850m. Appropriate lighting and shelter for students and school staff are required.		Snowy Mountains Special Activation Precinct – this is in the master plan.

Item	Required Infrastructure	Image	Responsibility
4	**Shared Path Route B1 and C1** A 3.0m shared path along Park Road and Gippsland Street is required to allow safe access for students and school staff from the Town Centre to the school. Since Park Road and Gippsland are existing residential streets and currently have footpath access, recommendations to monitor the quality of the footpaths and to provide pedestrian crossings along key intersections will improve student and school staff safety. Approximate length of shared path for the total of B1 and C1 is 3.2km. Appropriate lighting and shelter will need to be reviewed and provided, where lacking.		This could be Snowy Mountains Special Activation Precinct.
5	**Upgrade Existing Cycleway along Snowy River** A 3.0m formal shared path can be created along the existing gravel and narrow cycleway access following the Snowy River. This shared path access into the school provides a flatter journey for students and school staff. Adequate lighting and shelter is required along the shared path. Approximately 2.5km of shared path to be upgraded. Additional traffic measures, i.e. signalised intersection with pedestrian crossing, an overpass or an underpass, at the intersection of this shared path with Kosciusko Road is required.		This could be Snowy Monaro Council, since there is an existing gravel cycle path currently maintained by Snowy Monaro Council.

Item	Required Infrastructure	Image	Responsibility
6	**Northern and Southern Roundabout along Barry Way** A northern roundabout and access off Barry Way into the school is required to allow the school to have dual access. The current access into the Sport and Recreation Centre, off Barry Way, will need to be converted into a roundabout to allow ease of access from exiting vehicles and buses from the school. To accommodate the northern and southern roundabout, both verges of Barry Way will need to be flattened and a distance of 80.0m leading up and from the roundabout will need to be kept clear of any vertical obstruction. The speed of Barry Way at this location is reduced to 50km/h.		This could be Snowy Mountains Special Activation Precinct, noting that Barry Way is a regional road.

9 Key Findings

The proposed school site will need appropriate investment in walking and cycling infrastructure to provide students with safe and accessible active transport option to travel to school, as detailed in Section 8.0 and listed below. The proposed school site is currently severely lacking appropriate walking and cycling infrastructure. It is a risk on Day 1 of school opening if appropriate walking and cycling infrastructure is not provided.

- Shared path along Barry Way, including the reduction of speed to 50km/h
- Pedestrian can cycle bridge crossing the proposed Southern Connector Road
- Shared path from the Sports and Recreation Centre into the school
- Shared path Route B1 and C1, described in Section 4.4s and 8.0
- Upgrade existing cycleway along Snowy River
- Northern and southern roundabout access into the school along Barry Way

Bus services and operation will also need to be discussed with Alpine Charters and Cooma Coaches to understand additional bus services to pick up students within the Town Centre. Current consultation with both Alpine Charters and Cooma Coaches has yielded positive feedback and a mindset to collaborate and provide appropriate bus services to students on Day 1 2023.

The proposed school layout will accommodate the following transport infrastructure:

- 9.5 hectares of school space
- Shared path access to and from the school
- 50 bicycle spaces initially, including space for scooter and e-bike parking
- Eight student end of trip facilities (EOT)
- Two staff EOT
- Four bus bays located adjacent to the primary and high school buildings
- Two DDA spaces
- Total of 113 parking spaces
  - 53 Kiss and Drop spaces
  - Four visitor spaces
  - Six spaces for Year 12 student parking
  - 50 staff parking spaces
- Out of School Hours (OOSH) service through a third party provider

