SCT Consulting

The Forest High School

Transport Access Impact Assessment

2 NOVEMBER 2022

Quality Assurance

Project:	The Forest High School		
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Client:	School Infrastructure NSW	**ABN:**	40 038 020 88
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3.0	28 September 2022	Updated draft report
4.0	14 October 2022	Updated draft report (addressed ToA comments)
5.0	31 October 2022	Updated draft report
6.0	2 November 2022	Final report

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Proposal

The Northern Beaches Hospital Structure Plan nominated the existing The Forest High School site (at 135 Frenchs Forest Road West, Frenchs Forest) as the location of the new Frenchs Forest Town Centre. The land is to be zoned Mixed Use and green space. To realise the vision of the Northern Beaches Hospital Structure Plan and support a whole of government approach to strategic planning, the NSW Department of Education will be relocating the existing The Forest High School to Allambie Road, Allambie Heights NSW 2100.

The proposal is for the school facilities (totalling a Gross Floor Area of 16,380m^2) to cater for a student enrolment of up to 1,500 students. The increase in the student enrolment total compared to the existing site (800) is to accommodate projected demand from the forecast population increase in the catchment. The proposal also includes a FIFA-compliant sports field for potential shared use between the Northern Beaches Council and The Forest High School.

Site description

The new school location will be at Allambie Road, Allambie Heights. The site is located about 1km southeast of the Frenchs Forest Town Centre and is situated in the Northern Beaches Local Government Area. The proposed site is surrounded by Arranounbai School and the Cerebral Parsley Alliance to its immediate southwest and south respectively. The Warringah Aquatic Centre and a large area of protected bushland are situated to the west of the site. The Forestbridge Business Park is located to the north and low-density housing is to the east.

Source: Nearmap, 2022

A shared path is located on Allambie Road along the northern and eastern perimeter of the site alongside two regional cycle routes with 3m road shoulder cycle lanes provided on both sides. There are no pedestrian or cyclist priority crossings close to the site. Public bus services use both Aquatic Drive and Allambie Road with routes along Allambie Road stopping at two bus stops located north and east of the site.

No parking signs are in operation along both sides of Allambie Road near the site boundary. Aquatic Drive has on-street car parking along both sides of the road with 6P time restrictions. The location of Arranounbai School means a 40km/h school zone is already in place between 8.00am-9.30am and 2.00pm-4.00pm along Aquatic Drive between the roundabout with Allambie Road and close to the intersection with Madison Way.

Existing conditions

The proposed site for The Forest High School is well-situated for students who want to travel by active or sustainable transport. Allambie Road has a shared path along its eastern boundary and a footpath along its western boundary. The road also has a regional cycle route along both sides in the form of 3m road shoulders. Aquatic Drive is missing footpaths and/or shared paths in the vicinity of the schools. There are no pedestrian priority crossings across Allambie Road or Aquatic Drive apart from a refuge island on the eastern arm of the roundabout with the two roads.

The site is well served by bus. In the morning and evening peaks, the school would be served by a public bus every 5-7 minutes. This would be in addition to the school bus services of which there are eleven serving the existing site. Most of the future school population is expected to be within 30 minutes of the school by public transport and live within 400m of a bus stop.

A SIDRA Network was developed for the study area, which showed that the network operates between Levels of Service A and D. Allambie Road / Warringah Road is operating at Level of Service D with a degree of saturation (a measure of spare capacity) of 0.86-0.90, which indicates there is about 10-14% spare capacity.

Analysis & transport proposals

Analysis of confidential, anonymised student population data formed the basis of mode share forecasts. School Infrastructure supplied coordinated positions of students within the potential catchment of The Forest High School, which was analysed against various travel contexts. For example, the number and proportion of students within a 400m walk from the school were tabulated.

Mode share forecasts were defined based on the influence of infrastructure, services and transport encouragement programs on the mode share:

Scenario	Walk	Bicycle / scoot	Bus	Car
Existing conditions	3%	2%	45%	50%
Short-term base case	6%	3%	36%	55%
Long-term base case	4%	4%	31%	61%
Long-term moderate case (preferred)	4%	12%	39%	45%
Long-term stretch case	6%	12%	39%	43%

The moderate case was selected as elements within the stretch case weren't feasible, such as the signalisation of Allambie Road / Rodborough Road due to safety concerns raised by Transport for NSW.

The infrastructure, services and transport encouragement programs proposed as part of this development application are as follows. These will be funded by SINSW. All transport upgrades and public transport service changes are proposed to occur prior to the occupancy of the new school, or otherwise agreed with Council and TfNSW. Transport encouragement initiatives are proposed to occur in the first year post occupation.

Category	Proposals	Owner	Timing
Infrastructure	– Signalisation of Allambie Rd / Aquatic Dr – Zebra crossing and pedestrian fencing west approach to Rodborough Rd – Widening of the shared path to 3m (where feasible) on Allambie Road along the perimeter of the school site – Footpath along the northern side of Aquatic Drive – 182 bicycle/rideables parking spaces – Addition of a new bus zone on Aquatic Drive frontage of the school – Removal of the bus stop on Allambie Road (TSN 2100177) per request from TfNSW due to road safety issues – Relocation of Allambie Rd bus stop on school frontage further south to allow for two stands (TSN 210096)	SINSW	Prior to occupancy
Operational	– Staggered bell times – School Transport Committee – Funded Travel Coordinator – Governance arrangement as per School Transport Plan – Ridescore (if available) – Transport Access Guide – NSW Police road safety training – Tap on every time program – Bike repair quarterly on school grounds – Cycle to school competition with paid prizes (e.g. win a bike) – Bicycle skills training – Inquire into Bicycle NSW Spring Cycle Event – Bicycle network decals on paths	SINSW & Department of Education	First year of operation
	– Relocation of school special routes to new school location	TfNSW	To align with first date of occupancy

Impacts

Based on the infrastructure, services and transport encouragement programs proposed, the impacts of the school relocation and expansion were assessed. Pedestrian comfort level was assessed at the entry gates and showed that there is sufficient width to accommodate the student load. There is an adequate number of bus services provided that school specials currently terminating The Forest High School are relocated with the school.

Delays to cars are mitigated to the extent feasible.

Intersection	2031 background growth, no school				2031 background growth, school, and upgrades			
	AM Peak		PM peak		AM Peak		PM peak	
	Delay	LoS	Delay	LoS	Delay	LoS	Delay	LoS
Allambie Rd / Warringah Rd	48.3	D	71.1	F	76.1	F	67.8	E
Allambie Rd / Rodborough Rd	23.1	B	25.3	B	20.0	B	28.3	B
Allambie Rd / Aquatic Dr	15.4	B	29.4	C	49.0	D	41.7	C
Allambie Rd / Mortain Ave	8.7	A	6.8	A	9.7	A	7.4	A
Allambie Rd / Fleurs St	4.7	A	5.5	A	5.0	A	5.8	A
Rodborough zebra crossing	N/A				6.2	A	4.9	A

Delay = worst movement for priority and roundabout controlled intersections and DoS = degree of saturation of worst movement

The intersection performance shows that:

- Delays at Allambie Road / Warringah Road are worse in the morning peak but better in the evening peak than if the development were not to occur
- In the morning peak, Allambie Road / Warringah Road worsens by 27.8 seconds and in the evening peak it improves by 3.3 seconds
- The new intersection Allambie Road / Aquatic Drive operates at Level of Service D or better during both peak periods
- All other intersections have delays that are Level of Service B or better, with delays at a similar level than if the project were not proposed.

Per Transport for NSW's Road User Space Allocation Policy, planning should be focused on providing access first to pedestrians and cyclists, then public transport and private vehicles coming last.

An upgrade to Allambie Road / Warringah Road is beyond the resources available to School Infrastructure NSW and should be considered at a whole-of-government level. Significant upgrades are being delivered as part of the school's delivery, including a new traffic signal outside of the school.

The impacts are considered appropriately mitigated with the transport proposals.

Draft School Transport Plan

The relocation of The Forest High School offers an opportunity for the school to start a new sustainable travel behaviour culture. A combination of infrastructure and policy initiatives will prioritise walking and cycling for those close to the site and public transport for students located further away.

A draft School Transport Plan is provided in Section 5.0, which includes:

- A vision
- Mode share targets that are evidence-based and consistent with the remainder of this assessment
- An explanation of the transport encouragement initiatives that have been budgeted for
- An explanation of how students access the school by each mode and the responsibilities of different parties
- A governance framework for implementing initiatives
- A monitoring program.

Comparison to SEARs requirements

The Secretary's Environmental Assessment Requirements (SEARs) stipulates the evidence required to be prepared in support of the State Significant Development Application. This report provides all of the evidence requested as part of the SEARs. The table below outlines where this evidence may be found.

SEARs requirement	Location in report
Provide a transport and accessibility impact assessment, which includes:	The entirety of this report fulfils this requirement.
An analysis of the existing transport network, including the road hierarchy and any pedestrian, bicycle or public transport infrastructure, current daily and peak hour vehicle movements, and existing performance levels of nearby intersections.	**Section 2.0** Detailed counts and numbers are provided in **Appendix B** and **Appendix C**.
Details of the proposed development, including pedestrian and vehicular access arrangements (including swept path analysis of the largest vehicle and height clearances), parking arrangements and rates (including bicycle and end-of-trip facilities), drop-off/pick-up-zone(s) and bus bays (if applicable), and provisions for servicing and loading/unloading.	Sections 1.1.1 and 1.1.2 describe the proposed development. Access arrangements are included in **Sections 3.2.1** and **5.2.9**.
Analysis of the impacts of the proposed development (including justification for the methodology used), including predicted modal split, a forecast of additional daily and peak hour multimodal network flows as a result of the development (using industry standard modelling), potential queuing in drop-off/pick-up zones and bus bays during peak periods, identification of potential traffic impacts on road capacity, intersection performance and road safety (including pedestrian and cyclist conflict), and any cumulative impact from surrounding approved developments.	**Section 3.1** discusses the mode share analysis and forecast trip generation. **Section 4.0** describes the impact of the school proposal including capacity and queuing assessments.
Measures to mitigate any traffic impacts, including details of any new or upgraded infrastructure to achieve acceptable performance and safety, and the timing, viability and mechanisms (including proposed arrangements with local councils or government agencies) of delivery of any infrastructure improvements in accordance with relevant standards.	Measures to mitigate impacts are discussed in **Sections 3.2** and **5.2.9**. A road design of the proposed upgrades is provided in **Appendix E**.
Measures to promote sustainable travel choices for employees, students and visitors, such as connections into existing walking and cycling networks, minimising car parking provision¸ encouraging car share and public transport, providing adequate bicycle parking and high quality end-of-trip facilities, and implementing a Green Travel Plan.	Measures proposed to promote sustainable travel behaviour are included in **Section 3.2**. A School Travel Plan (which includes a Green Travel Plan) is provided in **Section 5.0**.
A preliminary operational traffic and access management plan for the development, including drop-off/pick-up zones, bus bays and their operations.	A School Travel Plan (which includes an operational traffic and access management plan) is provided in **Section 5.0**. The relevant access management chapter is **Section 5.2.9**.
Provide a Construction Traffic Management Plan detailing predicted construction vehicle movements, routes, access and parking arrangements, coordination with other construction occurring in the area, and how impacts on existing traffic, pedestrian and bicycle networks would be managed and mitigated	A Construction Traffic Management Plan is provided in **Section 4.1**.

Source: SCT Consulting, 2022

1.0 Strategic context

1.1 About the school project proposal

1.1.1 School site proposal

The Northern Beaches Hospital Structure Plan nominated the existing The Forest High School site (at 135 Frenchs Forest Road West, Frenchs Forest) as the location of the new Frenchs Forest Town Centre. The land is to be zoned Mixed Use and green space. To realise the vision of the Northern Beaches Hospital Structure Plan and support a whole of government approach to strategic planning, the NSW Department of Education will be relocating the existing The Forest High School to Allambie Road, Allambie Heights NSW 2100.

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1.1.2 Site description

Figure 1–1 shows the proposed site for The Forest High School at Allambie Road, Allambie Heights. The site is located about 1km southeast of the Frenchs Forest Town Centre and is situated in the Northern Beaches Local Government Area. The proposed site is surrounded by Arranounbai School and the Cerebral Parsley Alliance to its immediate southwest and south respectively. The Warringah Aquatic Centre and a large area of protected bushland are situated to the west of the site. The Forestbridge Business Park is located to the north and low-density housing is to the east.

Figure 1–1 The proposed school site for The Forest High School

Source: Nearmap, 2022

A shared path is located on Allambie Road along the northern and eastern perimeter of the site alongside two regional cycle routes with 3m road shoulder cycle lanes provided on both sides. There are no pedestrian or cyclist priority crossings close to the site. Public bus services use both Aquatic Drive and Allambie Road with routes along Allambie Road stopping at two bus stops located north and east of the site.

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40km/h school zone is already in place between 8.00am-9.30am and 2.00pm-4.00pm along Aquatic Drive between the roundabout with Allambie Road and close to the intersection with Madison Way.

1.1.3 School enrolment boundary

Figure 1–2 shows both the existing and proposed enrolment boundaries for the school. The proposed enrolment boundary has been revised to accommodate for future population growth and the expected capacity limits at The Forest High School. The enrolment boundary is expected to be adjusted to include a greater proportion of the suburbs of Beacon Hill and Brookvale to the east and reduced in coverage to the west and south. Those areas will be incorporated into the enrolment catchments of neighbouring schools.

Figure 1–2 Existing and proposed school enrolment boundaries

Enrolment boundaries change over time. The above enrolment boundary (blue dashes) has been used in this assessment.

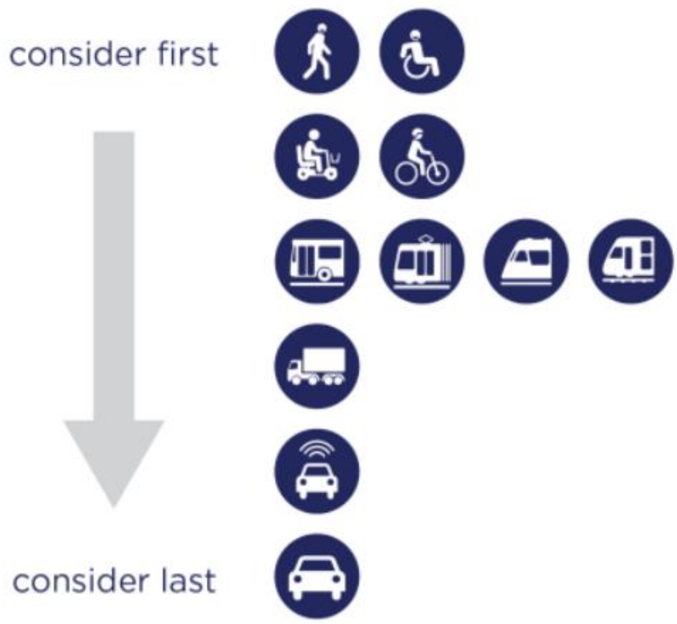
1.2 Strategic transport and land use context review

1.2.1 Road user space allocation policy

The policy set out by Transport for NSW aims to allocate road space, both physically and temporally, based on a hierarchy of road users. **Figure 1–3** shows the hierarchy of road users with the primary consideration being given to walking and the least consideration provided to private cars.

The key principles applicable to The Forest High School are the aim to reduce the mode share of private motor vehicles within built-up areas and the prioritisation of different road users, such as those who walk or cycle, during times of the day and times of the year. The policy gives the school a strong framework to encourage walking, cycling and public transport use and consider last those travelling to the site by car.

Figure 1–3 Hierarchy of road user considerations



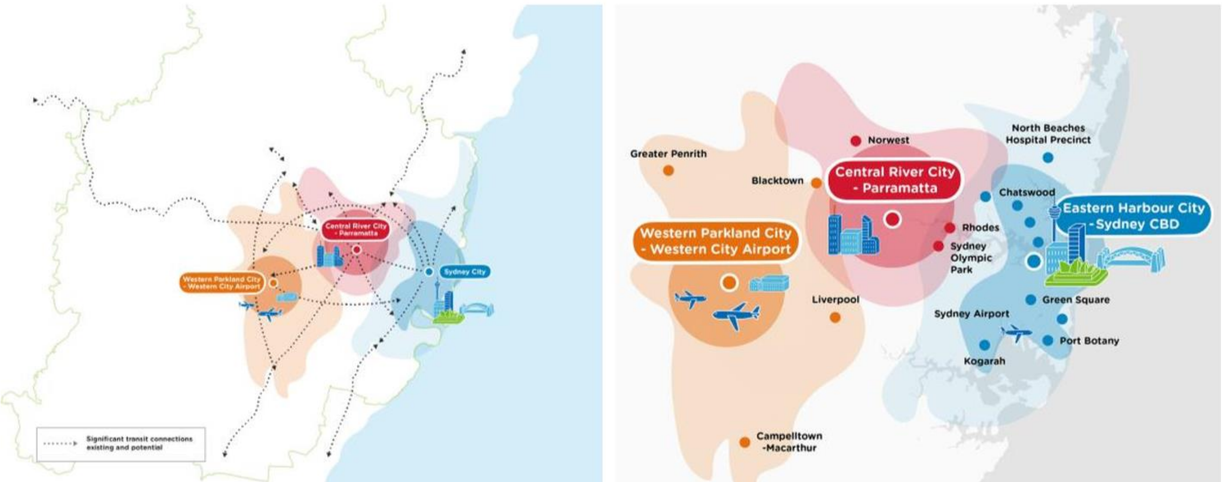
Source: Transport for NSW, 2021

1.2.2 Future Transport 2056

The Future Transport Strategy 2056 (The NSW Government, 2018) is an update of NSW's Long-Term Transport Master Plan. It is a vision for how transport can support growth and the economy of New South Wales over the next 40 years. The strategy is underpinned by the Regional Services and Infrastructure Plan and the Greater Sydney Services and Infrastructure Plan, as well as several supporting plans including Road Safety and Tourism.

The strategy sets the long-term vision for Greater Sydney as a Metropolis of Three Cities, where people can access most jobs and services within 30 minutes and will require a sustained and staged investment program to protect corridors and then develop an integrated transport system that includes city-shaping, city-serving, centre-serving, and strategic freight networks.

Figure 1–4 A future metropolis of three cities



Source: TfNSW, 2019

Existing and potential transit connections, together with new technology and innovation, will make the network surrounding the site more responsive to demand and better able to manage congestion in the future. For the three cities identified, more specific outcomes are listed as part of the Strategy which will benefit the site's transport context, including:

– 30-minute access for customers to their nearest Centre by public transport 7-days a week

- Fast and convenient interchanging with walking times no longer than 5 minutes between services
- Walking or cycling is the most convenient option for short trips around centres and local areas, supported by a safe road environment and attractive paths
- Fully accessible transport for all customers.

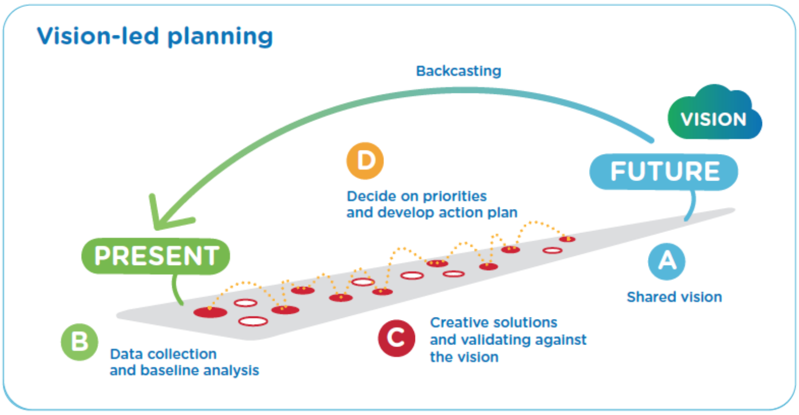
Since its publication in 2018, TfNSW has updated Future Transport in 2020 to acknowledge the changes arising from bushfires, COVID-19, and the ongoing delivery of the strategy.

Key new principles in the strategy include:

– Prioritising agile solutions: transport solutions need to be resilient against the backdrop of changing technology, consumer preferences, and broader trends. Solutions should therefore be less focused on capital investment and be more technology-based to be able to change circumstances.

– Vision-led planning as shown in **Figure 1–5:** planning for transport should identify the desirable future and use backcasting to decide on priorities and actions to identify what changes are required.

Figure 1–5 Vision-led planning by TfNSW



Source: TfNSW, 2021

– Collaboration and co-design: planning should involve co-design with stakeholders to develop a shared vision and shared actions to achieve the desired result.

– Delivering for people and places: rather than just taking an efficiency lens on transport infrastructure, transport planning and delivery should support the public realm, health, and climate outcomes.

Specific infrastructure items included in the *Greater Sydney Services & Infrastructure Plan,* which forms part of *Future Transport 2056,* that are relevant to Frenchs Forest and its surrounding area include the following:

– Northern Beaches B-Line (now complete)

– Northern Beaches Hospital road upgrades (now complete)

– Improved bus services between Northern Beaches and Chatswood

– Consideration of the corridor between Mona Vale – Frenchs Forest –Harbour CBD

– Western Harbour Tunnel and Beaches Link (subject to environmental assessment and approval).

Implications for The Forest High School: Future transport 2056 initiatives aimed to connect people to jobs, goods, and services in our cities and regions will increase the permeability of public transport networks throughout suburbs, which benefits both students and school employees through improved accessibility. Increased investment in walking and cycling infrastructure and improved public transport services will benefit students travelling between their homes and the school site.

1.2.3 North District Plan

A Metropolis of Three Cities, the region plan for Greater Sydney is built on a vision of three cities where most residents live within 30 minutes of their jobs, education and health facilities, services, and great places – Western Parkland City, Central River City, and Eastern Harbour City. This vision seeks to rebalance the economic and social opportunities and deliver a more equitable Greater Sydney. Greater Sydney's three cities reach five districts: Western

City District, Central City District, Eastern City District, North District, and South District. The Northern Beaches LGA is located in the North District as shown in **Figure 1–6**.

The North District Plan seeks to manage growth in the context of economic, social, and environmental matters. It contains the planning priorities and actions for implementing the Greater Sydney Region Plan – A Metropolis of Three Cities, at a district level and is a bridge between regional and local planning. The North District Plan has a specific focus on growing the health and education precincts of Frenchs Forest, Macquarie Park, and St Leonards. Frenchs Forest's future is visioned as an emerging innovative strategic centre, providing knowledge and health employment opportunities in alignment with the Northern Beaches Hospital.

The key objective of the North District Plan is Connecting Communities. Key directions and priorities for the Northern District include:

- **A City supported by infrastructure.** The infrastructure supporting new developments includes increased 30-minute access to a metropolitan centre/cluster and planning for a city supported by infrastructure
- **A collaborative City**. Working together to grow a Greater Sydney including through increased use of public resources such as community facilities
- **A City for people**. Celebrating diversity and putting people at the heart of planning including through increased walkable access to local centres; providing services and social infrastructure to meet people's changing needs; and fostering healthy, creative, culturally rich and socially connected communities.

The NSW Department of Education estimates that an additional 21,900 students will need to be accommodated in both government and non-government schools in the North District by 2036. This includes 3,454 additional students within the Northern Beaches LGA. The proposed development will assist in achieving this target through the provision of a new high school campus and an increase in student enrolment at the school to cater for 1,500 students.

Figure 1–6 North District showing Frenchs Forest as a Strategic Centre

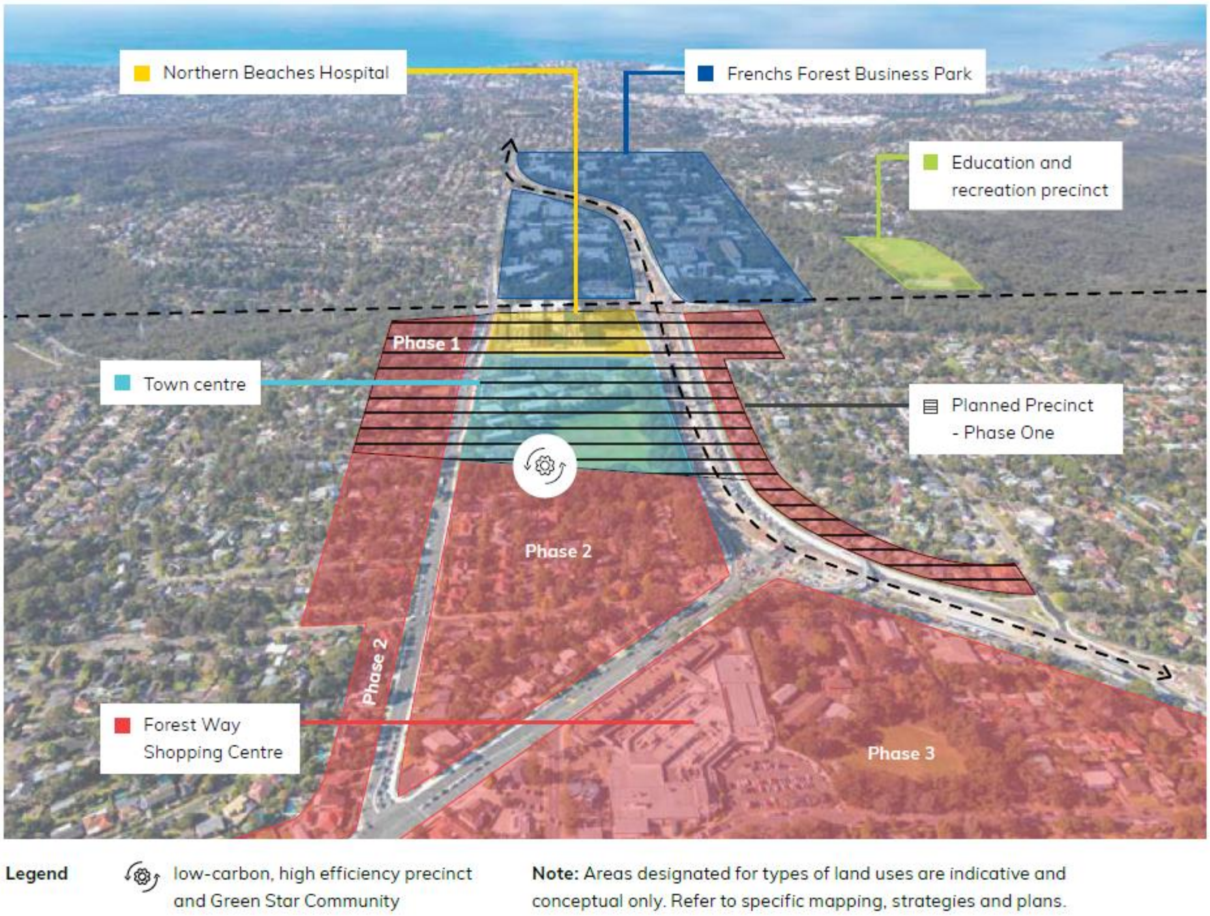
Source: Greater Sydney Commission, 2018

Implications for The Forest High School: The proposed school development is consistent with the vision, objectives, and planning priorities articulated by the North District Plan. The school fulfils the planning priority to provide social infrastructure to meet people's needs and will serve the growing population of Frenchs Forest and the surrounding suburbs.

1.2.4 Northern Beaches Local Strategic Planning Statement (LSPS)

Northern Beaches LSPS outlines priorities and actions for the Northern Beaches over the next 20 years to accommodate population and job growth. Northern Beaches Council wants to focus on reducing traffic congestion and encourage active travel. Council is working with TfNSW to look at ways to increase bus frequencies and coverage within the Northern Beaches Local Government Area. Wakehurst Parkway has been identified as part of the Beaches Link Project to provide improved road connections to Sydney CBD, Sydney Airport, and Western Sydney.

Figure 1–7 Illustrative map for Frenchs Forest strategic centre



Source: Northern Beaches Council, 2020

Figure 1–7 illustrates how Priority 23 aims for Frenchs Forest to be a sustainable health and education precinct. This priority includes the following principles for the broader Frenchs Forest area:

- Establish Frenchs Forest as an active mixed-use strategic centre with a variety of housing and employment options integrated with the area's bushland
- Deliver a low-carbon precinct with high efficiency in energy, water, and waste
- Strengthen Frenchs Forest business park, focusing on attracting health-related businesses
- Ensure the business park, town centre, hospital, and Forestway Shopping Centre function together
- Use Northern Beaches Hospital as a catalyst for new health and education jobs and businesses
- Provide high amenity, safe and accessible public spaces and facilities that are active day and night
- Transition new housing appropriately to existing low-density residential areas
- Prioritise walking in the town centre and provide connections to the broader active and public transport network
- Improve public transport and regional cycling routes to Chatswood and Spit Bridge.

Implications for The Forest High School: Population growth stemmed from new housing and commercial will be mostly served by The Forest High School located at the proposed site. Students and staff will benefit from the new high-frequency bus routes within the Northern Beaches LGA, Chatswood, and Sydney CBD as well as new pedestrian and cycling infrastructure to commercial centres, schools, and residential streets.

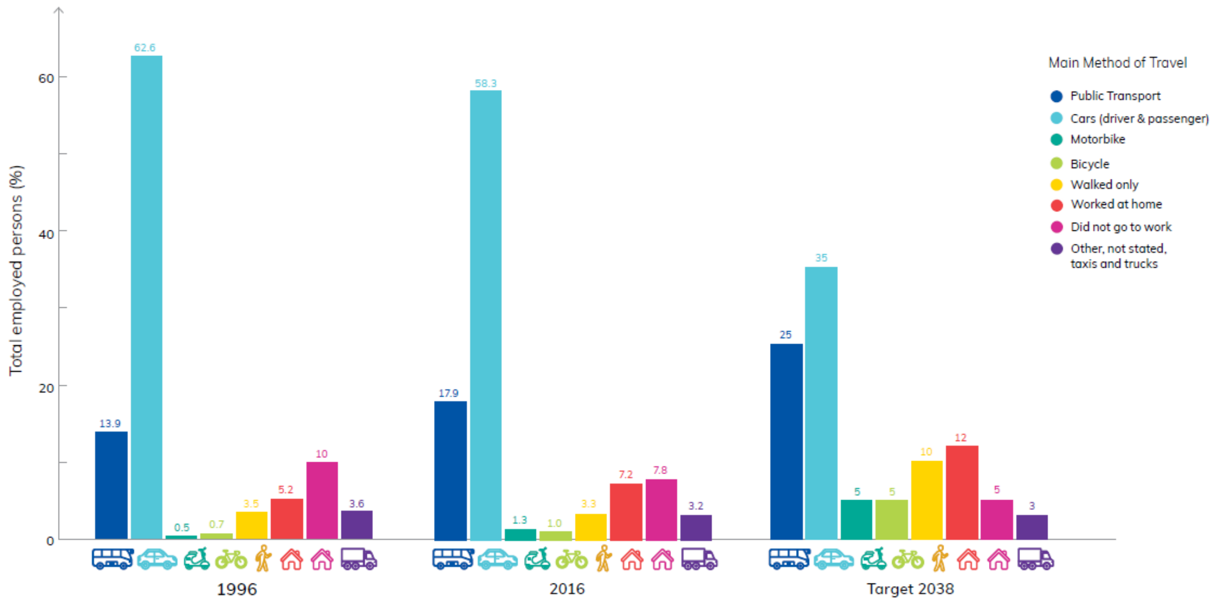
1.2.5 Move – Northern Beaches Transport Strategy 2038

Move - Northern Beaches Transport Strategy 2038 is the transport strategy for the Northern Beaches LGA regarding the challenges and opportunities for transport in the Northern Beaches LGA over the next 20 years.

Key directions from the strategy include the creation of accessible and liveable places, partnering with the NSW Government to implement rapid bus services between Dee Why and Chatswood, and working towards a high-frequency mass transit service for the Northern Beaches in the Long-term. It aims for zero deaths on the roads, a quarter of all trips in Northern Beaches LGA to be made by public transport by 2038, a 30% reduction in trips by cars, and double the active travel trips, especially for households, commuters, and school students in the same period.

Figure 1–8 shows the mode share targets set out in the strategy.

Figure 1–8 Aspiration targets for the method of travel to work from 1996 to 2038



Source: Northern Beaches Council, 2018

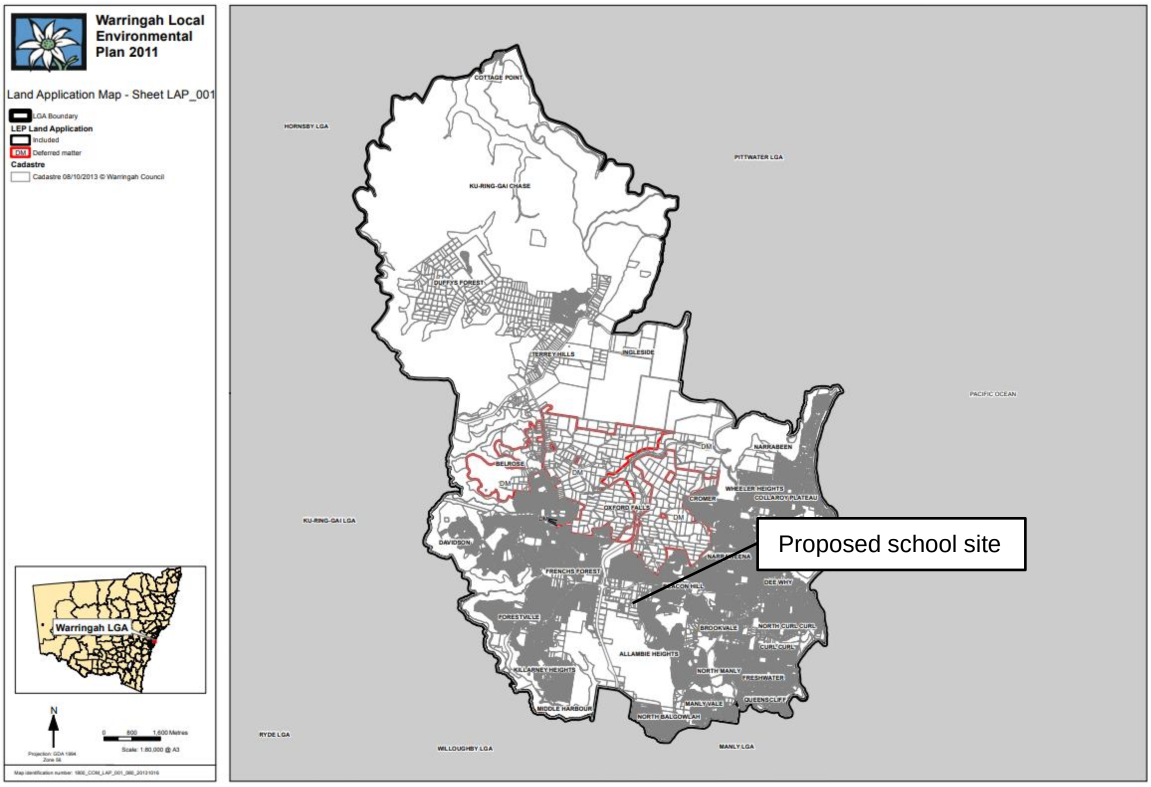
Implications for The Forest High School: The mode share targets laid out in Northern Beaches Transport Strategy 2038 will significantly benefit the school site through improvements in road safety, improved accessibility to public transport, and increased walking and cycling for both students and staff.

1.2.6 Warringah Development Control Plan (2011)

The Warringah Development Control Plan (DCP) provides a framework to guide development in the Warringah part of the Northern Beaches LGA.

The overriding objective of the DCP is to create and maintain a high level of environmental quality throughout Warringah. Development should result in an increased level of local amenity and environmental sustainability while responding to the characteristics of the site and the qualities of the surrounding neighbourhood. This DCP applies to development within the area shown in **Figure 1–9**.

Figure 1–9 Land application map - Warringah LGA



Source: Warringah Local Environmental Plan 2011 (Amendment No 19), 2017

1.2.6.1 Car parking requirements for educational establishment

The DCP has set out the following key objectives for parking facilities:

– To provide adequate off-street car parking

– To site and design parking facilities (including garages) to have a minimal visual impact on the street frontage or other public place

– To ensure that parking facilities (including garages) are designed so as not to dominate the street frontage or other public spaces.

The DCP has specified the following car parking requirements for a high school:

– 1 space per staff member in attendance

– Adequate pickup/set down area on site

– Adequate provision of bicycle racks

– Adequate provision for student parking

– Adequate provision for bus standing and turning area.

The DCP notes that the rates specified in the Guide to Traffic Generating Development (2002, TfNSW) should be used as a guide where relevant.

1.2.6.2 Bicycle parking requirements

Key objectives for bicycle parking and end-of-trip facilities include:

- To help meet the transport needs of the Warringah community
- To encourage healthy active lifestyles and help reduce reliance on private motor vehicles
- To provide convenience and safety for bicycle users.

The DCP requires a high school to have the following bicycle parking provisions:

- Bicycle parking facilities must be provided for new buildings and alterations or additions to existing buildings. In the case of alterations or additions to existing buildings bicycle parking facilities are required for the additional floor area only
- Bicycle parking shall be designed and constructed per Australian Standard AS 2890.3 – Bicycle Parking Facilities
- Bicycle parking facilities shall be designed to be an integral part of the development and where visible from public places or streets will complement the visual quality of the public domain
- End-of-trip facilities are not required for schools.

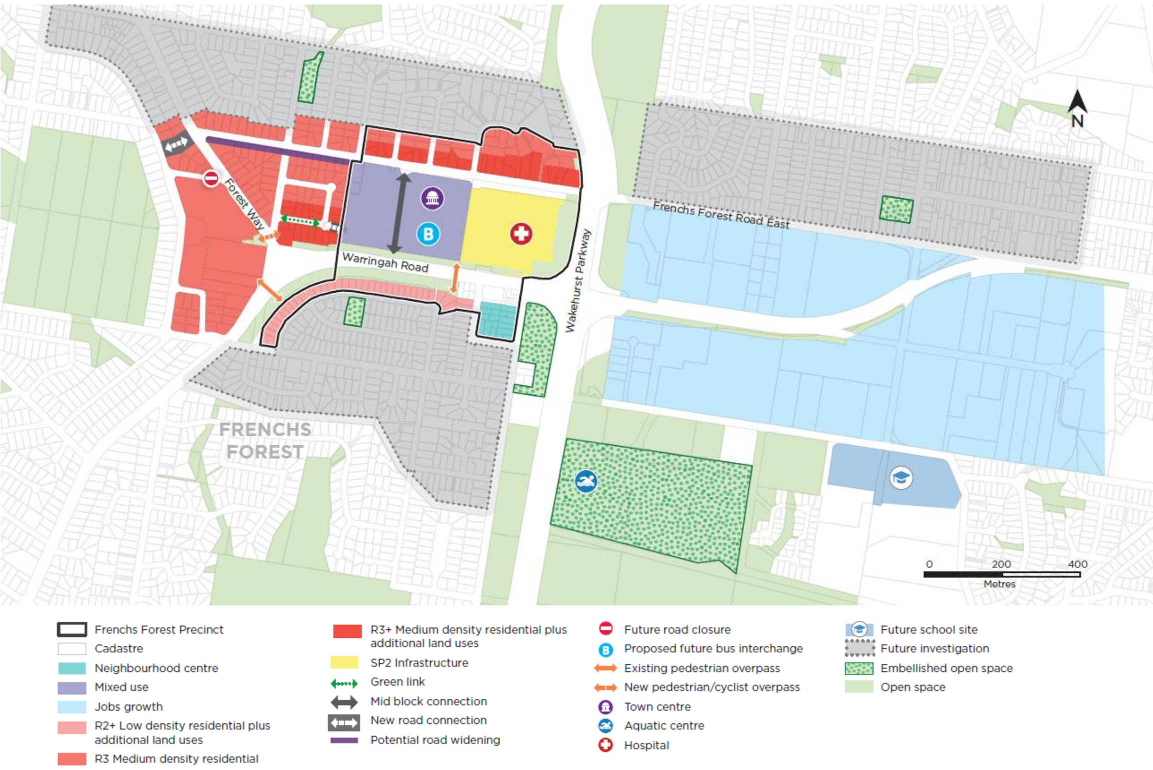
Implications for The Forest High School: A high school was not anticipated in the Warringah DCP 2011. However, it generally needs to be sympathetic to the scale and amenity of surrounding development, particularly adjacent to residential zones. Car parking will be provided at an adequate for staff only and bike parking will be installed to accommodate all students and staff who wish to cycle.

1.2.7 Northern Beaches Hospital Precinct Structural Plan

Northern Beaches Council has endorsed a structure plan that sets out a 20-year vision to inform the growth and strategic intent of future development within the hospital precinct. Taking advantage of the Northern Beaches Hospital, the plan aims to guide the urban development of a new town centre, employment opportunities, and housing within the Frenchs Forest Planned Precinct. **Figure 1–10** illustrates how The *Northern Beaches Hospital Precinct Structure Plan* will deliver the following outcomes:

- A new centrally located mixed-use town centre connected to the Northern Beaches Hospital with uses including retail, commercial, residential, open space, and recreation
- Retaining the existing Warringah Aquatic Centre in its current location and enhancing the playing fields at Aquatic Reserve
- New active transport infrastructure
- Rezoning of approximately 35 hectares of land for residential, commercial, and business purposes over 20 years to support the Northern Beaches Hospital
- New dwellings within the precinct would include up to 10 per cent of affordable housing units to support key workers and an additional 15 per cent for dwellings within the new town centre, allowing for approximately 600 new affordable units.

Figure 1–10 Hospital Precinct Structure Plan



Source: NSW Department of Planning, Industry, and Environment, 2021

Implications for The Forest High School: The existing school site has been identified as a new town centre and bus interchange for Frenchs Forest. The proposed site is located outside the structure plan area but will be impacted due to proposed population increases and changes to the local transport network.

1.2.8 Draft Frenchs Forest 2041 Place Strategy

Frenchs Forest 2041 looks to create a town centre on the plateau through the relocation of The Forest High School, with new jobs connected to Northern Beaches Hospital and new homes, social activities, and community places. The new town centre, anchored by the new hospital, will capitalise on the $500 million in regional road improvements, a future Western Harbour Tunnel and Beaches Link, and better connections to Sydney CBD, Macquarie Park, and other centres on the Eastern Economic Corridor.

The relocation of the Forest High School (**Figure 2–1**) will enable two major changes for Frenchs Forest:

- New state-of-the-art high school, where students will enjoy easy connections to transport, open space, and sporting fields
- The opening up of more than 60,000 sqm of ideally located land for a bustling new town centre.

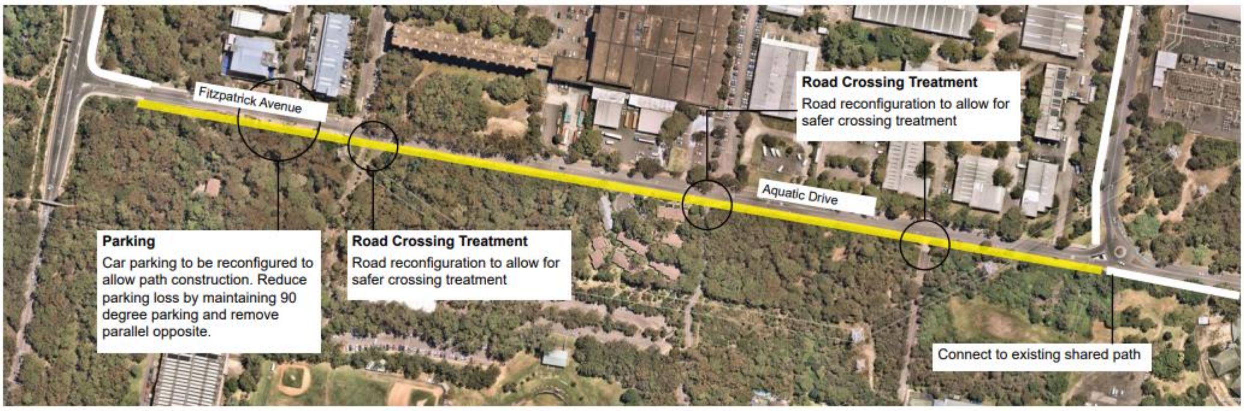
The proposed new site for the Forest High School is Allambie Road, Allambie Heights, around 1km southeast of Frenchs Forest Precinct. The proposed site is free of heritage constraints and is already serviced by gas, water, sewer, electricity, stormwater, and public transport. This site can be accessed from Allambie Road away from major intersections while remaining in the school catchment area. It is also near Allambie Heights Public School and Warringah Aquatic Centre.

Implications for The Forest High School: The Forest High School relocation provides an opportunity to create thousands of new jobs and a new strategic centre, reducing the need for people to commute outside the Northern Beaches LGA. The school relocation increases permeability to public transport networks provided with easier walking and cycling connections, which benefits both students and school employees travelling to and from the school.

1.2.9 Aquatic Drive shared path

Northern Beaches Council recently completed a shared path, as indicated in **Figure 1–11** along the southern boundary of Aquatic Drive and Fitzpatrick Avenue connecting to a shared pedestrian/cycling bridge over the Wakehurst Parkway. The path enhances walking and cycling accessibility for students travelling from the west.

Figure 1–11 Proposed Aquatic Drive shared path



Source: Northern Beaches Council, 2021

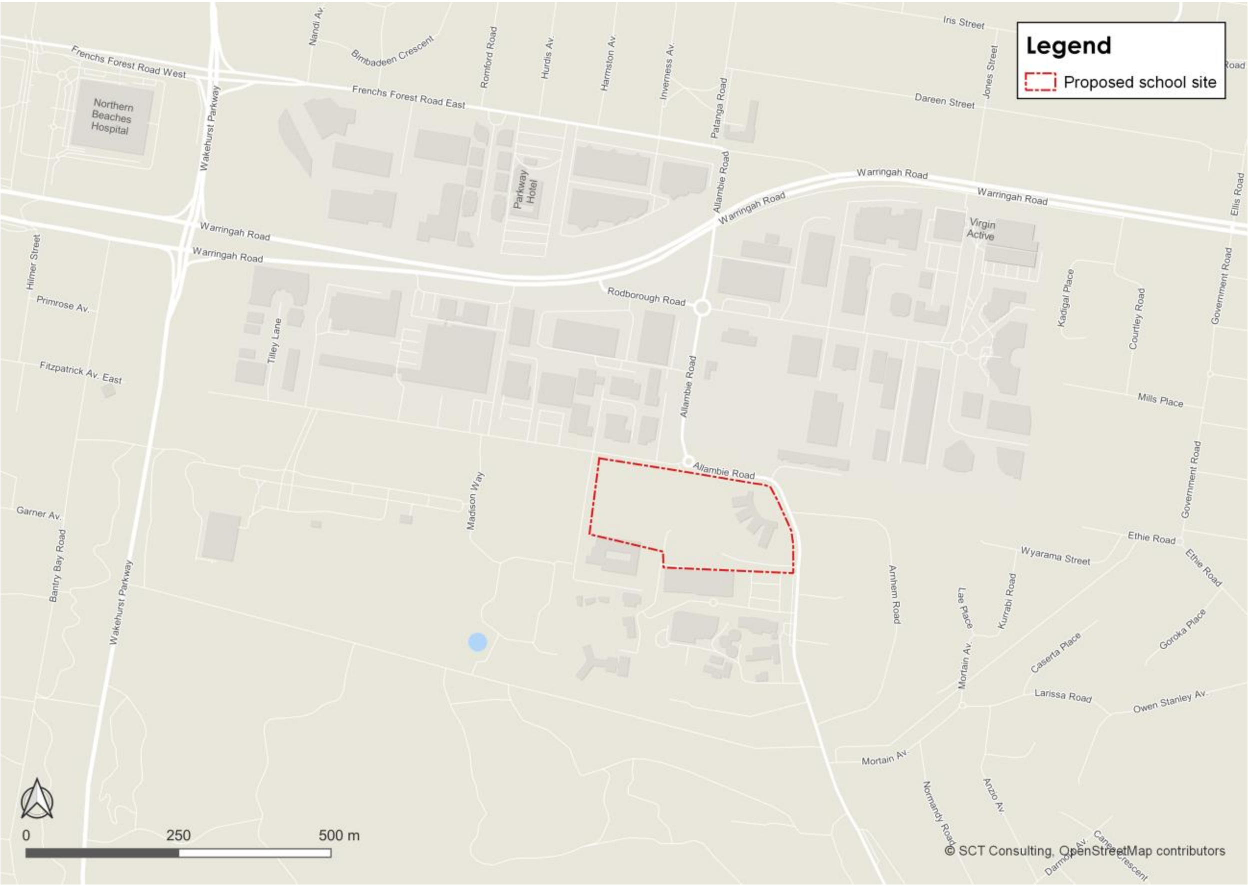
The existing crossing location to the site is via the roundabout on Allambie Road / Aquatic Drive. A pedestrian refuge is located on the western arm of the roundabout with raised median strips on the others.

2.0 Existing conditions

2.1 The site location

The proposed new site, as identified in **Figure 2–1,** for the Forest High School is Allambie Road, Allambie Heights. The property is legally identified as Lot 750 DP 1271174, Lot 751 DP 1271174, Lot 6 DP 1280781 and Lot 7 DP 1280781. The proposed site will be 16,380m^2 with a proportion of the western section containing bushland.

Figure 2–1 Site location



The site is located about 1km southeast of the Frenchs Forest Town Centre and is situated in the Northern Beaches Local Government Area. The proposed site is surrounded by Arranounbai School and the Cerebral Parsley Alliance to its immediate southwest and south respectively. The Warringah Aquatic Centre and a large area of protected bushland are situated to the west of the site. Forestbridge Business Park is located to the north and low-density housing to the east.

Due to the land use zoning and protected bushland in the vicinity of the proposed site future population growth close to the school is expected to be limited. Commercial development close to the school is forecasted with DA approval (DA2020/0717) for a Bunnings store, north of the proposed site, at Lot 1 DP 1209581, No. 357-373 Warringah Road, Frenchs Forest. The store is expected to create additional traffic generation in the area, but the peak times are not expected to align with that of the school.

2.2 Transport networks

2.2.1 Pedestrian facilities

Crossing locations and missing footpaths surrounding the site are shown in **Figure 2–2.** Beyond the immediate vicinity of the site, Allambie Road has footpaths along both sides, but the connecting residential streets located to the east of the site lack footpaths on either both or at least one side of the road.

Signalised pedestrian crossings are provided at the intersections of Warringah Road / Allambie Road, Wakehurst Parkway / Warringah Road, and Allambie Road / Mortain Avenue in the vicinity of the school. Pedestrian refuge islands in the surrounding areas provide some level of protection while crossing but do not provide any pedestrian priority.

Figure 2–2 Walking infrastructure in proximity to the site

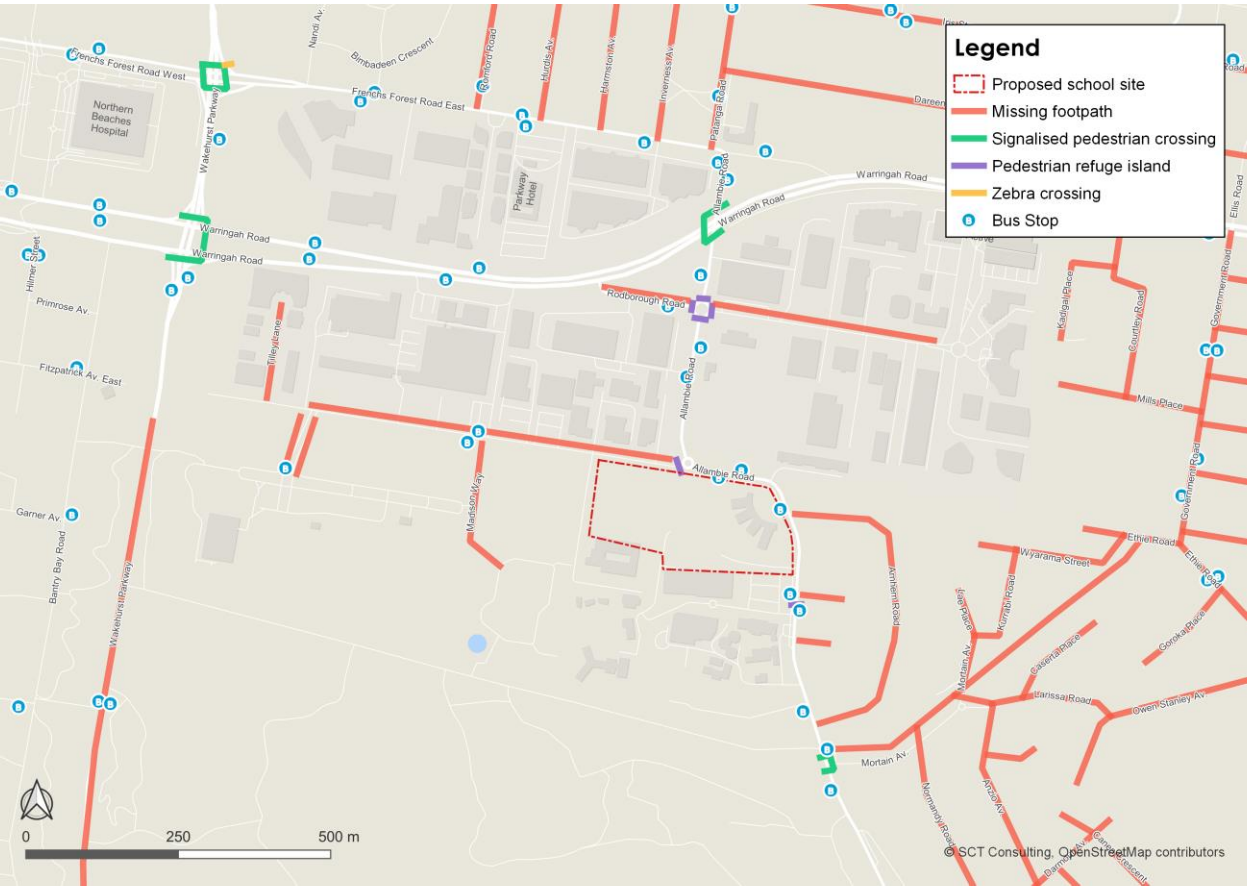
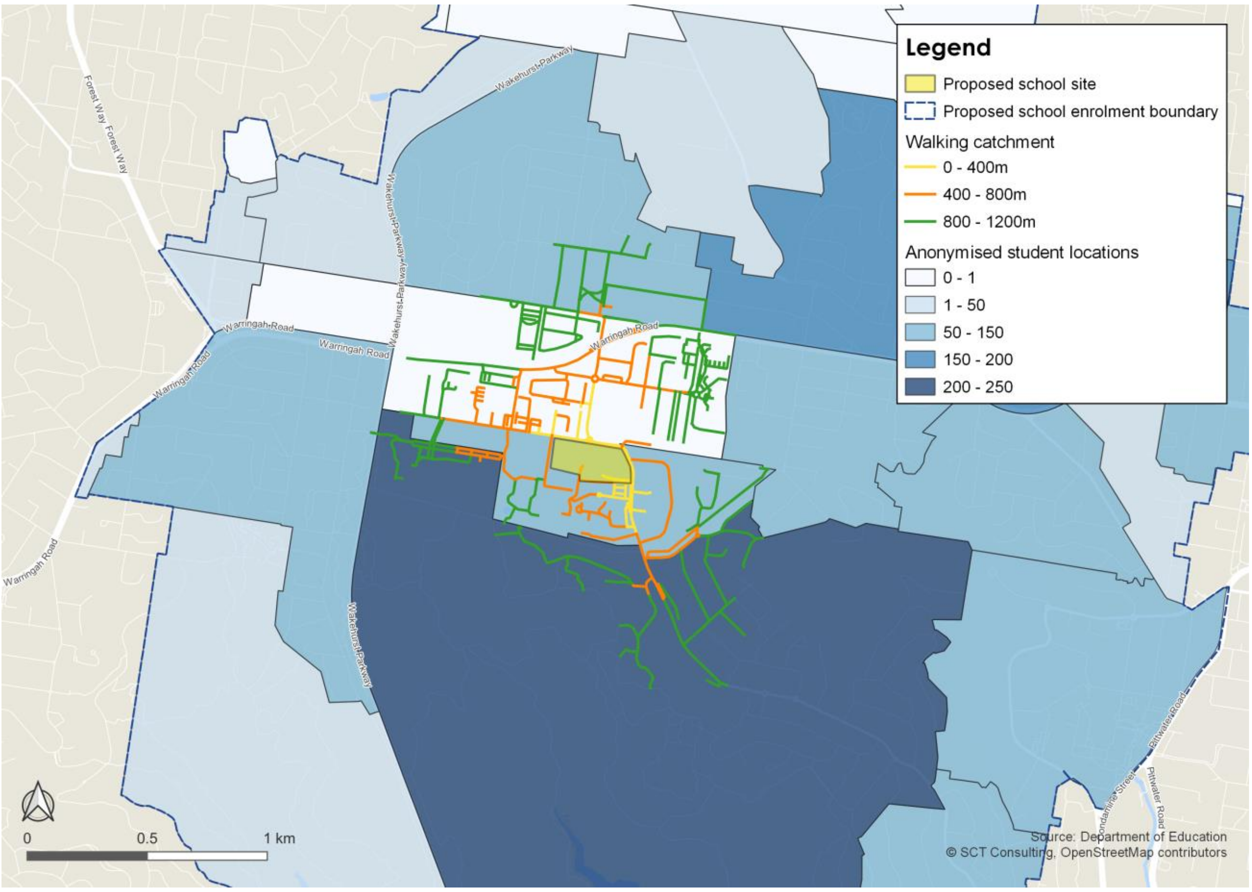


Figure 2–3 shows the walking catchment for the proposed site. The area located immediately north of the site has the best walking coverage but forms part of the Forestbridge Business Park and has no existing or planned residential premises. The areas of low-density housing to the east and south of the site offer the best opportunities for walking to school as they are situated within the 400-800m and 800-1,200m walking distance equating to a 10 / 15-minute walk.

