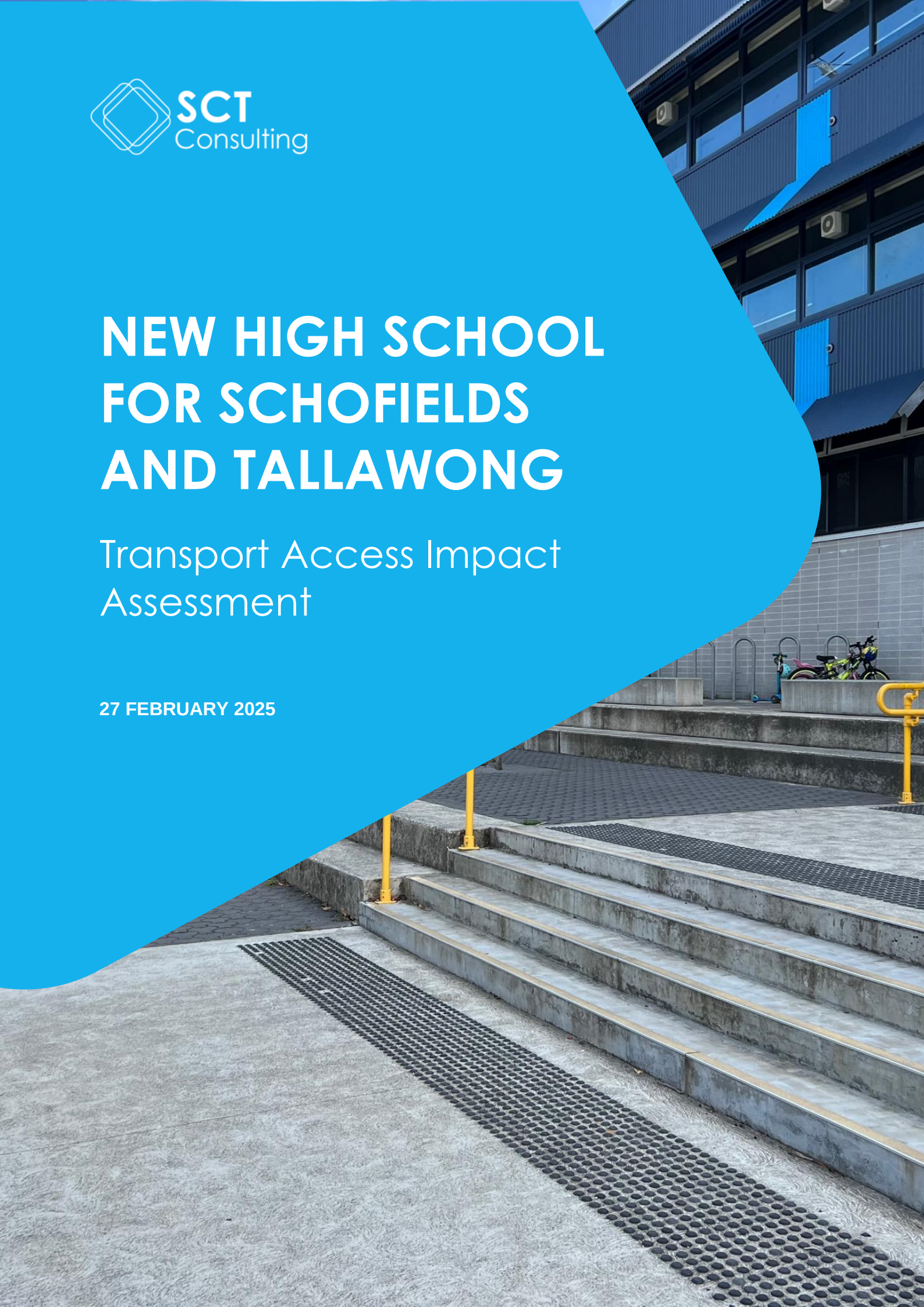
SCT Consulting

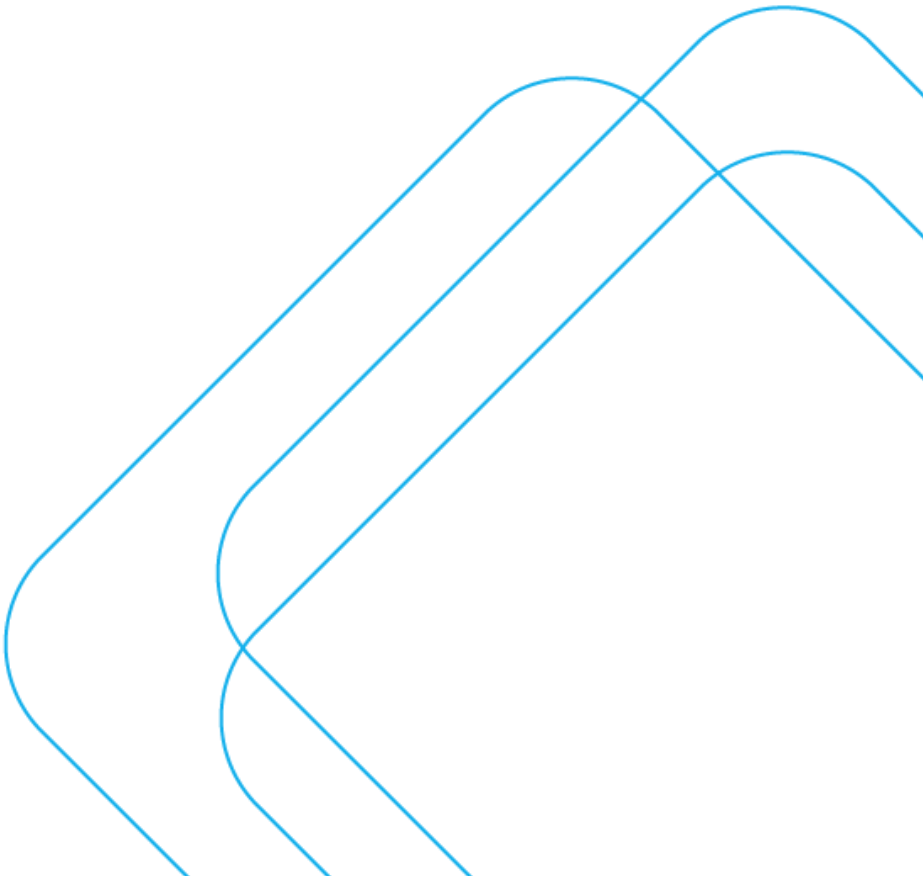
NEW HIGH SCHOOL FOR SCHOFIELDS AND TALLAWONG

Transport Access Impact Assessment

27 FEBRUARY 2025



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



Quality Assurance

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10.0	27 February 2025	Updated final report

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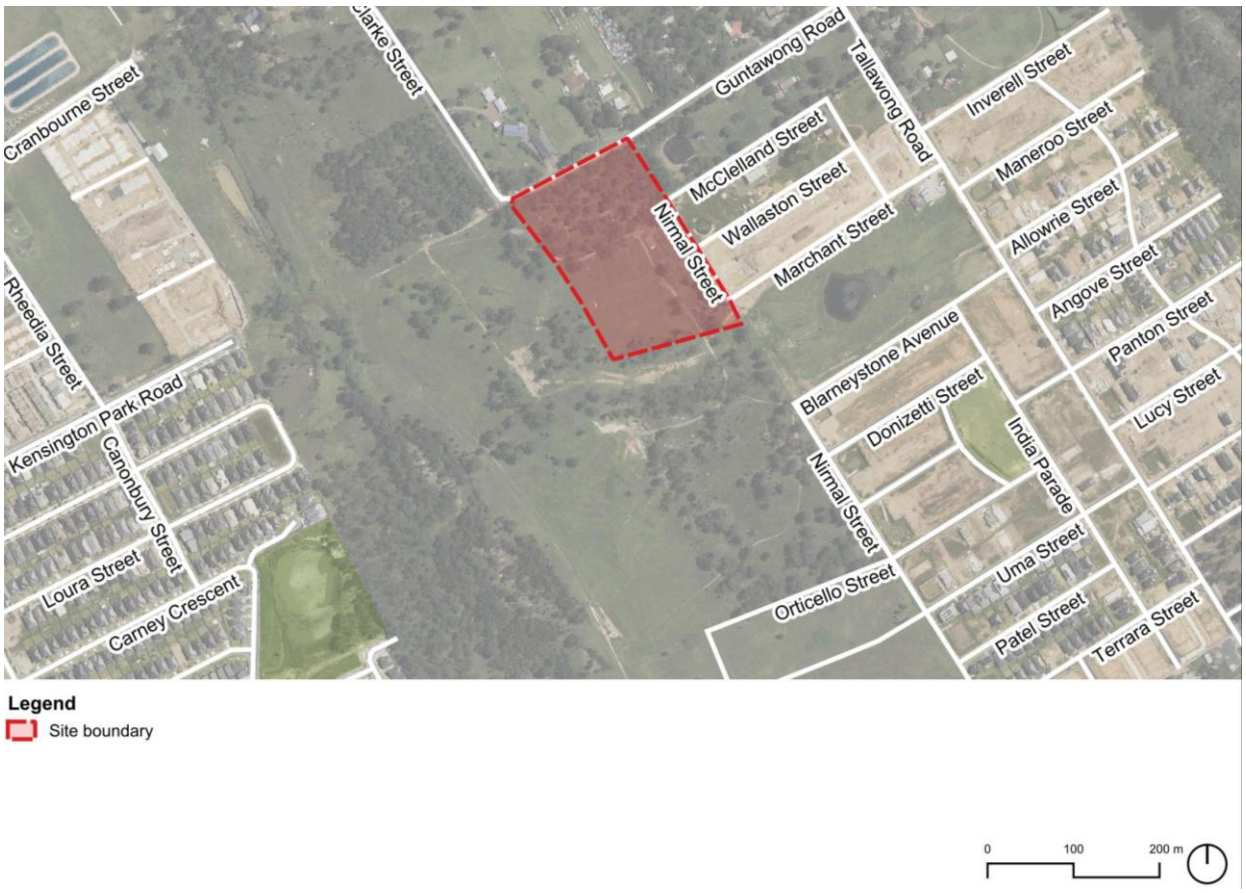
Executive Summary

Proposal

NSW Department of Education is proposing a new high school in the suburb of Tallawong. This will service the high school-age students in the expanding suburbs of Tallawong and Schofields. The new high school for Schofields and Tallawong is planned to accommodate 1,000 students.

The site for the proposed school is located at 201 Guntawong Road (Lot 1 DP 1283186) in the suburb of Tallawong in the Blacktown Local Government Area. The site is located at the corner of Guntawong Road and Clarke Street, Tallawong and is approximately 4 hectares in area. The site has an approximately 100-metre-long frontage to Guntawong Road along its northern boundary. Nirmal Street provides a partial frontage along the eastern boundary of the site with plans to extend Nirmal Street to provide a future connection to Guntawong Road.

Figure E-1 Proposed site location



Source: SCT Consulting, 2024

Existing conditions

The site is predominantly cleared land and consists of grassland with several patches of remnant native vegetation particularly within the northern portion of the site. As a result of precinct wide rezonings, the surrounding locality is currently transitioning from a semi-rural residential area to a highly urbanised area with new low to medium density residential development with supporting services. The site is located approximately 1.5km to the north west of Tallawong Metro Station and is also serviced by an existing bus stop along Guntawong Road.

Guntawong Road and Nirmal Street are local roads managed by Blacktown City Council. There are limited pedestrian facilities in the vicinity of the site. Two bus stops are adjacent and opposite the site on Guntawong Road. These are Stops 2765364 and 276259 that service Route 742. This is the only public bus route within the enrolment boundary that operates during the morning and afternoon that could be used by students to travel to school.

It is estimated that approximately 419 students will be eligible for subsidised public transport under the Student Subsidised Travel Scheme once the school reaches 1,000 students. Public transport coverage within the enrolment boundary for the proposed school is limited. There are significant gaps in the entire west section of the catchment and the north east of the enrolment boundary.

A kiss 'n drop area on the west side of Nirmal Street is proposed along the eastern boundary of the school. Nirmal Street will be extended to intersect with Guntawong Road and is proposed to be a priority intersection.

Proposed high school

The proposed activity is for the construction and operation of a new high school known as Schofields-Tallawong High School. The new high school will accommodate up to 1,000 students. The school will provide 49 permanent teaching spaces (PTS), and 3 support teaching spaces (STS) across three buildings.

The buildings will be three-storey in height and will include teaching spaces, specialist learning hubs, a library, administrative areas and a staff hub. Additional core facilities are also proposed including a standalone school hall, a carpark, a pick up and drop off zone along Nirmal Street, two sports courts and a sports field.

Specifically, the proposal involves the following:

– Three learning hubs (three-storeys in height) accommodating 49 general teaching spaces and 3 support learning units (SLUs).
– Other core facilities including amenities, library, staff hub and administrative areas.
– Standalone school hall.
– Separate carpark with 72 spaces.
– Kiss and drop zone along Nirmal Street.
– Open play space including sports courts and sports field.
– Public domain works.

The proposed site access arrangements are as follows:

– Pedestrian entrance to be located off Nirmal Street and Guntawong Road.
– Upgrade to bus stops and footpath connections at Guntawong Road.
– Kiss and drop zone proposed along Nirmal Street.
– Onsite staff car park with access via Nirmal Street.

Analysis & transport proposals

Future year mode share targets were developed based on existing student travel mode share achieved for Rouse Hill High School[1], existing student locations (these have been depersonalised for privacy), future population growth, proposed infrastructure upgrades and transport encouragement programs.

Table E-1 Mode share targets

Scenario	Metric	Walk	Bicycle/Scoot	Bus	Car
Base case	#	80	30	500	390
	%	8%	3%	50%	39%
Moderate case (preferred)	#	100	50	550	300
	%	10%	5%	55%	30%
Stretch case	#	150	100	550	200
	%	15%	10%	55%	20%

[1] Online student mode share survey undertaken in August 2023 by 763 students (75% of 2023 student population) that showed 41-50% of students travelled by bus in the AM and PM peak respectively.

Hence, the base case mode share target for future students taking buses to school is set at 50% based on what can be achieved at Rouse Hill High School, in a similar growth area as Schofields-Tallawong High School. This bus mode share target is set for the end-state when the full 1,000 student population is expected by 2040, and the bus mode share could be lower than 50% during Day 1 opening of the high school.

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

Table E-2 Description of scenario development

Scenario	Investment
Base case	– 100% within enrolment catchment
Moderate case	As with base case, plus: – Zebra crossing on Guntawong Road and Wombat crossing on Nirmal Street – 3.5m shared path along school frontage on Nirmal Street and Guntawong Road – 2 bus bays on either side of Guntawong Road
Stretch case	As with moderate case, plus – Guntawong Road extension to Kensington Park Road to improve east-west connections (by others)

The infrastructure which the stretch case relies on is not yet fully funded and committed (i.e. Guntawong Road extension), so the moderate case was adopted for the transport assessment. The initiatives in the moderate case are proposed to be funded by School Infrastructure.

Evaluation of environmental impacts

Assessment of traffic impacts based on the moderate future mode share target, for a student population of 1,000 was undertaken. Current traffic volumes collected in October 2024, were used to determine baseline intersection performance. Certain modelling settings had to be increased beyond their recommended values to validate queue lengths to those that were observed. These settings replicate driver behaviour in response to factors such as road quality and visibility.

Table E-3 Existing situation intersection performance

Intersection	Control	2024 Weekday AM peak			2024 Weekday PM peak		
		DOS	Delay	LOS	DOS	Delay	LOS
Guntawong Road | Tallawong Road	Priority	0.47	11.0	**A**	0.22	6.8	**A**
Tallawong Road | Marchant Road	Priority	0.17	5.7	**A**	0.13	6.1	**A**
Clarke Street | Riverstone Road	Priority	0.77	25.8	**B**	0.40	11.0	**A**

Traffic modelling results with the proposed school development and background growth are shown in **Table E-4**.

Table E-4 With Development Intersection Performance

Intersection	Control	2040 Weekday AM peak			2040 Weekday PM peak		
		DOS	Delay	LOS	DOS	Delay	LOS
Future base (with current condition modelling settings)							
Guntawong Road | Tallawong Road	Priority	0.40	16.0	B	0.29	7.6	A
Tallawong Road | Marchant Road	Priority	0.20	5.9	A	0.16	6.4	A
Clarke Street | Riverstone Road	Priority	1.40	395.4	F	0.49	13.4	A
Guntawong Road | Nirmal Street	Priority	0.48	7.2	A	0.25	5.4	A
Future base with school traffic (with current condition modelling settings)							
Guntawong Road | Tallawong Road	Priority	0.56	17.8	B	0.34	9.0	A
Tallawong Road | Marchant Road	Priority	0.26	6.7	A	0.21	6.9	A
Clarke Street | Riverstone Road	Priority	1.34	339.9	F	0.60	15.3	B
Guntawong Road | Nirmal Street	Priority	0.50	8.3	A	0.28	6.0	A
Future base (with reset modelling settings)							
Guntawong Road | Tallawong Road	Priority	0.54	10.5	A	0.26	6.6	A
Tallawong Road | Marchant Road	Priority	0.21	5.9	A	0.16	6.4	A
Clarke Street | Riverstone Road	Priority	0.64	16.1	B	0.32	8.9	A
Guntawong Road | Nirmal Street	Priority	0.52	7.8	A	0.25	5.4	A
Future base with school traffic (with reset modelling settings)							
Guntawong Road | Tallawong Road	Priority	0.61	13.3	A	0.33	7.3	A
Tallawong Road | Marchant Road	Priority	0.28	6.7	A	0.21	6.9	A
Clarke Street | Riverstone Road	Priority	0.75	18.8	B	0.39	9.5	A
Guntawong Road | Nirmal Street	Priority	0.55	9.2	A	0.28	6.0	A

The settings required to achieve calibration caused significant delay to when applied to 'future base' traffic conditions at Clarke Street | Riverstone Roady. This indicates that current road conditions and driver behaviour will cause the intersection to fail without the additional school traffic.

Once settings are set to their recommended values under the Transport for New South Wales *Modelling Guidelines* delays decrease significantly. The addition of traffic associated with the development of the school causes only minor increases in delay, under three seconds for all intersections examined. The proposed extension of Nirmal Street to Guntawong Road performs at Level of Service A, with an average delay of 9.2 seconds and Degree of Saturation of 0.55, which indicates significant spare capacity. This is reflective of the road quality (pavement etc.) being upgraded to current standards at Clarke Street | Riverstone Road (which is the responsibility of Council as the road authority).

Conclusions

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

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

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

The mitigation measures are required to address the impacts are provided in **Table E-5**. These measures have been discussed and agreed by the TWG. The transport network surrounding the new school is subject to significant change over the coming years with near roads to be delivered as development occurs. This assessment has assigned the full development traffic to the existing roads, which is a conservative approach. Traffic will realistically be distributed throughout the growth area road network as roads are delivered.

Table E-5 Mitigation measures

#	Impact	Mitigation Measure	Forms part of this REF	Significance after mitigation
1a	Students are unable to cross safely, resulting in harm from vehicles	Construct a zebra crossing on Guntawong Road prior to occupancy	No	Not significant
1b		Construct a wombat crossing on Nirmal Street prior to occupancy	Yes	Not significant
2	The Walking Space Guidelines requires the 3.5m footpath width based on the expected demand for the site but there are no footpaths currently on Nirmal Street	Construct a 3.5m shared path along school frontage on Nirmal Street on the school frontage side only (western) prior to occupancy	Yes	Not significant
3	The Walking Space Guidelines requires the 3.5m footpath width based on the expected demand for the site but there are no footpaths currently on Guntawong Road	Construct a 3.5m shared path along school frontage on Guntawong Road along the school frontage and on the northern side of Guntawong Road from the bus stop to the zebra crossing prior to occupancy	No	Not significant
4	Guntawong Road is not wide enough for both the bus stops and through traffic	Construct two indented bus bays on Guntawong Road able to each accommodate two buses: – Eastbound bus bay: 40 metres long – Westbound bus bay: 60 metres long In the sections of Guntawong Road comprising four lanes the cross section of Guntawong road should match with the end-state cross section of Guntawong Road where possible and appropriate. The intersection of Guntawong Road and Nirmal Street should be designed as a “Give Way’ intersection with one lane on each approach. The design should provision for the future roundabout at Guntawong Road and Nirmal Street where possible and appropriate.	No	Not significant
5	Nirmal Street is an incomplete road, with travel in the southbound direction only. With the half road only, there would be significant	Construct Nirmal Street within the site boundary to a carriageway width of 19m from Guntawong Road along the full extent	Yes	Not significant

#	Impact	Mitigation Measure	Forms part of this REF	Significance after mitigation
	congestion and impacts on other road users.	of the school frontage and dedicate it to Council prior to occupancy[2]		
6	Marchant Street is an incomplete road, with travel in the southbound direction only. With only this road infrastructure, there would be significant congestion and impacts on other road users.	The southern half of Marchant Street needs to be constructed from Nirmal Street to Tallawong Road and dedicated to the Council as a public road prior to occupancy[3]	No	Not significant
7	There are no car parking facilities for staff, resulting in staff having to park a significant distance from the site and impacting on other landowners in the area. Without a loading bay, collection would have to be on-street, which would be require waste to have to be transported to the kerb, impacting on safe student access	Construct a carpark with 72 spaces and a separate loading facility according to Australian standard AS2890.1, AS2890.2 and AS2890.6.	Yes	Not significant
8	Drivers travel past the school at the current posted speed limit, increasing the risk and severity of harm to students	Prior to the commencement of operation, all required School Zone signage, speed management signage and associated pavement markings must be installed, inspected by TfNSW and handed over to TfNSW.	Yes	Not significant
9	Students prefer arriving by private vehicle, resulting in congestion and delays to other road users.	Within the first 12 months of operation appoint a School Travel Coordinator, establish a School Transport Committee, and prepare a Travel Access Guide	Yes	Not significant
10	Students prefer arriving by private vehicle, resulting in congestion and delays to other road users.	Update the School Transport Plan annually for the first two years	Yes	Not significant
11	Construction, particularly the arrival of heavy vehicles causes safety issues for other road users.	Prior to construction commencing, prepare a construction traffic management plan to the satisfaction of Blacktown Council, including preparation of traffic guidance schemes where required.	Yes	Not significant
12	Construction worker parking impacts on safety and amenity of surrounding streets due to a large number of workers parking	The builder should run a shuttle bus to the station for use by workers for the duration of construction	Yes	Not significant
13	The two spaces at the south of the school are inaccessible	These spaces to be widened to 3.6m as they are at the end of a blind aisle – AS2890.1 Fig 2.3	Yes	Not significant

[2] The eastern half road of Nirmal Street from Marchant Street to the southern frontage of the school is within Lot 43 DP301086 and subject of Bathla Group subdivision DA (DA-23-00128), which is understood to be in the delivery phase with an expected completion by mid-2025. The eastern half road of Nirmal Street from Guntawong Road to McClelland Street is within Lot 1 DP1300811 and subject of Metro DA.

[3] Marchant Street from Nirmal Street to Tallawong Road is within Lot 43 DP301086 and subject of Bathla Group subdivision DA (DA-23-00128), which is understood to be in the delivery phase with an expected completion by mid-2025

Figure E-2 Schofields Tallawong High School – Mitigation measures

Source: djrd Architects with annotations by SCT Consulting; 2025

1.0 Strategic context

1.1 Project proposal

1.1.1 Proposed school site

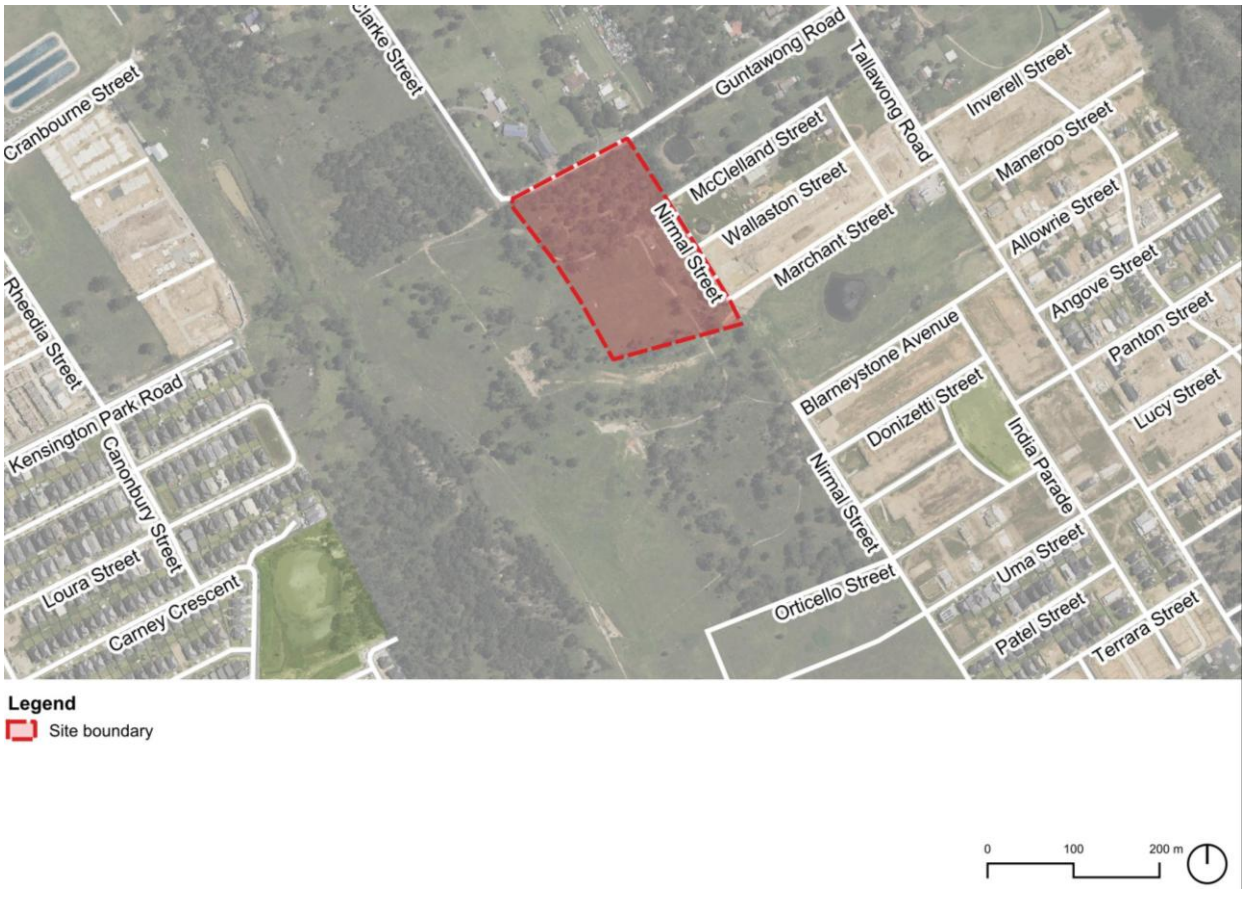
NSW Department of Education plans to construct a new high school for Schofields and Tallawong to meet the needs of the growing community in Schofields and Tallawong within the Blacktown Local Government Area (LGA), which is shown in Figure 1-1.

The site is known as 201 Guntawong Road, Tallawong, NSW, 2762 (the site), and is legally described as part of Lot 1 in Deposited Plan 1283186. The site is located at the corner of Guntawong Road and Clarke Street, Tallawong and is approximately 4 hectares in area. The site has an approximately 100-metre-long frontage to Guntawong Road along its northern boundary. Nirmal Street provides a partial frontage along the eastern boundary of the site with plans to extend Nirmal Street to provide a future connection to Guntawong Road. First Ponds Creek borders the western fringe of the site.

The site is predominantly cleared land and consists of grassland with several patches of remnant native vegetation particularly within the northern portion of the site. As a result of precinct wide rezonings, the surrounding locality is currently transitioning from a semi-rural residential area to a highly urbanised area with new low to medium density residential development with supporting services. The site is located approximately 1.5km to the north west of Tallawong Metro Station and is also serviced by an existing bus stop along Guntawong Road.

The school is targeting to be opened in 2027 with a capacity of up to 1,000 students.

Figure 1-1 Proposed site location



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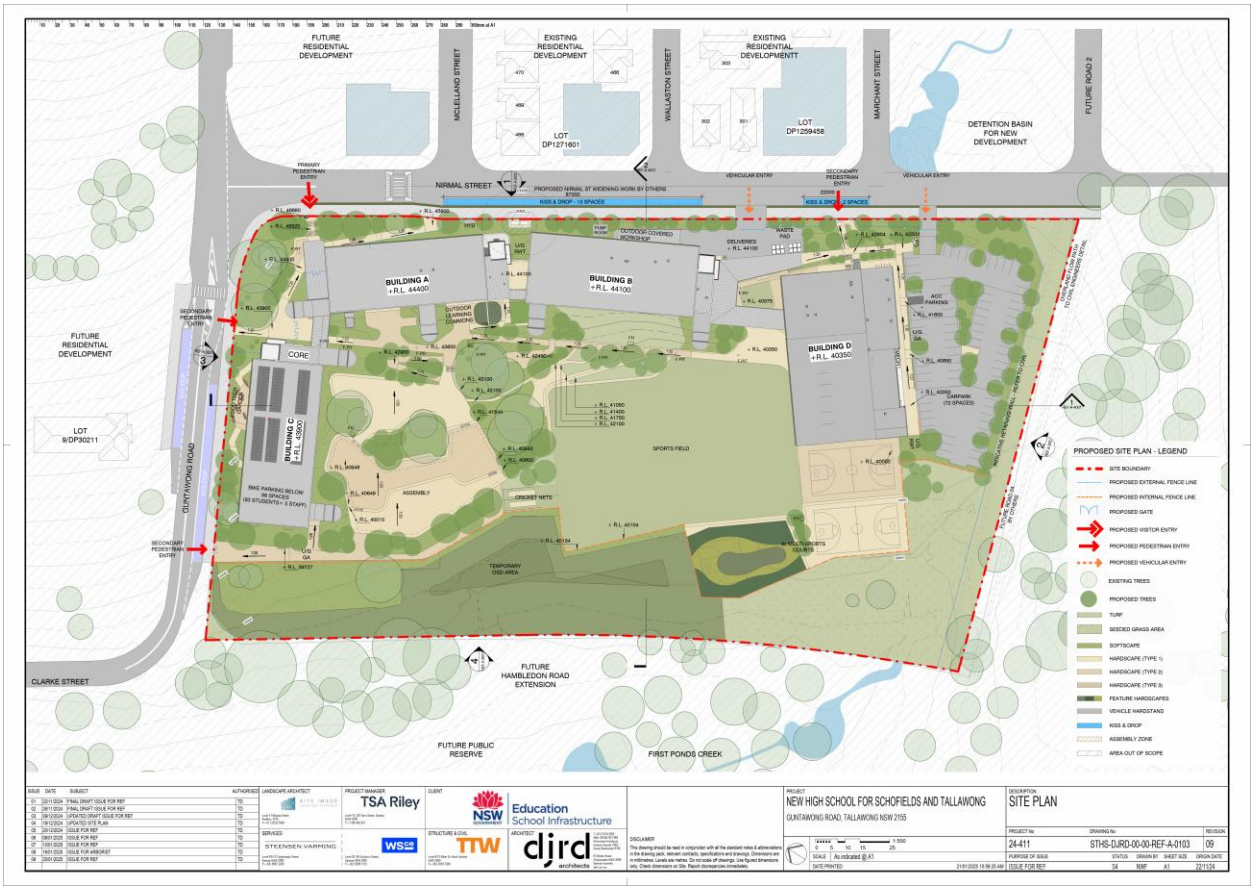
– Onsite staff car park with access via Nirmal Street.

Figure 1-2 Proposed site plan



1.1.3 Purpose of report

This Transport Assessment and Impact Assessment (TAIA) has been prepared to support a Review of Environmental Factors (REF) for the Department of Education (DoE) for the construction and operation of the new Schofields-Tallawong High School.

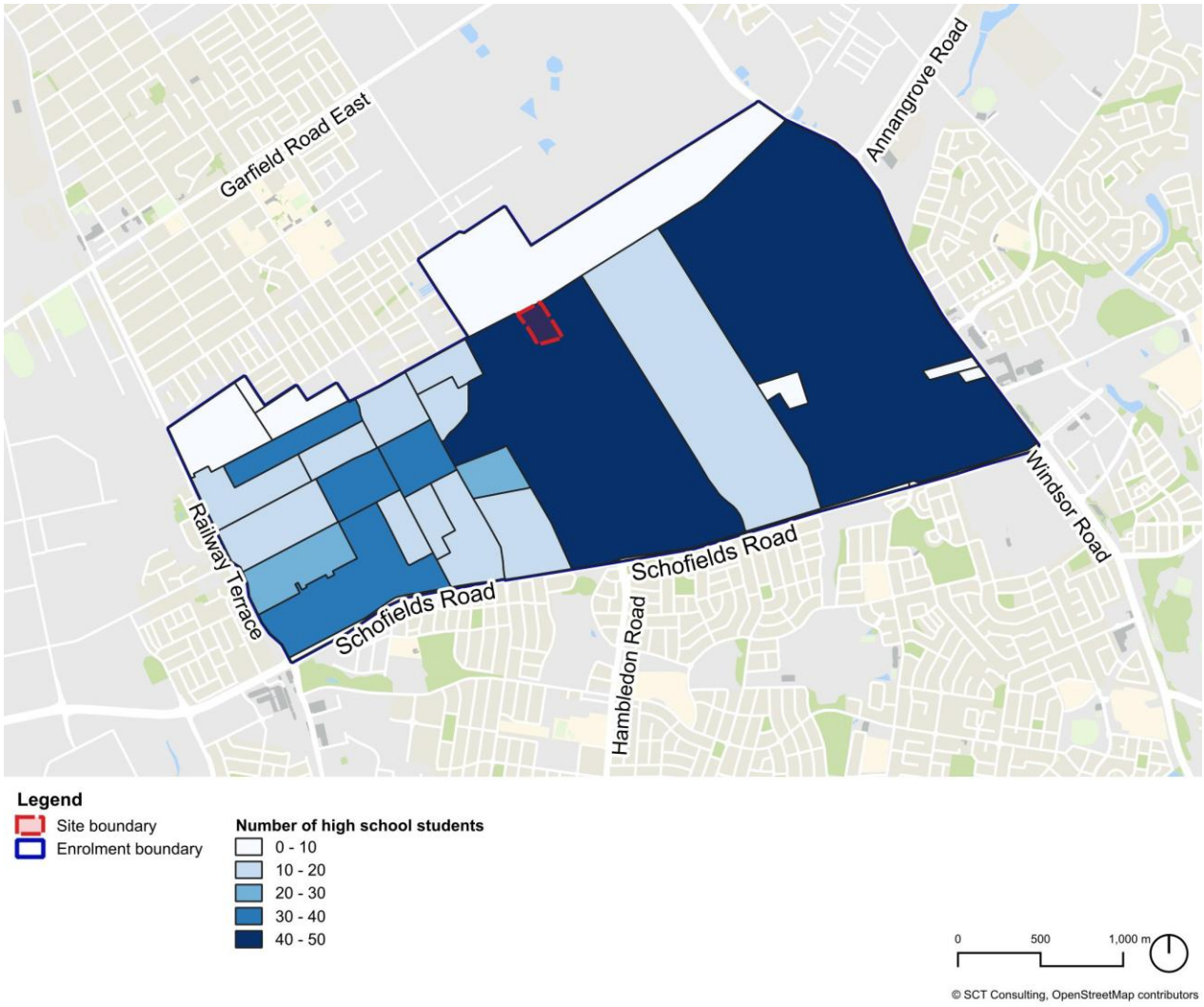
The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as “development permitted without consent” on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP.

This document has been prepared in accordance with the Guidelines for Division 5.1 assessments (the Guidelines) by the Department of Planning, Housing and Infrastructure (DPHI).

1.1.4 School enrolment boundary

The enrolment boundary for Schofields-Tallawong High School (STHS) falls partially within the Australian Bureau of Statistics’ ‘Statistical Area 2’ (SA2) boundaries of Schofields East and Riverstone and covers suburbs of Riverstone, Tallawong, Schofields and Rouse Hill. Anonymised student data provided by School Infrastructure indicates that there are 877 primary school students and 258 high school students currently residing within the proposed enrolment boundary. In the year of opening (2027), there will be approximately 460 high-school-aged students who reside within the enrolment boundary. **Figure 1-3** shows the number of high-school-aged students in 2027, per SA1 zone, that reside within the enrolment boundary currently. With a target enrolment of 1,000 students, a little less than half of total student enrolments will come from existing residents.

Figure 1-3 Enrolment catchment



1.1.5 Consultation and Technical Working Group summary

School Infrastructure has regularly consultation with the relevant agencies (including Blacktown City Council, Transport for NSW and local bus operators) during the development of the school design as well as the preparation of the TAIA. At the time of preparation of this report, two TWGs have been held on 8 October 2024 and 5 November 2024.

The full minutes of the two TWG meetings are included in **Appendix E** while the key discussion points are summarised as follows.

TWG #1 held on 8 October 2024

– TfNSW noted that 100% staff mode share for staff would not be acceptable – need to consider in green travel planning. TfNSW needs to see significant mode share for staff – car pooling and walking from the station.

– Council noted that reliance on other landowners on the delivery of Marchant Street is not acceptable. The road strategy is appropriate; however, the problem is third party reliance. If the southern portion of Marchant Street is delivered, then the access strategy is considered acceptable.

– Council would not support the right turn ban from Guntawong Road into Nirmal Street (when Guntawong Road is upgraded in the future).

– Nirmal Street needs to be 11m in the carriageway width along the whole school frontage to allow drop off and pick up activities.

– A zebra crossing would be relevant for the school. TfNSW's reduced warrants would apply to the school.

– The location where the bus bays are proposed overlap with the traffic signals. Further justification is needed for the proposal of bus stops near the signals – sight distances etc.

– Council noted that having a zebra crossing in a 60km/h zone is acceptable. No issues with the zebra crossing on Guntawong Road for the school as a temporary measure for the school. The zebra crossing may need to be removed when the signalised intersection is provided at Hambleton Road.

TWG #2 held on 5 November 2024

– The current plan assumes bus bay will become in lane bus stop when Guntawong Road gets upgraded. School Infrastructure is seeking to confirm with Council and Transport for NSW if this approach is acceptable in principle.

– Council confirmed that the roundabout at Nirmal Street is proposed by Council under 7.11 contribution. It is not a delivery for adjoining developments but for council. Therefore, it is not to be constructed as part of infrastructure of the new high school. There is no certainty on the timing of the delivery of the roundabout. The intersection will be built as priority intersection with Give Way sign across Nirmal Street by School Infrastructure.

– Council requested plans of proposed Nirmal Street and Guntawong Road upgrade prepared by School Infrastructure to be submitted to Council for formal feedback.

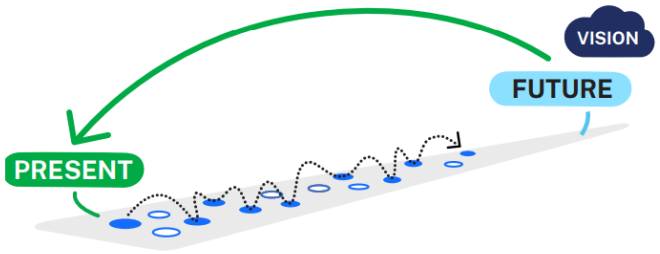
1.2 Strategic transport and land use context review

1.2.1 Future Transport Strategy

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

A 'vision and validate' approach was adopted during the development of the strategy. As shown in **Figure 1-4**, the approach targets a long-term vision and sets out outcomes to ensure the delivery of the vision for the community.

Figure 1-4 The 'vision and validate' approach



Source: TfNSW; 2023

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

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

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

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

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

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

Implication

School Infrastructure should prioritise sustainable modes of transportation while actively discouraging the use of private vehicles.

1.2.2 Road user space allocation policy

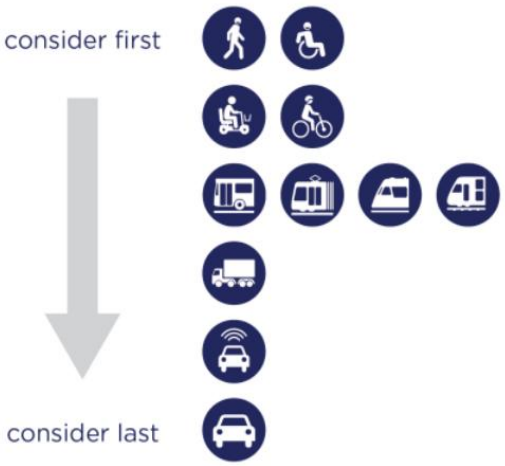
The policy prioritises road user space for different user groups to support road safety, equitable access of space, and to meet place objectives. This allocation can be a physical allocation (for example, a lane delineation) or temporal (e.g. time restricted kerbside use during school peak hours) and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

– Movement and place function of the road.

– Limited road space to accommodate all competing user needs.

Accordingly, **Figure 1-5** shows the ideal hierarchy of road users to be used in transport planning processes – consideration should be given to walking first and private cars last.

Figure 1-5 Road space user hierarchy



Source: TfNSW; 2021

Implication

In line with this policy, active and public transport have been prioritised over private vehicles in the infrastructure planning for Schofields Tallawong High School, shaping the identified needs and requirements.

1.2.3 TfNSW Active Transport Strategy

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

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

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

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

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

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

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

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

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

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

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

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

Implication

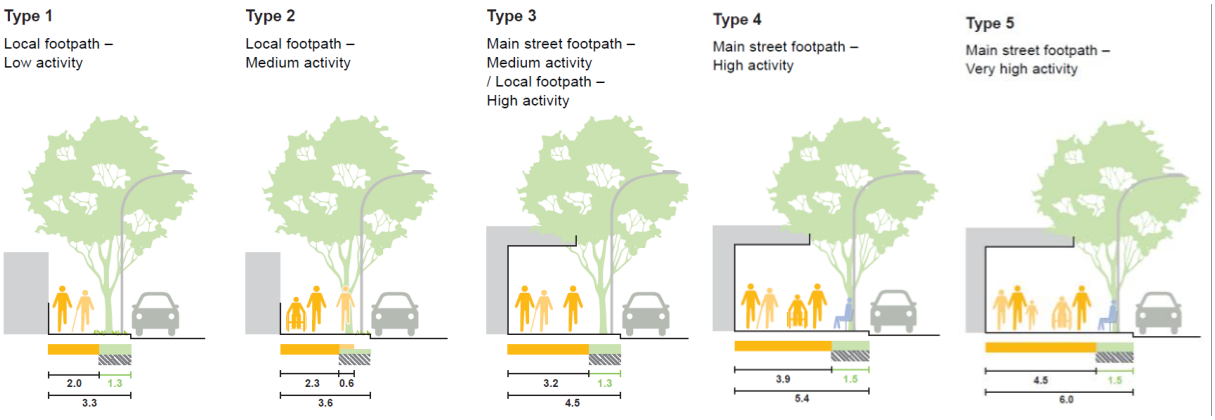
There is a strong emphasis on encouraging more students to travel more sustainably. Accordingly, the transport assessment discusses if existing active transport facilities are sufficient and what additional actions could be implemented to encourage Schofields Tallawong High School students to travel via active transport.

1.2.4 TfNSW Walking Space Guide

The Walking Space Guide, published in 2020, offers a comprehensive set of standards and tools to support those responsible for designing and managing walking spaces on streets. It aims to ensure that sufficient space is allocated to create comfortable, pedestrian-friendly environments that encourage walking.

The guide provides a range of footpath types and typical configurations and widths that vary depending on the street environment present. **Figure 1-6** shows the recommended footpath widths based on likely activity and footpath type. It is important that the footpath arrangement compliments the school environment and is designed to cater for future movement demands of a growing and evolving community.

Figure 1-6 Walking Space Guide – Footpath Types



Source: TfNSW; 2020

Implication

The current school site is currently being developed on a greenfield site, with Nirmal Street and Guntawong Road not built to their full widths. Footpath widths proposed along the frontage of the school will need to consider student distribution and future activity levels generated.