Appendix A – Intersection Performance Analysis Details

Opening Year 2023

Northern roundabout AM peak

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barry Way (S)														
2	T1	353	10.0	372	10.0	0.336	4.1	LOS A	2.4	18.1	0.48	0.48	0.48	47.4
3	R2	1	10.0	1	10.0	0.336	18.7	LOS B	2.4	18.1	0.48	0.48	0.48	16.6
Approach		354	10.0	373	10.0	0.336	4.1	LOS A	2.4	18.1	0.48	0.48	0.48	47.2
East: Campus Access Road North (E)														
4	L2	162	10.0	171	10.0	0.285	0.9	LOS A	1.8	13.7	0.36	0.20	0.36	16.1
6	R2	162	10.0	171	10.0	0.285	0.9	LOS A	1.8	13.7	0.36	0.20	0.36	16.3
Approach		324	10.0	341	10.0	0.285	0.9	LOS A	1.8	13.7	0.36	0.20	0.36	16.2
North: Barry Way (N)														
7	L2	344	10.0	362	10.0	0.208	7.1	LOS A	1.5	11.1	0.02	0.74	0.02	16.3
8	T1	113	10.0	119	10.0	0.090	2.7	LOS A	0.5	4.1	0.02	0.32	0.02	49.1
Approach		457	10.0	481	10.0	0.208	6.0	LOS A	1.5	11.1	0.02	0.63	0.02	19.5
All Vehicles		1135	10.0	1195	10.0	0.336	4.0	LOS A	2.4	18.1	0.26	0.46	0.26	22.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Northern roundabout PM peak

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barry Way (S)														
2	T1	418	10.0	440	10.0	0.405	4.3	LOS A	3.2	24.2	0.55	0.51	0.55	47.2
3	R2	1	10.0	1	10.0	0.405	18.9	LOS B	3.2	24.2	0.55	0.51	0.55	16.5
Approach		419	10.0	441	10.0	0.405	4.3	LOS A	3.2	24.2	0.55	0.51	0.55	47.0
East: Campus Access Road North (E)														
4	L2	172	10.0	181	10.0	0.377	2.7	LOS A	2.5	18.8	0.60	0.46	0.60	16.0
6	R2	172	10.0	181	10.0	0.377	2.7	LOS A	2.5	18.8	0.60	0.46	0.60	16.2
Approach		344	10.0	362	10.0	0.377	2.7	LOS A	2.5	18.8	0.60	0.46	0.60	16.1
North: Barry Way (N)														
7	L2	324	10.0	341	10.0	0.196	7.1	LOS A	1.4	10.7	0.02	0.74	0.02	16.3
8	T1	283	10.0	298	10.0	0.201	2.7	LOS A	1.4	10.7	0.02	0.32	0.02	49.1
Approach		607	10.0	639	10.0	0.201	5.0	LOS A	1.4	10.7	0.02	0.54	0.02	23.7
All Vehicles		1370	10.0	1442	10.0	0.405	4.2	LOS A	3.2	24.2	0.33	0.51	0.33	24.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Southern roundabout AM peak

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barry Way (S)														
2	T1	185	18	195	9.7	0.331	2.7	LOS A	2.6	18.7	0.02	1.00	0.02	43.6
3	R2	344	8	362	2.3	0.331	17.2	LOS B	2.6	18.7	0.02	1.00	0.02	16.2
Approach		529	26	557	4.9	0.331	12.2	LOS B	2.6	18.7	0.02	1.00	0.02	20.8
East: Campus Access Road South (E)														
4	L2	324	8	341	2.5	0.273	0.8	LOS A	1.9	13.9	0.37	0.20	0.37	16.3
6	R2	1	0	1	10.0	0.273	0.8	LOS A	1.9	13.9	0.37	0.20	0.37	16.5
Approach		325	8	342	2.5	0.273	0.8	LOS A	1.9	13.9	0.37	0.20	0.37	16.3
North: Barry Way (N)														
7	L2	1	0	1	10.0	0.118	9.5	LOS A	0.6	4.8	0.53	0.54	0.53	16.6
8	T1	102	10	107	9.8	0.118	5.1	LOS A	0.6	4.8	0.53	0.54	0.53	47.3
Approach		103	10	108	9.8	0.118	5.1	LOS A	0.6	4.8	0.53	0.54	0.53	46.5
All Vehicles		957	44	1007	4.6	0.331	7.5	LOS A	2.6	18.7	0.20	0.68	0.20	20.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Southern roundabout PM peak