Figure 2–3 Walking catchment for the proposed site



2.2.2 Cycling network

Figure 2–4 shows the locations of the shared pedestrian/cycle paths and road shoulder cycle lanes close to the school. Road shoulder cycle lanes are provided on both sides of Allambie Drive connecting Allambie Road/Aquatic Drive to the north and Condamine Street/Kentwell Road to the southeast. The road shoulder routes are designated ‘Regional Routes’ and form part of the Northern Beaches Cycle Network.

The provision of shared pedestrian/cycle paths along Allambie Road and Aquatic Drive, Warringah Road, and Aquatic Drive indicates students by bike do not need to mix with cars, bringing safety benefits for both students/teachers cycling to school. However, this is not free from safety risks, as people who ride often move at faster speeds than pedestrians and can cause injury. This is often the case because the footpaths provided are minimum width and minimise room for manoeuvring.

Similar to the pedestrian network, the cycling network also lacks priority crossings. This is less of an issue due to long uninterrupted bicycle paths in the network but could still be seen as a deterrent to cycling in the area.

Additionally, NSW legislation permits children under the age of 16 and accompanying adults to ride on footpaths, allowing young riders to avoid risks of conflict with vehicle traffic. As this is a high school, most students will be permitted to use footpaths where bicycle paths don’t exist.

Figure 2–4 Cycling infrastructure in proximity to the proposed site

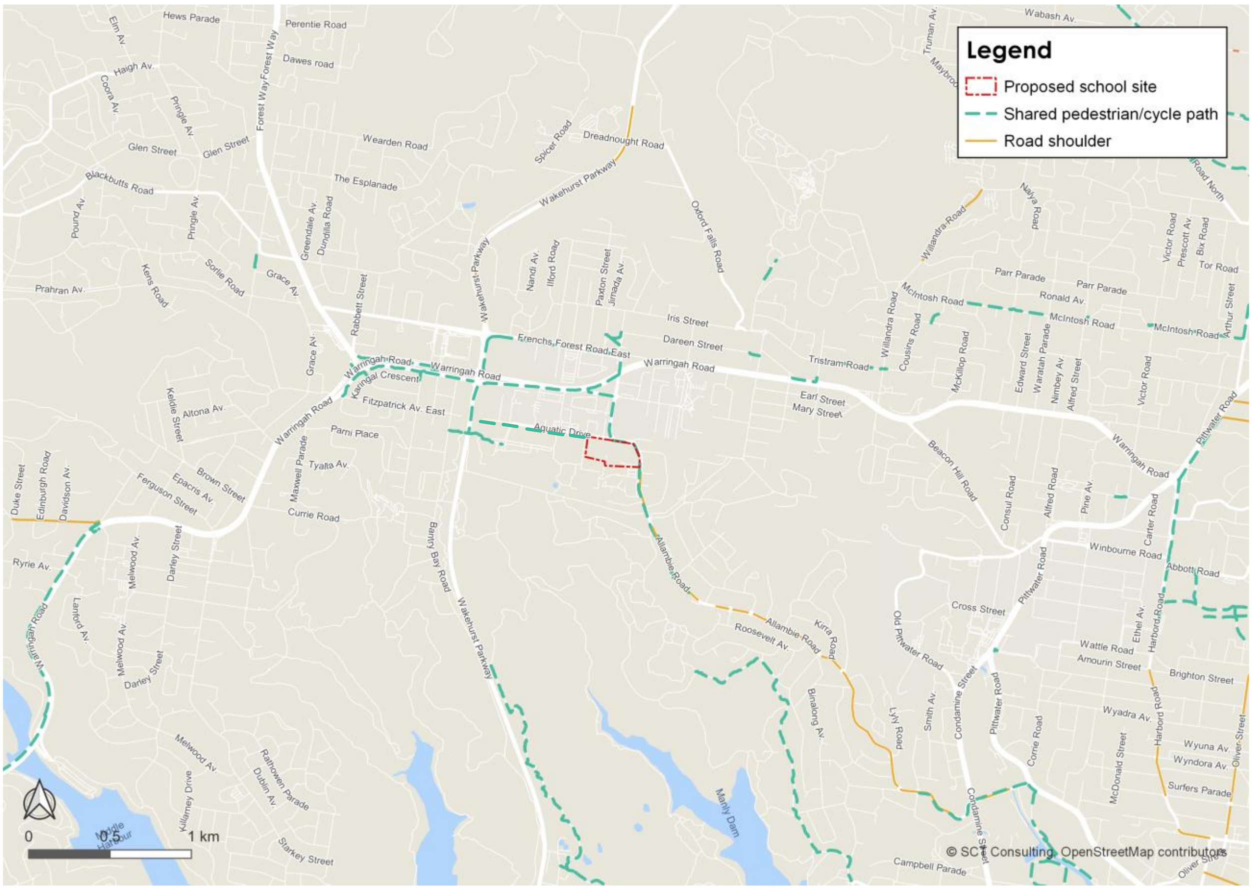
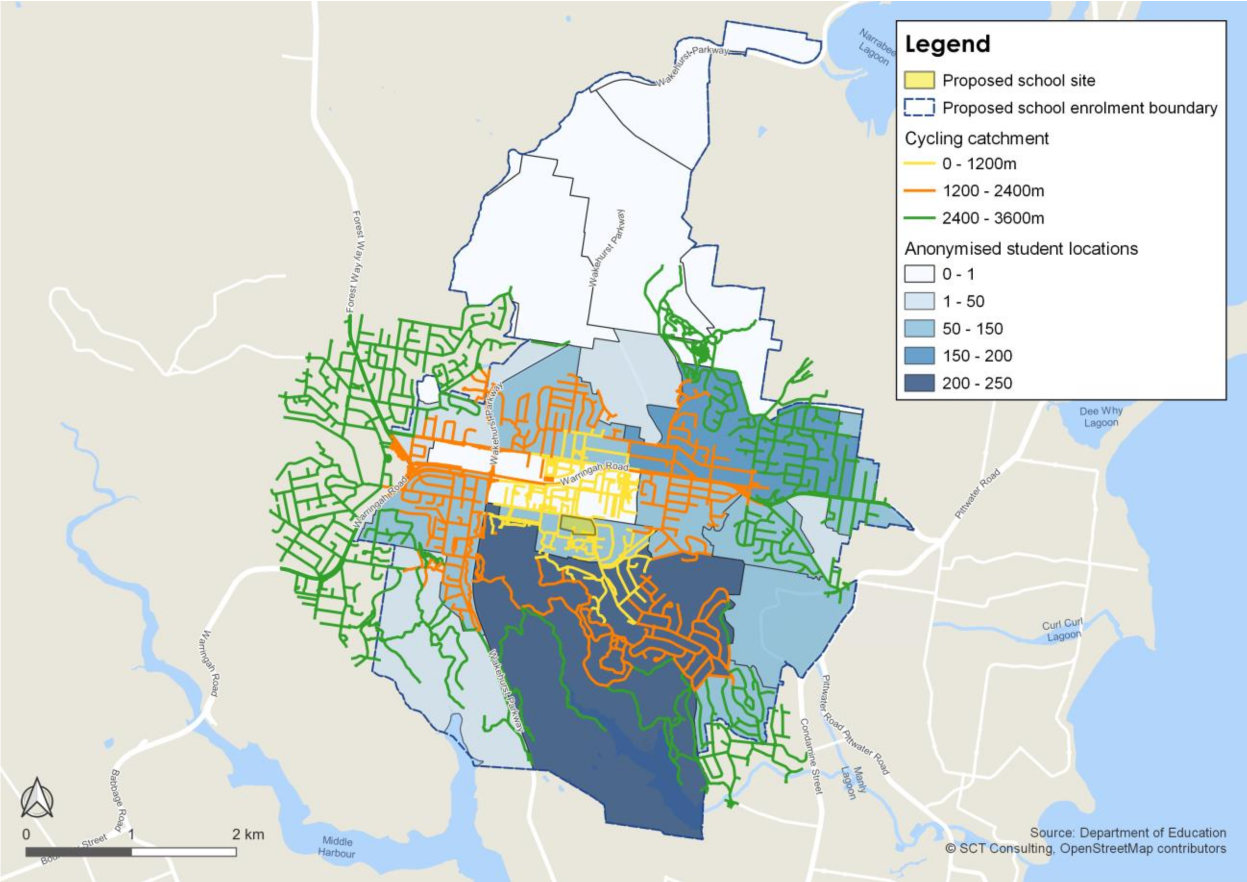


Figure 2–5 shows the biggest opportunity to encourage students to cycle to school is the areas to the west of the site. Those areas are located outside the ideal walking distance but within a comfortable cycling distance. Completion of a shared path by the Northern Beaches Council along Aquatic Drive would connect with a walking/cycling bridge over the Wakehurst Parkway to the mostly residential suburb of Forestville. Future residential development at the existing school site will also be able to take advantage of the route by using the walking/cycling bridge over Warringah Road and then cycling along the residential streets towards the pre-described route.

The area to the south of the site has a challenging gradient which may limit students who want to cycle on a conventional bicycle. Advances and wider uptake of electric bicycles could lead to cycling becoming more accessible in the future.

Figure 2–5 Cycling catchment to the proposed site



2.2.3 Public transport

The proposed site has a bus frequency of one bus every 5-7 minutes in AM peak (8-9am). As indicated in **Figure 2–6**, the main public bus services are the 142 (Manly to Skyline Shops) and the 280 (Warringah Mall to Chatswood). The 174x runs a limited PM peak service (3-5pm) to Narraweena only stopping at the bus stop located to the east of the site on Allambie Road. In addition to the public bus routes are the school bus routes currently serving the existing site. Currently, there are 11 dedicated services for The Forest High School which could be diverted to the new site on Allambie Road when the school relocates.

Figure 2–6 bus routes and services in proximity to the proposed site

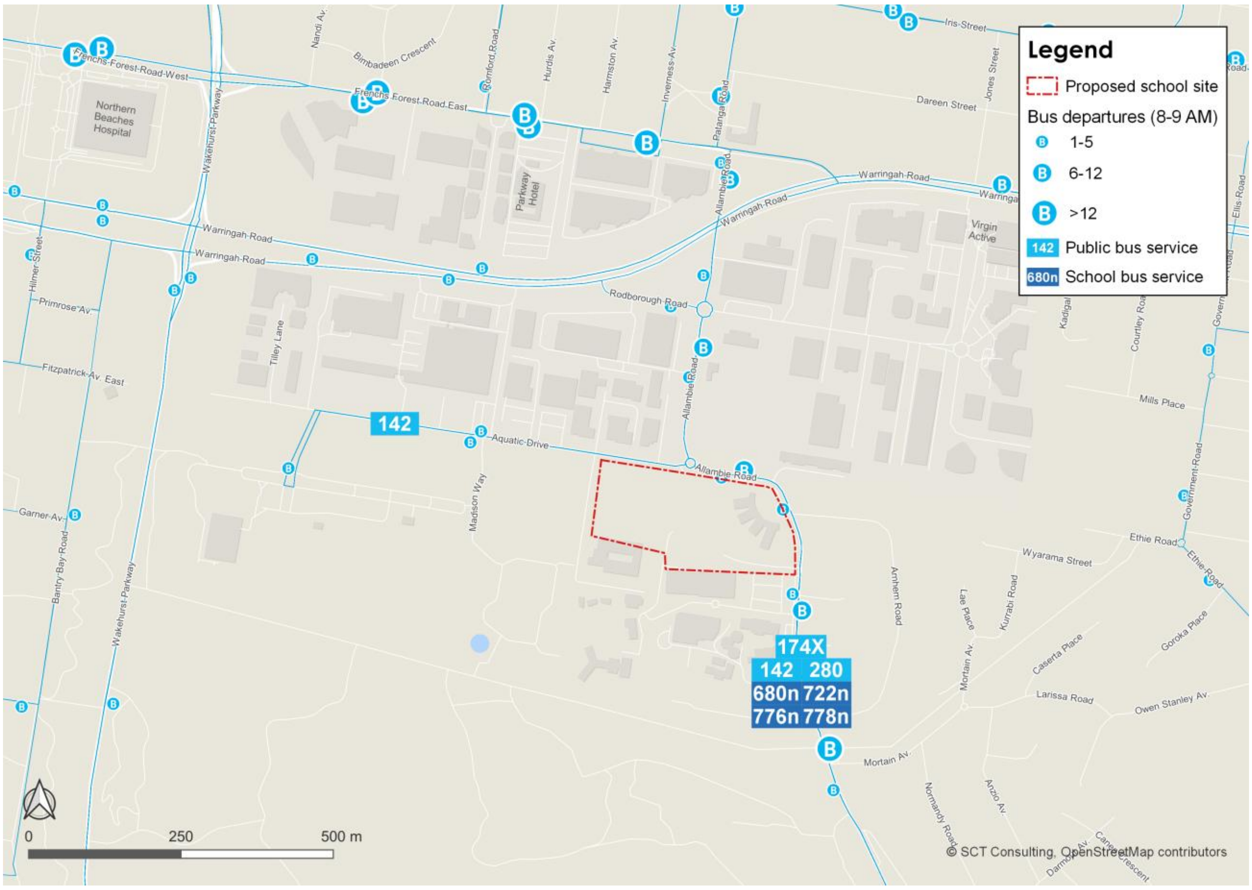
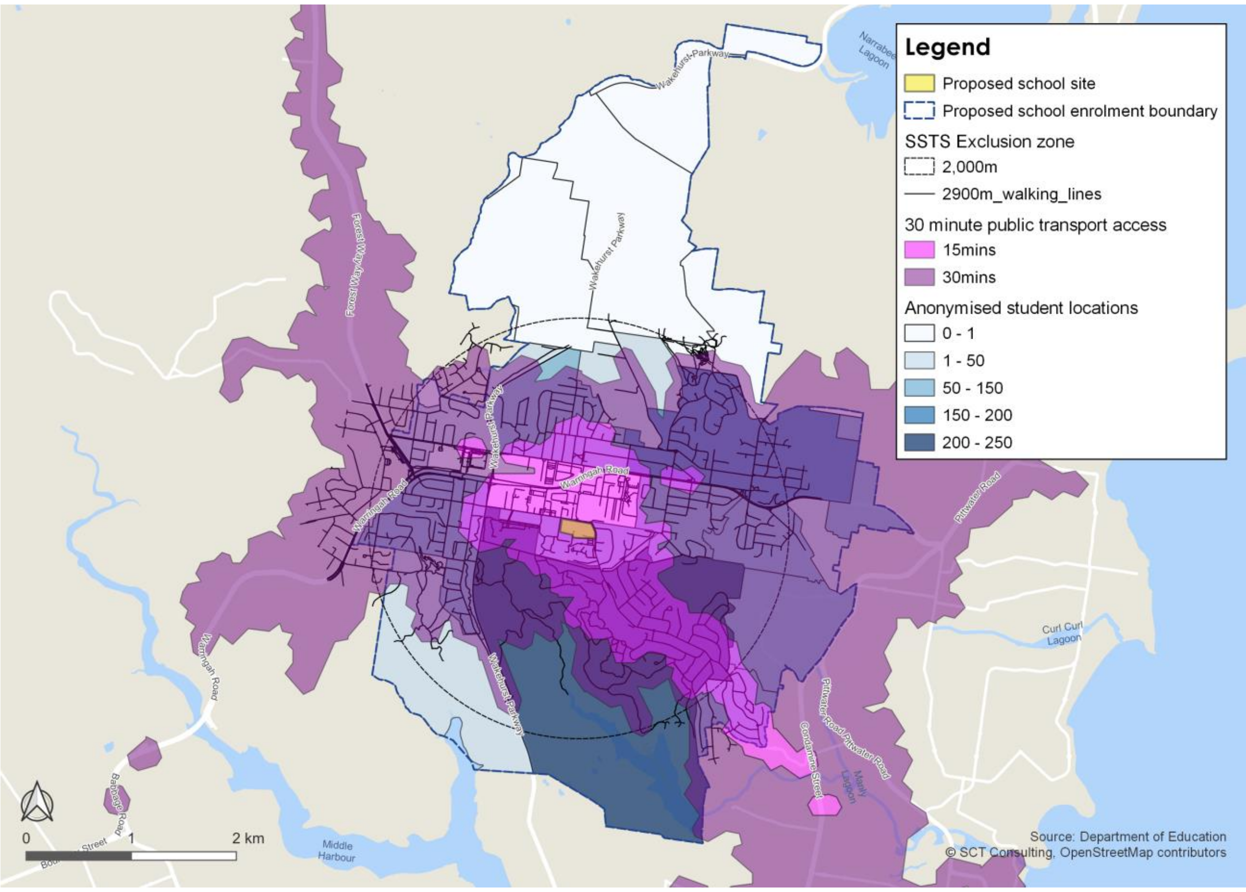


Figure 2–7 shows most students would be able to reach the school within 30 minutes on the bus. For some students, this may involve changing buses at Frenchs Forest Road to reach the proposed site. This could be the situation for students who would be situated in the suburbs of Brookvale and Beacon Hill to the west of the enrolment boundary, However, as most of the inhabited areas of the school enrolment boundary are within the SSTS exclusion area; 2000m as the crow flies, 2,900m on a path for secondary school students, the attractiveness of travelling by bus may be less due to both cost and required travelling time.

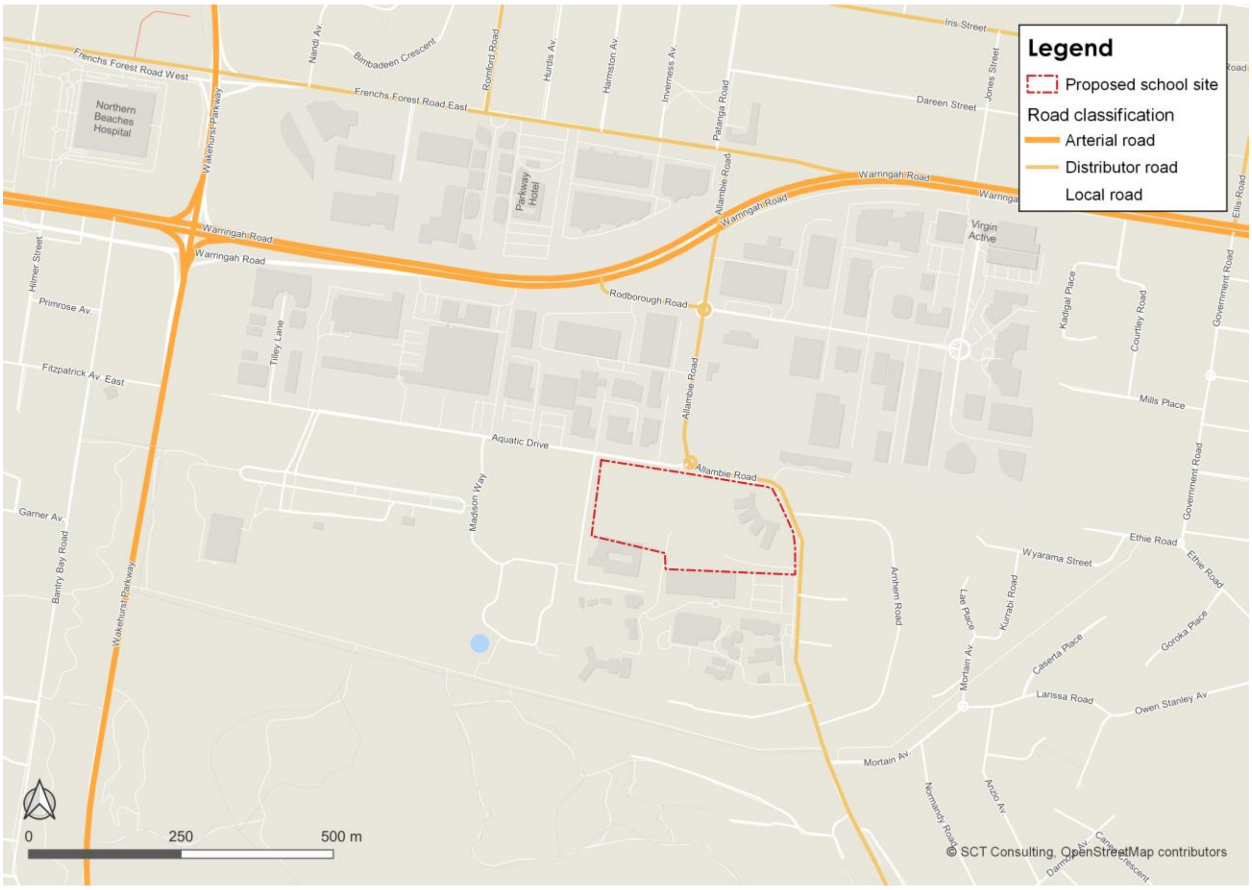
Figure 2–7 Public transport catchment to the proposed site



2.2.4 Road network

The main roads in the vicinity of the school include Warringah Road, Allambie Road, and Aquatic Drive. The road network surrounding The Forest High School is shown in **Figure 2–8**.

Figure 2–8 Road hierarchy



The characteristics of the roads surrounding the school are:

- **Warringah Road** is an arterial road to the north of the site that runs in an east-west direction between Pittwater Road to the east and Babbage Road to the west. It links the suburbs of Roseville Chase, Forestville, Frenchs Forest, and Dee Why. It connects vehicles accessing the site from the north while operating mostly as a three-lane dual carriageway with a speed limit of 70km/h. It is a clearway on the weekdays from 6 am to 7 pm and at weekends / public holidays from 9am to 6pm. Warringah Road carried 54,767 vehicles per day in 2022 so far[1]
- **Allambie Road** is a two-lane, single-carriageway distributor road connecting Frenchs Forest Road in the north and Kentwell Road in the south. It has a dedicated cycle lane in both directions. The road operates with a speed limit of 60km/h. To the north of the site, Allambie Road connects to Aquatic Drive via a roundabout. Allambie Road carries about 14,000-17,000 vehicles per day[2]
- **Aquatic Drive** is a two-lane, single-carriageway local road connecting Wakehurst Parkway in the east with Allambie Road in the west. Dedicated cycle lanes are provided in both directions. The road has a school zone with a speed limit of 40km/h during school hours and 50km/h outside of the school zone. Aquatic Drive carries about 5,000-6,000 vehicles per day.

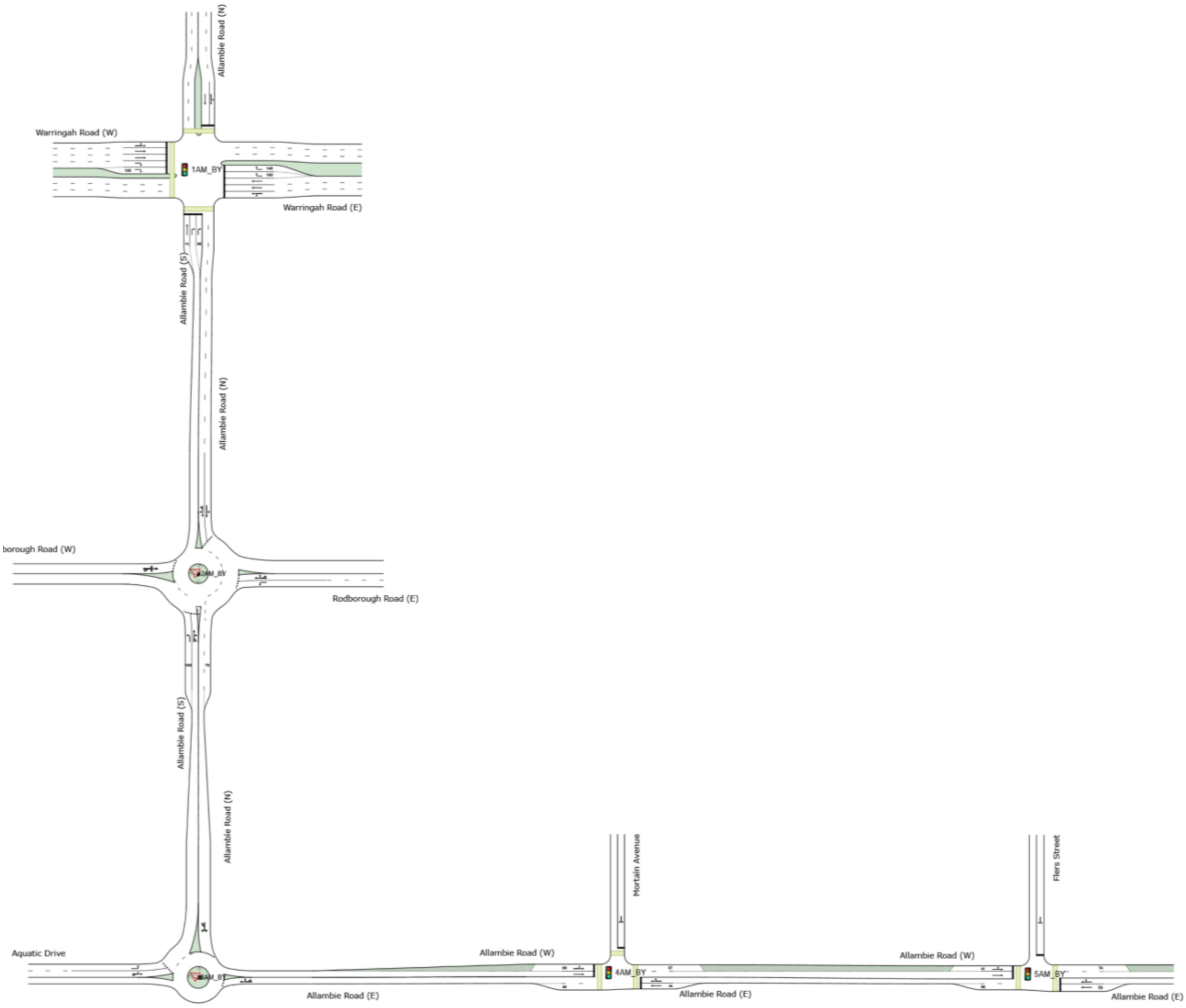
Pedestrian volumes in the transport network are low, with less than 10 pedestrians per hour on all crossings.

[1] TfNSW Traffic Volume Viewer
[2] Intersection turning count surveys factored up by 10

2.2.5 Existing intersection performance

Traffic network performance was measured for this assessment using SIDRA Network 9.0 for key intersections surrounding the new school. The study area is shown in **Figure 2–9**.

Figure 2–9 Existing intersection layouts



Source: SIDRA, SCT Consulting, 2022

The model covers:

- Allambie Road / Warringah Road: a traffic signal-controlled intersection that joins the state road Warringah Road to the regional road, Allambie Road
- Allambie Road / Rodborough Road: a roundabout that joins the regional road Allambie Road to the Local Road Rodborough Road
- Allambie Road / Aquatic Drive: a roundabout between Allambie Road and the Local Road Aquatic Drive
- Allambie Road / Mortain Avenue: a signalised intersection between Allambie Road and Mortain Avenue, which is a Local Road
- Allambie Road / Fleurs Street: a signalised intersection between Allambie Road and Fleurs Street, which is a local road.

These intersections were r based on the Northern Beaches Council's commentary in the request for the Secretary's Environment Assessment Requirements.

2.2.5.1 SIDRA Network development and calibration

Data was collected from traffic surveys and from TfNSW to support the development of the SIDRA Network models (**Table 2-1**).

Table 2-1 SIDRA Network Model Inputs

Data type	Details	Locations
Turning movement counts	Conducted 7.00 – 9.00 am and 2.30 – 4.30 pm Classified to light, heavy, cyclists and pedestrians Conducted on 1 December 2021	Allambie Road / Warringah Road Allambie Road / Rodborough Road Allambie Road / Aquatic Drive Allambie Road / Mortain Avenue Allambie Road / Fleurs Street.
Queue length surveys	Conducted 7.00 – 9.00 am and 2.30 – 4.30 pm Classified to light, heavy, cyclists and pedestrians Conducted on 1 December 2021	Allambie Road / Rodborough Road
SCATS data	TfNSW provided extracted intersection and subsystem data (plan details, minimum green times, link plans), phasing history, volume detector counts, SCATS graphic Conducted on 1 December 2021	Allambie Road / Warringah Road Allambie Road / Mortain Avenue Allambie Road / Fleurs Street.

Source: SCT Consulting, 2022

The date of 1 December 2021 was during the COVID-19 pandemic but was not during a time of lockdown.

Intersection geometry was determined from a combination of site visits and satellite imagery.

Models were prepared in consultation with Transport for NSW and Northern Beaches Council and under the TfNSW Traffic Modelling Guidelines.

During model calibration, TfNSW provided comments on the calibration of Allambie Road / Warringah Road. These comments were all closed before testing the existing network performance (**Table 2-2**).

Table 2-2 Calibration details

TfNSW Comment	Response	Status
Walk clearance times are not long enough, clearance times need to be entered manually.	**Completed**. Walk time set to 6 seconds as per SCATS. Clearance one and two times for each crossing adjusted as per SCATS data	Closed
Cycle time has been entered as either individual phase times or as 154s CT. Should be set to 160s as sits on 160 most of the time in peak times.	**Completed for AM** - AM Phase times adjusted to a 160-second cycle time using SCATS periodic statistics. Sub System 5 SCATS cycle times are closer to 150 **seconds, so 160s was not adopted in the PM.** An upper limit of 160 seconds will be used for scenario testing.	Closed
AM is running E phase for 8% longer than SCATS maximum. This needs to be re-checked after addressing the above issues.	**Completed**. Phase times returned to SCATS historical data.	Closed
Late starts and pedestrian protection need to be entered as per SCATS.	**Completed**. The default method is used in SIDRA based on priority allocation for pedestrian phases. It is noted that the pedestrian crossings across Warringah Road and the crossing on the southern end of Allambie Road are not in high demand.	Closed

TfNSW Comment	Response	Status
MF values in SIDRA indicate base saturation may be too low in some instances.	**Completed**. SIDRA uses a default saturation flow of 1950 pcu/h for each lane. Saturation flow for Warringah Road east and westbound, as well as Allambie Road northbound, were adjusted within a ± 10% range to match SCATS MF data. Refer email attached from SIDRA, which explains that adjustments should be "within a reasonable range". We've selected ± 10% arbitrarily but think this represents a reasonable upper/lower limit to avoid overfitting. As a result, the SIDRA "SCATS MF" values do not always perfectly match SCATS. We've assumed that the Saturation flow can vary by lane but not by peak period.	Closed
Gap acceptance has been increased for left and right turns off Warringah Road. I do not understand the need to change this as right turns are not filtered and left turn run unopposed, apart from pedestrian for both left and right. Was this to calibrate the effect of pedestrian protection by using gap acceptance parameters?	Because these don't impact the SIDRA operation (the movements never give way to other vehicle movements), there is no practical impact to these changes. They haven't been used to calibrate pedestrian protection as this is calculated by SIDRA.	Closed
Arrival type has been increased 5 on Warringah Rd. This equates top better coordination. This might be correct, but needs to be justified, as its effect is very significant on the operation of the intersection.	The justification is the close spacing of other signals on the corridor. It is expected that TfNSW coordinates signal primarily east-west rather than north-south at Warringah Road / Allambie Road.	Closed
There is a reduced start loss from 3s to 2s. Is this as per SCATS?	**Completed**. The default method used in SIDRA based on priority allocation for pedestrian phases. It is noted that the pedestrian crossings across Warringah Road and the crossing on the southern end of Allambie Road are not in high demand.	Closed
There are reduced minimum greens from 6s to 3s. Is this as per SCATS?	**Completed**. This was originally adopted to allow for testing of SCATS diamond phase operation, which SIDRA can find difficult to replicate. We have found another way of replicating this and have reverted to 6s.	Closed
Pedestrian actuation at Warringah Rd has been lowered to 10% is this as per site observations?	This is per SCATS history files	Closed
All signalised sites are very far away (between 600m and 1km). Is there any benefit to a network analysis?	Perhaps not but there is no harm in including them in the network analysis. It also allows for a simpler visual representation of the network for reporting.	Closed

Source: SCT Consulting, 2022

Queue lengths at the intersection of Aquatic Drive / Allambie Road were validated against the survey. The results of this validation are shown in **Table 2-3**.

Table 2-3 Queue length calibration (number of vehicles)

Approach	8.00-9.00 AM			2.30-3.30 PM		
	Modelled	Actual	Difference	Modelled	Actual	Difference
North	14.6	13	+1.6	6.8	8	-1.2
East	10.4	7	+3.4	6.8	9.0	-2.2
West	5.2	6	<1	4.5	5	<1

Source: SCT Consulting, Matrix, 2021

The queues were met so far as could be achieved without having different gap acceptance parameters in the morning and evening peaks. Queue lengths are highly similar, with the largest difference being 3.4 vehicles.

2.2.5.2 Existing network performance

Operational performance is typically measured through an assessment of the throughput of vehicles across a traffic network, with the average delay per vehicle used to assess the performance of an individual intersection. The average delay per vehicle measure is linked to a Level of Service (LoS) index which characterises the intersection's operational performance. **Table 2-4** provides a summary of the LoS performance bands.

In addition, intersection performance is measured using Degree of Saturation (DoS), which is a measure of the spare capacity of each intersection.

Table 2-4 Level of Service index

Level of Service	Average Delay per Vehicles (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 method.
F	70.5 or greater	At capacity, at signals incidents will cause excessive delays. Roundabouts require other control method.

Source: Guide to Traffic Generating Developments; RMS; 2002

The intersection Level of Service does not capture well the performance of the transport network for pedestrians. Pedestrians are typically excluded from the Level of Service metric.

The intersection performance for the 2021 existing conditions is shown in **Table 2-5**.

Table 2-5 Intersection performance for existing conditions (2021)

Intersection	Intersection type	Volume (veh/H)	Degree of Saturation	Delay (sec)	95th % queue (m)	LoS
AM peak 8.00-9.00am						
Allambie Rd / Warringah Rd	Signal	5,755	0.90	48.7	421.9	D
Allambie Rd / Rodborough Rd	Roundabout	2,444	0.65	19.4	48.2	B
Allambie Rd / Aquatic Dr	Roundabout	1,954	0.87	17.0	106.5	B
Allambie Rd / Mortain Ave	Signal	1,627	0.68	11.5	93.5	A
Allambie Rd / Fleurs St	Signal	1,580	0.58	9.7	79.9	A
PM peak 2.30-3.30pm						
Allambie Rd / Warringah Rd	Signal	5,357	0.86	42.2	321.2	C
Allambie Rd / Rodborough Rd	Roundabout	1,885	0.55	16.4	36.5	B
Allambie Rd / Aquatic Dr	Roundabout	1,862	0.78	15.5	64.6	B
Allambie Rd / Mortain Ave	Signal	1,517	0.57	9.4	87.6	A
Allambie Rd / Fleurs St	Signal	1,505	0.44	7.4	72.2	A

Source: SCT Consulting, 2021
Delay = worst movement for priority and roundabout controlled intersections and DoS = degree of saturation of worst movement

A further change that occurred during the calibration phase was that the intersection models were adjusted to account for peak spreading. It is assumed that the drop-off and pick-up period would occur between 8.30-9.30 am and 3.00-4.00 pm. The intersection performance for the 2021 existing conditions with peak spreading is shown in **Table 2-6**.

Table 2-6 Intersection performance for existing conditions (2021), with peak spreading

Intersection	Intersection type	Volume (veh/H)	Degree of Saturation	Delay (sec)	95^{th} % queue (m)	LoS
AM peak 8.30-9.30 am						
Allambie Rd / Warringah Rd	Signal	5,375	0.84	44.2	351.8	D
Allambie Rd / Rodborough Rd	Roundabout	2,306	0.61	17.6	42.4	B
Allambie Rd / Aquatic Dr	Roundabout	1,844	0.81	15.0	78.5	B
Allambie Rd / Mortain Ave	Signal	1,536	0.62	11.0	84.2	A
Allambie Rd / Fleurs St	Signal	1,491	0.55	9.5	73.4	A
PM peak 3.00-4.00pm						
Allambie Rd / Warringah Rd	Signal	5,173	0.88	43.9	364.9	D
Allambie Rd / Rodborough Rd	Roundabout	1,742	0.50	14.9	31.0	B
Allambie Rd / Aquatic Dr	Roundabout	1,720	0.71	13.4	47.5	A
Allambie Rd / Mortain Ave	Signal	1,401	0.51	8.9	75.7	A
Allambie Rd / Fleurs St	Signal	1,390	0.40	7.2	64.7	A

Source: SCT Consulting, 2021
Delay = worst movement for priority and roundabout controlled intersections and DoS = degree of saturation of worst movement

Intersection modelling shows that:

– Intersection performance is at Level of Service D or better for all intersections, with most performing between Level of Service A and B

– The Degree of Saturation varies between 0.5 and 0.9 for most intersections.

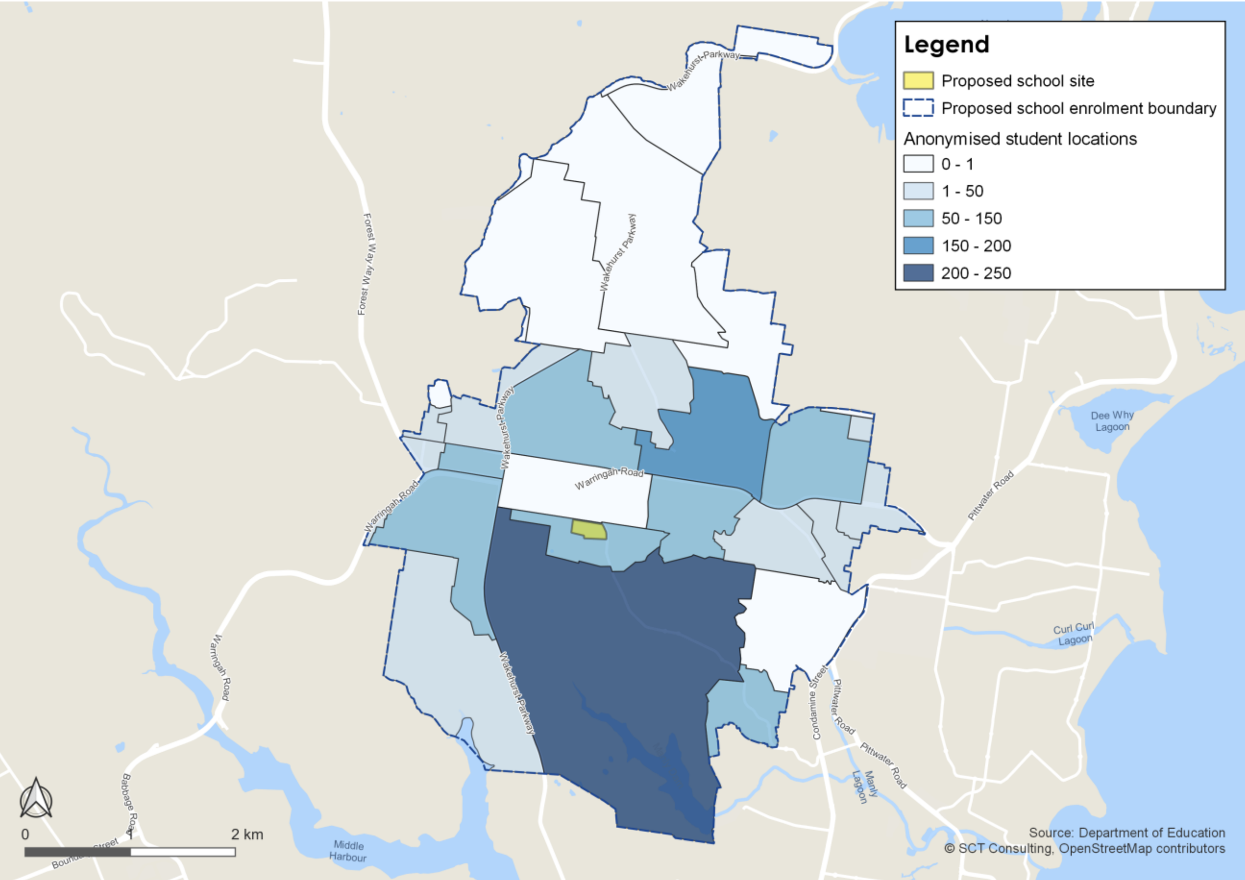
2.3 Travel demand

2.3.1 Student locations

Figure 2–10 shows the indicative anonymised locations of public school students located within the proposed school enrolment boundary. The Forest High School is being relocated within the current intake area for the high school. Intake area boundaries are updated regularly to balance enrolments equally between local schools to ensure every child in NSW has a well-resourced local public school to attend. The Department of Education will confirm any changes to intake areas closer to the school opening using the most current demographic data.

The locations of students within the school enrolment boundary are primarily influenced by a mixture of land use zoning and natural features. The northern part of the boundary is characterised by some areas of public recreation (RE1) but primarily the land zoning has been deferred (Deferred Matter) by the Warringah Local Environmental Plan 2011. The southern part of the boundary mostly consists of bushland and is zoned for public recreation (RE1) with housing mostly limited to either side of Allambie Road. The eastern and western sections are zoned low-density housing (RE2) and are where most of the students within the boundary are situated.

Figure 2–10 Anonymised student locations



2.3.2 Site visit

On 10 December 2020, SCT Consulting conducted a site visit between 7.30am and 9.00am to the existing location of The Forest High School. The site visit was to determine the car park occupancy and how students were arriving at the school.

The staff car park had a total of 138 spaces with an occupancy rate of 50 per cent. This equated to one parking space per staff member. It was noted Year 12 students were no longer in full attendance at the school, and as result, meant the car park was less occupied than at other times of the year.

Three kiss and drop spaces were situated in the western car park with parents also dropping off in the northern car park and using Frenchs Forest Road as an informal kiss and drop.

– 350 students were observed arriving at the school by the following means:

- 20% by school bus
- 25% on route 280 (that travel along Allambie Road)
- 55% on other routes (136, 141, 193).

Only a small number of students were observed walking and cycling to the school.

2.3.3 Meeting with the school principal

On 15 December 2020, SCT Consulting met with The Forest High School principal and other staff from the NSW Department of Education and School Infrastructure NSW.

The principal stated the car park is primarily reserved for staff with only a line of car parking (10 spaces) reserved for Year 12 students. The number of car parking spaces exceeds staff numbers because Transport for NSW offered to build additional parking capacity as part of a land acquisition deal with the school.

The opening of the Northern Beaches Hospital resulted in additional bus frequency stopping outside the school. In addition to the high number of out-of-enrolment students means a high proportion of the school population arrives by bus. As a result of the high bus demand and the presence of a 70m bus zone in front of the school 3-4 buses can arrive and queue simultaneously with the ability to pull in and pull out in sequence. The remaining buses filter in more sporadically.

Safety issues along Frenchs Forest Road and high school students located close to The Forest High School choosing other schools mean walking and cycling to the site is limited.

2.3.4 Local travel demand

2016 Census data taken for residents of Frenchs Forest and Allambie Heights provides insight into the travel behaviour of residents by analysing their mode choice when travelling to work. Census data suggests those the residents of those suburbs are most likely to drive in their regular commute. However, it is also important to note that the census is representative of parents and commuters rather than high school students, who can travel independently of their parents/careers.

The census results may differ from actual student travel behaviour and therefore, should not be over-relied on. The table is simply to indicate travel behaviour and occurrences of ‘trip chaining’. **Table 2-7** shows the main method of travel to work for residents of Frenchs Forest in comparison to Allambie Heights and Greater Sydney.

Table 2-7 Main methods of travel to work, 2016 Census

The main method of travel	Frenchs Forest %	Allambie Heights %	Greater Sydney %
Train	3%	2%	16%
Bus	12%	14%	6%
Car – as driver	59%	54%	61%
Car – as a passenger	4%	4%	5%
Truck	1%	1%	1%
Motorbike	1%	2%	1%
Bicycle	1%	1%	1%
Walked only	2%	4%	4%
Did not go to work	9%	10%	5%
Other	8%	8%	5%

Source: Australian Bureau of Statistics, 2021

Both Frenchs Forest, where the existing site is located, and Allambie Heights, where the proposed site is situated, have broadly similar mode shares with car travel being the dominant mode share as with the Greater Sydney average.

The bus mode shares for both suburbs are much higher than the Greater Sydney average due to a combination of high-frequency bus corridors and the limited availability of other public transport options. Frenchs Forest Road facilitates a high frequency of bus routes travelling on an east-west axis between Chatswood and Dee-Why. The route includes some key destinations, such as the Northern Beaches Hospital, allowing the need to drive by car. However, low-density housing, limited commercial zoning compared to neighbouring LGAs, and the presence of the large road infrastructure such as Warringah Road encourages driving and restricts investment in larger public transport options such as Train, Light Rail or Metro.

Allambie Road has a bus frequency of one bus every 5-7 minutes in AM peak (8-9 am) and a similar number in the PM peak (. As indicated in **Figure 2–6**, the main public bus services are the 142 (Manly to Skyline Shops) and the 280 (Warringah Mall to Chatswood). The 174x runs a limited PM peak service (3-5 pm) to Narraweena only stopping at the bus stop located to the east of the site on Allambie Road

Walking and cycling levels are mostly consistent with the Greater Sydney average but lower than some neighbouring suburbs and LGAs. This could be due to both suburbs having no core commercial centres, the low-density housing composition, and challenging topography which can limit the uptake of both walking and cycling.

2.3.5 School travel behaviour

The travel behaviour and mode share for the existing school site were collected through an on-site study visit and a meeting with The Forest High School principal.

3.0 Analysis of strategic context and existing transport networks / demands

3.1 Testing school transport targets

3.1.1 Executive summary of the mode share scenarios

The mode share analysis was conducted using both the anonymised student locations for public school students currently located in the proposed school enrolment boundary for The Forest High School and the NSW Department for Planning, Industry and Environment's Common Planning Assumptions for the suburbs surrounding the school site. The Common Planning Assumptions (CPA) are based on existing and predicted demographic trends across NSW between 2016 and 2056. The data source indicates where and how many students The Forest High School should be able to accommodate.

A combination of the different data sources, as well as calibration against the existing mode shares (**Section 2.3.2**), resulted in the following scenarios being proposed:

- Short-term base case
- Long-term base case
- Long-term moderate case
- Long-term stretch case.

The long-term base case scenarios all require the implementation of infrastructure, policy, and management initiatives to achieve the targets. **Table 3-1** shows the mode share targets for the different scenarios:

Table 3-1 Summary of the mode share scenarios

Scenario		Walk	Bicycle / scoot	Bus	Car
Existing conditions	#	25	18	360	397
	%	3%	2%	45%	50%
Short-term base case	#	47	26	284	443
	%	6%	3%	36%	55%
Long-term base case	#	66	66	472	936
	%	4%	4%	31%	61%
Long-term moderate case	#	66	182	600	692
	%	4%	12%	39%	45%
Long-term stretch case	#	99	182	600	659
	%	6%	12%	39%	43%

Source: SCT Consulting, 2022

Alterations to the school enrolment boundary and the forecasted population growth in the vicinity of the school site mean the capacity limit of the school will increase from 800, as used in the short-term base case, to 1,500 students after several years of operation.

3.1.2 Existing mode share

Following the site visit and discussion with the principal the mode share for the existing site was calculated and is displayed in **Table 3-2**.

Table 3-2 Existing mode shares

Travel mode	Frequency	Percentage
Walk	25	3%
Cycle / Scoot	18	2%
Bus	360	45%
Car	397	50%
Total	**800**	**100%**

3.1.3 Short-term base case scenario

The short-term base case scenario is based on the relocation of The Forest High School from the existing site to the proposed site. Compared with the existing site a higher proportion of students are within walking and cycling distance. This results in the walking mode share doubling when the school becomes operational. The bus mode share is expected to decrease as a greater number of students will be located within the SSTS exclusion zone and bus frequencies are lower than at the existing site.

Table 3-3 outlines the mode shares and population allocations for the short-term base case scenario.

The short-term base case generates:

– 585 vehicles total per pick up / drop off period (0.73 per student). These are one-way trips, meaning that cars are counted when they go to the site and then again when they leave. This calculation includes staff.

– A peak period traffic generation of 468 vehicles per hour, assuming 90% of students arrive during the peak and that staff arrive outside of student peaks.

– A daily traffic generation for the school of 1,170 vehicles.

Table 3-3 Short-term base case scenario

Catchment	Notional as the crow flies		Actual on path		Reference number	Allocation			
	#	%	#	%		Walk	Bicycle	Bus	Car
1-400m	14	2%	15	2%	15	80%	0%		
400-800m	32	4%	16	2%	16	60%	10%		
800-1,200m	74	9%	64	8%	64	40%	30%		
0-1,200m (up to 15 min walk)	120	15%	95	12%	95				
2,000m crow flies / 2,900m on path (excl form SSTS Secondary)	239	30%	261	33%	261		2%	37%	
Eligible for SSTS	561	70%	539	67%					
Located within a 400m buffer of a school bus stop	636	80%	350	44%	375			50%	
Located within an 800m buffer of a school bus stop	800	100%	760	95%					
Projected number of students						**47**	**26**	**284**	**443**
Projected mode share						**6%**	**3%**	**36%**	**55%**

Assumptions:

– School is relocated without any investment in the transport network

3.1.4 Long-term base case

The long-term base scenario is aligned with the forecasted increase in the student population (800 to 1,500) and their proposed places of residence based on the NSW Department of Planning, Industries, and Environment's Common Planning Assumptions. The Common Planning Assumptions data was organised using 2016 Travel Zone boundaries to estimate the origins of future student locations.

The only infrastructure assumption which has been made is the delivery of the shared path along the southern boundary of Aquatic Drive by the Northern Beaches Council (this was in construction when the mode share estimation work was underway).

Table 3-4 outlines the mode shares and population allocations for the long-term base case scenario.

The analysis indicates that due to the new population occurring outside of a walking or cycling catchment, the school increases in private car mode share. This is without any of the interventions proposed in this project.

The long-term base case generates:

- 1,222 vehicles total per pick up / drop off period (0.79 per student). These are one-way trips, meaning that cars are counted when they go to the site and then again when they leave. This calculation includes staff.
- A peak period traffic generation of 990 vehicles per hour, assuming 90% of students arrive during the peak and that staff arrive outside of student peaks.
- A daily traffic generation for the school of 2,444 vehicles.

Table 3-4 Long-term base case scenario

Catchment	Notional as the crow flies			Actual on path			Reference number	Allocation			
	#	Δ	%	#	Δ	%		Walk	Bicycle	Bus	Car
1-400m	23		1%	4		0%	4	80%	0%		
400-800m	124		8%	19		1%	19	60%	10%		
800-1,200m	268		17%	129		9%	129	40%	30%		
0-1,200m (up to 15 min walk)	415		27%	152		10%	152				
2,000m crow flies / 2,900m on path (excl form SSTS Secondary)	1054	+148	68%	1276	+148	85%	1276		2%	37%	
Eligible for SSTS	675		44%	837		56%					
Located within a 400m buffer of a school bus stop	1366	+148	89%	1154	+148	77%	90			50%	
Located within an 800m buffer of a school bus stop	1500	+148	100%	1449	+148	97%	4				
Projected number of students								**66**	**66**	**472**	**936**
Projected mode share								**4%**	**4%**	**31%**	**61%**

Assumptions:

- School is relocated without any investment in the transport network
- Population increases per the common planning assumptions
- Delivery of the shared path along the southern boundary of Aquatic Drive by the Northern Beaches Council.

3.1.5 Long-term moderate case (preferred)

To mitigate the impacts of the school, a moderate mode shift case was developed that was based on transport encouragement programs and investment in upgrades around the school that would facilitate walking and cycling.

The moderate case was ultimately selected to inform the implementation and impact assessment of the school. The stretch case relied on the signalisation of Rodborough Road / Allambie Road, which was not supported by Transport for NSW due to safety and car impacts.

The results of the mode share analysis are shown in **Table 3-5**. These results build on the base case and adjust it based on the increased propensity to walk, cycle, and take public transport afforded by the investments.

The long-term moderate case generates:

– 935 vehicles total per pick up / drop off period (0.60 per student). These are one-way trips, meaning that cars are counted when they go to the site and then again when they leave. This calculation includes staff.

– A peak period traffic generation of 733 vehicles per hour, assuming 90% of students arrive during the peak and that staff arrive outside of student peaks.

– A daily traffic generation for the school of 1,870 vehicles.

Table 3-5 Long-term moderate case scenario

Catchment	Notional as the crow flies			Actual (on path)			Reference number	Allocation			
	#	Δ	%	#		%		Walk	Bicycle	Bus	Car
1-400m	23		1%	4		0%	4	80%	0%		
400-800m	124		8%	19		1%	19	60%	15%		
800-1,200m	268		17%	129		9%	129	40%	40%		
0-1,200m (up to 15 min walk)	415		27%	152		10%	152				
2,000m crow flies / 2,900m on path (excl form SSTS Secondary)	1054	+148	68%	1276	+148	85%	1276		10%	47%	
Eligible for SSTS	675		44%	837		56%					
Located within a 400m buffer of a school bus stop	1366	+148	89%	1154	+148	77%	90			70%	
Located within an 800m buffer of a school bus stop	1500	+148	100%	1449	+148	97%	4				
Projected number								**66**	**182**	**600**	**692**
Projected mode share								**4%**	**12%**	**39%**	**45%**

Assumptions:

- Population increases per the common planning assumptions
- Shared path delivery by Council
- Transport encouragement programs (refer to **Section 5.2**)
- Abundant secured bicycle & scooter parking including protection from weather
- Shared path widening to 3.0m
- Signals at Allambie / Aquatic
- Delivery of the shared path along the southern boundary of Aquatic Drive by the Northern Beaches Council.

3.1.6 Long-term stretch case

A further scenario was developed that tested additional investments in the transport network to understand their benefits to walking, cycling and public transport. This scenario adopted the signalisation of Allambie Road / Rodborough Road to improve pedestrian connectivity to the school.

The results of the mode share analysis are shown in **Table 3-6**. These results build on the base case and adjust it based on the increased propensity to walk, cycle, and take public transport afforded by the investments.

The Long-term moderate case generates:

– 896 vehicles total per pick up / drop off period (0.58 per student). These are one-way trips, meaning that cars are counted when they go to the site and then again when they leave. This calculation includes staff.

– A peak period traffic generation of 698 vehicles per hour, assuming 90% of students arrive during the peak and that staff arrive outside of student peaks.

– A daily traffic generation for the school of 1,792 vehicles.

Table 3-6 Long-term stretch case scenario

Catchment	Notional as the crow flies #	Notional Δ	Notional %	Actual on path #	Actual Δ	Actual %	Reference number	Allocation Walk	Allocation Bicycle	Allocation Bus	Allocation Car
1-400m	23		1%	4		0%	4	80%	0%		
400-800m	124		8%	19		1%	19	65%	15%		
800-1,200m	268		17%	129		9%	129	45%	40%		
0-1,200m (up to 15 min walk)	415		27%	152		10%	152				
2,000m crow flies / 2,900m on path (excl form SSTS Secondary)	1054	+148	68%	1276	+148	85%	1276	2%	10%	47%	
Eligible for SSTS	675		44%	837		56%					
Located within a 400m buffer of a school bus stop	1366	+148	89%	1154	+148	77%	90			70%	
Located within an 800m buffer of a school bus stop	1500	+148	100%	1449	+148	97%	4				
							Projected number	**99**	**182**	**600**	**659**
							Projected mode share	**6%**	**12%**	**39%**	**43%**

Assumptions:

- Population increases per the common planning assumptions
- Shared path delivery by Council & bridge relocation
- Transport encouragement programs (refer to **Section 5.2**)
- Abundant secured bicycle & scooter parking including protection from weather
- Shared path widening to 3.0m
- Signals at Allambie / Aquatic
- Delivery of the shared path along the southern boundary of Aquatic Drive by the Northern Beaches Council.
- Rodborough Rd / Allambie signals
- Footpath on the southern side of Fitzpatrick Ave East from Wakehurst Parkway to Warringa Rd (554m)

3.2 Supporting scenarios with infrastructure, operations, policies & programs

The infrastructure, public transport provision, and transport encouragement programs that will help achieve the target mode share are detailed in this section.

Table 3-7 provides an overview of the infrastructure and operational requirements by scenarios. All transport upgrades and public transport service changes are proposed to occur prior to the occupancy of the new school, or otherwise agreed with Council and TfNSW. Transport encouragement initiatives are proposed to occur in the first year post occupation.