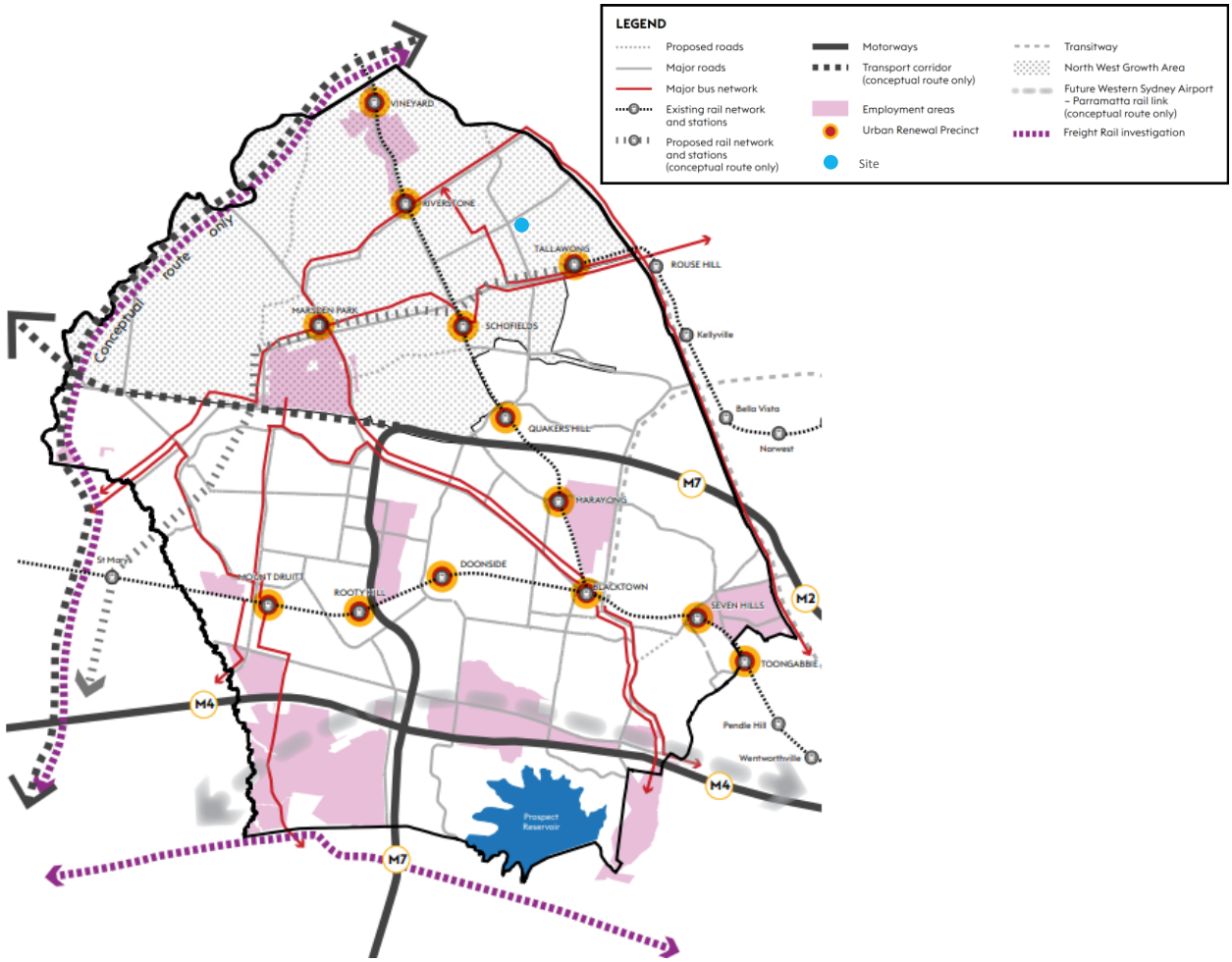
1.2.5 Local Strategic Planning Statement 2020

The Blacktown Local Strategic Planning Statement (LSPS) sets the 20-year planning vision for the Blacktown LGA to "have sustainable growth, supported by essential infrastructure, efficient transport, a prosperous economy and equitable access to a vibrant, healthy lifestyle." To achieve this, the LSPS lays out a set of Local Planning Priorities (LPP) including:

- **LPP1**: Planning for a city supported by infrastructure
- **LPP3**: Providing services and social infrastructure to meet people's changing needs
- **LPP5**: Providing housing supply, choice and affordability with access to jobs, services and public transport
- **LPP7**: Delivering integrated land use and transport planning and a 30-minute city
- **LPP14**: Increasing urban tree canopy cover and Green Grid connections.

A transport infrastructure plan is shown in **Figure 1-7** where a major road passes through the site and a major bus network is available near the site.

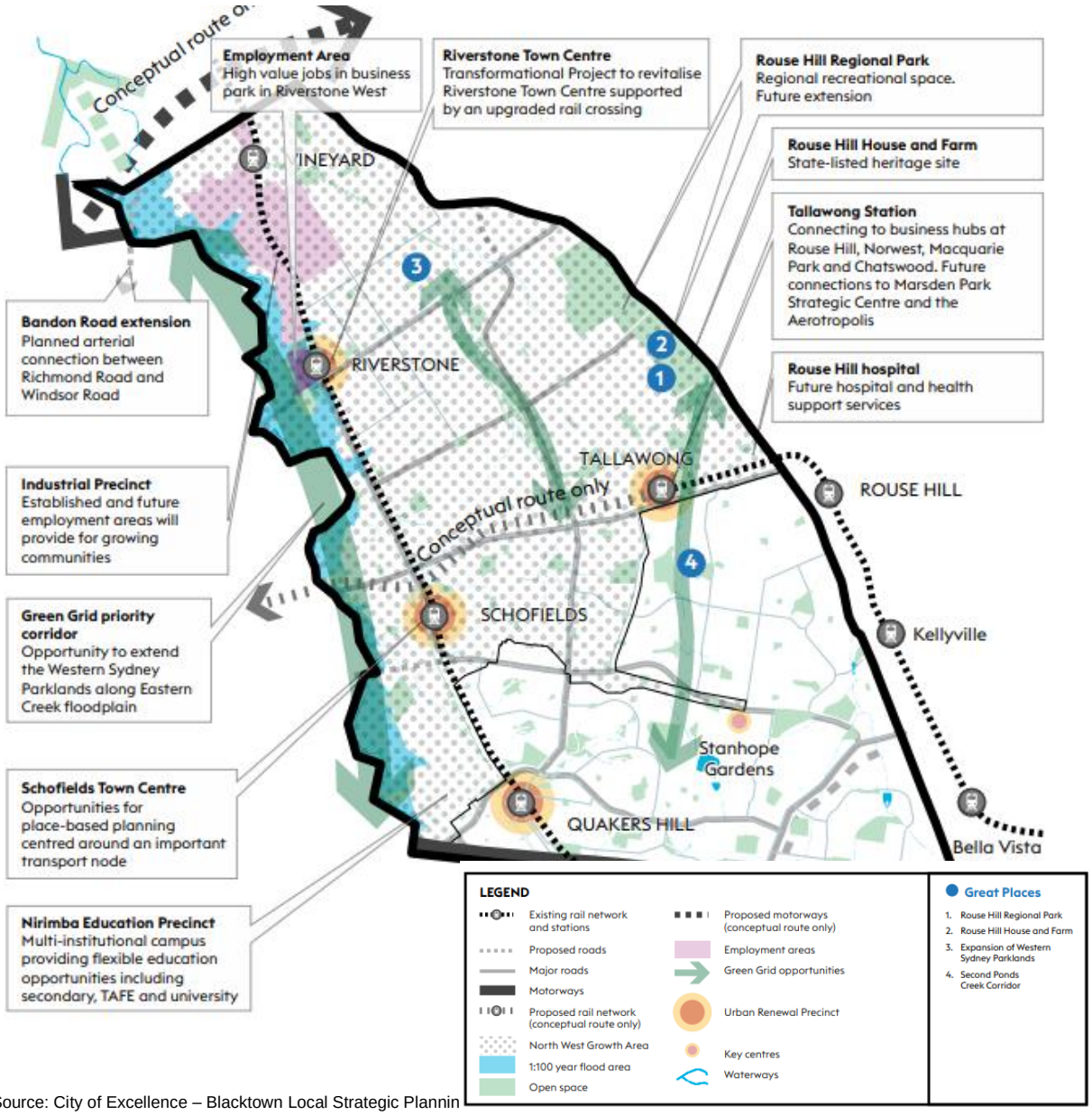
Figure 1-7 Blacktown City Council Transport Infrastructure



Source: Blacktown LSPS, 2020

The Riverstone precinct, where the site sits, aligns with the growth of Greater Parramatta. New housing will be developed in new communities in the North West Growth Area (NWGA), and urban renewal at Tallawong that accommodate a diversity of housing types. Council's structure plan is shown in **Figure 1-8**.

Figure 1-8 Riverstone Precinct Structure Plan



Source: City of Excellence – Blacktown Local Strategic Plannin

The new jobs in Rouse Hill Strategic Centre will support new and existing businesses and connect more businesses with a wider and more skilled labour force. Sydney Metro is expected to connect Tallawong Station to Schofields Station. A duplicated Richmond Rail Line beyond Schofields Station will also be completed. Improvements to public transport mean more people will be able to access Rouse Hill Strategic Centre within 30 minutes by public transport. The state-significant and state-funded Rouse Hill Regional Park will be expanded and include areas for active recreation such as organised sports and more places for people to exercise and relax.

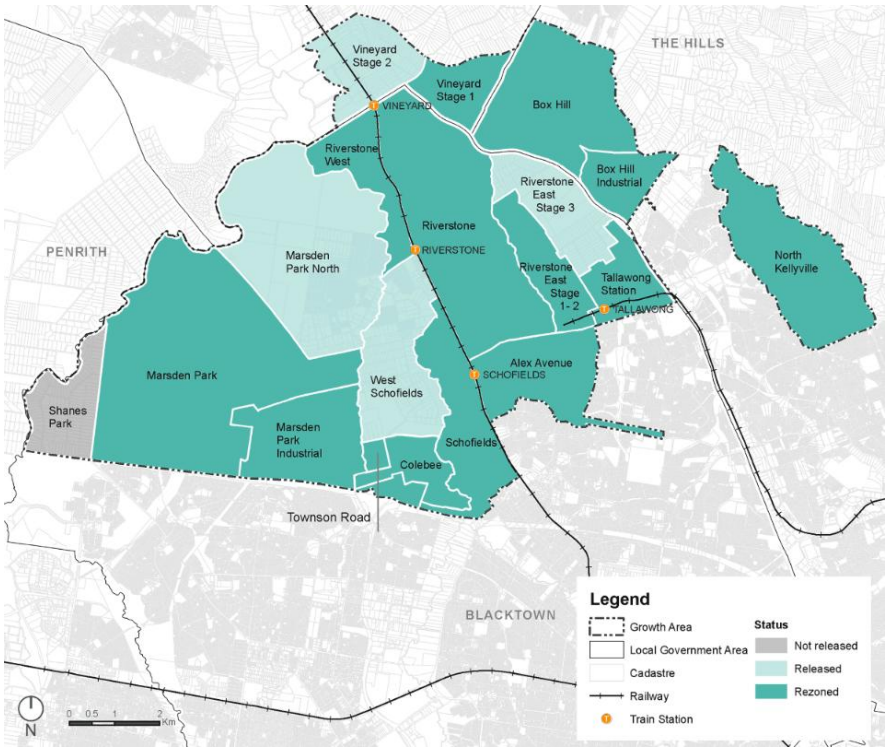
Implication

STHS supports the increasing education needs of the growing resident population in the area. Access to the school site will also be supported by high quality public transport within 1.2km of the site at Tallawong Metro station and Schofields train station.

1.2.6 Blacktown City Council Growth Centre Precincts DCP 2010 (amended May 2021)

The Blacktown City Council Growth Centre Precincts Development Control Plan 2010 has been prepared under the Environmental Planning and Assessment Act 1979. It has been prepared to provide additional objectives, controls and guidelines for development in the Blacktown City Council Growth Centre Precincts. It aims to ensure the orderly, efficient and environmentally sensitive development of the Precincts as envisaged by the North West Growth Centre Structure Plan and State Environmental Planning Policy (Precinct – Central River City) 2021.

Figure 1-9 North West Growth Area



Source: NSW DPIE, 2010

The plan currently applies to eight precincts within the Blacktown Local Government Area, as illustrated in **Figure 1-9**. The proposed school is located in the Riverstone East Stage 1-2 Precinct, with specific provisions for the Riverstone East precinct included in **Schedule 8** of the DCP.

The Riverstone East Precinct is bounded by Schofields Road to the south, Windsor Road to the northeast and First Ponds Creek to the west. It will be delivered in three stages, of which Stages 1 and 2, finalised in 2016, will deliver up to 3,500 new homes and local amenities in Riverstone East. The Indicative Layout Plan supports a mix of medium-density and low-density residential development in the vicinity of the school.

Key transport-related development controls include:

– The street network and road hierarchy are to be provided generally per the Precinct Road Hierarchy.

– Residential roads, i.e. minor collector roads, local streets, access roads/places, and share ways shall be designed for and sign posted at a maximum of 50km/h.

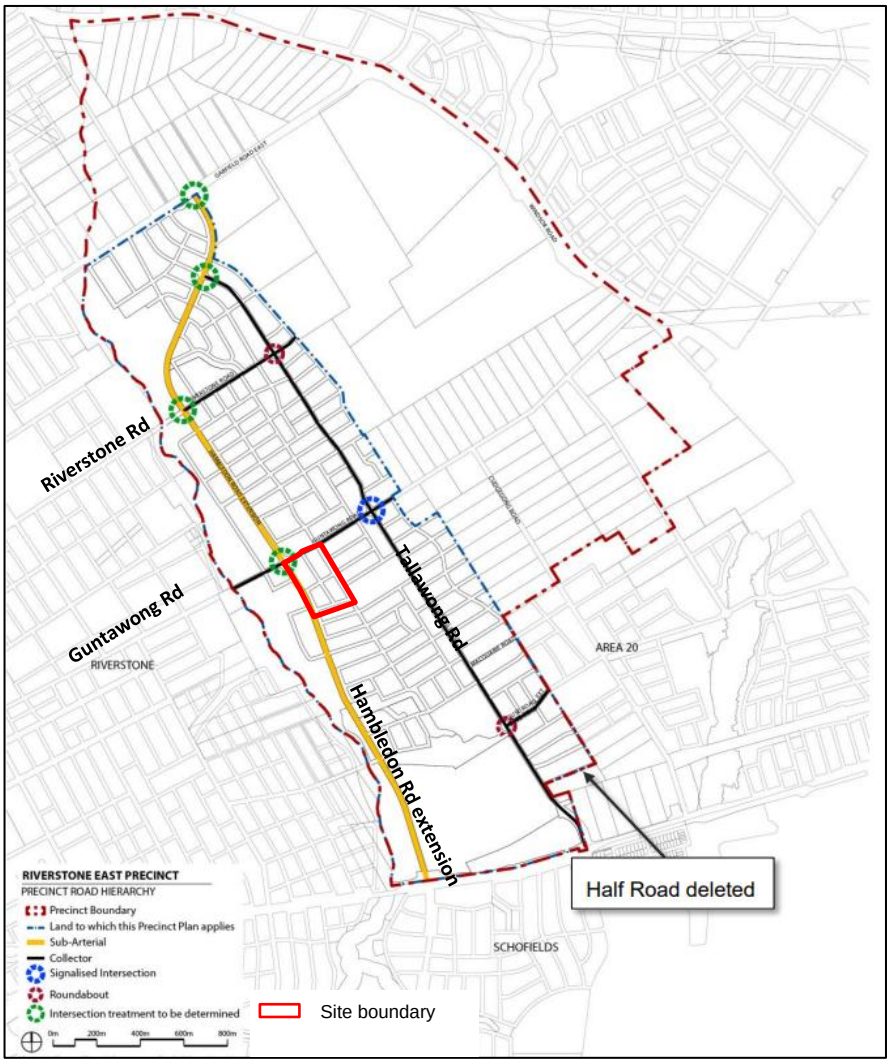
– Where four-way intersections are proposed, traffic is to be controlled, where appropriate, by traffic lights, roundabouts, median strips or signage.

– Street trees are required for all streets.

– Vehicular access to properties is not permitted along sub-arterial roads, therefore rear access should be provided. Shared paths are provided for pedestrian and cycle use and on-street parking is generally not permitted on sub-arterial roads

– A mix of street types, including sub-arterial, collector, local and rear access roads are proposed for the Riverstone East Precinct. The key road network, as illustrated in **Figure 1-10,** includes the proposed Guntawong Road extension and local streets that provide access to residential development across the precinct.

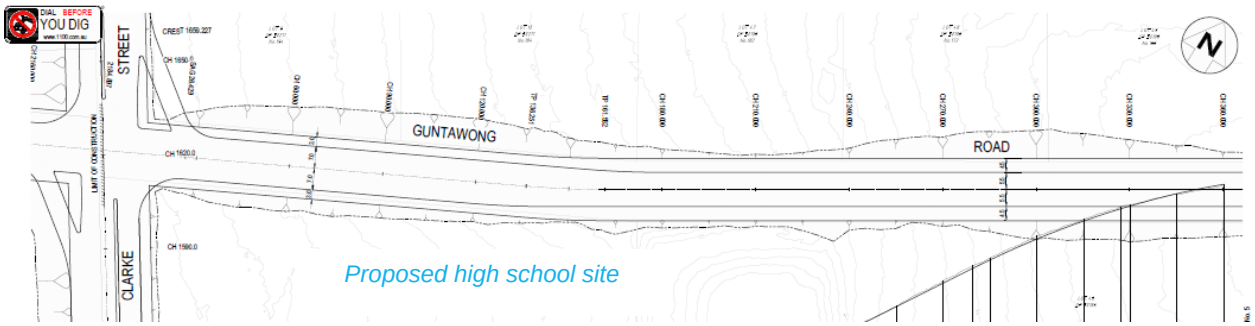
Figure 1-10 Riverstone East Precinct road hierarchy



Source: NSW DEIP Schedule 8 Riverstone East Precinct, 2021

Blacktown City Council (BCC) is managing the acquisition of the land required for the road on behalf of DPHI and is currently exploring options to fund this acquisition. Concept design, supplied by Council (as shown in **Figure 1-11**) indicates a signalised intersection at Guntawong Road. Pedestrian crossings are proposed at the intersection to provide east-west connectivity.

Figure 1-11 Guntawong Road extension concept design



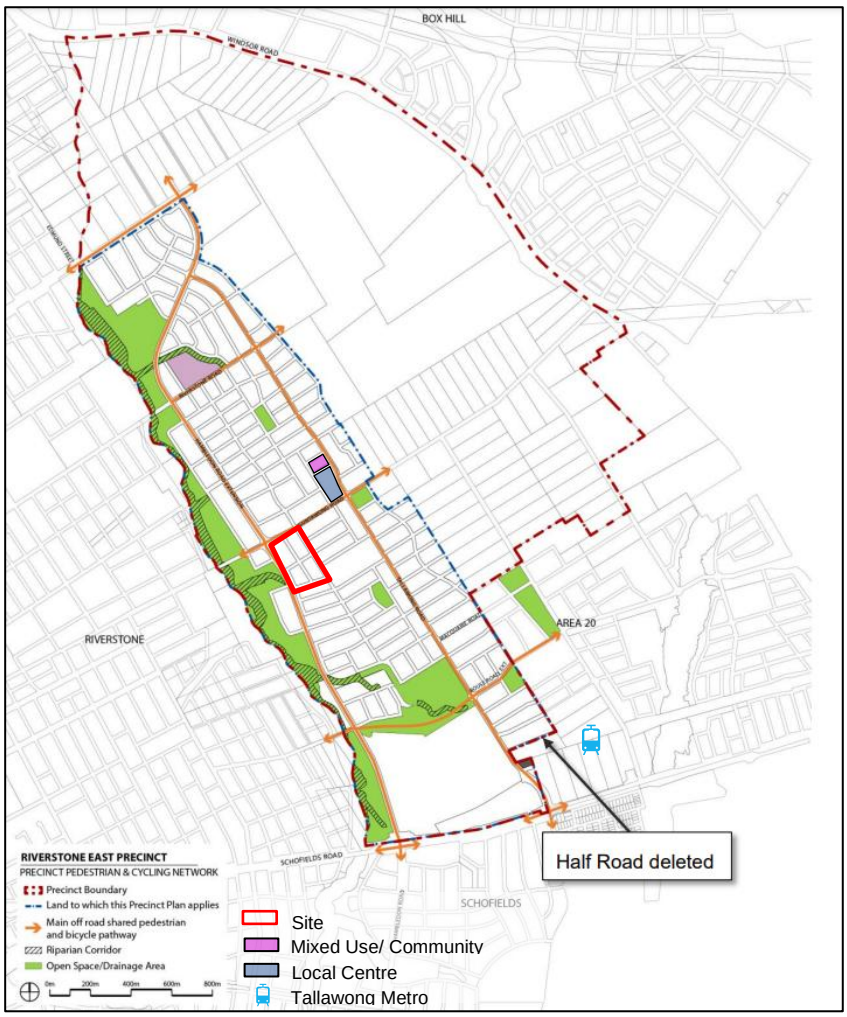
Source: Blacktown City Council, 2024

The school site is adjacent to shared paths proposed along the collector roads (including the Guntawong Road extension) and sub-arterial roads. The shared path routes provide connectivity to the future Local Centre and

Community Facility planned at the corner of Guntawong Road and Tallawong Road (north of the site) and southwards, towards Tallawong Metro (**Figure 1-12**).

The strategic active transport connections will provide direct walking and cycling connections from the site to Tallawong Station promoting a healthy lifestyle and reducing car dependency and parking demand at the metro station.

Figure 1-12 Strategic active transport network



Source: NSW DEIP Schedule 8 Riverstone East Precinct, 2021

Implication

STHS will be supported by appropriate road and active transport networks to encourage easy access to the school.

1.2.7 Blacktown City Council Integrated Transport Management Plan (2013)

The Integrated Transport Management Plan (ITMP) sets a long-term vision to address expected growth in the Blacktown LGA. The plan also consolidates transport elements from previous transport studies to support sustainable transport growth in the future.

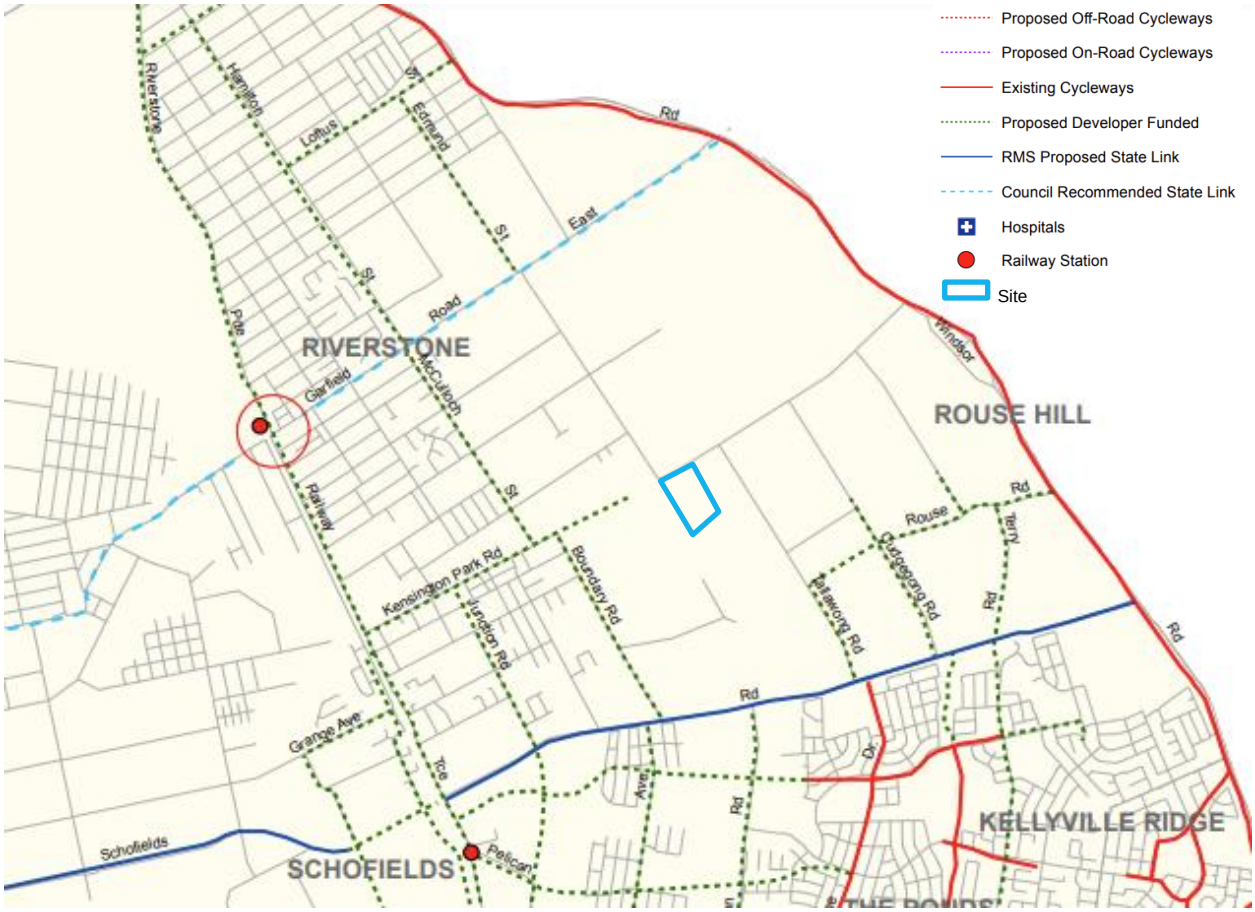
Part of that work includes a walking and cycling action plan with the identified actions:

– Progressively implement shared paths from the Blacktown Council Bike Plan

– Incorporate the provision of bicycle facilities in key locations

The proposed cycle network from the school is summarised in **Figure 1-13**.

Figure 1-13 Cycle network



Source: Blacktown City Council Bike Network Plan, 2016

Implication

The likely mode share assessment for STHS will take into consideration existing and proposed cycle networks in the vicinity of the school site.

2.0 Existing conditions

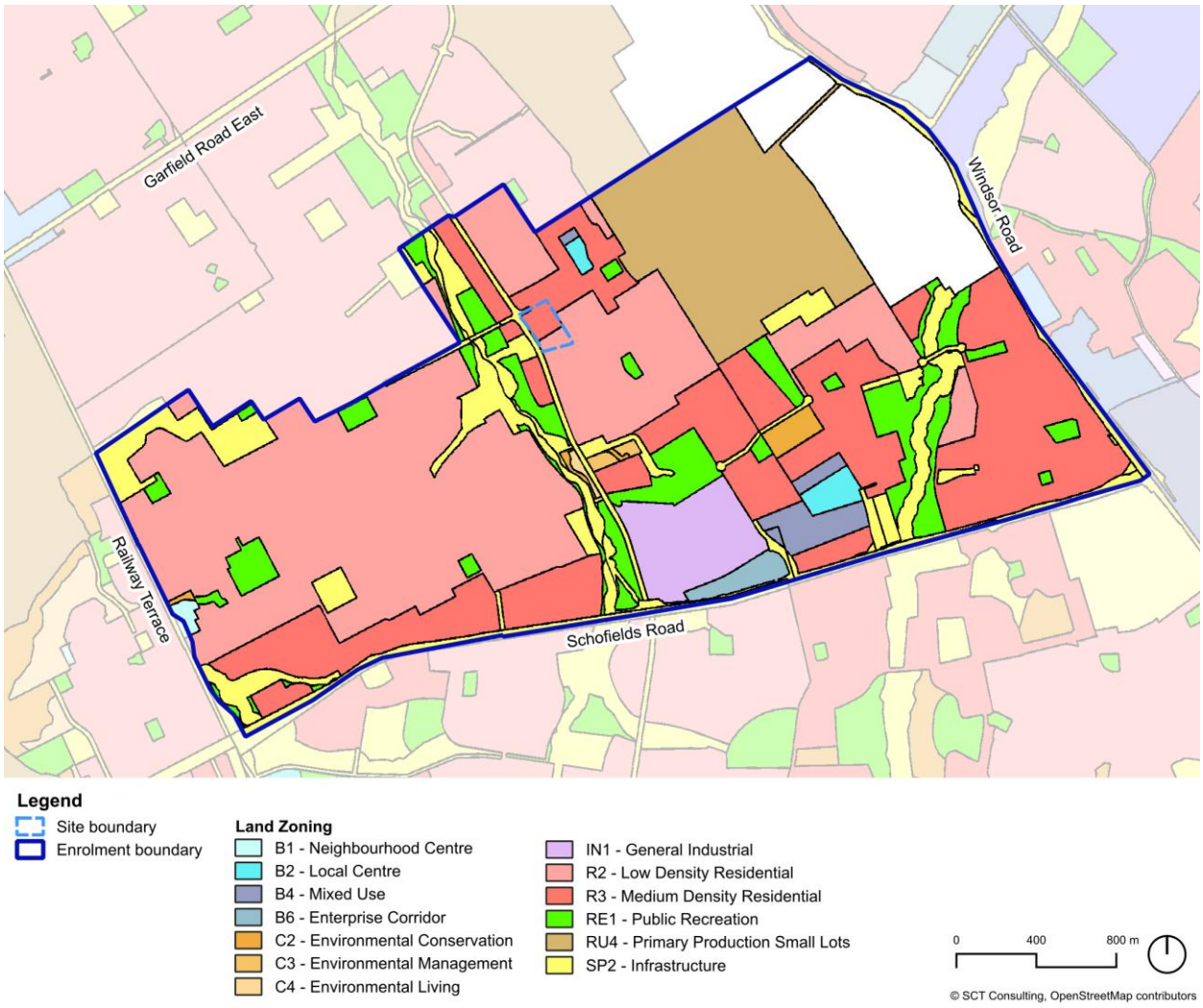
2.1 Site location

The site is known as 201 Guntawong Road, Tallawong, NSW, 2762 (the site), and is legally described as part of Lot 1 in Deposited Plan 1283186. The site is located at the corner of Guntawong Road and Clarke Street, Tallawong and is approximately 4 hectares in area.

The site is predominantly cleared land and consists of grassland with several patches of remnant native vegetation particularly within the northern portion of the site. As a result of precinct wide rezonings, the surrounding locality is currently transitioning from a semi-rural residential area to a highly urbanised area with new low to medium density residential development with supporting services.

The land use zoning surrounding STHS is shown in **Figure 2-1**. The northern part of the proposed school site is currently zoned Medium Density Residential while the southern part of the site is zoned Low Density Residential. Immediately surrounding the school site are low and medium-density residential zones to the east, north, and south.

Figure 2-1 Land zoning within enrolment boundary



2.2 Transport networks

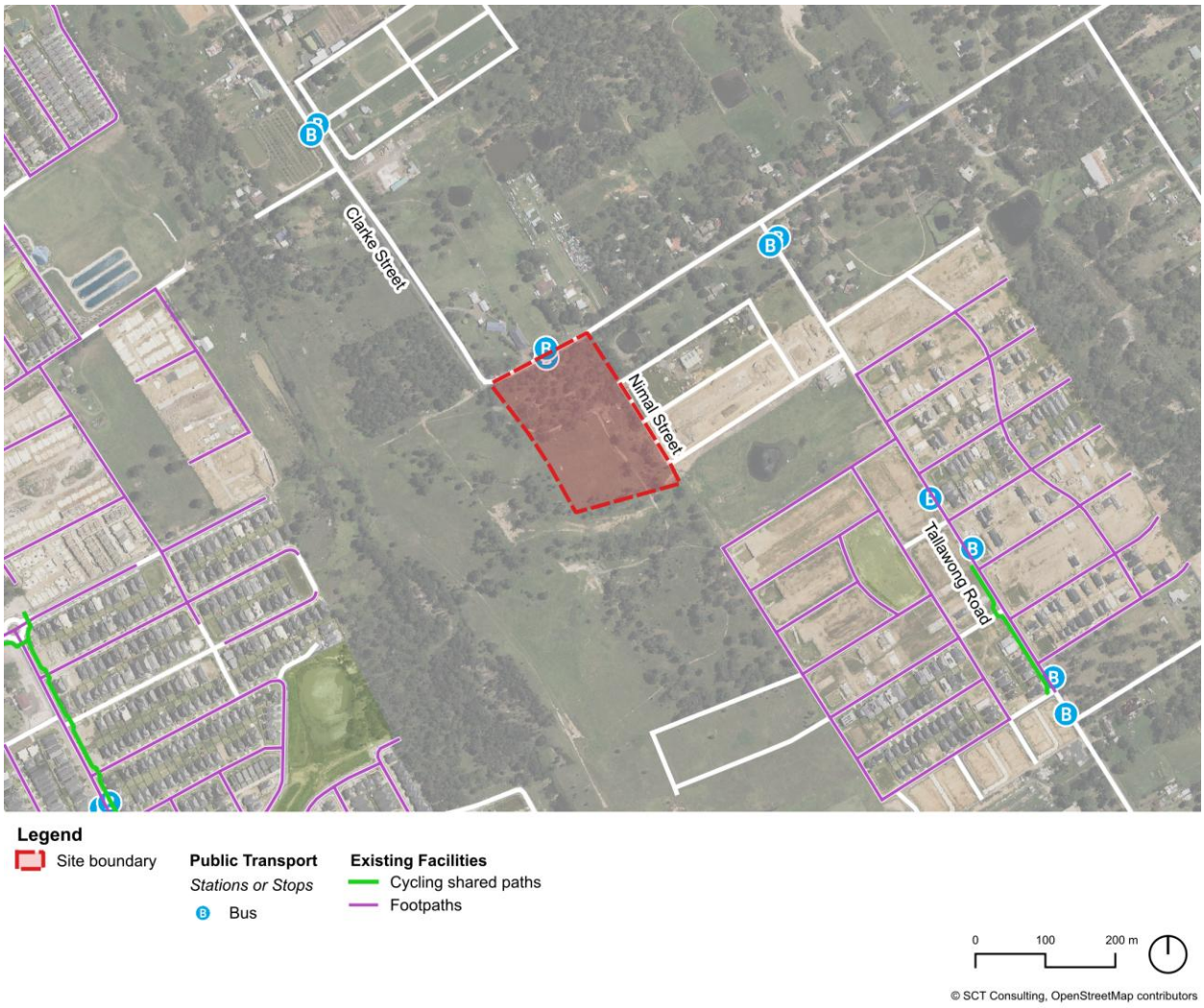
This section describes the existing transport network around the proposed Schofields-Tallawong High School.

2.2.1 Transport overview

The site has an approximately 100-metre-long frontage to Guntawong Road along its northern boundary. Nirmal Street provides a partial frontage along the eastern boundary of the site with plans to extend Nirmal Street to provide a future connection to Guntawong Road. At present, there are no footpaths on Guntawong Road and Nirmal Street.

The site is located approximately 1.5km to the north west of Tallawong Metro Station. The site is also serviced by two bus stops on Guntawong Road adjacent to the northern site boundary. The existing transport context close to the proposed school site is shown in **Figure 2-2**.

Figure 2-2 Transport context



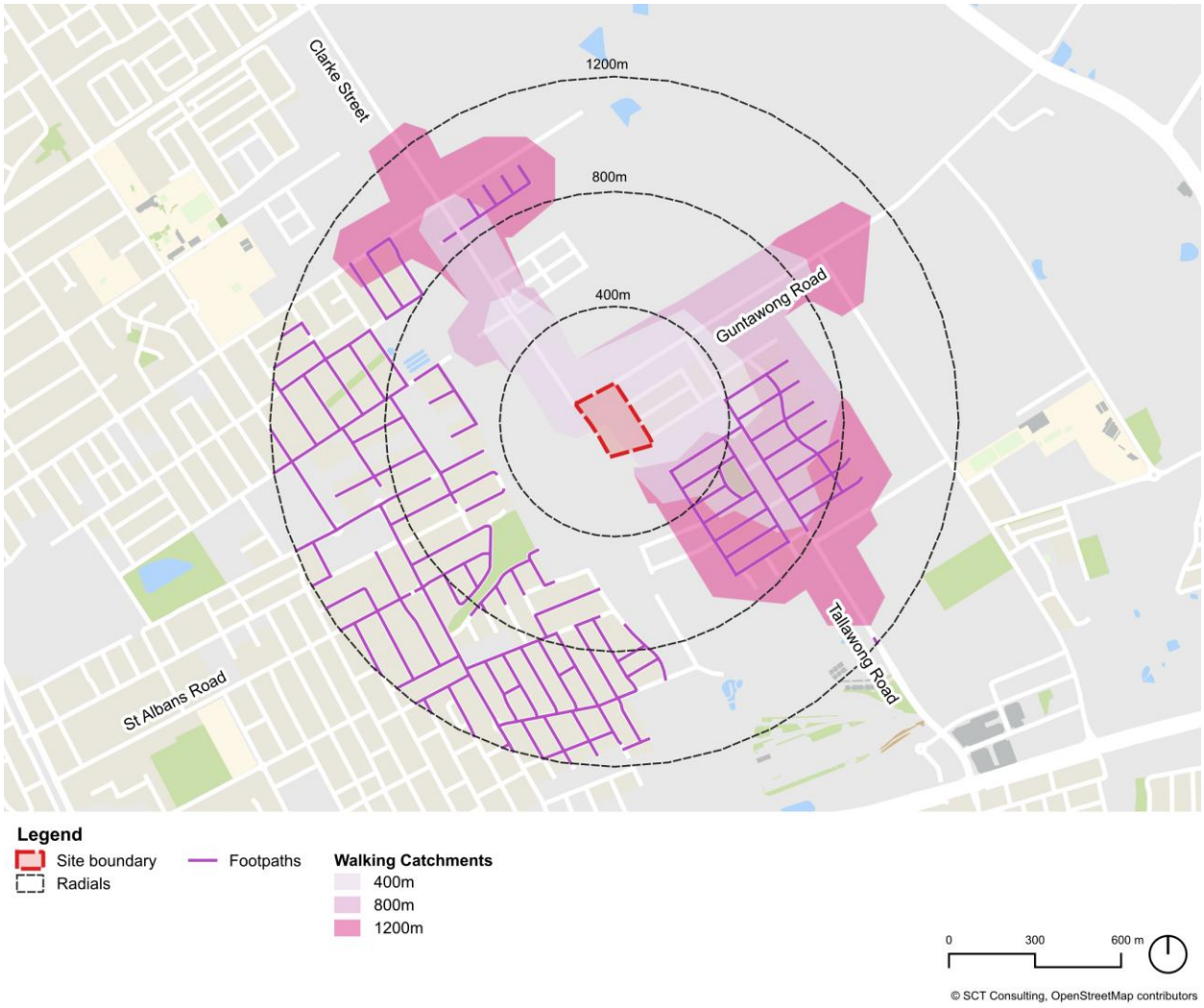
Source: SCT Consulting, 2024

2.2.2 Walking network

Footpath coverage within 1,200m of the school site is shown in **Figure 2-3**. Existing footpath connectivity directly servicing the site is poor with no footpaths directly adjoining the site. Other local streets within residential areas 1,200m of the proposed school have access to footpaths. However, the connectivity to the school, especially from the western residential catchment is poor as there is a lack of infrastructure and connectivity across First Ponds Creek.

There are no crossing facilities in the vicinity of the school site. The nearest is located approximately 1,700m to the south of the site on Tallawong Road, at the signalised intersection of Tallawong Road | Themeda Avenue.

Figure 2-3 Existing footpaths within 1200m

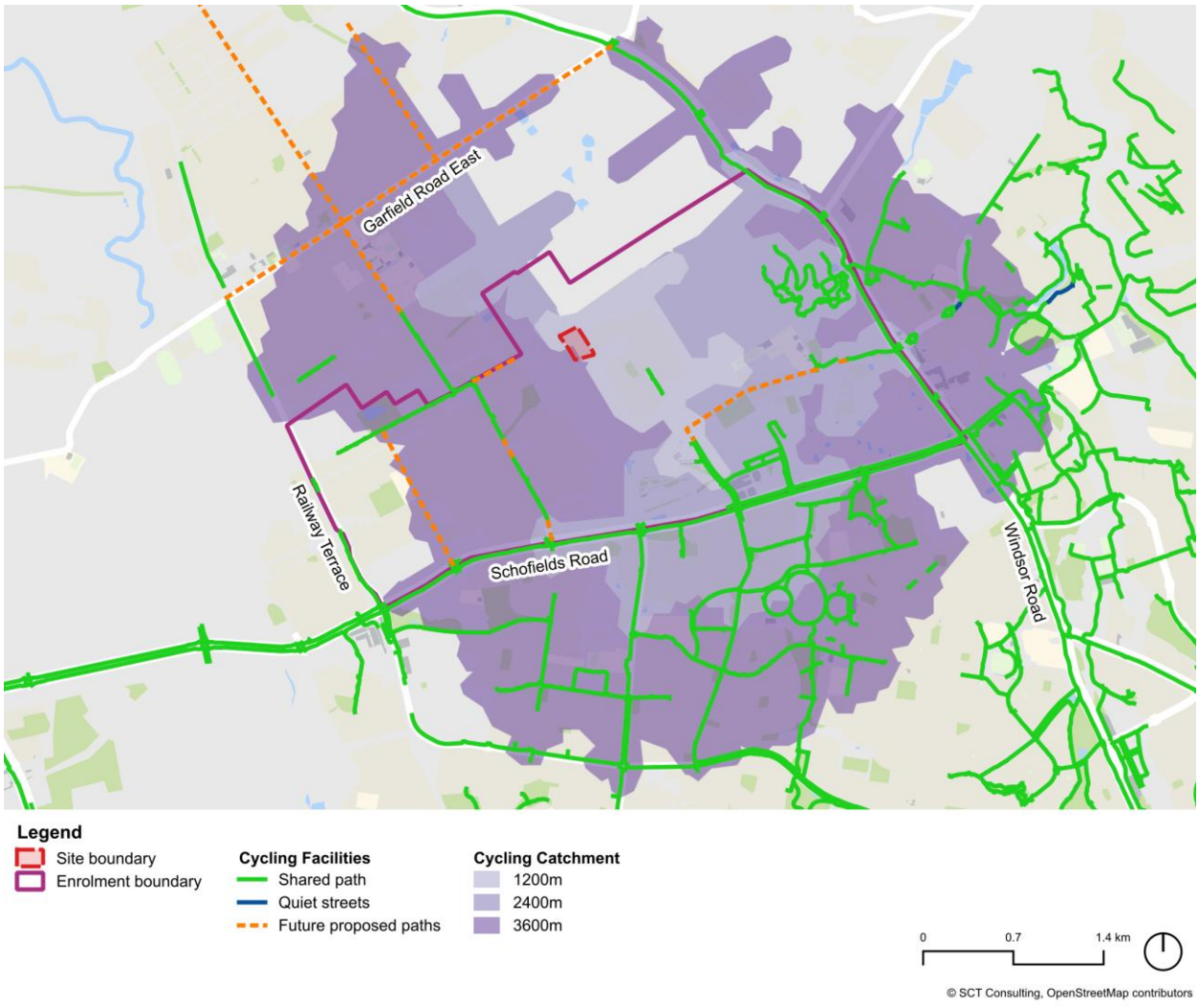


2.2.3 Cycling network

Cycling infrastructure within the enrolment boundary is limited. There is a shared path along Tallawong Road near the intersection of Schofields Road as part of the Tallawong Metro Station precinct. The Blacktown City Council 2016 Bike Plan outlines future proposed cycling infrastructure within the LGA. As of 2024, most of the proposed infrastructure within the school enrolment boundary and cycling catchment have been constructed. A proposed east-west cycling link along Rouse Road from Windsor Road to Tallawong Road is yet to be completed, as well as along Garfield Road East from Riverstone Station to Windsor Road. This however lies outside the enrolment boundary.

The cycling catchment, existing and proposed cycling infrastructure are shown in **Figure 2-4**. As there is limited cycle infrastructure, children 16 and under can choose to cycle on footpaths. However, as the surrounding footpath network connecting to the school site is also limited, it is expected that cycle mode shares will be low if no improvements are made to the existing cycle infrastructure. Although **Figure 2-4** reflects fairly large cycle catchments (2.4km to Tallawong Metro Station), it assumes that cyclists will cycle in mixed traffic conditions, which is not ideal for students.

Figure 2-4 Existing and proposed cycle network



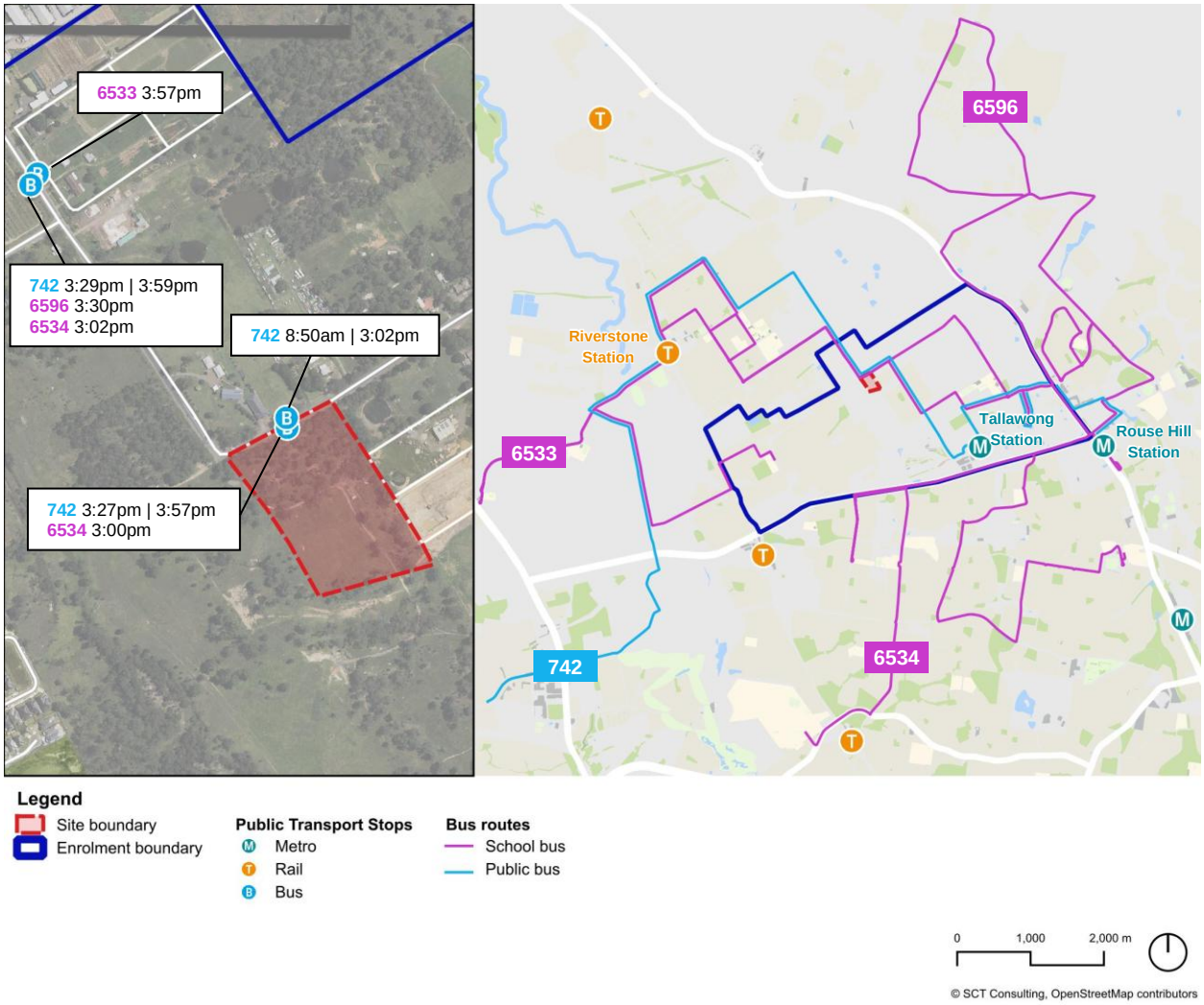
2.2.4 Public transport

The existing public transport network surrounding the proposed Schofields-Tallawong High School is described in this section.