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barry Way (S)														
2	T1	236	10.0	248	10.0	0.564	4.7	LOS A	5.4	41.4	0.69	0.78	0.69	42.8
3	R2	339	10.0	357	10.0	0.564	19.3	LOS B	5.4	41.4	0.69	0.78	0.69	16.1
Approach		575	10.0	605	10.0	0.564	13.3	LOS B	5.4	41.4	0.69	0.78	0.69	21.6
East: Campus Access Road South (E)														
4	L2	182	10.0	192	10.0	0.515	5.6	LOS A	4.5	34.3	0.86	0.87	0.95	15.8
6	R2	182	10.0	192	10.0	0.515	5.6	LOS A	4.5	34.3	0.86	0.87	0.95	16.0
Approach		364	10.0	383	10.0	0.515	5.6	LOS A	4.5	34.3	0.86	0.87	0.95	15.9
North: Barry Way (N)														
7	L2	6	10.0	6	10.0	0.556	11.6	LOS B	5.1	38.9	0.81	0.79	0.88	16.4
8	T1	449	10.0	473	10.0	0.556	7.1	LOS A	5.1	38.9	0.81	0.79	0.88	46.4
Approach		455	10.0	479	10.0	0.556	7.2	LOS A	5.1	38.9	0.81	0.79	0.88	45.3
All Vehicles		1394	10.0	1467	10.0	0.564	9.3	LOS A	5.4	41.4	0.77	0.81	0.82	23.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Future Year 2033

Northern roundabout AM peak

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barry Way (S)														
2	T1	372	10.0	392	10.0	0.353	4.1	LOS A	2.6	19.4	0.49	0.48	0.49	47.4
3	R2	1	10.0	1	10.0	0.353	18.8	LOS B	2.6	19.4	0.49	0.48	0.49	16.6
Approach		373	10.0	393	10.0	0.353	4.2	LOS A	2.6	19.4	0.49	0.48	0.49	47.2
East: Campus Access Road North (E)														
4	L2	162	10.0	171	10.0	0.290	1.0	LOS A	1.8	14.0	0.38	0.22	0.38	16.1
6	R2	162	10.0	171	10.0	0.290	1.0	LOS A	1.8	14.0	0.38	0.22	0.38	16.3
Approach		324	10.0	341	10.0	0.290	1.0	LOS A	1.8	14.0	0.38	0.22	0.38	16.2
North: Barry Way (N)														
7	L2	344	10.0	362	10.0	0.208	7.1	LOS A	1.5	11.1	0.02	0.74	0.02	16.3
8	T1	124	10.0	131	10.0	0.097	2.7	LOS A	0.6	4.5	0.02	0.32	0.02	49.1
Approach		468	10.0	493	10.0	0.208	5.9	LOS A	1.5	11.1	0.02	0.63	0.02	19.8
All Vehicles		1165	10.0	1226	10.0	0.353	4.0	LOS A	2.6	19.4	0.27	0.47	0.27	22.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Northern roundabout PM peak

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barry Way (S)														
2	T1	447	10.0	471	10.0	0.431	4.3	LOS A	3.5	26.7	0.57	0.52	0.57	47.2
3	R2	1	10.0	1	10.0	0.431	19.0	LOS B	3.5	26.7	0.57	0.52	0.57	16.5
Approach		448	10.0	472	10.0	0.431	4.4	LOS A	3.5	26.7	0.57	0.52	0.57	47.0
East: Campus Access Road North (E)														
4	L2	172	10.0	181	10.0	0.390	3.0	LOS A	2.6	19.5	0.63	0.51	0.63	16.0
6	R2	172	10.0	181	10.0	0.390	3.0	LOS A	2.6	19.5	0.63	0.51	0.63	16.1
Approach		344	10.0	362	10.0	0.390	3.0	LOS A	2.6	19.5	0.63	0.51	0.63	16.0
North: Barry Way (N)														
7	L2	324	10.0	341	10.0	0.196	7.1	LOS A	1.4	10.7	0.02	0.74	0.02	16.3
8	T1	317	10.0	334	10.0	0.223	2.7	LOS A	1.6	12.3	0.02	0.32	0.02	49.1
Approach		641	10.0	675	10.0	0.223	4.9	LOS A	1.6	12.3	0.02	0.53	0.02	24.4
All Vehicles		1433	10.0	1508	10.0	0.431	4.3	LOS A	3.5	26.7	0.34	0.52	0.34	25.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Southern roundabout AM peak