Table 3-7 Infrastructure and operational requirements

Category	Moderate case	Stretch case	Owner
Infrastructure	– Signalisation of Allambie Rd / Aquatic Dr – Zebra crossing and pedestrian fencing west approach to Rodborough Rd – Widening of the shared path to 3m (where feasible) on Allambie Road along the perimeter of the school site – Footpath along the northern side of Aquatic Drive – 182 Bicycle/Rideables parking spaces – Addition of a new bus zone on Aquatic Drive frontage of the school – Removal of the bus stop on Allambie Road (TSN 2100177) per request from TfNSW due to road safety issues – Allambie Rd bus stop on school frontage to be extended to allow for three stands (TSN 210096)	Moderate case plus: – Signalisation of Rodborough Rd / Allambie Rd – Footpath on the southern side of Fitzpatrick Ave East from Wakehurst Parkway to Warringa Rd (554m)	SINSW
Operational	– Staggered bell times – School Transport Committee – Funded Travel Coordinator – Governance arrangement as per School Transport Plan – Ridescore (if available) – Transport Access Guide – NSW Police road safety training – Tap on every time program – Bike repair quarterly on school grounds – Cycle to school competition with paid prizes (e.g. win a bike) – Bicycle skills training – Inquire into Bicycle NSW Spring Cycle Event – Bicycle network decals on paths	The same as the moderate case	SINSW & Department of Education
	– Relocation of school special routes to new school location	The same as the moderate case	TfNSW

Source SCT Consulting, 2022

3.2.1 School transport infrastructure

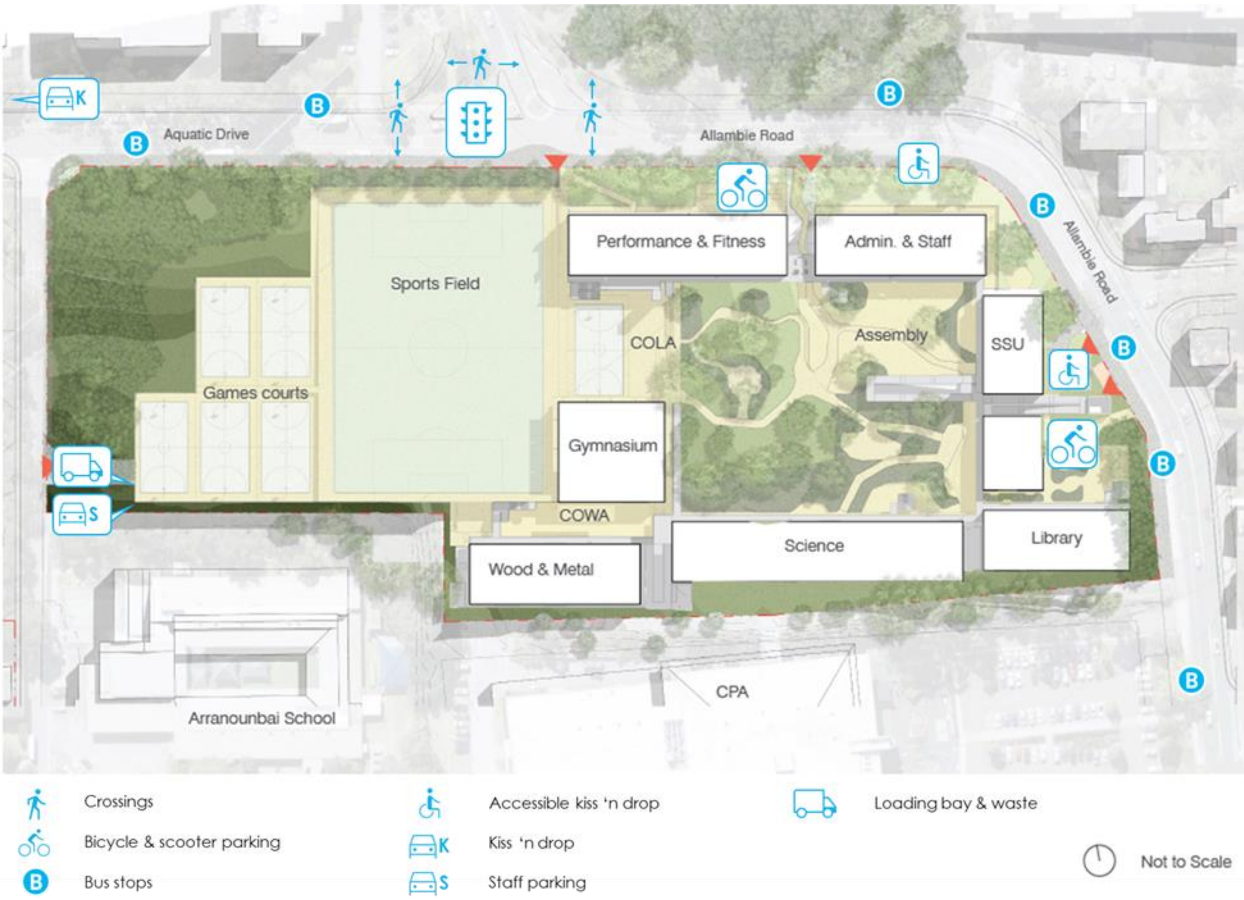
The Schematic Design provided as part of the exhibition package contains all of the details of the on-site transport infrastructure. Excerpts are provided in this report to assist in understanding the key inclusions. Readers should refer to the Schematic Design for further details. All transport upgrades and public transport service changes are proposed to occur prior to the occupancy of the new school, or otherwise agreed with Council and TfNSW. Transport encouragement initiatives are proposed to occur in the first year post occupation.

The site has been designed according to the requirements laid out in the AS2890 car parking suite and the Education Facilities Standards and Guidelines (EFSG). The design of the site is pedestrian and cycling-first. It has bicycle parking at prime locations and stops aligned with pedestrian crossings. Car parking is separated from sustainable modes of transport and sustainable modes are afforded more proximity to entry points.

This section should also be read in conjunction with **Section 5.2.9**, which provides more operational access details.

Figure 3–1 provides a summary of the key transport components of the site layout.

Figure 3–1 Transport access summary



Source: Architectus & SCT Consulting, 2022

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

Bicycle parking is provided at the northern and eastern entry points to the school (refer **to Figure 3–1** in orange). The design caters for a total of 182 rideable parking spaces, comprising:

– 61 scooter parking spaces

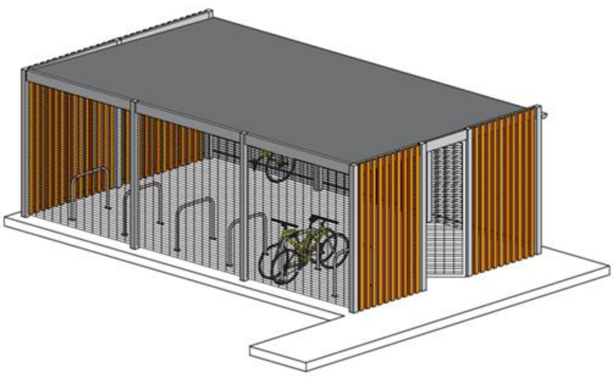
– 121 bicycle parking spaces.

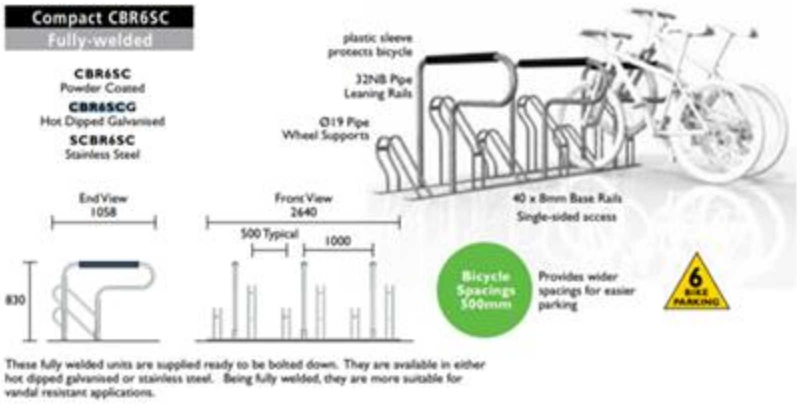
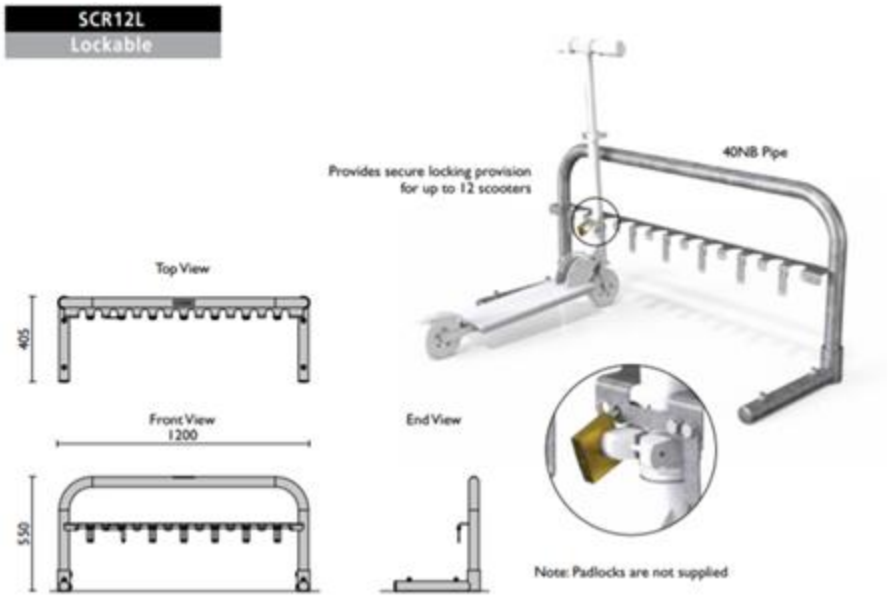
Bicycle parking is provided adjacent to entry gates, which is ideal for promoting sustainable transport. They are given a prime position and are highly visible to students. The locations also mitigate the risk that students ride their bikes within the school, which could cause hazards for other students.

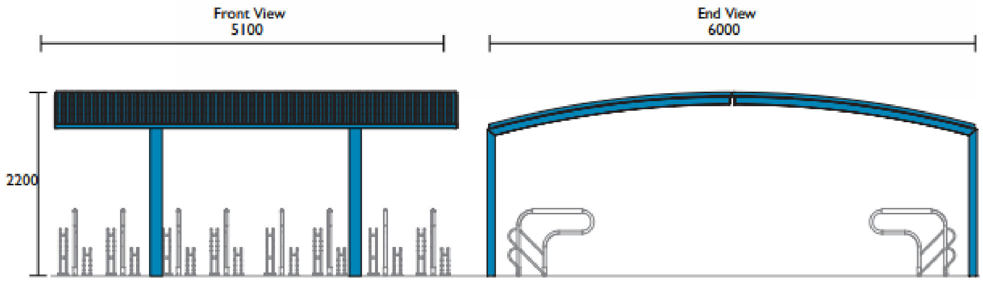
Bicycle parking has been able to be provided at two locations, which is desirable. Spreading out bicycle parking reduces the demand on each gate and reduces congestion in the mornings with students entering the school.

These facilities have been designed to the requirements laid out in **Table 3-8**.

Table 3-8 Bicycle parking design standards

<table>
<tr><th>Element</th><th>Design requirement</th></tr>
<tr><td>Access to facility</td><td>A pathway of not less than 1.5m should be provided – ideally 2.5m. We can make the argument that the path would generally operate as one way (1.5m), but there may be some use cases where the access way would need to cater for bidirectional traffic. If possible, it would be good to have some sections of 2.5m width for passing (like what we do in a very tight street network where we have passing bays).
Bike ramps should not exceed 1:12 and not contain stairs.</td></tr>
<tr><td>Facility</td><td>EFSG SG552 (metalwork) 4.36 Bicycle Enclosure
“Bicycle parking facility to AS 2890.3 – Facility Class 2 (Refer Appendix B Typical Bicycle Parking Facilities – B3 Class 2 - B3.2)”
A Class “2” (actually “B”) facility is as follows:
<table>
<tr><td>B</td><td>A secure room or structure, protected from the weather, containing bicycle parking devices that allow users to lock the bicycle frame and both wheels.
Users provided with security access devices such as keys, codes or swipe cards for communal cages. Users may provide their own locking devices for individual cages.
Chain mesh fencing is not considered suitable.
Entrance gates (to the secure bike area) are self-closing and self-locking.</td><td>Where available to the general public, or in large workplaces or institutions, some level of direct surveillance may be necessary to reduce the level of theft among users (e.g. CCTV).
Facilities should be located in well lit areas, and where passive surveillance is likely.
Facilities should be situated as close to the entrance/exit as practicable, e.g. lift core, workplace entrance, etc.</td><td>Destination parking—the cyclist works, lives or studies nearby and the facility is generally part of the destination.
All day parking where the cyclist continues on to a nearby location, e.g. a workplace, school, university.
Transport hub, e.g. railway station.
Resident parking at multi-dwelling developments.
Restricted access (non-public) compound for schools and workplaces.</td></tr>
</table>
Appendix B.2 is as follows:
B2 CAGE
Figure B2 shows examples of typical cage designs.

The facility must therefore be:
– A secure compound (i.e. with walls, but they can be permeable)
– Weather-protected – i.e. a roof.</td></tr>
</table>

Element	Design requirement
Bicycle racks	The EFSG notes “The bicycle rack described below is based on "Securable model cbr6sc" from leda security. Other proprietary Bicycle Racks that comply with the specification requirements described below may also be acceptable.” The specific product specified is available here: https://www.ledasecurity.com.au/wp-content/uploads/2015/06/SecurabikeAU-Hndbk_0616_e.pdf (search for "cbr6sc") 
Scooter racks	The EFSG doesn’t specify scooter racks. Because there is no specification in EFSG, the following rack is recommended: 

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

Source: Educational Facilities Standards and Guidelines, AS2890.3, SCT Consulting, 2022

3.2.1.2 Bus access and service frequency

Bus stops are proposed to be reconfigured to support the new school (**Table 3-9**) and illustrated in **Figure 3–2**.

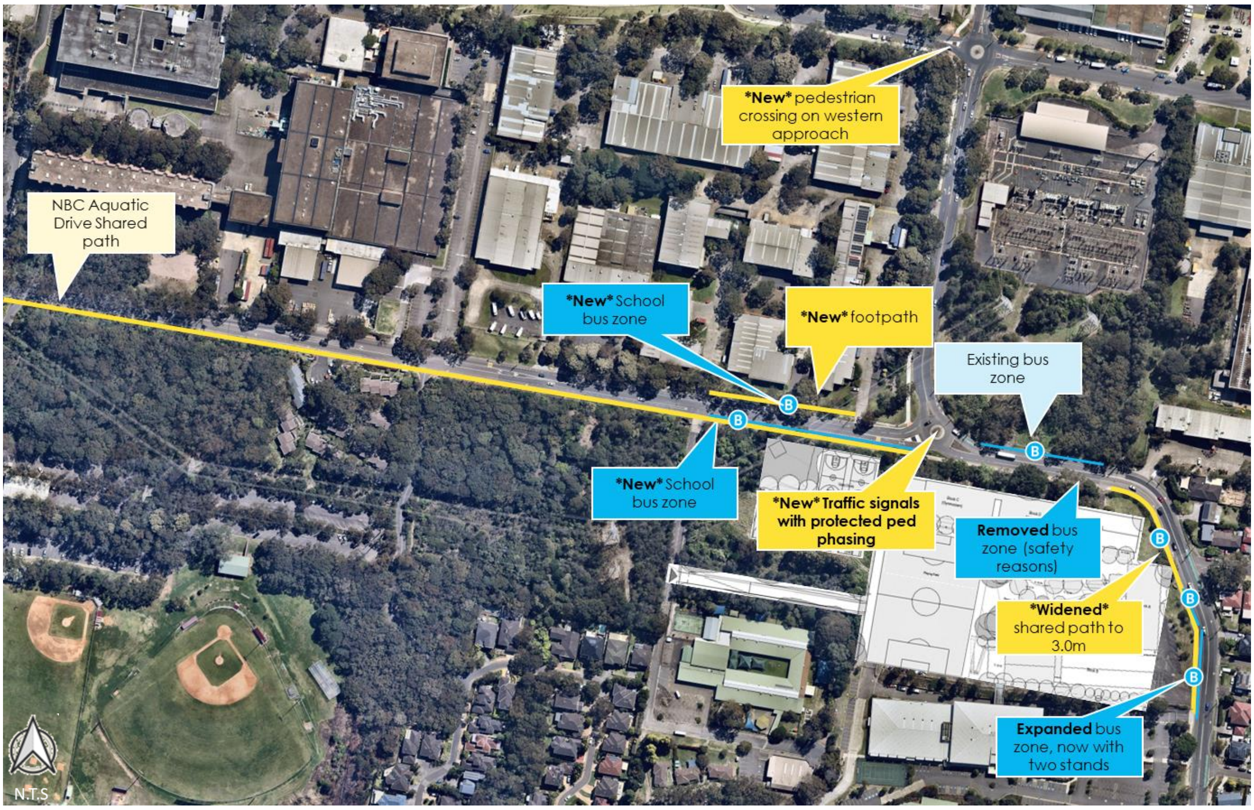
Table 3-9 Bus stop modifications

Transit Stop Number	Location	Action	Reason
210074	Allambie Rd opposite Aquatic Dr	No change	Continues to be in a good location to support the school project
2100177	Allambie Rd before Aquatic Dr	Removal	TfNSW bus planners requested this be removed as part of the delivery of signals at Allambie Rd / Aquatic Dr
210096	Allambie Rd opposite Arnhem Rd	Expand south to provide three total bus stands	Expanded to the south would allow two additional bus stands (three total), which is required due to the number of students using buses
N/A	Aquatic Dr after Allambie Rd (north side)	New bus zone	Provide stopping location for altered bus routes
N/A	Aquatic Dr after Allambie Rd (south side)	New bus zone to cater for two buses	Provide stopping location for altered bus routes

Source: SCT Consulting, 2022

The number of bus stops was requested by Transport for NSW during pre-lodgement consultation.

Figure 3–2 Summary of walking and cycling initiatives



Source: Nearmap, SCT Consulting, 2022

All existing school specials are recommended to be relocated, being:

- Route 210: The Forest HS to Myroo Rd after Booralie Rd via Davidson HS
- Route 213: The Forest HS to Chatswood Station
- Route 720n: Wyuna Ave & Oliver Sts to Rabbett St & Forest Way
- Route 730n: Forest High School to Warringah Mall
- Route 621n: Forest High School to Warringah Mall
- Route 739n: Forest High School to Seaforth
- Route 777n: Forest High School to Condamine & Balgowlah.

Allambie Road frequency is 14 services per hour in peak periods. When combined with the relocated school specials, there is an adequate number of services to cater for the new population of students at this location.

Two bus bays are proposed on the TSN 210096 (Allambie Road on the eastern side of the school). This was determined as necessary based on the number of bus arrivals and student volumes.

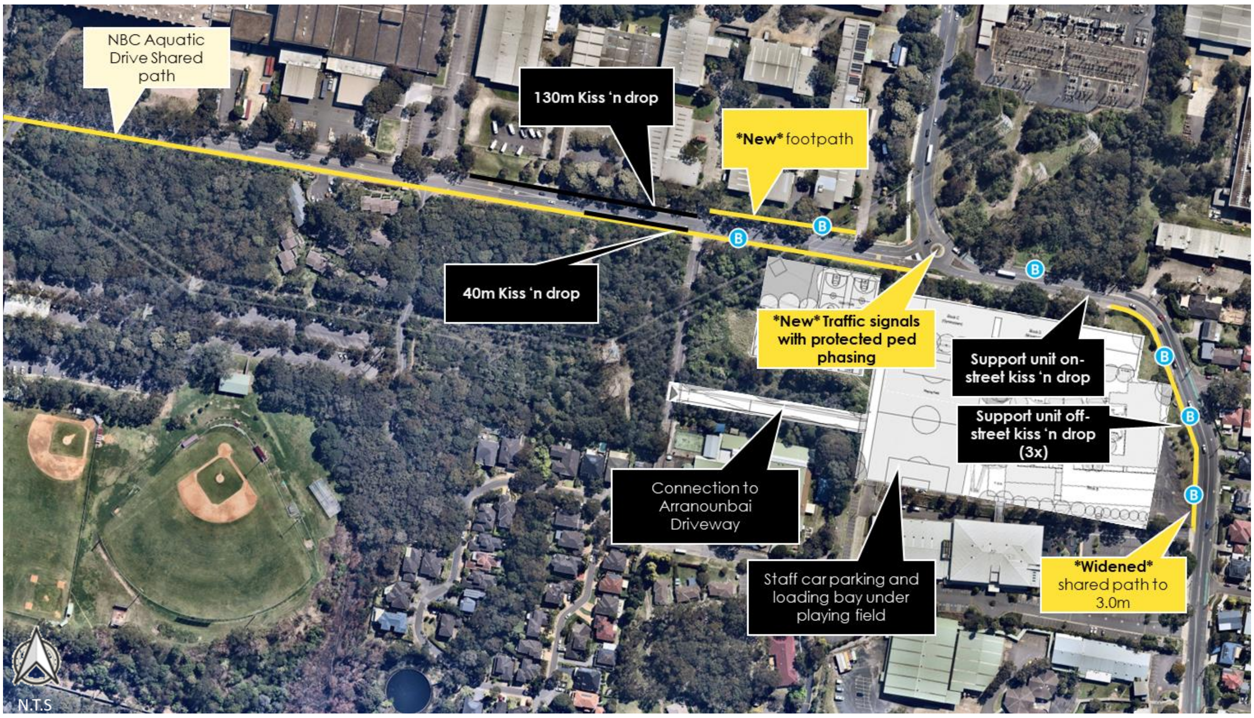
3.2.1.3 Kiss and drop provision

The main Kiss and Drop location will be along Aquatic Drive (**Figure 3–3**). Existing road space will be used with signage installed to indicate the allowed length of stay and operational hours.

A secondary Kiss and Drop location will be situated near the main entrance on Allambie Road. This location will be for students with mobility issues only (A in **Figure 3–3**). The design supports a total of three parking spaces at this location.

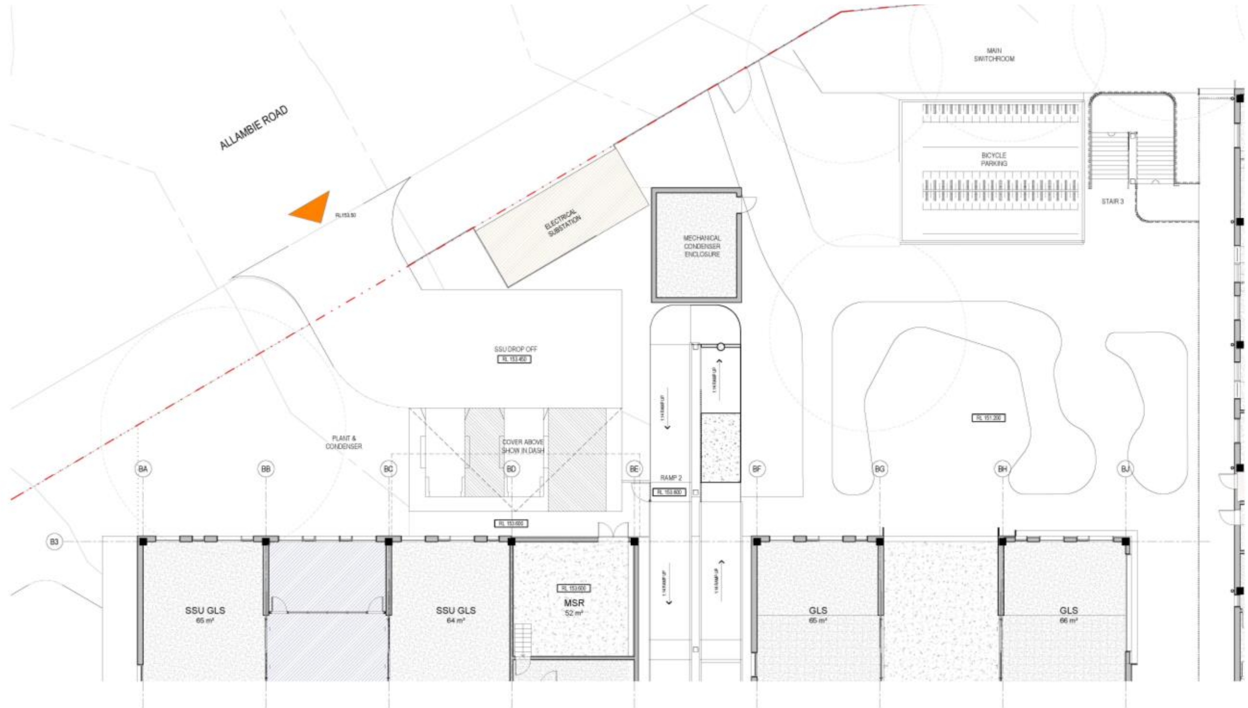
Lastly, a dedicated off-street parking area will be provided for the support unit kiss ‘n drop (A in **Figure 3–3**). This will cater for two accessible parking spaces and one Medium Rigid Vehicle – a minibus. An excerpt of the Schematic Design is provided in **Figure 3–4**. The car park has been designed per AS2890.1 and AS2890.6.

Figure 3–3 Kiss 'n drop facilities



Source: Nearmap with annotations by SCT Consulting, 2022

Figure 3–4 Support unit car park design



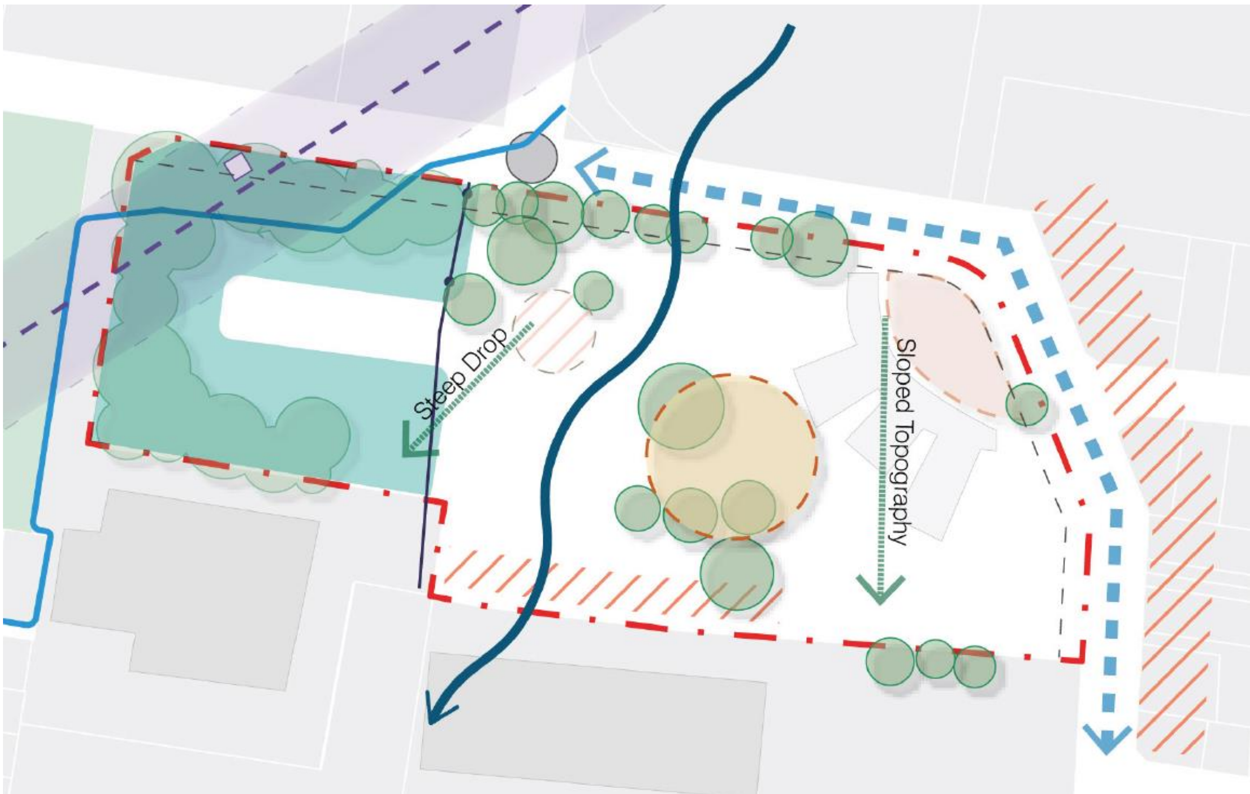
Source: Architectus, 2022

The kiss 'n drop arrangements appropriately put support unit students close to the primary entry gate and also with a dedicated off-street facility near the support unit.

3.2.1.4 Alternative kiss 'n drop options considered

Northern Beaches Council requested some proportion of the kiss 'n drop to occur using an on-site facility. The site has several constraints that make this challenging (**Figure 3–5**).

Figure 3–5 Site constraints



Source: Architectus, 2022

The key constraints are:

- An overhead power line easement runs along the northwestern corner of the site (dashed line in purple). In this easement, it is undesirable to have any permanent structures such as car parking
- A forest on the north-west and to the west of the site, which has asset protection zones
- Residential land uses to the east of the site for which a buffer to vehicle noise is desirable
- A steep fall across the site.

Other options for kiss 'n drop considered were:

1. A kiss 'n drop road in the north-west of the site
2. An expansion of the undercroft car park to include a kiss 'n drop facility.

The total amount of kiss 'n drop estimated to be required is 189m. This calculation is shown in more detail in **Section 4.2.3.5**. Option 1 does not provide sufficient space on site without a bent road to cater for the full demand. It would also introduce a reasonable increase in demand using Arranounbai Driveway.

Option 1 was discarded because it required the removal of significant forest and required the kiss 'n drop to be located within the overhead power line easement. It would also require the removal of a significant number of trees on site.

Option 2 was discarded because it would mix staff and student parking needs. It would increase the risks during a bushfire with the potential for students and staff to be using the same facilities.

3.2.1.5 Roundabout/turnaround on Aquatic Drive (discarded option)

Northern Beaches Council and residents have requested a roundabout be considered on Aquatic Drive to support kiss n' drop users conducting a u-turn manoeuvre. A road design was prepared for this roundabout, which would need to accommodate a 19m semi-trailer. Due to the industrial land uses surrounding the school, this would be necessary – there were semi-trailers observed parking within properties.

The footprint of this intersection requires the land acquisition of affected landowners. The size of the roundabout makes this a certainty regardless of the location on Aquatic Drive – the road corridor is not wide enough for a roundabout. **The proposal for a roundabout on Aquatic Drive was discarded and will not be progressed due to impacts on property owners**.

While this option would provide a more direct route for drivers, it can't be delivered without impacts on other property owners and land acquisition.

3.2.1.6 Midblock island refuge (discarded option)

Northern Beaches Council requested a midblock island to be located on Allambie Road, which was considered during design development. The only location which would meet sight distance requirements and not impact driveways was north of Arnhem Road. This location is a known crash location due to the smooth curve of the road. The road side is currently protected by a crash barrier.

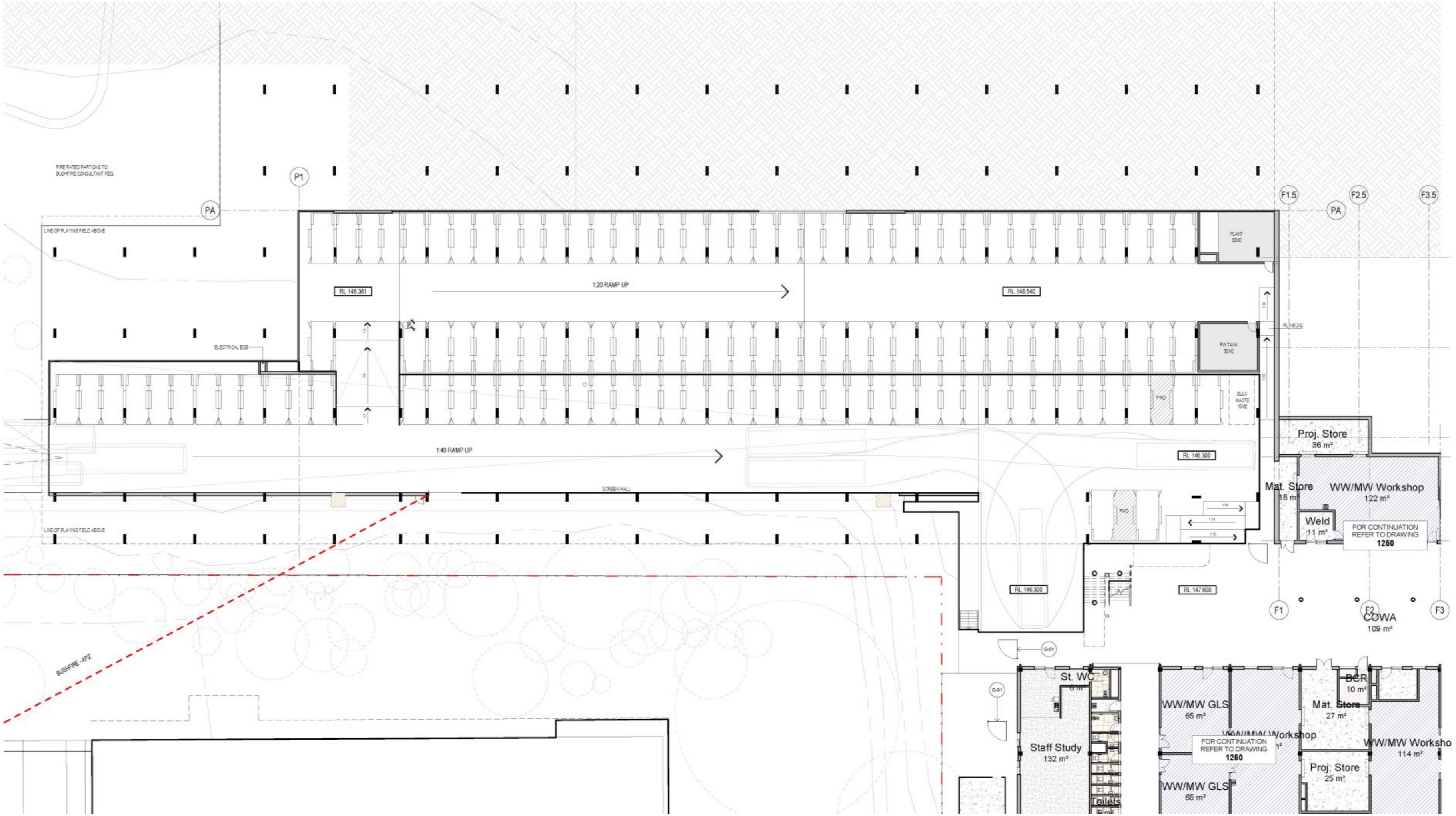
In order to install the midblock crossing, the crash barrier would need to be removed, which could result in a recurrence of incidents. The location-specific risks are also not mitigated, with cars observed on site to travel around this corner at speed.

The midblock crossing was discarded due to the impacts on Council's existing safety works in the area and the safety risks for crossing students.

3.2.1.7 Staff parking and loading dock

An undercroft parking area has been provided that caters for 121 staff parking spaces, which meets the DCP requirement of 1 parking space per staff member on site (**Figure 3–6**).

Figure 3–6 Staff car park and loading dock



Source: Architectus, 2022

This parking area has been designed for a Heavy Rigid Vehicle (12.5m length), which is required per the Development Control Plan. A Heavy Rigid Vehicle is also required for wood and metalwork deliveries. The loading dock is provided in the southeast corner of the parking structure, with a dedicated loading area.

The remaining car park is split level to follow the natural topography of the site, minimising cut and fill. Spaces have been designed according to AS2890.1 User Class 1, being all-day parking.

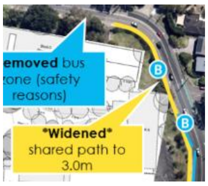
The entrance driveway doesn't allow a heavy rigid vehicle to access the driveway without using the opposite side of the driveway. A management approach is outlined in **Section 5.3.8** to manage this.

The car park has been designed and audited against AS2890.1, AS2890.2 and AS2890.6, which is provided in **Appendix F**. This includes swept paths where necessary to inform the design. Accessible spaces are provided for staff in the location closest to the entry/exit of the car park and at the rate required by the Building Code of Australia.

3.2.1.8 Offsite transport infrastructure

Transport upgrades are provided in the network surrounding the site which is shown in **Figure 3–2** and explained further in **Table 3-10**.

Table 3-10 Offsite transport upgrades

Upgrade	Location	Reason
Signalisation of Allambie Rd / Aquatic Dr		– Requested by Northern Beaches Council – Improved safety for pedestrians crossing – Improved reliability and reduced delays for cars
A new pedestrian crossing (raised threshold zebra) on Rodborough Rd		– Provides connectivity to school from the north – Improves safety for pedestrians
Widening of a shared path to 3.0m where required		– Requested by Northern Beaches Council – Provides more space for pedestrians to queue – Allows for footpath widening around bus stops, reducing conflicts between cyclists and students waiting for the bus
New footpath on Aquatic Dr from Allambie Rd to Arranounbai School driveway		– Improved safety for students using kiss 'n drop
Bus stops	Various	– Four new bus stops / stands are to be provided as part of the project.

Source: SCT Consulting, 2022

A signal warrants assessment was conducted per the request from Transport for NSW (**Table 3-11**). TfNSW's Traffic Signal Design Guide Section 2 – Warrants outlines that warrants are a guide as to whether signals should be installed. As will be shown in **Section 4.2.3.2**, the network performs with significant delays if signals are not installed.

The pedestrian demands significantly exceed the required 150 pedestrians per hour for four hours. While the peak of the school is expected to be a single hour, the volume of pedestrians that will use the school during this hour is more than double the figure of 150 pedestrians, so would satisfy the requirement when divided across the two hours in the morning. Lastly, roundabouts are a known safety hazard for students at this scale of demand. Midblock refuge islands are not able to accommodate the future expected volume of students, leading to a risk of students standing on the road. The safety hazards of retaining a roundabout would lead to higher car mode share and ultimately cause greater congestion in the network.

Table 3-11 Warrants for a signalised intersection at Allambie Road / Aquatic Drive

Warrant	Criteria	AM	PM	Warrants met?
a) Traffic demand	(i) The major road flow exceeds 600 vehs / h in each direction; and	Yes	Yes	Yes
	(ii) The minor road flow exceeds 200 vehs / h in one direction.	Yes	Yes	
b) Continuous traffic	(i) The major road flow exceeds 900 vehs / h in each direction; and	No	No	No
	(ii) The minor road flow exceeds 100 vehs / h in one direction; and	Yes	Yes	
	(iii) The speed of traffic on the major road or limited sight distance from the minor road causes undue delay or hazard to the minor road vehicles; and	Unlikely. The future intersection will be built to standard		
	(iv) There is no other nearby traffic signal site easily accessible to the minor road vehicles.	Yes (>500m away)		
c) Pedestrian safety	(i) The pedestrian flow crossing the major road exceeds 150 persons/hr; and	Yes	Yes	Yes
	(ii) The major road flow exceeds 600 vehicles/hr in each direction or, where there is a central median of at least 1.2m wide, 1,000 vehicles / hr in each direction.	Yes	Yes	
d) Pedestrian safety – high speed road	(i) The pedestrian flow crossing the major road exceeds 150 persons/hr; and	Yes	Yes	No
	(ii) The major road flow exceeds 450 vehicles / hr in each direction or, where there is a central median of at least 1.2m wide, 750 vehicles / hr in each direction; and	Yes	Yes	
	(iii) The 85th percentile speed on the major road exceeds 75 km/hr.	No	No	
e) Crashes	(i) The intersection has been the site of an average of three or more reported towaway or casualty traffic accidents per year over a three year period, where the traffic accidents could have been prevented by traffic signals; and	N/A – intersection does not exist		No
	(ii) The traffic flows are at least 80% of the appropriate flow warrants.	No	No	

Source: SCT Consulting, Transport for NSW, 2022

3.2.2 Transport Coordinator

The purpose of a transport coordinator is to promote travel behaviour change in the school community, including among staff, students, and parents. In addition to providing better access, infrastructure, and public transport services, it is important to communicate the availability and benefits of more sustainable modes of transport. A transport coordinator will take responsibility for organising programs and events that promote a mode shift away from cars, and the creation and distribution of communications that raise awareness of this in the school community.

The role of the transport coordinator would include:

- 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 GTP Committee and PCA to identify the needs of the school community
- Reporting of data collection and evaluation to stakeholder groups.

A transport coordinator is proposed to be established during the Construction Phase to be in readiness for 2025 School Operations.

The following initiatives are proposed as part of the School Travel Plan to support the transition to sustainable modes of transport.

Table 3-12 Transport Encouragement programs

Mode	Initiative
All	Transport Access Guide
	NSW Police road safety training
Bus	Tap on every time program
Cycle	Bike repair quarterly on school grounds
Cycle/scoot	Ridescore (if available)
	Cycle to school competition with paid prizes (e.g. win a bike)
	Bicycle skills training
	Inquire into Bicycle NSW Spring Cycle Event
	Bicycle network decals on paths

Source: SCT Consulting, 2022

3.2.3 Staggered bell times

Due to the scale of the school's impacts, staggered start and finish bell times have been adopted to smooth out the impacts of student arrivals. This is to some extent occurring currently, with some students arriving at school early or leaving late for HSC classes. As the school expands, staggered bell times will become necessary to achieve the extent of impacts outlined in this assessment.

The school needs to arrange staggered bell times such that:

- Arrival times are no earlier than 8.30am or 3.00pm
- There is a minimum window of 30 minutes.

This could look like the below schedule of bell times:

Table 3-13 Staggered bell times example

	Morning	Afternoon
Years 7 & 8	8.40am	3.10pm
Years 9 & 10	8.50am	3.20pm
Years 11 & 12	9.00am	3.30pm

Source: SCT Consulting, 2022

Arthur Phillip High School in Parramatta has a similar schedule of bell times:

– Years 7 & 8 – start school at 8.30am and finish 3.00pm every day, except Wednesday there will be an early finish at 2.20pm

– Year 11 & 12 – start school at 8.40am and finish at 3.10pm, except Tuesday and Wednesday there will be an early finish at 1.30pm

– Year 9 & 10 – start school at 8.50am and finish at 3.20pm every day, except Wednesday there will be an early finish at 2.40pm.

Arthur Phillip High School is a public high school, so has similar operating parameters to The Forest High School – indicating this can be achieved.

4.0 Impacts and mitigation measures

4.1 Construction

4.1.1 Preliminary construction management approach

The preliminary construction management approach is explained below. The contractor responsible for delivery will prepare a detailed construction traffic management plan (CTMP), which may need to be approved by relevant authorities before construction commences. The CTMP would usually include Temporary Traffic Management Plans (TTMPs) and a Driver's Code of Conduct.

As the vehicles delivering parts to the site are expected to be oversize, delivery will need to be outside of peak periods, both to minimise impacts to the broader road network and also to reduce the risk of damage to parts.

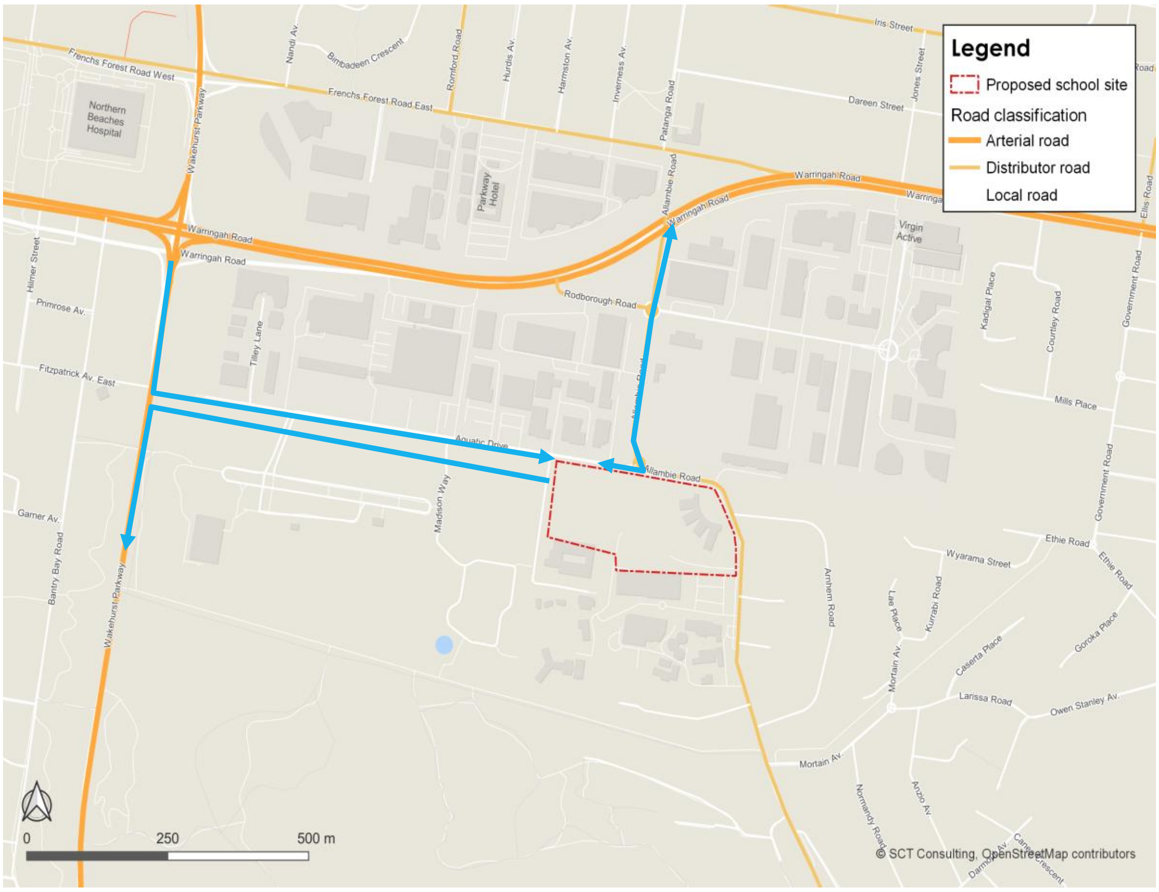
The haulage route from the state road network to the site is proposed to be (**Figure 4–1**):

– Warringah Road - Wakehurst Parkway – Aquatic Drive (to the site)

– Warringah Road – Allambie Road – Aquatic Drive (to/from site)

– Aquatic Drive – Wakehurst Parkway (from site)

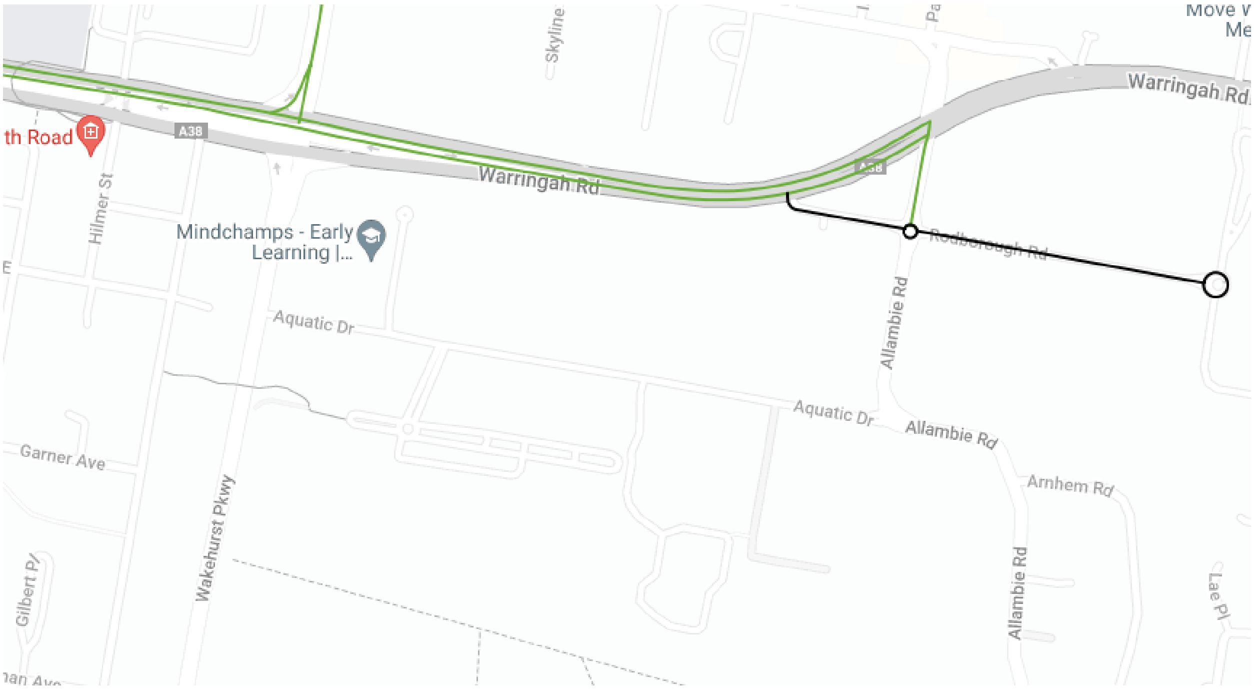
Figure 4–1 Construction haulage routes to/from the site (blue)



There are no right turns permitted at the intersection of Aquatic Drive / Wakehurst Parkway.

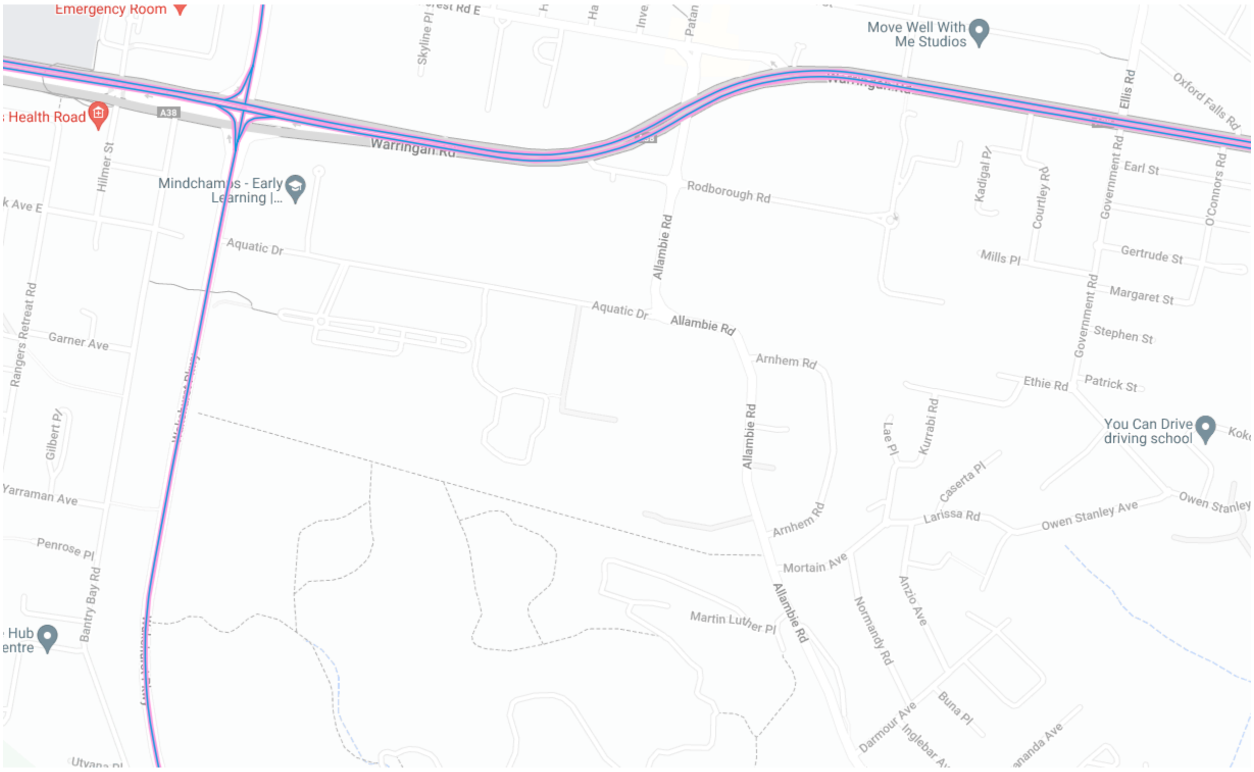
Aquatic Drive and Allambie Road are not approved for higher mass limits or oversize vehicles (**Figure 4–2** and **Figure 4–3**). Warringah Road does have approvals for certain over-size and over-mass vehicles. **No over-size or over-mass vehicles are anticipated to be required.**

Figure 4–2 approved 19m B-double Routes (over 50 tonnes)



Source: Transport for NSW, 2022

Figure 4–3 approved routes for Short Combinations (blue) and 4.6m high vehicles (pink)



Source: Transport for NSW, 2022

4.1.2 Road safety considerations

Traffic management will require approval from Northern Beaches Council. It is expected that traffic management measures will only be required within the Allambie Heights suburb.

The contractor will need to define traffic management requirements to ensure the safety of students, staff, parents, and all other transport network users.

Management measures need to be put in place to exclude pedestrian and vehicle conflicts with unloading including crane operations.

Delivery and unloading should avoid commuter peak periods to minimise risks to vehicles and congestion arising from deliveries.

Temporary diversions to footpaths need to provide safe crossing facilities, clear sightlines for vehicles and pedestrians, and even footpaths of at least the width of the footpath replaced. Where this is not achievable in the same corridor, diversions should be proposed in the construction traffic management plan, prepared in consultation with Council.

4.1.3 Construction program

The current program for the project is shown in **Table 4-1**.

Table 4-1 Estimated milestone program summary

Milestone	Estimated completion date
SSDA approval	Q2, 2023
Construction certificate	Q3, 2023
Early works (demolition)	Q3, 2023
Main works completed	Mid 2025
Operational commencement	Mid 2025

This program may adjust over time. The Construction Traffic Management Plan will include the final proposed construction program.

4.1.4 Construction traffic impacts and mitigation

The peak workforce is estimated to be approximately 163 FTE (full-time equivalent) workers. It is expected that because of the public transport access of the site, approximately 10 per cent of workers would arrive on site by public transport. Of the remaining 90 per cent of workers, a vehicle occupancy of 2.0 is assumed, which is typical of construction sites. The maximum number of cars therefore is expected to be approximately 75 vehicles.

Workers will be encouraged to park onsite or on-street within industrial areas. The site can accommodate approximately 50 vehicles parked, with the remaining 25 vehicles parking on-street. The on-street network around the industrial area has sufficient spare capacity for the 25 vehicles based on site observations:

- **Aquatic Drive:** 510m of generally vacant length up to the Forestridge Business Park, which often has on-street parking. This provides 80 vehicle parking spaces assuming 6.3m per vehicle.
- **Rodborough Road west**: 60m of generally vacant length, which would provide about 10 parking spaces assuming 6.3m per vehicle.
- **Rodborough Road east:** 250m of generally vacant length, which would provide about 39 parking spaces.

Rodborough Road is a reasonable walk to the site, but could be workable for trades to drop tools on site and then park longer term at this location.

Road network impacts by worker traffic to the site will be mitigated by the construction workers generally starting earlier and finishing earlier than the commuter peak periods and would likely not coincide with the school or road network peak periods. Construction workers will be encouraged to carpool, further reducing the impact on the road network and local parking demands.

Final construction vehicle numbers are still being confirmed. A preliminary estimate of 20 heavy vehicle truck movements is anticipated on a typical day.

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

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

- Construction workers will be discouraged from parking in residential areas. The head contractor would regularly monitor if on-street parking by construction workers in surrounding residential streets. Potential posting of signs in surrounding residential streets stating that construction workers are not to park and a number to report non-compliant vehicles by residents to further mitigate the likelihood of construction workers parking in surrounding residential streets
- Truck loads would be covered during transportation off-site
- Neighbouring properties would be notified of construction works and timing. Any comments would be recorded and taken into consideration when planning construction activities
- All activities, including the delivery of materials, would not impede traffic flow along local roads
- Materials would be delivered, and spoil removed during standard construction hours
- Avoidance of idling trucks alongside sensitive receivers
- Deliveries would be planned to ensure a consistent and minimal number of trucks arriving at the site at any one time.

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

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

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

It is not expected that there will be other major concurrent construction activities. The other sites are currently undergoing further planning processes, which means that construction is unlikely to commence soon. 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.

4.2 Operation

4.2.1 Cumulative background growth

Three sources of growth were adopted from publicly available sources:

- General background traffic growth
- Frenchs Forest Precinct uplift
- Bunnings Warehouse development.

Based on all of the sources of background growth, a 2031 traffic model was developed. The same peak period factor was applied to the traffic generation rates based on the 8.30-9.30 am and 3.00-4.00 pm periods selected. 2031 was adopted as the traffic modelling forecast year.

4.2.1.1 General background traffic growth

General background growth was adopted from the Jacobs Frenches Forest Planned Precinct Transport Strategy. Growth was provided by the intersection approach in the total number of vehicles from 2026 to 2036.

The total growth was added in proportion to turning movements from the traffic surveys.

4.2.1.2 Frenchs Forest Precinct

Traffic increase was added from the Frenchs Forest Precinct, using the traffic generation identified in Table 5.1 of the Jacobs Frenches Forest Planned Precinct Transport Strategy (provided as **Table 4-2** below).