2.2.4.1 Bus routes

The existing public bus routes and their timetables for stops close to the site around school peak hours (8am to 9am and 3pm to 4pm) are highlighted in **Figure 2-5.** The existing buses service Rouse Hill, Mount Druitt, Marsden Park, and Box Hill and provide a connection to Riverstone Station, Tallawong, and Rouse Hill Metro stations.

Figure 2-5 Existing bus routes and departure times in proximity to the site (8-9am, 3-4pm)



Source: GTFS, 2024

Table 2-1 Existing surrounding public and school bus routes

Route	AM stop location	AM arrival	PM stop location	PM departure
742	Guntawong Rd after Clarke St (2765364)	8:50	Guntawong Rd before Clarke St (276259)	3:27
				3:57
6534 (School)	-	-	Guntawong Rd before Clarke St (276259)	3:00
6596 (School)	-	-	Clarke St after Cranbourne St (276558)	3:30
6533 (School)	-	-	Clarke St opp Cranbourne St (276544)	3:57

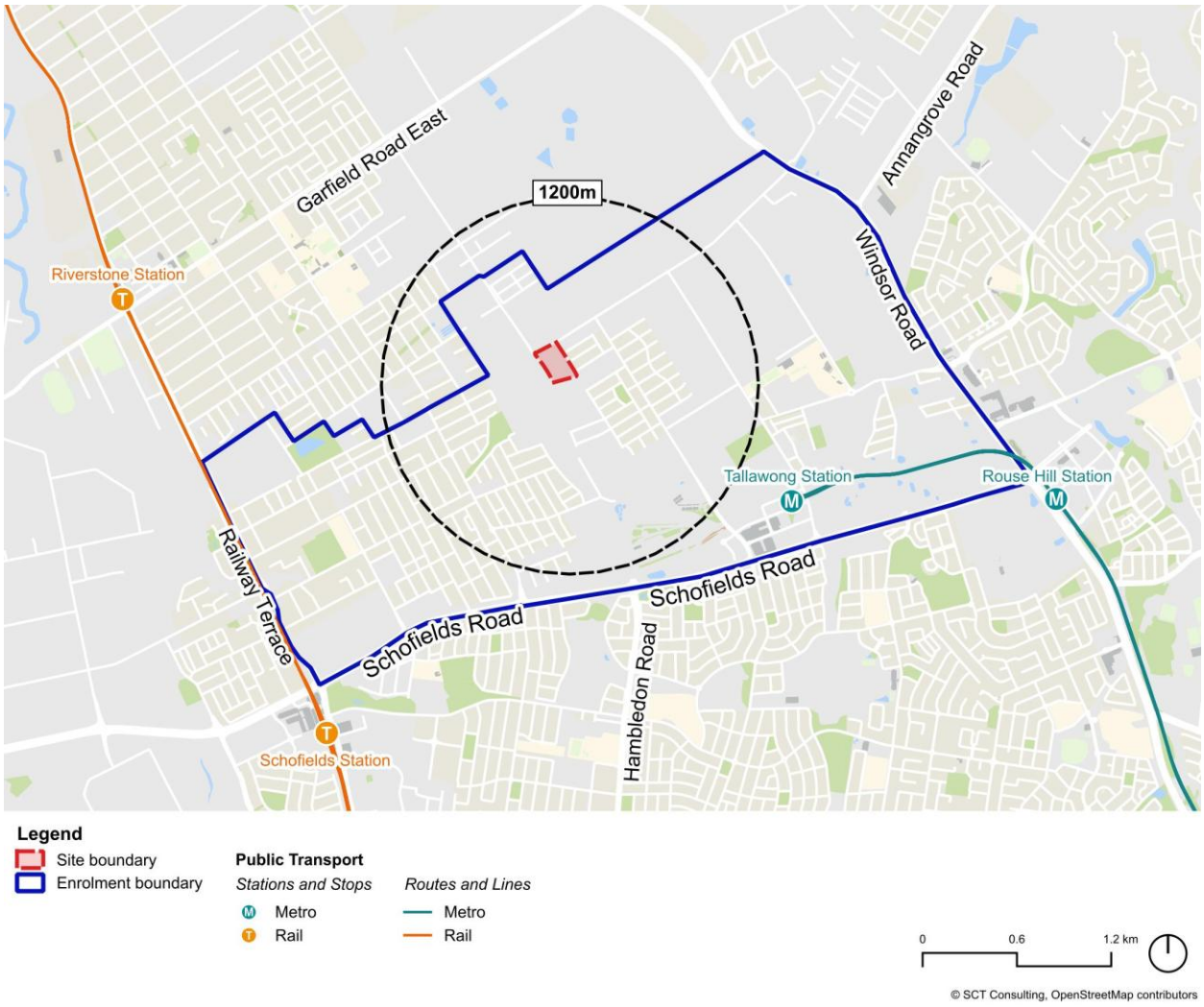
Current bus route directly servicing the site on Guntawong Road are infrequent with only one 742 service in the morning peak and 742 and 6534 servicing the site in the afternoon (3 services in PM peak). Alternative school services 6596 and 6533 also stop at the next bus stop north of the site (about 500m north) with one service each in the afternoon. There is potential to leverage the existing school services to provide adequate public transport services for future students.

All bus stops only have basic facilities with a bus-pole identifying the bus stop and no shelter.

2.2.4.2 Train and Metro

The site is located within a 1.8km walking distance of Tallawong Station to the south east, as shown in **Figure 2-6**. A 1.8km walking distance is approximately a 25-minute walk.

Figure 2-6 Surrounding public transport facilities



While the distance to the rail station is more than a typical walking length, there are bus routes that connect the school to the metro service. (**Figure 2-5**).

Riverstone and Schofields Station are positioned along Railway Terrace and service the T1 Western line (six services between 8-9am and eight services between 3-4pm) and the T5 Cumberland line (four services during each peak period).

The M1 metro services stop at Tallawong Station, which is the terminus. The metro provides frequent services of one service every 4 minutes during peak hours and 10 minutes during off-peak hours.

2.2.5 Student Subsidised Travel Scheme

The Student Subsidised Travel Scheme (SSTS) provides subsidised public transport for students to and from their homes and school. For secondary school students, the following criteria apply:

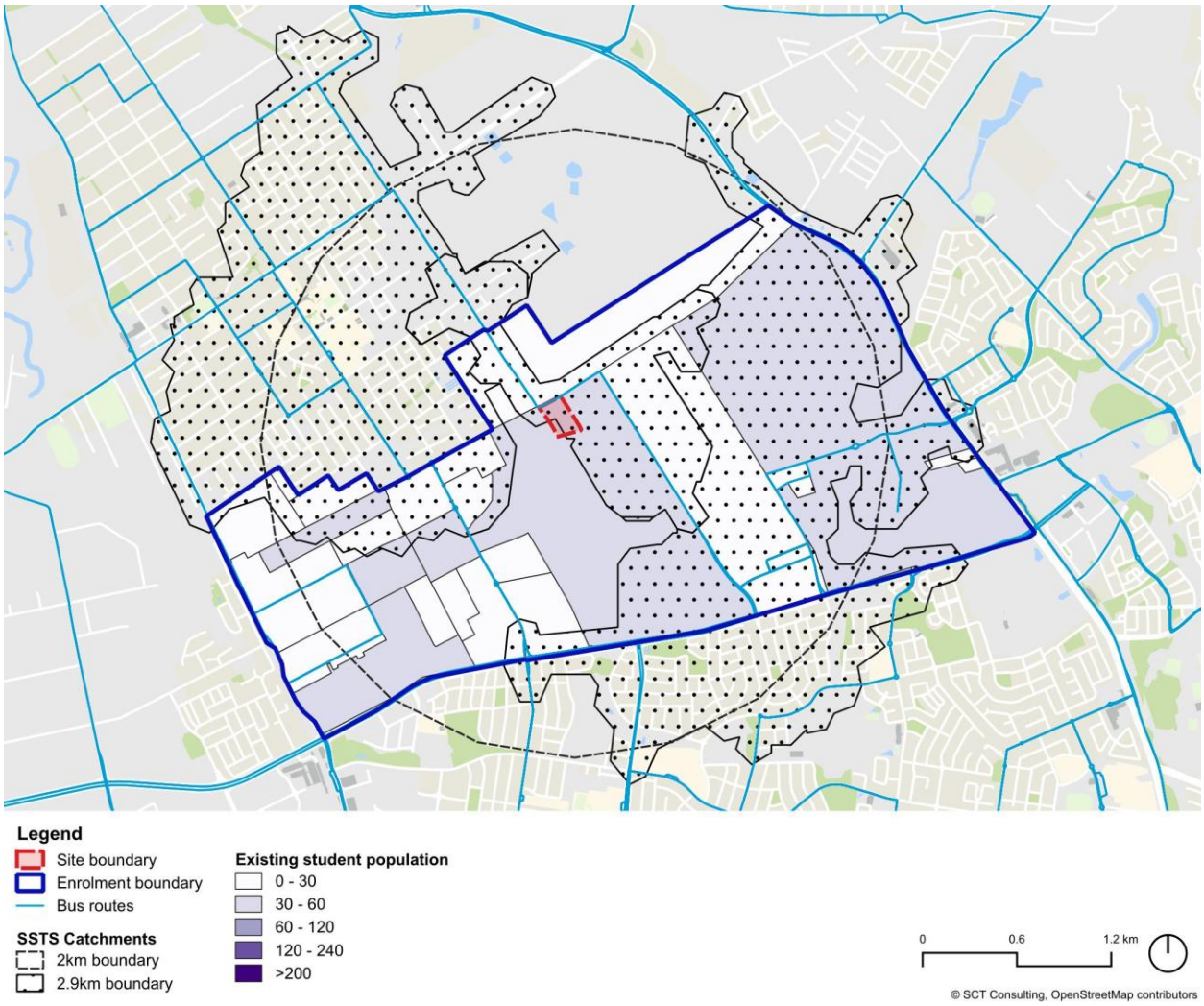
– They live more than 2 km (straight line distance) from school, or

– 2.9 km or more by the most direct practical walking route to the nearest entry point to the school.

There are 285 existing high school students who are eligible for SSTS, and it is estimated that 419 students will be eligible for SSTS when the school is operational.

Figure 2-7 visualises the location of existing high school students living within STHS's enrolment boundary in relation to the SSTS boundary. With future residential development concentrated in the eastern section of the enrolment boundary (not within SSTS), the majority of new students are not anticipated to be eligible for subsidised transport.

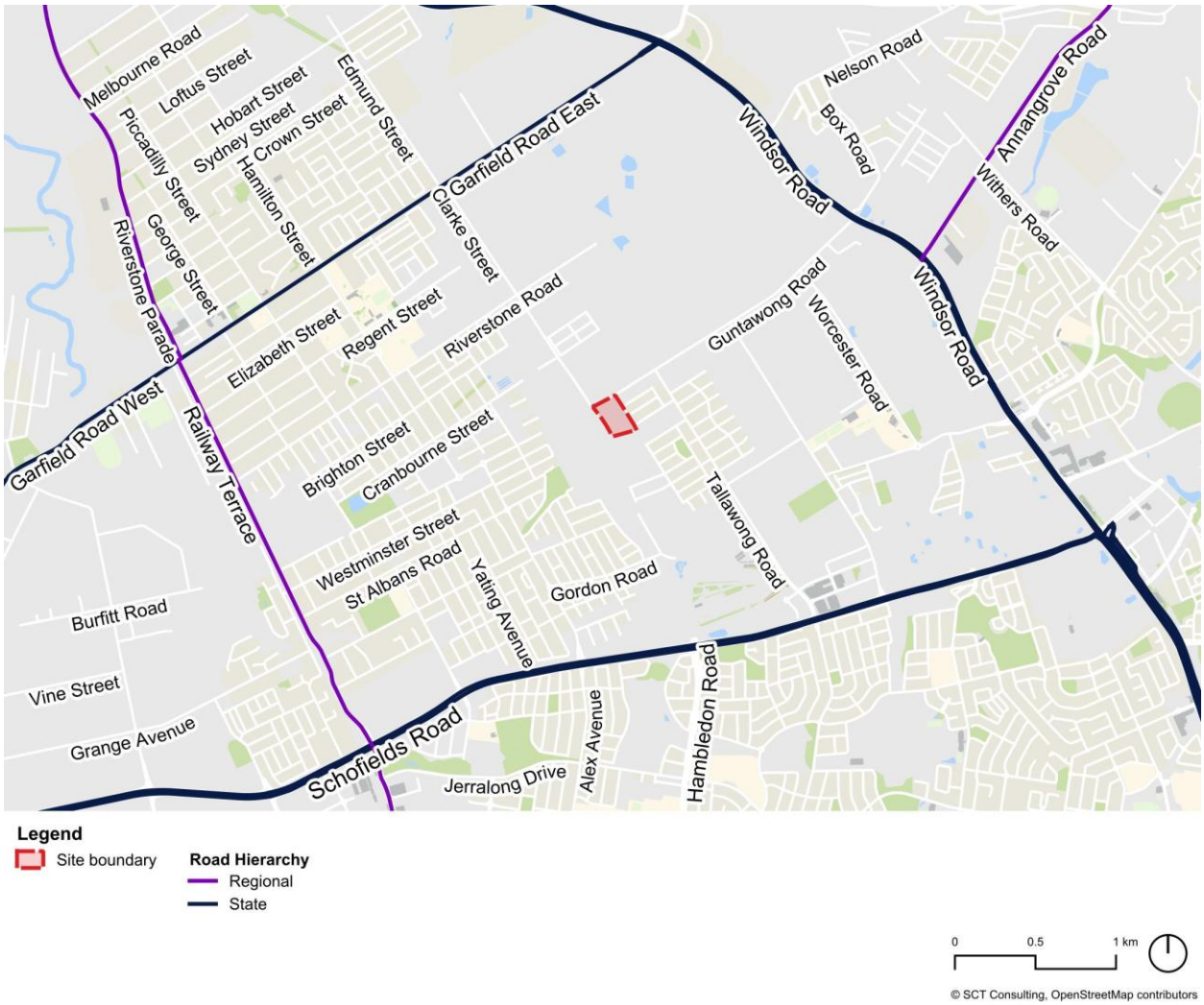
Figure 2-7 SSTS 2.9km walking catchment



2.2.6 Road network

The proposed school site is primarily bounded by Guntawong Road to the north and Nirmal Street to the east as shown in **Figure 2-8**. As a result of precinct wide rezonings, the surrounding locality is currently transitioning from a semi-rural residential area to a highly urbanised area with new low to medium density residential development with supporting services. These future development areas will be supported by new or upgraded road network as planned as part of the Riverstone East Precinct and the Blacktown City Council Growth Centre DCP.

Figure 2-8 Road hierarchy around Condell Park High School



The characteristics of the key road network surrounding the site are:

– **Schofields Road** is classified as a state road and provides access to the Rouse Hill Town Centre from Marsden Park via Schofields train station and Tallawong Metro station. It has two lanes in each direction and has a signposted speed limit of 70km/hr. Schofields Road and Hambledon Road signalised intersection is a key intersection servicing the Schofields residential development south of Schofields Road. A bus lane has been provided in the westbound direction. No parking is permitted on either side of the road whereas a shared path is provided on the south side of the road.

– **Hambledon Road** is a major north-south link connecting local developments around Schofields, The Ponds, and Stanhope Gardens to Quakers Hill and M7 in the south. It currently terminates at Schofields Road and is a four-lane, two-way local road, transitioning to a regional road south of Stanhope Parkway. Hambledon Road also provides access to St John Paul II College and services buses along the corridor. The signposted speed limit is 60km/hr and parking is not permitted on either side of the road. A shared path and a footpath are provided on the western and eastern sides of the road, respectively. It is expected that Hambledon Road will be extended to the north of Schofields towards the proposed school site in the future.

- **Tallawong Road** is a north-south local road connecting Schofields Road in the south and Guntawong Road in the north. It is a 60km/hr road providing access to the Tallawong Metro Station and the commuter car park which has a capacity of 1,000 car parking spaces. The road sections near Schofields Road and between the new residential subdivision to the north have been widened which allows on-street parking.
- **Guntawong Road** is a local road, connecting to Windsor Road in the east and Clarke Street in the west. It is a two-way single-carriageway road with a 60km/hr signposted speed limit, providing access to some private properties and residential streets. Clarke Street is a continuation of Guntawong Road and is also classified as a local two-way road providing a connection to Garfield Road East, north of the subject site. No footpath or walking facility is available along Clarke Street and Guntawong Road. Guntawong Road is expected to be extended to the west over First Ponds Creek to connect with Kensington Park Road in the future.
- **Nirmal Street** is a local street that runs along the eastern boundary of the site. It has a speed limit of 50km/hr and is constructed in sections servicing the adjacent subdivisions. Currently, there is no connection between Blarneystone Avenue and Marchant Street. The completed sections of Nirmal Street provide access to Tallawong Road via Marchant Street in the north and Terrara Street in the south.

2.2.7 Existing intersection performance

2.2.7.1 Traffic surveys

Intersection turning counts and queue length surveys were conducted on the 15 October 2024 at three key intersections in the vicinity of the proposed school site. These are:

- Guntawong Road | Tallawong Road
- Tallawong Road | Marchant Street
- Clarke Road | Riverstone Road.

Traffic counts were conducted between 7.30-9.30am and 2.30-5.30pm, to coincide with typical high school start and end times. The peak hours identified were 7.45-8.45am and 4.30-5.30pm. The layouts of the intersections are shown in **Appendix B**. Video data was also obtained for the time periods mentioned, to verify recorded queue lengths.

2.2.7.2 SIDRA network development and calibration

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

Intersection LOS is a tool to measure the level of congestion at an intersection as well as to identify locations requiring further investigation. The LOS as defined in the Traffic Modelling Guidelines is summarised in **Table 2-2**.

Notably, the intersection LOS is unable to capture the intersection performance and impacts on pedestrian movement. Pedestrians are typically excluded from the LOS metric.

Table 2-2 Level of Service definitions

Level of Service (LOS)	Average Delay per Vehicle (sec/h)	Performance explanation
A	Less than 14.5	Good operation
B	14.5 to 28.4	Good with acceptable delays and spare capacity
C	28.5 to 42.4	Satisfactory
D	42.5 to 56.4	Operating near capacity
E	56.5 to 70.4	At capacity, at signals incidents will cause excessive delays. Roundabouts require other control methods.
F	70.5 or greater	

Source: Roads and Maritime Services, 2002

DOS is another metric to measure the performance of isolated intersections and approaches. DOS is a ratio of traffic demand to capacity. For intersections controlled by traffic signals, both queue length and delays typically increase rapidly as DOS approaches 1.0.

To ensure the accuracy of the models, models that represent the existing conditions were calibrated to the observed approach queues by comparisons against the modelled 95th percentile back of queues. It is noted that the modelling tool is unable to model the upstream or downstream impacts of buses stopping, cars parking or other delays propagated through a network. These occurrences cause brief spikes in intersection queue lengths that will not be accounted for in SIDRA. In addition, SIDRA does not propagate excess percentile queue lengths upstream of an intersection when modelling a series of intersections as a network.

As such, queue lengths have been matched to the best level of accuracy achievable, to replicate conditions at these three intersections. A difference of about two to three vehicles (dependent on queue length) is generally an indication of validation. Queue length validation results and the difference between observed and modelled (*observed – modelled*) are shown in **Table 2-3**. Differences of more than three vehicles are shown in red.

Table 2-3 Queue length validation results

Approach	Model AM	Observed AM	Model PM	Observed PM	AM Difference	PM Difference
Guntawong Road | Tallawong Road						
South	1	6	1	6	5	5
East	0	0	0	0	0	0
West	3	7	1	4	4	3
Tallawong Road | Marchant Road						
North	0	0	0	0	0	0
South	0	0	0	0	0	0
West	0	1	0	1	1	1
Clarke Street | Riverstone Road						
North	1	3	1	3	2	2
South	0	0	0	0	0	0
East	0	0	0	2	0	2
West	7	10	2	7	3	5

For the intersection of Clarke Street | Riverstone Road, initial modelling yielded significant differences in queue lengths for the west approach. The Critical Gap, which is the minimum time between vehicles that is acceptable for vehicles to join the traffic stream from the minor road, was increased above the recommended values in *TfNSW Modelling Guidelines* to reflect what was observed from video footage. Values for the Follow-Up Headway, which is the average time between vehicles joining the major traffic stream, were also increased above the recommended values in *TfNSW Modelling Guidelines* to reflect what was observed from video footage. The observed Critical Gap and Follow-Up Headways are likely due to the narrow road widths with no sealed shoulders and line markings. Potholes are also observed in the turning path of the vehicles from Riverstone Road with poor visibility in the lead-up to the intersection. Queues for the PM peak were not able to be matched exactly. Queue lengths spike for a 15-minute period before quickly subsiding. To account for this, a Peak Flow Factor was applied to this approach to replicate the surge in traffic demand over this brief period. However, this did not fully validate queue lengths, and getting queues to exactly match would distort results over the entire one-hour peak.

The queue length for the south and west approaches at the intersection of Guntawong Road | Tallawong Road have notable differences of five and four vehicles respectively. Queue data and video footage show vehicles arriving on the west approach in groups, indicating that vehicles are not experiencing free-flow traffic conditions within the road network. Road widths on Guntawong Road and Tallawong Road (at the intersection of Guntawong Road) are narrow with no sealed shoulders and are largely not linemarked. This creates variable vehicle speeds with no opportunities for vehicles to overtake others. SIDRA cannot account for these factors. Similar to the south approach, queues are sporadic and not continuous across the peak. Queues form from platoons of vehicles arriving at the intersection and then dissipate.

2.2.7.3 Existing intersection performance

The peak hours that were assessed are 8.00-9.00am and 3.00-4.00pm. The existing morning and afternoon peak intersection performances are summarised in **Table 2-4**.

Table 2-4 2024 peak hour intersection performance

Intersection	Control	2024 Weekday AM peak			2024 Weekday PM peak		
		DOS	Delay	LOS	DOS	Delay	LOS
Guntawong Road | Tallawong Road	Priority	0.47	11.0	A	0.22	6.8	A
Tallawong Road | Marchant Road	Priority	0.17	5.7	A	0.13	6.1	A
Clarke Street | Riverstone Road	Priority	0.77	25.8	B	0.40	11.0	A

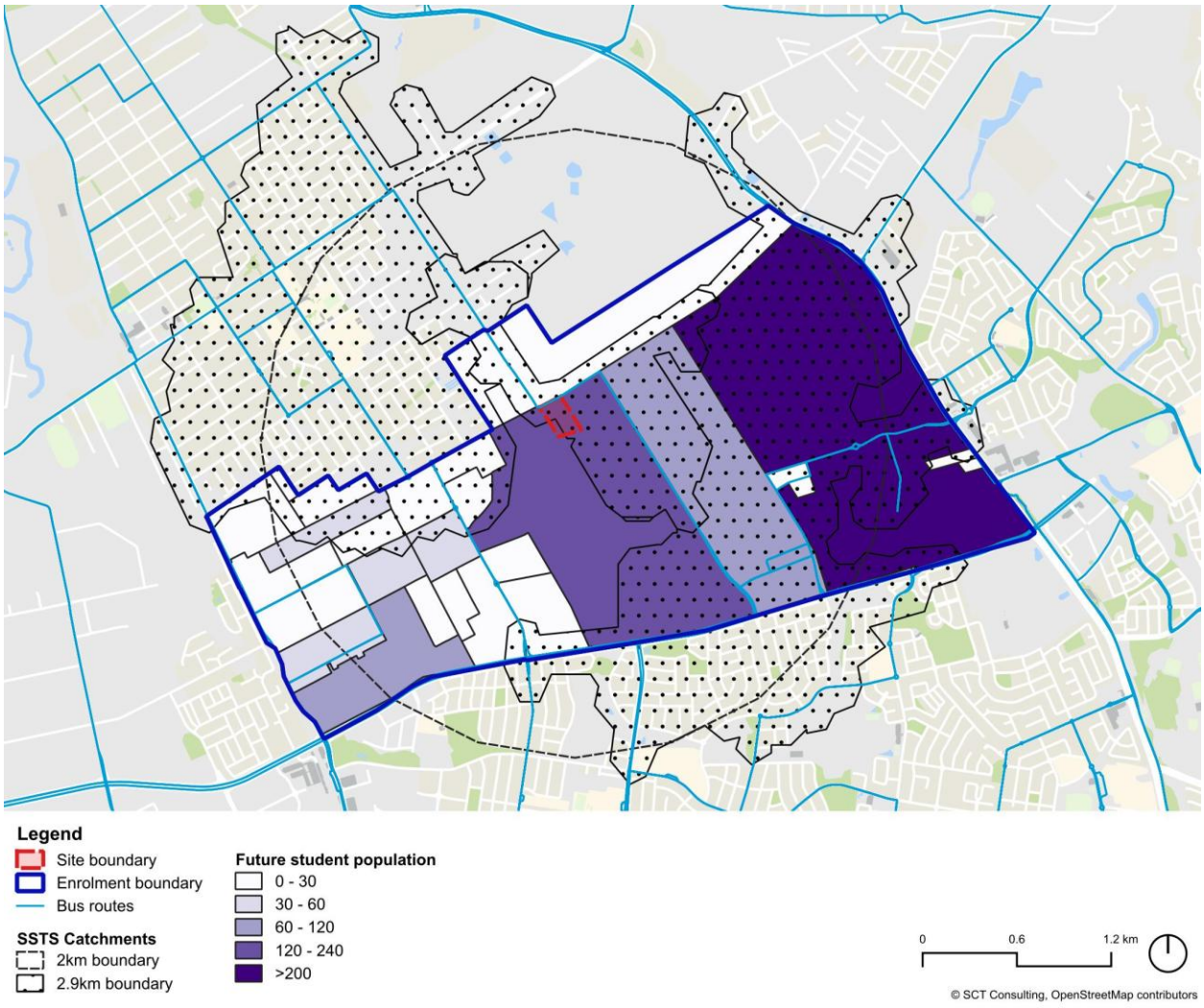
The SIDRA results for the intersection of Clarke Street | Riverstone Road show a LOS of B for the morning peak with a Degree Of Saturation of 0.77 indicating some spare capacity under current road conditions. All other intersections operate at LOS A during both peak hours assessed. Detailed SIDRA outputs can be found in **Appendix C**.

2.3 Travel demand

2.3.1 Student locations

Figure 2-9 shows the forecasted locations of school students within the enrolment boundary. Future student enrolment is expected to intensify on the eastern side of the enrolment boundary, in line with future residential densification.

Figure 2-9 Anonymised future student locations



2.3.2 Local travel demand

Schofields-Tallawong High School's enrolment boundary lies within the 2016 Australian Bureau of Statistics (ABS) Statistical Level 2 (SA2) boundary of Riverstone-Marsden Park. **Table 2-5** summarises how residents in the Riverstone-Marsden Park SA2 boundary travelled compared to Blacktown LGA and Greater Sydney. To understand how the community travelled, 2016 data was used as 2021 census data was impacted by COVID-19 and could not reflect typical conditions. As it is a journey-to-work statistic, it largely reflects how parents and commuters travel. High school students who often travel to school independently, are not explicitly represented. Despite this, the travel mode shares provide an overall indication of travel behaviour and preferences of residents in the area.

Table 2-5 2016 Census method of travel to work

Method of travel	Riverstone – Marsden Park SA2 boundary	Blacktown LGA	Greater Sydney
Train	14%	16%	16%
Bus	2%	4%	6%
Car, as driver	64%	62%	54%
Car, as passenger	4%	5%	4%
Truck	2%	1%	1%
Motorbike/scooter	0%	0%	1%
Bicycle	0%	0%	1%
Walked only	1%	1%	4%
Worked at home	4%	3%	4%
Did not go to work	7%	7%	8%
Other	1%	1%	1%

Source: Australian Bureau of Statistics; 2016

The SA2 data reflects a similar travel mode share to Blacktown LGA's mode share, with car travel being the dominant travel mode (almost 70 per cent) and very minimal active transport usage (less than two per cent). However, for public transport use, residents in the SA2 boundary use slightly less public transport (14 per cent train, two per cent bus) than residents in Blacktown LGA (16 per cent train, four per cent bus). Although the proposed school is within a 1.2km walking distance of the train station, walking to public transport would be less desirable for staff and students with heavy bags.

Table 2-6 summarises the 2023/23 Household Travel Survey (HTS) for Blacktown North (SA3) and Blacktown LGA.

Table 2-6 Household Travel Survey 2022/23

Travel mode	North Blacktown – SA3 boundary	Blacktown
Car, as driver	54%	52%
Car, as passenger	26%	27%
Public Transport	6%	7%
Walk only	14%	13%
Other	<1%	1%

Source: Transport for New South Wales; 2024

Compared to journey-to-work travel surveys, the HTS shows a similar overall trend of high dependence on car use (about 80 per cent) and lower public transport use (about seven per cent). However, as HTS includes different trip types, the data shows that there is a higher propensity for residents to walk for non-work trips (14 per cent) compared to journey-to-work trips (people are less likely to work within walking distance). In addition, the public transport mode share for household trips (seven per cent) is lower than for journey-to-work trips (16 per cent) as it includes a variety of ad-hoc trips, which are difficult to plan around irregular bus transport timetables. However, the public transport mode share is expected to be higher for the school as it will be serviced by buses catered to school bell times

2.3.3 Site visit

A site visit was carried out 19 September 2024 during the typical morning school peak hour (8am to 9am) to understand existing site traffic conditions. Key findings of the site visit are summarised in:

– Light traffic was observed for the surrounding road network on Guntawong Road, Nirmal Street and Clarke Street.

– High availability of on-street parking was observed on residential streets surrounding the site (Nirmal Street, Wallaston Street and Marchant Street).
– Poor pedestrian and cycling permeability from the west of the site to the school
– On-going development for surrounding lots was observed:
  - Active construction on land north of McClelland Street (to provide half road extension of Nirmal Road connecting to Guntawong Road
  - Hoarding around land south of Marchant Street.

2.3.4 School travel behaviour

As STHS is not an existing school, mode share surveys from Rouse Hill High School were used as a reference to understand likely travel patterns for STHS. Rouse Hill High School is a suitable benchmark as it is located only about 5km east of STHS and has a similar transport environment in a growth residential area. **Figure 2-10** summarises the mode share surveys for Rouse Hill High School.

Figure 2-10 Mode share surveys for Rouse Hill High School (August 2023)

Term 3 2023 Mode Share

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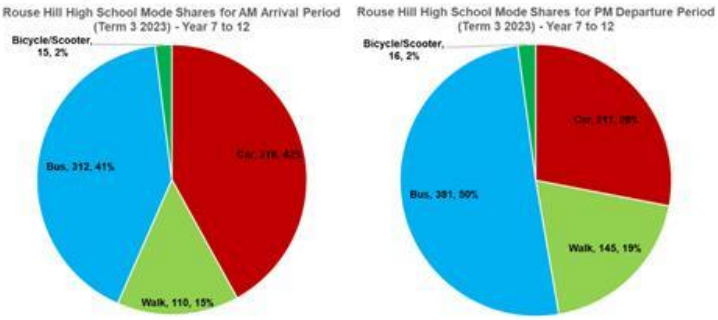
The mode share for students travelling to Rouse Hill High School was informed by the results of the online survey. The survey was undertaken on 4 August 2023 for Year 7 to 10 students and on 28 August 2023 for Year 11 to 12 students, with some 763 students completed the survey. This equates to almost 75% of the 2023 student population.



Mode	AM Peak		PM Peak	
	Number of Students	Mode Share	Number of Students	Mode Share
Car	316	41%	211	28%
Walk	110	14%	145	19%
Bus	312	41%	381	50%
Train	9	1%	10	1%
Bicycle	13	2%	13	2%
Scooter	2	0%	3	0%

From mode share survey of Rouse Hill High School, we have
~41% and 28% of students travelled by car in AM and PM respectively
~16% and 21% students walked/cycled in AM and PM respectively
~41% and 50% of students travelled by bus in AM and PM respectively

3.0 Analysis of strategic context and existing transport network/demands

3.1 Testing school transport targets

3.1.1 Student mode share scenarios

The mode share analysis was based on the indicative locations of future students, which were developed using anonymised locations of students within the proposed enrolment boundary, future year enrolment targets, and future residential growth areas in the enrolment boundary. As a new school, there are no existing travel mode shares for STHS and its base case mode share was calibrated against Rouse Hill High School's mode share surveys. Rouse Hill High School is a suitable benchmark as it is located only about 5km east of STHS and has a similar transport environment in a growth residential area.

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

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

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

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

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

Three scenarios are assessed:

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

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

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

The rationale for the assessment is that by including the base case, there is a way to assess the benefits of the mitigation measures. The stretch case is a possible future if others deliver relevant mitigation measures, but these can't be guaranteed. Hence the traffic modelling is undertaken using the moderate case, which is more car-oriented than the stretch case.

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

Table 3-1 Description of scenario development

Scenario	Investment
Base case	– 100% within enrolment catchment
Moderate case	As with base case, plus: – Zebra crossing on Guntawong Road and Wombat crossing on Nirmal Street – 3.5m shared path along school frontage on Nirmal Street and Guntawong Road – 2 bus bays on either side of Guntawong Road
Stretch case	As with moderate case, plus – Guntawong Road extension to Kensington Park Road to improve east-west connections (by others)

In the case of Guntawong Road extension, this is infrastructure which is required due to the delivery of the broader growth area.

Table 3-2 summarised the mode share targets for all three scenarios. The base case mode share target for future students taking buses to school is set at 50% based on what can be achieved at Rouse Hill High School, in a similar growth area as Schofields-Tallawong High School. This bus mode share target is set for the end-state when the full 1,000 student population is expected by 2040, and the bus mode share could be lower than 50% during Day 1 opening of the high school.

Table 3-2 Mode share targets

Scenario	Metric	Walk	Bicycle/Scoot	Bus	Car
Base case	#	80	30	500	390
	%	8%	3%	50%	39%
Moderate case	#	100	50	550	300
	%	10%	5%	55%	30%
Stretch case	#	150	100	550	200
	%	15%	10%	55%	20%

The infrastructure which the stretch case relies on in not yet fully funded and committed (i.e. Guntawong Road extension), so the moderate case was adopted for the transport assessment. The initiatives in the moderate case are proposed to be funded by School Infrastructure.

3.1.1.1 Base case

As STHS is a proposed school, there are no existing travel mode shares for the school and Rouse Hill High School's mode share targets were used to develop future year base travel mode shares for STHS. Rouse Hill High School is a suitable benchmark as it is located only about 5km east of STHS and has a similar transport environment in a growth residential area. Hence, the base case mode share target for future students taking buses to school is set at 50% based on what can be achieved at Rouse Hill High School, in a similar growth area as Schofields-Tallawong High School. This bus mode share target is set for the end-state when the full 1,000 student population is expected by 2040, and the bus mode share could be lower than 50% during Day 1 opening of the high school.

Table 3-3 outlines the mode shares for the future base case, which are based on the following assumptions:

– No investment in transport infrastructure

– Assumed access points

  - Primary access on Nirmal Street
  - Two secondary access points on Guntawong Road.

– Adequate bus services are provided to cater to student population at the year of opening

– 50 bicycle parking spaces will be provided on-site.

Assuming 1.5 students per car for kiss 'n drop use, the future base case will generate:

– 260 cars per pick up/drop off session (0.39 vehicles per student). However, as inbound and outbound vehicle trips relating to pick up and drop off are generated within the same hour, the road network will have to accommodate twice the number of trips per hour. These are student-only trips.

– 90 per cent of students are assumed to arrive during the peak hour and all staff will arrive outside the peak hour. This results in a peak period traffic generation of 208 vehicles in the peak hour.

– The daily traffic generation relating to student trips is 520 trips.

Table 3-3 Future base case scenario

Accessibility group	Notional (as the crow flies)		Actual (on path)		Students in accessibility group	Propensity to pick each mode			
	#	%	#	%		Walk	Bicycle	Bus	Car
1-400m	25	3%	24	2%	24	80%	5%	-	15%
400-800m	102	10%	44	4%	44	60%	10%	-	30%
800-1,200m	181	18%	17	2%	17	50%	15%	0%	35%
Not eligible for SSTS but beyond 1,200m walk	432	43%	222	22%	222	12%	10%	28%	51%
Eligible for SSTS and located within 400m of a PT stop	157	16%	489	49%	488	-	-	80%	20%
Eligible for SSTS and located beyond 400m buffer of a PT stop	103	10%	205	21%	205	-	-	23%	77%
Number of students predicted by mode						**80**	**30**	**500**	**390**
Proportion of students predicted by mode						**8%**	**3%**	**50%**	**39%**

Assumptions

– The School is upgraded with no investment in the transport network.

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

3.1.1.2 Moderate case (preferred)

A moderate case was developed based on a list of interventions to encourage mode shift towards more sustainable transport modes. These initiatives include:

– Pedestrian crossing on Guntawong Road and wombat crossing on Nirmal Street to facilitate safe access.

– 3.5m shared path along school frontage on Nirmal Street and Guntawong Road.

– 2 bus bays on either side of Guntawong Road.

Table 3-4 outlines the mode shares for the future moderate case, which are based on the following assumptions:

– Assumed access points

  - Primary access on Nirmal Street
  - Two secondary access points on Guntawong Road.

– Adequate bus services are provided to cater to student population

– 50 bicycle parking spaces will be provided on-site.

Assuming 1.5 students per car for kiss 'n drop use, the future moderate case will generate:

– 200 cars per pick up/drop off session (0.30 vehicles per student). However, as inbound and outbound vehicle trips relating to pick up and drop off are generated within the same hour, the road network will have to accommodate twice the number of trips per hour. These are student-only trips.

– 80 per cent of students are assumed to arrive during the peak hour and all staff will arrive outside the peak hour. This results in a peak period traffic generation of 165 vehicles in the peak hour.

– The daily traffic generation relating to student trips is 400 trips.

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

Intervention	Type	Walk	Cycle	Bus	Car	# students potentially benefited
Zebra crossings on Guntawong and Nirmal Street	Infrastructure	5	15		-20	573
3.5m shared path along school frontage on Nirmal Street and Guntawong Road	Infrastructure	15	5		-20	307
2 bus bays on either side of Guntawong Road	Infrastructure			50	-50	488
Net change in number		**20**	**20**	**50**	**-70**	
Future base case number		**80**	**30**	**500**	**390**	
Future base case mode share		**8%**	**3%**	**50%**	**39%**	
Moderate case projected number		**100**	**50**	**550**	**300**	
Moderate case projected mode share		**10%**	**5%**	**55%**	**30%**	

3.1.1.3 Stretch case

In addition to the initiatives proposed to be implemented in the moderate case, a stretch case was also developed with an additional intervention to improve east-west transport connectivity to the school. This will benefit students living west of the school as First Ponds Creek is a significant barrier to movement.

Table 3-5 outlines the mode shares for the stretch case, which are based on the following assumptions:

– Assumed access points
  - Primary access on Nirmal Street
  - Two secondary access points on Guntawong Road.
– Adequate bus services are provided to cater to student population
– 50 bicycle parking spaces will be provided on-site.

Assuming 1.5 students per car for kiss 'n drop use, the stretch case will generate:

– 134 cars per pick up/drop off session (0.2 vehicles per student). However, as inbound and outbound vehicle trips relating to pick up and drop off are generated within the same hour, the road network will have to accommodate twice the number of trips per hour. These are student-only trips.
– 80 per cent of students are assumed to arrive during the peak hour and all staff will arrive outside the peak hour. This results in a peak period traffic generation of 107 vehicles in the peak hour.
– The daily traffic generation relating to student trips is 268 trips.

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

Intervention	Type	Walk	Cycle	Bus	Car	# students potentially benefited
Guntawong Road extension to Kensington Park Road	Infrastructure	50	50		-100	203
Net change in number		**50**	**50**	**0**	**-100**	
Moderate case number		**100**	**50**	**550**	**300**	
Moderate case mode share		**10%**	**5%**	**55%**	**30%**	
Stretch case projected number		**150**	**100**	**550**	**200**	
Stretch case projected mode share		**15%**	**10%**	**55%**	**20%**	

3.2 Supporting scenarios with infrastructure, operations, policies & programs

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

Table 3-6 summarises the infrastructure and operational requirements across the moderate and stretch case scenarios. All transport upgrades and operational initiatives are proposed to be implemented within the first year of school operations, or otherwise agreed with Council and TfNSW.

Table 3-6 Infrastructure and operational requirements

Category	Moderate case	Stretch case
Infrastructure	– Pedestrian crossing on Guntawong Road and wombat crossing on Nirmal Street to facilitate safe access – 3.5m shared path along school frontage on Nirmal Street and Guntawong Road – 2 bus bays on either side of Guntawong Road	As with moderate case plus: – Guntawong Road extension to Kensington Park Road to improve east-west connections
Operations, policies & programs for **students**	– Travel Coordinator – School Transport Committee – NSW Police road safety training – Ride2School – Children's/Young People's Active Travel – STEPtember	Same as the moderate case
Operations, policies & programs for **staff**	– Travel Coordinator – School Transport Committee – Travel Access Guide – Use of carpooling and carsharing – Workplace walking/cycling group – STEPtember	Same as the moderate case

3.2.1 School transport infrastructure

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

Figure 3-1 Schofields Tallawong High School – Transport Access

Source: djrd Architects with annotations by SCT Consulting; 2024

3.2.1.1 Pedestrian facilities

The following pedestrian facilities are proposed surrounding the proposed high school to improve walkability to the school by future students, staff and parents, supporting at least 100 students that will be expected to walk to school and the connection with the proposed bus stops at Guntawong Road:

– Pedestrian accesses at Guntawong Road (x2) and Nirmal Street (x2)

– 3.5m wide footpaths on both sides of Guntawong Road between the bus stop and the school entrances

– 3.5m wide footpath on the western side of Nirmal Street along the school frontage

– At-grade pedestrian crossing at Guntawong Road to provide safe access by students, staff and parents to access the school from the bus stops

– Raised pedestrian crossing at Nirmal Street to provide safe access by students, staff and parents to the school near the northern Nirmal Street entrance.

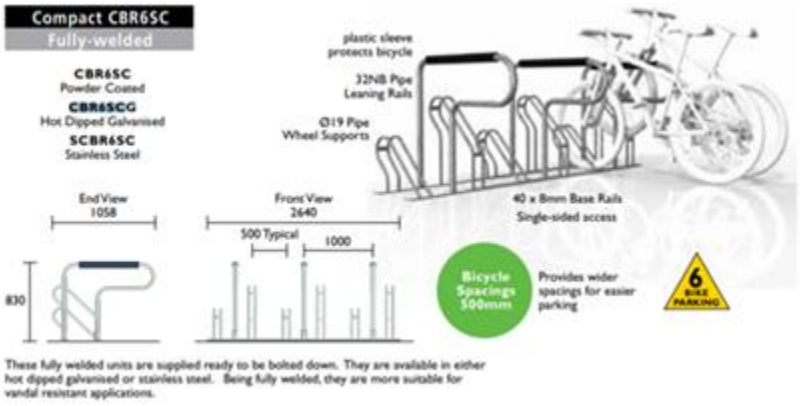
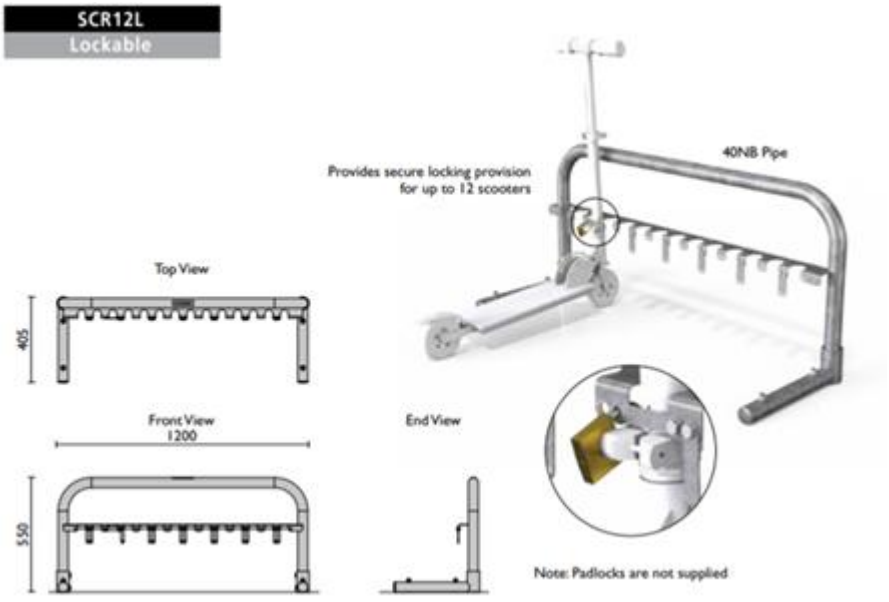
3.2.1.2 Bicycle/rideable parking and end-of-trip facilities

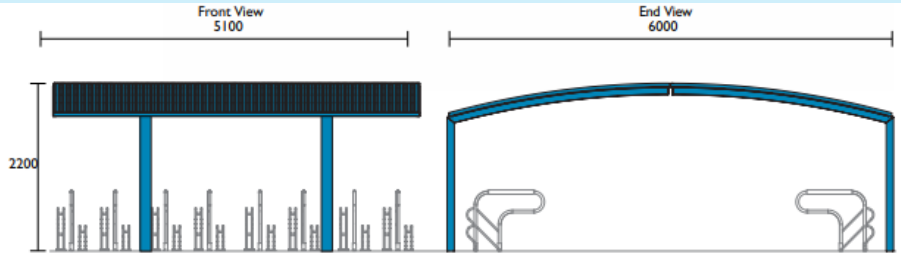
49 bicycle racks that can accommodate up to 98 bicycles are provided in the sheltered lower ground level of Building C at the southwest of the site. This is approximated to the student cycling mode share anticipated under the 'stretch' case of 100 bike riders. The location of the bicycle racks located close to the western entrance on Guntawong Road makes it convenient for students to access bicycle parking.