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barry Way (S)														
2	T1	204	10.0	215	10.0	0.530	4.5	LOS A	4.9	36.9	0.63	0.80	0.63	42.6
3	R2	354	10.0	373	10.0	0.530	19.1	LOS B	4.9	36.9	0.63	0.80	0.63	16.1
Approach		558	10.0	587	10.0	0.530	13.8	LOS B	4.9	36.9	0.63	0.80	0.63	20.8
East: Campus Access Road South (E)														
4	L2	168	10.0	177	10.0	0.383	2.6	LOS A	2.8	21.5	0.66	0.51	0.66	16.0
6	R2	168	10.0	177	10.0	0.383	2.6	LOS A	2.8	21.5	0.66	0.51	0.66	16.2
Approach		336	10.0	354	10.0	0.383	2.6	LOS A	2.8	21.5	0.66	0.51	0.66	16.1
North: Barry Way (N)														
7	L2	11	10.0	12	10.0	0.354	10.3	LOS B	2.5	19.0	0.70	0.68	0.70	16.5
8	T1	275	10.0	289	10.0	0.354	5.9	LOS A	2.5	19.0	0.70	0.68	0.70	46.7
Approach		286	10.0	301	10.0	0.354	6.0	LOS A	2.5	19.0	0.70	0.68	0.70	43.6
All Vehicles		1180	10.0	1242	10.0	0.530	8.7	LOS A	4.9	36.9	0.66	0.69	0.66	21.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Southern roundabout PM peak