Table 4-2 Frenchs Forest Precinct uplift traffic generation

Land use	Dwellings/GFA	AM rate	AM trips/hr	PM rate	PM trips/hr
Residential – high-density	1,726 dwellings	0.4 per dwelling	690	0.45 per dwelling	777
Residential – med-density	199 dwellings	0.5 per dwelling	100	0.55 per dwelling	109
Commercial	9,116m^2 GFA	1.6 per 100m^2	146	1.2 per 100m^2	109
Retail – supermarket	5,007m^2 GLFA	3.4 per 100m^2	170	9.8 per 100m^2	491
Retail – other	11,466m^2 GLFA	2.2 per 100m^2	252	6.1 per 100m^2	699
Hotel	9,000m^2 GFA	0.3 per 100m^2	27	0.3 per 100m^2	27
Education	8,175m^2 GFA	0.8 per 100m^2	65	0.8 per 100m^2	65
Aged care / community	26,882m^2 GFA	1.0 per 100m^2	269	1.6 per 100m^2	430
Total			**1,720**		**2,705**

Source: Jacobs, 2020

The Jacobs study also provided assumed travel directions for the traffic generated by the Frenchs Forest Precinct (**Figure 4–4**).

Figure 4–4 Frenchs Forest Precinct traffic distribution

Source: Jacobs, 2020

This distribution was also adopted into the background growth for The Forest High School traffic modelling.

4.2.1.3 Bunnings Warehouse development

A Development Application for a Bunnings warehouse has been approved on a site to the north of the new school location. The site identified in **Figure 4–5** will be 21,750m^2 and have frontages on Warringah Road, Allambie Road and Rodborough Road.

Figure 4–5 Proposed Bunnings development

Source: TTPA, 2019

A Traffic and Parking Assessment written by Transport and Traffic Planning Associates (TTPA) in 2019 (amended September 2020) stated the development will be across three levels and have 397 at-grade parking spaces. Access to the site will comprise:

- a new combined ingress/ egress driveway for the carpark on Rodborough Road
- relocation of the combined ingress/egress driveway on Allambie Road for carpark access (with left turn deceleration lane and left turn IN/OUT only)
- a combined ingress and egress driveway for trucks on Rodborough Road

The peak traffic periods for the Bunnings warehouse are expected to be Weekday PM (4.30-5.30 pm): and Saturday Midday. This equates to:

- Weekday PM:
  - 1.45 vehicles/hour/100m^2
  - 285 vehicles/hour.
- Saturday Midday
  - 4 vehicles/hour/100m^2
  - 786 vehicles/hour.

It is expected that 20 per cent of the traffic across both peaks will be via Allambie Road South. The peak periods of the Bunnings warehouse are not expected to align with the peak pick-up and drop-off periods for the school. This should mitigate the number of vehicles passing in proximity to the site when students will be crossing Allambie Road at their highest volumes.

4.2.2 2031 intersection performance with cumulative background growth

Intersection performance results for the 2031 cumulative background growth are shown in **Table 4-3**.

Table 4-3 Intersection performance for 2031 cumulative background growth

Intersection	Intersection type	Volume (veh/H)	Degree of Saturation	Delay (sec)	95th % queue (m)	LoS
AM peak 8.30-9.30am						
Allambie Rd / Warringah Rd	Signal	5,970	0.92	48.3	453.0	D
Allambie Rd / Rodborough Rd	Roundabout	2,430	0.69	23.1	48.2	B
Allambie Rd / Aquatic Dr	Roundabout	1,839	0.88	15.4	115.7	B
Allambie Rd / Mortain Ave	Signal	1,531	0.51	8.7	70.7	A
Allambie Rd / Fleurs St	Signal	1,486	0.42	4.7	51.2	A
PM peak 3.00-4.00pm						
Allambie Rd / Warringah Rd	Signal	6,238	1.01	71.1	531.6	F
Allambie Rd / Rodborough Rd	Roundabout	2,220	0.77	25.3	57.0	B
Allambie Rd / Aquatic Dr	Roundabout	1,996	0.99	29.4	302.2	C
Allambie Rd / Mortain Ave	Signal	1,650	0.57	6.8	94.7	A
Allambie Rd / Fleurs St	Signal	1,639	0.51	5.5	80.9	A

Source: SCT Consulting, 2021
Delay = worst movement for priority and roundabout controlled intersections and DoS = degree of saturation of worst movement

The intersection modelling shows that:

- With background growth, the network reaches capacity at Allambie Road / Rodborough Road. The intersection performs at Level of Service F in the PM peak and at close to capacity in the AM peak.

– Allambie Road / Aquatic Drive has no further spare capacity. By reaching the Degree of Saturation 0.99 in the PM peak, there is no more room for growth at this intersection. While performance is at an acceptable level, it would likely decline quickly with any additional growth.

4.2.3 Operational impacts

4.2.3.1 Entry gate capacity analysis for pedestrians

To test the space allocation for pedestrians using the gates to the school, a pedestrian comfort level assessment was conducted. Key assumptions were:

– To be conservative, 33% of the school arrives in 5 minutes, with 10% of students arriving at school early or late (e.g. due to sport)

– Allocation by bus stop is: 10% Aquatic Dr Bus stop, 45% Allambie to North, 45% Allambie to East

– Bikes take up the area of two pedestrians.

– Pedestrians require a 500mm buffer to the gate on each side to avoid collision (again, a conservative estimate. We can adopt 300mm).

The pedestrian comfort levels are provided in **Table 4-4** based on the pedestrian comfort levels shown in **Figure 4–6**.

Table 4-4 Pedestrian comfort level

Gate	Total width	Effective width	Total arriving peds	33% peds in 5 min (ped/min)	Ped / m / min	Pedestrian Comfort Level
West Secondary	3.0m	2.0m	708	46.7	23.4	C
North Primary	9.5m	8.5m	310	20.5	2.4	A
East Secondary	3.0m	2.0m	531	35.1	17.5	B-

Source: SCT Consulting, 2022

Pedestrian Comfort Level of Service C is busy but comfortable. Level of Service A is desirable for the main gate as it means there’s space to wait and look for directions (like visitors would do). The analysis indicates there is sufficient space for pedestrians in the design.

Figure 4–6 Pedestrian Comfort Level descriptions

Source: Pedestrian Comfort Guidance for London Guidance Document, TfL, 2019

4.2.3.2 2031 full development without mitigation

The moderate mode share scenario was tested with the school population at the date of opening **without any of the proposed upgrades in this transport assessment**.

The traffic performance based on this option is shown in **Table 4-5**.

Table 4-5 Intersection performance for 2031 with background growth and development but no upgrades

Intersection	Intersection type	Volume (veh/H)	Degree of Saturation	Delay (sec)	95th % queue (m)	LoS
AM peak 8.30-9.30am						
Allambie Rd / Warringah Rd	Signal	6,123	1.03	73.8	585.9	F
Allambie Rd / Rodborough Rd	Roundabout	2,639	1.12	129.2	248.5	F
Allambie Rd / Aquatic Dr	Roundabout	2,357	1.10	123.2	467.5	F
Allambie Rd / Mortain Ave	Signal	1,663	0.54	9.6	72.4	A
Allambie Rd / Fleurs St	Signal	1,579	0.42	4.9	48.8	A
PM peak3.00-4.00pm						
Allambie Rd / Warringah Rd	Signal	6,392	1.00	67.8	473.4	E
Allambie Rd / Rodborough Rd	Roundabout	2,429	1.03	45.6	248.5	D
Allambie Rd / Aquatic Dr	Roundabout	2,513	1.19	190.4	571.6	F
Allambie Rd / Mortain Ave	Signal	1,782	0.51	6.8	77.3	A
Allambie Rd / Fleurs St	Signal	1,731	0.43	5.5	67.7	A

Source: SCT Consulting, 2021
Delay = worst movement for priority and roundabout controlled intersections and DoS = degree of saturation of worst movement

Without any mitigations, the network operates with significant delays and queuing:

– Allambie Road / Warringah Road operates at Level of Service F in the morning peak and E in the evening peak

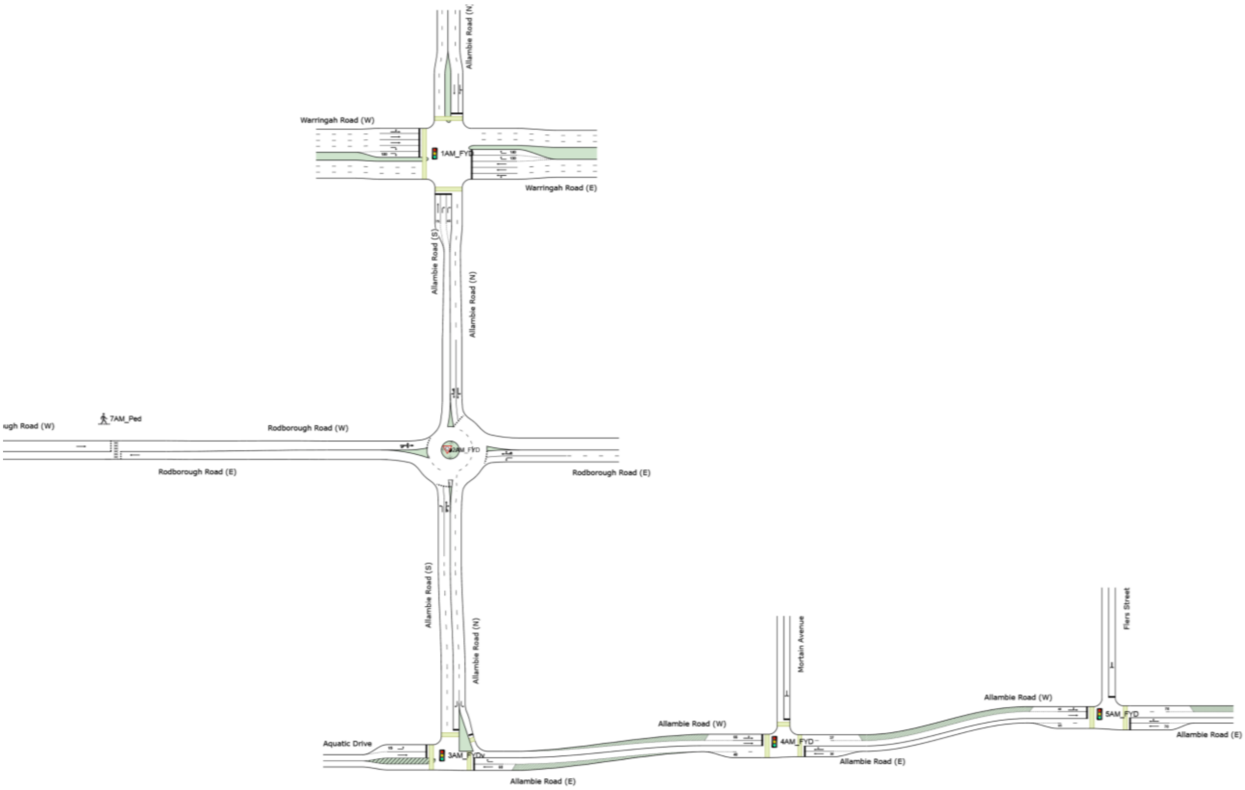
– Allambie Road operates with significant congestion, including intersections with over 500m of queuing and delays exceeding 100 seconds.

Road upgrades are required to mitigate the impacts of the development.

4.2.3.3 2031 full development with mitigation

The moderate mode share scenario was tested with the school population at the date of opening. Transport for NSW requested this scenario. The road network layout tested is shown in **Figure 4–7**. This includes the upgrades identified in **Table 3-7** and explained in **Section 3.2.1**.

Figure 4–7 Transport network infrastructure with development



Source: SCT Consulting using SIDRA Network 9.0, 2022

The traffic performance based on this option is shown in **Table 4-6**.

Table 4-6 Intersection performance for 2031 with background growth, development, and upgrades

Intersection	Intersection type	Volume (veh/H)	Degree of Saturation	Delay (sec)	95th % queue (m)	LoS
AM peak 8.30-9.30am						
Allambie Rd / Warringah Rd	Signal	6,123	1.0	76.1	539	F
Allambie Rd / Rodborough Rd	Roundabout	2,639	0.88	20.0	48	B
Allambie Rd / Aquatic Dr	Signal	2,350	0.93	49.0	230	D
Allambie Rd / Mortain Ave	Signal	1,663	0.57	9.7	84	A
Allambie Rd / Fleurs St	Signal	1,579	0.44	5.0	56	A
Rodborough zebra crossing	Priority	462	0.72	6.3	70	A
PM peak 3.00-4.00pm						
Allambie Rd / Warringah Rd	Signal	6,392	1.0	67.8	473	E
Allambie Rd / Rodborough Rd	Roundabout	2,429	0.92	28.3	56	B
Allambie Rd / Aquatic Dr	Signal	1,782	0.90	41.7	289	C
Allambie Rd / Mortain Ave	Signal	1,731	0.61	7.4	106	A
Allambie Rd / Fleurs St	Signal	2,357	0.55	5.8	86	B
Rodborough zebra crossing	Priority	333	0.50	4.9	24	A

Source: SCT Consulting, 2021
Delay = worst movement for priority and roundabout controlled intersections and DoS = degree of saturation of worst movement

The intersection performance shows that:

- Delays at Allambie Road / Warringah Road are worse in the morning peak but better in the evening peak than if the development were not to occur
- In the morning peak, Allambie Road / Warringah Road worsens by 27.8 seconds and in the evening peak it improves by 3.3 seconds
- Allambie Road / Aquatic Drive operates at Level of Service D or better in both peak periods
- All other intersections have delays that are Level of Service B or better, with delays at a similar level than if the project were not proposed.

The improvement in performance at Allambie Road / Warringah Road is associated with the reduced queuing issues at Allambie Road, improved by the signals at Allambie Road / Aquatic Drive.

Allambie Road / Warringah Road is forecast to accommodate approximately an additional 400 vehicles per hour due to this and other developments in the area. The intersection is already significant in size, with approaches of up to five lanes in width.

During the development of the infrastructure suite, a set of traffic signals was considered at Aquatic Drive / Wakehurst Parkway. TfNSW advised that this upgrade would be cost-prohibitive.

An upgrade to an intersection of this scale is beyond the resources available to School Infrastructure NSW and should be considered at a whole-of-government level. Significant upgrades are being delivered as part of the school's delivery, including a new traffic signal outside of the school.

4.2.3.4 2025 day of opening intersection performance

The moderate mode share scenario was tested with the school population at the date of opening. Transport for NSW requested this scenario. The road network layout tested is shown in **Figure 4–7**. This includes the upgrades identified in **Table 3-7** and explained in **Section 3.2.1**.

The traffic performance based on this option is shown in **Table 4-7**.

Table 4-7 Intersection performance for 2025 with background growth, development, and upgrades

Intersection	Intersection type	Volume (veh/H)	Degree of Saturation	Delay (sec)	95th % queue (m)	LoS
AM peak 8.30-9.30am						
Allambie Rd / Warringah Rd	Signal	5,661	0.93	48.0	428	D
Allambie Rd / Rodborough Rd	Roundabout	2,432	0.77	14.5	40.5	B
Allambie Rd / Aquatic Dr	Roundabout	2,106	0.89	31.3	127	C
Allambie Rd / Mortain Ave	Signal	1,543	0.52	9.4	73.6	A
Allambie Rd / Fleurs St	Signal	1,488	0.41	4.8	50.5	A
Rodborough zebra crossing	Priority	431	0.68	5.3	62	A
PM peak 3.00-4.00pm						
Allambie Rd / Warringah Rd	Signal	5,574	0.87	45.9	388.7	D
Allambie Rd / Rodborough Rd	Roundabout	1,953	0.61	12.4	23.1	A
Allambie Rd / Aquatic Dr	Signal	2,018	0.85	28.4	142	B
Allambie Rd / Mortain Ave	Signal	1,441	0.47	6.2	68.4	A
Allambie Rd / Fleurs St	Signal	1,421	0.70	5.2	60.8	A
Rodborough zebra crossing	Priority	265	0.38	4.9	15.4	A

Source: SCT Consulting, 2021
Delay = worst movement for priority and roundabout controlled intersections and DoS = degree of saturation of worst movement

4.2.3.5 Kiss ‘n drop queuing performance

The kiss ‘n drop under the moderate scenario needs to accommodate 692 students by car. The following assumptions were made regarding the kiss ‘n drop operational characteristics:

- 90% arrival during the busiest hour.
- A total drop-off window of 30 minutes. This is reflective of staggered start times
- Two minutes of dwell time for pick up or drop off.
- 1.7 students per car.
- 6.3m per vehicle.

The 85th percentile number of spaces required is 30. Based on kiss ‘n drop occurring on Aquatic Drive, this is equivalent to a total distance of 189m. This space is available along Aquatic Drive.

5.0 Draft School Transport Plan

5.1.1 Vision and objectives

The purpose of a School Transport Plan 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 school transport plan 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 to students which extends beyond the school boundary.

The vision for this school travel plan is that travel would be safe and sustainable.

5.1.2 Mode share targets

The mode share targets for the school are shown in **Table 5-1**.

Table 5-1 Mode share targets

Scenario	Walk	Bicycle / scoot	Bus	Car
Current mode share	3%	2%	45%	50%
One year after opening (2026)	4%	7%	39%	50%
Long-term	4%	12%	39%	45%

Source: SCT Consulting, 2022

The targets reflect that the mode shift takes time. As the school relocates, a great result would be that there is no net increase in car mode share despite the location having less bus frequency. Students that used to take the bus may have to switch to other modes such as cycling and walking. The current location of the school isn't favourable for walking compared to the new location, which has quieter roads.

Over time, the goal is to extend the mode share to the moderate targets identified in **Section 3.1.5**.

5.2 Adopted policies and procedures

5.2.1 School Travel Plan (STP) Committee

School Travel Plan Committee

Overview

The School Travel Plan Committee aims to build upon and promote sustainable transport initiatives identified in the Green Travel Plan for both staff and students.

The School Travel Plan Committee would be composed of members of the Parent and Citizen Association and representatives from the Northern Beaches Council and the NSW Department of Education.

The School Travel Plan Committee would liaise 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.

All initiatives would be promoted through newsletters, both internal and external, on the school website and in the classroom.

Investment:

The Forest High School will need to set up the STP Committee which meets at least once on a term basis. The roles are voluntary.

Evidence:

Committees ensure multi-party input and fair distribution of allocated tasks. The School Travel Plan Committee would be important at the inception of any new project because they provide the required leadership, resources, and attentiveness for initiatives to be realised.

5.2.2 Provision of a Travel Access Guide

Provision of a Travel Access Guide

Overview:

A Travel Access Guide (TAG) is a pamphlet showing the school locality and the wider area. The TAG aims to provide staff, parents, and students with useful information about how to access the school safely and efficiently.

The TAG provides an overview of the school site including the location of entrances and cycling facilities. The TAG also includes a wider view of the area including bus routes (including dedicated school services where they exist) and identified walking routes that do not require crossing major roads.

The TAG can be used to decide 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.

Investment:

The TAG has been completed as part of the GTP process. The TAG should be provided on the school website for staff and parents to easily find. The TAG can also be part of the New starter orientation and handbooks.

Evidence:

A Travel Access Guide is often part of a GTP to visually communicate and promote sustainable transport initiatives. A TAG also helps new starters develop a greater understanding of the area and opportunities to adopt alternative travel modes to the car.

5.2.3 Transport information on the website

Transport information on the website

Overview

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 would be 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 would give an overview of all the active transport initiatives, a Travel Access Guide, and some rules and expectations regarding car parking and kiss and drop.

The information would be updated periodically by the STP Committee so the information on the website remains topical and relevant.

Investment:

The STP Committee would coordinate with the NSW Department of Education website team.

Evidence:

Providing clear and easily accessible information allows for wide distribution among the intended audience creating a level of understanding and acceptance.

5.2.4 NSW Police Road Safety training

Provision of a Travel Access Guide

Overview:

NSW Police often visit schools to explain safe travel, on topics such as the road rules and strategies for how to access school safely.

Investment:

The STP Committee would coordinate with the NSW Police for the event.

Evidence:

N/A

5.2.5 Tap on every time program

Tap on every time program

Overview:

Bus planners in Transport for NSW use bus patronage to plan for future services. Students who are eligible for free travel often don't tap on.

Encouraging students to tap on could involve:

- Having a competition about the number of bus trips to/from school (max 2 per day). The evidence would be the opal record of trips.
- Putting up TfNSW-provided posters about tapping on and off.

Investment:

The STP Committee would coordinate with the TfNSW for materials and need to arrange posters, review entries etc.

Evidence:

N/A

5.2.6 Bicycle check-up

Bicycle check-up (Quarterly)

Overview:

A bicycle check-up would involve an accredited external organisation coming into the school to show both staff and students how to best look after their bikes.

The bicycle check-up can be arranged to occur annually or more periodically in conjunction with other sustainable transport initiatives.

The STP Committee will promote the event through the school website, newsletter, and the PCA social media. The school could 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 should be supported by road safety education and could be tied in with the timing of the PDHPE curriculum content on safe walking.

Investment:

Funding for courses is available through the Sporting Schools and Premier Sports Challenge Programs. Successful funding applications could expect to receive an average of $1,500-$3,500 per term over three consecutive terms.

Evidence:

The implementation of cycling initiatives increased cycling from 2% to 6% at one school in the UK.

5.2.7 Ridescore (if available)

Provision of a Travel Access Guide

Overview:

RideScore is an incentive-based program aimed at increasing active travel to and from school. The digital platform utilises beacons that provide notifications to parents on the arrival and departure of students riding and scooting to and from school. Individual trips are recorded and rewarded at certain milestones. (Ridescore website)

Not currently available in NSW, but being piloted in QLD.

Participating students will receive a personal sensor (beacon) that is attached to their bicycle or scooter. The school bicycle storage facility is fitted with a Bluetooth reader that detects the signal from the sensor and immediately sends a notification to the nominated contact that the student has arrived at, or departed the school gate. Data is collected by the online platform so that incentives can be offered at certain milestones.

Investment:

Financial investment in Ridescore application and sensor.

Evidence:

The program claims to provide the following benefits to schools:

- Increased road safety around schools
- Reduced traffic congestion and illegal parking
- Students arrive more active and alert
- Improved school community health and well-being

5.2.8 Cycle to school competition with paid prizes

Cycle to school competition with paid prizes

Overview:

Two staff members could be on duty to observe students arriving by bicycle to the bicycle storage areas, recording students' names who bring a bike to school in the morning and leave with it in the afternoon.

Students with the largest number of bike trips over a month could be eligible for a prize such as a bike shop voucher.

Investment:

Staff duties to manage the bicycle storage locations during the competition (nominally one month but could be shorter)

Funding for prizes.

Evidence:

N/A

5.2.9 Bicycle skills training

Provide bicycle skills training

Overview:

Bicycle NSW provides an accreditation program for Ride Leaders, who provide bicycle skills training.

Subject to uptake, SINSW is proposing to provide funded bicycle training during the first year of operation.

This training would increase students' level of skills, comfort and awareness about safe cycling behaviours.

Depending on the interests of students, it could be tailored to different skill levels.

Investment:

Funding will be required to facilitate training. Quotes will be sought when this investment is to be pursued.

Evidence:

N/A

5.2.10 Inquire into Bicycle NSW Spring Cycle Event

Inquire about a Bicycle NSW Spring Cycle event

Overview:

Bicycle NSW runs a Spring Cycle each year. If this event could occur in the vicinity of the new school location before it opens for use (or shortly after the school is opened), it could increase the awareness of students, staff, parents and guardians about cycling options in the area.

Investment:

The STP Committee would coordinate with Bicycle NSW to suggest the event, which would be run by Bicycle NSW.

Evidence:

N/A

5.2.11 Bicycle network decals on paths

Bicycle network decals on paths

Overview:

This proposal is to put non-slip footpath decals on footpaths approaching the school. The key motivation is to help students/parents/guardians find their way to school by reinforcing the right way to school. This would include:

- A decal placed at 100m distances along key routes to school points students to the right path
- Installed on key routes to school that are considered the safest
- The delivery would be undertaken by the builder responsible for school delivery

As the proposal involves work on Council's footpaths, it requires their approval.

Investment:

Funding will be required to provide stickers. Quotes will be sought if Council is supportive of the proposal.

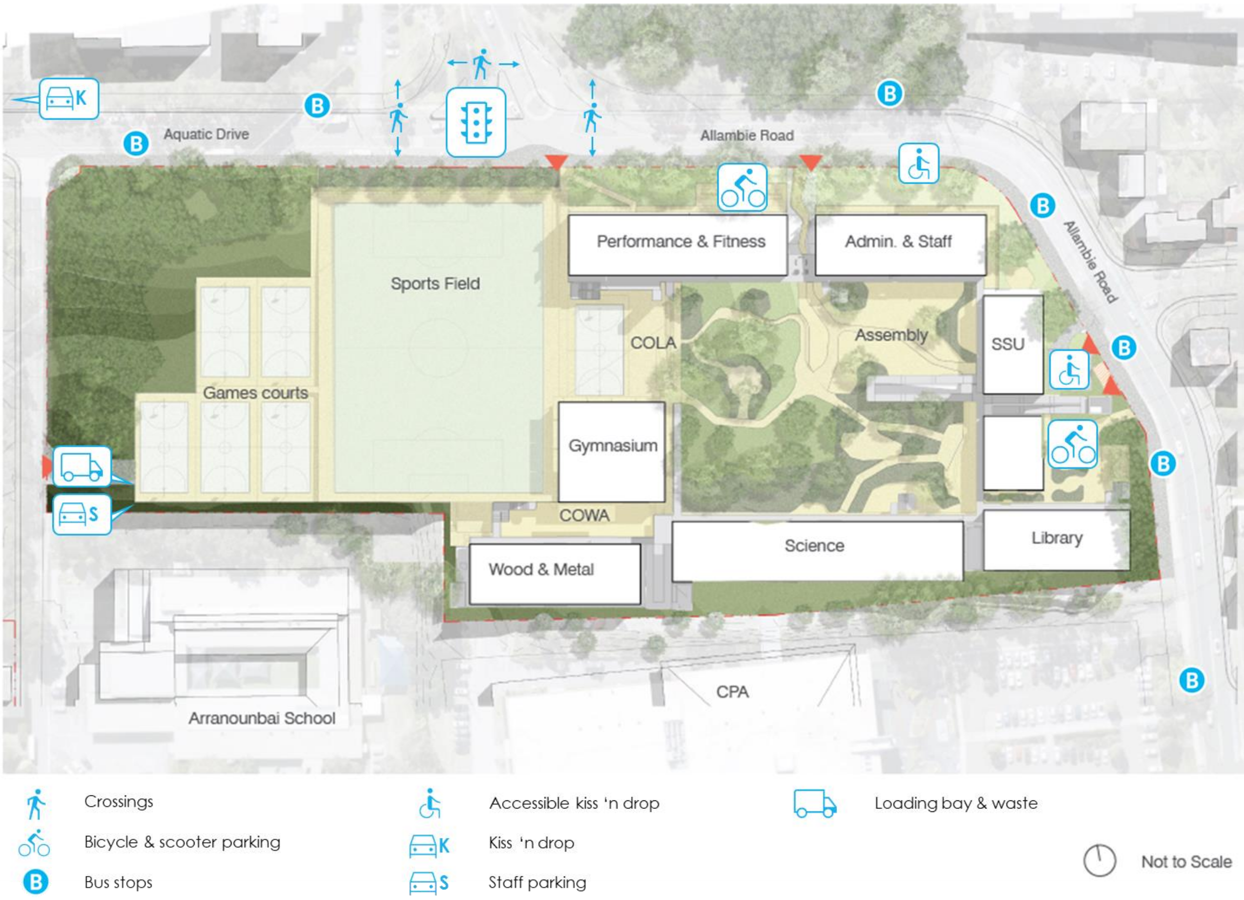
Evidence:

N/A

5.3 School transport operations

A summary of the key transport access arrangements is provided in **Figure 5–1**.

Figure 5–1 Transport access summary



Source: Architectus & Annotations by SCT Consulting, 2022

Each element of the transport access including the controls proposed is discussed in the subsequent sections.

5.3.1 Gate locations

The gates to the school are:

– The primary gate is located on Allambie Road east of the intersection with Aquatic Drive
– A secondary gate is located on Allambie Road just south of the intersection with Aquatic Drive
– A further secondary gate is provided on the eastern side of the site on Allambie Road.

All gates will be open during the pick-up and drop-off periods to make it convenient for students to access the site at the entry closest to their path of travel, and to spread out congestion on footpaths.

A driveway that connects to Aquatic Drive provides connectivity for the staff car park and loading zone.

5.3.2 Walking access

Surrounding the site is a 2.5m shared path along the northeast and eastern perimeter on Allambie Road, which widens to 3.0m along Allambie Road.

Footpaths are available along key roads such as Allambie Road, Aquatic Drive and Warringah Road.

5.3.3 Bicycle / scooter access

Bicycle parking is available near the north and east of the site. A total of 182 bicycle and scooter parking spaces will be provided, including:

– 61 scooter parking spaces

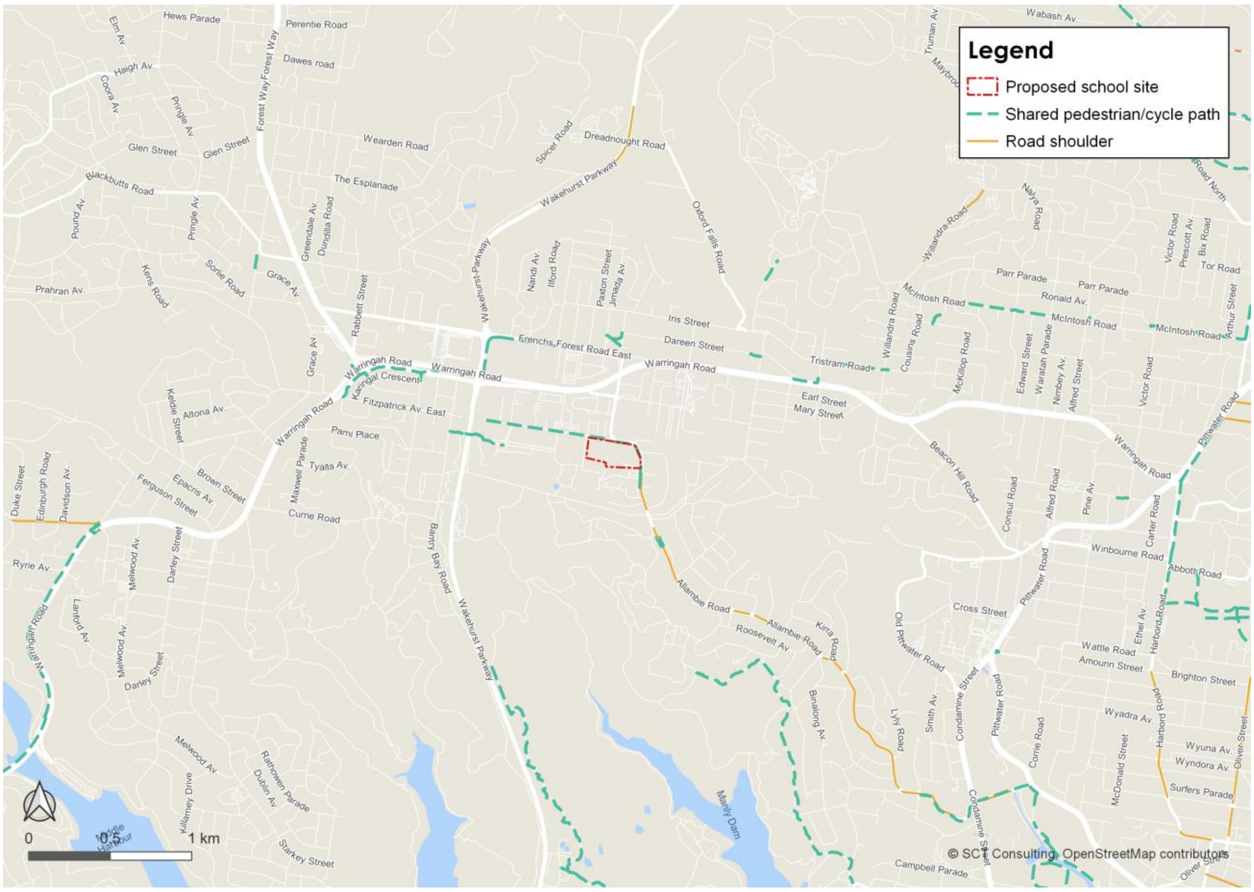
– 121 bicycle parking spaces.

Bicycle and scooter parking areas will be locked after the start of the first class and unlocked at the end of the last class. This will ensure that students don't use bicycles during the day. Students may lock their bikes or scooters to the rack to prevent theft.

Students should consider providing their contact details attached to their bike or scooter, particularly if it is expensive, so it can be returned to its owner if lost.

The site is surrounded by several shared paths, including the newly constructed Aquatic Drive shared path, which connects to the Allambie Road Shared path (**Figure 5–2**).

Figure 5–2 Cycling infrastructure in proximity to the proposed site



The NSW road rules allow children under 16 to ride on footpaths, which expands the potential cycle network for students. Students can take advantage of footpaths subject to these rules, as well as shared paths. Shared paths have more space available, so are less difficult to negotiate with pedestrians.

5.3.4 Bus zones

Three bus stops serve the school (**Table 5-2**).

Table 5-2 School bus stops

Transit Stop Number	Location	Bus services that stop here
210074	Allambie Rd opposite Aquatic Dr (need to cross at the lights)	Routes 174X, 142 and 280
210096	Allambie Rd opposite Arnhem Rd (no crossings required)	Routes 174X, 142 and 280
TBC	Aquatic Dr after Allambie Rd south side(no crossings required)	Route 142
TBC	Aquatic Dr after Allambie Rd north side (need to cross at the lights)	TBC

Source: Transport for NSW, SCT Consulting, 2022

School bus services should be relocated to service the school. When further details are available regarding which stop they terminate/start at, the above table will be updated.

5.3.5 Support unit access

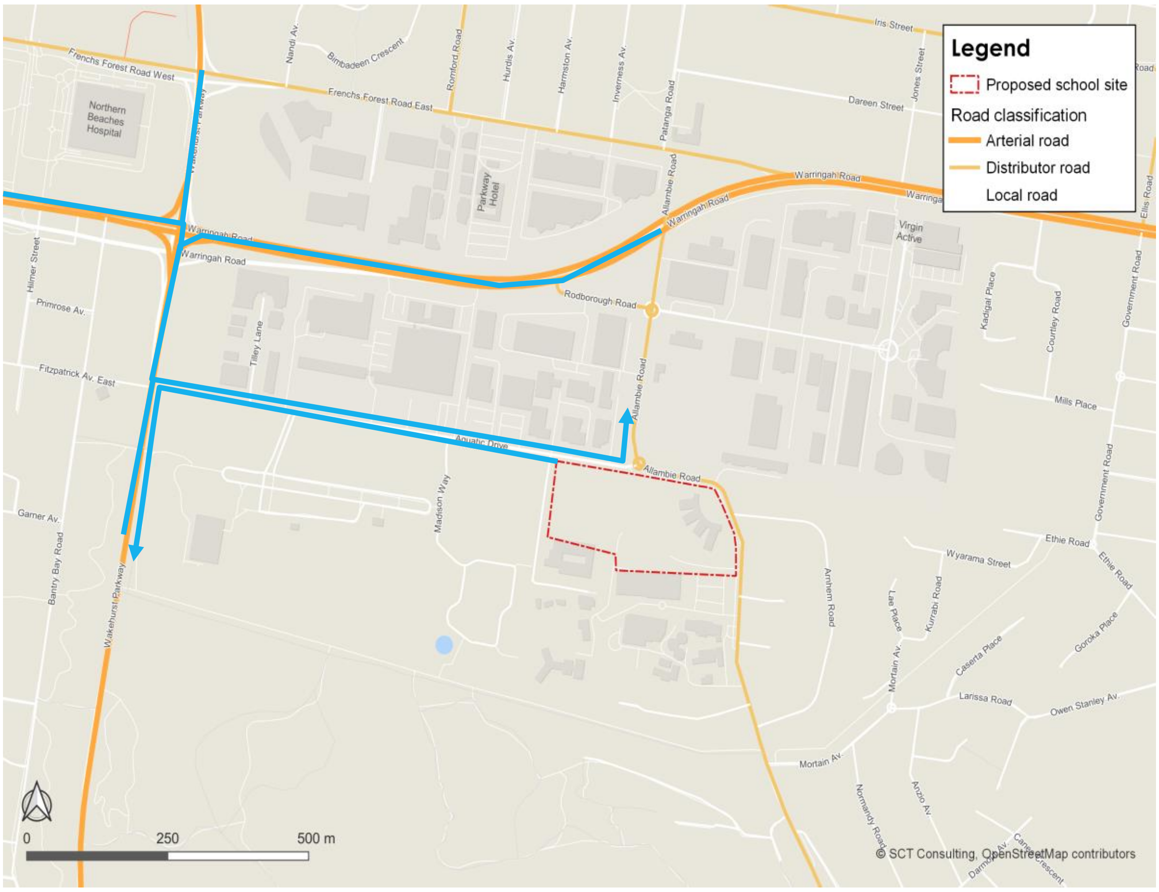
Access for the support unit or students with additional access needs is provided on Allambie Road near the main school gates (an on-street kiss ‘n drop space) as well as to the east of the school on Allambie Road with an off-street facility. The on-street parking space on Allambie Road has space for three vehicles to drop off students. The off-street parking space has two parking spaces and room for a minibus.

These areas are dedicated to students with additional needs and are not to be used by parents dropping other students.

5.3.6 Kiss and drop

The main Kiss and Drop location will be along the northern side of Aquatic Drive. Existing road space will be used with signage installed to indicate the allowed length of stay and operational hours. A secondary Kiss and Drop location will be situated near the main entrance on Allambie Road. This location will be for students with mobility issues only.

Figure 5–3 Access to site by kiss 'n drop (blue)



5.3.7 Staff car park

The car park will be located underground at the centre of the site beneath the soccer playing field. The car park will be accessed from Aquatic Drive via a shared private road along the western perimeter of the site. People who drive will then use a private access road to enter/exit the car park. The car park has been designed to

No provision will be made for Year 12 students who want to drive to the school. Year 12 students are encouraged to consider walking, cycling, or taking the bus to avoid creating additional congestion during school peaks.

The school is intended to be a low car use school focussing on sustainable transport. Providing car parking for Year 12 students will further encourage driving to school, which is contrary to the objectives of this plan.

5.3.8 Waste and deliveries

Deliveries and waste collection using a vehicle larger than a van shall not occur during times when students are on campus. All deliveries involving these larger vehicles should occur during pupil-free days or term breaks. Deliveries should be scheduled to occur at a time when driveway is not in use. Staff are to communicate with Arranounbai School to provide prior warning of truck arrival times to avoid use of the driveway during these times.

5.3.9 Day-to-Day operations

Table 5-3 outlines the Day-to-Day operations and policies of the school.

Table 5-3 Day-to-day operational policies

Mode	Where provided	Parents / Carers	School
Walking and riding	Onsite: refer to **Figure 5–1** Offsite: footpaths and crossing facilities	**Walking** – Parents/carers are responsible for the student's safety travelling to and from school. **Riding** – For children who wish to ride to school, a helmet should always be worn and should stay away from the road. – 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 will also publish a Travel Access Guide (**Appendix G**) 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 5–1**	– Parents/carers are responsible for the student's safety travelling to and from school.	– The school should provide links to the NSW Department of Education's 'Safe Travel' page on its website to inform and advise parents/carers on what is expected of them. – The school will manage the departure of students onto buses. Staff on duty will corral students within the site as they wait for buses. Staff will also stand near stops to direct students to the correct bus. As buses arrive, they will communicate with staff on duty within the school to direct students to head to the bus. – **Appendix G** is a Travel Access Guide indicating the location of bus stops and routes close to the school site.
Driving and Kiss and drop	Offsite in the areas shown in **Figure 5–1**.	– 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	– Council rangers will monitor adherence to parking restrictions surrounding the school to ensure the road rules are obeyed. – The school should provide links to the NSW Department of Education's 'Safe Travel' page on its website to inform and advise parents/carers on what is expected of them.

Mode	Where provided	Parents / Carers	School
		instructions regarding kiss and dropping.	
Shared use car park	Staff parking of 121 spaces provided.	N/A	– Development of policy to manage the allocation of parking spaces appropriately. – Policies to be developed to encourage staff to use public transport where possible.
Deliveries and service vehicles	Waste servicing is provided within the staff car park and loading bay off Arranounbai school's driveway.	N/A	– Waste collection and large deliveries to occur outside of school during morning and evening peaks to minimise conflict with pedestrians.

5.3.10 Event transport operations for Share our Space, hall hire and excursions

During excursions, buses will be parked on Aquatic Drive in the bus zone out of the front of the school. Staff will direct students to the relevant bus and ensure they board. Aquatic Drive doesn't have a right turn at the end, so buses will need to turn left onto Wakehurst Parkway to access their destination.

During larger events when external visitors (e.g. parents) are invited, on-campus parking is insufficient. Instead, visitors should be reminded and encouraged to use public transport or active transport to travel to the event. The Travel Access Guide (TAG) provides suggestions on alternative ways to access the school apart from the private car.

When the hall is hired by external parties for large events, the hirer will be requested to provide a short transport plan for how the event will be managed or agree to follow the operational measures outlined in this School Transport Plan.

5.4 Communication Plan

5.4.1 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 suggested channels and strategies communicate transport information.

5.4.1.1 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 would be provided either under a specific header on the school website page or found under the 'Location and Transport' sub-header. The information on the website would give an overview of all the active transport initiatives, a Travel Access Guide, and some rules and expectations regarding car parking and kiss and drop.

The information would be updated periodically by the travel coordinator so the information on the website remains topical and relevant.

The website will be updated following approval of the SSDA with the new travel access guide.

5.4.1.2 New starter orientation

The new starter orientation will provide new staff, students, and parents of students with information regarding public transport routes and times, safe working routes to the school, and expectations surrounding parking on site.

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 will also have a guided tour of the school site which will include the location of bicycle parking and end-of-trip facilities.

5.4.1.3 Parent and Community Association (PCA) social media

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

Using their social media channels to promote active and public transport modes will raise awareness of these alternatives to car use, and influence parents in their decision-making on how to send students to school while also increasing the safety of these modes by increasing awareness of these user groups.

5.4.1.4 School Newsletters / official communication from the principal

The school newsletter will be used to provide the Transport Access Guide and communicate with parents/guardians the key transport messages.

5.4.1.5 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 can emphasise safe transport network behaviours and encourage active transport through classroom teaching, excursions, assessments, and homework.

5.4.1.6 Awareness days and initiatives

Special days during the school year can be 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 will raise awareness of active transport alternatives and encourage mode shift away from car travel to and from the school.

The school can further extend this initiative by setting aside 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.

5.4.1.7 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 could include interviewing students or teachers who walk or ride to school.

5.4.1.8 Provision of a Transport Access Guide

A Travel Access Guide (TAG) is a pamphlet showing the school locality and the wider area. The TAG aims to provide staff, parents, and students with useful information about how to access the school safely and efficiently. The TAG is described in more detail in **Section 5.4.3**.

5.4.2 Messages

Messages issued by the travel coordinator role should aim 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.**

Message	
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 Warringah Road

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

- Encourage your children to walk rather than being dropped off
- Get to know the bus route, timetable and pick routes with spare seats
- If you have to 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.

Message

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

Term 2: *XX* April to *XX* June

Term 3: *XX* July to *XX* September

Term 4: *XX* October to *XX* December

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).

Driving and parking safely near the school

Help your children be safe by:

- drop your child off and pick them up on the school side of the road
- 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:

- Please only come after XXXpm
- Slow to a stop in the Kiss 'n Drop area on Aquatic Drive
- Communicate with your child about which side of the road they should expect you on
- Wait in your car for your student to arrive

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.

Message

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.

5.4.3 Travel Access Guide

A transport access guide is provided in **Appendix G**.

5.5 Data collection and monitoring

5.5.1 Data collection

Data collection is important in monitoring the successful implementation of sustainable transport targets. Data collection ambitions mustn't be overly burdensome or complex to ensure that they can be run by volunteers in the case where a travel coordinator is no longer funded in the long run. An annual Journey to School questionnaire that is sent out to staff and parents (or students) will be organised by the travel coordinator, and should include questions on the:

– Mode of transport used to get to school

– What would encourage a 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

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

If funding is available, more detailed data collection can be engaged, such as occupancy checks, audits, site observations, communication strategy hit-rate analysis and the like. This type of data collection should not be expected from a volunteering group.

Data was collected as part of the preparation of this School Travel Plan by SCT Consulting. During the implementation, a revised survey should be sent out to re-benchmark the mode share statistics and update the school travel plan as necessary to meet the targets.

5.5.2 Program evaluation

The effectiveness of the transport plan will be monitored by the travel coordinator or the School Travel Plan Committee as well as the PCA. The travel coordinator will monitor how the initiatives are progressing and if any changes are required. The findings of the evaluation should be published on the school website so members of the wider school community can 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.

Evaluations that require more in-depth data and analysis such as transport catchment analysis, parking occupancy and parking spill over will only be engaged if funding is available.

5.5.3 Reporting findings

The travel coordinator will report the findings of the School Transport Plan evaluation to the school and will also make it available for SINSW. 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 SINSW or the Department of Education for consideration. The responsibilities of each stakeholder group are presented in **Table 5-4**.

Table 5-4 Reporting responsibilities by stakeholder group

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

5.6 Governance framework

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

Table 5-5 Internal and external governance

School Travel Plan Committee	State government	Local government	SINSW / Department of Education
– Travel coordinator – Parents and Community Association volunteers – Northern Beaches Council representative – Department of Education representative	– Bus operator – TfNSW – Active Travel to Schools – Bus Service Planning – Bus contract manager – Assisted School Transport Program – Subsidised School Transport Scheme	– Manager, Transport Planning – Active Travel – Road Safety Officer – LGA Travel Coordinator – Sustainability	– Principal – Road Safety Education Officer

5.6.1 Travel Coordinator roles and responsibilities

The role of the travel coordinator will be as follows:

- Implementing transport programs to achieve travel behaviour change, as listed in **Section 5.2**.
- 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 PCA to identify the needs of the school community
- Reporting of data collection and evaluation to stakeholder groups.

If funding is not available in the long run for a dedicated travel coordinator, it is suggested that the STP Committee take on the role of travel coordinator.

5.6.2 Internal school

The travel coordinator and the GTP committee provide insight into all these different types of matters. Representatives from the local council and Department of Education should consult internally regularly to inform the travel coordinator and GTP committee accordingly.

5.6.3 External state and local transport

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

6.0 Conclusion

This Transport Access Impact Assessment shows that:

– The relocation of the school from Frenchs Forest to Allambie Heights can be accommodated with an investment in infrastructure, altered public transport services and transport encouragement initiatives.

– The design of the site is pedestrian and cycling-first. It has bicycle parking at prime locations and stops aligned with pedestrian crossings. Car parking is separated from sustainable modes of transport and sustainable modes are afforded more proximity to entry points.

– The site has been designed according to the requirements laid out in the AS2890 car parking suite and the Education Facilities Standards and Guidelines (EFSG).

– Road impacts are mitigated to the extent feasible by SINSW. The signalization of Allambie Road / Aquatic Drive mitigates significant delays which are forecast to occur if a roundabout is retained.

– The offsite transport infrastructure has been sketched by a road designer, providing authorities confidence that the proposals are feasible, realistic and able to be integrated with the school.

– Transport for NSW and Northern Beaches Council have been consulted during the development of this plan, with much of their feedback incorporated into the design. In some situations, it hasn't been possible to accommodate all stakeholder requests. In these situations, clear explanations have been provided in this report as to why this is the case.

– Transport encouragement programs have been identified and budgeted for the first year of operation of the new school. Initiatives avoid volunteer-run programs which are difficult to ensure maintenance.

– The SEARs for this assessment have been fulfilled.

APPENDIX A

Transport Working Group Minutes

TRANSPORT PLANNING WORKSHOP MINUTES

Project:	The Forest High School
Meeting:	Transport Working Group 2
Date:	11/2/22
Venue:	Via Teams
Time:	9.00am – 10.00am

INVITEES/ATTENDEES

Name	Title & Company
Ryan Thoroughgood (RT)	Senior Project Director, SINSW
Angelo Parissis (AP)	Senior Project Director, SINSW
Sumi Thambyrajah (ST)	Project Director, SINSW
Rebecca Lehman (RL)	Sustainable Transport Technical Advisor, SINSW
Jonathan Busch (JBu)	Associate Director, SCT Consulting
Peter Carruthers (PC)	Network Safety Services Manager, TfNSW
John Broady (JBr)	Senior Manager, Service Planning, TfNSW
Natalie Gulliver (NG)	Senior Manager, Network Safety, TfNSW
Sophia Grieve (SG)	Manager, Travel Demand Management, TfNSW
David Surplice (DS)	Senior Manager sustainable transport, TfNSW
Brett Morrison (BM)	Development Assessment Officer, TfNSW
Pahlee Rathan (PR)	Manager, Land Use Planning, TfNSW
Phillip Devon (PD)	Manager Transport, NBC
Michelle Carter (MC)	Strategic Transport Advisor, NBC
Robynann Dixon (RD)	Road Safety Officer, NBC
Karen Menzies	Road Safety Officer, NBC
Patrick Wright (PW)	Project Director, Johnstaff (JSP)
Elizabeth D'Olier (ED) - *Apology*	Senior Project Manager, Johnstaff (JSP)
Chris Traill (CT) - *Apology*	Project Manager, Johnstaff (JSP)

Education
School Infrastructure

Item	Description	Action By/When
1	**Proposed intersection upgrades**	
1.1	JBu presented intersection modelling noting SIDRA modelling and SCATS data. With COVID it incorporates a greater amount of traffic than data provided in Bunnings Traffic Engineering reports. Background modelling includes both Bunnings and the Future Fenchs Forest Town Centre (FFTC).	Note
1.2	JBu advised preferred option of: a) Signalisation of Allambie/Aquatic b) Signalisation of Aquatic/Wakehurst c) Introduction of pedestrian crossing on west side of Rodborough/Allambie Intersection. The above option performed best at mitigating impact of project on intersections performance whilst maintaining north-south pedestrian corridor from Warringah Rd.	Note
2	**Kiss and Ride**	
2.1	JBu advised kiss and ride has been relocated off site to aquatic road with only an accessible kiss and drop on east side of school on Allambie Road.	Note
3	**Community Concerns**	
3.1	JB advised that the community have concerns with the existing localised traffic congestion and have concerns that the new school will add to this. Other concerns include bus operations, drop off and pick-up configuration, student safety (walking/cycling), associated U-Turns in Aquatic Drive and parking in residential streets.	Note All
4	**Comments on presentation**	
4.1	TfNSW as a collective advised that signalisation of Aquatic/Wakehurst as shown in the Traffic Report commissioned by Department of Planning and Environment (DPE) for FFTC would not be supported due to 'knock on effect' in road widening up to Warringah Rd and safety concerns. Indicative costing for signalisation of Aquatic / Wakehurst is advised as in order of $20m-$30m. This option to be dropped from consideration by SINSW.	Note
4.2	JBr requested that intersection C (Allambie/Aquatic) be reviewed with respect to Bus movements before next meeting.	Note
4.3	JBr recommended that the existing bus stop is relocated on Allambie Rd.	Note
4.4	The proposed location of the crossing on west side of Allambie Road needs further work. There is a risk to pedestrian safety and the see-through effect from vehicles looking to cross east-west over the roundabout. This may include moving further west.	Note
4.5	PD advised NBC would like to improve pedestrian connectivity east-west to and from the Rodborough Industrial area.	Note
4.6	Allambie Road on east side of school will need the introduction of traffic calming measures to reduce speeding.	Note
4.7	BM to champion internal TfNSW stakeholders review comments and modelling review comments.	BM/ 23/2/22
4.8	RL advised that the new school location and size was not going to change and appealed for TfNSW reps and NBC reps to assist with determining agreeable solutions.	Note
4.9	PW advised that he would liaise with BM to convene a separate workshop with select TfNSW reps, SINSW project reps and JBu to look at options, ahead of another TWG.	PW/ 23/22
4.10	PC queried catchment for school. PW advised the adjusted catchment is mainly north and south of the new school site. There are currently out of area enrolments with students coming from Dee Why however it is likely this will change in future as focus will be in area enrolments.	Note
5	**Any other business**	
5.1	Nil	

SCT Consulting

TFHS Transport Working Group #2

Intersection upgrades

Prepared by: Matthew Chow

Reviewed by: Jonathan Busch

9 Feb 2022

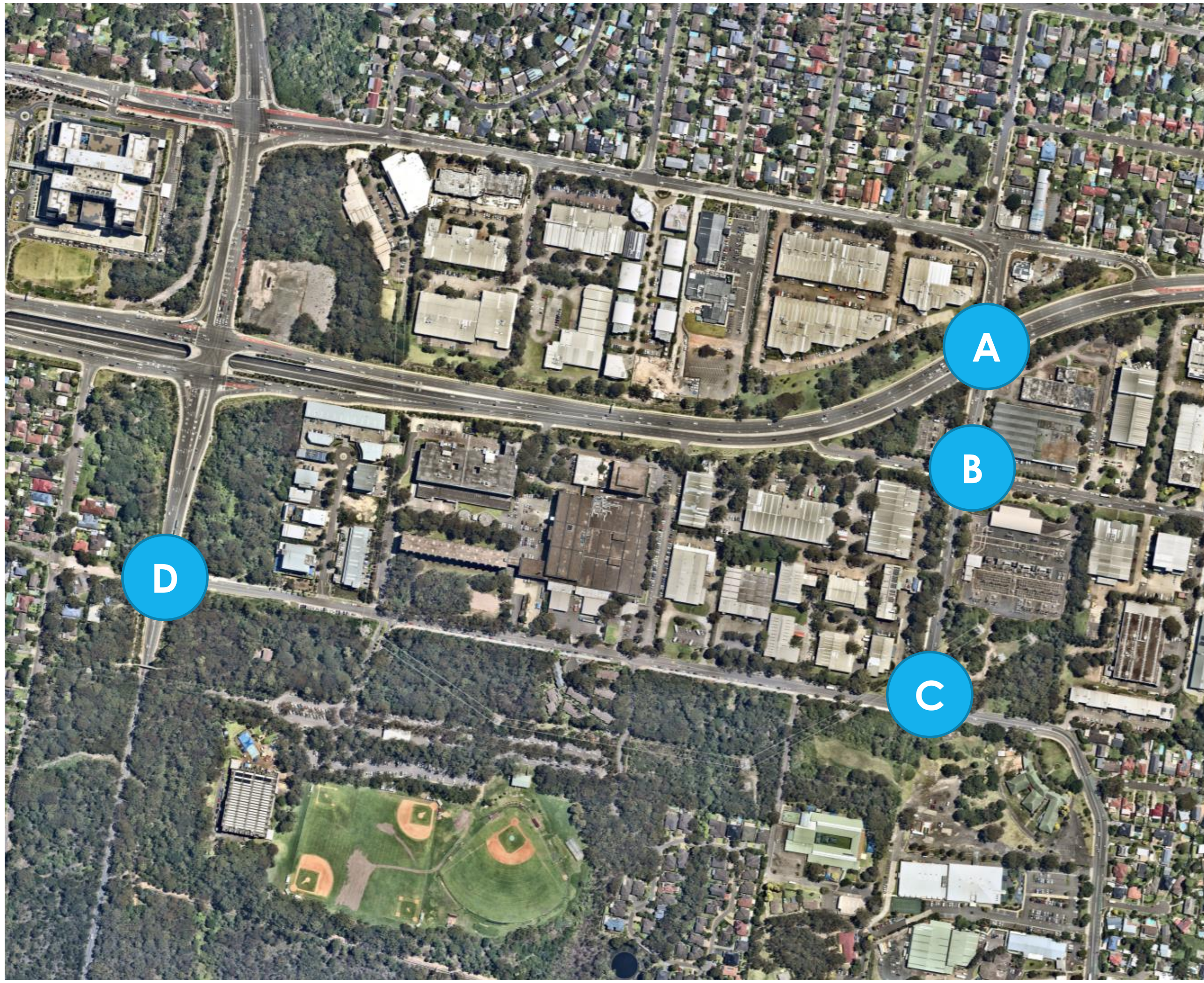
Intersections

How does the network perform?

The network operates with congestion now and into the future. Aquatic Drive is at capacity before the school is opened. The Frenchs Forest Precinct study includes TFHS relocation, but we've removed this demand for the background growth scenario.

Scenario (AM/PM)	A	B	C	D**
Now	F/D	B/B	A/B	?
Background growth (Frenchs Forest + Bunnings)	F/F	C/B	B/B	A/E
TFHS	F*/F*	C/C	F/F	?