With 90% of staff expected to drive to school (and provision with off-street car park), it is expected 4% of staff could be cycling to school (similar to moderate case student cycling mode share targets) and the remaining 6% of staff travelling to and from school by bus and walk. Hence, 5 bicycle parking space has been allocated for staff.

The facilities will be designed to the requirements summarised in **Table 3-7**.

Table 3-7 Bicycle and scooter parking design standards

Element	Design
Access to bike racks	AS 2890.3 recommends a minimum width of 1500mm for a one-way access path and a width of 2500mm for a two-way access path. Due to the temporal flow of typical day school pedestrian traffic (towards the school in the morning, and out of the school in the afternoon), we can make the argument that the path would generally operate as one way (1,500 mm). However, there may be some use cases where the access way would need to cater for bidirectional traffic. Where possible, it would be recommended to have sections of 2,500 mm width for passing, like what is done in tight street network passing bays. Bike ramps should also not exceed 1:12 and not contain stairs.
Bicycle racks	The EFSG does not provide specifications for bicycle racks. A recommended rack is as follows: 
Scooter racks	The EFSG does not provide specifications for scooter racks. A recommended rack is the following: 
Spatial design requirements	Aisle widths must be 2.0m between racks as these would be considered “multi-tier” (AS2890.3 Table 2.1). Aisles are one-way during school operations, so the 2.0m can drop to 1.5m. The total aisle dimensions are 6m from the extremity of one track to the extremity of another.

Element	Design
	 There are no Australian Standards for scooters. From product brochures, a scooter rack plus a scooter takes indicatively 0.7-0.8m. An aisle width of 1.2m is recommended, which is the minimum aisle width for accessible access.

3.2.1.3 Bus access and service frequency

In order to improve the quality and safety of the bus stops at Guntawong Road and to achieve the 50-55 per cent bus mode share targets for future students, the bus stops immediate outside the northern frontage of the proposed high school will be upgraded to include the following infrastructure, as shown in **Figure 3-2**:

– Stop 276259 (Guntawong Road westbound bus stop) with indented bus bay of 60m long (can accommodate up to 2 buses that can operate independently pulling in and out of the bus bay)

– Stop 2765364 (Guntawong Road eastbound bus stop) with indented bus bay of 40m long (can accommodate up to 2 buses)

– 3.5m wide footpaths on both sides of Guntawong Road between the bus stop and the school entrances

– At-grade pedestrian crossing at Guntawong Road to provide safe access by students, staff and parents to access the school from the bus stops

Figure 3-2 Proposed indented bus stops at Guntawong Road

Source: TTW, 2024

A Mitigation Measure is proposed for the delivery of the widening of Guntawong Road from Clarke Street to Nirmal Street, which is the black lines in the above plan. The design is compatible with a future roundabout at Guntawong Road / Nirmal Street, but this roundabout is not required for the school, hence is not proposed as a mitigation measure.

Four bus services directly service the site or alight passengers in its vicinity on Guntawong Road, directly outside the school site. The existing bus schedules are summarised in **Table 3-8**.

Table 3-8 Existing surrounding public and school bus routes

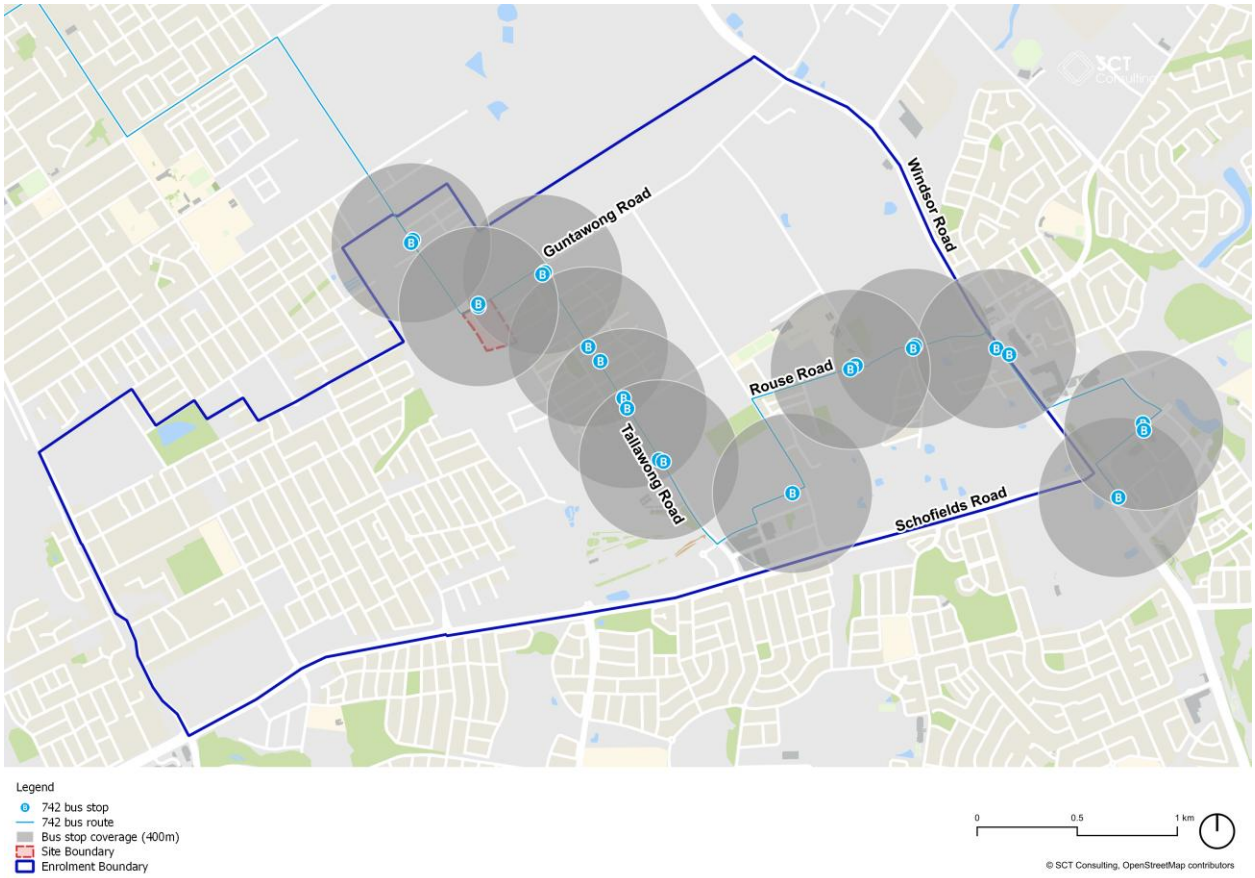
Route	AM stop location	AM arrival	PM stop location	PM departure
742	Guntawong Rd after Clarke St (opposite site)	8:50	Guntawong Rd before Clarke St (across from site)	3:27
				3:57
742	Guntawong Rd before Clarke St (across from site)	8:39	Guntawong Rd after Clarke St (opposite site)	3:02
				4:07
6534 (School)	-	-	Guntawong Rd before Clarke St (across from site)	3:00
6596 (School)	-	-	Clarke St after Cranbourne St (approximately 400m north of site)	3:30
6533 (School)	-	-	Clarke St opp Cranbourne St (approximately 400m north of site)	3:57

Route 742 services students living along Tallawong Road south of the proposed school site, as well as those living on Rouse Road and Cudgegong Road to the south, covering the majority of the student catchment on the eastern side of First Ponds Creek. There are around 334 current and future students that are within 400m of a bus stop where Route 742 picks up or drops off passengers. This includes the 154 students who are within a 1,200m walking distance from the school.

School bus route 6534 follows a similar route to the 742 travelling along Tallawong Road, Macquarie Road and Rouse Road. However, services are limited to one in the afternoon between 3.00-4.00pm. The 6596 school bus route travels north along Worcester Road and westbound along Guntawong Road past the school site. The closest stop is 400m north of the site. This is the only stop within enrolment boundary. Given the lack of stops and direction of travel in the afternoon (north to Riverstone outside the enrolment boundary), students using this service are anticipated to be low. The 6533 services Schofields Primary School to Marsden Park Primary School. It is the only bus service with a stop in the west of the enrolment boundary near to Railway Terrace. However, this service only operates in the afternoon and terminates near to the intersection of Guntawong Road and Tallawong Road. Usage of this service by students is therefore expected to be very low.

There is a significant gap in services for students living to the west, southwest and northeast, outside of walking distance from the site. This gap is illustrated in **Figure 3-3**.

Figure 3-3 Primary bus routes servicing the proposed school site



Source: GTFS, 2024

It is assumed that students will arrive and depart within 30 minutes of school bell times at 9am and 3pm and that each bus can hold 30 students on average. With 500 students in the future base and 550 in the moderate and stretch case expected to take the bus, it is estimated that the following number of services are required:

– Base case (500 students expected): Approximately 17 bus services will be required. Assuming all the walking mode share of 80 students (**Section 3.1.1)** would occur from within 1,200m of the school, four additional 742 bus services would be required in the morning and afternoon periods to coincide with bell times. Additional services will need to be provided to cater for the additional 333 students expected to take the bus who are not within 400m of a 742-bus stop or on the westside of the enrolment boundary, where there are no direct services to the school site. As TfNSW regularly monitors and revises bus frequencies as needed, it is assumed that the appropriate number of buses will be provided to meet the base and moderate case bus demands.

– Moderate & stretch case (550 students expected): Approximately 19 bus services will be required, including four additional 742 bus services and additional services for the other 366 students expected to take the bus who are not within 400m of a 742-bus stop or on the westside of the enrolment boundary, where there are no direct services to the school site.

– According to the bus stop capacity requirements stated in TfNSW's Bus Infrastructure Guidelines, 2 bus bays can cater up to 45 bus services in the busiest peak hours. Hence in this case, 2 bus bays being proposed on each side of Guntawong Road are considered appropriate to support up to 19 bus services (in both directions) with flexibility to accommodate scheduling and operational requirements to be specified by TfNSW.

3.2.1.4 Kiss and drop provision

The proposed Kiss 'n drop will be provided on the western side of Nirmal Street along the school eastern frontage. The Kiss 'n drop area will be 100m, equating to approximately 15 spaces (assuming a parking bay length of 6.5m, as per AS2890.5 - *On-street parking*). This will be sufficient for the moderate mode share case for a student population

of up to 1,000, of which 300 students could be expected to arrive by private vehicles (getting pick up and drop off by others), assuming typical occupancy of 1.5 students per car, average dwell time of 2 minutes.

All vehicles are expecting to access the Kiss ‘n drop spaces at Nirmal Street via Marchant Street or the new east-west road to be delivered as part of the Bathla Group development located to the south of Marchant Street and egress via the intersection of Nirmal Street | Guntawong Road. A right turn ban is proposed to be implemented from Guntawong Road into Nirmal Street to direct traffic to access the Kiss ‘n drop spaces via Marchant Street.

2 additional accessible spaces are proposed to be located just south of the raised pedestrian crossing, near the proposed school access point on Nirmal Street.

3.2.1.5 Staff parking, loading dock and waste management

Table 3-9 summarises Blacktown City Council Development Control Plan (DCP) parking requirements and compares it to the proposed carparks at different project stages.

Table 3-9 Blacktown Council DCP requirements for carparks

DCP requirement	Parking required	Proposed
1 car parking space per full staff member	80	72
1 car parking space per 100 students	10	0
1 car parking space per 5 students in Year 12 where appropriate	34	0
Total	**124**	**72**

In line with intentions to encourage more sustainable travel, fewer car parking spaces are proposed to be provided than recommended in the DCP. No parking spaces will be provided for year 12 students as access to the school shall be supported by public transport and walking facilities in its vicinity. School Infrastructure does not encourage students to use their private vehicles for trips to and from school.

The 1 car parking space per 100 students is provided in the form of on-street kiss ‘n drop facilities. As outlined in **Section 3.2.1.4**, a total of 15 spaces are provided on-street, which exceeds the requirement of the DCP – but on-street rather than off-street. From the perspective of drivers, being required to enter the school and drop students at the front door is less convenient than being able to drop students on the frontage of the school. Even if off-street kiss ‘n drop facilities are provided, many drivers would prefer to drop students on-street as the cohort is high school students who are capable accessing the school from the street fronting it.

In line with TfNSW and School Infrastructure’s expectation for more sustainable travel for proposed schools, staff are also encouraged to shift from using private vehicles, with 10% of staff expecting to travel to school by public transport (bus, train and metro), cycle to school or car pool with other teachers (estimated mode share in **Section 3.1.1**). This level of car parking provision is also consistent with other schools currently being delivered in the Blacktown City Council area such as Melonba High School in Marsden Park.

The DCP requirements are greater than required for the operation of the school. The site is also constrained with challenging topography and significant requirements for educational facilities to meet the needs of the growing community. Providing only the spaces necessary for 90% of staff is therefore recommended.

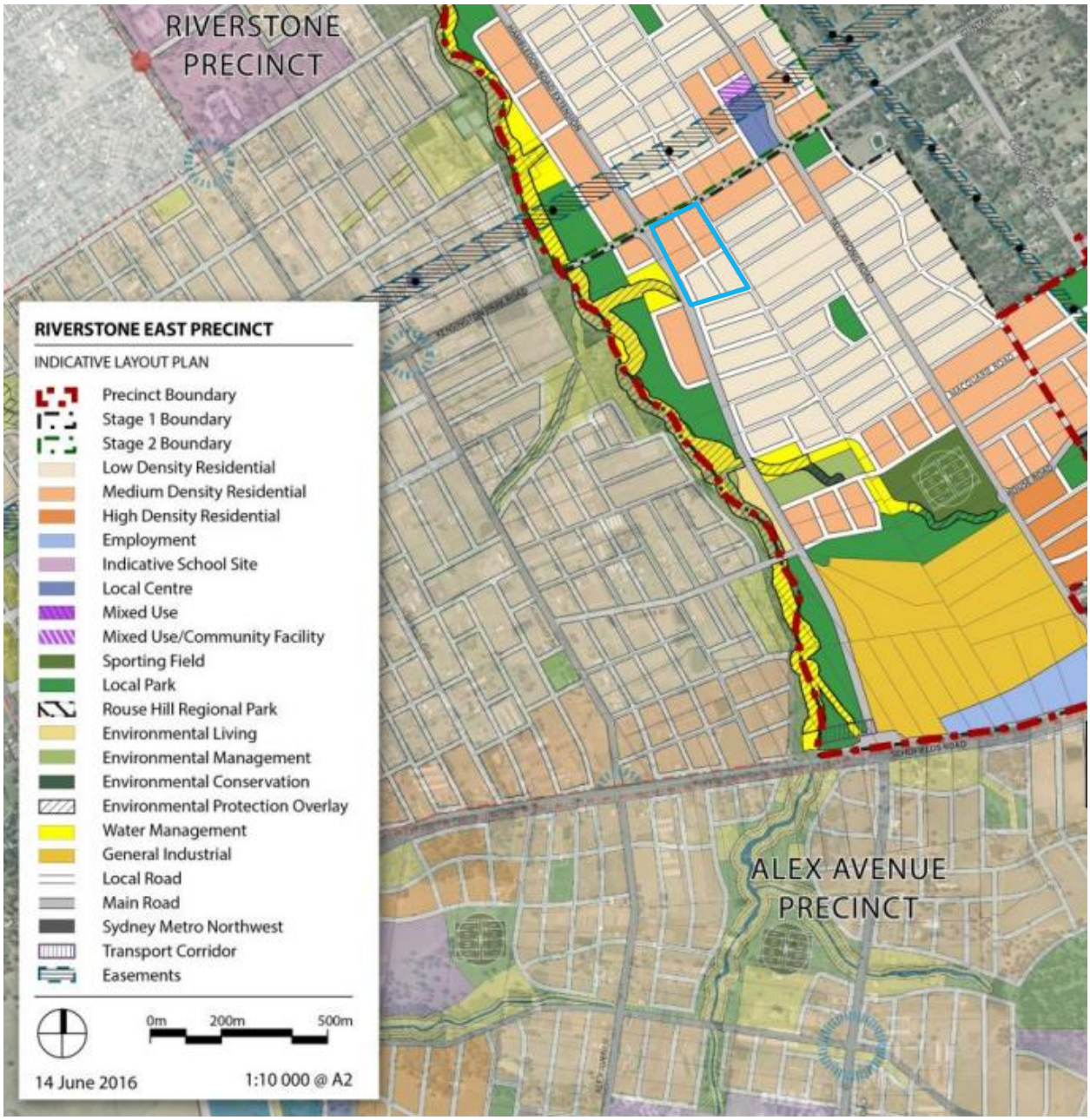
The carpark will be designed according to the requirements laid out in AS2890 car park requirements as per the Council DCP and the Education Facilities Standards and Guidelines (EFSG).

Delivery and waste collection will take place on site via a separate driveway on Nirmal Street. This driveway leads to an independent service area that is separate from the staff carpark, which complies with the DCP.

3.2.1.6 Offsite transport infrastructure

According to the Riverstone East Precinct ILP as shown in **Figure 3-4**, the proposed school site is bounded by Guntawong Road to the north, Nirmal Street to the east, a subdivision local street (referenced as Road 04) to the south and Hambledon Road extension to the west.

Figure 3-4 Proposed Riverstone East Precinct ILP and planned road network



As of to date, Guntawong Road exists on the northern school frontage as a local collector street that is planned to be upgraded and delivered by Council (including a roundabout at the intersection of Guntawong Road and Nirmal Street and the Guntawong Road extension to Kensington Park Road across First Ponds Creek) according to the s7.11 plan. As part of the school delivery, bus stops will be upgraded (with indented bus bays) at Guntawong Road to service the proposed high school.

As part of the delivery of the school, the western half road of Nirmal Street along the school frontage will require to be a 18m road reserve for a local street in the R4 zone according to the DCP requirements of, with an additional 1m (a total of 19m road reserve) to deliver a 3.5m footpath on the western side of Nirmal Street (along the full school frontage) to satisfy Council's requirements of a wider (than the 2.5m) footpath to service future students, staff and parents.

Council has confirmed that Hambledon Road extension on the western frontage of the school will also be delivered according to Council's s7.11 plan and funding in the future. According to the ILP road network, the proposed school site has no direct vehicular access to Hambledon Road extension along its full western frontage. The school site will gain access to Hambledon Road extension through a local subdivision street, located to the south of the school (extension of Reviver Street).

Given the complex road and stormwater design of Road 04 (located on the southern frontage of the proposed school site), this local subdivision road may be fully constructed by Landcom or other developers when the residential subdivision to the south of the school is delivered.

Currently, Marchant Street, which is proposed as the main vehicular access to the high school, only exists as a (northern) half road between Nirmal Street and Tallawong Road. School Infrastructure is currently in discussions with The Bathla Group who is delivering the residential subdivision to the south of Marchant Street and confirmed the timing of the construction of the (southern) half road of Marchant Street to ensure the full width of Marchant Street is delivered, prior to the planned opening of the future high school in Term 1, 2027.

The northern part of the proposed school site is currently zoned Medium Density Residential while the southern part of the site is zoned Low Density Residential, with a number of local residential streets (internal to the proposed school site) planned to service the residential subdivision originally planned. Since the four residential blocks will be aggregated to form the proposed school site, these internal local residential streets are no longer required to service the residential subdivision originally planned.

4.0 Evaluation of traffic impacts and mitigation measures

4.1.1 Cumulative background growth

As outlined, the new Schofields-Tallawong High School is planned for 1,000 students. Applying the target mode share of 30 per cent ('moderate' target in **Section 3.1.1**) equates to 300 students using private vehicles. An average vehicle occupancy of 1.5 passengers and 80% of trips occurring during the peak periods (typical for school trips), corresponds to an additional 165 vehicle trips on the local road network during the AM and PM peak periods once the student population target is reached. For traffic modelling purpose, we have assumed the surrounding traffic network volumes will be increasing at a rate similar to the planned population growth in the surrounding area.

4.1.2 Traffic modelling scenarios

The following traffic scenarios were modelled:

– **Future base**: This scenario applies a background growth rate to existing traffic volumes. Gap Acceptance and Follow-Up Headway were kept constant as per **Section 2.2.7**, to examine intersection performance under current road conditions.

– **Future base with school traffic**: This scenario applies a growth rate to existing traffic volumes as well as the additional 165 vehicle trips generated by the new school. Gap Acceptance and Follow-Up Headway were kept constant as per **Section 2.2.6**, to examine intersection performance under current road conditions.

– **Future base (with reset modelling settings)**: as for 'Future base' but Gap Acceptance and Follow-Up Headway were set to those recommended in the *TfNSW Modelling Guidelines* to examine intersection performance when (minor) road upgrades take place to improve travel conditions.

– **Future base with school traffic (with reset modelling settings)**: Applies a growth rate to existing traffic volumes with the additional 165 vehicle trips generated by the new school, but Gap Acceptance and Follow-Up Headway were set to those recommended in the *TfNSW Modelling Guidelines*.

4.1.3 Traffic modelling assumptions

Key assumptions for the future traffic modelling are outlined below:

– All vehicle trips were modelled as 'drop offs', meaning vehicles return to their place of origin within the peak period. This was to examine the performance of the intersection under a 'worst case' scenario.

– Trip distribution and assignment of future students was based on the shortest travel distance to the school site on existing roads within the enrolment boundary.

– All vehicles are expecting to access the Kiss 'n drop spaces at Nirmal Street via Marchant Street or the new east-west road to be delivered as part of the Bathla Group development located to the south of Marchant Street and egress via the intersection of Nirmal Street | Guntawong Road. A right turn ban is proposed to be implemented from Guntawong Road into Nirmal Street to direct traffic to access the Kiss 'n drop spaces via Marchant Street.

– Pick up and drop off will only occur on Nirmal Street to examine the performance of its intersections under a 'full use' demand scenario. This is a conservative assumption as high school students may be dropped further afield.

– Additional pedestrian volumes crossing the roads, generated by students walking or taking the bus were considered.

– Peak Flow Factors used in the validation process were set to the default values in SIDRA, as travel behaviours in the peak period are likely to change in the future.

– A 1.28% per annum growth rate was applied to base year traffic volumes at each intersection scaled to the year when the student population is expected to reach 1,000 (by 2040). This growth rate aligns with the NSW population projections for the Blacktown LGA.

– Year 2040 was adopted as the future year traffic modelling to consider the potential traffic impacts when:

  - The school is opened (in 2027) and at least 10 years from the opening of the school (typical industry practice for traffic modelling of development impacts).

- The school enrolment of 1,000 students is reached.

– Given the uncertainty in timing of delivery of infrastructure upgrades in proximity to the school such as Hambledon Road extension, traffic signals at Hambledon Road | Guntawong Road and roundabout at Guntawong Road | Nirmal Street, these potential upgrades were not modelled as a worst-case scenario as these upgrades will improve the capacity and performance of these intersections.

4.1.4 Future year intersection performance with cumulative background growth

Traffic modelling results for each of the scenarios are shown in **Table 4-1**. Detailed SIDRA modelling results can be seen in **Appendix C**.

Table 4-1 Modelling scenario results

Intersection	Control	2040 Weekday AM peak			2040 Weekday PM peak		
		DOS	Delay	LOS	DOS	Delay	LOS
Future base (with current condition modelling settings)							
Guntawong Road | Tallawong Road	Priority	0.40	16.0	B	0.29	7.6	A
Tallawong Road | Marchant Road	Priority	0.20	5.9	A	0.16	6.4	A
Clarke Street | Riverstone Road	Priority	1.40	395.4	F	0.49	13.4	A
Guntawong Road | Nirmal Street	Priority	0.48	7.2	A	0.25	5.4	A
Future base with school traffic (with current condition modelling settings)							
Guntawong Road | Tallawong Road	Priority	0.56	17.8	B	0.34	9.0	A
Tallawong Road | Marchant Road	Priority	0.26	6.5	A	0.20	6.7	A
Clarke Street | Riverstone Road	Priority	1.34	339.9	F	0.60	15.3	B
Guntawong Road | Nirmal Street	Priority	0.50	8.3	A	0.28	6.0	A
Future base (with reset modelling settings)							
Guntawong Road | Tallawong Road	Priority	0.54	10.5	A	0.26	6.6	A
Tallawong Road | Marchant Road	Priority	0.21	5.9	A	0.16	6.4	A
Clarke Street | Riverstone Road	Priority	0.64	16.1	B	0.32	8.9	A
Guntawong Road | Nirmal Street	Priority	0.52	7.8	A	0.25	5.4	A
Future base with school traffic (with reset modelling settings)							
Guntawong Road | Tallawong Road	Priority	0.61	13.3	A	0.33	7.3	A
Tallawong Road | Marchant Road	Priority	0.28	6.6	A	0.20	6.7	A
Clarke Street | Riverstone Road	Priority	0.75	18.8	B	0.39	9.5	A
Guntawong Road | Nirmal Street	Priority	0.55	9.2	A	0.28	6.0	A

The delay in the 'future base' case at Clarke Street | Riverstone Road sees a significant increase in delay to LOS F and a DOS greater than one. This indicates that the intersection is over-saturated and cannot handle the additional demand. The delay at the other intersections increases, notably Guntawong Road | Tallawong Road goes to LOS B. However, vehicles from Clarke Street | Riverstone Road travelling to the other intersections are unable to reach them due to oversaturation. Therefore, delay and DOS may be understated due to the actual vehicle demand at the other intersections being underrepresented.

For the 'future base with reset modelling settings' scenario, the delay in the am peak reduces by 9.7 seconds at Clarke Street | Riverstone Road from the base case, whilst remaining at LOS B during the AM peak. For all other intersections during the AM peak and all intersections during the PM peak, they forecast to operate at LOS is A with DOS indicating that the network has additional capacity under this scenario.

Under the 'future base with school traffic' scenario, intersection performance is similar to 'future base'. Clarke Street | Riverstone Road remains at LOS F during the AM peak with DOS greater one. During the PM peak, LOS remains at

A, except for Guntawong Road | New Access Road which goes to LOS B. However, the increase in delay is minimal at less than two seconds.

Under the 'future with school traffic with reset modelling settings' the maximum delay is 18.8 seconds at Clarke Street | Riverstone Road during the AM peak. This is a 2.7 second increase from 'future base with reset modelling settings' scenario. Delays during the PM peak remain at LOS A with addition of school traffic.

The modelling indicates that the intersection of Clarke Street | Riverstone Road is in need of upgrade regardless of whether the school is delivered at this location. These upgrades would be repair of damaged pavement and formalisation of the intersection to current design standards (footpaths, kerb and gutter), which is the responsibility of Council as the road authority. The deteriorated condition of the intersection is the cause of the poor performance. It does not require additional lane capacity or new control method (roundabout etc.).

4.1.5 Operational impacts

Results from **Table 4-1** indicate that if road conditions remain the same till 2040, background traffic growth will cause the intersection performance to greatly deteriorate in the absence of the proposed school. The addition of traffic volumes generated by the school does not cause any further material increases in delay if conditions remain the same from the 'base case'. Once roads are upgraded by Council, Gap Acceptance and Follow-up Headways will reduce.

The intersections perform at LOS B or higher when using inputs recommended under the TfNSW *modelling guidelines*. The additional school traffic at Clarke Street | Riverstone Road causes a minor increase in delay of 2.7 seconds.

It is therefore concluded that school traffic will only have a minor impact on the local road network, irrespective of whether road conditions are improved.

5.0 Preliminary Construction Traffic Management Plan

This section summarises the construction methodology and approach with regards to potential traffic and transport impacts, as well as mitigation measures that could be implemented.

5.1 Preliminary construction management approach

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

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

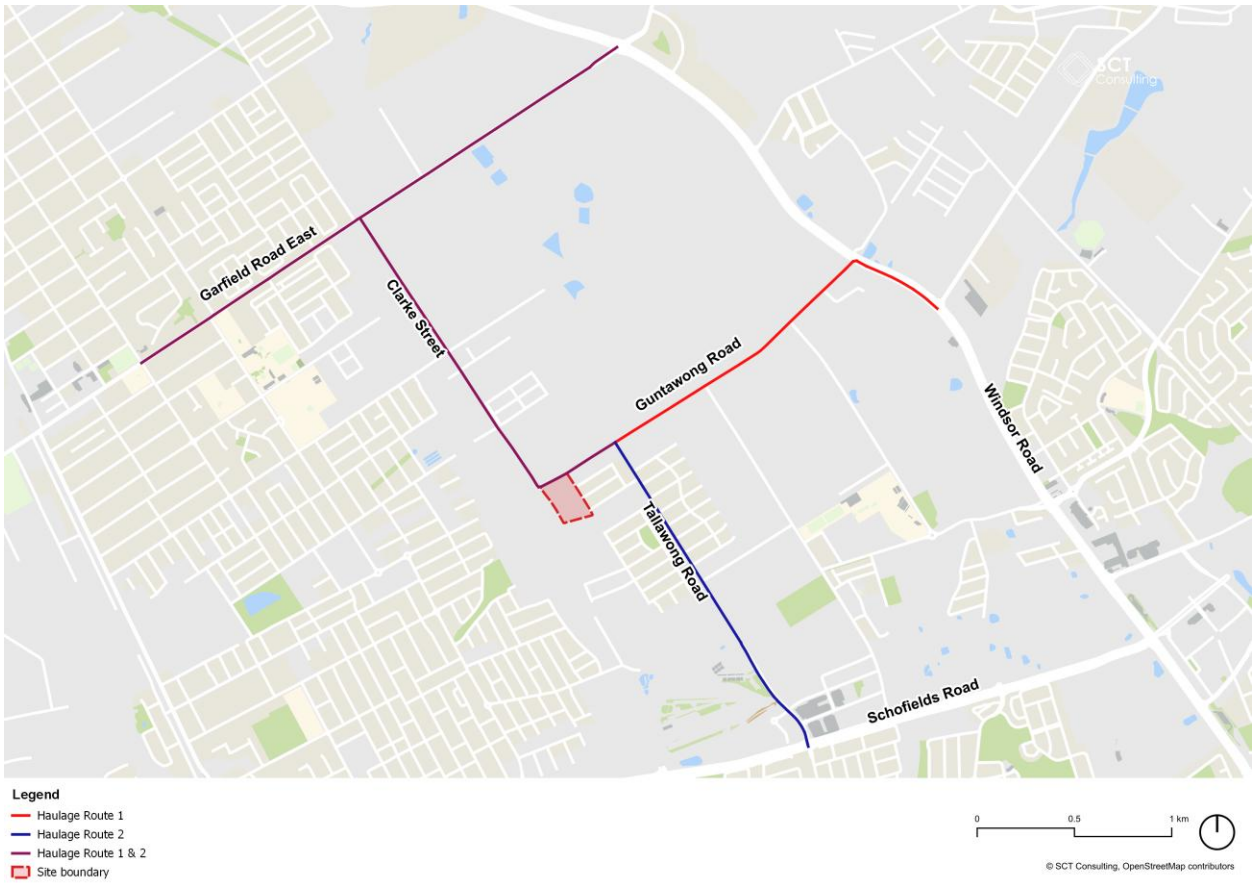
It is assumed that heavy vehicles will use either Guntawong Road or Tallawong Road to enter and exit the site. There are two potential haulage routes from the state road network to the site:

– Windsor Road > Guntawong Road > Clarke Street > Garfield Road East (Route 1)

– Schofields Road > Tallawong Road > Guntawong Road > Windsor Road (Route 2).

These two haulage routes are shown overleaf in **Figure 5-1**.

Figure 5-1 Haulage routes to school site



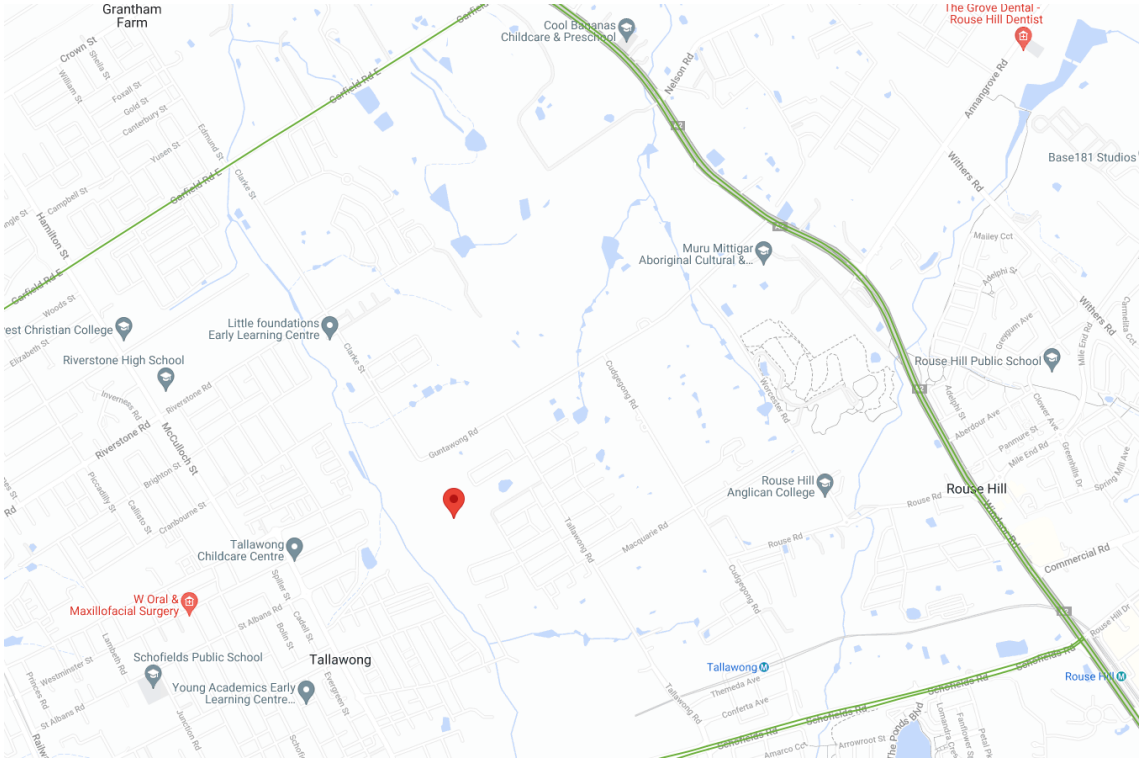
Source: SCT Consulting, 2024

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

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

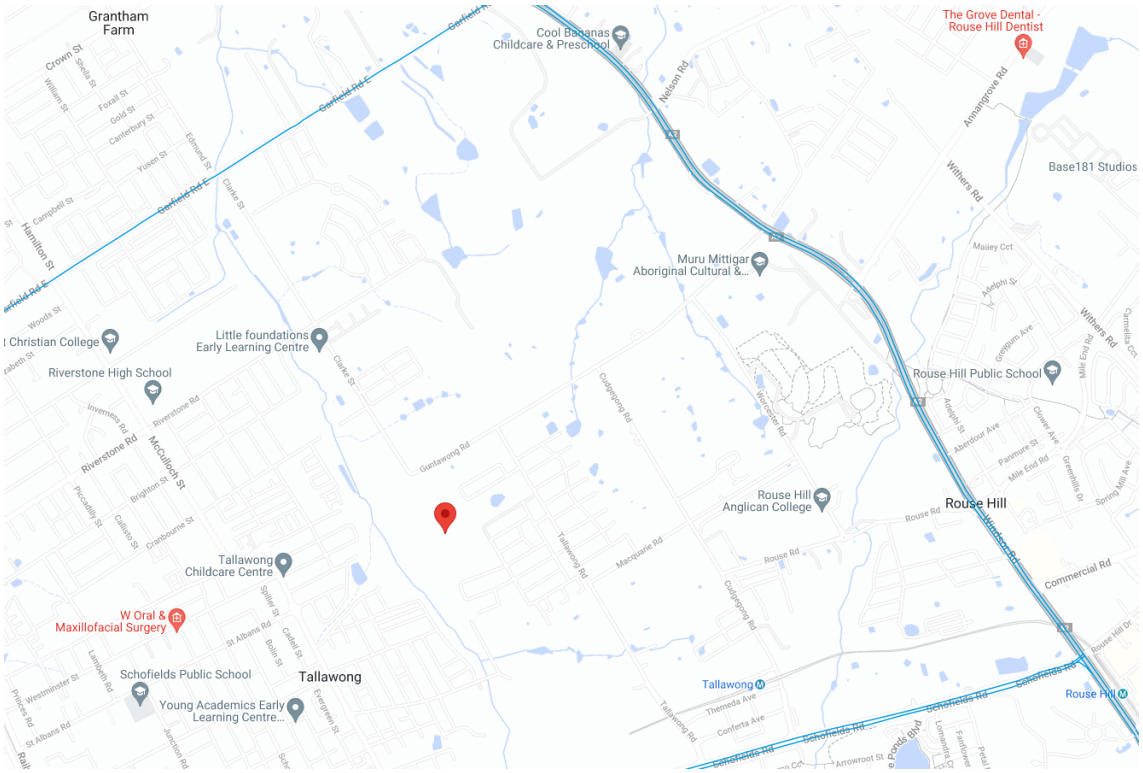
Tallawong Road, Guntawong Road and Clarke Street are not approved for higher mass limits or oversized vehicles. Windsor Road, Schofields Road and Garfield Road East are approved for heavy vehicles under the General Mass Limit (GML), Concessional Mass Limit (CML), and Higher Mass Limit (HML) network. This is inclusive of 25/26m B-double routes and short combination routes.

Figure 5-2 Approved B-double routes (25/26m) on the GML and CML network near the proposed high school



Source: TfNSW, 2024

Figure 5-3 Approved B-double (25/26m) and short combination routes on the HML network near the proposed high school



Source: TfNSW, 2024

5.2 Road safety considerations

Traffic management will require approval from Blacktown City Council. It is expected that traffic management measures will only be required within the suburbs of Tallawong and Rouse Hill. Traffic management requirements need to be defined to ensure all users of the site, including construction staff and users of the general transport network can access the site safely.

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

5.3 Construction program

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

Table 5-1 Estimated construction milestone program summary

Milestone	Estimated completion date
Planning Application granted	July 2025
Construction contract tender released	November 2024
Construction Contract Awarded	May 2025
Construction commencement onsite	**August 2025**
Anticipated construction completion and handover	**September 2026**
Contract/Construction completion	December 2026

5.4 Construction traffic impacts and mitigation measures

The estimated peak workforce is approximately up to 300 full-time equivalent (FTE) workers. Due to the limited public transport to the site, it is estimated that:

– 100 per cent would take private vehicle transport to the site, with a vehicle occupancy of 2.0 is assumed (typical of construction sites).

– Based on an estimated 300 full-time site workers, the maximum number of cars during the peak hours generated by the site is 150 light vehicles per day.

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

It is assumed that the 150 light vehicles generated can park on site (outside of school operating hours), or on-street on the surrounding road networks. The contractors will confirm the maximum number of car parking can be provided on site to minimise the impacts of on-street parking on the surrounding local residential streets. Most work will occur outside of school hours and workers would generally start earlier and end earlier than the commuter peak periods and would likely not coincide with the school or road network periods.

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

The 150 light vehicle trips are less than the traffic generation when the school is in operations (165 peak hour trips as discussed in Section 4.1.1) and hence this level of traffic increase during the peak construction periods is expected to have negligible impacts on the surrounding street network.

The construction approach may require traffic management measures such as full/partial road closures, that will be confirmed at a later stage, will be detailed in a CTMP to be submitted to the relevant road authorities prior to obtaining Construction Certificate (CC).

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

– Construction workers will be discouraged from parking in residential areas. Given that Guntawong Road does not have on-street parking, this may only be required for Nirmal Street and the adjoining local roads currently under construction.

– Truck loads would be covered during transportation off-site.

– Neighbouring properties would be notified of construction works and timing. Any comments would be recorded and taken into consideration when planning construction activities.

– All activities, including the delivery of materials, would not impede traffic flow along local roads.

– Materials would be delivered, and spoil removed during standard construction hours.

– Avoidance of idling trucks alongside sensitive receivers.

– Deliveries would be planned to ensure a consistent and minimal number of trucks arriving at the site at any one time.

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

– All truck movements will be scheduled

– Vehicles are to enter and exit the site in a forward direction along the travel path shown on delivery maps

– Drivers are to always give way to pedestrians and plant.

The RTA completed previously noted that frequent construction vehicle movements for neighbouring residential developments. To mitigate potential conflicts with other construction vehicles and general traffic, traffic controllers will be used to stop traffic on the public street(s) to allow trucks to enter or leave the site. Where possible, vehicles must enter and exit the site in a forward direction. They must wait until a suitable gap in traffic allows them to assist trucks to enter or exit the site. The Roads Act does not give any special treatment to trucks leaving a construction site, the vehicles already on the road have the right-of-way. Vehicles entering, exiting, and driving around the site will be required to always give way to pedestrians.

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

6.0 Draft School Transport Plan

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

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

– Staff have not yet been appointed to their roles.

– The Parents and Community group has not been established.

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

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

6.1 Vision

6.1.1 Vision and objectives

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

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

School Transport Vision

STHS is a sustainable travel school with students and staff choosing to walk, cycle or take public transport to access the school. The catchment is within a realistic walking or cycling distance for most students, multiple bus services and slow streets presents an opportunity to have a higher sustainable transport mode share.

The objectives for this STP are:

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

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

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

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

6.1.2 Mode share targets

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

Table 6-1 Mode share target for students

Mode	Student target	Staff target
Walking	10%	1%
Cycle/Scoot	5%	4%
Bus (including from rail)	55%	5%
Car	30%	90%

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

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

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

6.1.3 Specific tools and actions

STHS implements the following actions to achieve the targeted mode share (**Table 6-2**).

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

Activity	Description and target outcomes	Frequency	Responsibility
School Travel Coordinator	A School Travel Coordinator (STC) will be engaged in the first year of operations to promote travel behaviour change for all school stakeholders (students, parents/carers, and all staff). The role of an STC goes beyond just improving access to the school via infrastructural measures, but also involves communication of the availability and benefits of sustainable modes of transport. The STC is responsible for organising programs and events to encourage sustainable travel via: – Implementing transport programs to achieve travel behaviour change – Driving communication of transport options to raise awareness of sustainable transport modes – Monitoring and evaluate the progress of the school in reaching its target mode shares – Processing feedback and recommendations from the school community on transport-related matters – Coordinating initiatives and events to promote mode shift away from cars – Working closely with the Green Travel Plan (GTP) Committee and Parents' Community Association (PCA) to identify the needs of the school community – Reporting data collection and evaluation to stakeholder groups.	Ongoing role	STC
Coordinate a STP Committee	A STP Committee (chaired by the School Travel Coordinator (STC)) performs the role of promoting sustainable school transport initiatives identified in the STP. The STP Committee ensures multi-party input and fair distribution of allocated tasks and would be important at the inception of any new project as they provide the required leadership, resources, and attentiveness for initiatives to be realised. The STP Committee liaises with both internal and external stakeholders such as TfNSW and NSW Police to inform them of any school initiatives which require their respective expertise and/or funding. The committee meets once a quarter and will comprise of members of the Parents and	Quarterly	The STC is be appointed by Department of Education within 12 months of the school opening. The STC works with the school to coordinate appropriate members of the STP Committee

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

Activity	Description and target outcomes	Frequency	Responsibility
	Successful funding applications may expect to receive an average of $1,500-$3,500 per term over three consecutive terms.		
Walk Safely to School Day and/or National Ride Day	Walk Safely to School Day and National Ride Day are Australia-wide coordinated efforts to encourage walking or cycling to school on one day of the year. The Walk Safely to School Day is organised by the Pedestrian Council of Australia. Their website provides free downable resources and advice to enable schools to host successful events. The event occurs in May each year. The National Ride Day is coordinated by the Bicycle Network in NSW, the charity encourages schools to register to join a community of other schools taking part in the event. The charity provides free downloadable resources, activities as well as advice on how best to deliver the day and what can be done to maintain momentum. The school may choose to re-promote other active transport initiatives as part of the day to encourage and reinforce a shift away from car travel to and from the school. These days are supported by road safety education and will be tied in with the timing of the PDHPE curriculum content on safe walking. Free resources and advice (potentially funding) are provided on the Bicycle Network website for hosting a National Ride. The STC will be required to coordinate with the council and police and may wish to register the school with the charity. A competition with a suitable prize is used to encourage more students to cycle to school where possible. A suggested way to organise the competition is described below: – During a selected competition period (e.g. a week), a teacher will ask students during class who arrived by bicycle or scooter that day – Each student will be provided one entry into a raffle for each day they cycled to school – Three winners will be selected at the end of the competition period randomly. This initiative requires funding for prizes.	Annual	The STC promotes the event through the school website, newsletter, and the Parents and Community Association social media. It is important to communicate with the local Council, as the local NSW Police unit to ensure the road rules are correctly followed by cars when interacting with students riding, scooting, or walking to the site.
Workplace walking/cycling group	Staff members who live within walking or cycling distance of the school are invited to walk or cycle together to work. Walking or cycling to work in a group could make the daily commute a more enjoyable and safer experience, which would encourage a higher uptake of sustainable travel. A prize is awarded to those who consistently walk or cycle to work. The STC coordinates with other staff on their interest levels and to organise prizes.	Ongoing	STC
Workplace car pooling group	It is not feasible to expect all staff to commute via public or active transport as it is likely that they live outside of active travel distances or	Ongoing	STC

Activity	Description and target outcomes	Frequency	Responsibility
	public transport is inconvenient. Carpooling or carsharing is an important alternative whereby staff who live close together commute together. To encourage staff to carpool, designated parking can be reserved for those who carpool in the staff carpark. The STC gathers interest from other staff and to organise the carpooling groups based on staff locations.		
NSW PDHPE syllabus	The NSW PDHPE syllabus includes content on "healthy, safe and active communities" (or similar) in stages 1 through 5. This includes suggested content on road safety for each stage. In the delivery of the curriculum, teachers emphasise safe transport network behaviours through classroom teaching, excursions, assessments, and homework.	Teacher and classroom time are required to deliver curriculum content on road safety. Timing/frequency of delivery will differ depending on teacher approach.	Teachers deliver the content. The STC and willing volunteers also be able to aid in the delivery of the syllabus.