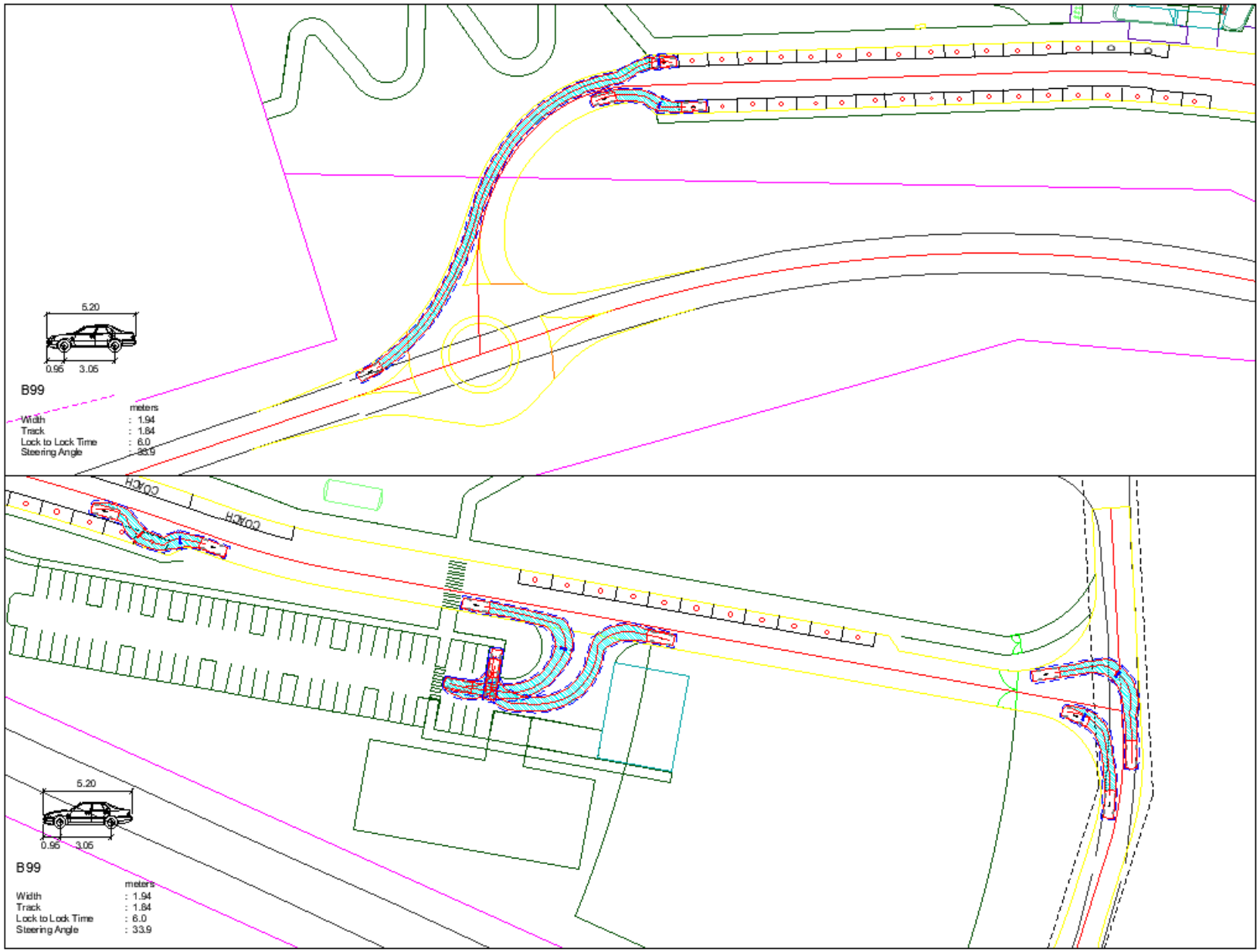
Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barry Way (S)														
2	T1	265	10.0	279	10.0	0.582	4.7	LOS A	5.8	43.7	0.71	0.77	0.71	43.0
3	R2	330	10.0	347	10.0	0.582	19.4	LOS B	5.8	43.7	0.71	0.77	0.71	16.1
Approach		595	10.0	626	10.0	0.582	12.9	LOS B	5.8	43.7	0.71	0.77	0.71	22.3
East: Campus Access Road South (E)														
4	L2	182	10.0	192	10.0	0.515	5.6	LOS A	4.5	34.2	0.86	0.87	0.95	15.8
6	R2	182	10.0	192	10.0	0.515	5.6	LOS A	4.5	34.2	0.86	0.87	0.95	16.0
Approach		364	10.0	383	10.0	0.515	5.6	LOS A	4.5	34.2	0.86	0.87	0.95	15.9
North: Barry Way (N)														
7	L2	6	10.0	6	10.0	0.550	11.3	LOS B	5.0	38.0	0.80	0.77	0.86	16.4
8	T1	449	10.0	473	10.0	0.550	6.9	LOS A	5.0	38.0	0.80	0.77	0.86	46.4
Approach		455	10.0	479	10.0	0.550	7.0	LOS A	5.0	38.0	0.80	0.77	0.86	45.3
All Vehicles		1414	10.0	1488	10.0	0.582	9.1	LOS A	5.8	43.7	0.78	0.80	0.82	23.7