*a bad LoS F
** Results from Jacobs Frenchs Forest Precinct study (out of study area), 2036 results

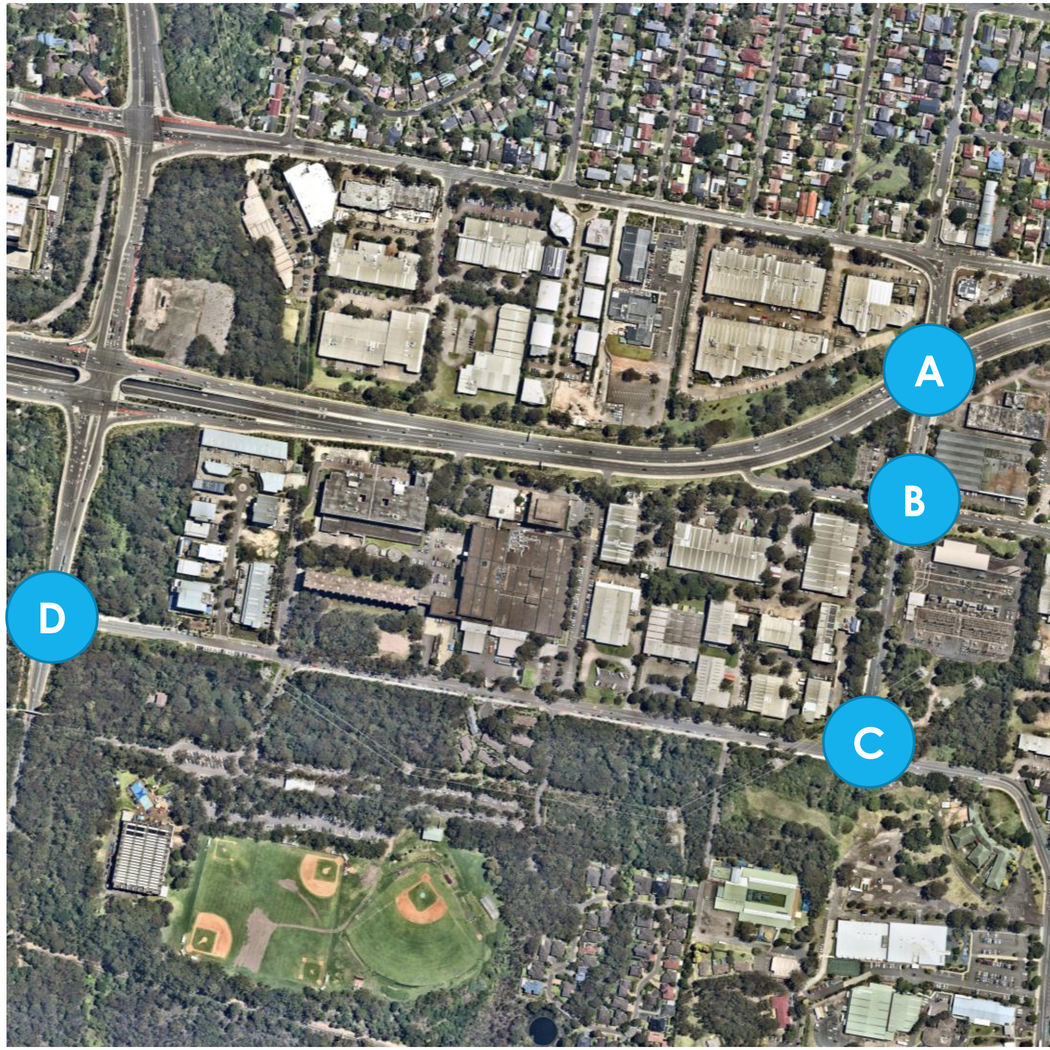


What interventions are required?

In the medium mode share scenario, the best pedestrian outcomes can be reached by signalising Rodborough & Aquatic, but it comes at the expense of Warringa Road performance.
We are putting forward signalisation of Wakehurst/Aquatic, which is documented in the Frenchs Forest precinct study by Jacobs as an alternative.
To provide a north-south pedestrian corridor, we want to also add in a zebra crossing on Rodborough (west)
There are also benefits to the safety of kiss 'n drop with a more logical route.

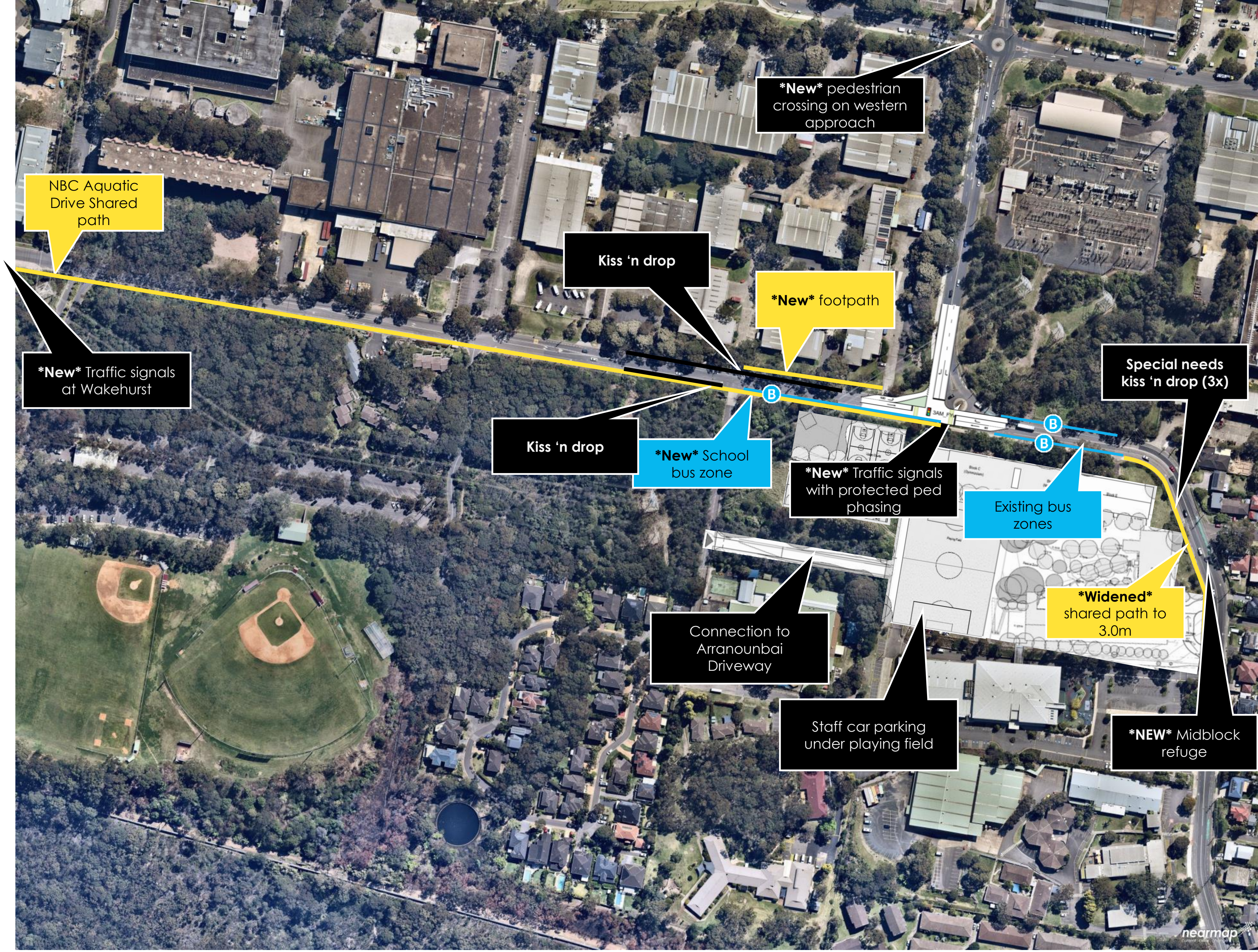
Scenario (AM/PM)	A	B	C	D**	N-S Peds?
TFHS + signals @C	F*/F	B/B	B/B	?	✗
TFHS + signals @C & B	F*/F*	C/C	B/C	?	✓
TFHS + signals @C & B & D	F/F*	B/C	B/C	?	✓
TFHS + signals @C & D	F/F	A/A	C/C	D/A	✗
TFHS + signals @C & D + ped xing @Rod (preferred)	**F/F**	**A/A**	**C/C**	**D/A**	**✓**

*a bad LoS F
** Results from Jacobs Frenchs Forest Precinct study (out of study area), 2036 results



All proposals

- Signals on Aquatic Drive / Warringah and Aquatic Drive / Wakehurst.
- Secure, weather protected bicycle (121 spaces) & scooter (61 spaces) parking to AS2890.3 & EFSG, located at 2x entry points to school
- Transport encouragement programs (largely bike-oriented)
- One parking space per teacher plus special needs kiss ‘n drop in staff car park (for specialised student transport).
- SRV-compatible drop zone within staff car park for special needs shuttles
- Fire egress to Allambie along southern boundary



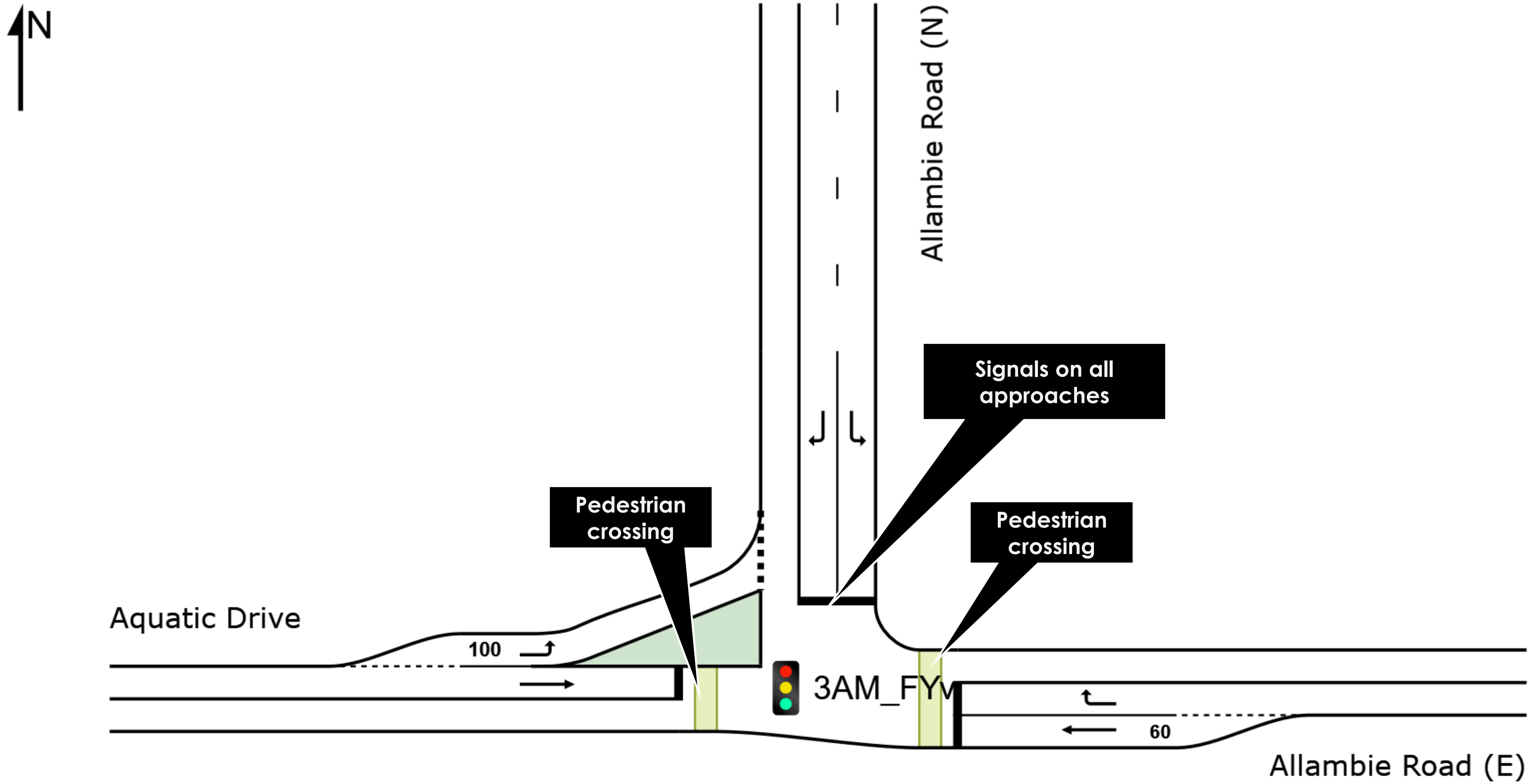
SCT Consulting

Funding

- Volumes are measured over the two peak hours.
- The Forest High School relocation is part of a range of growth occurring in the area.
- At Aquatic Drive, the school represents 79% of the growth
- At Warringah Road, TFHS is only 17% of the growth
- The intersection of Wakehurst / Aquatic is for the purpose of mitigating the impacts on Warringah Road, so is measured against the growth for the broader precinct.

	Aquatic Drive / Allambie Rd	Warringah Road / Wakehurst Parkway
Non-TFHS growth	1,469	267
TFHS growth	292	983
Contribution % for TFHS	17%	79%
Intersection upgrade	Wakehurst/Aquatic	Aquatic/Allambie

Layout of Allambie / Aquatic

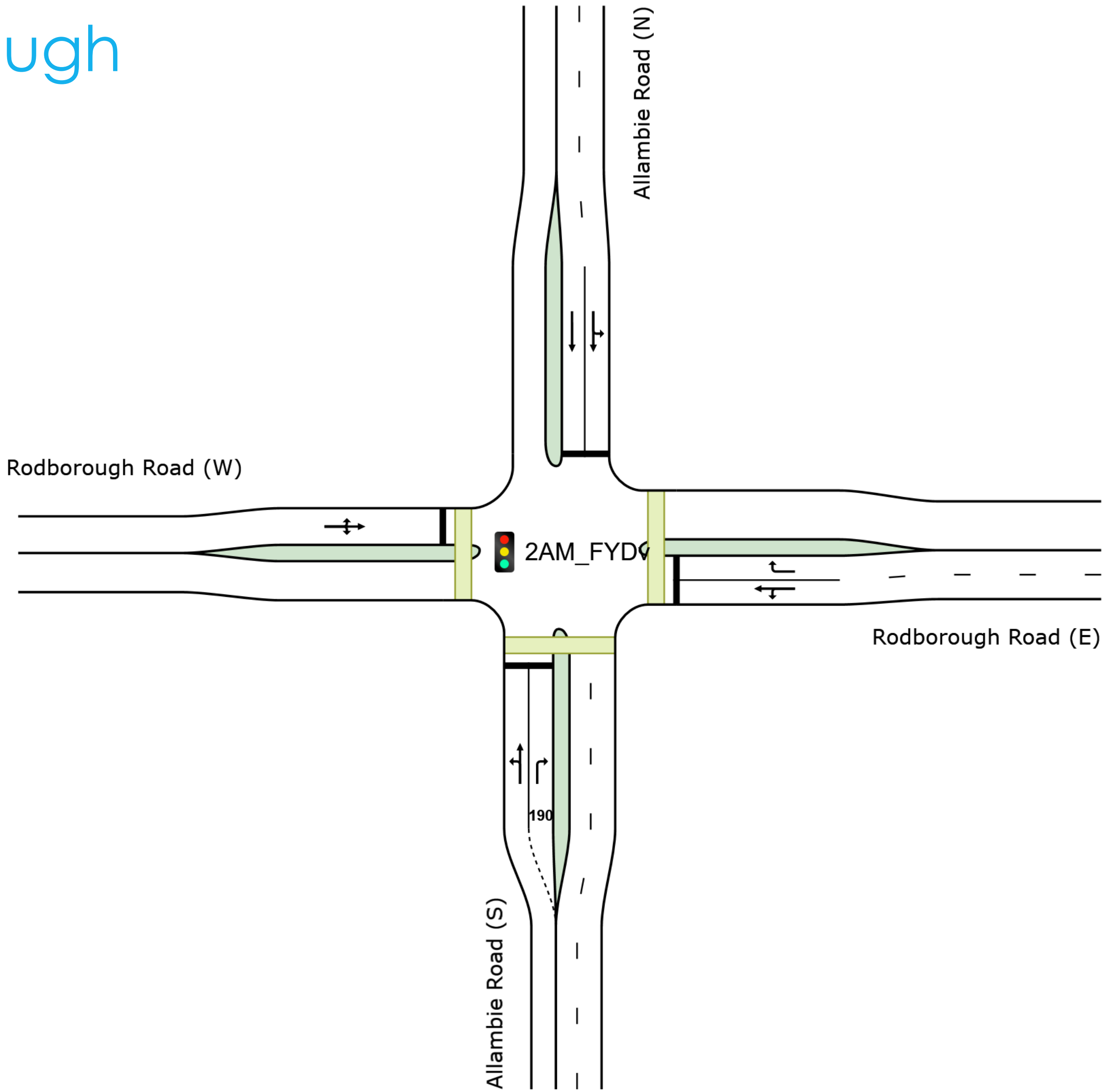


Layout of Allambie / Rodborough

- Raised threshold zebra crossing on western approach.
- Road is already only one lane in each direction, so scan comply with relevant standards.
- Design should allow for storage of at least one vehicle to on eastern approach.

Layout of Allambie / Rodborough (alternative tested)

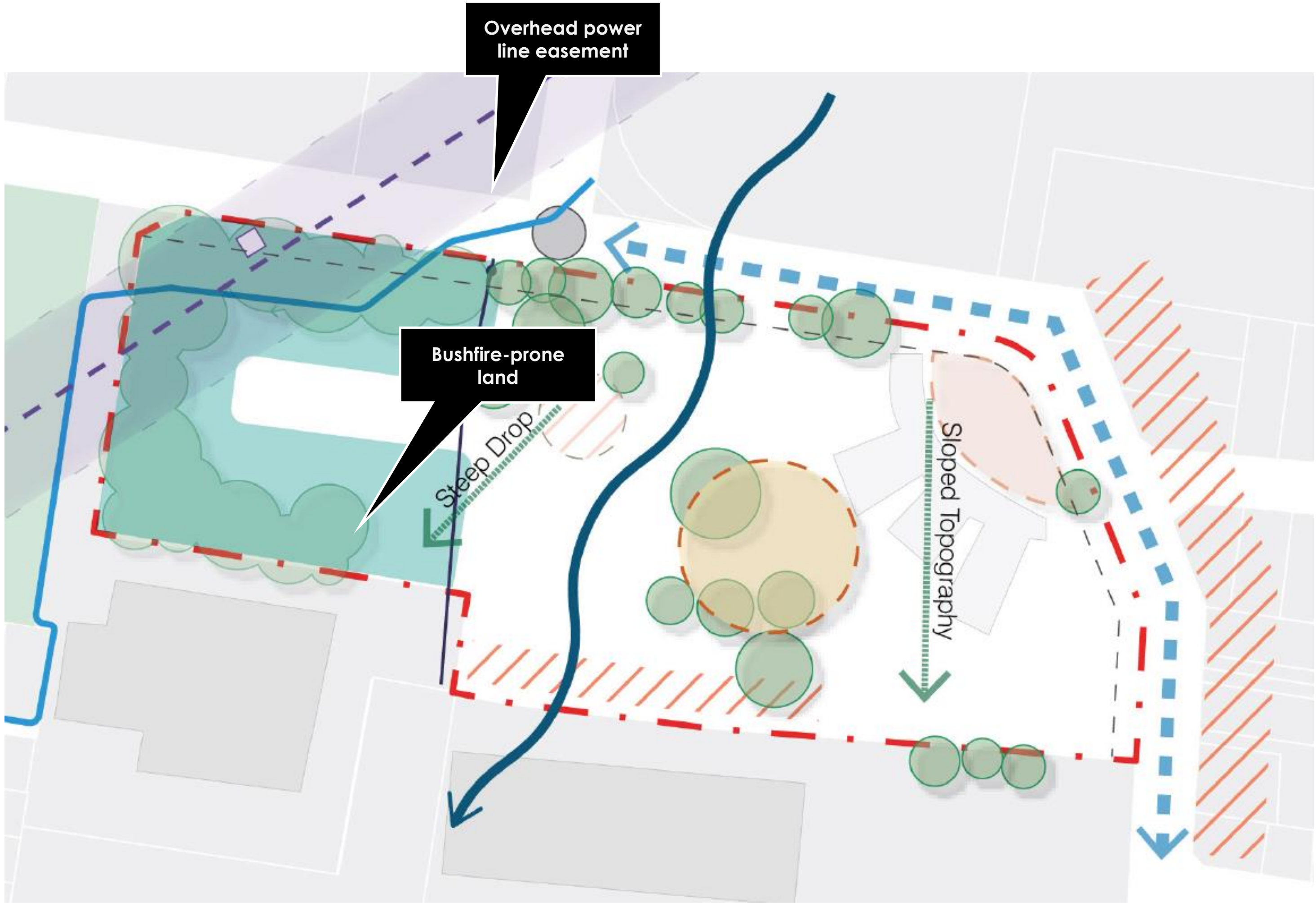
- Note a right turn ban was introduced for the northern approach.



Kiss ‘n drop optioneering

Constraints

- Utility easement not compatible with long stay parking facility.
- Bushfire-prone land creates risk for structures and car parking
- EFSG requirements for accommodation and design
- Designing for access (avoiding stairs and lifts)



Current approach

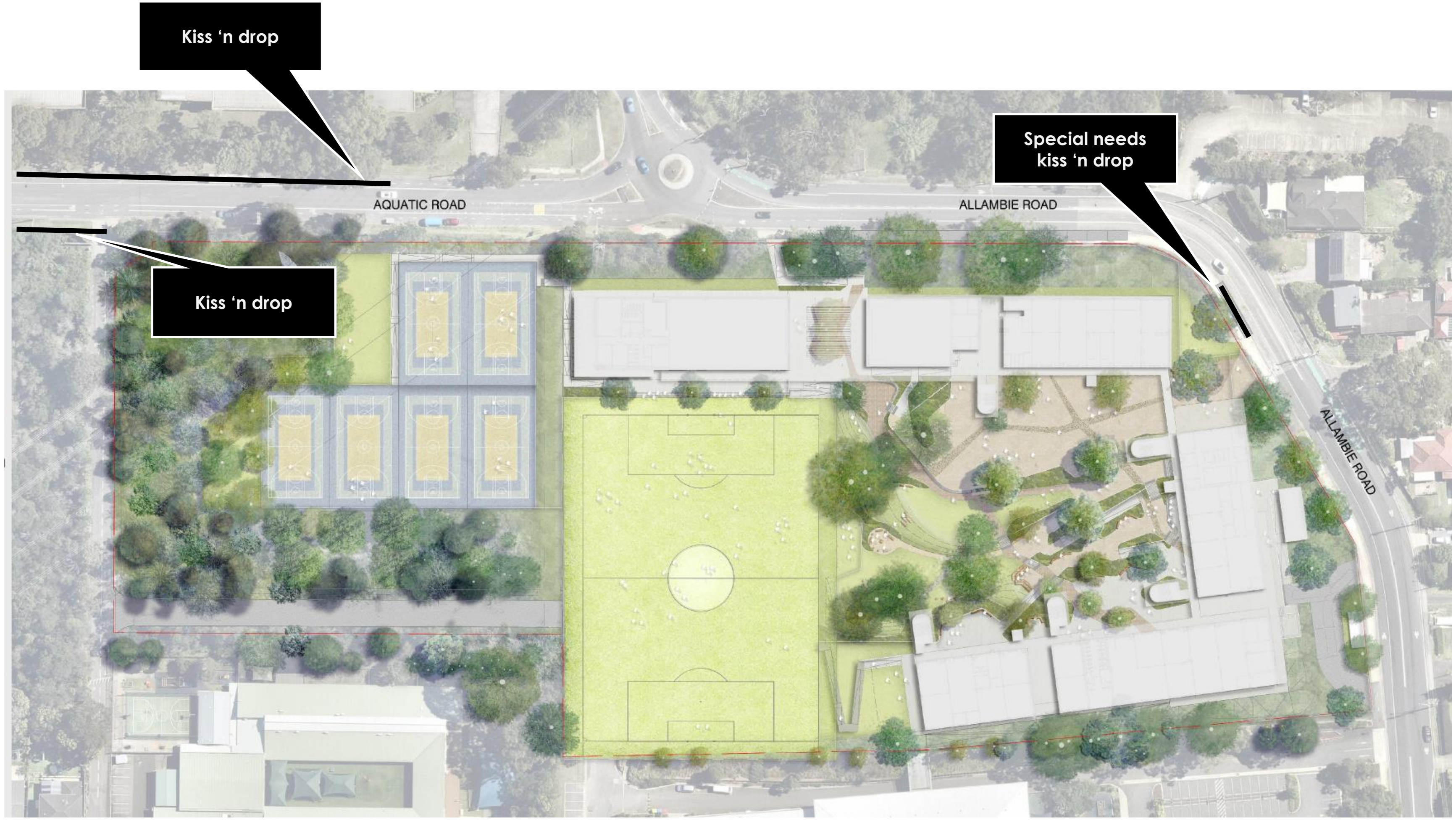
- Kiss ‘n drop on Aquatic Drive.
- Special needs kiss ‘n drop on Allambie Road near gate to school.

Strengths

- Site has minimal on-site roads, which require crossing and management.
- Takes advantage of spare on-street capacity on Aquatic Drive.
- Less impacted by bushfire risk
- No impact to utility corridor.

Weaknesses

- Fully offsite kiss ‘n drop.



Discarded option #1

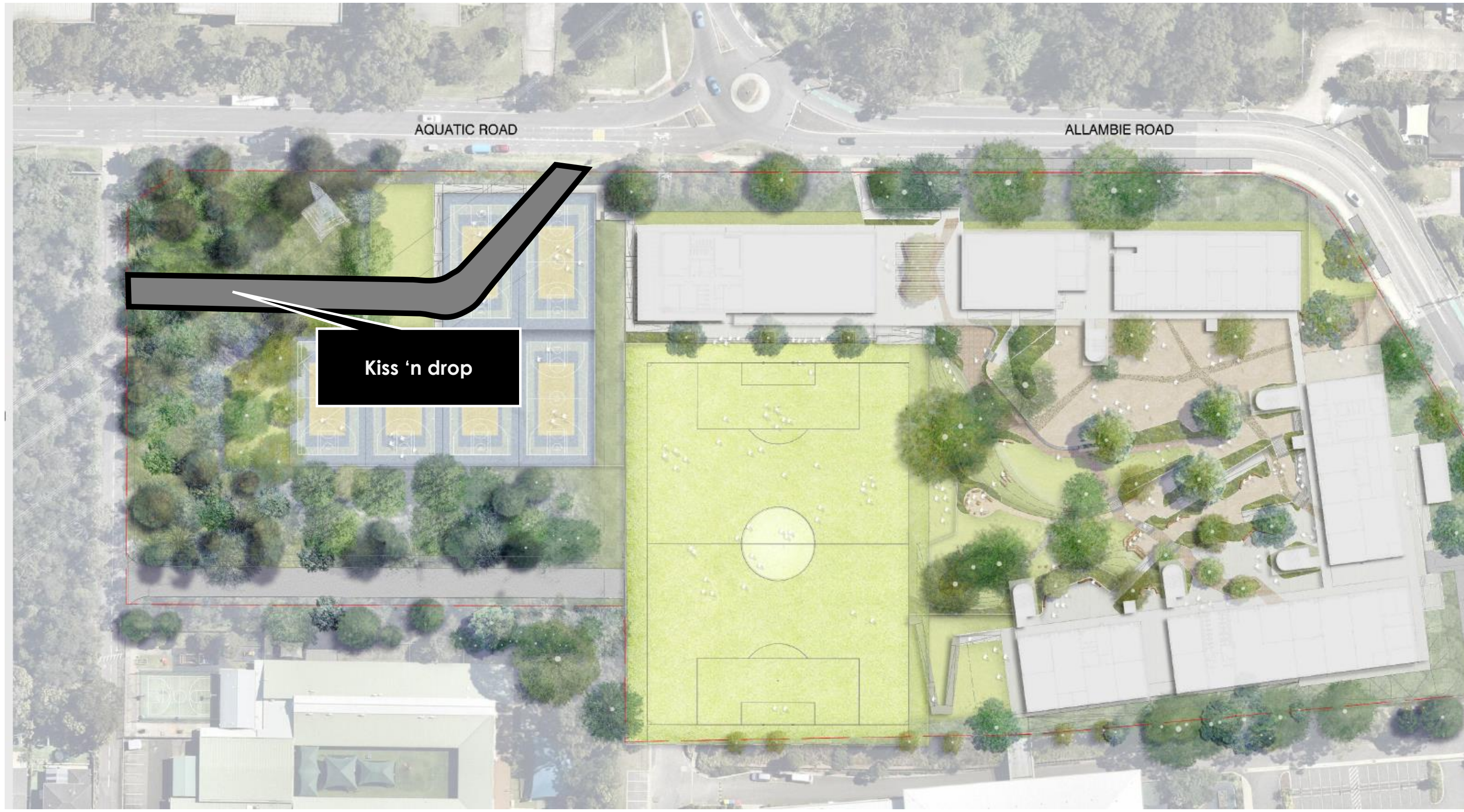
- Kiss 'n drop on Aquatic Drive.
- Special needs kiss 'n drop on Allambie Road near gate to school.

Strengths

- Partial on-site kiss 'n drop.
- Less on-street parking impacts.

Weaknesses

- Removal of forest
- Sight lines to Aquatic Drive are short
- Not likely to have the full capacity available onsite leading to risk of queuing on Aquatic Drive.
- Increased bushfire risk.
- Conflict with overhead powerline requirements.
- Loss of play space.



Discarded option #2

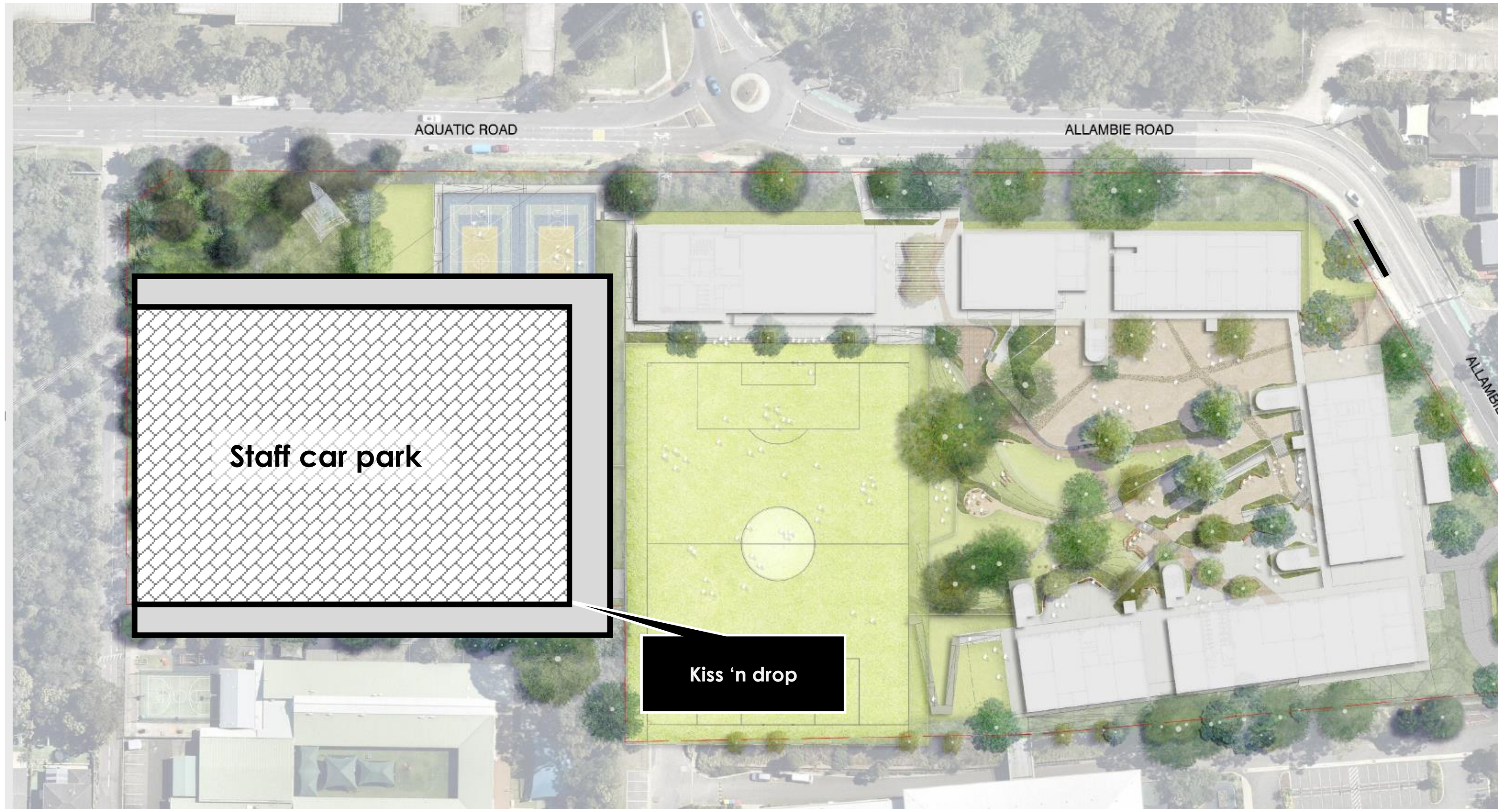
- Facility fully surrounding staff car park as entry/exit road

Strengths

- Fully onsite kiss 'n drop
- Less on-street parking impacts

Weaknesses

- Loss of ability to achieve playing fields on top of car park leading to a loss of play space.
- Removal of forest.
- Increased bushfire risk.
- Substantial cost, reducing ability to contribute to offsite upgrades.
- Not compatible with fire or overhead powerline constraints.



Community concerns and responses

Community feedback & responses

Concern	Approach
Overspill parking into residential streets due to Year 12 students and visitors to the school. This is particularly concerning for residents to the east of the site.	• Work with Council to support year 12 parking in Aquatic Centre. The Warringah Aquatic Centre has over 300 parking spaces, so can accommodate any surplus demand. • **Timed parking restrictions (~2P) during school hours in Arnhem, Sunlea & Eaton.**

Community feedback & responses

Concern	Approach
Concern about queues and speeding issues on Allambie Road	• Delivery of a 40km/h high pedestrian activity area as well as school zone signage on Allambie Road and Aquatic Drive. • Intersection upgrade to signals at Allambie / Aquatic

Detailed intersection results

Key assumptions and inputs

- Surveys were undertaken during a period affected by COVID-19. The volumes were **larger** than previous years/surveys. We adopted these surveys to be conservative and avoid scrutiny (traffic *generally* grows over time).
- Trip generation for the Bunnings development includes some reductions as well as increases due to the change of use.
- Background growth scenario includes the Frenchs Forest Precinct.
- We deducted the current TFHS trips from the network based on an assumed 1.7 students/vehicle (our typical assumption).
- We added new TFHS trips based on the moderate scenario (45% car)
- 90% of trips in the peak period, 10% are before/after school classes/activities
- Trips were distributed to key areas within the catchment

2021 95th percentile queue calibration (# vehicles)

Approach	AM			PM		
	Modelled	**Actual**	**Delta**	**Modelled**	**Actual**	**Delta**
North	13.5	13	<1	9.0	8	+1
East	10.1	7	+3.1	6.8	7	<1
West	5.2	6	<1	4.5	5	<1

Appropriate level of queue calibration

2021 current situation performance

Intersection with Allambie Rd	AM peak			PM peak		
	DOS	Delay	LOS	DOS	Delay	LOS
Warringah Rd	1.03	80.4	**F**	0.88	43.1	D
Rodborough Rd	0.64	18.8	B	0.55	16.4	B
Aquatic Dr	0.85	16.6	A	0.78	15.5	B
Mortain Ave	0.66	11.3	A	0.57	9.4	A
Fleurs St	0.55	9.1	A	0.44	7.4	A

- Allambie / Warringah operates with a cycle time of ~160 seconds, indicating highly congested performance.
- Our results are notably worse than that reported by TTPA (LoS C in the evening – *with development*)
- LoS C is an unlikely performance level given the cycle times.

2031 Bunnings + Frenchs Forest (no upgrades)

Intersection with Allambie Rd	AM			PM		
	DOS	Delay	LOS	DOS	Delay	LOS
Warringah Rd	**1.04**	**84.2**	**F**	**1.11**	**88.5**	**F**
Rodborough Rd	0.73	32.6	C	0.65	21.7	B
Aquatic Dr	0.95	20.9	B	0.93	16.1	B
Mortain Ave	0.53	9.5	A	0.55	6.3	A
Fleurs St	0.43	5.3	A	0.49	5.6	A

- Intersection performance shows that most intersections operate with acceptable levels of delay, except for Warringah Road / Allambie Road, which is deteriorating.

2031 + Bunnings + Frenchs Forest + TFHS

Intersection with Allambie Rd	AM			PM		
	DOS	Delay	LOS	DOS	Delay	LOS
Warringah Rd	**1.21**	**159**	**F**	**1.13**	**128**	**F**
Rodborough Rd	0.93	29.1	C	0.96	31.2	C
Aquatic Dr	**1.09**	**102**	**F**	**1.16**	**167**	**F**
Mortain Ave	0.56	9.8	A	0.52	6.6	A
Fleurs St	0.43	5.2	A	0.45	5.5	A

- Results show the school introduces sizeable delays at the two key intersections. Rodborough / Allambie operates within capacity.

2031 + Bunnings + Frenchs Forest + TFHS + signals @ Aquatic

Intersection with Allambie Rd	AM			PM		
	DOS	Delay	LOS	DOS	Delay	LOS
Warringah Rd	**1.21**	**158**	**F**	**1.02**	**82.4**	**F**
Rodborough Rd	0.92	25.1	B	0.92	27.8	B
+ Aquatic Dr	0.83	19.2	B	0.90	21.3	B
Mortain Ave	0.56	9.8	A	0.83	12.3	A
Fleurs St	0.44	5.5	A	0.56	5.6	A

Our ref: AM_FY – TFHS

- Impacts at Aquatic Drive are fully mitigated and performance improves at Rodborough Rd (compared with the no upgrades scenario).
- Performance in the morning at Warringah Road is still unsatisfactory in the morning peak.

2031 + Bunnings + Frenchs Forest + TFHS + Aquatic & Rodborough signals

Intersection with Allambie Rd	AM			PM		
	DOS	**Delay**	**LOS**	**DOS**	**Delay**	**LOS**
Warringah Rd	**1.21**	**158**	**F**	**1.18**	**147.1**	**F**
+ Rodborough Rd	0.98	36.9	C	0.92	38.4	C
+ Aquatic Dr	0.76	19.7	B	0.78	30.7	C
Mortain Ave	0.56	9.9	A	0.79	10.9	A
Fleurs St	0.43	5.0	A	0.68	7.6	A

Our ref: AM_FY – TFHS 2S1 PM_FY – TFHS – 2S3

- The introduction of Rodborough signals improves performance at Rodborough and Aquatic signals but worsens performance at Warringah Road.
- Rodborough’s traffic signals create interference with the Allambie / Warringah intersection, reducing southbound capacity. There’s only 110m of storage between Rodborough and Warringa, creating a risk of spillback queues.

2031 + Bunnings + Frenchs Forest + TFHS + Aquatic & Rodborough signals + diversion

Intersection with Allambie Rd	AM			PM		
	DOS	Delay	LOS	DOS	Delay	LOS
Warringah Rd	**1.09**	**109.5**	**F**	**1.18**	**147.8**	**F**
+ Rodborough Rd	0.76	18.1	B	0.62	30.4	C
+ Aquatic Dr	0.72	26.4	B	0.70	29.0	C

Our ref: AM_FY – TFHS 2S1-Diversion PM_FY – TFHS – 2S3-Diversion

- Diversion based on Jacobs assumption that traffic signals could be delivered at Aquatic Drive / Wakehurst Parkway, allowing northbound right turning traffic from Aquatic Drive.
- Jacobs modelled Wakehurst Parkway including Warringah/Wakehurst and recommended this infrastructure
- Diversion significantly improves intersections with Rodborough and Aquatic but Warringah Road remains poorly performing.

2031 + Bunnings + Frenchs Forest + TFHS + Aquatic signals + diversion

Intersection with Allambie Rd	AM			PM		
	DOS	Delay	LOS	DOS	Delay	LOS
Warringah Rd	**1.02**	**78.6**	**F**	**1.00**	**77.1**	**F**
Rodborough Rd	0.63	11.1	A	0.51	12.0	A
+ Aquatic Dr	0.70	31.1	C	0.69	32.5	C

Our ref: AM_FY – TFHS 2S1-Diversion PM_FY – TFHS – 2S3-Diversion

- This is based on Jacobs assumption that traffic signals could be delivered at Aquatic Drive / Wakehurst Parkway, allowing northbound right turning traffic from Aquatic Drive
- Diversion without signalising intersection with Rodborough significantly improves the performance at Warringah Road in both the AM and the PM peaks. **This performance is better (lower delay) than the no TFHS scenario.**

2031 + Bunnings + Frenchs Forest + TFHS + Aquatic signals + diversion + ped crossing @ Rodborough

Intersection with Allambie Rd	AM			PM		
	DOS	Delay	LOS	DOS	Delay	LOS
Warringah Rd	**1.02**	**78.6**	**F**	**1.00**	**77.1**	**F**
Rodborough Rd	0.73	14.1	A	0.54	15.9	B
+ Aquatic Dr	0.70	31.1	C	0.69	32.5	C

Our ref: AM_FY – TFHS 2S1-Diversion PM_FY – TFHS – 2S3-Diversion

- This is based on Jacobs assumption that traffic signals could be delivered at Aquatic Drive / Wakehurst Parkway, allowing northbound right turning traffic from Aquatic Drive
- Diversion without signalising intersection with Rodborough significantly improves the performance at Warringah Road in both the AM and the PM peaks. **This performance is better (lower delay) than the no TFHS scenario.**

Thank you

sctconsulting.com.au

TRANSPORT PLANNING WORKSHOP MINUTES

Project:	The Forest High School
Meeting:	Transport Working Group 3
Date:	24/08/22
Venue:	Via Teams
Time:	10.00am – 11.00am

INVITEES/ATTENDEES

Name	Title & Company
Angelo Parissis (AP) - *Apology*	Senior Project Director, SINSW
Sumi Thambyrajah (ST)	Project Director, SINSW
Rebecca Lehman (RL)	Sustainable Transport Technical Advisor, SINSW
Jonathan Busch (JBu)	Associate Director, SCT Consulting
Peter Carruthers (PC)	Network Safety Services Manager, TfNSW
John Broady (JBr)	Senior Manager, Service Planning, TfNSW
Natalie Gulliver (NG) - *Apology*	Senior Manager, Network Safety, TfNSW
Sophia Grieve (SG)	Manager, Travel Demand Management, TfNSW
David Surplice (DS) - *Apology*	Senior Manager sustainable transport, TfNSW
Brett Morrison (BM)	Development Assessment Officer, TfNSW
Phillip Devon (PD)	Manager Transport, NBC
Michelle Carter (MC)	Strategic Transport Advisor, NBC
Karen Menzies (KM) - *Apology*	Road Safety Officer, NBC
Vicky Walker (VW)	Networking Safety Services, TfNSW
Patrick Wright (PW)	Project Director, Johnstaff (JSP)
Elizabeth D'Olier (ED)	Senior Project Manager, Johnstaff (JSP)
Chris Traill (CT)	Project Manager, Johnstaff (JSP)

Education
School Infrastructure

Item	Description	Action By/When
1	**Introduction**	
1.1	PW noted since prior TWG 2 on 11 Feb 22 further Off-site infrastructure review workshops had taken place on 23/02/2022, 04/03/2022 and 25/05/2022 between TfNSW, SI and Northern Beaches Council Representatives with corresponding minutes issued. The purpose of TWG 3 was to present the collated transport investment option for final feedback from TWG prior to SSD Lodgement.	Note
2	**Transport investment summary**	
2.1	JBu presented overview of Transport noting upgrades to intersection, pedestrian footpaths, path widening, pedestrian crossings and mid-path refuge.	Note
2.2	***Comments on design:***	
2.2.1	**School Zone:** JBu to issue Allambie Rd plans to VW for updated school zone mark up.	Note
2.2.2	**Mid-point crossing:** PC advised refuge adjacent bus location not a safe location. JBu advised bus stop is not adjacent, PD advised curb blisters would be beneficial to reduce travel distance for proposed crossing.	Note
2.2.3	**Allambie / Aquatic intersection design** BM queried layout of Aquatic-Allambie intersection. JBu/BM to review detailed design offline.	JBu/BM
2.2.4	**Student / pedestrian protections** BM Advised concerns on design discouraging pedestrian J-walking. BM inclusion of fencing on east / west approaches at wither median or kerb.	Note
2.2.5	**Right turn from left lane** JBr Queried allowance for right hand turn from Left Hand Lane. JBu to review alternative designs with project team allowing for Right hand turn from left lane option.	JBu
3	**Transport encouragement programmes**	
3.1	JBu reviewed transport encouragement programmes in line with the attached presentation.	Note
3.2	***Comments on presented options:***	
3.2.1	Council confirmed support of bicycle network decals on paths.	Note
4	**Public Transport adjustments**	
4.1	JBu presented Public transport design options in line with attached presentation	Note
4.2	**Comments on presented design**	

Item	Description	Action By/When
4.3	PD flagged concerns regarding bus space allowance differences to those in the current school PD advised that the current school services 6 busses, this design appears to only allow for 2-3 buses.	Note
4.4	Proposed staggered start times are not supported by JBr. JBu advised that split start/finish times (3 x 10minute tranches over the 30mins period) would be non-negotiable in meeting the requirements of the model and that staggered start time core part of proposal.	Note
4.4.1	Bus bay will need to be maintained eastbound on Aquatic Drive just prior to Allambie Road to service the 142 from Seaforth for AM peak.	Note
4.4.2	Bus stop northwest of site (westbound on Aquatic Drive) would service 142 and would require additional bay during school pickup times.	Note
4.4.3	Bus stop westbound on Allambie Road at main entrance could be retained if left lane can be a right turn lane.	Note
4.4.4	Bus stop eastbound on Allambie Road opposite main entrance is advised to have capacity for 2 busses.	Note
4.5	*Post Meeting action JBr has circulated proposed alterations to bus routes to accommodate change in school location (Attached to meeting minutes).*	Note
4.6	BM requested JBu supply forecast pedestrian volumes between the proposed school catchments areas along Allambie Road north of Warringah Road.	Note
5	**Traffic Modelling results**	
5.1	JBu Presented 2025 (school opening) modelled intersection performance noting an improvement on 2031 results with not as much traffic from the town centre.	Note
6	**Any other business**	
6.1	Nil to report	Note

The Forest High SSDA

Transport Working Group 3

15 August 2022

Quality Assurance

Project details			
Project number:	SCT_00213		
Document name:	Summary of Transport Exhibition Content		
Client:	School Infrastructure NSW	ABN:	40 300 173 822
Prepared by:	SCT Consulting Pty. Ltd.	ABN:	53 612 624 058

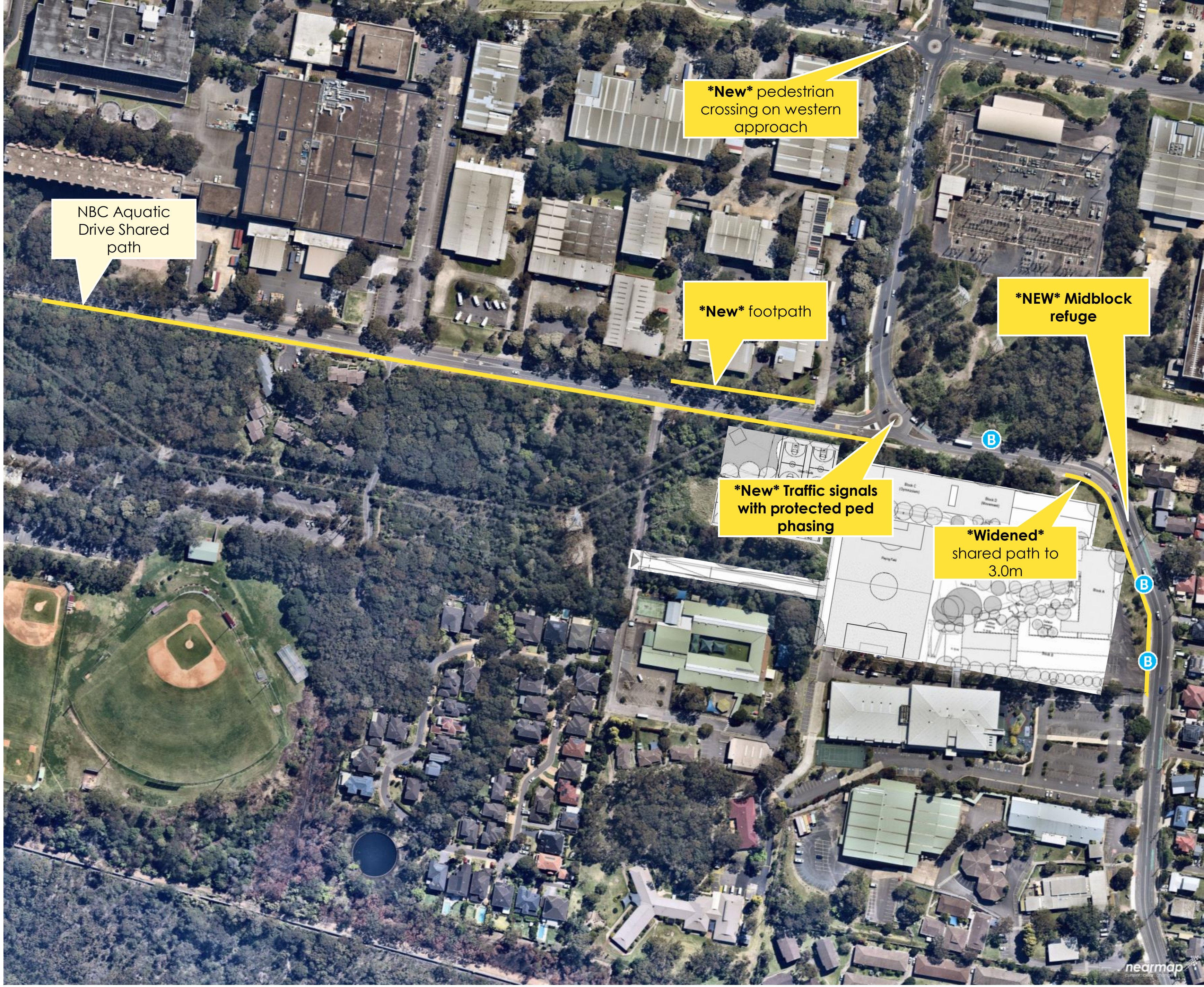
Information	Name	Position	Signature
Author:	Jonathan Busch	Associate Director	JDB
Reviewer:	Andy Yung	Director	AY
Authoriser:	Andy Yung	Director	AY

Version	Date	Details
1.0	14 April 2022	Draft
2.0	28 July 2022	Draft
3.0	30 July 2022	Draft
4.0	15 August 2022	Final

Transport investment summary

Walk & cycle

- Signals on Aquatic Drive / Allambie Road
- New crossings
- New footpath
- Signalisation of Allambie / Aquatic
- Widened shared path outside school
- Secure, weather protected bicycle (121 spaces) & scooter (61 spaces) parking to AS2890.3 & EFSG.
- Transport encouragement programs for first year of operations (largely bike-oriented)



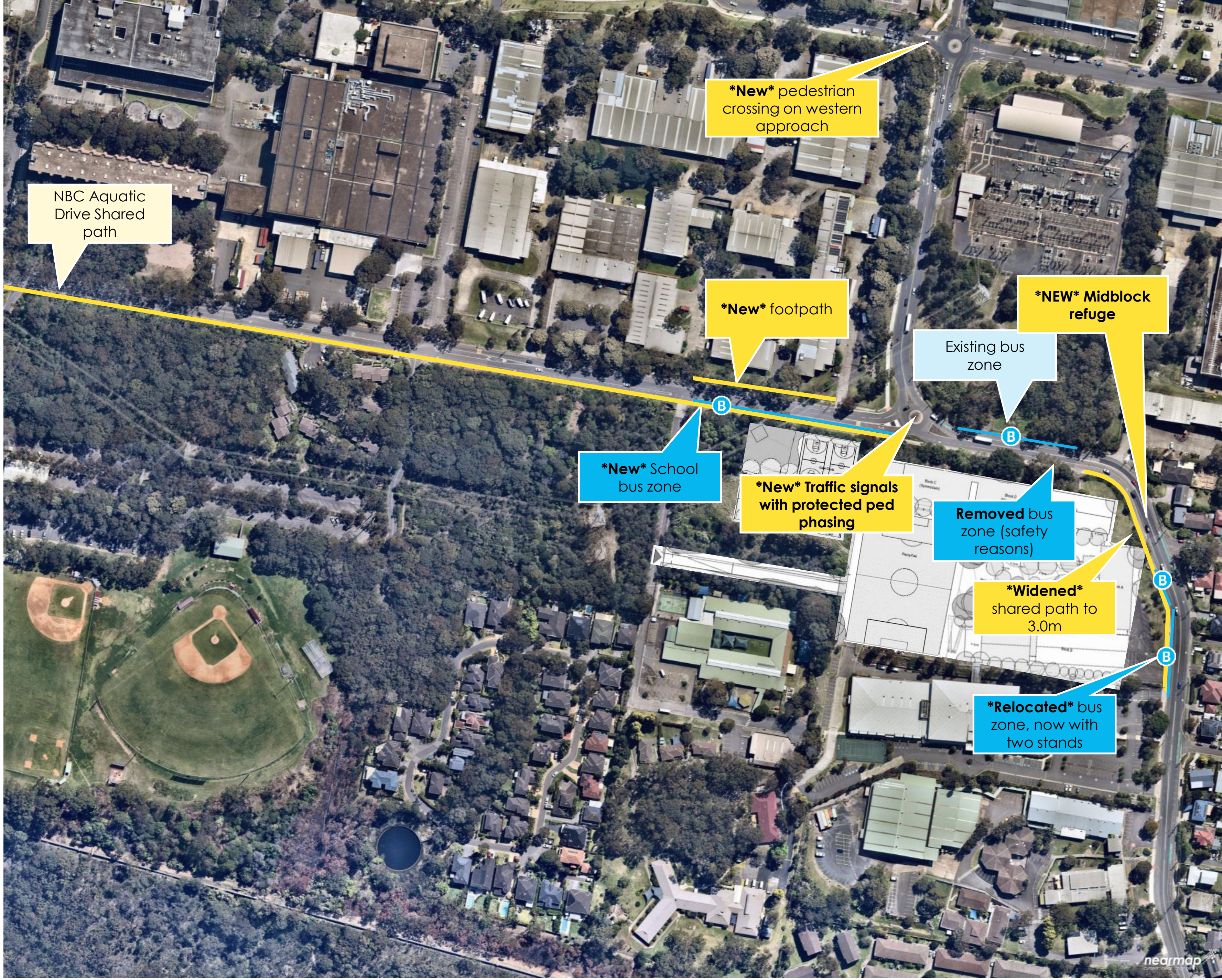
SCT Consulting

Transport encouragement programs

Mode	Initiative
All	Transport Access Guide
All	NSW Police road safety training
Bus	Tap on every time program
Cycle	Bike repair quarterly on school grounds
Cycle/scoot	Ridescore (if available)
Cycle/scoot	Cycle to school competition with paid prizes (e.g. win a bike)
Cycle/scoot	Bicycle skills training
Cycle/scoot	Inquire into Bicycle NSW Spring Cycle Event
Cycle/scoot	Bicycle network decals on paths

Public transport

- Addition of new bus zone on Aquatic Drive frontage of school
- Removal of bus stop on Allambie Road (TSN 2100177) per request from TfNSW due to road safety issues.
- Relocation of Allambie Road bus stop on school frontage further south to allow for two stands (TSN 210096)
- No change to existing stop on Allambie Road north of school (TSN 210074)



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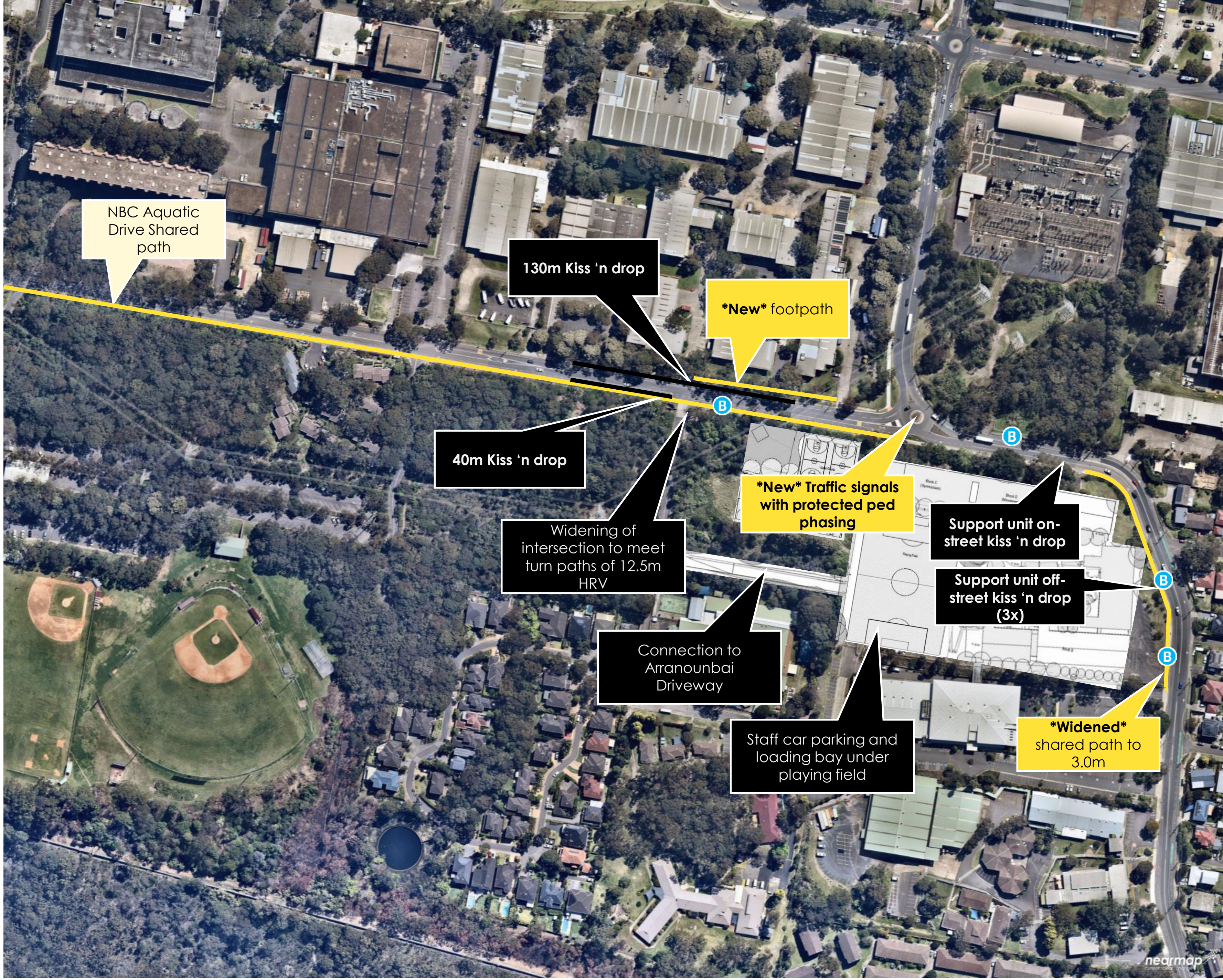
Bus recommendations

- Allambie Road frequency is 14 services per hour in peak periods – very high for a high school site
- The current school is served by 11 school specials. The following routes are recommended for relocation:
  - Route 210: The Forest HS to Myroo Rd after Booralie Rd via Davidson HS
  - Route 213: The Forest HS to Chatswood Station
  - Route 720n: Wyuna Ave & Oliver Sts to Rabbett St & Forest Way
  - Route 730n: Forest High School to Warringah Mall
  - Route 621n: Forest High School to Warringah Mall
  - Route 739n: Forest High School to Seaforth
  - Route 777n: Forest High School to Condamine & Balgowlah

Vehicle

- Off and on-street options for special needs kiss 'n drop (the school will have a support unit)
- Widening of the Arranounbai driveway splay top Aquatic Dr to cater for Heavy Rigid Vehicle (required for metalwork classes & waste)
- Loading bay designed for Heavy Rigid Vehicle
- One parking space / teacher plus special needs kiss 'n drop in staff car park (for specialised student transport)



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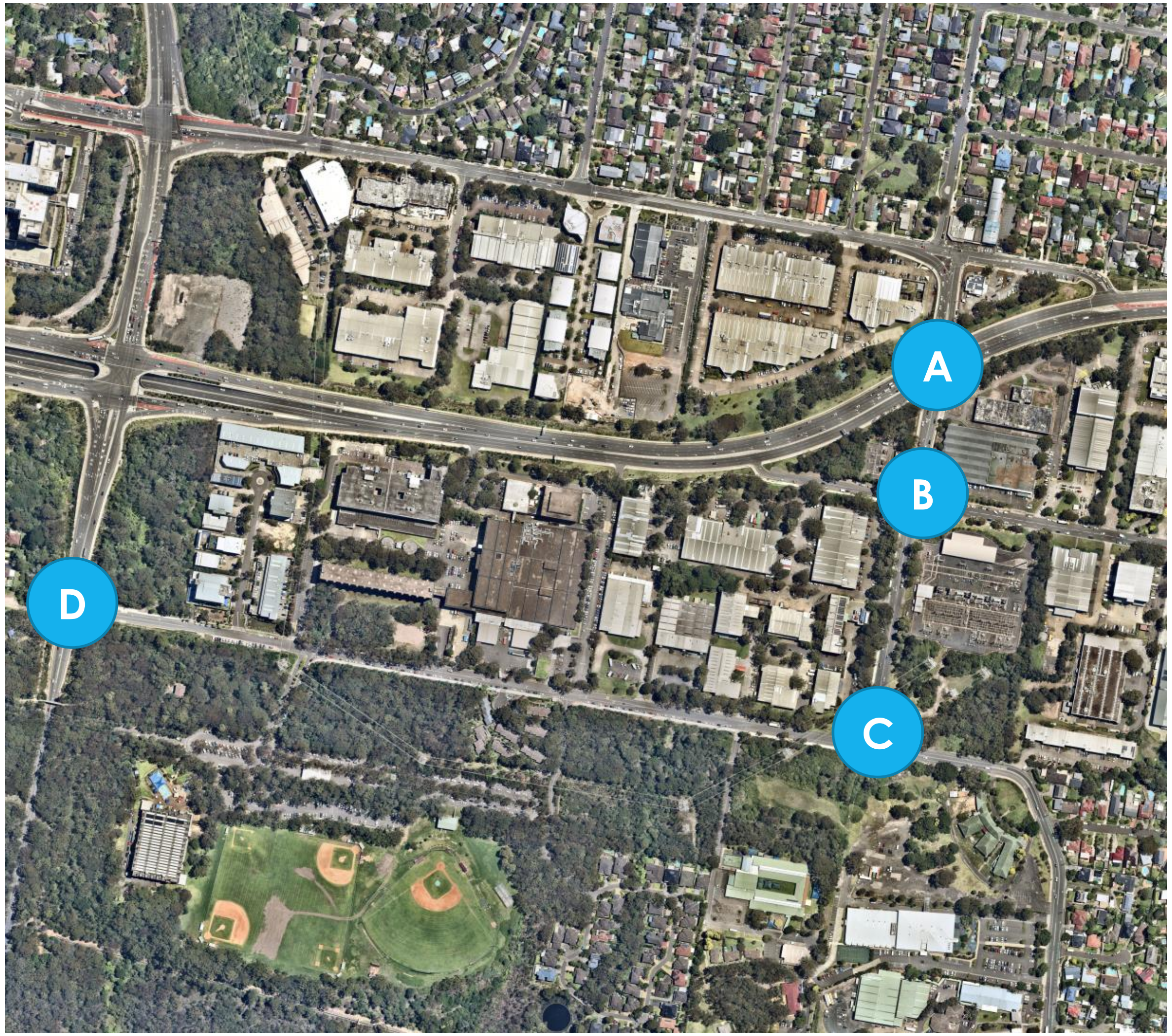
Traffic modelling results

Results from last TWG

- **The network operates with congestion now and into the future.**
- **Aquatic Drive is at capacity** before the school is opened.
- Signalisation of (B) Rodborough / Allambie and (D) Aquatic / Wakehurst were ruled out.
- TfNSW requested re-calibration of SIDRA models.