6.2 School transport operations

6.2.1 Site transport access

Figure 6-1 shows the access arrangements for the school.

Figure 6-1 Schofields Tallawong High School – Transport Access

Source: djrd Architects with annotations by SCT Consulting; 2024

The school has frontage to Guntawong Road and Nirmal Street. There are four gates (pedestrian access) to STHS:

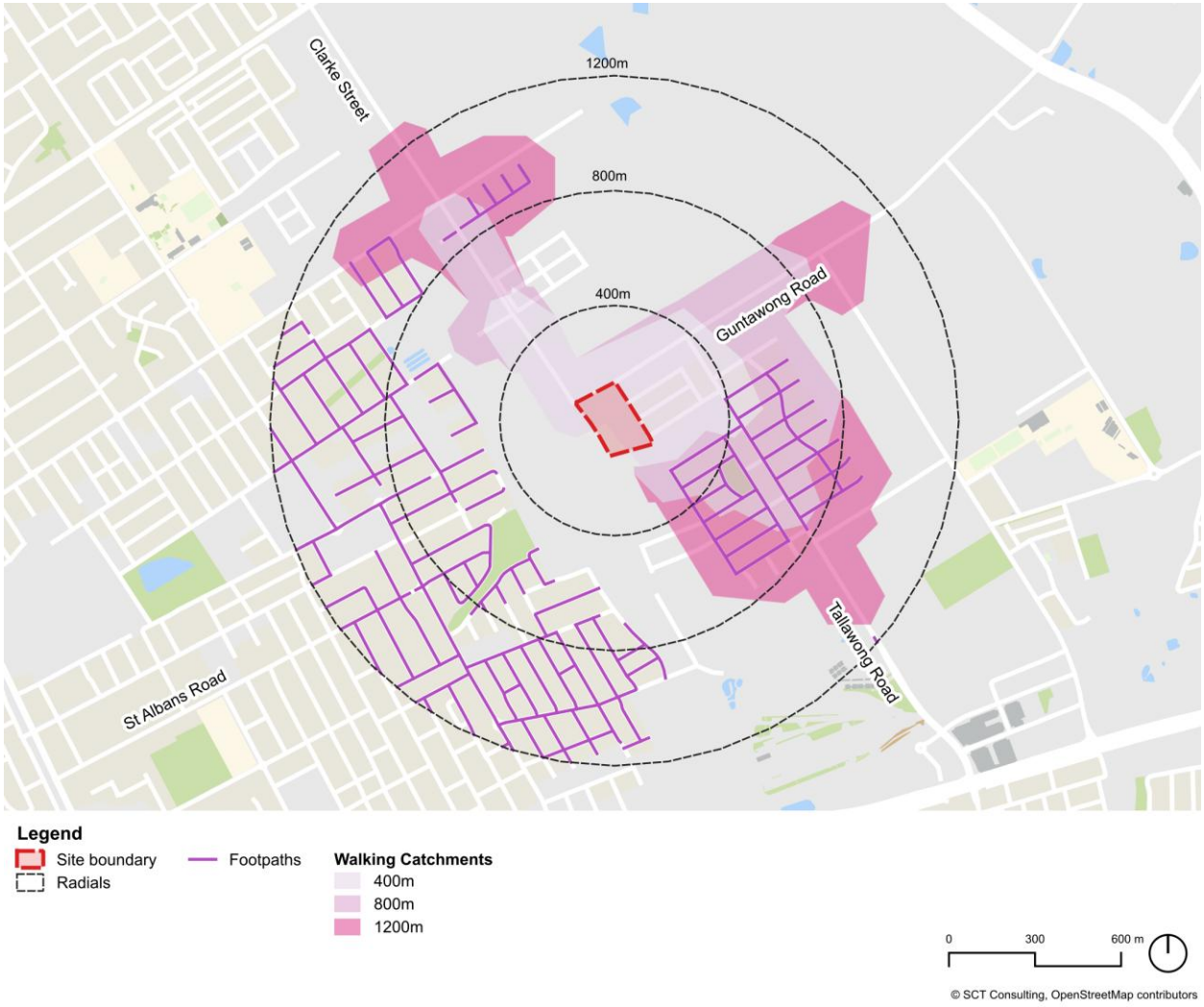
- **Nirmal Street main entry:** the main entrance to the school is located at the northern end of Nirmal Street, just south of the intersection with Guntawong Road. This entrance provides access to the school's admin building.
- **Nirmal Street secondary entrance:** a secondary entrance is on Nirmal Street just north of the staff car park. It provides access to the movement, lecture and Building D facilities.
- **Guntawong Road eastern entrance:** a secondary entrance providing access to the eastern side of Building E.
- **Guntawong Road western entrance:** a secondary entrance providing access to the western side of Building E and the bicycle parking facilities.

6.2.2 Pedestrian access

Footpath coverage within 1,200m of the school site is shown in **Figure 6-2**. Existing footpath connectivity directly servicing the site is poor with no footpaths directly adjoining the site. Other local streets within residential areas 1,200m of the proposed school have access to footpaths.

The nearest is located approximately 1,700m to the south of the site on Tallawong Road, at the signalised intersection of Tallawong Road | Themeda Avenue.

Figure 6-2 Existing footpaths within 1200m

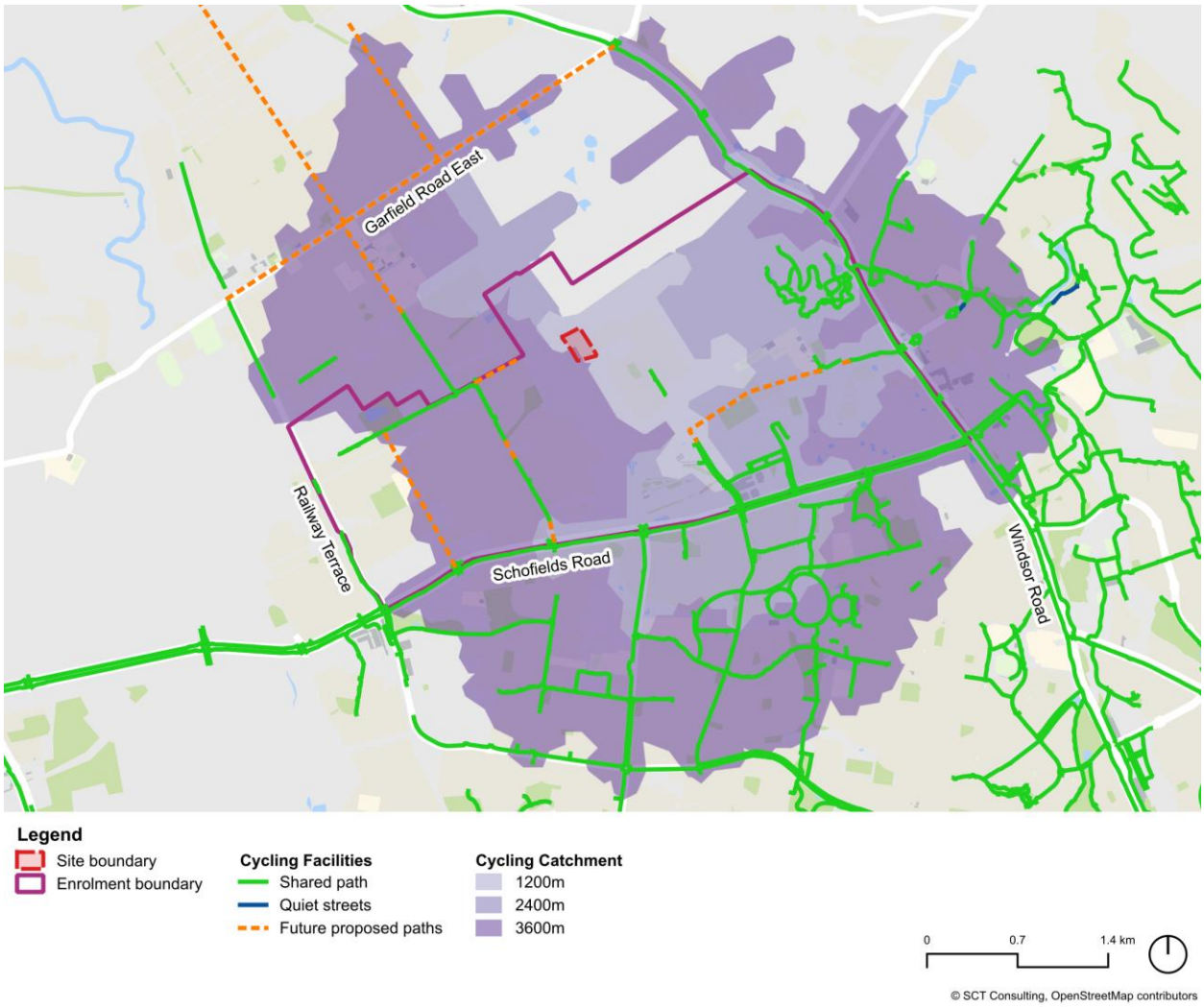


Students should cross Guntawong Road and Nirmal Street using the newly constructed pedestrian crossings.

6.2.3 Cycling/ridable access

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

Figure 6-3 Existing and proposed cycle network



There is a shared path along Tallawong Road near the intersection of Schofields Road as part of the Tallawong Metro Station precinct. It is also noted that children 16 and under can choose to cycle on footpaths

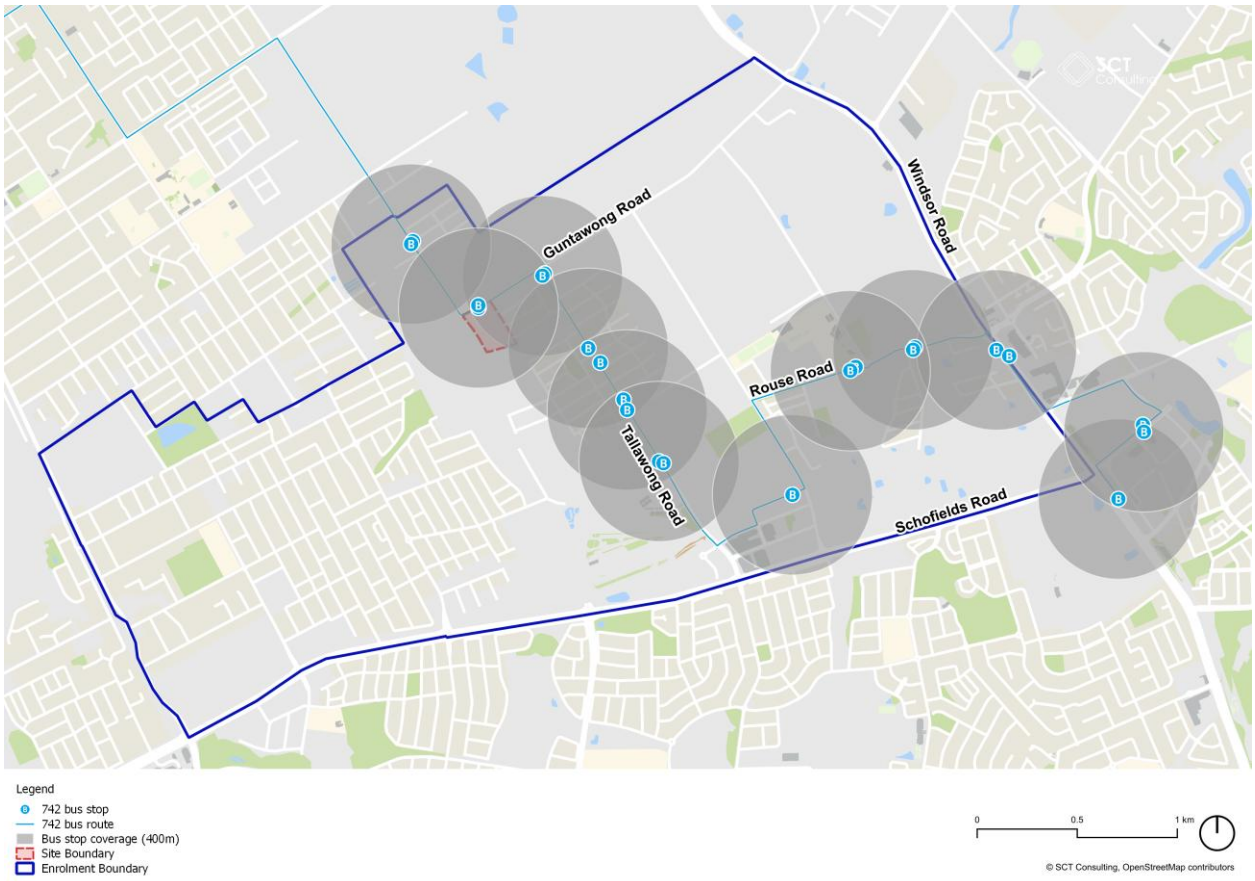
49 bicycle racks that can accommodate up to 98 bicycles are provided in the sheltered lower ground level of Building C at the southwest of the site. 5 bicycle parking space has been allocated for staff. For staff, two showers and change rooms are provided as end of trip facilities. These are within a staff-only area and not accessible to students.

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

6.2.4 Bus access

Four bus services directly service the site or alight passengers in its vicinity on Guntawong Road, directly outside the school site (shown in in **Figure 6-4**). The Guntawong Road stops cater for Route 742, Route 6534, Route 6596 and Route 6533.

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



Source: GTFS & TfNSW, 2024

Bus users should refer to the Transport for NSW timetable for up-to-date route and stop times.

6.2.5 Kiss 'n drop

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

6.2.6 Staff car parking

72 staff parking spaces are provided in the staff car park, which is located on the eastern side of the school. The staff car park may be accessed from Nirmal Street.

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

6.2.7 Waste collection

Waste occurs within the dedicated waste and loading area, which is accessed from Nirmal Street. The car park has been designed to cater for a 10.5m long waste collection vehicle, which is the dimensions of the typical Council garbage truck used for domestic waste collection.

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

6.2.8 Deliveries

Deliveries occurs within the dedicated waste and loading area, which is accessed from Nirmal Street.

6.2.9 Emergency vehicles

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

6.2.10 Day to day operations

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

Table 6-3 Day to day operations by mode

Mode	Where provided	Parents/carers	School
Walking and riding	Footpaths and crossing facilities are shown in **Figure 6-1**	**Walking** – Parents/carers are responsible for the student's safety travelling to and from school. **Riding** – Students who wish to ride to school should always wear a helmet. – Students riding to school should avoid riding on the road and be cautious of vehicle conflict when crossing driveways. – Children under 16 years of age can ride on a footpath. An adult rider who is supervising a bicycle rider under 16 may also ride with the young rider on the footpath. Children aged 16 or 17 can ride on the footpath when accompanied by a child under 16 and a supervising adult. Children aged 16 or 17 can ride on the footpath when accompanied by a child under 16 and a supervising adult.	– For the school, learning activities that reinforce being a safe pedestrian are part of the NSW 7-12 PDHPE syllabus. – The school publishes a TAG (**Appendix A**) which is a visual guide advising staff and parents/carers which are the safer routes to the school and the location of road crossings.
Public transport	Offsite bus stops in the locations shown in **Figure 6-4**	– Parents/carers are responsible for the student's safety travelling to and from school.	– The school provides links to the NSW Department of Education's 'Safe Travel' page on their website to inform and advise parents/carers what is expected of them. – **Appendix A** is a TAG indicating the location of bus stops and routes close to the school site.
Driving and Kiss and drop	Along Nirmal Street as shown in **Figure 6-1**	– Parents/carers are responsible for the student's safety travelling to and from school. – Parents/carers are advised by NSW DoE and TfNSW to drive cautiously around schools, park legally, and not perform U-turns or three-point turns next to a school. – Parents/carers will be expected to follow the school's instruction regarding kiss and drop.	– Blacktown City Council imposes time limits on the duration of car parking to prevent congestion around the school which could potentially lead to unsafe parking. – Staff supervise the kiss and drop to ensure students safely enter the school and to discourage unsafe driving practices. – The school provides links to the NSW Department of Education's 'Safe Travel' page on their website to inform and advise parents/carers what is expected of them.
Staff parking	Staff parking of 72 spaces provided, two of which are an accessible space	N/A	– Staff to be encouraged to car pool by STC.

Mode	Where provided	Parents/carers	School
Deliveries and service vehicles	Waste servicing and deliveries are provided as a standalone facility with access from Nirmal Street.	N/A	– Waste collection occurs between 5am – 7am and not during times when students are at school. – Low impact deliveries, such as mail or small goods may be delivered at any time. Large or hazardous materials should be delivered at a time when there is no conflict with students, such as between 5am and 7am or after school hours.

6.3 Event operations

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

Events will be managed by:

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

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

Large scale events should occur outside of peak periods to reduce impact on the surrounding community. residents in the area have off-street parking, so impact to on-street parking should not impede their ability to park.

6.4 Communications plan

6.4.1 Channels

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

6.4.1.1 Transport information on the website

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

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

6.4.1.2 New starter orientation

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

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

6.4.1.3 Parent and Community Association social media

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

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

6.4.1.4 School newsletters/official communication from the principal

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

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

6.4.1.5 Classroom content

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

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

6.4.1.6 Awareness days and initiatives

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

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

6.4.1.7 Assemblies

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

6.4.1.8 Provision of a Transport Access Guide

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

6.4.2 Messages

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

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

Message

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

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

Make walking to school fun!

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

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

Walking is great exercise

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

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

We could all benefit from more steps each day.

School speed zones

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

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

Message

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

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

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

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

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

Tap on and off every time

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

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

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

Driving and parking safely near the school

Help your children be safe by:

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

Kiss 'n Drop

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

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

6.5 Data collection and monitoring

6.5.1 Data collection

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

– Mode of transport used to get to school

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

– Any suggestions on how to improve the journey to school

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

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

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

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

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

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

6.5.2 Program evaluation

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

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

The overarching goal of the STP is to achieve safe travel and mode share targets identified in **Section 6.1.2**. In order to reach the targets, it is important that the school provide encouragement, information and support for students, parents and staff to ensure that active and public transport modes are preferred ways to travel to school.

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

6.5.3 Report findings

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

Table 6-4 Reporting responsibilities by stakeholder group

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

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

6.6 Governance framework

6.6.1 Governance structure

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

Table 6-5 Internal and external governance

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

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

6.6.2 STC roles and responsibilities

The role of the STC will be as follows:

– Implementing transport programs to achieve travel behaviour change

– Driving communication of transport options to raise awareness of sustainable transport modes

– Monitor and evaluate the progress of the school in reaching its target mode shares

- Processing of feedback and recommendations from the school community on transport-related matters
- Coordinate initiatives and events to promote mode shift away from cars
- Working closely with the STP Committee and the P&C to identify the needs of the school community
- Reporting of data collection and evaluation to stakeholder groups.
- School Infrastructure will appoint a STC to implement the STP in the first 4 terms of the schools' operation.

6.6.3 Internal school

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

6.6.4 External state and local transport

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

6.6.5 Funding arrangements

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

7.0 Conclusion

In summary, this document has assessed the traffic impact of the new proposed Schofields-Tallawong High School. Key findings for the transport assessment include:

– Mode shares for the future school were benchmarked from Rouse Hill High School mode share surveys (which indicated the level of non-car mode shares that can be achieved by a high school in a similar context), which suggested a baseline mode share of 39% car, 50% public transport, 8% walk, 3% bicycle. Rouse Hill High School is a suitable benchmark as it is located only about 5km east of STHS and has a similar transport environment in a growth residential area.

– Footpath and active transport infrastructure is limited in the vicinity of the proposed school site. The proposed school requires 3.5m footpaths along the school frontages at Guntawong Road and Nirmal Street as well as safe crossing connections with the nearby bus stops to improve walkability to and from the school and surrounding bus stops.

– The design of the site is pedestrian and cycling first. It has bicycle parking close to the main school entrance and car parking is separated from sustainable modes of transport.

– Bus coverage within the enrolment boundary is limited and will need expansion to meet the mode share targets for the school. Bus stops are available on the northern frontage of the school site – Guntawong Road. These two bus stops will be upgraded to improve the quality and safety for future students to travel to school by buses in order to achieve the 50-55 per cent bus mode share targets.

– Delivery of a staff car park with 72 spaces that caters for 90% of staff to drive to work. Despite this does not comply with Council's typical DCP requirements, this is considered acceptable as staff are also encouraged to shift from using private vehicles, with 10% of staff expecting to travel to school by public transport (bus, train and metro), cycle to school or car pool with other teachers. This level of car parking provision is also consistent with other schools currently being delivered in the Blacktown City Council area (such as Melonba High School in Marsden Park) and in line with Transport for NSW and School Infrastructure's intentions to encourage more sustainable travel for the delivery of schools.

– The traffic assessment has highlighted that a student population of 1,000 can be accommodated by the local road network, if roads are upgraded overtime to accommodate both the increase in background traffic and school traffic. Travel behaviour will likely towards bus travel and active transport if private vehicle travel times increase as a result of the proposed increase in student population.

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

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

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

8.0 Mitigation measures

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

Table 8-1 Mitigation measures

#	Impact	Mitigation Measure	Forms part of this REF	Significance after mitigation
1a	Students are unable to cross safely, resulting in harm from vehicles	Construct a zebra crossing on Guntawong Road prior to occupancy	No	Not significant
1b		Construct a wombat crossing on Nirmal Street prior to occupancy	Yes	Not significant
2	The Walking Space Guidelines requires the 3.5m footpath width based on the expected demand for the site but there are no footpaths currently on Nirmal Street	Construct a 3.5m shared path along school frontage on Nirmal Street on the school frontage side only (western) prior to occupancy	Yes	Not significant
3	The Walking Space Guidelines requires the 3.5m footpath width based on the expected demand for the site but there are no footpaths currently on Guntawong Road	Construct a 3.5m shared path along school frontage on Guntawong Road along the school frontage and on the northern side of Guntawong Road from the bus stop to the zebra crossing prior to occupancy	No	Not significant
4	Guntawong Road is not wide enough for both the bus stops and through traffic	Construct two indented bus bays on Guntawong Road able to each accommodate two buses: – Eastbound bus bay: 40 metres long – Westbound bus bay: 60 metres long In the sections of Guntawong Road comprising four lanes the cross section of Guntawong road should match with the end-state cross section of Guntawong Road where possible and appropriate. The intersection of Guntawong Road and Nirmal Street should be designed as a “Give Way’ intersection with one lane on each approach. The design should provision for the future roundabout at Guntawong Road and Nirmal Street where possible and appropriate.	No	Not significant
5	Nirmal Street is an incomplete road, with travel in the southbound direction only. With the half road only, there would be significant congestion and impacts on other road users.	Construct Nirmal Street within the site boundary to a carriageway width of 19m from Guntawong Road along the full extent of the school frontage and dedicate it to Council prior to occupancy[4]	Yes	Not significant
6	Marchant Street is an incomplete road, with travel in the southbound direction only.	The southern half of Marchant Street needs to be constructed from Nirmal Street to	No	Not significant

[4] The eastern half road of Nirmal Street from Marchant Street to the southern frontage of the school is within Lot 43 DP301086 and subject of Bathla Group subdivision DA (DA-23-00128), which is understood to be in the delivery phase with an expected completion by mid-2025. The eastern half road of Nirmal Street from Guntawong Road to McClelland Street is within Lot 1 DP1300811 and subject of Metro DA.

#	Impact	Mitigation Measure	Forms part of this REF	Significance after mitigation
	With only this road infrastructure, there would be significant congestion and impacts on other road users.	Tallawong Road and dedicated to the Council as a public road prior to occupancy[5]		
7	There are no car parking facilities for staff, resulting in staff having to park a significant distance from the site and impacting on other landowners in the area. Without a loading bay, collection would have to be on-street, which would be require waste to have to be transported to the kerb, impacting on safe student access	Construct a carpark with 72 spaces and a separate loading facility according to Australian standard AS2890.1, AS2890.2 and AS2890.6.	Yes	Not significant
8	Drivers travel past the school at the current posted speed limit, increasing the risk and severity of harm to students	Prior to the commencement of operation, all required School Zone signage, speed management signage and associated pavement markings must be installed, inspected by TfNSW and handed over to TfNSW.	Yes	Not significant
9	Students prefer arriving by private vehicle, resulting in congestion and delays to other road users.	Within the first 12 months of operation appoint a School Travel Coordinator, establish a School Transport Committee, and prepare a Travel Access Guide	Yes	Not significant
10	Students prefer arriving by private vehicle, resulting in congestion and delays to other road users.	Update the School Transport Plan annually for the first two years	Yes	Not significant
11	Construction, particularly the arrival of heavy vehicles causes safety issues for other road users.	Prior to construction commencing, prepare a construction traffic management plan to the satisfaction of Blacktown Council, including preparation of traffic guidance schemes where required.	Yes	Not significant
12	Construction worker parking impacts on safety and amenity of surrounding streets due to a large number of workers parking	The builder should run a shuttle bus to the station for use by workers for the duration of construction	Yes	Not significant
13	The two spaces at the south of the school are inaccessible	These spaces to be widened to 3.6m as they are at the end of a blind aisle – AS2890.1 Fig 2.3	Yes	Not significant

[5] Marchant Street from Nirmal Street to Tallawong Road is within Lot 43 DP301086 and subject of Bathla Group subdivision DA (DA-23-00128), which is understood to be in the delivery phase with an expected completion by mid-2025

Figure 8-1 Schofields Tallawong High School – Mitigation measures

Source: djrd Architects with annotations by SCT Consulting; 2025

APPENDIX A

TRAVEL ACCESS GUIDE

Schofields Tallawong High School

Travel Access Guide

November 2024

Project overview

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

Using public transport to get to school

School buses and public buses

- Public bus route available is route 742 (Marsden Park to Rouse Hill) with AM and PM services.
- School bus routes available are 6533, 6534, and 6596. Only PM services are available for these routes.

Metro

- Tallawong station is the nearest metro station and is part of the M1 line. Frequent services are available during the AM and PM.

Safety

- Always be cautious around metro tracks and stand behind the gates.
- Don't enter the metro when doors are closing.
- Be cautious around roads for other motor vehicles and cyclists.
- Always cross at desginated crossings.

Apply for opal card

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

Students are expected to be courteous and responsible, and follow the school student's code

Message from your Principal

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

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

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

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

For more information contact:

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

NSW GOVERNMENT

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

Plan your trip to school

You can plan ahead to make sure you get to school on time! Visit transport.info or download an app to help:

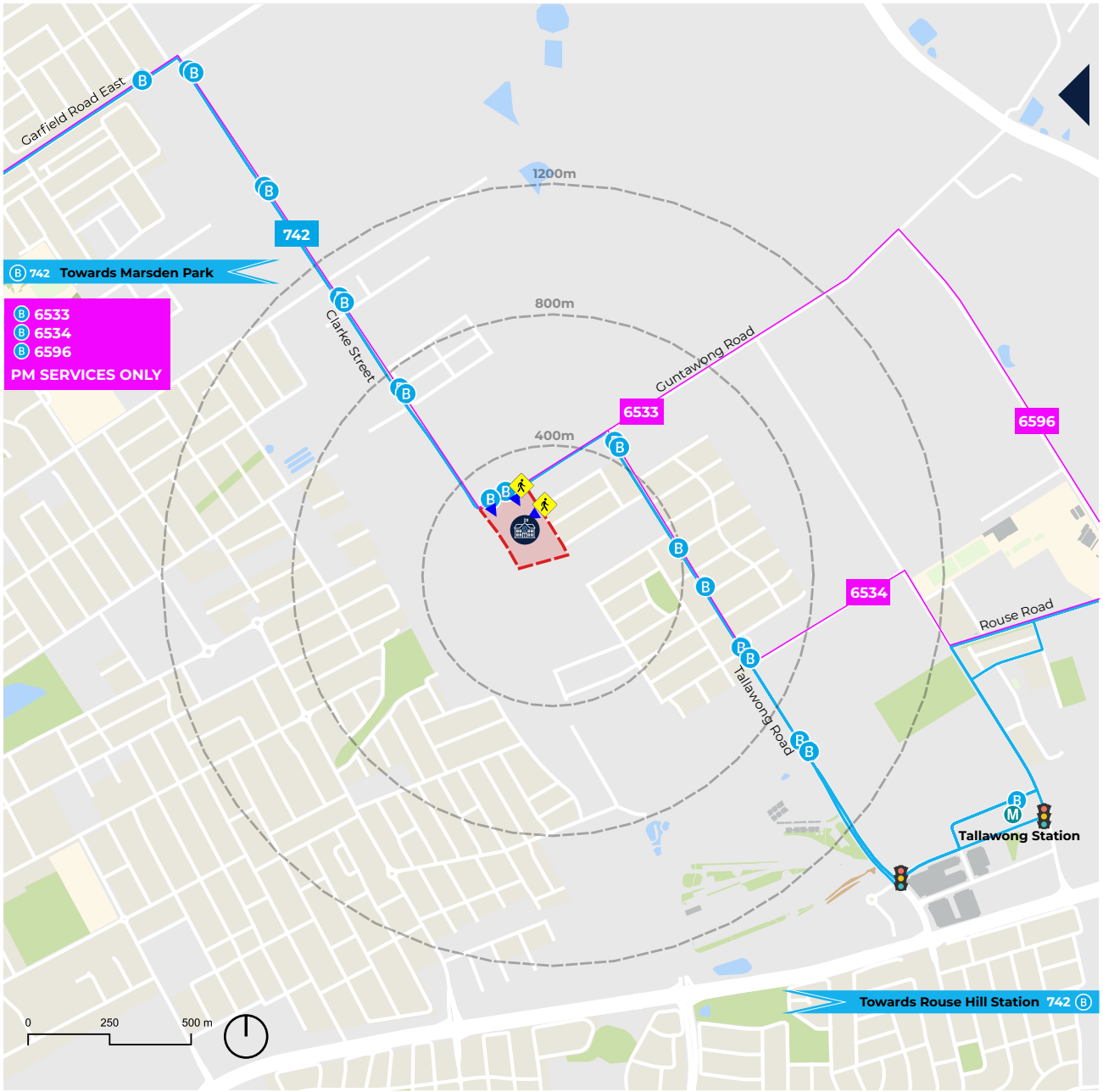
- Trip View
- Next There

When taking public transport

Remember to always:

- Tap your opal card on and off
- Be respectful of public
- Be safe around tracks and roads
- Offer your seat to the public if there are no seats

The public transport network



Legend

- Schofields Tallawong High School
- Metro station
- Bus stops
- Public bus routes
- School bus routes
- Zebra crossing
- Signalised crossing
- School pedestrian entrance

For more information contact:

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

NSW GOVERNMENT

Active travel options to school

Walking is a healthy, active way to get to school

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

Ride your bike or scooter

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

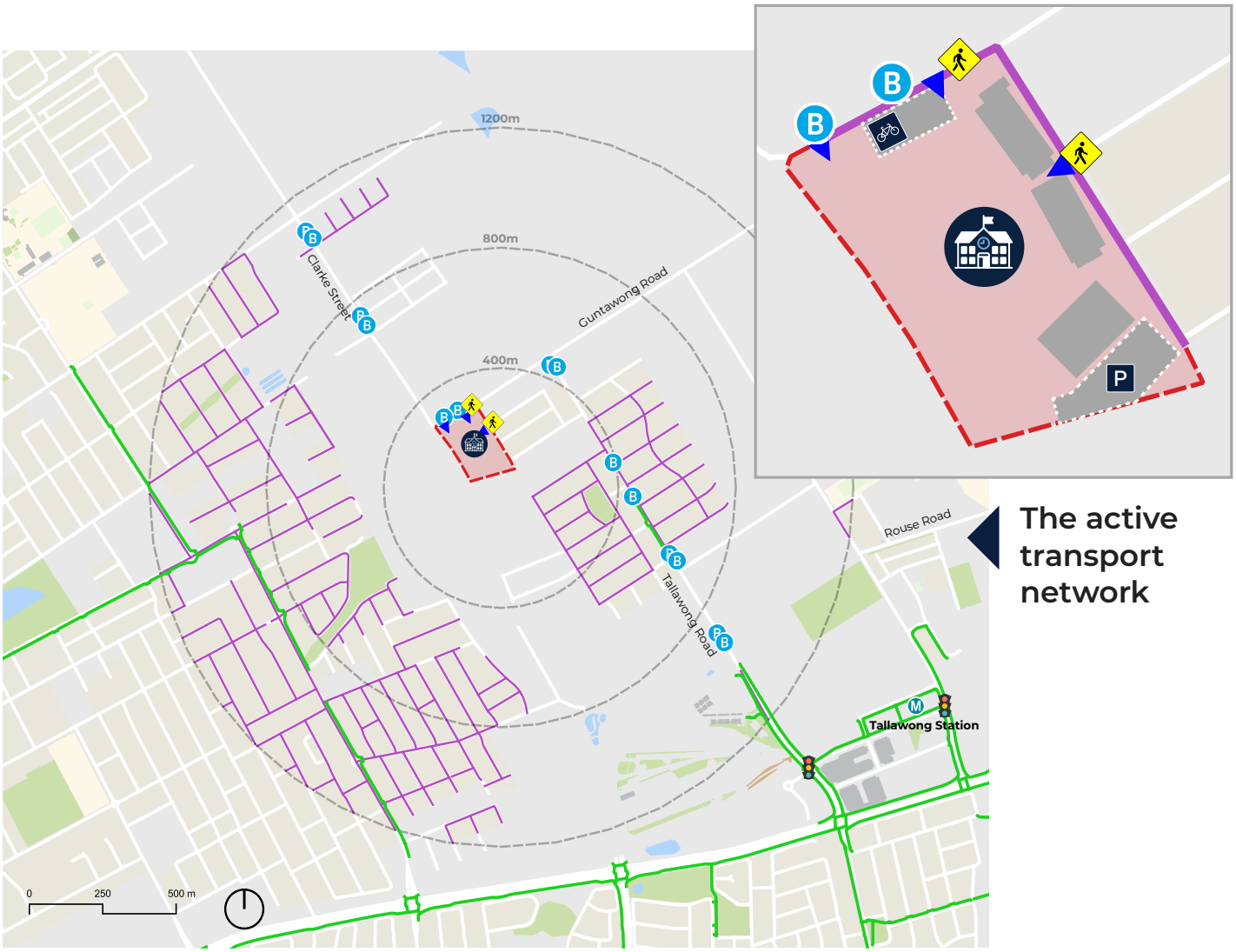
Kiss and drop code of conduct

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

Spot something unsafe on the way to school?

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

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



The active transport network

Legend

- Schofields Tallawong High School
- Metro station
- Bus stops
- Footpaths
- Cycling network
- Zebra crossing
- Signalised crossing
- School pedestrian entrance

For more information contact:

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

NSW GOVERNMENT

APPENDIX B

TRAFFIC SURVEYS AND DISTRIBUTION

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Guntawong Rd and Tallawong Rd, Tallawong

GPS -33.680841, 150.892798

Date:	Tue 15/10/24
Weather:	Overcast
Suburban:	Tallawong
Customer:	SCT

North:	N/A
East:	Guntawong Rd
South:	Tallawong Rd
West:	Guntawong Rd

Survey Period	AM:	7:30 AM-9:30 AM
	PM:	2:30 PM-5:30 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	3:00 PM-4:00 PM

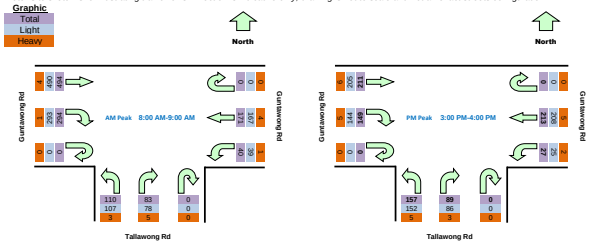
All Vehicles

Time		East Approach Guntawong Rd			South Approach Tallawong Rd			West Approach Guntawong Rd			Hourly Total	
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Hour	Peak
7:30	7:45	0	32	3	0	14	15	0	76	141		
7:45	8:00	0	44	5	0	19	35	0	75	150		
8:00	8:15	0	43	9	0	15	26	0	85	147	1192	Peak
8:15	8:30	0	43	5	0	23	36	0	87	128		
8:30	8:45	0	38	13	0	27	22	0	77	125		
8:45	9:00	0	47	13	0	18	26	0	45	94		
9:00	9:15	0	32	9	0	11	18	0	26	50		
9:15	9:30	0	29	4	0	17	13	0	19	29		
14:30	14:45	0	32	5	0	14	18	0	26	30		
14:45	15:00	0	23	1	0	13	17	0	39	44		
15:00	15:15	0	37	5	0	26	33	0	43	68	846	Peak
15:15	15:30	0	53	5	0	27	44	0	45	56		
15:30	15:45	0	58	7	0	20	30	0	28	37		
15:45	16:00	0	65	10	0	16	50	0	33	50		
16:00	16:15	0	70	5	0	24	52	0	31	46		
16:15	16:30	0	53	8	0	18	52	0	35	27		
16:30	16:45	0	66	6	0	19	34	0	34	49		
16:45	17:00	0	70	1	0	26	61	0	35	42		
17:00	17:15	0	66	9	0	26	43	0	45	50		
17:15	17:30	0	83	6	0	27	50	0	29	37		

Peak Time		East Approach Guntawong Rd			South Approach Tallawong Rd			West Approach Guntawong Rd			Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total
8:00	9:00	0	171	40	0	83	110	0	294	494	1192
15:00	16:00	0	213	27	0	89	157	0	149	211	846

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

Graphic
Total
Light
Heavy



Light Vehicles

Time		East Approach Guntawong Rd			South Approach Tallawong Rd			West Approach Guntawong Rd		
Period Start	Period End	U	WB	L	U	R	L	U	R	EB
7:30	7:45	0	30	3	0	13	13	0	74	138
7:45	8:00	0	43	5	0	18	35	0	73	148
8:00	8:15	0	43	8	0	15	26	0	85	146
8:15	8:30	0	40	5	0	21	35	0	87	127
8:30	8:45	0	38	13	0	25	22	0	77	125
8:45	9:00	0	46	13	0	17	24	0	44	92
9:00	9:15	0	30	9	0	11	17	0	25	47
9:15	9:30	0	28	4	0	16	13	0	17	29
14:30	14:45	0	30	5	0	13	16	0	25	29
14:45	15:00	0	22	1	0	13	16	0	38	44
15:00	15:15	0	37	4	0	26	31	0	41	67
15:15	15:30	0	50	5	0	27	43	0	44	55
15:30	15:45	0	57	7	0	17	29	0	26	37
15:45	16:00	0	64	9	0	16	49	0	33	46
16:00	16:15	0	70	5	0	23	51	0	30	46
16:15	16:30	0	53	8	0	17	51	0	33	27
16:30	16:45	0	64	6	0	19	33	0	31	48
16:45	17:00	0	69	1	0	24	58	0	34	41
17:00	17:15	0	66	9	0	23	43	0	42	49
17:15	17:30	0	83	6	0	27	47	0	29	36

Peak Time		East Approach Guntawong Rd			South Approach Tallawong Rd			West Approach Guntawong Rd			Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total
8:00	9:00	0	167	39	0	78	107	0	293	490	1174
15:00	16:00	0	208	25	0	86	152	0	144	205	820

Heavy Vehicles

Time		East Approach Guntawong Rd			South Approach Tallawong Rd			West Approach Guntawong Rd		
Period Start	Period End	U	WB	L	U	R	L	U	R	EB
7:30	7:45	0	2	0	0	1	2	0	2	3
7:45	8:00	0	1	0	0	1	0	0	2	2
8:00	8:15	0	0	1	0	0	0	0	0	1
8:15	8:30	0	3	0	0	2	1	0	0	1
8:30	8:45	0	0	0	0	2	0	0	0	0
8:45	9:00	0	1	0	0	1	2	0	1	2
9:00	9:15	0	2	0	0	0	1	0	1	3
9:15	9:30	0	1	0	0	1	0	0	2	0
14:30	14:45	0	2	0	0	1	2	0	1	1
14:45	15:00	0	1	0	0	0	1	0	1	0
15:00	15:15	0	0	1	0	0	2	0	2	1
15:15	15:30	0	3	0	0	0	1	0	1	1
15:30	15:45	0	1	0	0	3	1	0	2	0
15:45	16:00	0	1	1	0	0	1	0	0	4
16:00	16:15	0	0	0	0	1	1	0	1	0
16:15	16:30	0	0	0	0	1	1	0	2	0
16:30	16:45	0	2	0	0	0	1	0	3	1
16:45	17:00	0	1	0	0	2	3	0	1	1
17:00	17:15	0	0	0	0	3	0	0	3	1
17:15	17:30	0	0	0	0	0	3	0	0	1

Peak Time		East Approach Guntawong Rd			South Approach Tallawong Rd			West Approach Guntawong Rd			Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total
8:00	9:00	0	4	1	0	5	3	0	1	4	18
15:00	16:00	0	5	2	0	3	5	0	5	6	26

Queues

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

		East	South	West
8:00	9:00	**0**	**6**	**7**
15:00	16:00	**0**	**6**	**4**

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Marchant St and Tallawong Rd, Tallawong

GPS	-33.682526, 150.893983
Date:	Tue 15/10/24
Weather:	Overcast
Suburban:	Tallawong
Customer:	SCT

North:	Tallawong Rd
East:	N/A
South:	Tallawong Rd
West:	Marchant St

Survey Period	AM:	7:30 AM-9:30 AM
	PM:	2:30 PM-5:30 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	3:00 PM-4:00 PM

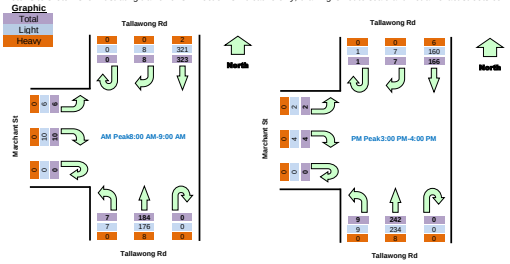
All Vehicles

Time		North Approach Tallawong Rd			South Approach Tallawong Rd			West Approach Marchant St			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
7:30	7:45	0	2	76	0	23	5	0	7	5		
7:45	8:00	0	0	79	0	53	2	0	2	3		
8:00	8:15	0	2	90	0	35	2	0	4	4	538	Peak
8:15	8:30	0	1	91	0	62	0	0	3	0		
8:30	8:45	0	4	82	0	44	2	0	1	1		
8:45	9:00	0	1	60	0	43	3	0	2	1		
9:00	9:15	0	1	34	0	27	1	0	5	0		
9:15	9:30	0	1	22	0	31	0	0	1	0		
14:30	14:45	0	0	29	0	31	1	0	4	3		
14:45	15:00	0	0	40	0	29	0	0	2	1		
15:00	15:15	0	2	46	0	57	2	0	1	0	431	Peak
15:15	15:30	0	3	47	0	72	3	0	2	0		
15:30	15:45	0	1	33	0	49	2	0	1	1		
15:45	16:00	1	1	40	0	64	2	0	0	1		
16:00	16:15	0	1	36	0	75	3	0	2	1		
16:15	16:30	0	0	41	0	70	3	0	3	1		
16:30	16:45	0	2	36	0	53	1	0	5	2		
16:45	17:00	0	3	36	0	83	3	0	3	2		
17:00	17:15	0	0	52	0	69	3	0	0	3		
17:15	17:30	0	1	35	0	77	1	0	3	1		

Peak Time		North Approach Tallawong Rd			South Approach Tallawong Rd			West Approach Marchant St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	8	323	0	184	7	0	10	6	538
15:00	16:00	1	7	166	0	242	9	0	4	2	431

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

Graphic: Total / Light / Heavy



Light Vehicles

Time		North Approach Tallawong Rd			South Approach Tallawong Rd			West Approach Marchant St			
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
7:30	7:45	0	2	74	0	20	5	0	7	5	
7:45	8:00	0	0	77	0	52	2	0	2	3	
8:00	8:15	0	2	89	0	35	2	0	4	4	
8:15	8:30	0	1	91	0	59	0	0	3	0	
8:30	8:45	0	4	82	0	42	2	0	1	1	
8:45	9:00	0	1	59	0	40	3	0	2	1	
9:00	9:15	0	1	33	0	26	1	0	5	0	
9:15	9:30	0	1	20	0	30	0	0	1	0	
14:30	14:45	0	0	28	0	29	1	0	4	2	
14:45	15:00	0	0	39	0	28	0	0	2	1	
15:00	15:15	0	2	43	0	55	2	0	1	0	
15:15	15:30	0	3	46	0	71	3	0	2	0	
15:30	15:45	0	1	31	0	45	2	0	1	1	
15:45	16:00	1	1	40	0	63	2	0	0	1	
16:00	16:15	0	1	34	0	73	3	0	2	1	
16:15	16:30	0	0	40	0	68	3	0	3	1	
16:30	16:45	0	2	33	0	52	1	0	5	2	
16:45	17:00	0	3	34	0	78	3	0	3	2	
17:00	17:15	0	0	49	0	65	3	0	0	3	
17:15	17:30	0	1	35	0	75	1	0	3	1	

Peak Time		North Approach Tallawong Rd			South Approach Tallawong Rd			West Approach Marchant St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	8	321	0	176	7	0	10	6	528
15:00	16:00	1	7	160	0	234	9	0	4	2	417