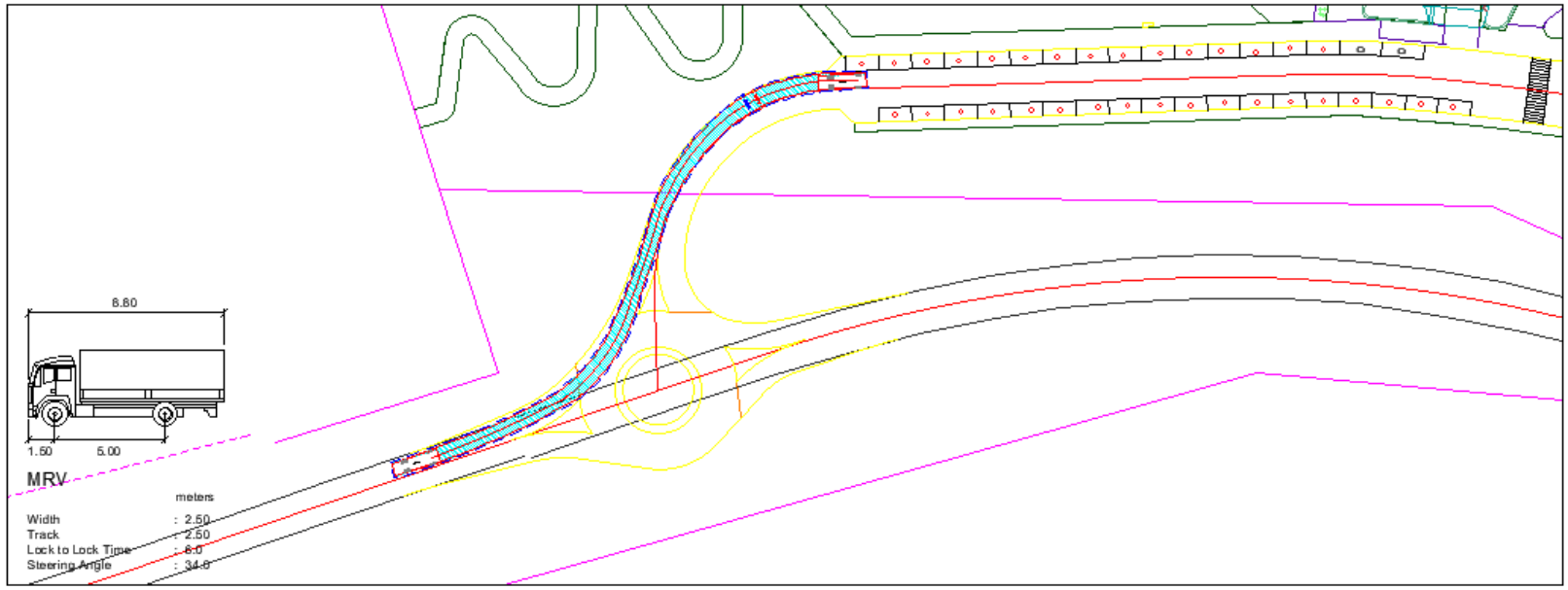
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