Mode share scenarios

Scenario	Explanation	Investment assumptions
Existing conditions	• Enables calibration of mode share factors	• Existing conditions
Short term base case	• The mode share *immediately* as a base case • Assumes existing students all relocate to new school (including out of area enrolments)	• Existing conditions
Long term base case	• The mode share in the longer term with committed infrastructure • Based on locations of current public school students in feeder schools plus new growth potential in Frenchs Forest precinct	• Council shared path on Aquatic Drive
Long term moderate intervention (preferred)	• The combined benefits of all the highest feasibility investments	• Allambie Rd / Aquatic Dr signals • Wider shared path on Allambie Rd • Secure, weather-protected cycle & scooter parking • Crossing on Allambie Rd east of Arnhem Rd • Ped crossing at Rodborough Road • Transport encouragement programs
Long term stretch case	• The combined benefits of all investments	Above plus: • Signalisation of Rodborough Rd / Allambie Rd • Footpath on southern side of Fitzpatrick Ave East from Wakehurst Parkway to Warringa Rd • Footpath provision on Mortain Ave and Larissa Rd

Mode share outcomes (no change since RTA)

Scenario		Walk	Bicycle / scoot	Bus	Car
Existing conditions (based on SCT survey)	#	25	18	360	397
	%	**3%**	**2%**	**45%**	**50%**
Short term base case	#	47	26	284	443
	%	**6%**	**3%**	**36%**	**55%**
Long term base case	#	66	66	472	936
	%	**4%**	**4%**	**31%**	**61%**
Long term moderate case	#	66	182	600	692
	%	**4%**	**12%**	**39%**	**45%**
Long term stretch case	#	99	182	600	659
	%	**6%**	**12%**	**39%**	**43%**

- A mode share of up to 7 per cent from car to more sustainable modes is considered feasible in the stretch case scenario
- Trip generation in traffic modelling will be based on the moderate case

Updated modelling results

- Models were recalibrated in consultation with TfNSW using new SCATS data
- Staggered bell times and delaying the morning bell to 8.30-9.30 am provides an improvement in performance.
- **However, Warringah / Allambie is still at/over capacity due to growth caused by others.**

Scenario Level of Service Performance (traffic)	A Warringah		B Rodborough		C Aquatic	
	AM	**PM**	**AM**	**PM**	**AM**	**PM**
Now (base)	D	C	B	B	B	B
2031 Background growth (Frenchs Forest + Bunnings)	D	**F**	B	B	B	C
2031 TFHS relocation with no upgrades	**F**	**E***	**F**	D	**F**	**F**
2031 TFHS + signals @ Aquatic Drive and ped crossing at Rodborough	**F**	**E**	B	B	C	B
2025 background growth & TFHS (day of opening)	D	D	B	A	B	A

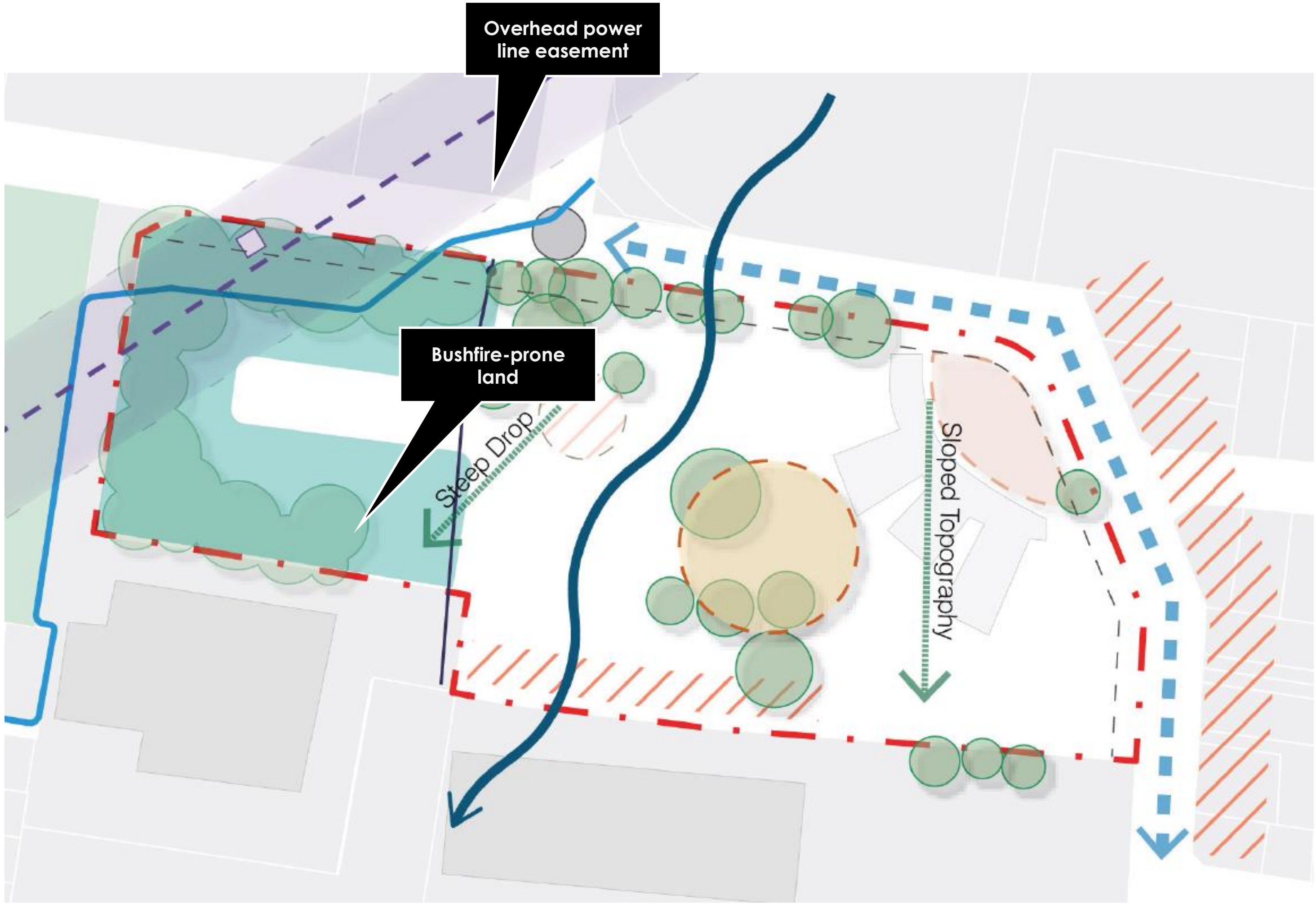
*intersection appears to improve, but this is due to traffic held back at earlier intersections

- The proposed works mitigate impacts at Rodborough and Aquatic but not Warringah.
- There are no options to upgrade Warringah that are within the transport budget for the project.

Kiss ‘n drop options considered

Constraints

- Utility easement not compatible with long stay parking facility.
- Bushfire-prone land creates risk for structures and car parking
- EFSG requirements for accommodation and design
- Designing for access (avoiding stairs and lifts)



Current approach

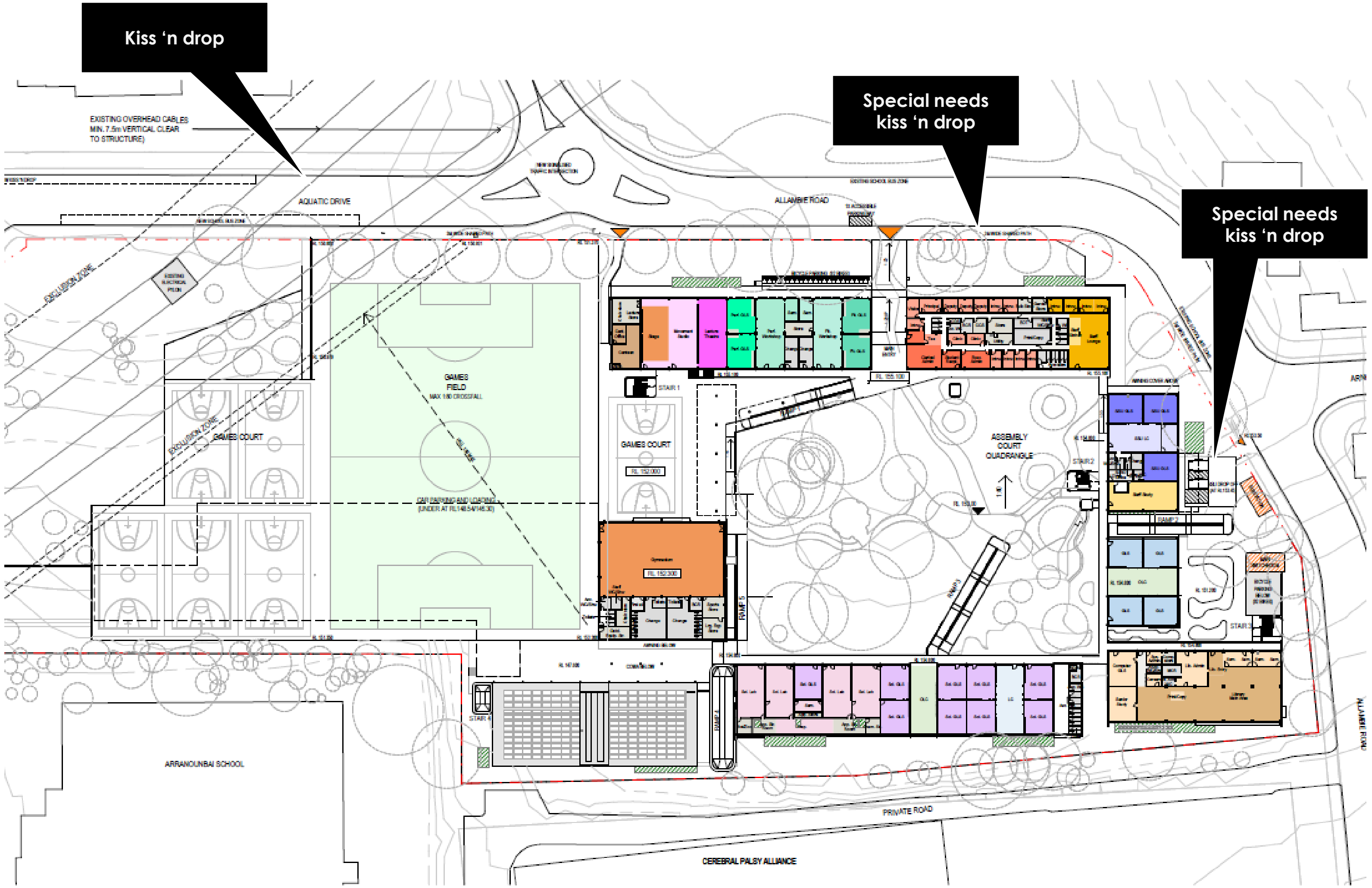
- Kiss 'n drop on Aquatic Drive.
- Special needs kiss 'n drop on Allambie Road near gate to school.

Strengths

- Site has minimal on-site roads, which require crossing and management.
- Takes advantage of spare on-street capacity on Aquatic Drive.
- Less impacted by bushfire risk
- No impact to utility corridor.

Weaknesses

- Fully offsite kiss 'n drop.



Discarded option #1

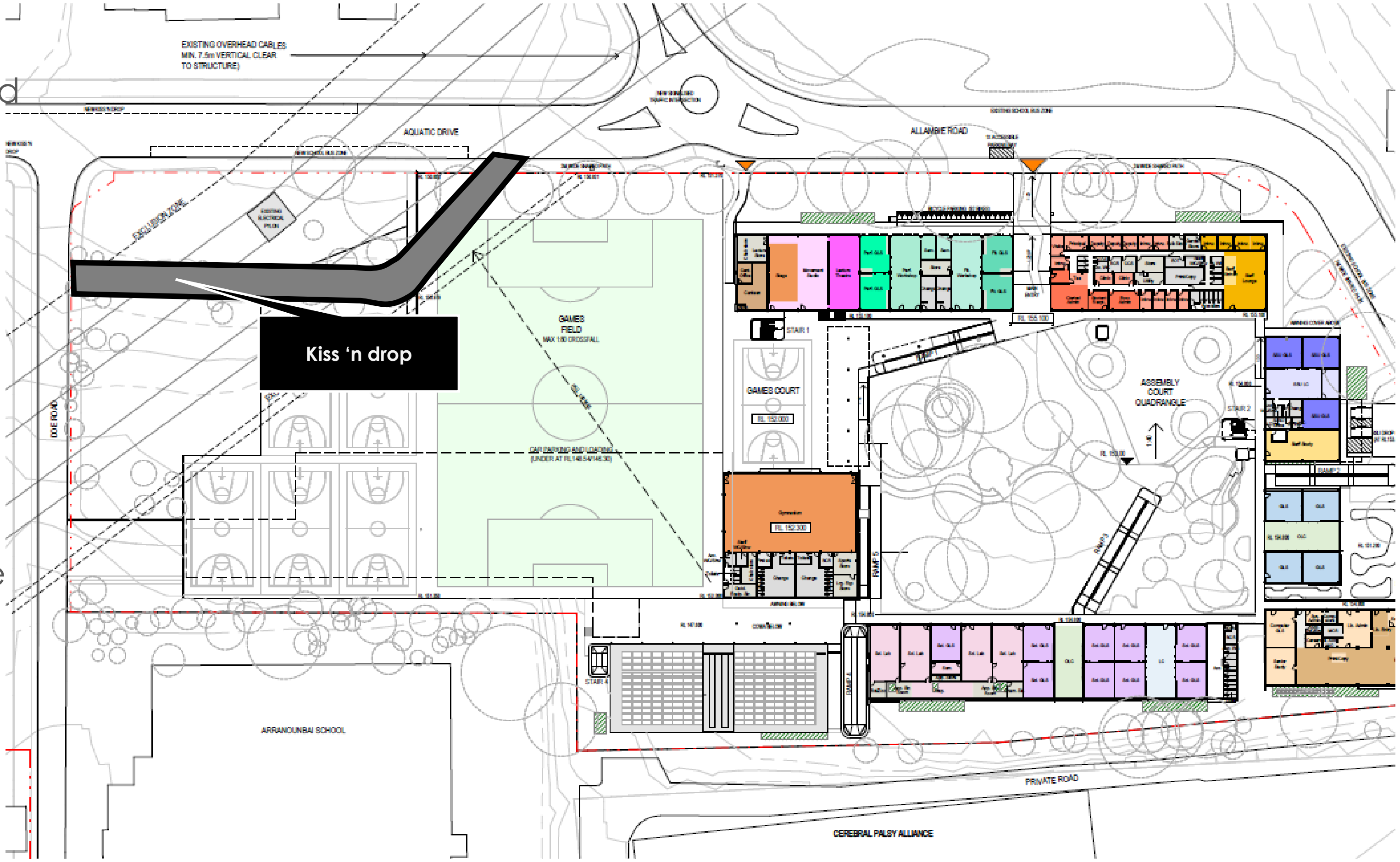
- Kiss 'n drop on Aquatic Drive.
- Special needs kiss 'n drop on Allambie Road near gate to school.

Strengths

- Partial on-site kiss 'n drop.
- Less on-street parking impacts.

Weaknesses

- Removal of forest
- Sight lines to Aquatic Drive are short
- Not likely to have the full capacity available onsite leading to risk of queuing on Aquatic Drive.
- Increased bushfire risk.
- Conflict with overhead powerline requirements.
- Loss of play space.



Discarded option #2

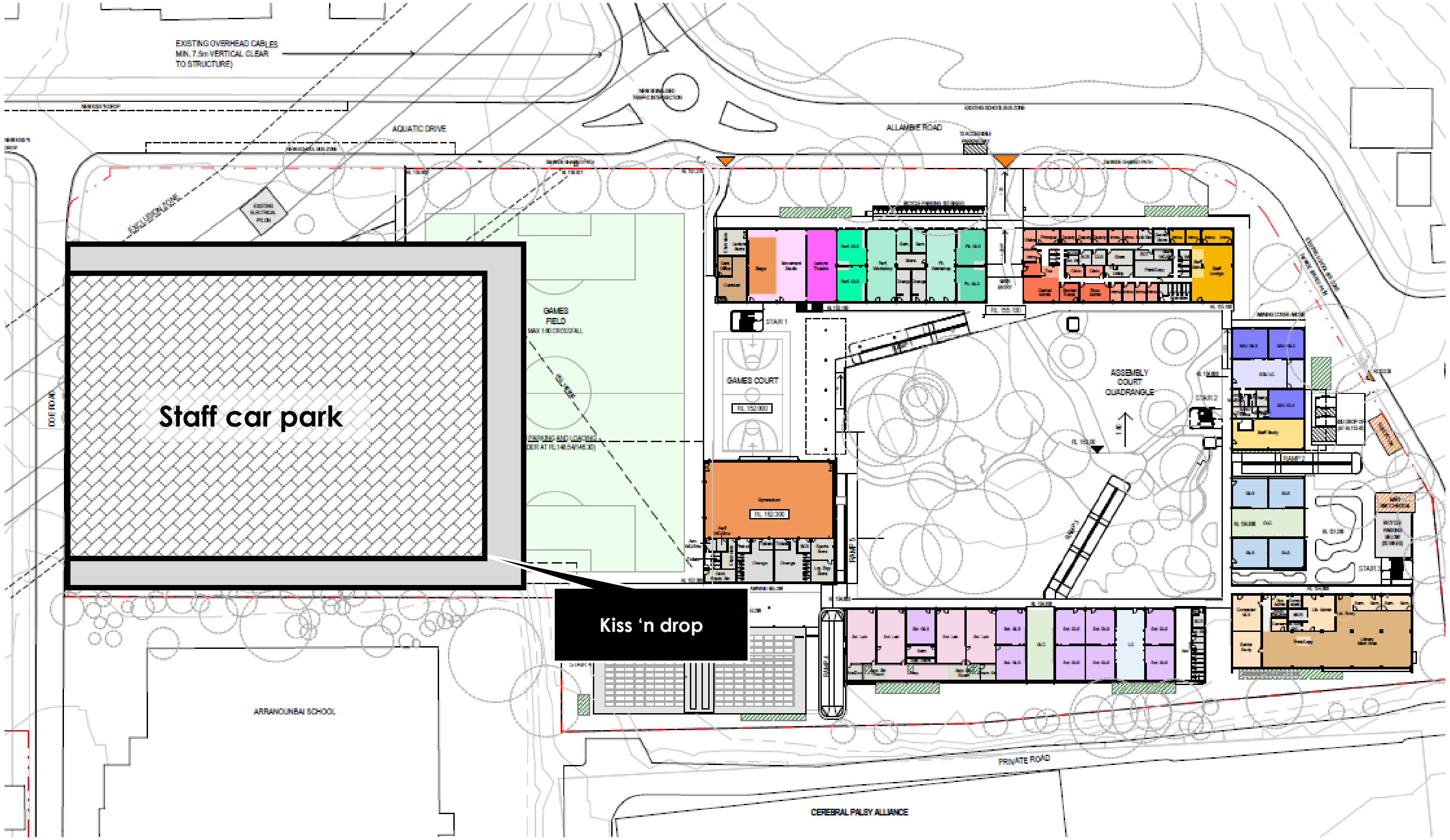
- Facility fully surrounding staff car park as entry/exit road

Strengths

- Fully onsite kiss 'n drop
- Less on-street parking impacts

Weaknesses

- Loss of ability to achieve playing fields on top of car park leading to a loss of play space.
- Removal of forest.
- Increased bushfire risk.
- Substantial cost, reducing ability to contribute to offsite upgrades.
- Not compatible with fire or overhead powerline constraints.



Thank you

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Education
School Infrastructure

TRANSPORT PLANNING WORKSHOP MINUTES

Project:	The Forest High School
Meeting:	Off Site transport infrastructure Review 1
Date:	23/02/2022
Venue:	Via Teams
Time:	4.00pm – 4.45pm

INVITEES/ATTENDEES

Name	Title & Company
Brett Morrison (BM)	Development Assessment Officer, TfNSW
Peter Carruthers (PC)	Network Safety Services Manager, TfNSW
John Broady (JBr)	Senior Manager, Service Planning, TfNSW
Sophia Grieve (Apology) (SG)	Manager, Travel Demand Management, TfNSW
Brendan Pegg (BP)	Senior Land Use Planner, TfNSW
Mukhwinder Athwal (MA)	Transport Ops Planner, TfNSW
Philip Devon (PD) - *Apology*	Manager Transport, NBC
Ryan Thoroughgood (RT)	Senior Project Director, SINSW
Angelo Parissis (AP)	Senior Project Director, SINSW
Sumi Thambyrajah (ST)	Project Director, SINSW
Rebecca Lehman (RL) *(Apology)*	Sustainable Transport Technical Advisor, SINSW
Jonathan Busch (JBu)	Associate Director, SCT Consulting
Adam Smith (AS)	Transport Consultant, SCT Consulting
Patrick Wright (PW)	Project Director, Johnstaff (JSP)
Elizabeth D'Olier (ED)	Senior Project Manager, Johnstaff (JSP)
Chris Traill (CT)	Project Manager, Johnstaff (JSP)

Item	Description	Action By/When
1	Review of intersection options	
1.1	TfNSW noted that the crossing of Wakehurst Parkway was not regarded as committed infrastructure as it appeared to be tied into the delivery of Beaches Link, which was not fully committed at this stage. SCT to provide the contact details of the individual who had passed through the design details for TfNSW land use confirmation.	Note
1.2	TfNSW noted that plan for Allambie Road / Aquatic Drive intersection does not allow for retention of bus stop adjacent. TfNSW recommended to delete Allambie/Aquatic (westbound) stop.	Note

Item	Description	Action By/When
1.3	TfNSW agreed that the Allambie Road / Aquatic Drive intersection should be progressed to a basic sketch design for review. SCT to provide updated sketch level design to group for discussion.	SCT
1.4	TfNSW requested a review of warrants for the signals. SCT noted that this would be included in the future traffic impact assessment.	Note
1.5	TfNSW noted that they could support a zebra crossing on Rodborough Road, further to the west than specified by SCT Consulting. This would be accompanied by pedestrian fencing around the roundabout.	Note
1.6	SCT supported the proposal, and it was agreed that this would be raised with Council. TfNSW to organise future meeting including with Council to discuss.	Note
1.7	TfNSW noted that they were considering some broader changes that would improve the safety of Rodborough Road for pedestrians, but these weren't ready to share due to lack of understanding about land ownership issues. TfNSW to progress consideration of upgrades to Warringah/Allambie. SCT to provide information about the Lot and DP number.	TfNSW
1.8	BM advised he is reviewing SIDRA model outputs. SCT noted that the AM peak at Allambie Road/Warringah Road is current performing at level of service F.	BM
1.9	SCT to draft sketches of the proposed modifications for Allambie/Aquatic and Rodborough for discussion at the next meeting.	SCT
2	**Next Meeting**	
2.1	Next Meeting: 2:30pm 4 March 22 via Teams	

TRANSPORT PLANNING WORKSHOP MINUTES

Project:	The Forest High School
Meeting:	Off Site transport infrastructure Review 2
Date:	04/03/2022
Venue:	Via Teams
Time:	2:30pm – 3:00pm

INVITEES/ATTENDEES

Name	Title & Company
Brett Morrison (BM)	Development Assessment Officer, TfNSW
Peter Carruthers (PC)	Network Safety Services Manager, TfNSW
John Broady (JBr)	Senior Manager, Service Planning, TfNSW
Sophia Grieve (Apology) (SG)	Manager, Travel Demand Management, TfNSW
Brendan Pegg (BP)	Senior Land Use Planner, TfNSW
Mukhwinder Athwal (MA) - *Apology*	Transport Ops Planner, TfNSW
Ennio Morson (EM)	Team Leader, Network Operations at Roads and Maritime Services
Philip Devon (PD) - *Apology*	Manager Transport, NBC
Ryan Thoroughgood (RT)	Senior Project Director, SINSW
Angelo Parissis (AP)	Senior Project Director, SINSW
Sumi Thambyrajah (ST)	Project Director, SINSW
Rebecca Lehman (RL) - *Apology*	Sustainable Transport Technical Advisor, SINSW
Jeff Lewis (JL)	Community Engagement Manager, SISNW
Jonathan Busch (JBu)	Associate Director, SCT Consulting
Adam Smith (AS)	Transport Consultant, SCT Consulting
Patrick Wright (PW)	Project Director, Johnstaff (JSP)
Elizabeth D’Olier (ED)	Senior Project Manager, Johnstaff (JSP)
Chris Traill (CT)	Project Manager, Johnstaff (JSP)

Item	Description	Action By/ When
1	**Allambie Rd/ Aquatic Drive intersection**	
1.1	JBu presented the Allambie /Aquatic intersection design noting improved site lines and facilitation of concerns raised regarding bus movements.	Note
1.2	TfNSW provided the following comments on the design: • Design would require discontinuation of Allambie Rd Stop adjacent intersection (Westbound) • It is recommended to retain bus stop on Allambie between Aquatic and Rodborough.	Note

Education
School Infrastructure

Item	Description	Action By/ When
	• It is queried whether intersection could be shifted east (Toward existing intersections).	
1.3	PW queried endorsement of Design. BM advised response would be provided following provision of modelling advice.	BM
2	**Rodborough crossing**	Note
2.1	JBu presented proposed pedestrian crossing at Rodborough 28 m west of Allambie to allow for site lines and charging of intersection. Design incorporates advise for inclusion of fencing to prevent pedestrian crossing prior to zebra crossing. JBu further noted that north side includes an existing driveway which allows an open desire line for a crossing point outside the zebra crossing area. This could be mitigated through bringing zebra crossing to 20m from intersection but would require a slower speed existing the roundabout.	Note
2.2	SCT supported the proposal, and it was agreed that this would be raised with Council. TfNSW to organise future meeting including with Council to discuss.	Note
3	**Warringah Rd**	TfNSW
3.1	BM tabled potential option for Waringah Rd closing Rodborough and slip road left to Warringah from Allambie. This option has not been modelled by TfNSW and would need to be validated if established as an option by the project.	Note
3.2	BM advised aversion to level zebra crossings noting prior issues in incidents for crossing. PC noted that raised crossing is considered safer, but there are no recent issues identified with zebra crossings.	Note
3.3	The queue back through the intersection was queried JBu confirmed crossing is captured in modelling. JBu advised existing Warringah performance means that this is unlikely to impact queue back.	Note
3.4	PC advised that there was potential to grant exemption to bring crossing closer to avoid driveway conflict to avoid student crossing on breakdown. If site distance is compromised 125mm-150mm raised threshold to reduce desire line (corner cutting). JBu to review with council for preferred option as Rodborough is a council road.	SCT
4	**Next Steps**	
4.1	Project team to revert with modelling data and applicable design updates	Johnstaff/ SCT
4.2	Project Team to review transport options with NBC (apologies from off-site transport infrastructure workshops)	Johnstaff/ SCT
4.3	Project team to confirm timing for next Transport working group meeting	Johnstaff/ SISNW

Education
School Infrastructure

TRANSPORT PLANNING WORKSHOP MINUTES

Project:	The Forest High School
Meeting:	Off Site transport infrastructure Review 3
Date:	25/05/2022
Venue:	Via Teams
Time:	1:30pm – 2:00pm

INVITEES/ATTENDEES

Name	Title & Company
Brett Morrison (BM)	Development Assessment Officer, TfNSW
Peter Carruthers (PC)	Network Safety Services Manager, TfNSW
John Broady (JBr)	Senior Manager, Service Planning, TfNSW
Brendan Pegg (BP) *(Apology)*	Senior Land Use Planner, TfNSW
Ennio Morson (EM)	Team Leader, Network Operations at Roads and Maritime Services
Peter Wheen (PWh)	Transactions and Structuring Lead. Transport for NSW
James Hall (JH)	Senior Land use planner, TfNSW
Leonardo Ferreri (LF)	TfNSW
Philip Devon (PD)	Manager Transport, NBC
Angelo Parissis (AP)	Senior Project Director, SINSW
Sumi Thambyrajah (ST)	Project Director, SINSW
Rebecca Lehman (RL) - *Apology*	Sustainable Transport Technical Advisor, SINSW
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Adam Smith (AS)	Transport Consultant, SCT Consulting
Patrick Wright (PWr)	Project Director, Johnstaff (JSP)
Elizabeth D'Olier (ED)	Senior Project Manager, Johnstaff (JSP)
Chris Traill (CT)	Project Manager, Johnstaff (JSP)

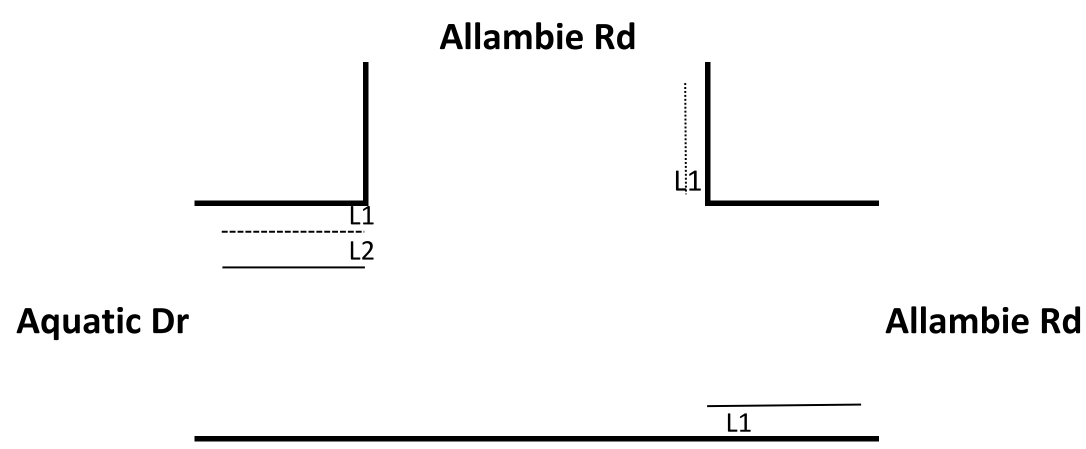
Item	Description	Action By/ When
1	**Future Transport project Status**	
1.1	JBu queried the status of planned transport upgraded and the extent to which it could be linked into project traffic reporting further noting concerns with going to public exhibit without wider consideration of transport issued. BM advised only items that have been released publicly can be included: e.g. internet for planned major TfNSW transport projects including: • Beaches link • FFFP upgrade works • Bus Rapid Transport	Note

Item	Description	Action By/ When
2	**Presentation review**	Note
2.1	JBu presented reviewed modelling and identified preferred solution within project budget for pedestrian crossing to West Rodborough/Allambie and Signalisation of Aquatic/Allambie Intersection. It was noted that option improved performance of key intersections, however performance of Warringah/Allambie could not be mitigated. JBu confirmed intent to go to Exhibit on basis of presented data. TfNSW queried basis of projected trips for modelling. JBu Confirmed this was sourced from Jacobs report for the Forest Precinct based on +10 years and school operation at capacity. TfNSW requested modelling for Day 1 operations of the school noting a) operation at new site for existing school population b) exclusion of Forest Precinct data. It was noted that presented data presents a stress tested case without further infrastructure development. Design Team and SCT to review with SINSW for direction on further modelling.	Note Johnstaff/ SCT
2.2	JBu noted that options for upgrades to Aquatic/Wakehurst and Allambie/Warringah intersections were considered, however costs cannot be accommodated within project budget. This was noted as understood by TfNSW. PWr clarified that a significant amount of funding had been allocated to fund proposed Off Site transport infrastructure.	Note
2.3	Pedestrian Safety: BM queried modelling for pedestrian traffic charging for the North-South link across Warringah Rd. JBu advised this hadn't been considered due to absence of traffic island on road, it was considered there was enough space at footpath adjacent to lights.	Note
3	**Next Steps**	
3.1	Project team to revert intersection design update for Signalised Allambie / Aquatic intersection.	Johnstaff/ SCT

APPENDIX B

Traffic surveys

Client	SCT Consulting Pty Ltd
Location	1. Allambie Rd & Aquatic Dr
Date	Wednesday, 1 December 2021
Survey Time	7:00-9:00 & 14:30-16:30
Description	Queue Length Surveys

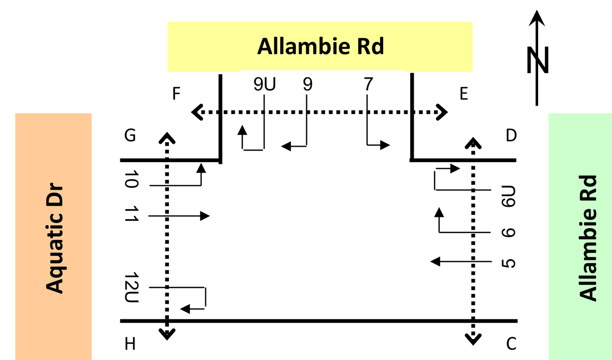


AM			East Leg (Allambie Rd)	North Leg (Allambie Rd)	West Leg (Aquatic Dr)	
			Lane 1	Lane 1	Lane 1	Lane 2
7:00	to	7:05	3	1	1	1
7:05	to	7:10	2	1	1	2
7:10	to	7:15	4	1	5	2
7:15	to	7:20	3	1	1	1
7:20	to	7:25	3	1	3	-
7:25	to	7:30	6	-	3	1
7:30	to	7:35	5	3	1	1
7:35	to	7:40	8	-	1	2
7:40	to	7:45	14	-	2	1
7:45	to	7:50	3	2	6	2
7:50	to	7:55	8	1	3	1
7:55	to	8:00	3	2	2	2
8:00	to	8:05	6	3	4	1
8:05	to	8:10	4	4	2	3
8:10	to	8:15	12	7	2	3
8:15	to	8:20	10	3	3	2
8:20	to	8:25	3	5	6	1
8:25	to	8:30	15	2	7	3
8:30	to	8:35	4	7	1	1
8:35	to	8:40	2	5	3	2
8:40	to	8:45	3	5	3	1
8:45	to	8:50	4	3	2	3
8:50	to	8:55	4	4	5	4
8:55	to	9:00	3	2	3	2
MAX			15	7	7	4
MIN			2	1	1	1

PM			East Leg (Allambie Rd)	North Leg (Allambie Rd)	West Leg (Aquatic Dr)	
			Lane 1	Lane 1	Lane 1	Lane 2
14:30	to	14:35	4	4	2	1
14:35	to	14:40	7	2	1	1
14:40	to	14:45	2	3	1	2
14:45	to	14:50	5	4	2	1
14:50	to	14:55	7	7	1	2
14:55	to	15:00	5	3	2	2
15:00	to	15:05	12	3	4	2
15:05	to	15:10	6	2	2	7
15:10	to	15:15	9	2	3	2
15:15	to	15:20	8	4	2	5
15:20	to	15:25	4	1	2	2
15:25	to	15:30	3	3	3	2
15:30	to	15:35	5	2	5	2
15:35	to	15:40	3	7	5	2
15:40	to	15:45	2	6	6	1
15:45	to	15:50	3	5	3	2
15:50	to	15:55	1	3	1	4
15:55	to	16:00	7	5	5	3
16:00	to	16:05	4	3	4	2
16:05	to	16:10	3	8	4	2
16:10	to	16:15	2	4	3	2
16:15	to	16:20	7	6	2	2
16:20	to	16:25	9	3	2	-
16:25	to	16:30	5	1	4	2
MAX			12	8	6	7
MIN			1	1	1	1

Job No. : AUNSW1386
Client : SCT Consulting Pty Ltd
Suburb : Frenchs Forest
Location : 1. Allambie Rd / Aquatic Dr

Day/Date : Wed, 1 Dec 2021
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data



	Class 1	Class 2	Class 3
Classifications	Lights	Heavies	Cyclists

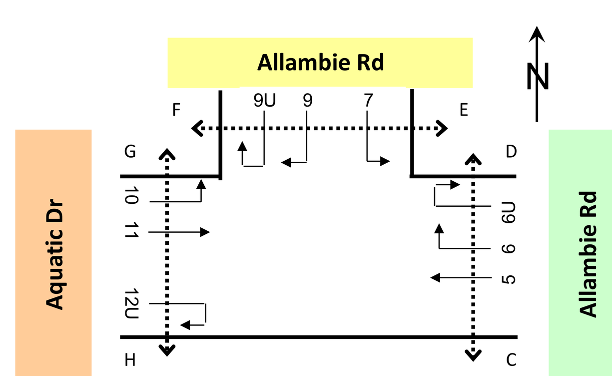
Approach	Allambie Rd											
Direction	Direction 5 (Through)				Direction 6 (Right Turn)				Direction 6U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	18	1	1	**20**	114	5	2	**121**	0	0	0	**0**
7:15 to 7:30	19	0	2	**21**	122	1	0	**123**	0	0	0	**0**
7:30 to 7:45	21	1	0	**22**	144	8	0	**152**	1	0	0	**1**
7:45 to 8:00	25	1	0	**26**	154	3	0	**157**	1	0	0	**1**
8:00 to 8:15	32	0	2	**34**	137	4	0	**141**	0	0	0	**0**
8:15 to 8:30	29	2	0	**31**	167	4	2	**173**	0	0	0	**0**
8:30 to 8:45	22	1	0	**23**	136	5	1	**142**	0	0	0	**0**
8:45 to 9:00	28	0	0	**28**	154	4	0	**158**	0	0	0	**0**
AM Totals	**194**	**6**	**5**	**205**	**1,128**	**34**	**5**	**1,167**	**2**	**0**	**0**	**2**
14:30 to 14:45	7	1	0	**8**	142	6	0	**148**	0	0	0	**0**
14:45 to 15:00	7	0	0	**7**	136	2	0	**138**	0	0	0	**0**
15:00 to 15:15	23	0	0	**23**	172	1	0	**173**	0	0	0	**0**
15:15 to 15:30	16	1	0	**17**	128	4	0	**132**	3	0	0	**3**
15:30 to 15:45	18	1	0	**19**	170	8	0	**178**	0	0	0	**0**
15:45 to 16:00	10	2	1	**13**	136	7	0	**143**	0	0	0	**0**
16:00 to 16:15	16	2	0	**18**	164	3	0	**167**	0	0	0	**0**
16:15 to 16:30	21	0	2	**23**	157	7	0	**164**	0	0	0	**0**
PM Totals	**118**	**7**	**3**	**128**	**1,205**	**38**	**0**	**1,243**	**3**	**0**	**0**	**3**

Approach	Allambie Rd												Aquatic Dr												Crossing Pedestrians						
Direction	Direction 7 (Left Turn)				Direction 9 (Right Turn)				Direction 9U (U Turn)				Direction 10 (Left Turn)				Direction 11 (Through)				Direction 12U (U Turn)										
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	D to C	C to D	F to E	E to F	H to G	G to H	Total
7:00 to 7:15	75	4	0	**79**	25	2	0	**27**	0	0	0	**0**	21	2	0	**23**	15	0	0	**15**	0	1	0	**1**	0	0	1	0	1	0	**2**
7:15 to 7:30	95	9	0	**104**	30	4	0	**34**	0	0	0	**0**	30	1	0	**31**	13	0	0	**13**	1	0	0	**1**	0	0	0	0	0	0	**0**
7:30 to 7:45	110	10	1	**121**	30	2	0	**32**	0	0	0	**0**	25	4	0	**29**	18	1	0	**19**	1	0	0	**1**	0	0	0	0	0	0	**0**
7:45 to 8:00	145	5	0	**150**	43	1	0	**44**	0	0	0	**0**	40	1	0	**41**	18	0	2	**20**	1	1	0	**2**	0	0	0	0	3	0	**3**
8:00 to 8:15	129	9	0	**138**	36	2	0	**38**	0	0	0	**0**	48	2	0	**50**	46	2	0	**48**	0	0	0	**0**	0	0	0	0	0	0	**0**
8:15 to 8:30	135	6	0	**141**	37	1	0	**38**	1	0	0	**1**	40	1	0	**41**	33	0	0	**33**	0	0	0	**0**	0	0	0	0	0	0	**0**
8:30 to 8:45	155	6	0	**161**	39	3	0	**42**	3	0	0	**3**	49	3	1	**53**	30	3	0	**33**	0	0	0	**0**	0	0	0	0	0	0	**0**
8:45 to 9:00	159	9	0	**168**	41	0	0	**41**	0	0	0	**0**	62	1	0	**63**	38	0	0	**38**	0	0	0	**0**	0	0	0	0	1	1	**2**
AM Totals	**1,003**	**58**	**1**	**1,062**	**281**	**15**	**0**	**296**	**4**	**0**	**0**	**4**	**315**	**15**	**1**	**331**	**211**	**6**	**2**	**219**	**3**	**2**	**0**	**5**	**0**	**0**	**1**	**0**	**5**	**1**	**7**
14:30 to 14:45	85	4	2	**91**	23	2	0	**25**	0	0	0	**0**	50	0	0	**50**	18	0	0	**18**	0	0	0	**0**	0	0	0	0	0	1	**1**
14:45 to 15:00	127	2	1	**130**	22	4	0	**26**	1	0	0	**1**	43	3	0	**46**	26	3	0	**29**	0	0	0	**0**	0	0	0	0	0	0	**0**
15:00 to 15:15	156	1	0	**157**	19	1	0	**20**	0	0	0	**0**	62	1	0	**63**	26	2	0	**28**	0	0	0	**0**	0	0	0	0	0	0	**0**
15:15 to 15:30	158	7	1	**166**	24	2	0	**26**	0	0	0	**0**	31	5	0	**36**	21	1	0	**22**	0	0	0	**0**	0	0	0	0	0	0	**0**
15:30 to 15:45	144	2	0	**146**	18	1	0	**19**	0	0	0	**0**	75	6	0	**81**	34	1	0	**35**	0	0	0	**0**	0	0	0	0	0	1	**1**
15:45 to 16:00	158	6	0	**164**	31	0	0	**31**	0	0	0	**0**	43	3	0	**46**	27	1	0	**28**	0	0	0	**0**	0	0	0	0	0	0	**0**
16:00 to 16:15	147	5	0	**152**	19	1	0	**20**	1	0	0	**1**	55	3	0	**58**	31	0	0	**31**	0	0	0	**0**	0	0	0	0	1	1	**2**
16:15 to 16:30	141	4	0	**145**	19	1	0	**20**	0	0	0	**0**	52	2	0	**54**	16	0	0	**16**	0	0	0	**0**	0	0	0	0	1	0	**1**
PM Totals	**1,116**	**31**	**4**	**1,151**	**175**	**12**	**0**	**187**	**2**	**0**	**0**	**2**	**411**	**23**	**0**	**434**	**199**	**8**	**0**	**207**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**3**	**5**

Job No. : AUNSW1386
Client : SCT Consulting Pty Ltd
Suburb : Frenchs Forest
Location : 1. Allambie Rd / Aquatic Dr

Day/Date : Wed, 1 Dec 2021
Weather : Fine
Description : Classified Intersection Count

: Hourly Summary



Approach	Allambie Rd											
Direction	Direction 5 (Through)				Direction 6 (Right Turn)				Direction 6U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 8:00	83	3	3	**89**	534	17	2	**553**	2	0	0	**2**
7:15 to 8:15	97	2	4	**103**	557	16	0	**573**	2	0	0	**2**
7:30 to 8:30	107	4	2	**113**	602	19	2	**623**	2	0	0	**2**
7:45 to 8:45	108	4	2	**114**	594	16	3	**613**	1	0	0	**1**
8:00 to 9:00	111	3	2	**116**	594	17	3	**614**	0	0	0	**0**
AM Totals	**194**	**6**	**5**	**205**	**1,128**	**34**	**5**	**1,167**	**2**	**0**	**0**	**2**
14:30 to 15:30	53	2	0	**55**	578	13	0	**591**	3	0	0	**3**
14:45 to 15:45	64	2	0	**66**	606	15	0	**621**	3	0	0	**3**
15:00 to 16:00	67	4	1	**72**	606	20	0	**626**	3	0	0	**3**
15:15 to 16:15	60	6	1	**67**	598	22	0	**620**	3	0	0	**3**
15:30 to 16:30	65	5	3	**73**	627	25	0	**652**	0	0	0	**0**
PM Totals	**118**	**7**	**3**	**128**	**1,205**	**38**	**0**	**1,243**	**3**	**0**	**0**	**3**

Approach	Allambie Rd												Aquatic Dr												Crossing Pedestrians						
Direction	Direction 7 (Left Turn)				Direction 9 (Right Turn)				Direction 9U (U Turn)				Direction 10 (Left Turn)				Direction 11 (Through)				Direction 12U (U Turn)										
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	D to C	C to D	F to E	E to F	H to G	G to H	Total

7:00 to 8:00	425	28	1	**454**	128	9	0	**137**	0	0	0	**0**
7:15 to 8:15	479	33	1	**513**	139	9	0	**148**	0	0	0	**0**
7:30 to 8:30	519	30	1	**550**	146	6	0	**152**	1	0	0	**1**
7:45 to 8:45	564	26	0	**590**	155	7	0	**162**	4	0	0	**4**
8:00 to 9:00	578	30	0	**608**	153	6	0	**159**	4	0	0	**4**
AM Totals	**1,003**	**58**	**1**	**1,062**	**281**	**15**	**0**	**296**	**4**	**0**	**0**	**4**
14:30 to 15:30	526	14	4	**544**	88	9	0	**97**	1	0	0	**1**
14:45 to 15:45	585	12	2	**599**	83	8	0	**91**	1	0	0	**1**
15:00 to 16:00	616	16	1	**633**	92	4	0	**96**	0	0	0	**0**
15:15 to 16:15	607	20	1	**628**	92	4	0	**96**	1	0	0	**1**
15:30 to 16:30	590	17	0	**607**	87	3	0	**90**	1	0	0	**1**
PM Totals	**1,116**	**31**	**4**	**1,151**	**175**	**12**	**0**	**187**	**2**	**0**	**0**	**2**

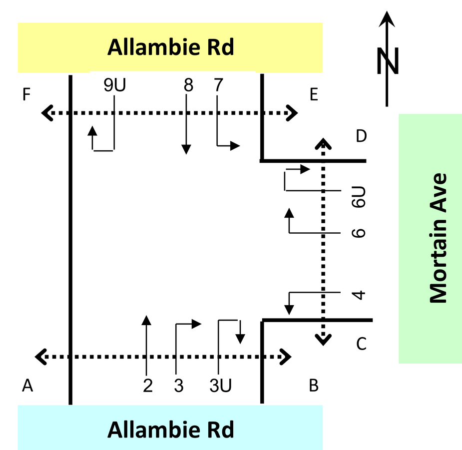
7:00 to 8:00	116	8	0	**124**	64	1	2	**67**
7:15 to 8:15	143	8	0	**151**	95	3	2	**100**
7:30 to 8:30	153	8	0	**161**	115	3	2	**120**
7:45 to 8:45	177	7	1	**185**	127	5	2	**134**
8:00 to 9:00	199	7	1	**207**	147	5	0	**152**
AM Totals	**315**	**15**	**1**	**331**	**211**	**6**	**2**	**219**
14:30 to 15:30	186	9	0	**195**	91	6	0	**97**
14:45 to 15:45	211	15	0	**226**	107	7	0	**114**
15:00 to 16:00	211	15	0	**226**	108	5	0	**113**
15:15 to 16:15	204	17	0	**221**	113	3	0	**116**
15:30 to 16:30	225	14	0	**239**	108	2	0	**110**
PM Totals	**411**	**23**	**0**	**434**	**199**	**8**	**0**	**207**

7:00 to 8:00	3	2	0	**5**	0	0	1	0	4	0	**5**
7:15 to 8:15	3	1	0	**4**	0	0	0	0	3	0	**3**
7:30 to 8:30	2	1	0	**3**	0	0	0	0	3	0	**3**
7:45 to 8:45	1	1	0	**2**	0	0	0	0	3	0	**3**
8:00 to 9:00	0	0	0	**0**	0	0	0	0	1	1	**2**
AM Totals	**3**	**2**	**0**	**5**	**0**	**0**	**1**	**0**	**5**	**1**	**7**
14:30 to 15:30	0	0	0	**0**	0	0	0	0	0	1	**1**
14:45 to 15:45	0	0	0	**0**	0	0	0	0	0	1	**1**
15:00 to 16:00	0	0	0	**0**	0	0	0	0	0	1	**1**
15:15 to 16:15	0	0	0	**0**	0	0	0	0	1	2	**3**
15:30 to 16:30	0	0	0	**0**	0	0	0	0	2	2	**4**
PM Totals	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**3**	**5**

Job No. : AUNSW1386
Client : SCT Consulting Pty Ltd
Suburb : Frenchs Forest
Location : 2. Allambie Rd / Mortain Ave

Day/Date : Wed, 1 Dec 2021
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data

	Class 1	Class 2	Class 3
Classifications	Lights	Heavies	Cyclists



MATRIX Traffic and Transport Data

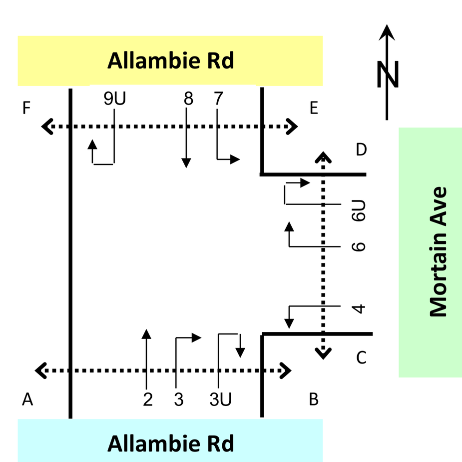
Approach	Allambie Rd												Mortain Ave											
Direction	Direction 2 (Through)				Direction 3 (Right Turn)				Direction 3U (U Turn)				Direction 4 (Left Turn)				Direction 6 (Right Turn)				Direction 6U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	112	5	2	**119**	5	0	0	**5**	0	0	0	**0**	6	1	0	**7**	12	0	0	**12**	0	0	0	**0**
7:15 to 7:30	130	1	2	**133**	11	0	0	**11**	0	0	0	**0**	11	0	0	**11**	12	0	0	**12**	0	0	0	**0**
7:30 to 7:45	152	10	0	**162**	6	0	0	**6**	0	0	0	**0**	14	0	0	**14**	17	0	0	**17**	0	0	0	**0**
7:45 to 8:00	160	3	0	**163**	12	0	0	**12**	0	0	0	**0**	20	0	0	**20**	15	0	0	**15**	0	0	0	**0**
8:00 to 8:15	160	3	2	**165**	12	0	0	**12**	0	0	0	**0**	19	0	0	**19**	15	0	0	**15**	0	0	0	**0**
8:15 to 8:30	164	6	1	**171**	11	0	0	**11**	0	0	0	**0**	12	0	0	**12**	22	0	0	**22**	0	0	0	**0**
8:30 to 8:45	153	5	0	**158**	15	0	0	**15**	0	0	0	**0**	14	0	0	**14**	14	0	0	**14**	0	0	0	**0**
8:45 to 9:00	177	4	0	**181**	13	0	0	**13**	0	0	0	**0**	19	0	0	**19**	22	0	0	**22**	0	0	0	**0**
AM Totals	**1,208**	**37**	**7**	**1,252**	**85**	**0**	**0**	**85**	**0**	**0**	**0**	**0**	**115**	**1**	**0**	**116**	**129**	**0**	**0**	**129**	**0**	**0**	**0**	**0**
14:30 to 14:45	136	6	0	**142**	9	0	0	**9**	0	0	0	**0**	8	0	0	**8**	7	0	0	**7**	0	0	0	**0**
14:45 to 15:00	124	3	0	**127**	13	0	0	**13**	0	0	0	**0**	11	1	0	**12**	9	0	0	**9**	0	0	0	**0**
15:00 to 15:15	165	0	0	**165**	11	1	0	**12**	0	0	0	**0**	7	0	0	**7**	8	0	0	**8**	0	0	0	**0**
15:15 to 15:30	140	6	0	**146**	26	0	0	**26**	0	0	0	**0**	4	0	0	**4**	6	0	0	**6**	0	0	0	**0**
15:30 to 15:45	155	7	0	**162**	10	0	0	**10**	0	0	0	**0**	13	0	0	**13**	3	0	0	**3**	0	0	0	**0**
15:45 to 16:00	130	7	1	**138**	14	0	0	**14**	0	0	0	**0**	9	0	0	**9**	2	0	0	**2**	0	0	0	**0**
16:00 to 16:15	147	6	0	**153**	16	0	0	**16**	0	0	0	**0**	11	0	0	**11**	5	0	0	**5**	0	0	0	**0**
16:15 to 16:30	151	5	0	**156**	18	0	0	**18**	0	0	0	**0**	10	0	0	**10**	6	0	0	**6**	0	0	0	**0**
PM Totals	**1,148**	**40**	**1**	**1,189**	**117**	**1**	**0**	**118**	**0**	**0**	**0**	**0**	**73**	**1**	**0**	**74**	**46**	**0**	**0**	**46**	**0**	**0**	**0**	**0**