Heavy Vehicles

Time		North Approach Tallawong Rd			South Approach Tallawong Rd			West Approach Marchant St			
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
7:30	7:45	0	0	2	0	3	0	0	0	0	
7:45	8:00	0	0	2	0	1	0	0	0	0	
8:00	8:15	0	0	1	0	0	0	0	0	0	
8:15	8:30	0	0	0	0	3	0	0	0	0	
8:30	8:45	0	0	0	0	2	0	0	0	0	
8:45	9:00	0	0	1	0	3	0	0	0	0	
9:00	9:15	0	0	1	0	1	0	0	0	0	
9:15	9:30	0	0	2	0	1	0	0	0	0	
14:30	14:45	0	0	1	0	2	0	0	0	1	
14:45	15:00	0	0	1	0	1	0	0	0	0	
15:00	15:15	0	0	3	0	2	0	0	0	0	
15:15	15:30	0	0	1	0	1	0	0	0	0	
15:30	15:45	0	0	2	0	4	0	0	0	0	
15:45	16:00	0	0	0	0	1	0	0	0	0	
16:00	16:15	0	0	2	0	2	0	0	0	0	
16:15	16:30	0	0	1	0	2	0	0	0	0	
16:30	16:45	0	0	3	0	1	0	0	0	0	
16:45	17:00	0	0	2	0	5	0	0	0	0	
17:00	17:15	0	0	3	0	4	0	0	0	0	
17:15	17:30	0	0	0	0	2	0	0	0	0	

Peak Time		North Approach Tallawong Rd			South Approach Tallawong Rd			West Approach Marchant St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	0	2	0	8	0	0	0	0	10
15:00	16:00	0	0	6	0	8	0	0	0	0	14

Queues

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

		North	South	West
8:00	9:00	**0**	**0**	**1**
15:00	16:00	**0**	**0**	**1**

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Riverstone Rd and Clarke St, Tallawong

GPS -33.676527, 150.883668

Date:	Tue 15/10/24
Weather:	Overcast
Suburban:	Tallawong
Customer:	SCT

North:	Clarke St
East:	Riverstone Rd
South:	Clarke St
West:	Riverstone Rd

Survey	AM:	7:30 AM-9:30 AM
Period	PM:	2:30 PM-5:30 PM
Traffic	AM:	8:00 AM-9:00 AM
Peak	PM:	3:00 PM-4:00 PM

All Vehicles

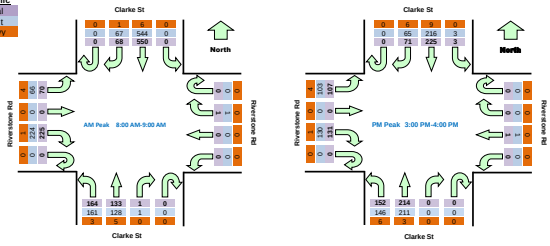
Time		North Approach Clarke St				East Approach Riverstone Rd				South Approach Clarke St				West Approach Riverstone Rd				Hourly Total	
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:30	7:45	0	16	156	0	0	0	0	0	0	0	20	27	0	54	0	7		
7:45	8:00	0	14	157	0	0	0	0	0	0	0	31	41	0	62	0	17		
8:00	8:15	0	10	183	0	0	0	0	0	0	0	35	41	0	52	0	13	1212	Peak
8:15	8:30	0	19	151	0	0	0	0	0	0	0	37	45	0	60	0	9		
8:30	8:45	0	17	138	0	0	0	0	0	0	1	25	37	0	59	0	22		
8:45	9:00	0	22	78	0	0	1	0	0	0	0	36	41	0	54	0	26		
9:00	9:15	0	15	45	0	0	0	0	0	0	0	22	31	0	31	0	22		
9:15	9:30	0	6	27	0	0	0	0	0	0	0	24	18	0	27	0	15		
14:30	14:45	0	16	34	0	0	0	0	0	0	0	19	26	0	21	0	8		
14:45	15:00	0	22	50	0	0	0	0	0	0	0	19	23	0	35	0	12		
15:00	15:15	0	16	60	2	0	0	1	0	0	0	42	27	0	52	0	36	904	Peak
15:15	15:30	0	18	71	1	0	0	0	0	0	0	54	36	0	28	0	27		
15:30	15:45	0	24	49	0	0	0	0	0	0	0	57	41	0	26	0	24		
15:45	16:00	0	13	45	0	0	0	0	0	0	0	61	48	0	25	0	20		
16:00	16:15	0	14	59	0	0	0	0	0	0	0	74	44	0	24	0	16		
16:15	16:30	0	12	35	0	0	0	0	0	0	0	67	42	0	23	0	15		
16:30	16:45	0	13	59	0	0	0	0	0	0	0	55	40	0	26	0	14		
16:45	17:00	0	16	46	0	0	0	0	0	0	0	70	62	0	30	0	18		
17:00	17:15	0	15	65	0	0	0	0	0	0	0	51	53	0	30	0	25		
17:15	17:30	0	23	45	0	0	0	0	0	0	0	78	58	0	27	0	23		

Peak Time		North Approach Clarke St				East Approach Riverstone Rd				South Approach Clarke St				West Approach Riverstone Rd				Peak
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	68	550	0	0	1	0	0	0	1	133	164	0	225	0	70	1212
15:00	16:00	0	71	225	3	0	0	1	0	0	0	214	152	0	131	0	107	904

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

Graphic

Total
Light
Heavy



Queues

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

		North	East	South	West
8:00	9:00	3	0	0	10
15:00	16:00	3	2	0	7

Light Vehicles

Time		North Approach Clarke St				East Approach Riverstone Rd				South Approach Clarke St				West Approach Riverstone Rd			
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:30	7:45	0	16	150	0	0	0	0	0	0	0	17	25	0	53	0	7
7:45	8:00	0	13	154	0	0	0	0	0	0	0	31	40	0	60	0	15
8:00	8:15	0	10	182	0	0	0	0	0	0	0	35	41	0	51	0	12
8:15	8:30	0	19	148	0	0	0	0	0	0	0	35	43	0	60	0	7
8:30	8:45	0	17	138	0	0	0	0	0	0	1	24	37	0	59	0	21
8:45	9:00	0	21	76	0	0	1	0	0	0	0	34	40	0	54	0	26
9:00	9:15	0	14	41	0	0	0	0	0	0	0	21	30	0	31	0	22
9:15	9:30	0	6	22	0	0	0	0	0	0	0	21	18	0	27	0	15
14:30	14:45	0	14	33	0	0	0	0	0	0	0	17	25	0	21	0	8
14:45	15:00	0	21	49	0	0	0	0	0	0	0	17	23	0	35	0	11
15:00	15:15	0	14	56	2	0	0	1	0	0	0	41	26	0	52	0	36
15:15	15:30	0	17	69	1	0	0	0	0	0	0	53	35	0	28	0	26
15:30	15:45	0	23	48	0	0	0	0	0	0	0	56	39	0	26	0	21
15:45	16:00	0	11	43	0	0	0	0	0	0	0	61	46	0	24	0	20
16:00	16:15	0	12	58	0	0	0	0	0	0	0	74	44	0	23	0	15
16:15	16:30	0	11	33	0	0	0	0	0	0	0	64	41	0	23	0	15
16:30	16:45	0	12	55	0	0	0	0	0	0	0	54	38	0	25	0	14
16:45	17:00	0	16	46	0	0	0	0	0	0	0	67	62	0	30	0	18
17:00	17:15	0	15	61	0	0	0	0	0	0	0	50	53	0	30	0	25
17:15	17:30	0	22	44	0	0	0	0	0	0	0	76	57	0	27	0	23

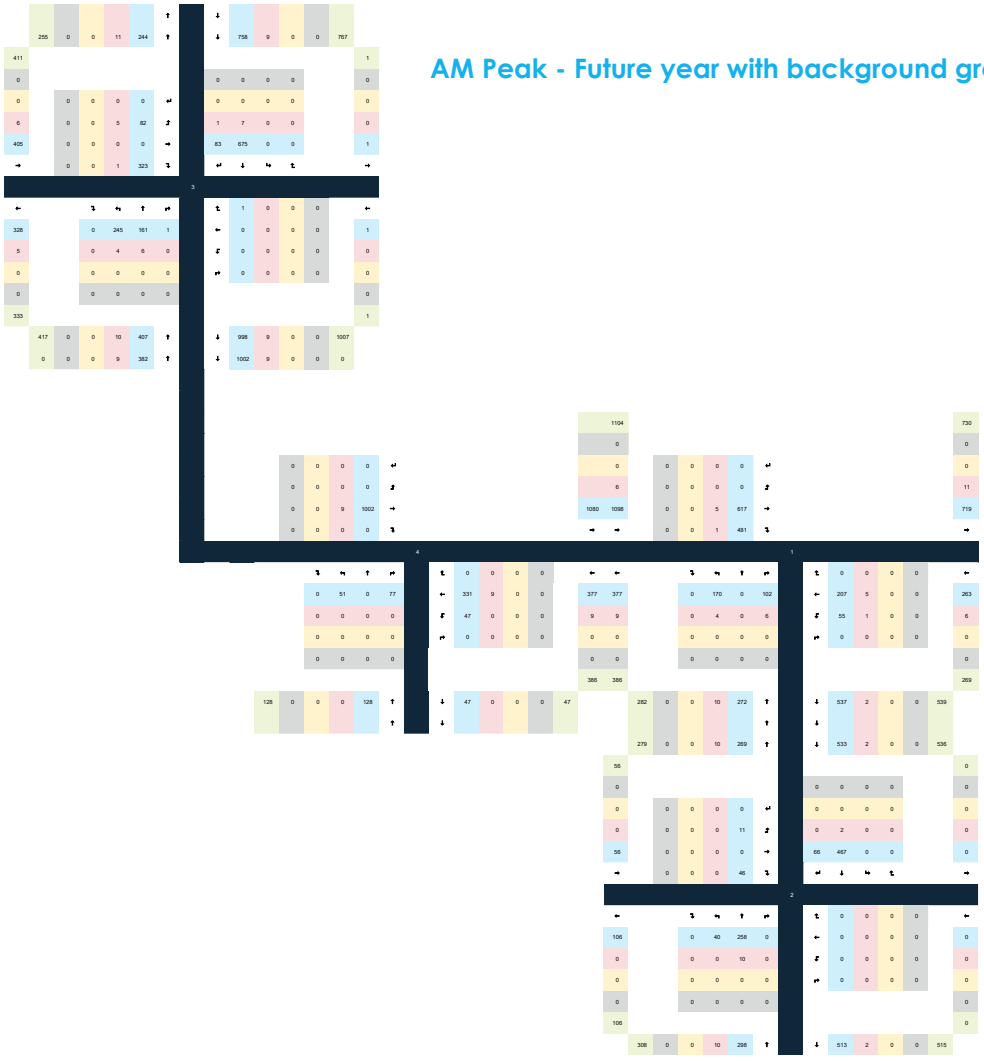
Peak Time		North Approach Clarke St				East Approach Riverstone Rd				South Approach Clarke St				West Approach Riverstone Rd				Peak
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	67	544	0	0	1	0	0	0	1	128	161	0	224	0	66	1192
15:00	16:00	0	65	216	3	0	0	1	0	0	0	211	146	0	130	0	103	875

Heavy Vehicles

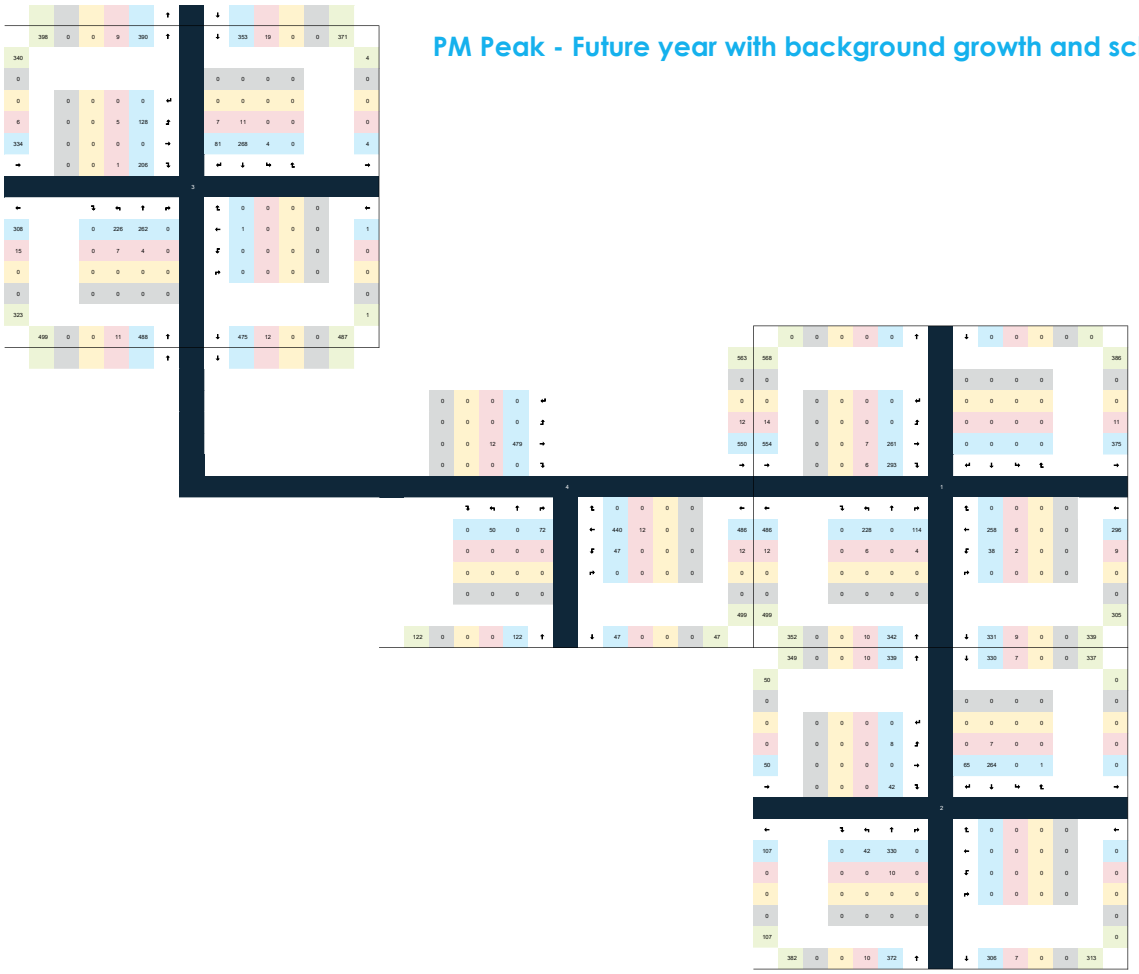
Time		North Approach Clarke St				East Approach Riverstone Rd				South Approach Clarke St				West Approach Riverstone Rd			
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:30	7:45	0	0	6	0	0	0	0	0	0	0	3	2	0	1	0	0
7:45	8:00	0	1	3	0	0	0	0	0	0	0	0	1	0	2	0	2
8:00	8:15	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1
8:15	8:30	0	0	3	0	0	0	0	0	0	0	2	2	0	0	0	2
8:30	8:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
8:45	9:00	0	1	2	0	0	0	0	0	0	0	2	1	0	0	0	0
9:00	9:15	0	1	4	0	0	0	0	0	0	0	1	1	0	0	0	0
9:15	9:30	0	0	5	0	0	0	0	0	0	0	3	0	0	0	0	0
14:30	14:45	0	2	1	0	0	0	0	0	0	0	2	1	0	0	0	0
14:45	15:00	0	1	1	0	0	0	0	0	0	0	2	0	0	0	0	1
15:00	15:15	0	2	4	0	0	0	0	0	0	0	1	1	0	0	0	0
15:15	15:30	0	1	2	0	0	0	0	0	0	0	1	1	0	0	0	1
15:30	15:45	0	1	1	0	0	0	0	0	0	0	1	2	0	0	0	3
15:45	16:00	0	2	2	0	0	0	0	0	0	0	0	2	0	1	0	0
16:00	16:15	0	2	1	0	0	0	0	0	0	0	0	0	0	1	0	1
16:15	16:30	0	1	2	0	0	0	0	0	0	0	3	1	0	0	0	0
16:30	16:45	0	1	4	0	0	0	0	0	0	0	1	2	0	1	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
17:00	17:15	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0
17:15	17:30	0	1	1	0	0	0	0	0	0	0	2	1	0	0	0	0

Peak Time		North Approach Clarke St				East Approach Riverstone Rd				South Approach Clarke St				West Approach Riverstone Rd				Peak
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	1	6	0	0	0	0	0	0	0	5	3	0	1	0	4	20
15:00	16:00	0	6	9	0	0	0	0	0	0	0	3	6	0	1	0	4	29