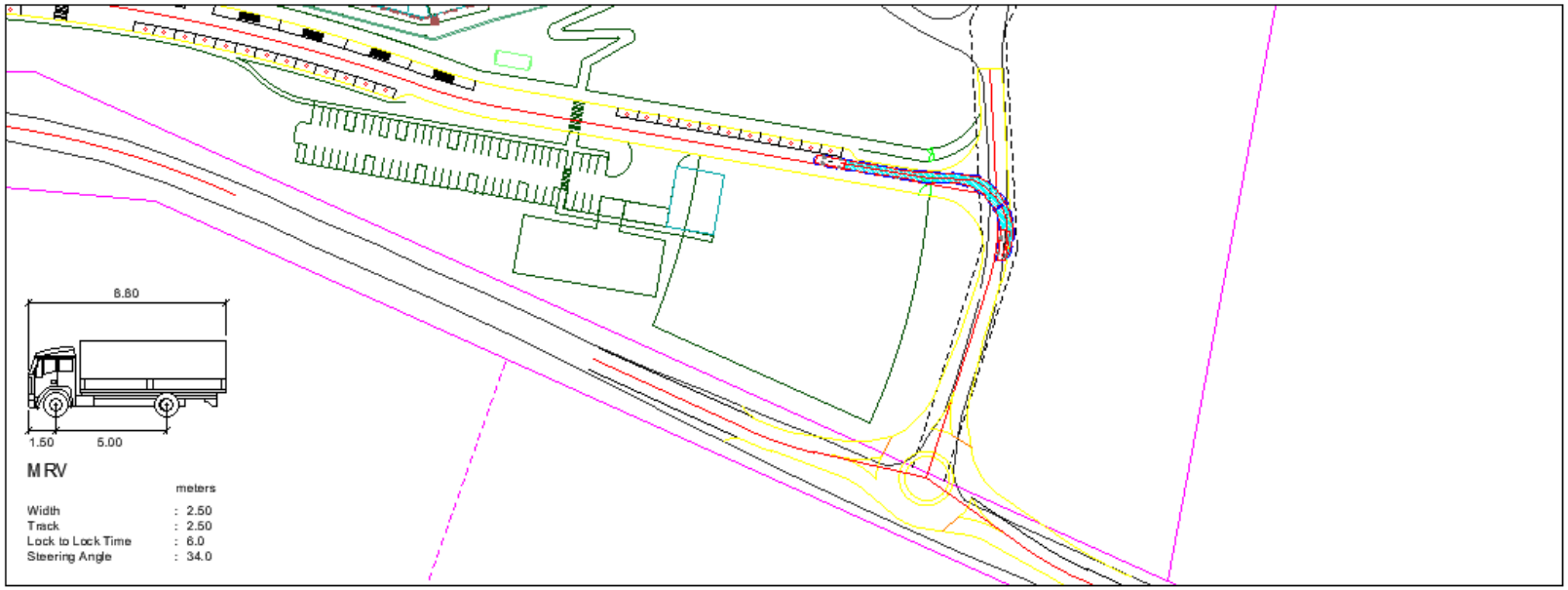
Appendix B – Swept Path Analysis

Private Car – 5.2m



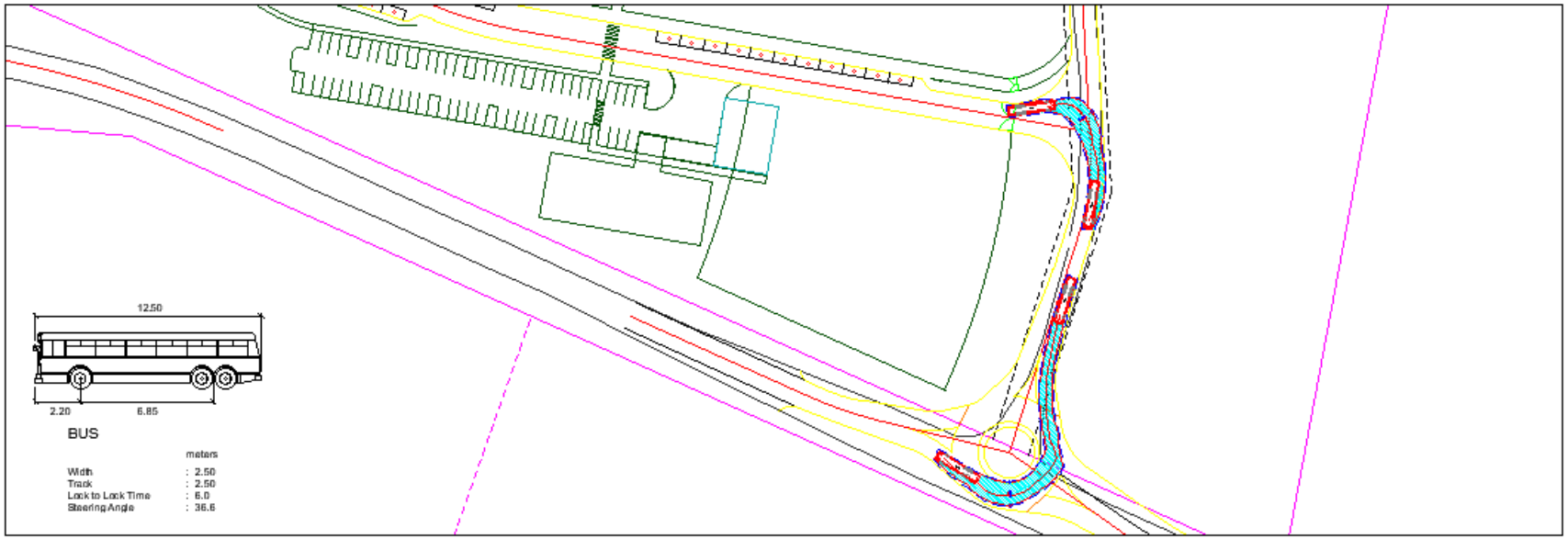
Service Vehicle – 8.8m





Bus – 12.5m


12.50
2.20
6.85
BUS
meters
Width : 2.50
Track : 2.50
Lock to Lock Time : 6.0
Steering Angle : 36.6


12.50
2.20
6.85
BUS
meters
Width : 2.50
Track : 2.50
Lock to Lock Time : 6.0
Steering Angle : 36.6

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