Approach	Allambie Rd												Crossing Pedestrians						
Direction	Direction 7 (Left Turn)				Direction 8 (Through)				Direction 9U (U Turn)										
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	B to A	A to B	D to C	C to D	F to E	E to F	Total
7:00 to 7:15	4	0	0	**4**	83	7	4	**94**	0	0	0	**0**	0	0	1	2	0	3	**6**
7:15 to 7:30	1	0	0	**1**	94	7	2	**103**	0	0	0	**0**	3	1	0	0	1	2	**7**
7:30 to 7:45	4	0	0	**4**	109	10	1	**120**	0	0	0	**0**	3	2	0	1	2	1	**9**
7:45 to 8:00	6	0	0	**6**	133	5	1	**139**	0	0	0	**0**	1	0	0	2	2	7	**12**
8:00 to 8:15	6	0	0	**6**	132	10	0	**142**	0	0	0	**0**	6	1	1	5	1	0	**14**
8:15 to 8:30	5	0	0	**5**	161	7	0	**168**	0	0	0	**0**	2	0	0	0	1	0	**3**
8:30 to 8:45	4	2	0	**6**	165	5	0	**170**	0	0	0	**0**	6	0	1	2	0	7	**16**
8:45 to 9:00	5	0	0	**5**	175	9	1	**185**	0	0	0	**0**	1	1	0	2	4	3	**11**
AM Totals	**35**	**2**	**0**	**37**	**1,052**	**60**	**9**	**1,121**	**0**	**0**	**0**	**0**	**22**	**5**	**3**	**14**	**11**	**23**	**78**
14:30 to 14:45	7	0	0	**7**	102	3	2	**107**	0	0	0	**0**	0	3	1	0	2	1	**7**
14:45 to 15:00	5	1	0	**6**	139	4	1	**144**	0	0	0	**0**	0	0	0	0	1	0	**1**
15:00 to 15:15	9	0	1	**10**	168	3	0	**171**	0	0	0	**0**	0	0	2	1	5	1	**9**
15:15 to 15:30	8	1	0	**9**	164	6	2	**172**	0	0	0	**0**	0	7	0	1	5	2	**15**
15:30 to 15:45	8	0	0	**8**	161	3	0	**164**	0	0	0	**0**	0	0	4	1	5	0	**10**
15:45 to 16:00	12	0	0	**12**	167	7	0	**174**	0	0	0	**0**	2	2	0	1	4	1	**10**
16:00 to 16:15	15	0	0	**15**	169	5	1	**175**	0	0	0	**0**	0	9	1	2	3	0	**15**
16:15 to 16:30	7	0	0	**7**	147	2	0	**149**	0	0	0	**0**	0	1	5	0	1	0	**7**
PM Totals	**71**	**2**	**1**	**74**	**1,217**	**33**	**6**	**1,256**	**0**	**0**	**0**	**0**	**2**	**22**	**13**	**6**	**26**	**5**	**74**

Job No. : AUNSW1386
Client : SCT Consulting Pty Ltd
Suburb : Frenchs Forest
Location : 2. Allambie Rd / Mortain Ave

Day/Date : Wed, 1 Dec 2021
Weather : Fine
Description : Classified Intersection Count

: Hourly Summary



MATRIX Traffic and Transport Data

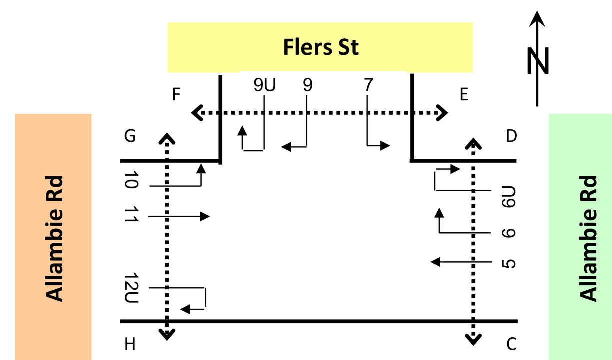
Approach	Allambie Rd												Mortain Ave											
Direction	Direction 2 (Through)				Direction 3 (Right Turn)				Direction 3U (U Turn)				Direction 4 (Left Turn)				Direction 6 (Right Turn)				Direction 6U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 8:00	554	19	4	**577**	34	0	0	**34**	0	0	0	**0**	51	1	0	**52**	56	0	0	**56**	0	0	0	**0**
7:15 to 8:15	602	17	4	**623**	41	0	0	**41**	0	0	0	**0**	64	0	0	**64**	59	0	0	**59**	0	0	0	**0**
7:30 to 8:30	636	22	3	**661**	41	0	0	**41**	0	0	0	**0**	65	0	0	**65**	69	0	0	**69**	0	0	0	**0**
7:45 to 8:45	637	17	3	**657**	50	0	0	**50**	0	0	0	**0**	65	0	0	**65**	66	0	0	**66**	0	0	0	**0**
8:00 to 9:00	654	18	3	**675**	51	0	0	**51**	0	0	0	**0**	64	0	0	**64**	73	0	0	**73**	0	0	0	**0**
AM Totals	**1,208**	**37**	**7**	**1,252**	**85**	**0**	**0**	**85**	**0**	**0**	**0**	**0**	**115**	**1**	**0**	**116**	**129**	**0**	**0**	**129**	**0**	**0**	**0**	**0**
14:30 to 15:30	565	15	0	**580**	59	1	0	**60**	0	0	0	**0**	30	1	0	**31**	30	0	0	**30**	0	0	0	**0**
14:45 to 15:45	584	16	0	**600**	60	1	0	**61**	0	0	0	**0**	35	1	0	**36**	26	0	0	**26**	0	0	0	**0**
15:00 to 16:00	590	20	1	**611**	61	1	0	**62**	0	0	0	**0**	33	0	0	**33**	19	0	0	**19**	0	0	0	**0**
15:15 to 16:15	572	26	1	**599**	66	0	0	**66**	0	0	0	**0**	37	0	0	**37**	16	0	0	**16**	0	0	0	**0**
15:30 to 16:30	583	25	1	**609**	58	0	0	**58**	0	0	0	**0**	43	0	0	**43**	16	0	0	**16**	0	0	0	**0**
PM Totals	**1,148**	**40**	**1**	**1,189**	**117**	**1**	**0**	**118**	**0**	**0**	**0**	**0**	**73**	**1**	**0**	**74**	**46**	**0**	**0**	**46**	**0**	**0**	**0**	**0**

Approach	Allambie Rd												Crossing Pedestrians						
Direction	Direction 7 (Left Turn)				Direction 8 (Through)				Direction 9U (U Turn)										
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	B to A	A to B	D to C	C to D	F to E	E to F	Total

7:00 to 8:00	15	0	0	**15**	419	29	8	**456**	0	0	0	**0**	7	3	1	5	5	13	**34**
7:15 to 8:15	17	0	0	**17**	468	32	4	**504**	0	0	0	**0**	13	4	1	8	6	10	**42**
7:30 to 8:30	21	0	0	**21**	535	32	2	**569**	0	0	0	**0**	12	3	1	8	6	8	**38**
7:45 to 8:45	21	2	0	**23**	591	27	1	**619**	0	0	0	**0**	15	1	2	9	4	14	**45**
8:00 to 9:00	20	2	0	**22**	633	31	1	**665**	0	0	0	**0**	15	2	2	9	6	10	**44**
AM Totals	**35**	**2**	**0**	**37**	**1,052**	**60**	**9**	**1,121**	**0**	**0**	**0**	**0**	**22**	**5**	**3**	**14**	**11**	**23**	**78**
14:30 to 15:30	29	2	1	**32**	573	16	5	**594**	0	0	0	**0**	0	10	3	2	13	4	**32**
14:45 to 15:45	30	2	1	**33**	632	16	3	**651**	0	0	0	**0**	0	7	6	3	16	3	**35**
15:00 to 16:00	37	1	1	**39**	660	19	2	**681**	0	0	0	**0**	2	9	6	4	19	4	**44**
15:15 to 16:15	43	1	0	**44**	661	21	3	**685**	0	0	0	**0**	2	18	5	5	17	3	**50**
15:30 to 16:30	42	0	0	**42**	644	17	1	**662**	0	0	0	**0**	2	12	10	4	13	1	**42**
PM Totals	**71**	**2**	**1**	**74**	**1,217**	**33**	**6**	**1,256**	**0**	**0**	**0**	**0**	**2**	**22**	**13**	**6**	**26**	**5**	**74**

Job No.	: AUNSW1386
Client	: SCT Consulting Pty Ltd
Suburb	: Frenchs Forest
Location	: 3. Allambie Rd / Flers St
Day/Date	: Wed, 1 Dec 2021
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

	Class 1	Class 2	Class 3
Classifications	Lights	Heavies	Cyclists



MATRIX Traffic and Transport Data

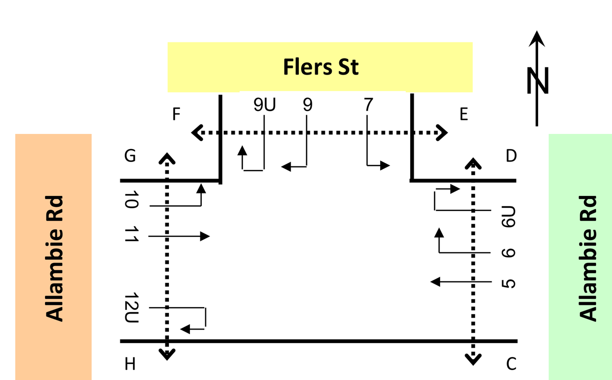
Approach	Allambie Rd											
Direction	Direction 5 (Through)				Direction 6 (Right Turn)				Direction 6U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	136	4	2	**142**	2	0	0	**2**	0	0	0	**0**
7:15 to 7:30	133	2	2	**137**	5	0	0	**5**	1	0	0	**1**
7:30 to 7:45	161	9	0	**170**	3	0	0	**3**	0	0	0	**0**
7:45 to 8:00	176	3	0	**179**	4	0	0	**4**	0	0	0	**0**
8:00 to 8:15	172	3	1	**176**	7	0	0	**7**	0	0	0	**0**
8:15 to 8:30	173	5	1	**179**	6	0	0	**6**	0	0	0	**0**
8:30 to 8:45	172	5	1	**178**	4	0	0	**4**	0	0	0	**0**
8:45 to 9:00	184	4	0	**188**	8	0	0	**8**	0	0	0	**0**
AM Totals	**1,307**	**35**	**7**	**1,349**	**39**	**0**	**0**	**39**	**1**	**0**	**0**	**1**
14:30 to 14:45	164	7	0	**171**	2	0	0	**2**	0	0	0	**0**
14:45 to 15:00	145	2	0	**147**	2	0	0	**2**	0	0	0	**0**
15:00 to 15:15	174	2	0	**176**	5	0	0	**5**	0	0	0	**0**
15:15 to 15:30	144	5	0	**149**	12	1	0	**13**	0	0	0	**0**
15:30 to 15:45	154	5	0	**159**	2	0	0	**2**	0	0	0	**0**
15:45 to 16:00	152	8	1	**161**	4	0	0	**4**	0	0	0	**0**
16:00 to 16:15	175	7	1	**183**	11	0	0	**11**	0	0	0	**0**
16:15 to 16:30	168	4	0	**172**	2	0	0	**2**	0	0	0	**0**
PM Totals	**1,276**	**40**	**2**	**1,318**	**40**	**1**	**0**	**41**	**0**	**0**	**0**	**0**

Approach	Flers St											
Direction	Direction 7 (Left Turn)				Direction 9 (Right Turn)				Direction 9U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	4	0	0	**4**	1	0	0	**1**	0	0	0	**0**
7:15 to 7:30	6	0	0	**6**	9	0	0	**9**	0	0	0	**0**
7:30 to 7:45	1	0	0	**1**	3	0	0	**3**	0	0	0	**0**
7:45 to 8:00	2	0	0	**2**	3	0	0	**3**	0	0	0	**0**
8:00 to 8:15	1	0	0	**1**	8	0	1	**9**	0	0	0	**0**
8:15 to 8:30	2	0	0	**2**	8	0	0	**8**	0	0	0	**0**
8:30 to 8:45	6	0	0	**6**	4	0	0	**4**	0	0	0	**0**
8:45 to 9:00	6	0	0	**6**	9	1	0	**10**	0	0	0	**0**
AM Totals	**28**	**0**	**0**	**28**	**45**	**1**	**1**	**47**	**0**	**0**	**0**	**0**
14:30 to 14:45	2	0	0	**2**	3	0	0	**3**	0	0	0	**0**
14:45 to 15:00	3	0	0	**3**	2	0	0	**2**	0	0	0	**0**
15:00 to 15:15	5	0	0	**5**	5	0	0	**5**	0	0	0	**0**
15:15 to 15:30	5	0	0	**5**	5	1	0	**6**	0	0	0	**0**
15:30 to 15:45	4	0	0	**4**	3	1	0	**4**	0	0	0	**0**
15:45 to 16:00	5	0	0	**5**	2	0	0	**2**	0	0	0	**0**
16:00 to 16:15	0	0	0	**0**	4	0	0	**4**	0	0	0	**0**
16:15 to 16:30	3	0	0	**3**	2	0	0	**2**	0	0	0	**0**
PM Totals	**27**	**0**	**0**	**27**	**26**	**2**	**0**	**28**	**0**	**0**	**0**	**0**

Approach	Allambie Rd												Crossing Pedestrians						
Direction	Direction 10 (Left Turn)				Direction 11 (Through)				Direction 12U (U Turn)										
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	D to C	C to D	F to E	E to F	H to G	G to H	Total
7:00 to 7:15	1	0	0	**1**	99	8	4	**111**	0	0	0	**0**	3	5	0	0	4	0	**12**
7:15 to 7:30	2	0	0	**2**	112	7	2	**121**	0	0	0	**0**	4	1	0	0	0	2	**7**
7:30 to 7:45	3	0	0	**3**	125	10	1	**136**	0	0	0	**0**	6	1	0	0	0	2	**9**
7:45 to 8:00	2	0	0	**2**	150	5	1	**156**	0	0	0	**0**	7	6	3	0	4	1	**21**
8:00 to 8:15	4	0	1	**5**	154	9	0	**163**	0	0	0	**0**	6	12	0	1	1	1	**21**
8:15 to 8:30	6	0	0	**6**	171	7	0	**178**	0	0	0	**0**	5	1	2	3	3	1	**15**
8:30 to 8:45	4	1	0	**5**	163	4	0	**167**	0	0	0	**0**	34	6	0	0	0	11	**51**
8:45 to 9:00	4	0	0	**4**	178	8	1	**187**	0	0	0	**0**	52	6	0	0	3	15	**76**
AM Totals	**26**	**1**	**1**	**28**	**1,152**	**58**	**9**	**1,219**	**0**	**0**	**0**	**0**	**117**	**38**	**5**	**4**	**15**	**33**	**212**
14:30 to 14:45	1	1	1	**3**	105	1	2	**108**	1	0	0	**1**	5	2	2	0	1	5	**15**
14:45 to 15:00	10	1	0	**11**	133	3	1	**137**	0	0	0	**0**	6	2	1	0	11	22	**42**
15:00 to 15:15	13	0	0	**13**	173	4	0	**177**	0	0	0	**0**	7	74	0	1	60	7	**149**
15:15 to 15:30	3	0	0	**3**	169	5	1	**175**	0	0	0	**0**	4	12	0	0	5	0	**21**
15:30 to 15:45	2	0	0	**2**	181	3	0	**184**	0	0	0	**0**	0	4	0	2	1	2	**9**
15:45 to 16:00	4	0	0	**4**	163	6	0	**169**	0	0	0	**0**	3	2	0	0	1	3	**9**
16:00 to 16:15	4	0	0	**4**	182	5	1	**188**	0	0	0	**0**	6	6	1	0	3	1	**17**
16:15 to 16:30	5	0	0	**5**	150	2	0	**152**	0	0	0	**0**	11	2	2	0	0	1	**16**
PM Totals	**42**	**2**	**1**	**45**	**1,256**	**29**	**5**	**1,290**	**1**	**0**	**0**	**1**	**42**	**104**	**6**	**3**	**82**	**41**	**278**

Job No.	: AUNSW1386
Client	: SCT Consulting Pty Ltd
Suburb	: Frenchs Forest
Location	: 3. Allambie Rd / Flers St
Day/Date	: Wed, 1 Dec 2021
Weather	: Fine
Description	: Classified Intersection Count

| | : Hourly Summary |



MATRIX Traffic and Transport Data

Approach	Allambie Rd											
Direction	Direction 5 (Through)				Direction 6 (Right Turn)				Direction 6U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 8:00	606	18	4	**628**	14	0	0	**14**	1	0	0	**1**
7:15 to 8:15	642	17	3	**662**	19	0	0	**19**	1	0	0	**1**
7:30 to 8:30	682	20	2	**704**	20	0	0	**20**	0	0	0	**0**
7:45 to 8:45	693	16	3	**712**	21	0	0	**21**	0	0	0	**0**
8:00 to 9:00	701	17	3	**721**	25	0	0	**25**	0	0	0	**0**
AM Totals	**1,307**	**35**	**7**	**1,349**	**39**	**0**	**0**	**39**	**1**	**0**	**0**	**1**
14:30 to 15:30	627	16	0	**643**	21	1	0	**22**	0	0	0	**0**
14:45 to 15:45	617	14	0	**631**	21	1	0	**22**	0	0	0	**0**
15:00 to 16:00	624	20	1	**645**	23	1	0	**24**	0	0	0	**0**
15:15 to 16:15	625	25	2	**652**	29	1	0	**30**	0	0	0	**0**
15:30 to 16:30	649	24	2	**675**	19	0	0	**19**	0	0	0	**0**
PM Totals	**1,276**	**40**	**2**	**1,318**	**40**	**1**	**0**	**41**	**0**	**0**	**0**	**0**

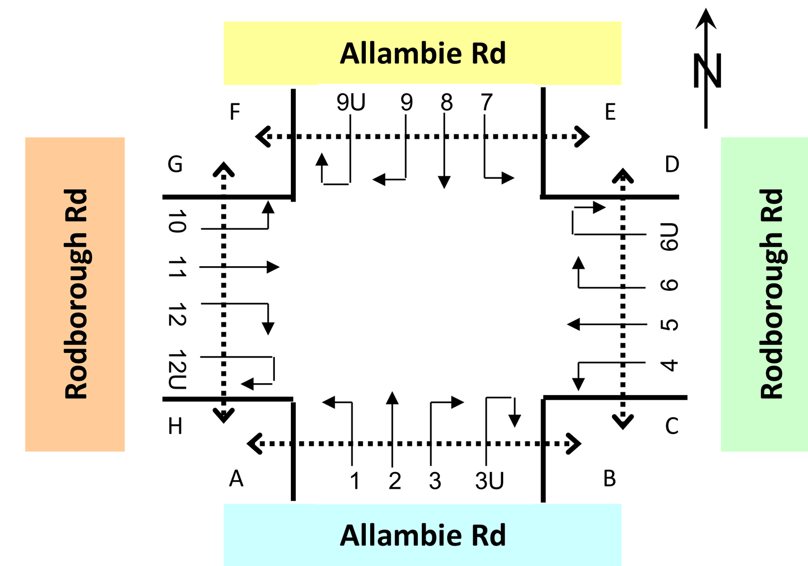
Approach	Flers St												Allambie Rd												Crossing Pedestrians						
Direction	Direction 7 (Left Turn)				Direction 9 (Right Turn)				Direction 9U (U Turn)				Direction 10 (Left Turn)				Direction 11 (Through)				Direction 12U (U Turn)										
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	D to C	C to D	F to E	E to F	H to G	G to H	Total

7:00 to 8:00	13	0	0	**13**	16	0	0	**16**	0	0	0	**0**
7:15 to 8:15	10	0	0	**10**	23	0	1	**24**	0	0	0	**0**
7:30 to 8:30	6	0	0	**6**	22	0	1	**23**	0	0	0	**0**
7:45 to 8:45	11	0	0	**11**	23	0	1	**24**	0	0	0	**0**
8:00 to 9:00	15	0	0	**15**	29	1	1	**31**	0	0	0	**0**
AM Totals	**28**	**0**	**0**	**28**	**45**	**1**	**1**	**47**	**0**	**0**	**0**	**0**
14:30 to 15:30	15	0	0	**15**	15	1	0	**16**	0	0	0	**0**
14:45 to 15:45	17	0	0	**17**	15	2	0	**17**	0	0	0	**0**
15:00 to 16:00	19	0	0	**19**	15	2	0	**17**	0	0	0	**0**
15:15 to 16:15	14	0	0	**14**	14	2	0	**16**	0	0	0	**0**
15:30 to 16:30	12	0	0	**12**	11	1	0	**12**	0	0	0	**0**
PM Totals	**27**	**0**	**0**	**27**	**26**	**2**	**0**	**28**	**0**	**0**	**0**	**0**

7:00 to 8:00	8	0	0	**8**	486	30	8	**524**	0	0	0	**0**	20	13	3	0	8	5	**49**
7:15 to 8:15	11	0	1	**12**	541	31	4	**576**	0	0	0	**0**	23	20	3	1	5	6	**58**
7:30 to 8:30	15	0	1	**16**	600	31	2	**633**	0	0	0	**0**	24	20	5	4	8	5	**66**
7:45 to 8:45	16	1	1	**18**	638	25	1	**664**	0	0	0	**0**	52	25	5	4	8	14	**108**
8:00 to 9:00	18	1	1	**20**	666	28	1	**695**	0	0	0	**0**	97	25	2	4	7	28	**163**
AM Totals	**26**	**1**	**1**	**28**	**1,152**	**58**	**9**	**1,219**	**0**	**0**	**0**	**0**	**117**	**38**	**5**	**4**	**15**	**33**	**212**
14:30 to 15:30	27	2	1	**30**	580	13	4	**597**	1	0	0	**1**	22	90	3	1	77	34	**227**
14:45 to 15:45	28	1	0	**29**	656	15	2	**673**	0	0	0	**0**	17	92	1	3	77	31	**221**
15:00 to 16:00	22	0	0	**22**	686	18	1	**705**	0	0	0	**0**	14	92	0	3	67	12	**188**
15:15 to 16:15	13	0	0	**13**	695	19	2	**716**	0	0	0	**0**	13	24	1	2	10	6	**56**
15:30 to 16:30	15	0	0	**15**	676	16	1	**693**	0	0	0	**0**	20	14	3	2	5	7	**51**
PM Totals	**42**	**2**	**1**	**45**	**1,256**	**29**	**5**	**1,290**	**1**	**0**	**0**	**1**	**42**	**104**	**6**	**3**	**82**	**41**	**278**

Job No. : AUNSW1386
Client : SCT Consulting Pty Ltd
Suburb : Frenchs Forest
Location : 4. Allambie Rd / Rodborough Rd

Day/Date : Wed, 1 Dec 2021
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data



	Class 1	Class 2	Class 3
Classifications	Lights	Heavies	Cyclists

Approach	Allambie Rd															
Direction	Direction 1 (Left Turn)				Direction 2 (Through)				Direction 3 (Right Turn)				Direction 3U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	70	3	0	**73**	35	5	2	**42**	13	0	0	**13**	0	0	0	**0**
7:15 to 7:30	91	2	0	**93**	46	0	0	**46**	15	1	0	**16**	0	0	0	**0**
7:30 to 7:45	81	3	0	**84**	53	3	0	**56**	18	0	0	**18**	0	0	0	**0**
7:45 to 8:00	107	1	0	**108**	65	7	0	**72**	22	2	0	**24**	0	0	0	**0**
8:00 to 8:15	86	3	0	**89**	62	1	0	**63**	25	0	0	**25**	0	0	0	**0**
8:15 to 8:30	86	5	0	**91**	81	2	0	**83**	30	0	0	**30**	1	0	0	**1**
8:30 to 8:45	79	4	1	**84**	86	4	0	**90**	34	0	0	**34**	0	0	0	**0**
8:45 to 9:00	97	2	0	**99**	59	2	0	**61**	43	1	1	**45**	1	0	0	**1**
Total	**697**	**23**	**1**	**721**	**487**	**24**	**2**	**513**	**200**	**4**	**1**	**205**	**2**	**0**	**0**	**2**

Approach	Rodborough Rd															
Direction	Direction 4 (Left Turn)				Direction 5 (Through)				Direction 6 (Right Turn)				Direction 6U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	5	0	0	**5**	10	0	0	**10**	13	1	0	**14**	2	0	0	**2**
7:15 to 7:30	7	2	0	**9**	13	1	0	**14**	13	3	0	**16**	0	0	0	**0**
7:30 to 7:45	14	0	0	**14**	11	1	0	**12**	17	0	0	**17**	0	0	0	**0**
7:45 to 8:00	24	1	0	**25**	26	0	0	**26**	25	0	0	**25**	1	0	0	**1**
8:00 to 8:15	12	0	0	**12**	20	0	0	**20**	23	0	0	**23**	0	0	0	**0**
8:15 to 8:30	18	0	0	**18**	13	2	0	**15**	26	2	0	**28**	0	0	0	**0**
8:30 to 8:45	20	0	0	**20**	22	2	0	**24**	23	1	0	**24**	1	0	0	**1**
8:45 to 9:00	28	1	0	**29**	21	3	0	**24**	23	1	0	**24**	0	0	0	**0**
Total	**128**	**4**	**0**	**132**	**136**	**9**	**0**	**145**	**163**	**8**	**0**	**171**	**4**	**0**	**0**	**4**

Approach	Allambie Rd															
Direction	Direction 7 (Left Turn)				Direction 8 (Through)				Direction 9 (Right Turn)				Direction 9U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	44	1	0	**45**	95	9	0	**104**	21	1	0	**22**	0	0	0	**0**
7:15 to 7:30	45	4	0	**49**	107	10	4	**121**	10	0	0	**10**	0	0	0	**0**
7:30 to 7:45	62	1	0	**63**	127	10	0	**137**	7	0	0	**7**	1	0	0	**1**
7:45 to 8:00	75	0	0	**75**	156	8	0	**164**	6	1	0	**7**	0	0	0	**0**
8:00 to 8:15	96	1	0	**97**	162	9	1	**172**	6	1	0	**7**	2	0	0	**2**
8:15 to 8:30	97	3	0	**100**	178	7	0	**185**	16	1	0	**17**	1	0	0	**1**
8:30 to 8:45	135	4	1	**140**	164	8	0	**172**	18	2	0	**20**	2	0	0	**2**
8:45 to 9:00	137	1	0	**138**	173	10	0	**183**	18	0	0	**18**	1	0	0	**1**
Total	**691**	**15**	**1**	**707**	**1,162**	**71**	**5**	**1,238**	**102**	**6**	**0**	**108**	**7**	**0**	**0**	**7**

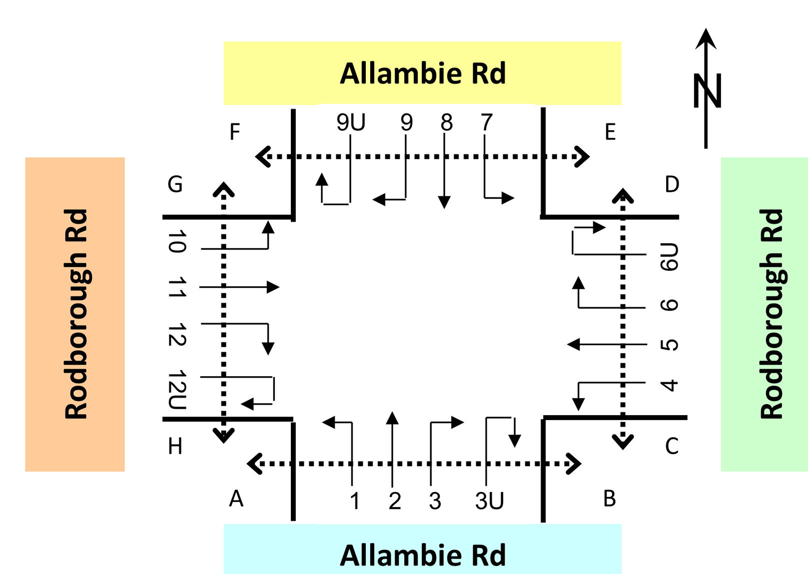
Approach	Rodborough Rd															
Direction	Direction 10 (Left Turn)				Direction 11 (Through)				Direction 12 (Right Turn)				Direction 12U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	2	1	0	**3**	0	0	0	**0**	1	1	0	**2**	0	0	0	**0**
7:15 to 7:30	2	1	0	**3**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**
7:30 to 7:45	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
7:45 to 8:00	1	0	0	**1**	1	0	0	**1**	1	0	0	**1**	0	0	0	**0**
8:00 to 8:15	1	0	0	**1**	1	0	0	**1**	1	0	0	**1**	0	0	0	**0**
8:15 to 8:30	2	0	0	**2**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**
8:30 to 8:45	2	0	0	**2**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**
8:45 to 9:00	0	1	0	**1**	0	0	0	**0**	2	0	0	**2**	0	0	0	**0**
Total	**10**	**3**	**0**	**13**	**3**	**0**	**0**	**3**	**7**	**1**	**0**	**8**	**0**	**0**	**0**	**0**

Time Period	Crossing Pedestrians								
	B to A	A to B	D to C	C to D	F to E	E to F	H to G	G to H	Total
7:00 to 7:15	3	1	2	2	0	0	0	8	**16**
7:15 to 7:30	1	1	0	1	0	0	1	2	**6**
7:30 to 7:45	0	1	0	0	0	0	1	2	**4**
7:45 to 8:00	0	1	0	0	2	0	1	1	**5**
8:00 to 8:15	1	1	1	0	2	1	1	5	**12**
8:15 to 8:30	4	1	3	1	0	2	0	5	**16**
8:30 to 8:45	2	6	1	0	2	1	0	1	**13**
8:45 to 9:00	2	8	3	0	2	2	2	3	**22**
Total	**13**	**20**	**10**	**4**	**8**	**6**	**6**	**27**	**94**

Job No. : AUNSW1386
Client : SCT Consulting Pty Ltd
Suburb : Frenchs Forest
Location : 4. Allambie Rd / Rodborough Rd

Day/Date : Wed, 1 Dec 2021
Weather : Fine
Description : Classified Intersection Count

: Hourly Summary



Approach	Allambie Rd															
Direction	Direction 1 (Left Turn)				Direction 2 (Through)				Direction 3 (Right Turn)				Direction 3U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 8:00	349	9	0	**358**	199	15	2	**216**	68	3	0	**71**	0	0	0	**0**
7:15 to 8:15	365	9	0	**374**	226	11	0	**237**	80	3	0	**83**	0	0	0	**0**
7:30 to 8:30	360	12	0	**372**	261	13	0	**274**	95	2	0	**97**	1	0	0	**1**
7:45 to 8:45	358	13	1	**372**	294	14	0	**308**	111	2	0	**113**	1	0	0	**1**
8:00 to 9:00	348	14	1	**363**	288	9	0	**297**	132	1	1	**134**	2	0	0	**2**
Total	**697**	**23**	**1**	**721**	**487**	**24**	**2**	**513**	**200**	**4**	**1**	**205**	**2**	**0**	**0**	**2**

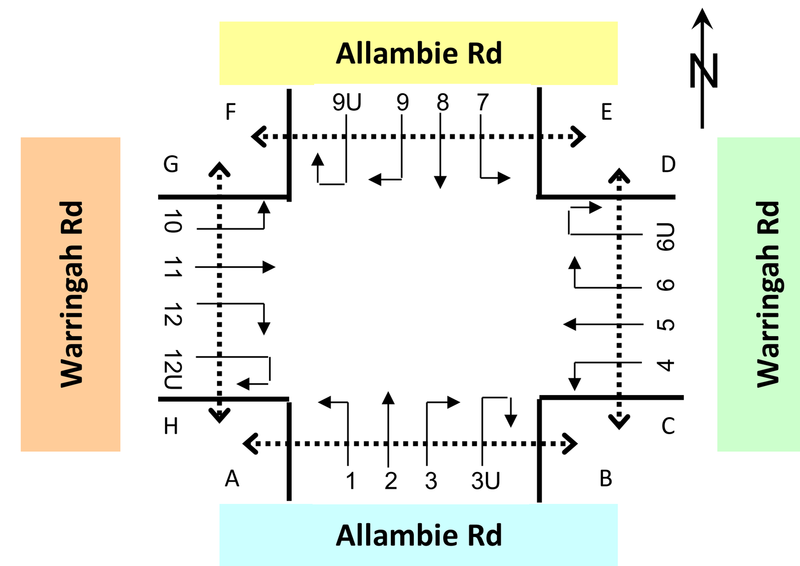
Approach	Rodborough Rd															
Direction	Direction 4 (Left Turn)				Direction 5 (Through)				Direction 6 (Right Turn)				Direction 6U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 8:00	50	3	0	**53**	60	2	0	**62**	68	4	0	**72**	3	0	0	**3**
7:15 to 8:15	57	3	0	**60**	70	2	0	**72**	78	3	0	**81**	1	0	0	**1**
7:30 to 8:30	68	1	0	**69**	70	3	0	**73**	91	2	0	**93**	1	0	0	**1**
7:45 to 8:45	74	1	0	**75**	81	4	0	**85**	97	3	0	**100**	2	0	0	**2**
8:00 to 9:00	78	1	0	**79**	76	7	0	**83**	95	4	0	**99**	1	0	0	**1**
Total	**128**	**4**	**0**	**132**	**136**	**9**	**0**	**145**	**163**	**8**	**0**	**171**	**4**	**0**	**0**	**4**

Approach	Allambie Rd															
Direction	Direction 7 (Left Turn)				Direction 8 (Through)				Direction 9 (Right Turn)				Direction 9U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 8:00	226	6	0	**232**	485	37	4	**526**	44	2	0	**46**	1	0	0	**1**
7:15 to 8:15	278	6	0	**284**	552	37	5	**594**	29	2	0	**31**	3	0	0	**3**
7:30 to 8:30	330	5	0	**335**	623	34	1	**658**	35	3	0	**38**	4	0	0	**4**
7:45 to 8:45	403	8	1	**412**	660	32	1	**693**	46	5	0	**51**	5	0	0	**5**
8:00 to 9:00	465	9	1	**475**	677	34	1	**712**	58	4	0	**62**	6	0	0	**6**
Total	**691**	**15**	**1**	**707**	**1,162**	**71**	**5**	**1,238**	**102**	**6**	**0**	**108**	**7**	**0**	**0**	**7**

Approach	Rodborough Rd															
Direction	Direction 10 (Left Turn)				Direction 11 (Through)				Direction 12 (Right Turn)				Direction 12U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 8:00	5	2	0	**7**	1	0	0	**1**	3	1	0	**4**	0	0	0	**0**
7:15 to 8:15	4	1	0	**5**	2	0	0	**2**	3	0	0	**3**	0	0	0	**0**
7:30 to 8:30	4	0	0	**4**	3	0	0	**3**	2	0	0	**2**	0	0	0	**0**
7:45 to 8:45	6	0	0	**6**	3	0	0	**3**	3	0	0	**3**	0	0	0	**0**
8:00 to 9:00	5	1	0	**6**	2	0	0	**2**	4	0	0	**4**	0	0	0	**0**
Total	**10**	**3**	**0**	**13**	**3**	**0**	**0**	**3**	**7**	**1**	**0**	**8**	**0**	**0**	**0**	**0**

	Crossing Pedestrians								
Time Period	**B to A**	**A to B**	**D to C**	**C to D**	**F to E**	**E to F**	**H to G**	**G to H**	Total
7:00 to 8:00	4	4	2	3	2	0	3	13	**31**
7:15 to 8:15	2	4	1	1	4	1	4	10	**27**
7:30 to 8:30	5	4	4	1	4	3	3	13	**37**
7:45 to 8:45	7	9	5	1	6	4	2	12	**46**
8:00 to 9:00	9	16	8	1	6	6	3	14	**63**
Total	**13**	**20**	**10**	**4**	**8**	**6**	**6**	**27**	**94**

Job No.	: AUNSW1386
Client	: SCT Consulting Pty Ltd
Suburb	: Frenchs Forest
Location	: 5. Allambie Rd / Warringah Rd
Day/Date	: Wed, 1 Dec 2021
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data



	Class 1	Class 2	Class 3
Classifications	Lights	Heavies	Cyclists

Approach	Allambie Rd															
Direction	Direction 1 (Left Turn)				Direction 2 (Through)				Direction 3 (Right Turn)				Direction 3U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	0	0	0	**0**	30	5	1	**36**	36	1	0	**37**	0	0	0	**0**
7:15 to 7:30	0	0	0	**0**	32	0	0	**32**	28	3	2	**33**	0	0	0	**0**
7:30 to 7:45	0	0	0	**0**	36	3	0	**39**	26	3	0	**29**	0	0	0	**0**
7:45 to 8:00	0	0	0	**0**	55	4	0	**59**	31	2	0	**33**	0	0	0	**0**
8:00 to 8:15	1	0	0	**1**	47	1	1	**49**	42	1	0	**43**	0	0	0	**0**
8:15 to 8:30	0	0	0	**0**	71	1	0	**72**	32	1	0	**33**	0	0	0	**0**
8:30 to 8:45	1	0	0	**1**	69	2	0	**71**	41	3	0	**44**	0	0	0	**0**
8:45 to 9:00	0	0	0	**0**	54	3	0	**57**	40	0	0	**40**	0	0	0	**0**
Total	**2**	**0**	**0**	**2**	**394**	**19**	**2**	**415**	**276**	**14**	**2**	**292**	**0**	**0**	**0**	**0**

Approach	Warringah Rd															
Direction	Direction 4 (Left Turn)				Direction 5 (Through)				Direction 6 (Right Turn)				Direction 6U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	38	3	0	**41**	383	32	0	**415**	51	0	0	**51**	0	0	0	**0**
7:15 to 7:30	43	4	0	**47**	439	19	0	**458**	45	0	0	**45**	0	0	0	**0**
7:30 to 7:45	43	3	0	**46**	449	22	0	**471**	56	0	0	**56**	0	0	0	**0**
7:45 to 8:00	58	1	0	**59**	460	19	0	**479**	72	1	0	**73**	0	0	0	**0**
8:00 to 8:15	79	4	0	**83**	367	24	0	**391**	68	0	0	**68**	0	0	0	**0**
8:15 to 8:30	74	2	0	**76**	443	27	0	**470**	88	0	0	**88**	0	0	0	**0**
8:30 to 8:45	70	2	0	**72**	426	26	0	**452**	112	1	0	**113**	0	0	0	**0**
8:45 to 9:00	74	1	0	**75**	327	18	0	**345**	79	0	0	**79**	0	0	0	**0**
Total	**479**	**20**	**0**	**499**	**3,294**	**187**	**0**	**3,481**	**571**	**2**	**0**	**573**	**0**	**0**	**0**	**0**

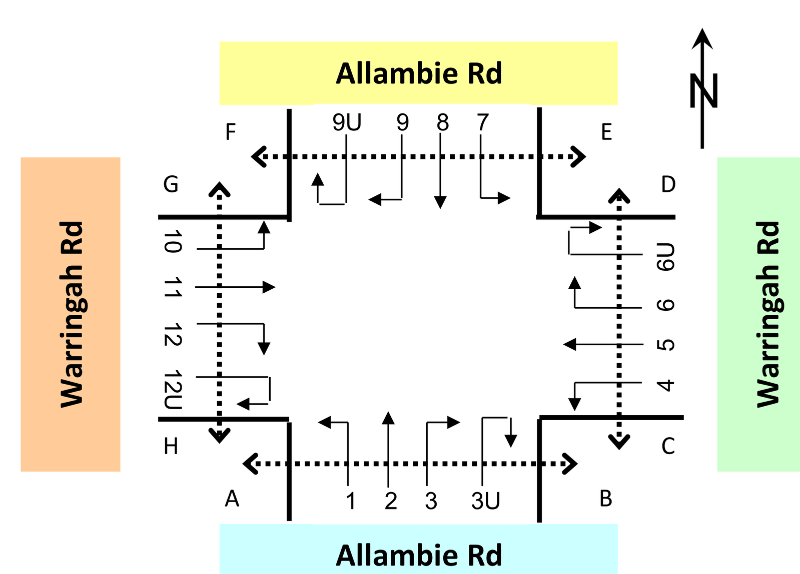
Approach	Allambie Rd															
Direction	Direction 7 (Left Turn)				Direction 8 (Through)				Direction 9 (Right Turn)				Direction 9U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	0	0	0	**0**	32	4	0	**36**	0	0	0	**0**	0	0	0	**0**
7:15 to 7:30	0	0	0	**0**	24	2	2	**28**	0	0	0	**0**	0	0	0	**0**
7:30 to 7:45	0	0	0	**0**	29	2	0	**31**	0	0	0	**0**	0	0	0	**0**
7:45 to 8:00	1	0	0	**1**	41	4	0	**45**	0	0	0	**0**	0	0	0	**0**
8:00 to 8:15	0	0	0	**0**	51	3	0	**54**	0	0	0	**0**	0	0	0	**0**
8:15 to 8:30	0	0	0	**0**	59	3	0	**62**	0	0	0	**0**	0	0	0	**0**
8:30 to 8:45	5	0	0	**5**	68	2	0	**70**	0	0	0	**0**	0	0	0	**0**
8:45 to 9:00	1	0	0	**1**	79	2	1	**82**	0	0	0	**0**	0	0	0	**0**
Total	**7**	**0**	**0**	**7**	**383**	**22**	**3**	**408**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Approach	Warringah Rd															
Direction	Direction 10 (Left Turn)				Direction 11 (Through)				Direction 12 (Right Turn)				Direction 12U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 7:15	22	0	0	**22**	322	22	0	**344**	118	6	0	**124**	0	0	0	**0**
7:15 to 7:30	19	0	3	**22**	325	27	0	**352**	74	7	2	**83**	0	0	0	**0**
7:30 to 7:45	21	0	0	**21**	351	29	0	**380**	105	7	0	**112**	0	0	0	**0**
7:45 to 8:00	18	0	0	**18**	457	30	0	**487**	154	4	0	**158**	0	0	0	**0**
8:00 to 8:15	22	2	0	**24**	366	31	0	**397**	137	2	0	**139**	0	0	0	**0**
8:15 to 8:30	28	0	0	**28**	435	30	1	**466**	145	6	1	**152**	1	0	0	**1**
8:30 to 8:45	28	0	0	**28**	414	23	1	**438**	177	10	0	**187**	0	0	0	**0**
8:45 to 9:00	22	0	0	**22**	397	18	0	**415**	174	7	0	**181**	1	0	0	**1**
Total	**180**	**2**	**3**	**185**	**3,067**	**210**	**2**	**3,279**	**1,084**	**49**	**3**	**1,136**	**2**	**0**	**0**	**2**

Crossing Pedestrians									
Time Period	B to A	A to B	D to C	C to D	F to E	E to F	H to G	G to H	Total
7:00 to 7:15	0	0	0	0	0	0	0	10	**10**
7:15 to 7:30	0	0	0	0	0	1	0	4	**5**
7:30 to 7:45	0	0	0	0	1	0	2	4	**7**
7:45 to 8:00	1	0	0	0	1	0	2	3	**7**
8:00 to 8:15	3	2	0	0	0	1	2	9	**17**
8:15 to 8:30	3	1	0	0	0	0	1	6	**11**
8:30 to 8:45	1	0	0	0	0	1	0	3	**5**
8:45 to 9:00	1	4	0	0	0	2	2	12	**21**
Total	**9**	**7**	**0**	**0**	**2**	**5**	**9**	**51**	**83**

Job No.	: AUNSW1386
Client	: SCT Consulting Pty Ltd
Suburb	: Frenchs Forest
Location	: 5. Allambie Rd / Warringah Rd
Day/Date	: Wed, 1 Dec 2021
Weather	: Fine
Description	: Classified Intersection Count

: Hourly Summary



Approach	Allambie Rd															
Direction	Direction 1 (Left Turn)				Direction 2 (Through)				Direction 3 (Right Turn)				Direction 3U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 8:00	0	0	0	**0**	153	12	1	**166**	121	9	2	**132**	0	0	0	**0**
7:15 to 8:15	1	0	0	**1**	170	8	1	**179**	127	9	2	**138**	0	0	0	**0**
7:30 to 8:30	1	0	0	**1**	209	9	1	**219**	131	7	0	**138**	0	0	0	**0**
7:45 to 8:45	2	0	0	**2**	242	8	1	**251**	146	7	0	**153**	0	0	0	**0**
8:00 to 9:00	2	0	0	**2**	241	7	1	**249**	155	5	0	**160**	0	0	0	**0**
Total	**2**	**0**	**0**	**2**	**394**	**19**	**2**	**415**	**276**	**14**	**2**	**292**	**0**	**0**	**0**	**0**

Approach	Warringah Rd															
Direction	Direction 4 (Left Turn)				Direction 5 (Through)				Direction 6 (Right Turn)				Direction 6U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 8:00	182	11	0	**193**	1,731	92	0	**1,823**	224	1	0	**225**	0	0	0	**0**
7:15 to 8:15	223	12	0	**235**	1,715	84	0	**1,799**	241	1	0	**242**	0	0	0	**0**
7:30 to 8:30	254	10	0	**264**	1,719	92	0	**1,811**	284	1	0	**285**	0	0	0	**0**
7:45 to 8:45	281	9	0	**290**	1,696	96	0	**1,792**	340	2	0	**342**	0	0	0	**0**
8:00 to 9:00	297	9	0	**306**	1,563	95	0	**1,658**	347	1	0	**348**	0	0	0	**0**
Total	**479**	**20**	**0**	**499**	**3,294**	**187**	**0**	**3,481**	**571**	**2**	**0**	**573**	**0**	**0**	**0**	**0**

Approach	Allambie Rd															
Direction	Direction 7 (Left Turn)				Direction 8 (Through)				Direction 9 (Right Turn)				Direction 9U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 8:00	1	0	0	**1**	126	12	2	**140**	0	0	0	**0**	0	0	0	**0**
7:15 to 8:15	1	0	0	**1**	145	11	2	**158**	0	0	0	**0**	0	0	0	**0**
7:30 to 8:30	1	0	0	**1**	180	12	0	**192**	0	0	0	**0**	0	0	0	**0**
7:45 to 8:45	6	0	0	**6**	219	12	0	**231**	0	0	0	**0**	0	0	0	**0**
8:00 to 9:00	6	0	0	**6**	257	10	1	**268**	0	0	0	**0**	0	0	0	**0**
Total	**7**	**0**	**0**	**7**	**383**	**22**	**3**	**408**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

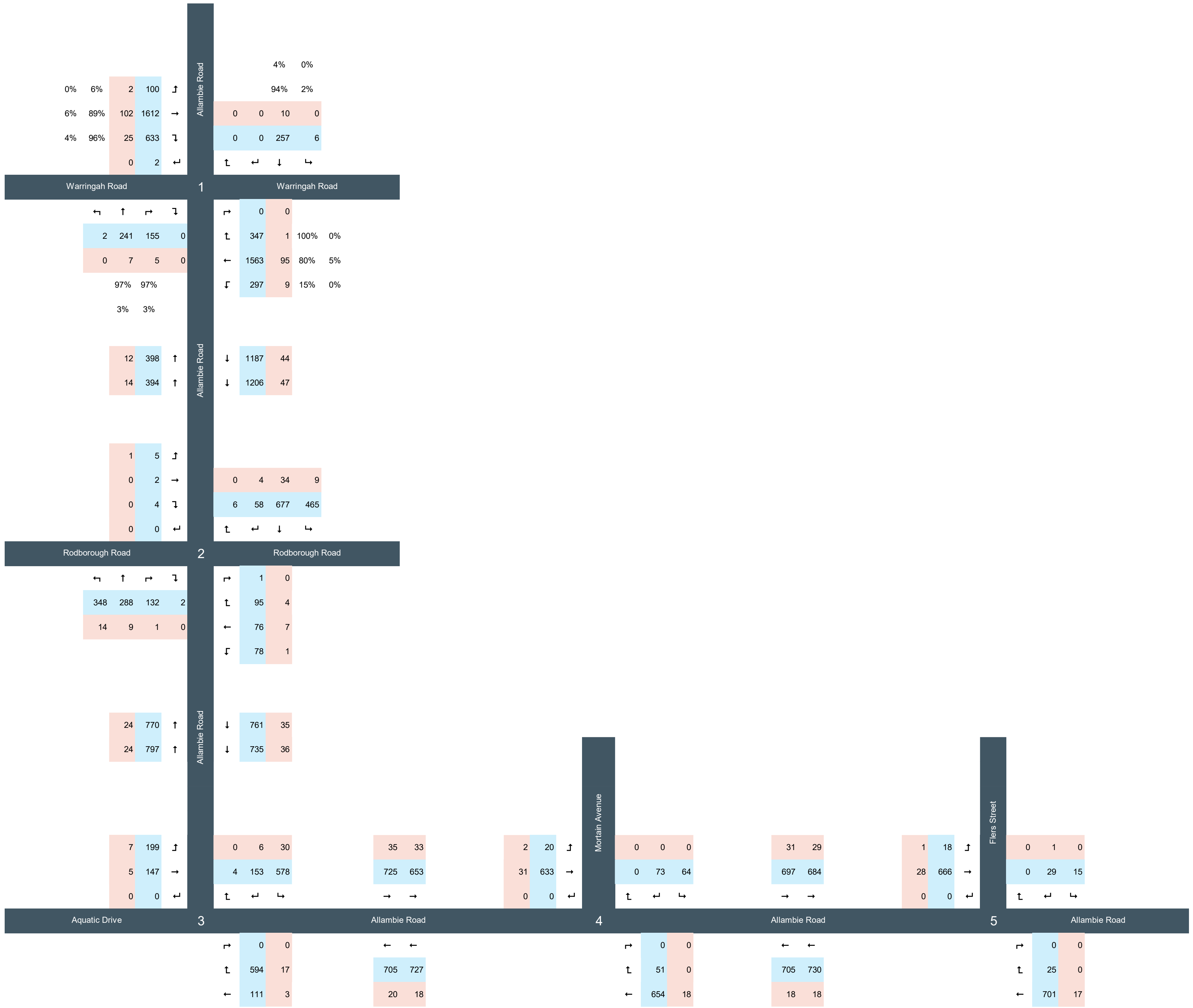
Approach	Warringah Rd															
Direction	Direction 10 (Left Turn)				Direction 11 (Through)				Direction 12 (Right Turn)				Direction 12U (U Turn)			
Time Period	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total	Lights	Heavies	Cyclists	Total
7:00 to 8:00	80	0	3	**83**	1,455	108	0	**1,563**	451	24	2	**477**	0	0	0	**0**
7:15 to 8:15	80	2	3	**85**	1,499	117	0	**1,616**	470	20	2	**492**	0	0	0	**0**
7:30 to 8:30	89	2	0	**91**	1,609	120	1	**1,730**	541	19	1	**561**	1	0	0	**1**
7:45 to 8:45	96	2	0	**98**	1,672	114	2	**1,788**	613	22	1	**636**	1	0	0	**1**
8:00 to 9:00	100	2	0	**102**	1,612	102	2	**1,716**	633	25	1	**659**	2	0	0	**2**
Total	**180**	**2**	**3**	**185**	**3,067**	**210**	**2**	**3,279**	**1,084**	**49**	**3**	**1,136**	**2**	**0**	**0**	**2**

Crossing Pedestrians									
Time Period	B to A	A to B	D to C	C to D	F to E	E to F	H to G	G to H	Total
7:00 to 8:00	1	0	0	0	2	1	4	21	**29**
7:15 to 8:15	4	2	0	0	2	2	6	20	**36**
7:30 to 8:30	7	3	0	0	2	1	7	22	**42**
7:45 to 8:45	8	3	0	0	1	2	5	21	**40**
8:00 to 9:00	8	7	0	0	0	4	5	30	**54**
Total	**9**	**7**	**0**	**0**	**2**	**5**	**9**	**51**	**83**