AM Peak - Future year with background growth and school traffic



PM Peak - Future year with background growth and school traffic



APPENDIX C

SIDRA OUTPUTS

MOVEMENT SUMMARY

Site: 1AM [TAL_GUN_24_BY_AM (Site Folder: AM BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	116	2.7	116	2.7	0.255	5.1	LOS A	0.9	6.3	0.46	0.60	0.46	34.0
3	R2	All MCs	87	6.0	87	6.0	0.255	11.0	LOS A	0.9	6.3	0.46	0.60	0.46	45.7
Approach			203	4.1	203	4.1	0.255	7.7	LOS A	0.9	6.3	0.46	0.60	0.46	41.6
East: Guntawong Road															
4	L2	All MCs	42	2.5	42	2.5	0.116	5.6	LOS A	0.0	0.0	0.00	0.40	0.00	54.8
5	T1	All MCs	180	2.3	180	2.3	0.116	2.3	LOS A	0.0	0.0	0.00	0.40	0.00	54.8
Approach			222	2.4	222	2.4	0.116	2.9	NA	0.0	0.0	0.00	0.40	0.00	54.8
West: Guntawong Road															
11	T1	All MCs	581	0.8	581	0.8	0.466	0.5	LOS A	2.4	16.8	0.30	0.29	0.30	43.2
12	R2	All MCs	327	0.3	327	0.3	0.466	4.4	LOS A	2.4	16.8	0.30	0.29	0.30	39.2
Approach			908	0.6	908	0.6	0.466	1.9	NA	2.4	16.8	0.30	0.29	0.30	41.9
All Vehicles			1333	1.5	1333	1.5	0.466	2.9	NA	2.4	16.8	0.27	0.36	0.27	42.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2AM [TAL_MAR_24_BY_AM (Site Folder: AM BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	7	0.0	7	0.0	0.099	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	56.6
2	T1	All MCs	194	4.3	194	4.3	0.099	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
Approach			201	4.2	201	4.2	0.099	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.4
North: Tallawong Road															
8	T1	All MCs	340	0.6	340	0.6	0.168	0.0	LOS A	0.1	0.4	0.02	0.02	0.02	59.7
9	R2	All MCs	8	0.0	8	0.0	0.168	5.7	LOS A	0.1	0.4	0.02	0.02	0.02	50.5
Approach			348	0.6	348	0.6	0.168	0.1	NA	0.1	0.4	0.02	0.02	0.02	59.5
West: Marchant Road															
10	L2	All MCs	6	0.0	6	0.0	0.013	5.0	LOS A	0.0	0.3	0.28	0.54	0.28	39.4
12	R2	All MCs	11	0.0	11	0.0	0.013	5.5	LOS A	0.0	0.3	0.28	0.54	0.28	47.9
Approach			17	0.0	17	0.0	0.013	5.3	LOS A	0.0	0.3	0.28	0.54	0.28	46.1
All Vehicles			566	1.9	566	1.9	0.168	0.3	NA	0.1	0.4	0.02	0.03	0.02	59.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3AM [CLA_RIV_24_BY_AM (Site Folder: AM BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Clarke St															
1	L2	All MCs	173	1.8	173	1.8	0.171	5.6	LOS A	0.0	0.1	0.01	0.32	0.01	56.9
2	T1	All MCs	145	3.8	145	3.8	0.171	0.0	LOS A	0.0	0.1	0.01	0.32	0.01	58.3
3	R2	All MCs	1	0.0	1	0.0	0.171	6.2	LOS A	0.0	0.1	0.01	0.32	0.01	56.8
Approach			318	2.7	318	2.7	0.171	3.0	NA	0.0	0.1	0.01	0.32	0.01	57.6
East: Riverstone Rd															
4	L2	All MCs	1	0.0	1	0.0	0.004	7.6	LOS A	0.0	0.1	0.53	0.66	0.53	47.8
5	T1	All MCs	1	0.0	1	0.0	0.004	7.0	LOS A	0.0	0.1	0.53	0.66	0.53	51.6
6	R2	All MCs	1	0.0	1	0.0	0.004	8.9	LOS A	0.0	0.1	0.53	0.66	0.53	50.9
Approach			3	0.0	3	0.0	0.004	7.8	LOS A	0.0	0.1	0.53	0.66	0.53	50.5
North: Clarke St															
7	L2	All MCs	1	0.0	1	0.0	0.388	6.7	LOS A	0.6	4.2	0.10	0.12	0.10	56.6
8	T1	All MCs	671	1.1	671	1.1	0.388	0.2	LOS A	0.6	4.2	0.10	0.12	0.10	58.1
9	R2	All MCs	72	1.5	72	1.5	0.388	6.7	LOS A	0.6	4.2	0.10	0.12	0.10	56.2
Approach			743	1.1	743	1.1	0.388	0.8	NA	0.6	4.2	0.10	0.12	0.10	57.8
West: Riverstone Rd															
10	L2	All MCs	74	5.7	74	5.7	0.769	13.1	LOS A	6.2	44.1	0.85	1.20	2.04	42.2
11	T1	All MCs	1	0.0	1	0.0	0.769	15.6	LOS B	6.2	44.1	0.85	1.20	2.04	42.6
12	R2	All MCs	237	0.4	237	0.4	0.769	25.8	LOS B	6.2	44.1	0.85	1.20	2.04	34.5
Approach			312	1.7	312	1.7	0.769	22.7	LOS B	6.2	44.1	0.85	1.20	2.04	37.1
All Vehicles			1376	1.6	1376	1.6	0.769	6.3	NA	6.2	44.1	0.25	0.41	0.52	52.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1PM [TAL_GUN_24_BY_PM (Site Folder: PM BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	165	3.2	165	3.2	0.212	5.3	LOS A	0.8	5.8	0.37	0.59	0.37	36.5
3	R2	All MCs	94	3.4	94	3.4	0.212	6.8	LOS A	0.8	5.8	0.37	0.59	0.37	47.2
Approach			259	3.3	259	3.3	0.212	5.8	LOS A	0.8	5.8	0.37	0.59	0.37	42.7
East: Guntawong Road															
4	L2	All MCs	28	7.4	28	7.4	0.131	5.7	LOS A	0.0	0.0	0.00	0.38	0.00	55.2
5	T1	All MCs	224	2.3	224	2.3	0.131	2.3	LOS A	0.0	0.0	0.00	0.38	0.00	55.2
Approach			253	2.9	253	2.9	0.131	2.7	NA	0.0	0.0	0.00	0.38	0.00	55.2
West: Guntawong Road															
11	T1	All MCs	234	2.8	234	2.8	0.217	0.5	LOS A	1.0	7.3	0.30	0.31	0.30	43.1
12	R2	All MCs	175	3.4	175	3.4	0.217	4.3	LOS A	1.0	7.3	0.30	0.31	0.30	39.1
Approach			410	3.1	410	3.1	0.217	2.1	NA	1.0	7.3	0.30	0.31	0.30	41.6
All Vehicles			921	3.1	921	3.1	0.217	3.3	NA	1.0	7.3	0.24	0.41	0.24	43.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2PM [TAL_MAR_24_BY_PM (Site Folder: PM BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	9	0.0	9	0.0	0.130	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	56.6
2	T1	All MCs	255	3.3	255	3.3	0.130	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
Approach			264	3.2	264	3.2	0.130	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.4
North: Tallawong Road															
8	T1	All MCs	175	3.6	175	3.6	0.090	0.0	LOS A	0.0	0.4	0.03	0.04	0.03	59.5
9	R2	All MCs	7	0.0	7	0.0	0.090	6.1	LOS A	0.0	0.4	0.03	0.04	0.03	50.3
Approach			182	3.5	182	3.5	0.090	0.3	NA	0.0	0.4	0.03	0.04	0.03	59.2
West: Marchant Road															
10	L2	All MCs	2	0.0	2	0.0	0.005	5.1	LOS A	0.0	0.1	0.28	0.53	0.28	39.4
12	R2	All MCs	4	0.0	4	0.0	0.005	5.2	LOS A	0.0	0.1	0.28	0.53	0.28	47.9
Approach			6	0.0	6	0.0	0.005	5.2	LOS A	0.0	0.1	0.28	0.53	0.28	46.3
All Vehicles			453	3.3	453	3.3	0.130	0.3	NA	0.0	0.4	0.02	0.04	0.02	59.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3PM [CLA_RIV_24_BY_PM (Site Folder: PM BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Clarke St															
1	L2	All MCs	160	3.9	160	3.9	0.206	5.6	LOS A	0.0	0.1	0.00	0.25	0.00	57.3
2	T1	All MCs	225	1.4	225	1.4	0.206	0.0	LOS A	0.0	0.1	0.00	0.25	0.00	58.7
3	R2	All MCs	1	0.0	1	0.0	0.206	5.5	LOS A	0.0	0.1	0.00	0.25	0.00	57.2
Approach			386	2.5	386	2.5	0.206	2.3	NA	0.0	0.1	0.00	0.25	0.00	58.1
East: Riverstone Rd															
4	L2	All MCs	1	0.0	1	0.0	0.003	6.1	LOS A	0.0	0.1	0.37	0.56	0.37	49.6
5	T1	All MCs	1	0.0	1	0.0	0.003	5.6	LOS A	0.0	0.1	0.37	0.56	0.37	52.6
6	R2	All MCs	1	0.0	1	0.0	0.003	7.3	LOS A	0.0	0.1	0.37	0.56	0.37	51.9
Approach			3	0.0	3	0.0	0.003	6.4	LOS A	0.0	0.1	0.37	0.56	0.37	51.7
North: Clarke St															
7	L2	All MCs	3	0.0	3	0.0	0.189	6.9	LOS A	0.6	4.2	0.23	0.26	0.23	55.6
8	T1	All MCs	262	4.0	262	4.0	0.189	0.5	LOS A	0.6	4.2	0.23	0.26	0.23	56.0
9	R2	All MCs	75	8.5	75	8.5	0.189	6.9	LOS A	0.6	4.2	0.23	0.26	0.23	54.8
Approach			340	4.9	340	4.9	0.189	1.9	NA	0.6	4.2	0.23	0.26	0.23	55.6
West: Riverstone Rd															
10	L2	All MCs	126	3.7	126	3.7	0.399	7.2	LOS A	1.9	13.3	0.50	0.76	0.64	50.0
11	T1	All MCs	1	0.0	1	0.0	0.399	6.7	LOS A	1.9	13.3	0.50	0.76	0.64	50.5
12	R2	All MCs	160	0.8	160	0.8	0.399	11.0	LOS A	1.9	13.3	0.50	0.76	0.64	46.1
Approach			287	2.1	287	2.1	0.399	9.3	LOS A	1.9	13.3	0.50	0.76	0.64	48.4
All Vehicles			1016	3.2	1016	3.2	0.399	4.2	NA	1.9	13.3	0.22	0.40	0.26	55.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 4AMFB [GUN_NEW_FB_AM (Site Folder: AM FUTURE BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: New Access Road															
1	L2	All MCs	2	0.0	2	0.0	0.015	4.3	LOS A	0.0	0.3	0.52	0.66	0.52	34.9
3	R2	All MCs	8	0.0	8	0.0	0.015	7.2	LOS A	0.0	0.3	0.52	0.66	0.52	34.9
Approach			10	0.0	10	0.0	0.015	6.6	LOS A	0.0	0.3	0.52	0.66	0.52	34.9
East: Guntawong Road															
4	L2	All MCs	1	0.0	1	0.0	0.191	3.4	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
5	T1	All MCs	365	2.5	365	2.5	0.191	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach			366	2.5	366	2.5	0.191	0.0	NA	0.0	0.0	0.00	0.00	0.00	39.9
West: Guntawong Road															
11	T1	All MCs	1013	0.9	937	0.9	0.483	0.5	LOS A	0.0	0.0	0.00	0.00	0.00	39.8
Approach			1013	0.9	937	0.9	0.483	0.5	NA	0.0	0.0	0.00	0.00	0.00	39.8
All Vehicles			1389	1.3	1313	1.4	0.483	0.4	NA	0.0	0.3	0.00	0.01	0.00	39.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1AMFB [TAL_GUN_24_FB_AM (Site Folder: AM FUTURE BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	151	2.8	151	2.8	0.397	6.2	LOS A	1.9	13.8	0.60	0.74	0.81	30.7
3	R2	All MCs	107	6.1	107	6.1	0.397	16.0	LOS B	1.9	13.8	0.60	0.74	0.81	43.7
Approach			258	4.2	258	4.2	0.397	10.3	LOS A	1.9	13.8	0.60	0.74	0.81	38.7
East: Guntawong Road															
4	L2	All MCs	52	2.5	52	2.5	0.143	5.6	LOS A	0.0	0.0	0.00	0.40	0.00	54.8
5	T1	All MCs	223	2.3	223	2.3	0.143	2.3	LOS A	0.0	0.0	0.00	0.40	0.00	54.8
Approach			276	2.4	276	2.4	0.143	2.9	NA	0.0	0.0	0.00	0.40	0.00	54.8
West: Guntawong Road															
11	T1	All MCs	683	0.8	637	0.8	0.546	1.1	LOS A	4.3	30.4	0.37	0.40	0.44	47.6
12	R2	All MCs	437	0.3	407	0.3	0.546	5.1	LOS A	4.3	30.4	0.37	0.40	0.44	36.1
Approach			1120	0.6	1044	0.6	0.546	2.7	NA	4.3	30.4	0.37	0.40	0.44	44.9
All Vehicles			1653	1.5	1577	1.5	0.546	3.9	NA	4.3	30.4	0.35	0.46	0.42	45.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2AMFB [TAL_MAR_24_FB_AM (Site Folder: AM FUTURE BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	9	0.0	9	0.0	0.123	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
2	T1	All MCs	240	4.3	240	4.3	0.123	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
Approach			250	4.2	250	4.2	0.123	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.5
North: Tallawong Road															
8	T1	All MCs	429	0.6	403	0.6	0.199	0.0	LOS A	0.1	0.5	0.02	0.02	0.02	59.7
9	R2	All MCs	10	0.0	10	0.0	0.199	5.9	LOS A	0.1	0.5	0.02	0.02	0.02	59.0
Approach			439	0.6	412	0.6	0.199	0.2	NA	0.1	0.5	0.02	0.02	0.02	59.7
West: Marchant Road															
10	L2	All MCs	4	0.0	4	0.0	0.008	5.1	LOS A	0.0	0.2	0.32	0.55	0.32	43.0
12	R2	All MCs	7	0.0	7	0.0	0.008	5.7	LOS A	0.0	0.2	0.32	0.55	0.32	48.2
Approach			10	0.0	10	0.0	0.008	5.5	LOS A	0.0	0.2	0.32	0.55	0.32	46.9
All Vehicles			699	1.9	672	1.9	0.199	0.3	NA	0.1	0.5	0.02	0.03	0.02	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3AMFB [CLA_RIV_24_FB_AM (Site Folder: AM FUTURE BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Clarke St															
1	L2	All MCs	214	1.8	214	1.8	0.214	5.6	LOS A	0.0	0.2	0.01	0.32	0.01	56.4
2	T1	All MCs	182	3.7	182	3.7	0.214	0.0	LOS A	0.0	0.2	0.01	0.32	0.01	58.0
3	R2	All MCs	1	0.0	1	0.0	0.214	7.0	LOS A	0.0	0.2	0.01	0.32	0.01	56.2
Approach			397	2.7	397	2.7	0.214	3.0	NA	0.0	0.2	0.01	0.32	0.01	57.1
East: Riverstone Rd															
4	L2	All MCs	1	0.0	1	0.0	0.006	8.6	LOS A	0.0	0.1	0.64	0.75	0.64	45.9
5	T1	All MCs	1	0.0	1	0.0	0.006	8.6	LOS A	0.0	0.1	0.64	0.75	0.64	50.4
6	R2	All MCs	1	0.0	1	0.0	0.006	10.8	LOS A	0.0	0.1	0.64	0.75	0.64	49.8
Approach			3	0.0	3	0.0	0.006	9.4	LOS A	0.0	0.1	0.64	0.75	0.64	49.2
North: Clarke St															
7	L2	All MCs	1	0.0	1	0.0	0.486	7.4	LOS A	1.1	8.0	0.12	0.16	0.15	56.5
8	T1	All MCs	833	1.1	833	1.1	0.486	0.4	LOS A	1.1	8.0	0.12	0.16	0.15	58.0
9	R2	All MCs	89	1.5	89	1.5	0.486	7.3	LOS A	1.1	8.0	0.12	0.16	0.15	56.1
Approach			923	1.1	923	1.1	0.486	1.0	NA	1.1	8.0	0.12	0.16	0.15	57.6
West: Riverstone Rd															
10	L2	All MCs	91	5.7	91	5.7	1.402	374.2	LOS F	75.0	532.3	1.00	4.89	15.69	8.0
11	T1	All MCs	1	0.0	1	0.0	1.402	378.9	LOS F	75.0	532.3	1.00	4.89	15.69	8.0
12	R2	All MCs	294	0.4	294	0.4	1.402	395.4	LOS F	75.0	532.3	1.00	4.89	15.69	4.4
Approach			387	1.7	387	1.7	1.402	390.3	LOS F	75.0	532.3	1.00	4.89	15.69	5.3
All Vehicles			1710	1.6	1710	1.6	1.402	89.5	NA	75.0	532.3	0.30	1.27	3.63	20.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 4PMFB [GUN_NEW_FB_PM (Site Folder: PM FUTURE BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: New Access Road															
1	L2	All MCs	1	0.0	1	0.0	0.004	4.7	LOS A	0.0	0.1	0.43	0.56	0.43	35.8
3	R2	All MCs	3	0.0	3	0.0	0.004	5.4	LOS A	0.0	0.1	0.43	0.56	0.43	35.8
Approach			4	0.0	4	0.0	0.004	5.2	LOS A	0.0	0.1	0.43	0.56	0.43	35.8
East: Guntawong Road															
4	L2	All MCs	1	0.0	1	0.0	0.253	3.4	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
5	T1	All MCs	483	2.7	483	2.7	0.253	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach			485	2.7	485	2.7	0.253	0.1	NA	0.0	0.0	0.00	0.00	0.00	39.9
West: Guntawong Road															
11	T1	All MCs	465	2.8	465	2.8	0.243	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach			465	2.8	465	2.8	0.243	0.2	NA	0.0	0.0	0.00	0.00	0.00	39.9
All Vehicles			954	2.7	954	2.7	0.253	0.1	NA	0.0	0.1	0.00	0.00	0.00	39.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1PMFB [TAL_GUN_24_FB_PM (Site Folder: PM FUTURE BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	205	3.2	205	3.2	0.285	5.5	LOS A	1.1	8.1	0.44	0.63	0.44	36.0
3	R2	All MCs	116	3.4	116	3.4	0.285	7.6	LOS A	1.1	8.1	0.44	0.63	0.44	46.9
Approach			321	3.3	321	3.3	0.285	6.3	LOS A	1.1	8.1	0.44	0.63	0.44	42.4
East: Guntawong Road															
4	L2	All MCs	35	7.4	35	7.4	0.163	5.7	LOS A	0.0	0.0	0.00	0.38	0.00	55.2
5	T1	All MCs	278	2.3	278	2.3	0.163	2.3	LOS A	0.0	0.0	0.00	0.38	0.00	55.2
Approach			314	2.9	314	2.9	0.163	2.7	NA	0.0	0.0	0.00	0.38	0.00	55.2
West: Guntawong Road															
11	T1	All MCs	276	2.8	276	2.8	0.256	0.7	LOS A	1.2	8.9	0.34	0.35	0.34	47.6
12	R2	All MCs	197	3.3	197	3.3	0.256	4.6	LOS A	1.2	8.9	0.34	0.35	0.34	36.2
Approach			473	3.0	473	3.0	0.256	2.3	NA	1.2	8.9	0.34	0.35	0.34	44.7
All Vehicles			1108	3.1	1108	3.1	0.285	3.6	NA	1.2	8.9	0.27	0.44	0.27	46.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2PMFB [TAL_MAR_24_FB_PM (Site Folder: PM FUTURE BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	12	0.0	12	0.0	0.161	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
2	T1	All MCs	316	3.3	316	3.3	0.161	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
Approach			328	3.2	328	3.2	0.161	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.5
North: Tallawong Road															
8	T1	All MCs	220	3.6	220	3.6	0.113	0.1	LOS A	0.1	0.5	0.04	0.04	0.04	59.5
9	R2	All MCs	9	0.0	9	0.0	0.113	6.4	LOS A	0.1	0.5	0.04	0.04	0.04	58.2
Approach			229	3.4	229	3.4	0.113	0.3	NA	0.1	0.5	0.04	0.04	0.04	59.4
West: Marchant Road															
10	L2	All MCs	1	0.0	1	0.0	0.003	5.3	LOS A	0.0	0.1	0.32	0.54	0.32	43.0
12	R2	All MCs	3	0.0	3	0.0	0.003	5.4	LOS A	0.0	0.1	0.32	0.54	0.32	48.2
Approach			4	0.0	4	0.0	0.003	5.4	LOS A	0.0	0.1	0.32	0.54	0.32	47.1
All Vehicles			561	3.3	561	3.3	0.161	0.3	NA	0.1	0.5	0.02	0.03	0.02	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3PMFB [CLA_RIV_24_FB_PM (Site Folder: PM FUTURE BASE)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future Base (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Clarke St															
1	L2	All MCs	199	3.9	199	3.9	0.255	5.6	LOS A	0.0	0.1	0.00	0.25	0.00	56.8
2	T1	All MCs	280	1.4	280	1.4	0.255	0.0	LOS A	0.0	0.1	0.00	0.25	0.00	58.5
3	R2	All MCs	1	0.0	1	0.0	0.255	5.5	LOS A	0.0	0.1	0.00	0.25	0.00	56.7
Approach			479	2.5	479	2.5	0.255	2.3	NA	0.0	0.1	0.00	0.25	0.00	57.8
East: Riverstone Rd															
4	L2	All MCs	1	0.0	1	0.0	0.004	6.2	LOS A	0.0	0.1	0.42	0.58	0.42	49.3
5	T1	All MCs	1	0.0	1	0.0	0.004	6.1	LOS A	0.0	0.1	0.42	0.58	0.42	52.4
6	R2	All MCs	1	0.0	1	0.0	0.004	7.8	LOS A	0.0	0.1	0.42	0.58	0.42	51.8
Approach			3	0.0	3	0.0	0.004	6.7	LOS A	0.0	0.1	0.42	0.58	0.42	51.6
North: Clarke St															
7	L2	All MCs	4	0.0	4	0.0	0.225	7.3	LOS A	0.8	5.7	0.28	0.33	0.28	55.3
8	T1	All MCs	294	4.0	294	4.0	0.225	0.7	LOS A	0.8	5.7	0.28	0.33	0.28	55.5
9	R2	All MCs	93	8.5	93	8.5	0.225	7.4	LOS A	0.8	5.7	0.28	0.33	0.28	54.6
Approach			391	5.0	391	5.0	0.225	2.4	NA	0.8	5.7	0.28	0.33	0.28	55.1
West: Riverstone Rd															
10	L2	All MCs	140	3.7	140	3.7	0.487	8.2	LOS A	2.6	18.3	0.59	0.87	0.88	48.8
11	T1	All MCs	1	0.0	1	0.0	0.487	7.9	LOS A	2.6	18.3	0.59	0.87	0.88	49.3
12	R2	All MCs	171	0.8	171	0.8	0.487	13.4	LOS A	2.6	18.3	0.59	0.87	0.88	44.2
Approach			312	2.1	312	2.1	0.487	11.1	LOS A	2.6	18.3	0.59	0.87	0.88	47.0
All Vehicles			1185	3.2	1185	3.2	0.487	4.6	NA	2.6	18.3	0.25	0.44	0.33	54.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 4AMFB [GUN_NEW_FB_AM_R (Site Folder: AM FUTURE BASE RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future Base Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: New Access Road															
1	L2	All MCs	2	0.0	2	0.0	0.017	4.3	LOS A	0.0	0.3	0.54	0.68	0.54	34.6
3	R2	All MCs	8	0.0	8	0.0	0.017	7.8	LOS A	0.0	0.3	0.54	0.68	0.54	34.6
Approach			10	0.0	10	0.0	0.017	7.0	LOS A	0.0	0.3	0.54	0.68	0.54	34.6
East: Guntawong Road															
4	L2	All MCs	1	0.0	1	0.0	0.191	3.4	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
5	T1	All MCs	365	2.5	365	2.5	0.191	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach			366	2.5	366	2.5	0.191	0.0	NA	0.0	0.0	0.00	0.00	0.00	39.9
West: Guntawong Road															
11	T1	All MCs	1013	0.9	1013	0.9	0.522	0.6	LOS A	0.0	0.0	0.00	0.00	0.00	39.7
Approach			1013	0.9	1013	0.9	0.522	0.6	NA	0.0	0.0	0.00	0.00	0.00	39.7
All Vehicles			1389	1.3	1389	1.3	0.522	0.5	NA	0.0	0.3	0.00	0.01	0.00	39.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1AMFB [TAL_GUN_24_FB_AM_R (Site Folder: AM FUTURE BASE RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future Base Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	141	2.8	141	2.8	0.283	5.3	LOS A	1.0	7.5	0.50	0.63	0.51	34.2
3	R2	All MCs	107	6.1	107	6.1	0.283	10.5	LOS A	1.0	7.5	0.50	0.63	0.51	45.8
Approach			248	4.2	248	4.2	0.283	7.5	LOS A	1.0	7.5	0.50	0.63	0.51	41.7
East: Guntawong Road															
4	L2	All MCs	52	2.5	52	2.5	0.143	5.6	LOS A	0.0	0.0	0.00	0.40	0.00	54.8
5	T1	All MCs	223	2.3	223	2.3	0.143	2.3	LOS A	0.0	0.0	0.00	0.40	0.00	54.8
Approach			276	2.4	276	2.4	0.143	2.9	NA	0.0	0.0	0.00	0.40	0.00	54.8
West: Guntawong Road															
11	T1	All MCs	647	0.8	647	0.8	0.542	1.0	LOS A	4.1	29.1	0.36	0.39	0.42	47.7
12	R2	All MCs	391	0.3	391	0.3	0.542	5.1	LOS A	4.1	29.1	0.36	0.39	0.42	36.2
Approach			1038	0.6	1038	0.6	0.542	2.6	NA	4.1	29.1	0.36	0.39	0.42	45.1
All Vehicles			1562	1.5	1562	1.5	0.542	3.4	NA	4.1	29.1	0.32	0.43	0.36	45.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2AMFB [TAL_MAR_24_FB_AM_R (Site Folder: AM FUTURE BASE RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future Base Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	9	0.0	9	0.0	0.123	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
2	T1	All MCs	240	4.3	240	4.3	0.123	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
Approach			250	4.2	250	4.2	0.123	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.5
North: Tallawong Road															
8	T1	All MCs	429	0.6	429	0.6	0.212	0.0	LOS A	0.1	0.5	0.02	0.02	0.02	59.7
9	R2	All MCs	10	0.0	10	0.0	0.212	5.9	LOS A	0.1	0.5	0.02	0.02	0.02	59.0
Approach			439	0.6	439	0.6	0.212	0.2	NA	0.1	0.5	0.02	0.02	0.02	59.7
West: Marchant Road															
10	L2	All MCs	4	0.0	4	0.0	0.008	5.1	LOS A	0.0	0.2	0.33	0.55	0.33	43.0
12	R2	All MCs	7	0.0	7	0.0	0.008	5.8	LOS A	0.0	0.2	0.33	0.55	0.33	48.2
Approach			10	0.0	10	0.0	0.008	5.5	LOS A	0.0	0.2	0.33	0.55	0.33	46.9
All Vehicles			699	1.9	699	1.9	0.212	0.3	NA	0.1	0.5	0.02	0.03	0.02	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3AMFB [CLA_RIV_24_FB_AM_R (Site Folder: AM FUTURE BASE RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future Base Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Clarke St															
1	L2	All MCs	214	1.8	214	1.8	0.211	5.6	LOS A	0.0	0.2	0.01	0.33	0.01	56.4
2	T1	All MCs	176	3.7	176	3.7	0.211	0.0	LOS A	0.0	0.2	0.01	0.33	0.01	58.0
3	R2	All MCs	1	0.0	1	0.0	0.211	6.4	LOS A	0.0	0.2	0.01	0.33	0.01	56.2
Approach			392	2.7	392	2.7	0.211	3.1	NA	0.0	0.2	0.01	0.33	0.01	57.1
East: Riverstone Rd															
4	L2	All MCs	1	0.0	1	0.0	0.005	7.8	LOS A	0.0	0.1	0.58	0.70	0.58	47.0
5	T1	All MCs	1	0.0	1	0.0	0.005	7.7	LOS A	0.0	0.1	0.58	0.70	0.58	51.1
6	R2	All MCs	1	0.0	1	0.0	0.005	9.7	LOS A	0.0	0.1	0.58	0.70	0.58	50.4
Approach			3	0.0	3	0.0	0.005	8.5	LOS A	0.0	0.1	0.58	0.70	0.58	50.0
North: Clarke St															
7	L2	All MCs	1	0.0	1	0.0	0.427	7.2	LOS A	0.9	6.5	0.13	0.16	0.15	56.4
8	T1	All MCs	719	1.1	719	1.1	0.427	0.3	LOS A	0.9	6.5	0.13	0.16	0.15	57.8
9	R2	All MCs	89	1.5	89	1.5	0.427	7.1	LOS A	0.9	6.5	0.13	0.16	0.15	56.0
Approach			809	1.1	809	1.1	0.427	1.1	NA	0.9	6.5	0.13	0.16	0.15	57.4
West: Riverstone Rd															
10	L2	All MCs	91	5.7	91	5.7	0.635	8.9	LOS A	4.3	30.5	0.74	1.01	1.40	46.7
11	T1	All MCs	1	0.0	1	0.0	0.635	12.2	LOS A	4.3	30.5	0.74	1.01	1.40	47.2
12	R2	All MCs	294	0.4	294	0.4	0.635	16.1	LOS B	4.3	30.5	0.74	1.01	1.40	40.9
Approach			387	1.7	387	1.7	0.635	14.4	LOS A	4.3	30.5	0.74	1.01	1.40	42.9
All Vehicles			1590	1.6	1590	1.6	0.635	4.8	NA	4.3	30.5	0.25	0.41	0.42	53.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 4PMFB [GUN_NEW_FB_PM_R (Site Folder: PM FUTURE BASE RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future Base Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: New Access Road															
1	L2	All MCs	1	0.0	1	0.0	0.004	4.7	LOS A	0.0	0.1	0.43	0.56	0.43	35.8
3	R2	All MCs	3	0.0	3	0.0	0.004	5.4	LOS A	0.0	0.1	0.43	0.56	0.43	35.8
Approach			4	0.0	4	0.0	0.004	5.2	LOS A	0.0	0.1	0.43	0.56	0.43	35.8
East: Guntawong Road															
4	L2	All MCs	1	0.0	1	0.0	0.253	3.4	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
5	T1	All MCs	483	2.7	483	2.7	0.253	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach			485	2.7	485	2.7	0.253	0.1	NA	0.0	0.0	0.00	0.00	0.00	39.9
West: Guntawong Road															
11	T1	All MCs	465	2.8	465	2.8	0.243	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach			465	2.8	465	2.8	0.243	0.2	NA	0.0	0.0	0.00	0.00	0.00	39.9
All Vehicles			954	2.7	954	2.7	0.253	0.1	NA	0.0	0.1	0.00	0.00	0.00	39.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1PMFB [TAL_GUN_24_FB_PM_R (Site Folder: PM FUTURE BASE RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future Base Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	205	3.2	205	3.2	0.246	5.5	LOS A	1.0	7.1	0.41	0.62	0.41	36.2
3	R2	All MCs	116	3.4	116	3.4	0.246	6.6	LOS A	1.0	7.1	0.41	0.62	0.41	47.0
Approach			321	3.3	321	3.3	0.246	5.9	LOS A	1.0	7.1	0.41	0.62	0.41	42.5
East: Guntawong Road															
4	L2	All MCs	35	7.4	35	7.4	0.163	5.7	LOS A	0.0	0.0	0.00	0.38	0.00	55.2
5	T1	All MCs	278	2.3	278	2.3	0.163	2.3	LOS A	0.0	0.0	0.00	0.38	0.00	55.2
Approach			314	2.9	314	2.9	0.163	2.7	NA	0.0	0.0	0.00	0.38	0.00	55.2
West: Guntawong Road															
11	T1	All MCs	276	2.8	276	2.8	0.256	0.7	LOS A	1.2	8.9	0.34	0.35	0.34	47.6
12	R2	All MCs	197	3.3	197	3.3	0.256	4.6	LOS A	1.2	8.9	0.34	0.35	0.34	36.2
Approach			473	3.0	473	3.0	0.256	2.3	NA	1.2	8.9	0.34	0.35	0.34	44.7
All Vehicles			1108	3.1	1108	3.1	0.256	3.4	NA	1.2	8.9	0.27	0.44	0.27	46.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2PMFB [TAL_MAR_24_FB_PM_R (Site Folder: PM FUTURE BASE RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future Base Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	12	0.0	12	0.0	0.161	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
2	T1	All MCs	316	3.3	316	3.3	0.161	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
Approach			328	3.2	328	3.2	0.161	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.5
North: Tallawong Road															
8	T1	All MCs	220	3.6	220	3.6	0.113	0.1	LOS A	0.1	0.5	0.04	0.04	0.04	59.5
9	R2	All MCs	9	0.0	9	0.0	0.113	6.4	LOS A	0.1	0.5	0.04	0.04	0.04	58.2
Approach			229	3.4	229	3.4	0.113	0.3	NA	0.1	0.5	0.04	0.04	0.04	59.4
West: Marchant Road															
10	L2	All MCs	1	0.0	1	0.0	0.003	5.3	LOS A	0.0	0.1	0.32	0.54	0.32	43.0
12	R2	All MCs	3	0.0	3	0.0	0.003	5.4	LOS A	0.0	0.1	0.32	0.54	0.32	48.2
Approach			4	0.0	4	0.0	0.003	5.4	LOS A	0.0	0.1	0.32	0.54	0.32	47.1
All Vehicles			561	3.3	561	3.3	0.161	0.3	NA	0.1	0.5	0.02	0.03	0.02	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3PMFB [CLA_RIV_24_FB_PM_R (Site Folder: PM FUTURE BASE RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future Base Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Clarke St															
1	L2	All MCs	199	3.9	199	3.9	0.255	5.6	LOS A	0.0	0.1	0.00	0.25	0.00	56.8
2	T1	All MCs	280	1.4	280	1.4	0.255	0.0	LOS A	0.0	0.1	0.00	0.25	0.00	58.5
3	R2	All MCs	1	0.0	1	0.0	0.255	5.5	LOS A	0.0	0.1	0.00	0.25	0.00	56.7
Approach			479	2.5	479	2.5	0.255	2.3	NA	0.0	0.1	0.00	0.25	0.00	57.8
East: Riverstone Rd															
4	L2	All MCs	1	0.0	1	0.0	0.004	6.2	LOS A	0.0	0.1	0.42	0.58	0.42	49.3
5	T1	All MCs	1	0.0	1	0.0	0.004	6.1	LOS A	0.0	0.1	0.42	0.58	0.42	52.4
6	R2	All MCs	1	0.0	1	0.0	0.004	7.8	LOS A	0.0	0.1	0.42	0.58	0.42	51.8
Approach			3	0.0	3	0.0	0.004	6.7	LOS A	0.0	0.1	0.42	0.58	0.42	51.6
North: Clarke St															
7	L2	All MCs	4	0.0	4	0.0	0.225	7.3	LOS A	0.8	5.7	0.28	0.33	0.28	55.3
8	T1	All MCs	294	4.0	294	4.0	0.225	0.7	LOS A	0.8	5.7	0.28	0.33	0.28	55.5
9	R2	All MCs	93	8.5	93	8.5	0.225	7.4	LOS A	0.8	5.7	0.28	0.33	0.28	54.6
Approach			391	5.0	391	5.0	0.225	2.4	NA	0.8	5.7	0.28	0.33	0.28	55.1
West: Riverstone Rd															
10	L2	All MCs	140	3.7	140	3.7	0.318	6.7	LOS A	1.3	9.5	0.48	0.72	0.53	51.0
11	T1	All MCs	1	0.0	1	0.0	0.318	6.6	LOS A	1.3	9.5	0.48	0.72	0.53	51.6
12	R2	All MCs	171	0.8	171	0.8	0.318	8.9	LOS A	1.3	9.5	0.48	0.72	0.53	47.8
Approach			312	2.1	312	2.1	0.318	7.9	LOS A	1.3	9.5	0.48	0.72	0.53	49.7
All Vehicles			1185	3.2	1185	3.2	0.318	3.8	NA	1.3	9.5	0.22	0.40	0.23	55.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 4AMFY [GUN_NEW_FY_AM (Site Folder: AM FUTURE SCHOOL)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future with school (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: New Access Road															
1	L2	All MCs	54	0.0	52	0.0	0.174	4.4	LOS A	0.5	3.7	0.54	0.72	0.54	34.8
3	R2	All MCs	81	0.0	78	0.0	0.174	8.3	LOS A	0.5	3.7	0.54	0.72	0.54	34.8
Approach			135	0.0	130	0.0	0.174	6.8	LOS A	0.5	3.7	0.54	0.72	0.54	34.8
East: Guntawong Road															
4	L2	All MCs	49	0.0	49	0.0	0.213	3.4	LOS A	0.0	0.0	0.00	0.06	0.00	39.3
5	T1	All MCs	358	2.6	358	2.6	0.213	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	39.3
Approach			406	2.3	406	2.3	0.213	0.5	NA	0.0	0.0	0.00	0.06	0.00	39.3
West: Guntawong Road															
11	T1	All MCs	1064	0.9	977	0.9	0.504	0.6	LOS A	0.0	0.0	0.00	0.00	0.00	39.8
Approach			1064	0.9	977	0.9	0.504	0.6	NA	0.0	0.0	0.00	0.00	0.00	39.8
All Vehicles			1606	1.1	1514	1.2	0.504	1.1	NA	0.5	3.7	0.05	0.08	0.05	39.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1AMFY [TAL_GUN_24_FY_AM (Site Folder: AM FUTURE SCHOOL)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future with school (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	183	2.1	183	2.1	0.453	6.6	LOS A	2.5	18.2	0.64	0.77	0.92	30.0
3	R2	All MCs	114	5.7	114	5.7	0.453	17.8	LOS B	2.5	18.2	0.64	0.77	0.92	43.3
Approach			297	3.5	297	3.5	0.453	10.9	LOS A	2.5	18.2	0.64	0.77	0.92	37.7
East: Guntawong Road															
4	L2	All MCs	60	2.2	60	2.2	0.147	5.6	LOS A	0.0	0.0	0.00	0.41	0.00	54.7
5	T1	All MCs	223	2.3	223	2.3	0.147	2.3	LOS A	0.0	0.0	0.00	0.41	0.00	54.7
Approach			283	2.3	283	2.3	0.147	3.0	NA	0.0	0.0	0.00	0.41	0.00	54.7
West: Guntawong Road															
11	T1	All MCs	655	0.8	604	0.8	0.564	1.3	LOS A	5.1	36.0	0.41	0.45	0.50	47.4
12	R2	All MCs	508	0.3	469	0.3	0.564	5.3	LOS A	5.1	36.0	0.41	0.45	0.50	35.7
Approach			1163	0.6	1072	0.6	0.564	3.1	NA	5.1	36.0	0.41	0.45	0.50	44.2
All Vehicles			1743	1.3	1653	1.4	0.564	4.5	NA	5.1	36.0	0.38	0.50	0.49	44.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2AMFY [TAL_MAR_24_FY_AM (Site Folder: AM FUTURE SCHOOL)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future with school (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	42	0.0	42	0.0	0.160	5.6	LOS A	0.0	0.0	0.00	0.08	0.00	58.5
2	T1	All MCs	282	3.7	282	3.7	0.160	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	58.5
Approach			324	3.2	324	3.2	0.160	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.5
North: Tallawong Road															
8	T1	All MCs	494	0.5	460	0.6	0.259	0.2	LOS A	0.5	3.5	0.13	0.14	0.13	58.3
9	R2	All MCs	69	0.0	65	0.0	0.259	6.5	LOS A	0.5	3.5	0.13	0.14	0.13	54.9
Approach			564	0.5	525	0.5	0.259	1.0	NA	0.5	3.5	0.13	0.14	0.13	58.2
West: Marchant Road															
10	L2	All MCs	11	0.0	11	0.0	0.057	5.3	LOS A	0.2	1.1	0.39	0.65	0.39	42.7
12	R2	All MCs	48	0.0	48	0.0	0.057	6.3	LOS A	0.2	1.1	0.39	0.65	0.39	48.0
Approach			59	0.0	59	0.0	0.057	6.1	LOS A	0.2	1.1	0.39	0.65	0.39	47.4
All Vehicles			947	1.4	908	1.4	0.259	1.2	NA	0.5	3.5	0.10	0.15	0.10	57.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3AMFY [CLA_RIV_24_FY_AM (Site Folder: AM FUTURE SCHOOL)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future with school (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Clarke St															
1	L2	All MCs	262	1.5	261	1.5	0.235	5.6	LOS A	0.0	0.2	0.01	0.35	0.01	56.2
2	T1	All MCs	176	3.7	175	3.7	0.235	0.0	LOS A	0.0	0.2	0.01	0.35	0.01	57.8
3	R2	All MCs	1	0.0	1	0.0	0.235	6.3	LOS A	0.0	0.2	0.01	0.35	0.01	56.1
Approach			439	2.4	437	2.4	0.235	3.3	NA	0.0	0.2	0.01	0.35	0.01	56.9
East: Riverstone Rd															
4	L2	All MCs	1	0.0	1	0.0	0.005	7.8	LOS A	0.0	0.1	0.59	0.70	0.59	46.9
5	T1	All MCs	1	0.0	1	0.0	0.005	8.0	LOS A	0.0	0.1	0.59	0.70	0.59	51.0
6	R2	All MCs	1	0.0	1	0.0	0.005	9.7	LOS A	0.0	0.1	0.59	0.70	0.59	50.4
Approach			3	0.0	3	0.0	0.005	8.6	LOS A	0.0	0.1	0.59	0.70	0.59	49.9
North: Clarke St															
7	L2	All MCs	1	0.0	1	0.0	0.430	7.4	LOS A	1.0	7.0	0.14	0.18	0.16	56.4
8	T1	All MCs	719	1.1	719	1.1	0.430	0.4	LOS A	1.0	7.0	0.14	0.18	0.16	57.7
9	R2	All MCs	89	1.5	89	1.5	0.430	7.3	LOS A	1.0	7.0	0.14	0.18	0.16	56.0
Approach			809	1.1	809	1.1	0.430	1.2	NA	1.0	7.0	0.14	0.18	0.16	57.3
West: Riverstone Rd															
10	L2	All MCs	91	5.7	91	5.7	1.344	322.1	LOS F	75.9	537.9	1.00	4.86	15.44	9.1
11	T1	All MCs	1	0.0	1	0.0	1.344	325.9	LOS F	75.9	537.9	1.00	4.86	15.44	9.1
12	R2	All MCs	341	0.4	341	0.4	1.344	339.8	LOS F	75.9	537.9	1.00	4.86	15.44	5.0
Approach			434	1.5	434	1.5	1.344	336.0	LOS F	75.9	537.9	1.00	4.86	15.44	6.0
All Vehicles			1685	1.6	1683	1.6	1.344	88.1	NA	75.9	537.9	0.33	1.43	4.06	21.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 4PMFY [GUN_NEW_FY_PM (Site Folder: PM FUTURE SCHOOL)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future with school (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: New Access Road															
1	L2	All MCs	53	0.0	53	0.0	0.130	4.9	LOS A	0.4	2.8	0.47	0.69	0.47	35.6
3	R2	All MCs	76	0.0	76	0.0	0.130	6.0	LOS A	0.4	2.8	0.47	0.69	0.47	35.6
Approach			129	0.0	129	0.0	0.130	5.5	LOS A	0.4	2.8	0.47	0.69	0.47	35.6
East: Guntawong Road															
4	L2	All MCs	49	0.0	49	0.0	0.275	3.5	LOS A	0.0	0.0	0.00	0.04	0.00	39.4
5	T1	All MCs	476	2.7	476	2.7	0.275	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	39.4
Approach			525	2.5	525	2.5	0.275	0.4	NA	0.0	0.0	0.00	0.04	0.00	39.4
West: Guntawong Road															
11	T1	All MCs	517	2.5	517	2.5	0.269	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach			517	2.5	517	2.5	0.269	0.2	NA	0.0	0.0	0.00	0.00	0.00	39.9
All Vehicles			1170	2.2	1170	2.2	0.275	0.9	NA	0.4	2.8	0.05	0.10	0.05	39.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1PMFY [TAL_GUN_24_FY_PM (Site Folder: PM FUTURE SCHOOL)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future with school (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	247	2.6	247	2.6	0.344	5.7	LOS A	1.6	11.3	0.48	0.66	0.52	35.3
3	R2	All MCs	124	3.2	124	3.2	0.344	9.0	LOS A	1.6	11.3	0.48	0.66	0.52	46.6
Approach			370	2.8	370	2.8	0.344	6.8	LOS A	1.6	11.3	0.48	0.66	0.52	41.5
East: Guntawong Road															
4	L2	All MCs	43	6.1	43	6.1	0.167	5.6	LOS A	0.0	0.0	0.00	0.39	0.00	55.1
5	T1	All MCs	278	2.3	278	2.3	0.167	2.3	LOS A	0.0	0.0	0.00	0.39	0.00	55.1
Approach			321	2.8	321	2.8	0.167	2.8	NA	0.0	0.0	0.00	0.39	0.00	55.1
West: Guntawong Road															
11	T1	All MCs	283	2.8	283	2.8	0.326	0.9	LOS A	1.9	13.3	0.42	0.42	0.42	47.1
12	R2	All MCs	315	2.1	315	2.1	0.326	4.7	LOS A	1.9	13.3	0.42	0.42	0.42	35.4
Approach			598	2.4	598	2.4	0.326	2.9	NA	1.9	13.3	0.42	0.42	0.42	43.0
All Vehicles			1289	2.6	1289	2.6	0.344	4.0	NA	1.9	13.3	0.33	0.48	0.34	45.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2PMFY [TAL_MAR_24_FY_PM (Site Folder: PM FUTURE SCHOOL)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future with school (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	45	0.0	45	0.0	0.198	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	58.7
2	T1	All MCs	358	2.9	358	2.9	0.198	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	58.7
Approach			403	2.6	403	2.6	0.198	0.7	NA	0.0	0.0	0.00	0.07	0.00	58.7
North: Tallawong Road															
8	T1	All MCs	285	2.7	285	2.7	0.181	0.4	LOS A	0.5	3.6	0.20	0.22	0.20	57.4
9	R2	All MCs	68	0.0	68	0.0	0.181	6.7	LOS A	0.5	3.6	0.20	0.22	0.20	52.3
Approach			353	2.2	353	2.2	0.181	1.6	NA	0.5	3.6	0.20	0.22	0.20	57.0
West: Marchant Road															
10	L2	All MCs	9	0.0	9	0.0	0.049	5.5	LOS A	0.1	0.9	0.37	0.65	0.37	42.8
12	R2	All MCs	44	0.0	44	0.0	0.049	5.9	LOS A	0.1	0.9	0.37	0.65	0.37	48.1
Approach			53	0.0	53	0.0	0.049	5.9	LOS A	0.1	0.9	0.37	0.65	0.37	47.6
All Vehicles			809	2.3	809	2.3	0.198	1.4	NA	0.5	3.6	0.11	0.17	0.11	56.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3PMFY [CLA_RIV_24_FY_PM (Site Folder: PM FUTURE SCHOOL)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future with school (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Clarke St															
1	L2	All MCs	246	3.2	246	3.2	0.281	5.6	LOS A	0.0	0.1	0.00	0.28	0.00	56.6
2	T1	All MCs	280	1.4	280	1.4	0.281	0.0	LOS A	0.0	0.1	0.00	0.28	0.00	58.3
3	R2	All MCs	1	0.0	1	0.0	0.281	5.5	LOS A	0.0	0.1	0.00	0.28	0.00	56.5
Approach			527	2.2	527	2.2	0.281	2.6	NA	0.0	0.1	0.00	0.28	0.00	57.5
East: Riverstone Rd															
4	L2	All MCs	1	0.0	1	0.0	0.004	6.2	LOS A	0.0	0.1	0.42	0.58	0.42	49.2
5	T1	All MCs	1	0.0	1	0.0	0.004	6.3	LOS A	0.0	0.1	0.42	0.58	0.42	52.4
6	R2	All MCs	1	0.0	1	0.0	0.004	7.8	LOS A	0.0	0.1	0.42	0.58	0.42	51.7
Approach			3	0.0	3	0.0	0.004	6.7	LOS A	0.0	0.1	0.42	0.58	0.42	51.5
North: Clarke St															
7	L2	All MCs	4	0.0	4	0.0	0.229	7.6	LOS A	0.8	6.0	0.30	0.36	0.30	55.2
8	T1	All MCs	294	4.0	294	4.0	0.229	0.8	LOS A	0.8	6.0	0.30	0.36	0.30	55.3
9	R2	All MCs	93	8.5	93	8.5	0.229	7.6	LOS A	0.8	6.0	0.30	0.36	0.30	54.5
Approach			391	5.0	391	5.0	0.229	2.5	NA	0.8	6.0	0.30	0.36	0.30	55.0
West: Riverstone Rd															
10	L2	All MCs	140	3.7	140	3.7	0.603	9.2	LOS A	3.7	26.6	0.66	0.98	1.16	47.6
11	T1	All MCs	1	0.0	1	0.0	0.603	9.2	LOS A	3.7	26.6	0.66	0.98	1.16	48.1
12	R2	All MCs	219	0.6	219	0.6	0.603	15.3	LOS B	3.7	26.6	0.66	0.98	1.16	42.3
Approach			359	1.8	359	1.8	0.603	12.9	LOS A	3.7	26.6	0.66	0.98	1.16	45.1
All Vehicles			1280	3.0	1280	3.0	0.603	5.5	NA	3.7	26.6	0.28	0.50	0.42	54.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 4AMFY [GUN_NEW_FY_AM_R (Site Folder: AM FUTURE SCHOOL RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future with school Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: New Access Road															
1	L2	All MCs	54	0.0	54	0.0	0.200	4.4	LOS A	0.6	4.2	0.57	0.73	0.57	34.4
3	R2	All MCs	81	0.0	81	0.0	0.200	9.2	LOS A	0.6	4.2	0.57	0.73	0.57	34.4
Approach			135	0.0	135	0.0	0.200	7.3	LOS A	0.6	4.2	0.57	0.73	0.57	34.4
East: Guntawong Road															
4	L2	All MCs	49	0.0	49	0.0	0.213	3.4	LOS A	0.0	0.0	0.00	0.06	0.00	39.3
5	T1	All MCs	358	2.6	358	2.6	0.213	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	39.3
Approach			406	2.3	406	2.3	0.213	0.5	NA	0.0	0.0	0.00	0.06	0.00	39.3
West: Guntawong Road															
11	T1	All MCs	1064	0.9	1064	0.9	0.549	0.7	LOS A	0.0	0.0	0.00	0.00	0.00	39.7
Approach			1064	0.9	1064	0.9	0.549	0.7	NA	0.0	0.0	0.00	0.00	0.00	39.7
All Vehicles			1606	1.1	1606	1.1	0.549	1.2	NA	0.6	4.2	0.05	0.08	0.05	39.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1AMFY [TAL_GUN_24_FY_AM_R (Site Folder: AM FUTURE SCHOOL RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future with school Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	183	2.1	183	2.1	0.366	5.8	LOS A	1.7	12.5	0.55	0.68	0.68	32.6
3	R2	All MCs	114	5.7	114	5.7	0.366	13.3	LOS A	1.7	12.5	0.55	0.68	0.68	44.9
Approach			297	3.5	297	3.5	0.366	8.7	LOS A	1.7	12.5	0.55	0.68	0.68	39.9
East: Guntawong Road															
4	L2	All MCs	60	2.2	60	2.2	0.147	5.6	LOS A	0.0	0.0	0.00	0.41	0.00	54.7
5	T1	All MCs	223	2.3	223	2.3	0.147	2.3	LOS A	0.0	0.0	0.00	0.41	0.00	54.7
Approach			283	2.3	283	2.3	0.147	3.0	NA	0.0	0.0	0.00	0.41	0.00	54.7
West: Guntawong Road															
11	T1	All MCs	655	0.8	655	0.8	0.611	1.6	LOS A	6.5	45.5	0.43	0.47	0.56	47.2
12	R2	All MCs	508	0.3	508	0.3	0.611	5.6	LOS A	6.5	45.5	0.43	0.47	0.56	35.5
Approach			1163	0.6	1163	0.6	0.611	3.4	NA	6.5	45.5	0.43	0.47	0.56	44.0
All Vehicles			1743	1.3	1743	1.3	0.611	4.2	NA	6.5	45.5	0.38	0.49	0.49	44.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2AMFY [TAL_MAR_24_FY_AM_R (Site Folder: AM FUTURE SCHOOL RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future with school Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	42	0.0	42	0.0	0.160	5.6	LOS A	0.0	0.0	0.00	0.08	0.00	58.5
2	T1	All MCs	282	3.7	282	3.7	0.160	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	58.5
Approach			324	3.2	324	3.2	0.160	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.5
North: Tallawong Road															
8	T1	All MCs	494	0.5	494	0.5	0.278	0.2	LOS A	0.5	3.8	0.13	0.14	0.13	58.3
9	R2	All MCs	69	0.0	69	0.0	0.278	6.6	LOS A	0.5	3.8	0.13	0.14	0.13	54.9
Approach			564	0.5	564	0.5	0.278	1.0	NA	0.5	3.8	0.13	0.14	0.13	58.2
West: Marchant Road															
10	L2	All MCs	11	0.0	11	0.0	0.059	5.3	LOS A	0.2	1.1	0.40	0.66	0.40	42.6
12	R2	All MCs	48	0.0	48	0.0	0.059	6.4	LOS A	0.2	1.1	0.40	0.66	0.40	48.0
Approach			59	0.0	59	0.0	0.059	6.2	LOS A	0.2	1.1	0.40	0.66	0.40	47.3
All Vehicles			947	1.4	947	1.4	0.278	1.2	NA	0.5	3.8	0.10	0.15	0.10	57.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3AMFY [CLA_RIV_24_FY_AM_R (Site Folder: AM FUTURE SCHOOL RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM Future with school Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Clarke St															
1	L2	All MCs	262	1.5	262	1.5	0.236	5.6	LOS A	0.0	0.2	0.01	0.35	0.01	56.2
2	T1	All MCs	176	3.7	176	3.7	0.236	0.0	LOS A	0.0	0.2	0.01	0.35	0.01	57.8
3	R2	All MCs	1	0.0	1	0.0	0.236	6.3	LOS A	0.0	0.2	0.01	0.35	0.01	56.1
Approach			439	2.4	439	2.4	0.236	3.3	NA	0.0	0.2	0.01	0.35	0.01	56.9
East: Riverstone Rd															
4	L2	All MCs	1	0.0	1	0.0	0.005	7.8	LOS A	0.0	0.1	0.59	0.70	0.59	46.9
5	T1	All MCs	1	0.0	1	0.0	0.005	8.0	LOS A	0.0	0.1	0.59	0.70	0.59	51.0
6	R2	All MCs	1	0.0	1	0.0	0.005	9.7	LOS A	0.0	0.1	0.59	0.70	0.59	50.4
Approach			3	0.0	3	0.0	0.005	8.6	LOS A	0.0	0.1	0.59	0.70	0.59	49.9
North: Clarke St															
7	L2	All MCs	1	0.0	1	0.0	0.430	7.4	LOS A	1.0	7.0	0.14	0.18	0.16	56.4
8	T1	All MCs	719	1.1	719	1.1	0.430	0.4	LOS A	1.0	7.0	0.14	0.18	0.16	57.7
9	R2	All MCs	89	1.5	89	1.5	0.430	7.4	LOS A	1.0	7.0	0.14	0.18	0.16	56.0
Approach			809	1.1	809	1.1	0.430	1.2	NA	1.0	7.0	0.14	0.18	0.16	57.3
West: Riverstone Rd															
10	L2	All MCs	91	5.7	91	5.7	0.745	10.8	LOS A	6.1	43.4	0.81	1.17	1.88	45.1
11	T1	All MCs	1	0.0	1	0.0	0.745	14.6	LOS B	6.1	43.4	0.81	1.17	1.88	45.6
12	R2	All MCs	341	0.4	341	0.4	0.745	18.8	LOS B	6.1	43.4	0.81	1.17	1.88	38.5
Approach			434	1.5	434	1.5	0.745	17.1	LOS B	6.1	43.4	0.81	1.17	1.88	40.6
All Vehicles			1685	1.6	1685	1.6	0.745	5.9	NA	6.1	43.4	0.28	0.48	0.56	52.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 4PMFY [GUN_NEW_FY_PM_R (Site Folder: PM FUTURE SCHOOL RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future with school Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: New Access Road															
1	L2	All MCs	53	0.0	53	0.0	0.130	4.9	LOS A	0.4	2.8	0.47	0.69	0.47	35.6
3	R2	All MCs	76	0.0	76	0.0	0.130	6.0	LOS A	0.4	2.8	0.47	0.69	0.47	35.6
Approach			129	0.0	129	0.0	0.130	5.5	LOS A	0.4	2.8	0.47	0.69	0.47	35.6
East: Guntawong Road															
4	L2	All MCs	49	0.0	49	0.0	0.275	3.5	LOS A	0.0	0.0	0.00	0.04	0.00	39.4
5	T1	All MCs	476	2.7	476	2.7	0.275	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	39.4
Approach			525	2.5	525	2.5	0.275	0.4	NA	0.0	0.0	0.00	0.04	0.00	39.4
West: Guntawong Road															
11	T1	All MCs	517	2.5	517	2.5	0.269	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach			517	2.5	517	2.5	0.269	0.2	NA	0.0	0.0	0.00	0.00	0.00	39.9
All Vehicles			1170	2.2	1170	2.2	0.275	0.9	NA	0.4	2.8	0.05	0.10	0.05	39.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1PMFY [TAL_GUN_24_FY_PM_R (Site Folder: PM FUTURE SCHOOL RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future with school Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	247	2.6	247	2.6	0.292	5.5	LOS A	1.2	8.7	0.44	0.62	0.44	36.0
3	R2	All MCs	124	3.2	124	3.2	0.292	7.3	LOS A	1.2	8.7	0.44	0.62	0.44	47.0
Approach			370	2.8	370	2.8	0.292	6.1	LOS A	1.2	8.7	0.44	0.62	0.44	42.1
East: Guntawong Road															
4	L2	All MCs	43	6.1	43	6.1	0.167	5.6	LOS A	0.0	0.0	0.00	0.39	0.00	55.1
5	T1	All MCs	278	2.3	278	2.3	0.167	2.3	LOS A	0.0	0.0	0.00	0.39	0.00	55.1
Approach			321	2.8	321	2.8	0.167	2.8	NA	0.0	0.0	0.00	0.39	0.00	55.1
West: Guntawong Road															
11	T1	All MCs	283	2.8	283	2.8	0.326	0.9	LOS A	1.9	13.3	0.42	0.42	0.42	47.1
12	R2	All MCs	315	2.1	315	2.1	0.326	4.7	LOS A	1.9	13.3	0.42	0.42	0.42	35.4
Approach			598	2.4	598	2.4	0.326	2.9	NA	1.9	13.3	0.42	0.42	0.42	43.0
All Vehicles			1289	2.6	1289	2.6	0.326	3.8	NA	1.9	13.3	0.32	0.47	0.32	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2PMFY [TAL_MAR_24_FY_PM_R (Site Folder: PM FUTURE SCHOOL RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future with school Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Tallawong Road															
1	L2	All MCs	45	0.0	45	0.0	0.198	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	58.7
2	T1	All MCs	358	2.9	358	2.9	0.198	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	58.7
Approach			403	2.6	403	2.6	0.198	0.7	NA	0.0	0.0	0.00	0.07	0.00	58.7
North: Tallawong Road															
8	T1	All MCs	285	2.7	285	2.7	0.181	0.4	LOS A	0.5	3.6	0.20	0.22	0.20	57.4
9	R2	All MCs	68	0.0	68	0.0	0.181	6.7	LOS A	0.5	3.6	0.20	0.22	0.20	52.3
Approach			353	2.2	353	2.2	0.181	1.6	NA	0.5	3.6	0.20	0.22	0.20	57.0
West: Marchant Road															
10	L2	All MCs	9	0.0	9	0.0	0.049	5.5	LOS A	0.1	0.9	0.37	0.65	0.37	42.8
12	R2	All MCs	44	0.0	44	0.0	0.049	5.9	LOS A	0.1	0.9	0.37	0.65	0.37	48.1
Approach			53	0.0	53	0.0	0.049	5.9	LOS A	0.1	0.9	0.37	0.65	0.37	47.6
All Vehicles			809	2.3	809	2.3	0.198	1.4	NA	0.5	3.6	0.11	0.17	0.11	56.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3PMFY [CLA_RIV_24_FY_PM_R (Site Folder: PM FUTURE SCHOOL RESET INPUTS)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM Future with school Reset Inputs (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Clarke St															
1	L2	All MCs	246	3.2	246	3.2	0.281	5.6	LOS A	0.0	0.1	0.00	0.28	0.00	56.6
2	T1	All MCs	280	1.4	280	1.4	0.281	0.0	LOS A	0.0	0.1	0.00	0.28	0.00	58.3
3	R2	All MCs	1	0.0	1	0.0	0.281	5.5	LOS A	0.0	0.1	0.00	0.28	0.00	56.5
Approach			527	2.2	527	2.2	0.281	2.6	NA	0.0	0.1	0.00	0.28	0.00	57.5
East: Riverstone Rd															
4	L2	All MCs	1	0.0	1	0.0	0.004	6.2	LOS A	0.0	0.1	0.42	0.58	0.42	49.2
5	T1	All MCs	1	0.0	1	0.0	0.004	6.3	LOS A	0.0	0.1	0.42	0.58	0.42	52.4
6	R2	All MCs	1	0.0	1	0.0	0.004	7.8	LOS A	0.0	0.1	0.42	0.58	0.42	51.7
Approach			3	0.0	3	0.0	0.004	6.7	LOS A	0.0	0.1	0.42	0.58	0.42	51.5
North: Clarke St															
7	L2	All MCs	4	0.0	4	0.0	0.229	7.6	LOS A	0.8	6.0	0.30	0.36	0.30	55.2
8	T1	All MCs	294	4.0	294	4.0	0.229	0.8	LOS A	0.8	6.0	0.30	0.36	0.30	55.3
9	R2	All MCs	93	8.5	93	8.5	0.229	7.6	LOS A	0.8	6.0	0.30	0.36	0.30	54.5
Approach			391	5.0	391	5.0	0.229	2.5	NA	0.8	6.0	0.30	0.36	0.30	55.0
West: Riverstone Rd															
10	L2	All MCs	140	3.7	140	3.7	0.387	7.0	LOS A	1.9	13.2	0.52	0.77	0.65	50.6
11	T1	All MCs	1	0.0	1	0.0	0.387	7.1	LOS A	1.9	13.2	0.52	0.77	0.65	51.1
12	R2	All MCs	219	0.6	219	0.6	0.387	9.5	LOS A	1.9	13.2	0.52	0.77	0.65	47.0
Approach			359	1.8	359	1.8	0.387	8.5	LOS A	1.9	13.2	0.52	0.77	0.65	48.9
All Vehicles			1280	3.0	1280	3.0	0.387	4.3	NA	1.9	13.2	0.24	0.44	0.28	55.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

APPENDIX D

TRANSPORT WORKING GROUP MEETING MINUTES

Meeting minutes:

Schofields Tallawong new High School

Meeting Information			
Project Name	Schofields Tallawong new High School		
Project Number	SCT_00638		
Client	School Infrastructure NSW		
Date	8 October 2024	**Time**	2.00 – 3.00 pm
Venue	MS Teams		
Subject	Transport Working Group		
Attendees	Kamoru Adetunmbi (KA) SINSW Jesica Ng (JN) SINSW Emily Doyle (ED), TSA Riley Luis Fornes (LF), TSA Riley Sam Bush (SB), TSA Riley Andy Yung (AY) SCT Consulting Jonathan Busch (JBu) SCT Consulting	Vance Painter (VP), Blacktown City Council Nadeem Shaikh (NS), Blacktown City Council Julie Ashby (JA), Busway Group Judy Wong (JW), Blacktown City Council Dina Hanna (DH) TfNSW Sophia Grieve (SG), TfNSW John Broady (JBr) TfNSW	
Apologies	N/A		
Circulation	Attendees		

Matters discussed or arising		Action
1.0	**Welcome & Acknowledgement of country**	
2.0	**Stage 1 presentation**	
2.1	AY presented the deck attached.	
2.2	SG noted that 100% staff mode share for staff would not be acceptable – need to consider in green travel planning. TfNSW needs to see significant mode share for staff – car pooling and walking from the station.	
2.3	DH noted that TfNSW is the approval authority for speed zone changes. The proposal to reduce the existing speed limit would need Council to endorse and propose with TfNSW. The proposal needs to be careful to not to rely on a speed zone change from 60km/h to 50km/h.	
2.4	NS noted that reliance on delivery of Marchant Street is not acceptable. The road strategy is appropriate; however, the problem is third party reliance. If the southern portion of Marchant Street is delivered, then the strategy is considered acceptable.	
2.5	NS noted that: – Council would not support the right turn ban from Guntawong Road into Nirmal Street (when Guntawong Road is upgraded in the future). – Nirmal Street needs to be 11m in width along the whole school frontage to allow drop off and pick up activities – A zebra crossing would be relevant for the school. TfNSW's reduced warrants would apply to the school. – The crossing on Tallawong Road is too far from the site and would require justification.	

Matters discussed or arising		Action
	– The location where the bus bays are proposed overlap with the traffic signals. Further justification is needed for the proposal of bus stops near the signals – sight distances etc. – The proponent may be asked to upgrade Guntawong Road along the frontage of the site.	
2.6	VP noted that the new Hambledon Road extension may be delivered in line with Stage 2 the school expansion. It will not provide direct access to the school as it would be a major (high order) road. Guntawong Road upgrade and extension would be funded and delivered by the developers building along the road. There is no guarantee that these roads will be delivered in the required time. Traffic signals at the intersection of Guntawong Road / Hambledon Road would be delivered as part of the Hambledon Road extension. The layout will need to be workable for the existing and future road network in the area.	
2.7	KA – when would a speed zone reduction be considered? NS: when the area is fully developed, the speed reduction is not considered necessary. NS noted that having a zebra crossing in a 60km/h zone is acceptable. No issues with the zebra crossing on Guntawong Road for the school as a temporary measure for the school. The zebra crossing may need to be removed when the signalised intersection is provided at Hambleton Road.	
3.0	**Stage 2**	
3.1	SG – the car mode share for staff is too high (80%) and the provision of car parking is also too high. VP noted that the car mode share characteristics are different in western Sydney. NS noted Council would not like to see car parking on-street by staff, need to protect amenity of residents.	
3.2	NS noted that the location of the crossing (pedestrian refuge) on Hambledon Road is not ideal given the traffic volumes and types, especially that it will be a four-lane road. The crossing on Tallawong Road is too far from the site and would require justification.	
3.3	JBr: The focus of bus planning will be in the north west and south west areas so hopefully there won't be an issue with achieving the travel mode goals.	
4.0	**AOB**	
4.1	Nil	

List of attachments:

Attachment 1: Presentation

SCT Consulting

Schofields-Tallawong High School

Staged Infrastructure Requirements Review – for TWG meeting

04.10.2024 | Rev 5.0

Quality Assurance

Project details			
Project number:	SCT_00638		
Document name:	Schofields-Tallawong High School - Staged Infrastructure Requirements Review		
Client:	Schools Infrastructure NSW	ABN:	40 300 173 822
Prepared by:	SCT Consulting Pty. Ltd.	ABN:	53 612 624 058

Information	Name	Position	Signature
Author:	Andy Yung	Director	
Reviewer:	Jonathan Busch	Associate Director	
Authoriser:	Andy Yung	Director	

Version	Date	Details
1.0	5/09/2024	Initial analysis
2.0	9/09/2024	Updated analysis
3.0	10/09/2024	Final review
4.0	18/09/2024	Updated final review (post consultation with Kamoru Adetunmbi)
5.0	4/10/2024	Updated for TWG meeting

Table of contents

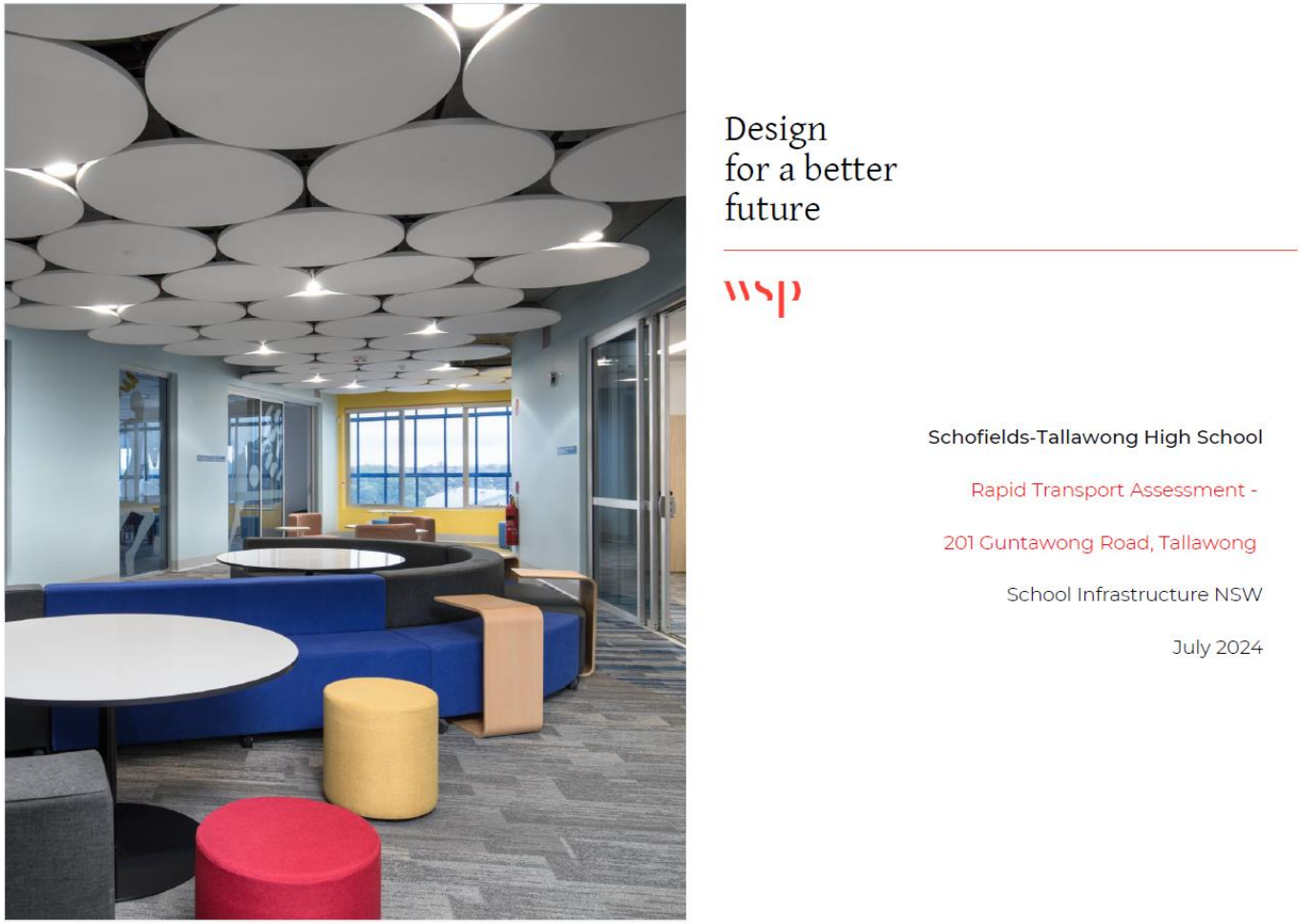
01

Introduction

Purpose of this document

- SINSW has engaged SCT Consulting to prepare a TAIA to support the planning approvals for the new Schofields and Tallawong High School.
- The project team has requested SCT Consulting to undertake an infrastructure review to identify the transport infrastructure requirements to support Stage 1 and Stage 2 of the development.

Figure 1: Schofields-Tallawong High School Rapid Transport Assessment Rev C (WSP, July 2024)



Assessment scenarios

- The staging strategy for the assessment is outlined in **Table 1**.
- Due to the lack of maturity and choices available within the transport network, the capacity of the transport network will be an important determinant of conditions of consent, student capacities and investment.
- Stage 1 is governed by a choice about the level of investment vs reliance on other landowners. **Greater investment will translate to greater student capacity and certainty of approvals**. Table 2 conceives a 'minimal investment' approach, where reliance is placed on infrastructure outside of SINSW control.
- **If there is reliance on other parties, SINSW should anticipate capacity limits that are dependent on infrastructure delivered by others**.
- Stage 2 is proposed to be assessed against the long-term future network. This has planning risk as the timing of both the student demand & infrastructure is uncertain. As these tend to correlate, this is a reasonable scenario, but DPHI would likely want to include some controls for re-assessment. This re-assessment may be substantial in scale (new traffic modelling, review of transport networks, update of mode share) – akin to starting again. **Is there any material difference to a new SSDA?**

Table 1: Assessment of scenarios

Student capacity	Infrastructure scenario
Stage 1 – 1,000 students	Existing infrastructure + Any network/infrastructure built by SINSW (with minimal reliance on others)
Stage 2 – 2,000 students	**Full network delivered by Council & developers** *An updated TAIA update may be required before any student capacity increases above 1,000 students.

02

Overview of RTA assumptions

Enrolment area

- Existing student data indicates that most current students reside in the western area of the enrolment precinct toward Schofields.
- However, with upcoming residential development plans, it is anticipated that growth in student population will shift towards the eastern part of the precinct, toward Rouse Hill, where numerous lots are proposed for medium and high-density residential developments.
- To anticipate the projected enrolment of 1,000 students in Stage 1 (2027), an additional 540 future students were allocated to prospective residential zones.
- To anticipate the projected enrolment of 2,000 students in Stage 2 (2037) , an additional 1,000 future students were allocated to prospective residential zones as well as existing low-density residential areas where there may be potential for increased density in the future.

Figure 2: Stage 1 and Stage 2 student enrolments (WSP)

Images with student location removed for distribution purpose

Mode share

- The identified baseline mode share for the new Schofields Tallawong High School was informed by the catchment analysis results and by the **Rouse Hill High School Terms 3 2023 survey**.
- The dominant mode for students is the use of public transport (50 per cent) with private vehicles as the second highest usage (39 per cent). The combined baseline travel modes for students for active transport are 11 per cent with Walk (8 per cent) and Bicycle (3 per cent).
- Stretched case targets have been identified with improvements in walking and cycling infrastructure and further behavioural changes for students and parents to reduce reliance on private vehicles.
- **Moderate case** – with 3-5 per cent increase for active transport, has been selected to consider infrastructure requirements for **Stage 1**, as the stretched case to minimise traffic generation. The best case is not considered appropriate for Stage 1 given the lack of walking and cycling infrastructure in the wider network.
- **Best case** mode share scenario has then been considered for infrastructure requirements for **Stage 2** to reflect a more substantial shift towards active transport modes as the transport network completes in the wider area.

Table 2: Mode share scenarios considered in RTA and selected for Stage 1 review (WSP)

Table 5.3: Mode share scenarios for new Schofields Tallawong High School

	Scenario 1 Baseline (Benchmark)			Scenario 2 Medium (Moderate)			Scenario 3 Reach (Best case)		
	%	Stage 1 # of students	Stage 2 # of students	%	Stage 1 # of students	Stage 2 # of students	%	Stage 1 # of students	Stage 2 # of students
Walk	8	80	160	10	100	200	15	150	300
Bicycle	3	30	60	5	50	100	10	100	200
Public transport	50	500	1000	55	550	1100	55	550	1100
Private vehicle *	39	390	780	30	300	600	20	200	400
Total	**100%**	**1,000**	**2,000**	**100%**	**1,000**	**2,000**	**100%**	**1,000**	**2,000**

**assumes pick up and drop off*

Note: preliminary data from NSW Department of Education provided 973 students from preliminary study. Student mode share has been adjusted to full build out of the new Schofields and Tallawong High School (Masterplan) for 2,000 students for Scenarios 2 and 3. Scenario 1 adopted Stage 1 student enrolment capacity at 1,000 students

03

Stage 1 infrastructure requirements

Stage 1 transport infrastructure review (SCT)

Walking/cycling infrastructure requirements:

- Footpath upgrades will be focussed in the local area to connect students in the immediate catchment to the east of the school
- Given the lack of immediate east-west crossing opportunities, it is unlikely students living to the west of First Ponds Creek will walk to school
- No dedicated cycling connection is planned for Stage 1 as students are expected to cycle on available footpaths (given the low mode share)
- Bicycle parking = 50 spaces

Bus infrastructure requirements:

- 9 buses are required to cater for 550 students expected to catch a bus to school
- **12 buses** are required if we assume 75% of full bus load only
- 2 bus bays based on the demand according to the TfNSW Bus Infrastructure Guide

Traffic infrastructure requirements:

- 200 vehicles with 400 vehicle movements assuming occupancy rate of 1.5 students/veh
- 15 spaces or 98m of kiss and drop space (assuming 300 students with typical occupancy of 1.5 students per car, average dwell time of 2 minutes and high turnover space length of 6.5m)

Table 3: Transport infrastructure requirements based on moderate mode share scenario

Mode	Mode share scenario for students	Demand based on moderate case	SCT approach
Walking	10%	100 students	• Primary pedestrian and cyclist access at Nirmal Street • Secondary pedestrian and cyclist access at Guntawong Road • Footpath upgrade along key routes • Zebra crossing at Nirmal Street and Tallawong Road • Safe crossing at Guntawong Road (to connect with bus stops) • Bicycle parking of 50 spaces
Cycling	5%	50 students	
Buses	55%	550 students	• 2 bus bays at Guntawong Road (one on each side)
Private vehicles	30% for students	300 students	• 98m of kiss and drop space
	100% for staff	80 staff	• Staff car park of 80 spaces, with vehicular access via Nirmal Street
Total	**100%**	**1,000 students**	

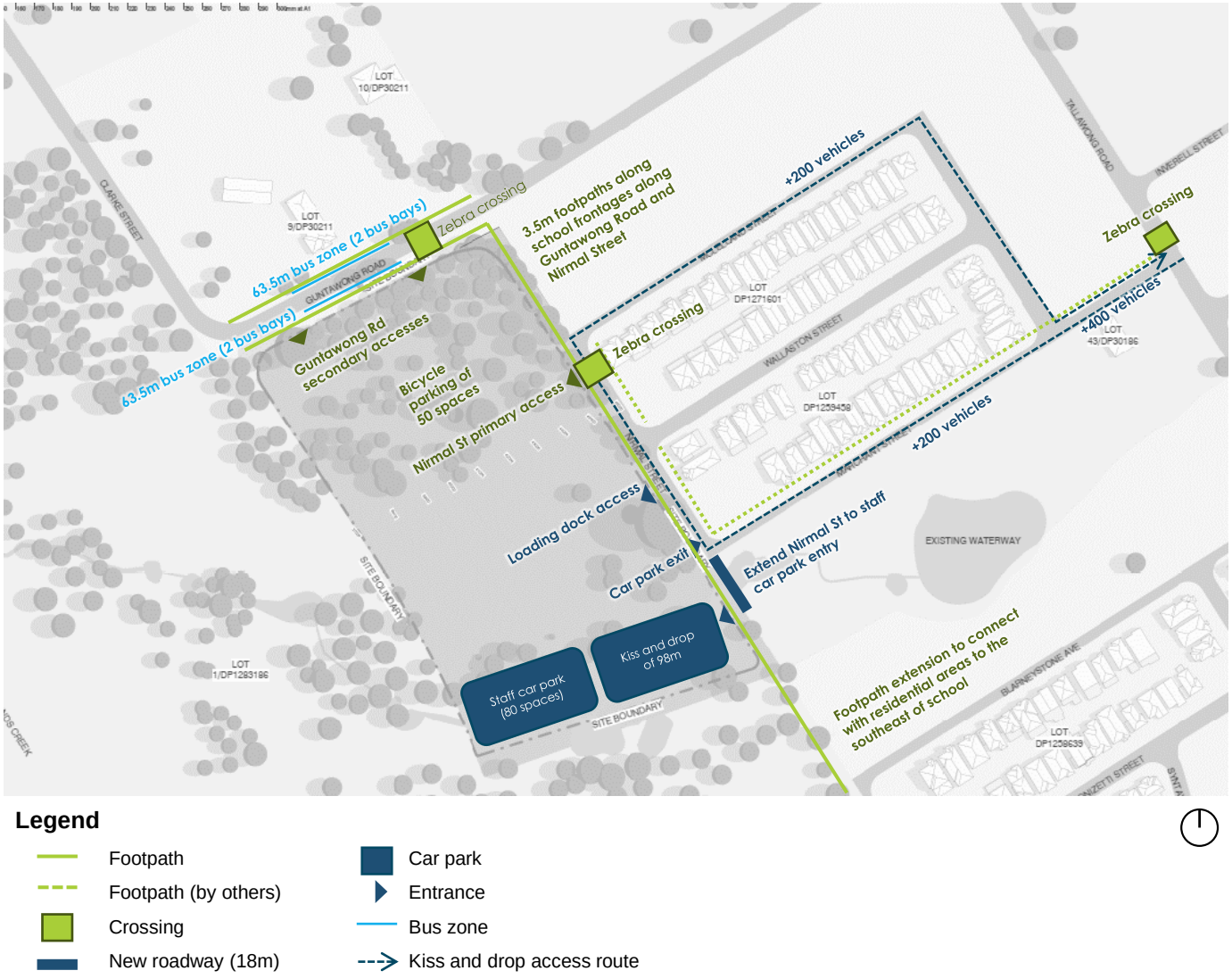
Differences to WSP RTA recommendations:

- A zebra crossing is proposed at Guntawong Road to provide safe crossing for students accessing the bus stops (instead of a pedestrian refuge), together with speed reduction to 50km/hr on the approaches to the zebra crossing.
- Location of zebra crossings at Nirmal Street and Tallawong Road to align with pedestrian desire lines.
- Bus stops are not proposed at Nirmal Street anymore as it is expected the school will be serviced by 'through' school bus routes and other public bus routes. It also avoids the upgrade of local streets to cater for proposed bus movements.

Stage 1 traffic infrastructure review – Option 1 (SCT)

- **Option 1** key features
  - Extend Nirmal St to staff car park access (assuming existing half roads are wide enough for two-way traffic and the additional kiss and drop movements will not exceed the environmental capacity of these streets)
  - Provide staff car park and student kiss and drop within the school
  - Footpath upgrades along Nirmal Street (western side) and Guntawong Road (both sides along school frontage) by SINSW
  - Footpath upgrades along Marchant Street (north side) and Nirmal Street (eastern side) by others as part of delivered subdivision
  - 3x zebra crossings
  - Bus bays on Guntawong Road to serve (through) school and public bus routes
  - Bicycle parking of 50 spaces
- Pros:
  - Waste and servicing vehicles using the existing road network that already serves the surrounding residential area
  - No reliance on road upgrades (by others)
  - No need to upgrade local streets such as Nirmal St to cater for bus movements
- Cons:
  - Additional traffic on surrounding half roads
  - Challenging conditions within site to accommodate kiss and drop zone

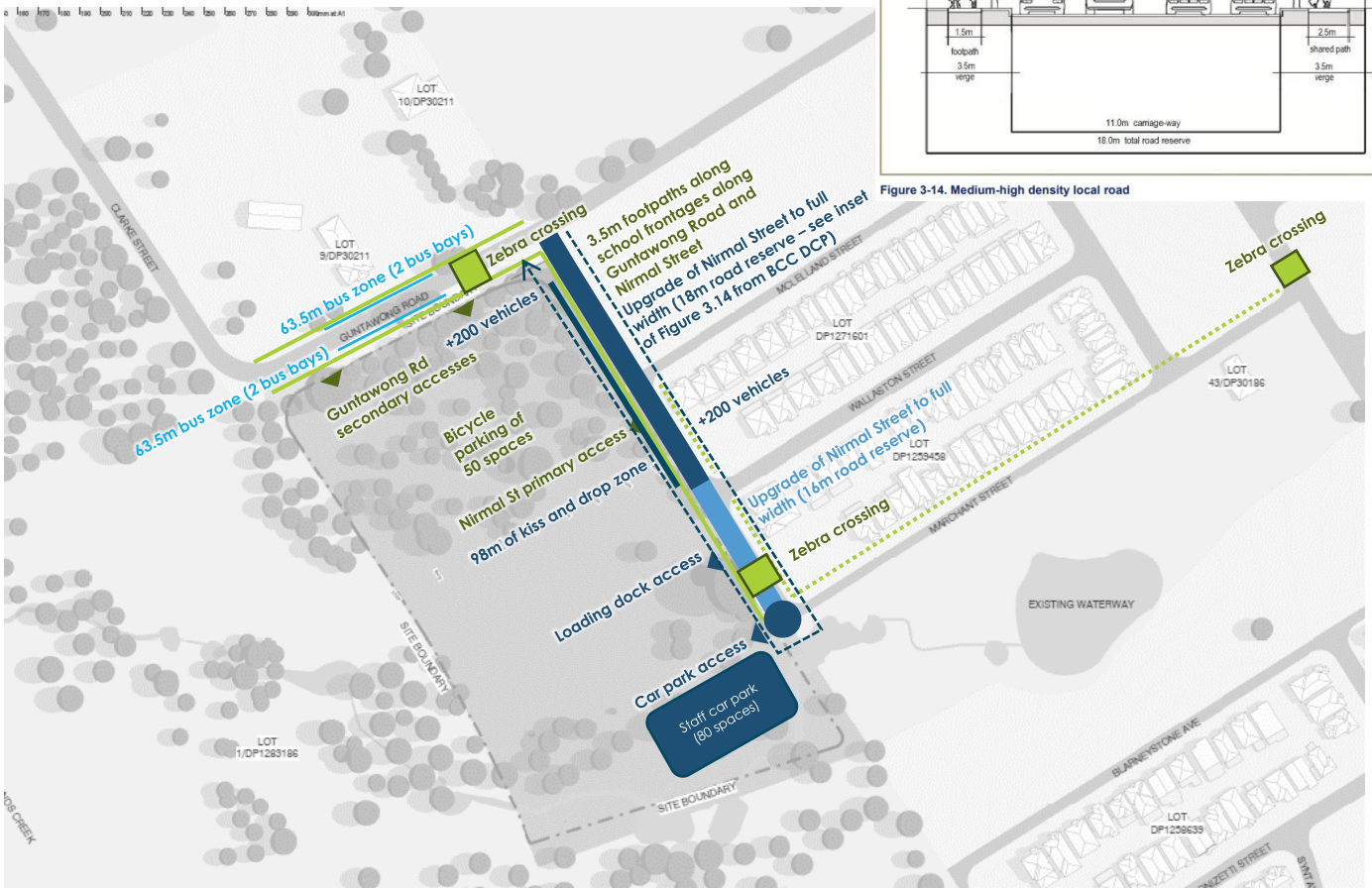
Figure 4: Option 1 transport improvements



Stage 1 traffic infrastructure review – Option 2 (SCT)

- **Option 2** key features
  - Same as Option 1, plus
  - Upgrade of Nirmal Street to full width (18m road reserve) between Guntawong Road and Wallaston Street, to accommodate the 85m of kiss and drop zone along Nirmal Street school frontage
  - Upgrade of Nirmal Street to full width (16m road reserve outside of R3 zone) between Wallaston Street and Marchant Street
  - Roundabout at Nirmal Street / Marchant Street to facilitate efficient access to on-street kiss and drop on school side of Nirmal Street and staff car park (that minimises impacts on surrounding residential half roads)
  - *Further consideration: timing of upgrade of Guntawong Road / Nirmal Street roundabout (subject to traffic modelling)*
- Pros:
  - Vehicular access to school via full-width Nirmal Street and minimise additional traffic and impacts on surrounding half roads
- Cons:
  - Land acquisition / ingress into the school lot may be required to construct a roundabout at Nirmal Street / Marchant Street

Figure 5: Option 2 transport improvements



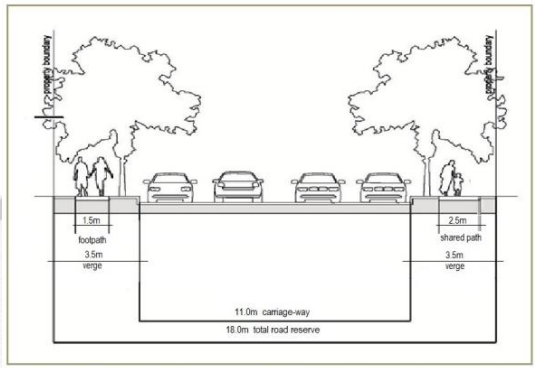


Figure 3-14. Medium-high density local road

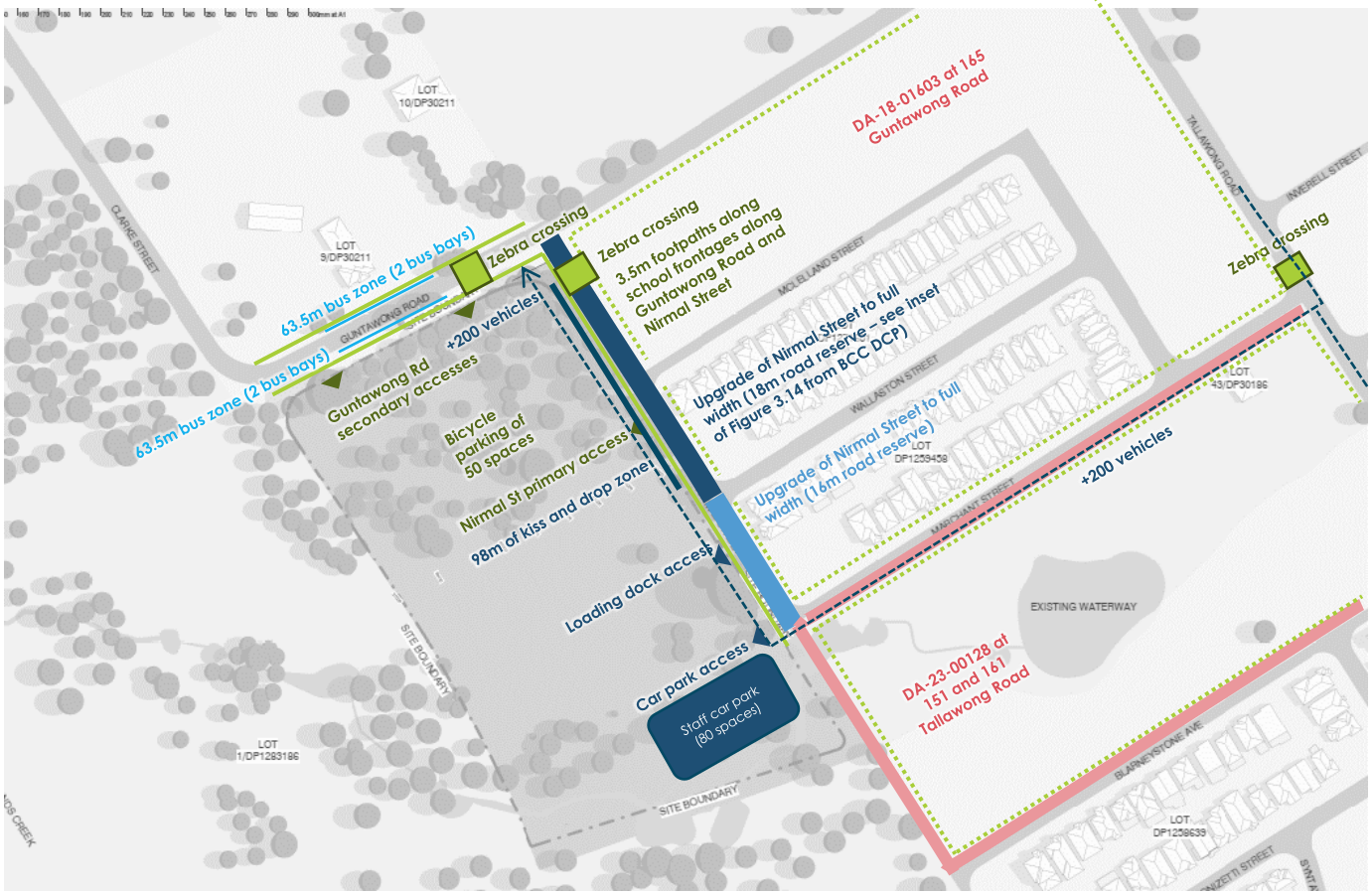
Legend

- Footpath
- Footpath (by others)
- Crossing
- New roadway (18m)
- New roadway (16m)
- Car park
- Entrance
- Bus zone
- Kiss and drop access route

Stage 1 traffic infrastructure review – Option 3 (SCT)

- **Option 3** key features
  - Same as Option 2, but <u>without</u> the construction of the roundabout at Nirmal Street / Marchant Street (assuming DA-23-00128 and DA-18-01603 are approved and constructed with associated infrastructure)
  - Kiss and drop access via Marchant Street (full width Marchant Street to be delivered as part of DA-23-00128)
  - *Further consideration: timing of upgrade of Guntawong Road / Nirmal Street roundabout (subject to traffic modelling)*
- Pros:
  - No need to construct roundabout at Nirmal Street / Marchant Street
  - Traffic impacts are distributed to an alternative entry route via Marchant Street rather than focussed on Nirmal Street
- Cons:
  - Relying on the completion of Marchant Street by others or bringing forward construction with SINSW funding
  - Traffic impacts on surrounding residents (particularly Marchant Street)

Figure 6: Option 3 transport improvements



04

Stage 2 infrastructure requirements

Stage 2 transport infrastructure review (SCT)

Walking/cycling infrastructure requirements:

- Footpaths along Guntawong Road extension and Kensington Park Road to connect with students in the western catchment (footpath network already exists in the residential areas of the western catchment)
- Footpaths along Hambledon Road extension with traffic signals to facilitate safe crossings by students and parents at the intersection of Hambledon Road / Guntawong Road.
- Safe crossing points along Hambledon Road extension near Proposed Road 4 (southern boundary of school and Gordon Road).
- Off-road bicycle path network along Guntawong Road, Tallawong Road and Hambledon Road extension (according to the ILP and DCP)
- Additional bicycle parking of 150 spaces to meet the stretched target of students cycling to school

Bus infrastructure requirements:

- 18 buses are required to cater for 1,100 students expected to catch a bus to school
- 24 buses are required if we assume 75% of full bus load only
- 2 bus bays based on the demand according to the TfNSW Bus Infrastructure Guide

Traffic infrastructure requirements:

- 267 vehicles with 533 vehicle movements assuming occupancy rate of 1.5

Table 4: Transport infrastructure requirements based on moderate mode share scenario

Mode	Mode share scenario for students	Demand based on moderate case	Infrastructure and servicing requirements
Walking	15% (+5% from Stage 1)	300 students (+200)	• Primary pedestrian and cyclist access at Nirmal Street • Secondary pedestrian and cyclist access at Guntawong Road • Footpath upgrade and **bike paths** along key routes • Zebra crossings at Nirmal Street • Safe crossing at Guntawong Road (to connect with bus stops) • Bicycle parking of 200 spaces
Cycling	10% (+5% from Stage 1)	200 students (+150)	
Buses	55%	1,100 students (+550)	• 2 bus bays at Guntawong Road (one on each side)
Private vehicles	20% for students (-10% from Stage 1)	400 students (+100)	• **125m** of kiss and drop space
	80% for staff (-20% from Stage 1)	117 staff (+37)	• Staff car park of 117 spaces, with vehicular access via Nirmal Street
Total	**100%**	**2,000 students**	

- 19 spaces or 125m of kiss and drop space (assuming 400 students with typical occupancy of 1.5 students per car, average dwell time of 2 minutes and high turnover space length of 6.5m)
- Guntawong Road extension including roundabout at Nirmal Street

Differences to WSP RTA recommendations:

- Safe crossing of Guntawong Road to accessing the bus stops is proposed at the traffic signals of Guntawong Road / Hambledon Road
- Wombat crossing (instead of mid-block signal crossing) at Nirmal Street
- Bus stops are not proposed at Nirmal Street for the same reasons as suggested for Stage 1.

Stage 2 traffic infrastructure review – Option 4 (SCT)

- **Stage 2 transport network** key features
  - Guntawong Road extension, Nirmal Street and Hambledon Road extension all completed (by others) with footpaths or shared paths delivered as per ILP/DCP requirements
  - Traffic signals at Hambledon Road / Guntawong Road
  - Safe crossing points along Hambledon Road extension near Proposed Road 4 (southern boundary of school and Gordon Road)
  - 2x zebra crossings (as per Stage 1)
  - Footpath and bike path network completed on all school frontages (3.5m) and surrounding residential subdivisions as per ILP/DCP requirements
  - Staff car park expansion (117 spaces)
  - Kiss and drop zone (125m) on the school side of Nirmal Street and other locations (TBC)
  - Bus stops on both sides of Guntawong Road to serve (through) school and public bus services (as per Stage 1) plus potential bus stops on both sides of Hambledon Road extension
  - Bicycle parking of 200 spaces

Figure 8: Stage 2 transport improvements

Legend

- Footpath
- Footpath (by others)
- Crossing
- New roadway
- Car park
- Entrance
- Bus zone

- We do not suggest a connection of Road 04 with Hambeldon Road as it is a deviation from the ILP which will delay the approval of Stage 2.
- The delivery of the ILP road network enables access route to the kiss and drop zone from all directions.

05

Summary

Summary

- Option 1 has been ruled out for Stage 1 given the lack of infrastructure to accommodate additional kiss and drop movements on the existing network and reliance on placing kiss and drop internally to the school.
- Both Option 2 and Option 3 should have enough capacity to service Stage 1 (1,000 students).
- Option 2 relies on constructing a roundabout at Nirmal Street / Marchant Street to minimise the impacts of the surrounding local streets. This may require land acquisition.
- Option 3 relies on other approved DA to upgrade Marchant Road + other infrastructure to provide access to the on-street kiss and drop at Nirmal Street (without the need to construct the roundabout in Option 2).
- After consultation with SINSW project team and traffic coordinator, Option 3 is the preferred option to support Stage 1.

Table 5: Assessment of scenario capacities

Student capacity	Option 1	Option 2	Option 3	Option 4
Stage 1 – 1,000 students	×	✓	✓ (Preferred)	✓
Stage 2 – 2,000 students	×	×	×	✓

Summary Stage 1 transport infrastructure (Option 3)

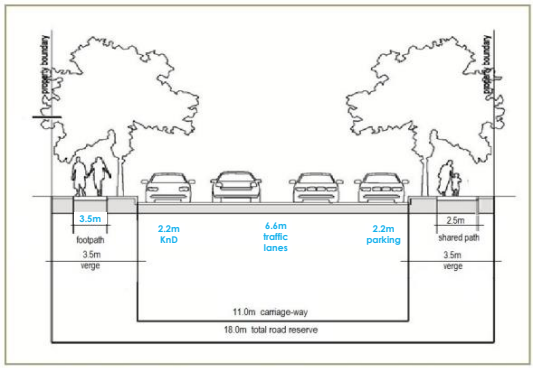


Figure 3-14. Medium-high density local road

Next steps

- Given the proposed transport infrastructure required to support Stage 1 and Stage 2 development have been revised as a result of the review, we propose to present this review to the TWG, before further discussion with Council.
- In parallel with the consultation with TWG and Council, we will continue to provide traffic and access advice to support DJRD in refining the masterplan layout.
- We will also commence the preparation of the TAIA to support planning approvals. We also need to confirm traffic modelling requirements with the TWG. Once this is confirmed, we need to undertake traffic surveys (ideally before the school holidays commence in 2 weeks otherwise this may have implications on the program of delivery of the TAIA.


SCT
Consulting
Thoughtful Transport Solutions

TSA Riley

Minutes

Transport Working Group Meeting

Meeting title:	Schofields/ Tallawong High School TWG meeting
Date:	**5 November 2024**
Time:	2.00-3.00pm
Location:	Microsoft Teams

Attendees:

Name	Org	Email
Sonia Mallos	School Infrastructure	Sonia.dasilva1@det.nsw.edu.au
Kamoru Adetunmbi	School Infrastructure	kamoru.adetunmbi2@det.nsw.edu.au
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Andy Yung	SCT Consulting	andy.yung@sctconsulting.com.au
Jed Coppa	Transport for NSW	Jed.coppa@transport.nsw.gov.au
Julie Ashby	Busways Group	julieashby@busways.com.au
Whitney Chow	Blacktown Council	whitney.chow@blacktown.nsw.gov.au

Item	Comments
Bus Bays	
1	• This is showing flexibility that 3 buses can stop and operate independently on south side • This is showing flexibility that 2 buses can stop and operate independently on north side • What showing is more than what is required based on traffic engineer review • Continue working with Transport for NSW on how to best coordinate future need
2	Plan assumes bus bay will become in lane bus stop when Guntawong Road gets upgraded. Traffic Engineer is seeking to confirm with Council and Transport for NSW if this approach is acceptable in principle.
3	Julie will check if bus bay design specifications needs to involve SI Infrastructure moving forward.

Roundabout (Nirmal St | Guntawong Rd)	
4	Roundabout is proposed by Council under 7.11 contribution. Not a delivery for adjoining developments but for council. Therefore not constructed as part of infrastructure of the new high school. In previous consultation with Council, there is no certainty on the timing of the delivery of the roundabout. Intersection will be built as priority intersection with Give Way sign across Nirmal Street.
5	Further coordination of proposed pedestrian crossing at Guntawong Road to the west of Nirmal Street as it will not work with roundabout in current arrangement. Desired pedestrian crossing is 6m from roundabout approach. Hendrik to provide feedback on proposed traffic solutions. Preference is to see works coordinated and completed as much as possible in single construction stage.
Timing	
6	Hendrik will touch base with director to bring works forward to align with construction that is being done for school, preference is for one main contractor.
7	SINSW: Start of construction mid 2025 for opening day 1 term 1 so accelerated timeframe of delivery of a high school.
8	Future upgrade to Guntawong Rd. Currently showing current alignment, eventually it will connect with Kensington Park Road and Hambledon Road extension will be built by Council and will form signalised intersection with Guntawong Rd and Clarke street.
9	Road closures to be avoided and no roads anticipated to be closed during construction. Detailed construction traffic management plan will be developed in consultation with Council and Transport NSW.
Correspondence	
10	Feedback will need to be via email to council with supportive plans as this can then be forwarded to the broader teams for comments. Any comments or endorsements that is needed must be addressed on email directly. To accept plans needs to be on email to allow for consult to a wider group. Hendrik requested for plans showing school arrangement with entrances and gates of school plan.
11	Note from SI Transport: The scheme includes present stop hence okay. Would like to be included in future meetings so they can input from wider team into the design.
12	Signage for disabled parking – Preference that they get combined to single signs instead of two signs.
13	Continue working on public domain plans and work on actions from meeting.
14	Glenn to provide DA for adjoining roads development to Hendrik. The relevant Bathla DA's on Guntawong Road are: DA19-01158 - 182 Guntawong Road DA22-00916 - 184-194 Guntawong Road

Meeting Close.

APPENDIX E

AS2890 AUDIT

Technical Advisory Note

Project	Schofields Tallawong High School	**Project Number**	SCT_00638
Client	School Infrastructure New South Wales (SINSW)		
Document Name	Staff carpark and loading area AS2890 review		
Version	2.0	**Date**	22 January 2025
Author	Jonathan Busch	Associate Director	
Reviewer	Shawn Cen	Principal Consultant	
Authoriser	Jonathan Busch	Associate Director	

Background

School Infrastructure New South Wales is proposing a new high school in the suburb of Tallawong. The site for the proposed school is located at 201 Guntawong Road (Lot 1 DP 1283186) in the suburb of Tallawong in the Blacktown Local Government Area. As part of the school, a staff car park and a separate loading area for service vehicles is proposed.

Items in green highlight are recommendations requiring action.

AS2890.1:2004 Off-street car parking review

A total of 72 parking spaces (including two accessible parking spaces) for staff is provided. AS2890.1:2004 requirements for this carpark are reviewed in **Table 1**.

Table 1 Review against AS2890.1:2004

AS2890.1 section	Consistent	Comment
2.3.2 parking angle	Yes	90-degree angle parking is proposed. Parking aisles for 90-degree parking shall be designed for two-way movement even though one-way movement may need to be imposed in some instances.
2.3.3 Parking aisle length	Yes	Parking aisle length is less than 100m and therefore does not require traffic control devices.
2.4.1 Angle parking spaces	Ys	Parking spaces are 2600mm wide and 5400m in length. Staff parking spaces can be reduced to 2400mm if required.
2.4.2 Angle parking aisle	No	User Class 1A (Staff parking spaces) are 90 degrees. The spaces at the end of the blind aisle are not wide enough and should be extended by 1m to 3.6m wide.

AS2890.1 section	Consistent	Comment
		 Parking aisle widths are 5800mm and therefore compliant.
2.4.3 Angle parking module layout	N/A	
2.4.5 Physical controls	To be undertaken in future design	Wheel stops should be assessed in detailed design.
2.4.6 Gradients within parking modules	Yes	Gradients measured at any other direction other than parallel to the parking spaces are 6.25% and are therefore compliant. Gradients measured parallel to the direction of the parking spaces are required to be less than 5%. Gradients within the parking module (i.e. the area comprising parking spaces and aisles) should be a minimum of 1:200. The grade across the accessible parking is 1:206 and will need to be a minimum of 1:200. Spot gradients show spaces comply.
2.5.2 Layout design of circulation roadways and ramps	Yes	Circulation roadways in the carpark are straight and wider than 5500mm (two-way roadway) and is compliant. This roadway will require a kerb on both sides of maximum height of 150mm high. Two vehicles cannot pass one another on turns. However, given that vehicles will likely enter and exit during the same periods, this is unlikely to cause issue as the car park tends to be tidal in nature (entry in the morning and exit in the evening).
2.5.3 Circulation roadway and ramp grades	Yes	Grades along roadway from Nirmal Street to parking module are less than the maximum grades for circulation roads and ramps and are therefore compliant. The grade transitions for all the roadways are within the acceptable range at the bottom and top of ramp and or road. They are therefore compliant.
2.6 Design of domestic driveways	Yes	Not relevant
3.1 General	N/A	Access facility category for a staff carpark with 72 spaces, fronting a local road is ‘Category 1‘
3.2 Access driveways – width and location	Yes	Driveway width is greater than the minimum of 5.5m for a ‘Category 1’ facility
3.3 Gradients of access driveways	To be undertaken in future design	The maximum gradient of the access driveway shall not exceed 5% between the edge of the frontage road and the property line.

AS2890.1 section	Consistent	Comment
		The following 6m from the property line into the carpark the grade can be increased to 12.5% (as long as the grade is a downgrade for vehicles leaving the carpark and entering Nirmal Street) When the driveway crosses the footpath, the driveway will need to have a grade of 2.5% or less across the footpath covered over a lateral distance of at least one metre. Gradients are not provided for ramps with start and finish locations.
3.4 Queuing areas	To be undertaken in future design	There is no vehicle control point specified on plans. If a median and swipe card access is required, then this would translate to a wider driveway. This needs to be resolved in detailed design. If vehicle control points are implemented a queuing area to contain at least two vehicles off the street and not across the footpath is required
3.5 Access to mechanical parking installations	N/A	
4.1 Pedestrian service	Y	Vehicle entrance and exit points shall be separated from vehicular entrances and exits.
4.2 Bicycle parking	N/A	Bicycle parking provision to be consistent with AS2890.3. See Transport Access and Impact Assessment for details.
4.3 Signposting	TBC	Signposting to be used to indicate direction of travel on circulating roads and parking aisles as well as at vehicle conflict points and intersections. Signposting for accessible spaces shall such that they can be easily located. Signs should not be placed at any location where they may obstruct sight lines.
4.4 Pavement markings	TBC	General parking spaces (i.e. non accessible spaces) shall be delineated using white or yellow lines 80mm to 100mm wide
4.5 Parcel pick-up	N/A	
4.6 Shopping trolley requirements	N/A	
4.7 Lighting	To be undertaken in future design	Parking areas and circulation areas, together with pedestrian pathway s including those used by people with disabilities shall be adequately lit. Minimum lighting levels for open air car parks should be as is specified in AS/NZS 1158.3.1.
4.8 Landscaping	To be undertaken in future design	Sight distances shall not be compromised by shrubs or landscaping.
4.9 Humps	N/A	Not required as the maximum aisle length is 100m.
4.10 Special loading/unloading parking spaces	N/A	

AS2890.1 section	Consistent	Comment
5.2 Column location and spacing	N/A	Open air carpark with no columns
5.3 Headroom	N/A	
5.4 Design of enclosed garages	N/A	

AS2890.2:2018 Off-street commercial vehicles review

AS2890.2:2018 requirements are reviewed in **Table 2.**

Table 2 Review against AS2890.2:2018

AS2890.2 section	Consistent	Comment
2.1 General	Yes	The largest expected design vehicle is a Medium Rigid Vehicle (MRV) and a Blacktown Council Waste Vehicle (BWV).
3.3.1 Width	Yes	Swept paths show that the width of the area gazetted for service vehicles is sufficient for an MRV and BWV to enter and exit in a forward direction. Simultaneous use of the service area by more than one vehicle is not anticipated. If this does occur, there is sufficient space for vehicles to pass or manoeuvre out of the way of the other.
3.3.2 Parking on circulation roadway	Yes	Parking on the circulating roadway is not proposed. However, there is sufficient space for service vehicles to park that satisfies the minimum width requirements (3.5m) for parking areas.
3.3.3.2 Maximum roadway and ramp grades	To be undertaken in future design	The maximum gradient for the roadway, driveways and any ramps shall be 15.4% Gradients not shown on plans
3.3.4 Maximum rates of change of grade on circulation roadways	To be undertaken in future design	The maximum rate of change of grade shall be 6.25% over a minimum distance of 7m. A simultaneous grade change of 2% or less is permitted, however grade change still cannot exceed 6.25% over 7.0m. Gradients not shown on plans
3.4.3 (driveway) layout design requirements	Y To be undertaken in future design	Swept paths show services vehicles can enter and exit the driveway in a forward direction and can turn entirely within the kerbside lane. The maximum grade for the access driveway is 5% for distance extending from the property of at least 6m. Gradients not shown on plans
3.4.5 Sight distance requirements	Y	Previously assessed as compliant A 2m wide and 2.5m long triangular splay is required to enable a pedestrian on the public road footpath to evade a vehicle emerging from an access driveway. This does not require a physical splay but needs to be kept clear of obstructions.
4.1 (Service areas) General	Yes	There is sufficient space for service vehicles to manoeuvre.
4.2 dimensions of service bays	Yes	The service area meets the minimum required dimensions. Vertical clearances shall be a minimum of 4.5m
5. Design turning paths	N/A	

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

Two accessible parking spaces with a common shared between the two is proposed. AS2890.6:2022 requirements are reviewed in **Table 3**.

Table 3 Review against AS2890.6:2022

AS2890.6 section	Consistent	Comment
2.2 Location of accessible spaces	Yes	Accessible parking spaces shall be located within 50 m of an accessible entrance.
2.3.1 Shared area	Yes	Shared area locations comply.
2.3.2 Side of vehicle	Yes	Shared area is provided on one side.
2.3.3 Rear of vehicle	Yes	Shared area at rear of parking spaces is greater than the minimum of 2400mm. Posted speed limit should no greater 10km/h
2.4 Zone for bollard, post and columns	To be undertaken in future design	A bollard/post shall be placed within the shared area to prevent vehicles using the area for parking. This shall be placed a minimum of 750mm and maximum of 1750mm from the end of the shared area closest to the parking aisle
2.5.1 Angled parking spaces	Yes	Accessible parking spaces are compliant with the minimum width and lengths
2.5.2 Parallel parking spaces	N/A	
2.6 Pavement slope and surface	To be undertaken in future design	Parking spaces and the shared area shall not exceed 1/33 if the surface is a bituminous seal. A suitably qualified individual shall assess accessibility requirements for surfaces.
2.7 Headroom	N/A	
2.8 Kerb ramps	To be undertaken in future design	Where kerb ramps are to be provided, they shall serve the shared area which is located adjacent to the parking space. Where a kerb ramp is provided within the shared area, it shall intrude no further than 1200 mm into the shared area.
3.1.1 Non residential space identification	To be undertaken in future design	Each accessible space shall be identified by means of a white symbol of access in accordance with AS 1428.1, between 800 mm and 1000 mm high placed on a blue rectangle with no side more than 1200 mm, and placed as a pavement marking in the centre of the space between 500 mm and 600 mm from its entry point.
3.1.2 Residential space identification	N/A	
3.2.1 General	To be undertaken in future design	Space delineation and shared area pavement markings shall be yellow and have a slip-resistant surface. Raised pavement markers shall not be used for space delineation.
3.2.2 Pavement markers for accessible spaces	To be undertaken in future design	Accessible parking spaces shall be outlined with unbroken lines 80 mm to 100 mm wide on the long edge of an angled parking space and the short edge of a parallel parking space (except where any side is delineated by a kerb, barrier or wall). Where defined by line marking, all measurements shall be taken from the centre of the marked lines.

AS2890.6 section	Consistent	Comment
3.2.3 Pavement markers for accessible spaces	To be undertaken in future design	Walkways within or partly within a shared area shall be marked with unbroken longitudinal lines on both sides of the walkway (except where any side is delineated by a kerb, barrier or wall). Shared areas shall be marked with unbroken lines 80 mm to 100 mm wide on all sides and marked with diagonal stripes 150 mm to 200 mm wide with spaces 200 mm to 300 mm between stripes. The stripes shall be at an angle of 45 degrees± 10 degrees to the side of the space.
3.2.4 Pavement markings	To be undertaken in future design	A suitably qualified individual shall assess accessibility requirements for pavement markings on surfaces.

SCT Consulting

V	Description	Date
5.0	REF Issue	22.01.2025

Prepared for:
School Infrastructure

Quality information	
Date	01/25
Prepared	JB
Reviewed	SC
Authorised	JB

Scale @ A3
0 2 4
Scale 1:200

Project
New High School for Schofields and Tallawong
Guntawong Road, Tallawong NSW 2155

Title
Ground Floor
Dimension audit

Project Number
SCT_00638_CAD_STHS_Carpark audit_GF

Sheet number
01

A3

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XREF 22.01.2025 | FloorPlan-REF_OVERALLGROUNDFLOORPLAN.dwg | DJRD

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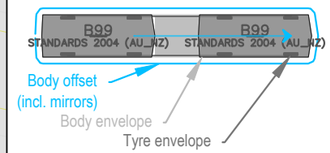
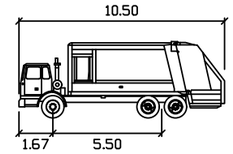


This swept path assessment is based on:

- 600mm body offset
- Vehicle speed of 5-10km/h
- Blacktown DCP Waste Vehicle



Blacktown waste vehicle

meters

Width	: 2.50
Track	: 2.50
Lock to Lock Time	6.0
Steering Angle	: 36.7

V	Description	Date
5.0	REF Issue	22.01.2025

SCT Consulting

Prepared for:
School Infrastructure

Quality information	
Date	1/25
Prepared	JB
Reviewed	SC
Authorised	JB

Scale @ A3

0 2 4

Scale 1:200

Project
New High School for Schofields and Tallawong
Guntawong Road, Tallawong NSW 2155

Title
Lower Ground Floor
Swept Path Assessment - Council Waste Vehicle

Project Number
SCT_00638_CAD_STHS_Carpark audit_LGF

Sheet number
01

A3

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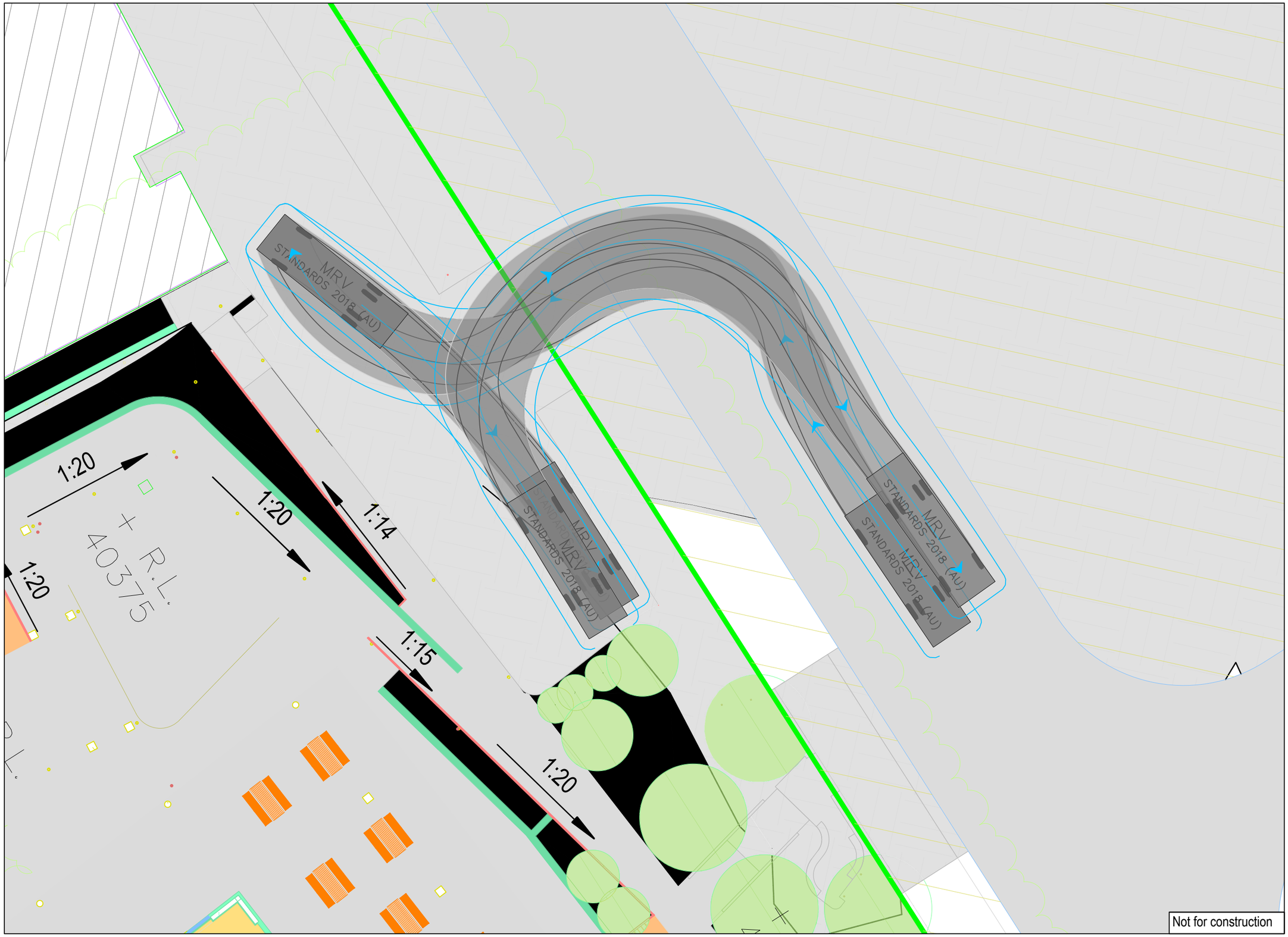
XREF DATE | FILE NAME | PROVIDER



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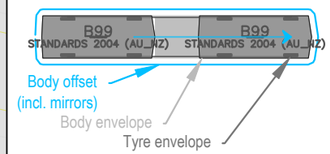
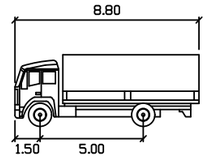


This swept path assessment is based on:

- 600mm body offset
- Vehicle speed of 5-10km/h
- Medium Rigid Vehicle



MRV

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

Not for construction

V	Description	Date
5.0	REF Issue	22.01.2025

SCT Consulting

Prepared for:
School Infrastructure

Quality information	
Date	1/25
Prepared	JB
Reviewed	SC
Authorised	JB

Scale @ A3
0 2 4
Scale 1:200

Project
New High School for Schofields and Tallawong
Guntawong Road, Tallawong NSW 2155

Title
Lower Ground Floor
Swept Path Assessment - Mdium Rigid Vehicle (8.8m)

Project Number: SCT_00638_CAD_STHS_Carpark audit_LGF

Sheet number: 02

A3

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