APPENDIX C

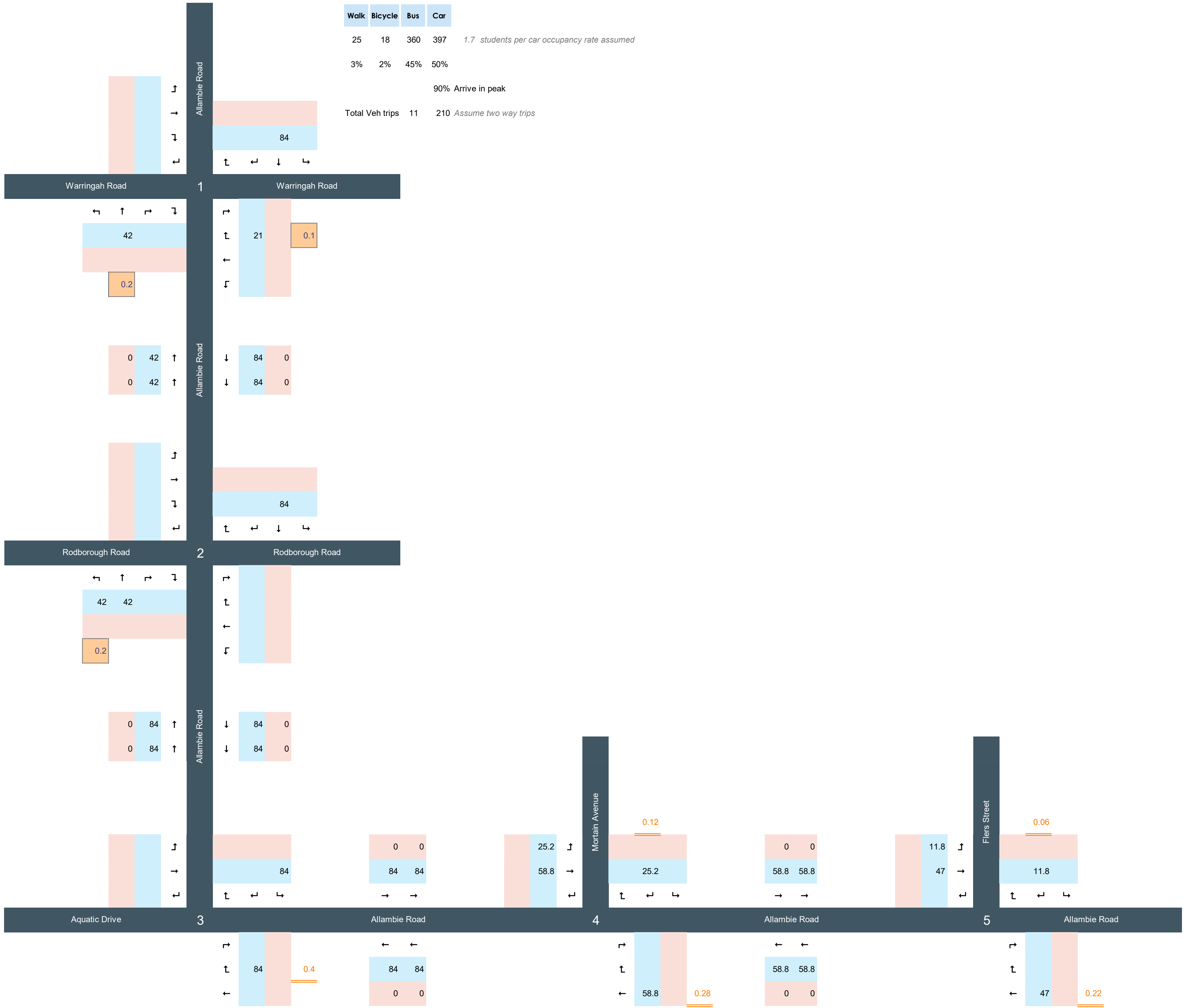
Spreadsheet model outputs

2021AM Base 8:00-9:00

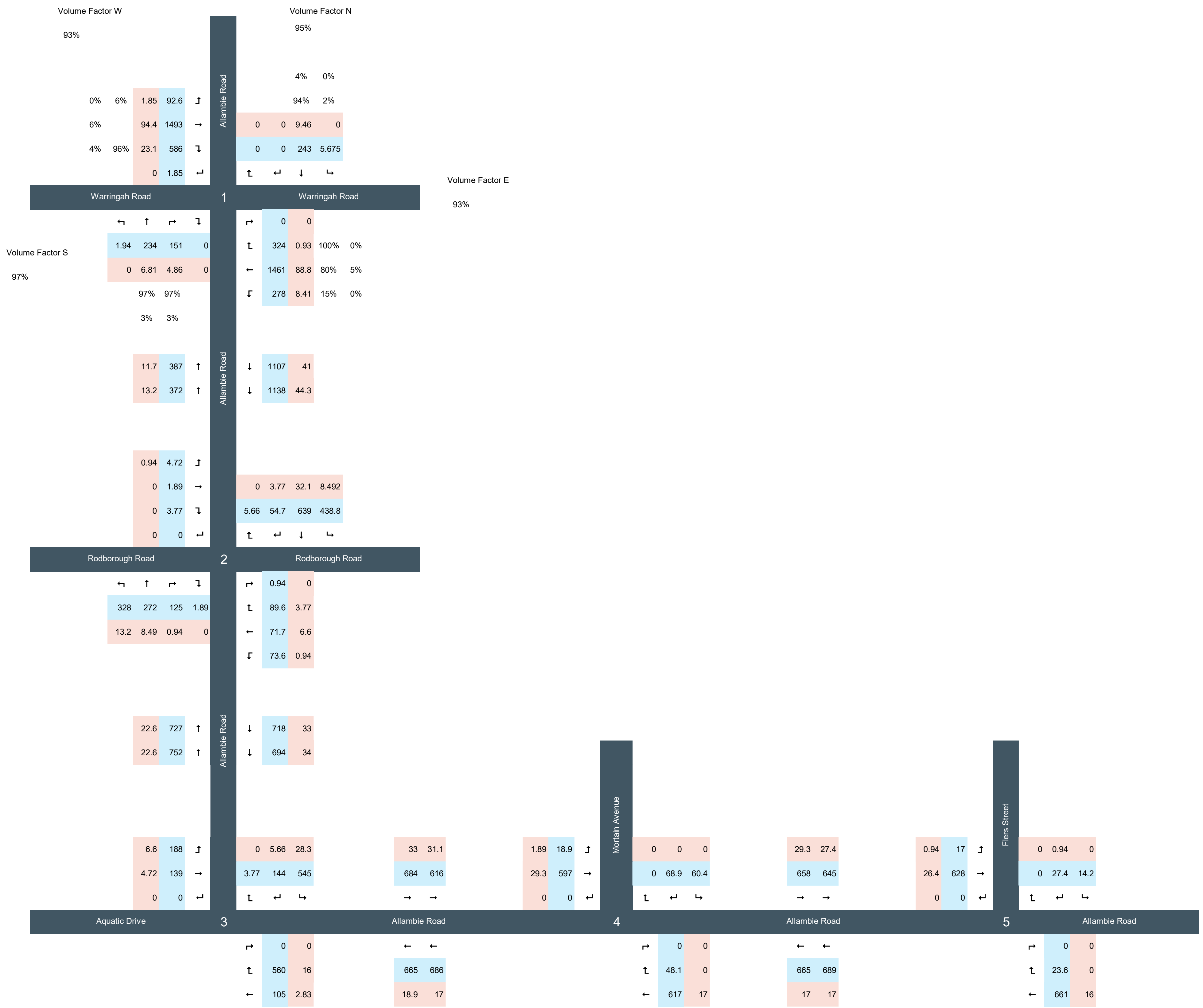


2021 BY TFHS 8:00-9:00

Walk	Bicycle	Bus	Car	
25	18	360	397	*1.7 students per car occupancy rate assumed*
3%	2%	45%	50%	
			90%	Arrive in peak
Total Veh trips		11	210	*Assume two way trips*



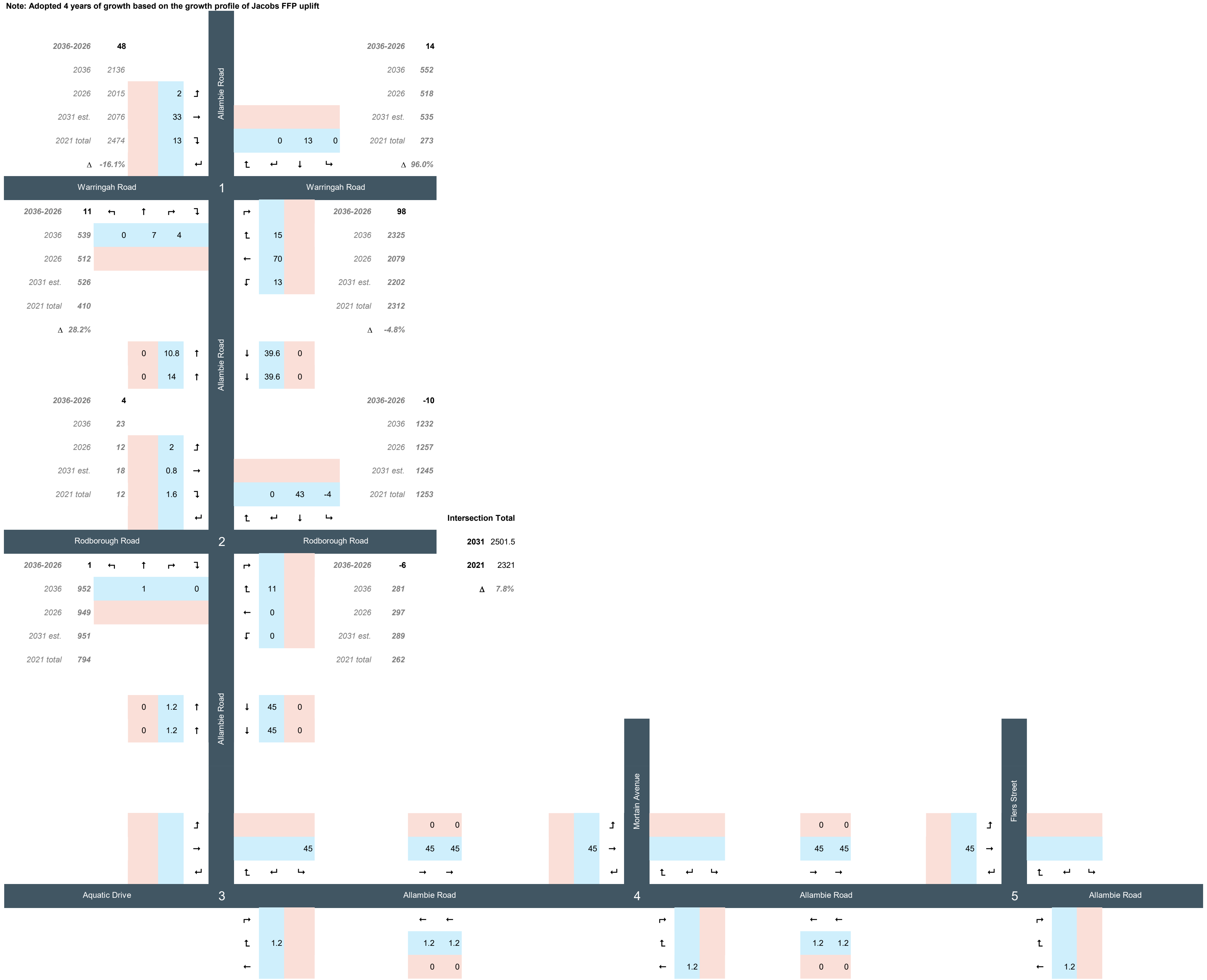
2021AM Base 8:30-9:30



2025AM FY Do Minimum (Background Growth Only) 8:00-9:00

Growth between 2026 and 2036 in "Frenches Forest Planned Precinct Transport Strategy" as proxy for 2021 to 2031 growth, distributed per approach volumes

Note: Adopted 4 years of growth based on the growth profile of Jacobs FFP uplift



2025AM Frenches Forest Planned Precinct Traffic Only 8:00-9:00

Development Traffic, distributed based on Sydney Motorway Project Model (SMPM), an STM

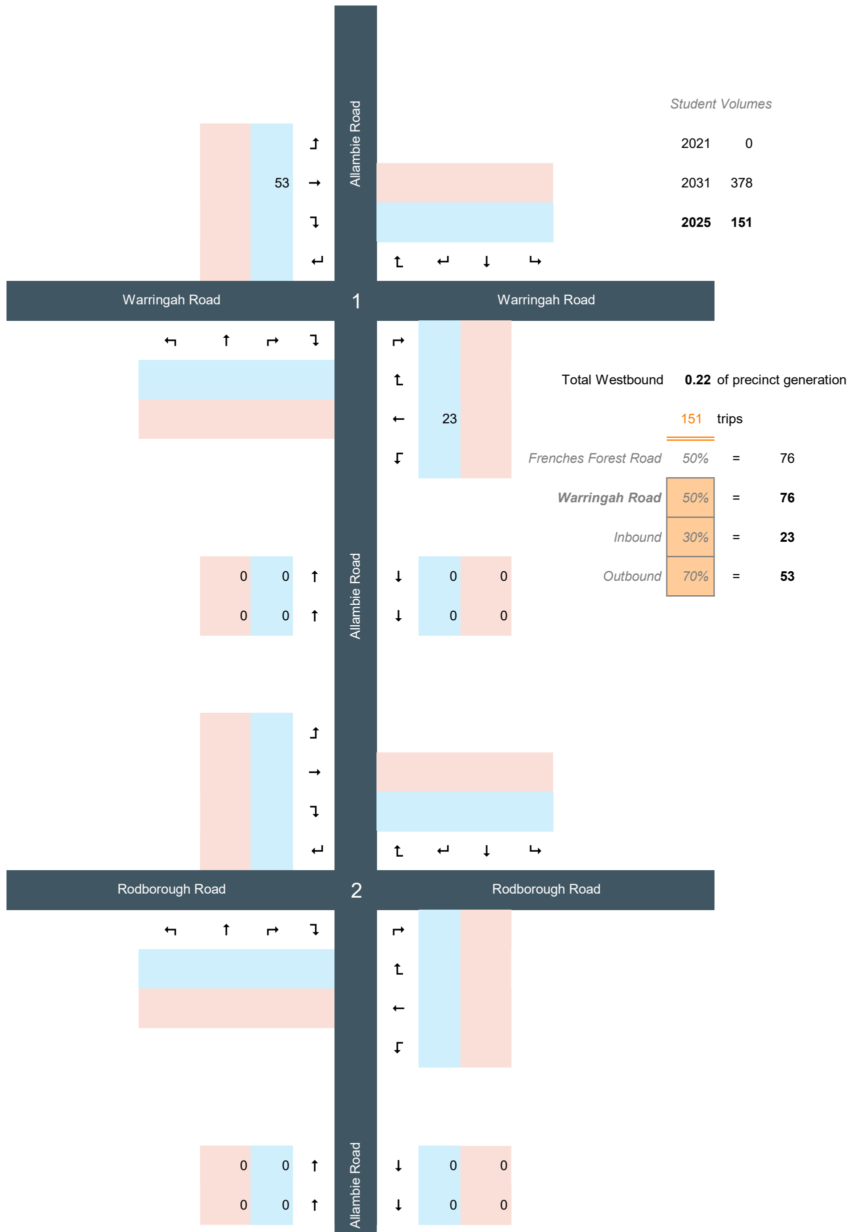
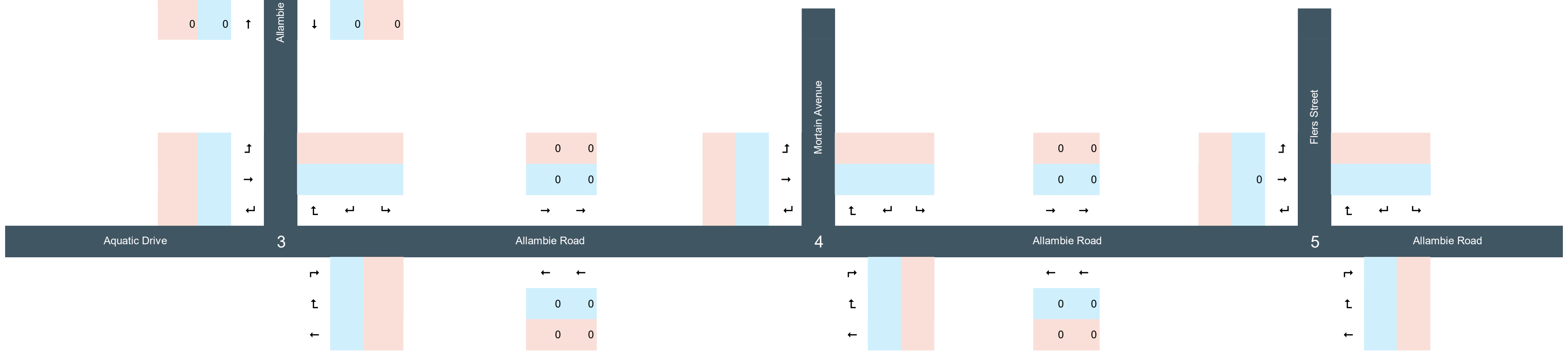
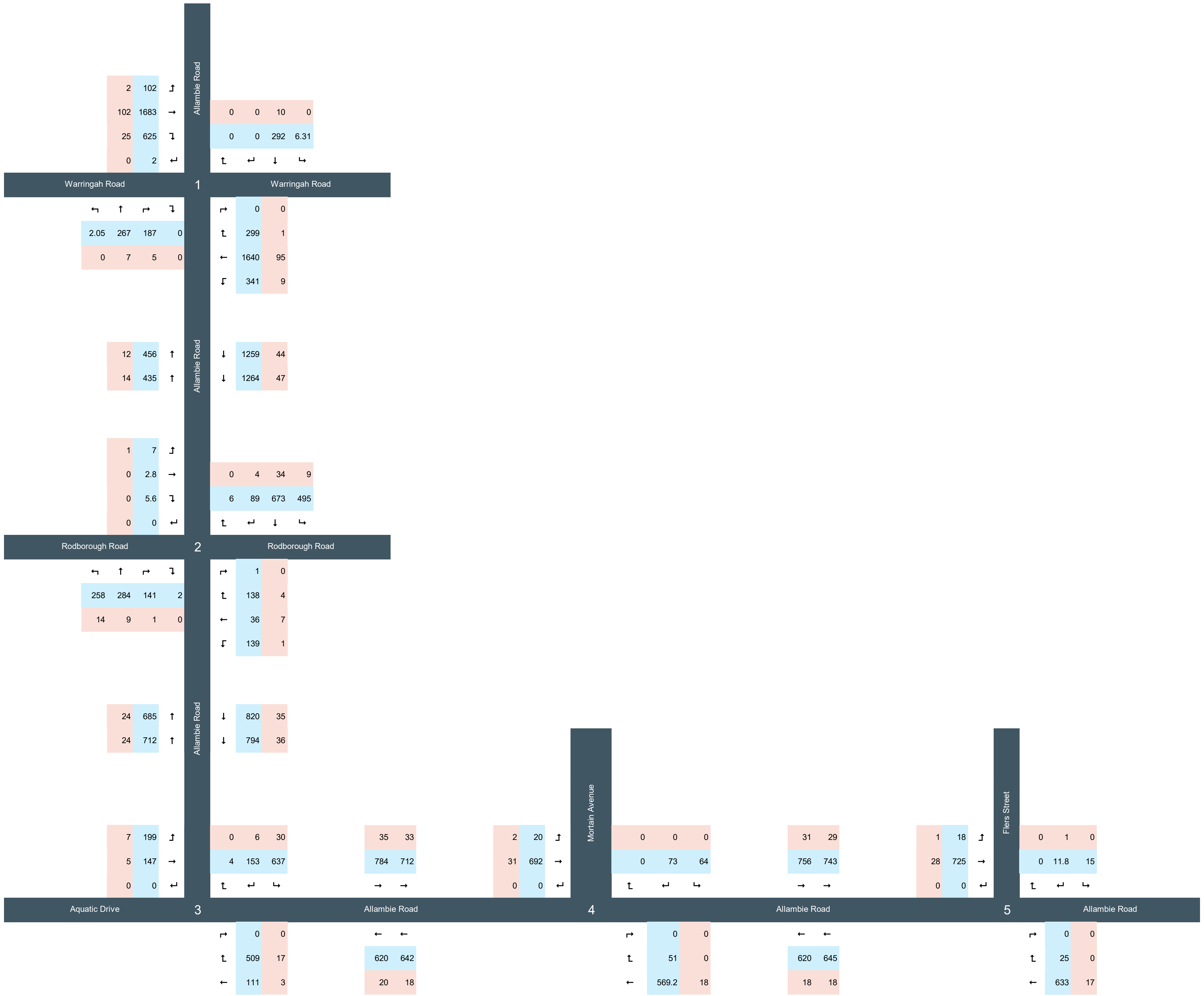


Table 5.1: Traffic generation rates and peak hour vehicle trips

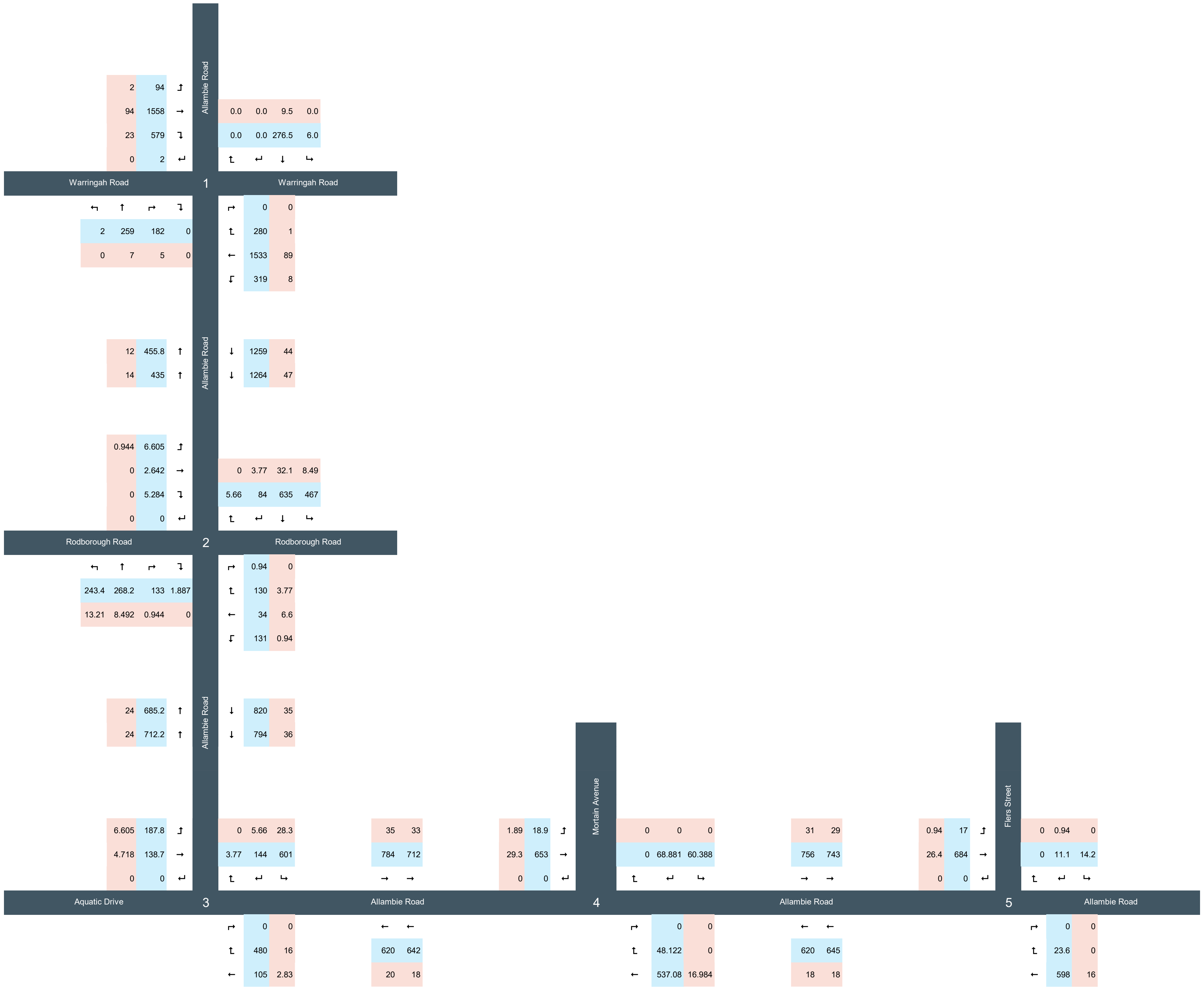
Land use	Dwellings/GFA	AM rate	AM trips/hr	PM rate	PM trips/hr
Residential – high-density	1,726 dwellings	0.4 per dwelling	690	0.45 per dwelling	777
Residential – med-density	199 dwellings	0.5 per dwelling	100	0.55 per dwelling	109
Commercial	9,116m² GFA	1.6 per 100m²	146	1.2 per 100m²	109
Retail – supermarket	5,007m² GLFA	3.4 per 100m²	170	9.8 per 100m²	491
Retail – other	11,466m² GLFA	2.2 per 100m²	252	6.1 per 100m²	699
Hotel	9,000m² GFA	0.3 per 100m²	27	0.3 per 100m²	27
Education	8,175m² GFA	0.8 per 100m²	65	0.8 per 100m²	65
Aged care / community	26,882m² GFA	1.0 per 100m²	269	1.6 per 100m²	430
Total			**1,720**		**2,705**



2025AM FY Base 8:00-9:00

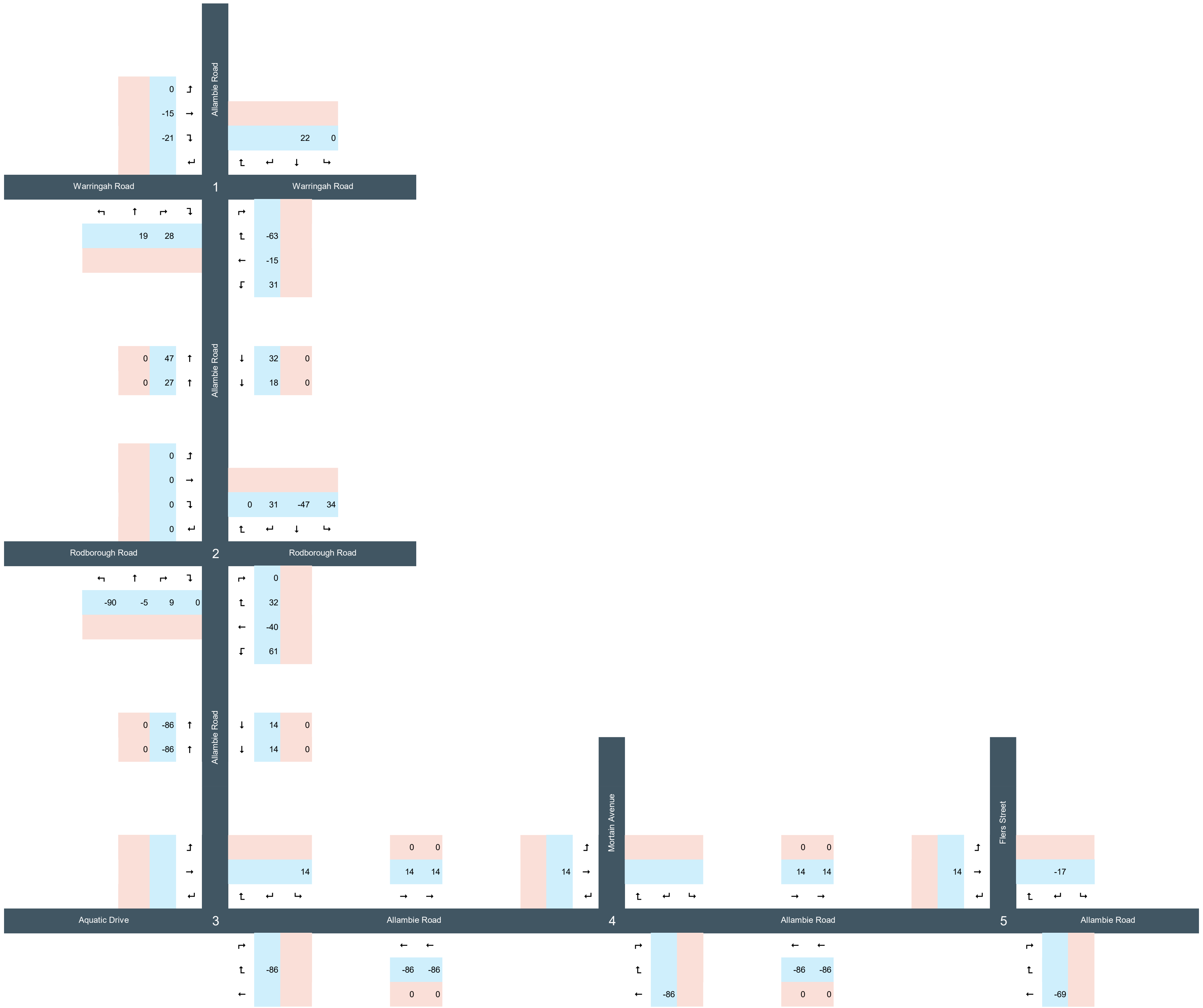


2025AM FY Base 8:30-9:30



2025AM FY Bunnings 8:00-9:00

Data obtained directly from Bunnings DA traffic study



SCT Consulting

2025AM FY TFHS 8:00-9:00

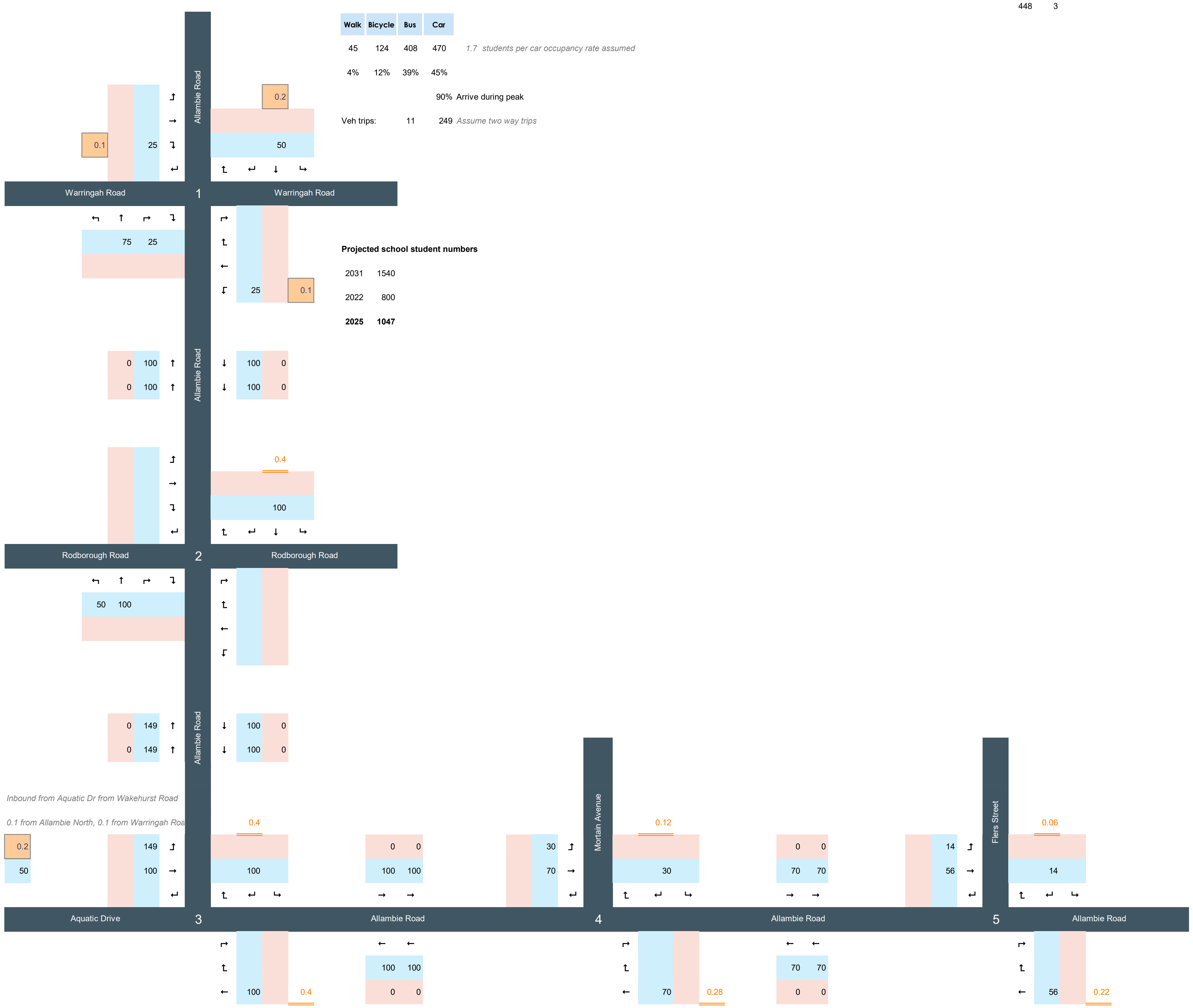
199	1
249	2
448	3

Walk	Bicycle	Bus	Car	
45	124	408	470	*1.7 students per car occupancy rate assumed*
4%	12%	39%	45%	
			90%	Arrive during peak

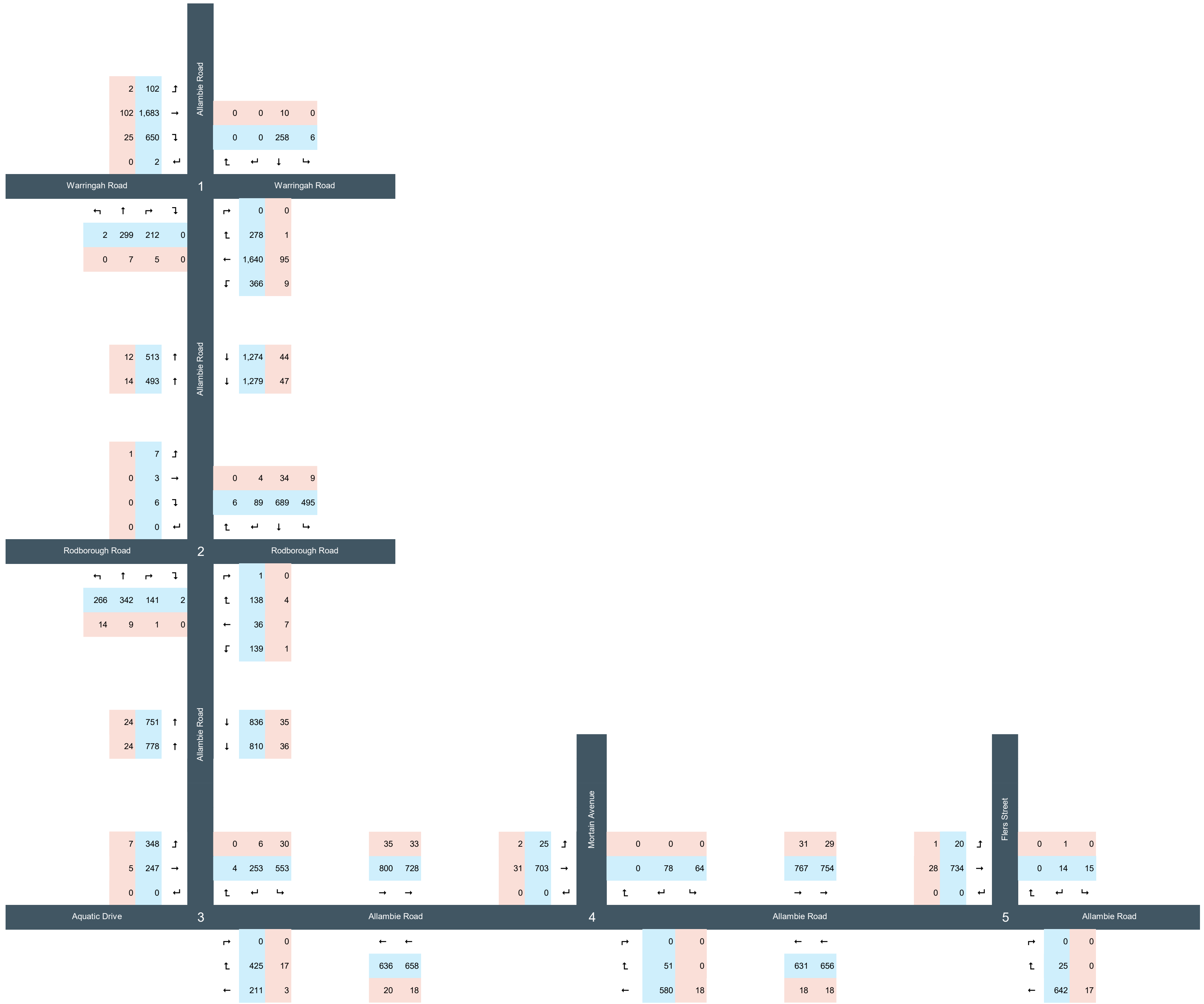
Veh trips: 11 249 *Assume two way trips*

Projected school student numbers

2031	1540
2022	800
2025	**1047**

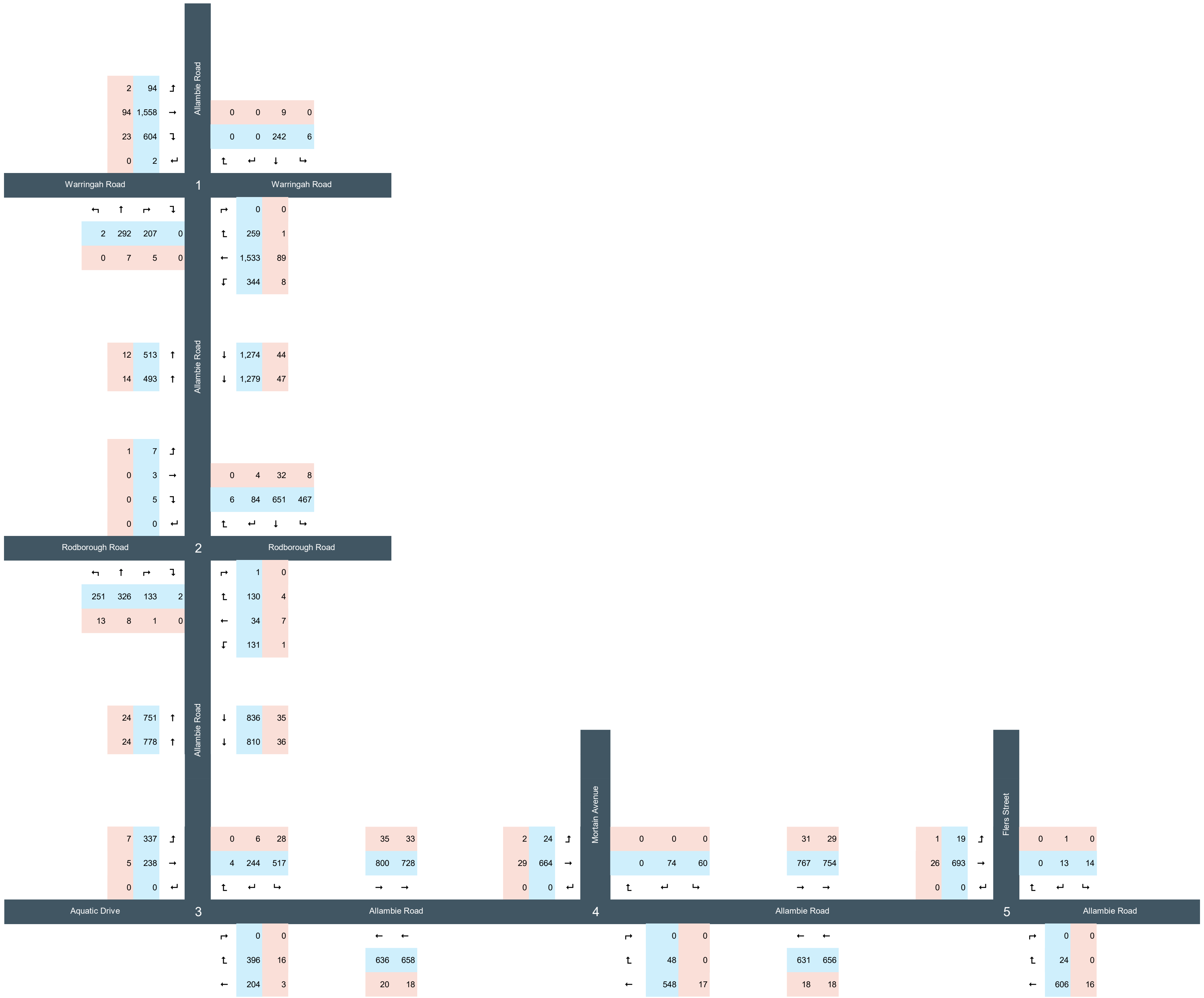


2025AM FY Development 8:00-9:00

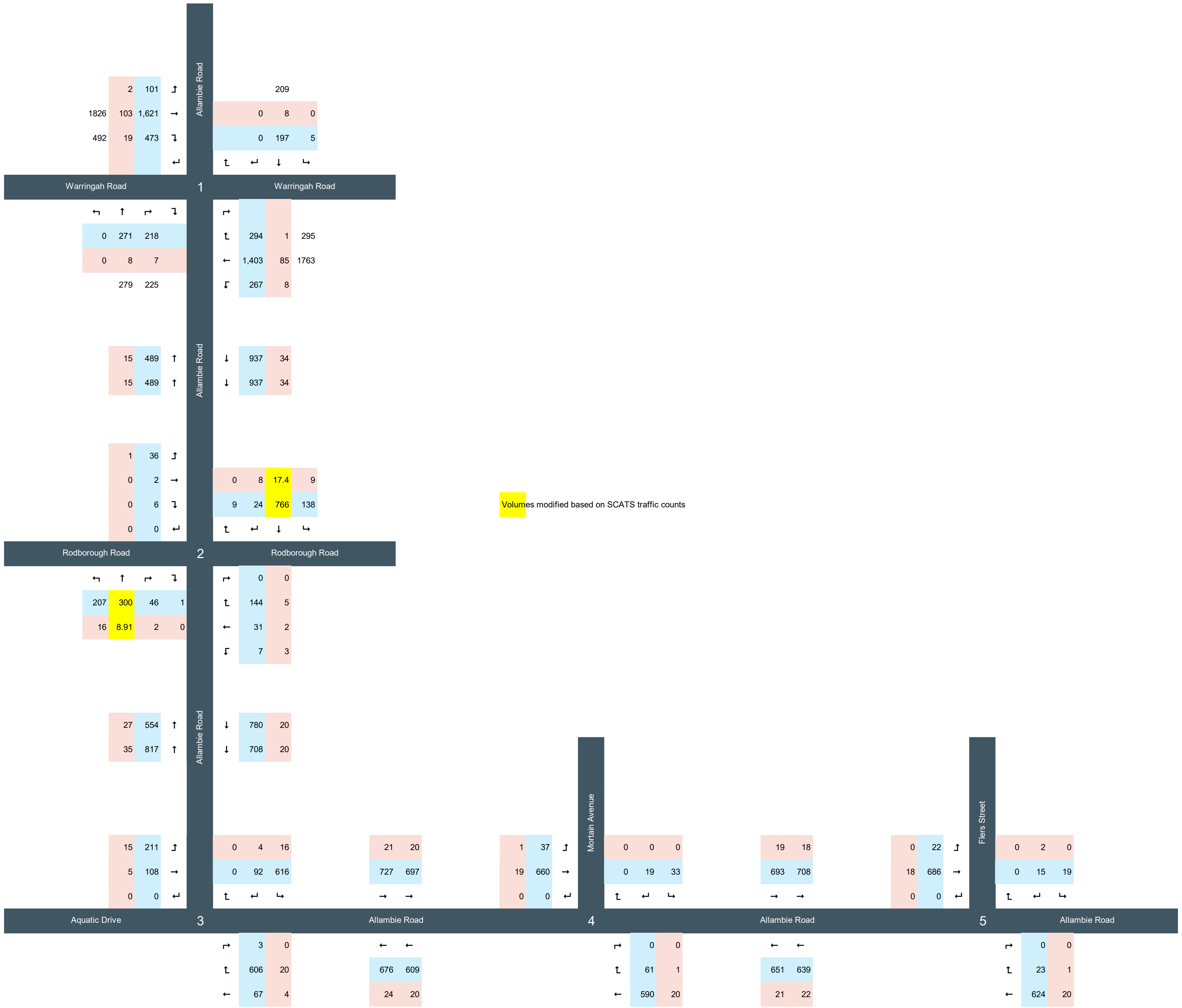


SCT Consulting

2025AM FY Development 8:30-9:30

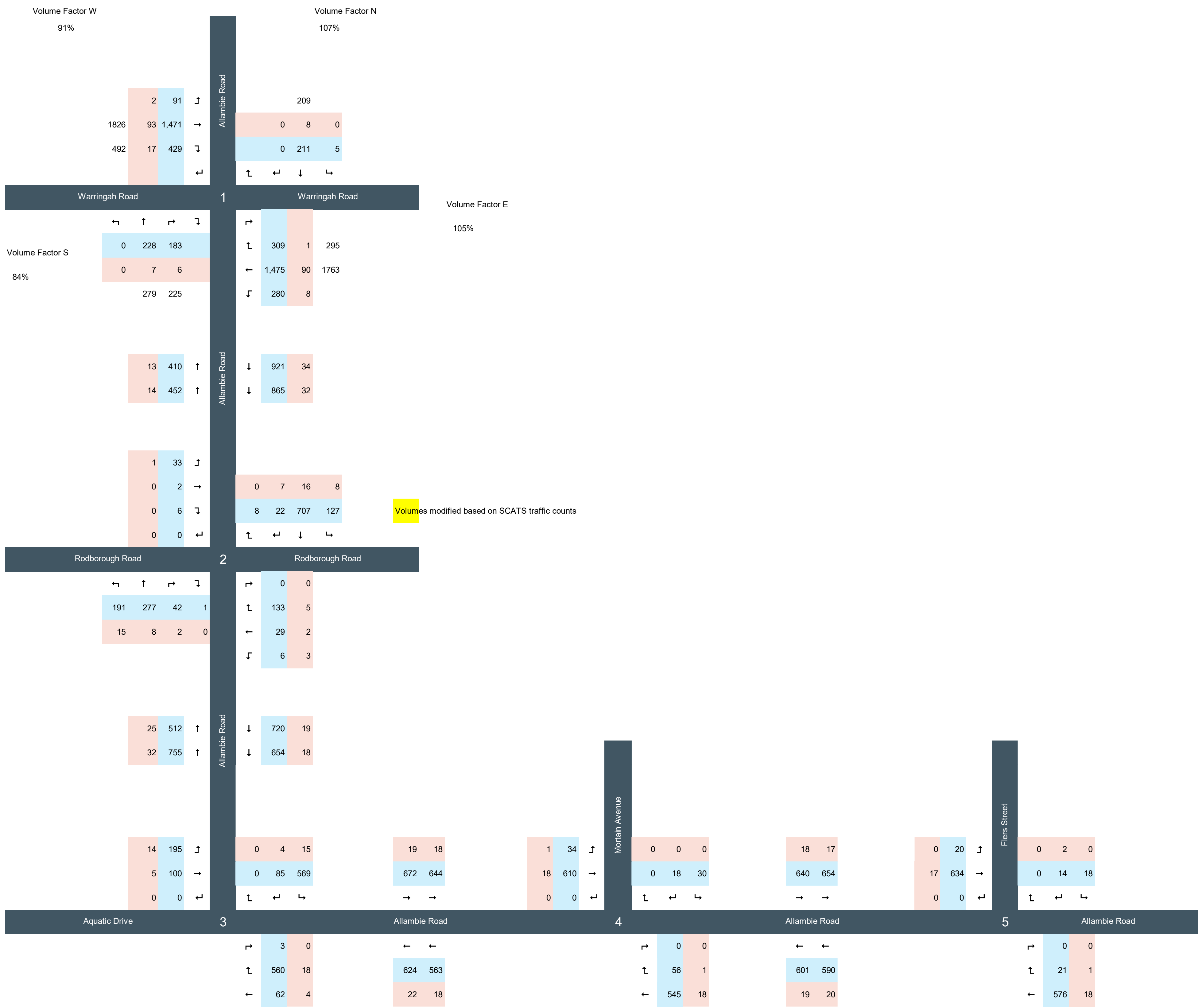


2021PM Base 15:00-16:00



SCT Consulting

2021PM Base 14:30-15:30

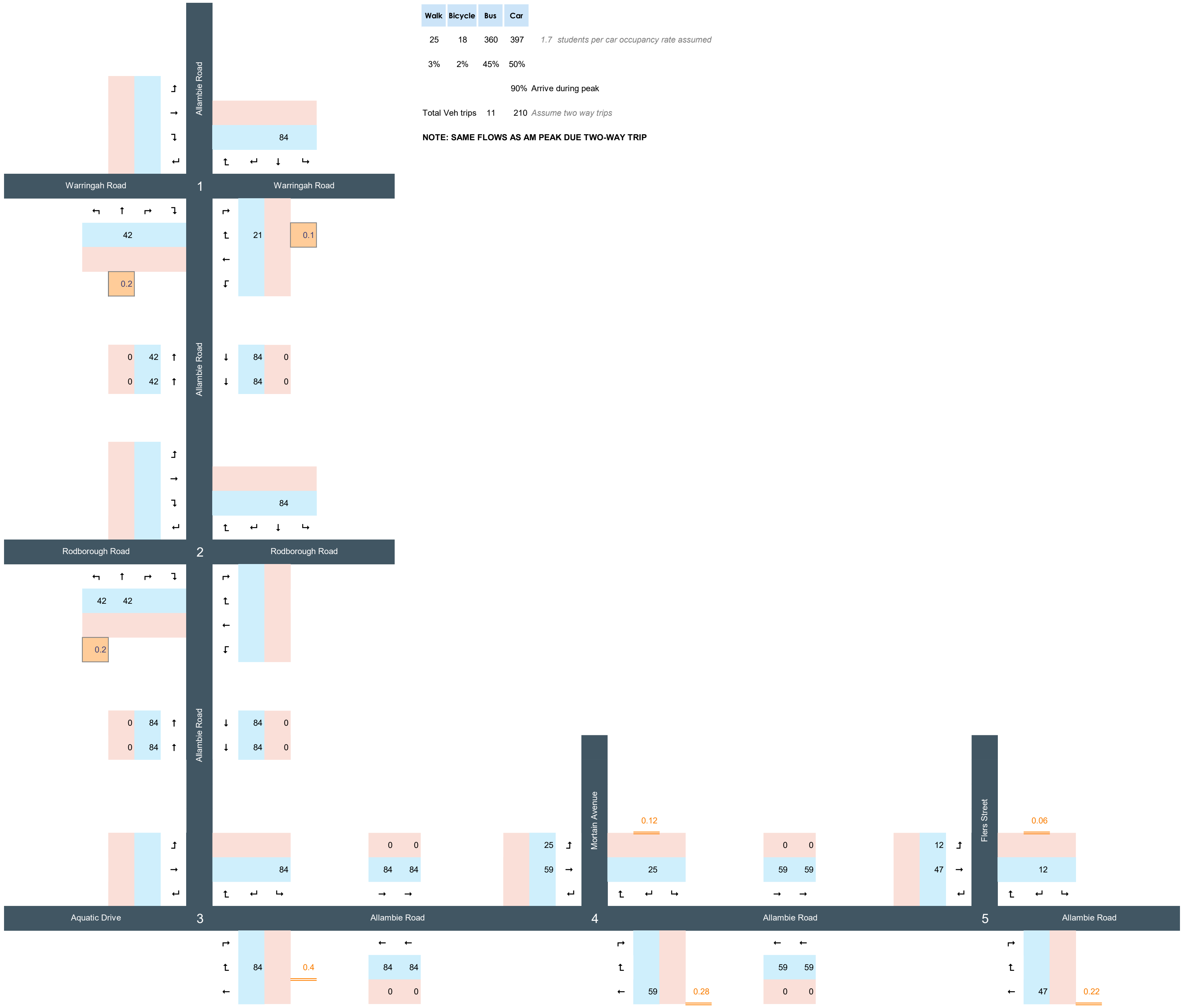


2021 BY TFHS 15:00-16:00

Walk	Bicycle	Bus	Car	
25	18	360	397	*1.7 students per car occupancy rate assumed*
3%	2%	45%	50%	
			90%	Arrive during peak

Total Veh trips 11 210 *Assume two way trips*

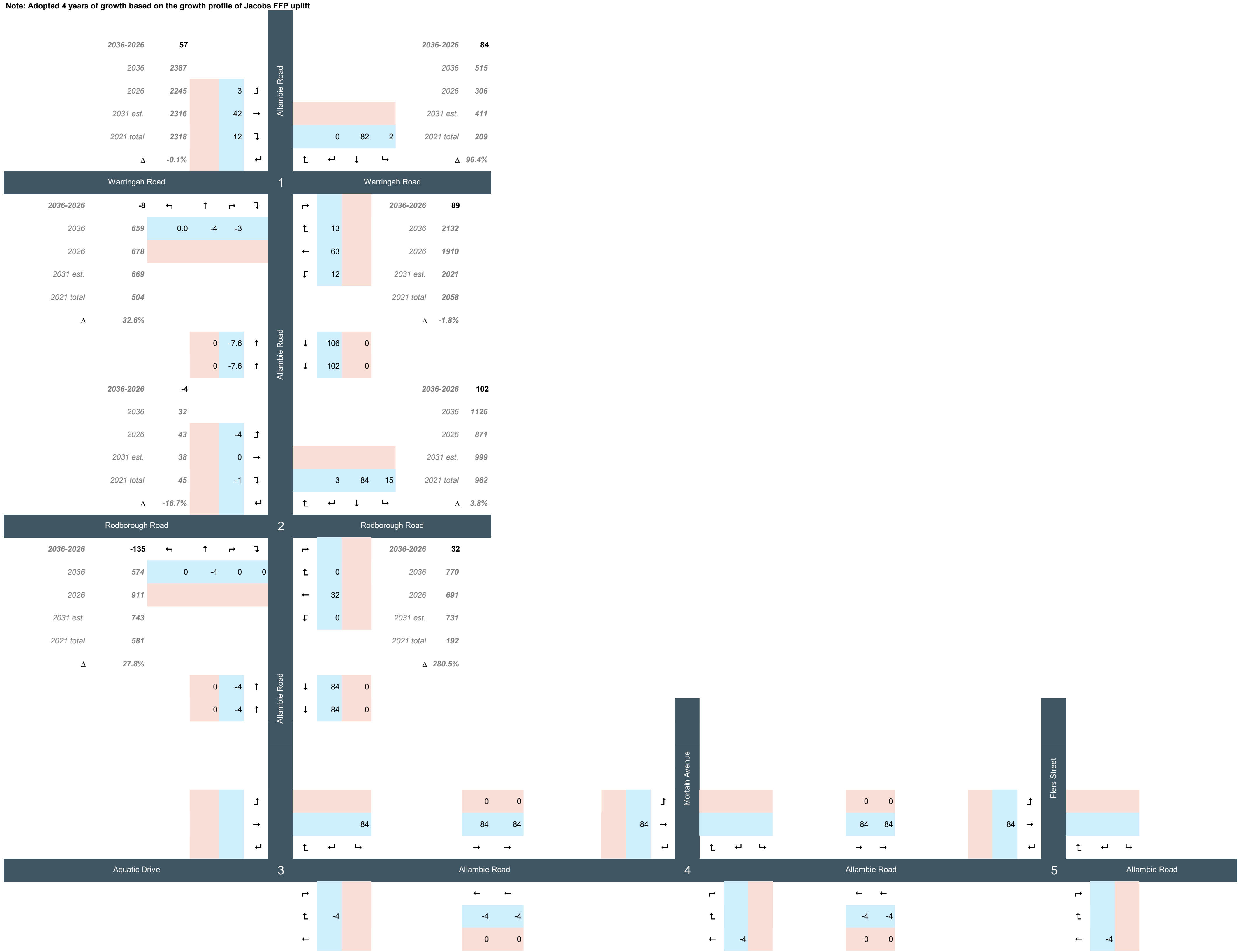
NOTE: SAME FLOWS AS AM PEAK DUE TWO-WAY TRIP



2025PM FY FY Do Minimum (Background Growth Only) 15:00-16:00

Growth between 2026 and 2036 in "Frenches Forest Planned Precinct Transport Strategy" as proxy for 2021 to 2031 growth, distributed per approach volumes

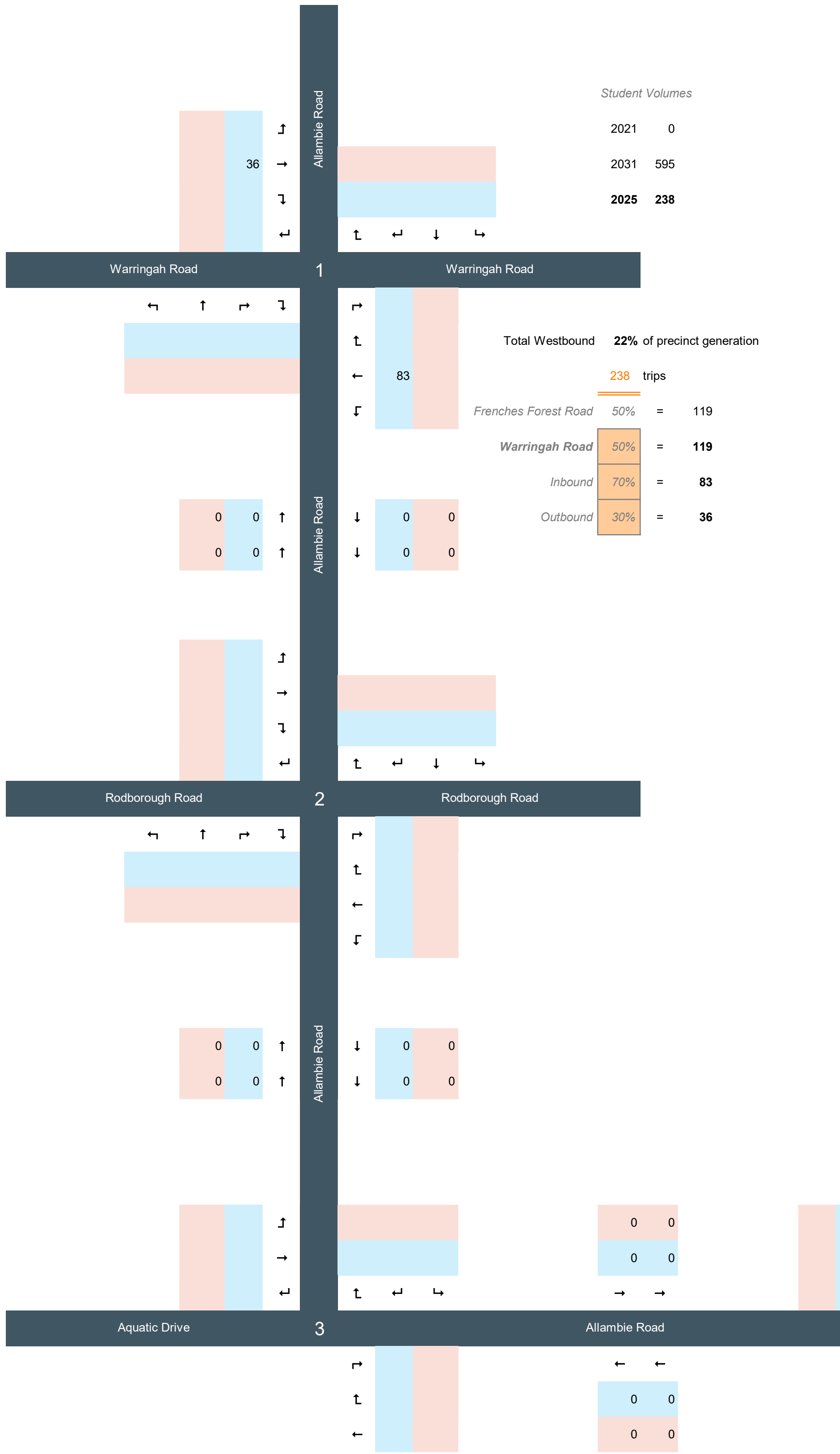
Note: Adopted 4 years of growth based on the growth profile of Jacobs FFP uplift



2025PM Frenches Forest Planned Precinct Traffic Only 15:00-16:00

Development Traffic, distributed based on Sydney Motorway Project Model (SMPM), an STM

119	1
0	2
0	3



Student Volumes

2021	0
2031	595
2025	**238**

Total Westbound **22%** of precinct generation

238 trips

Frenches Forest Road	*50%*	=	119
Warringah Road	*50%*	=	**119**
Inbound	*70%*	=	**83**
Outbound	*30%*	=	**36**

Table 5.1: Traffic generation rates and peak hour vehicle trips

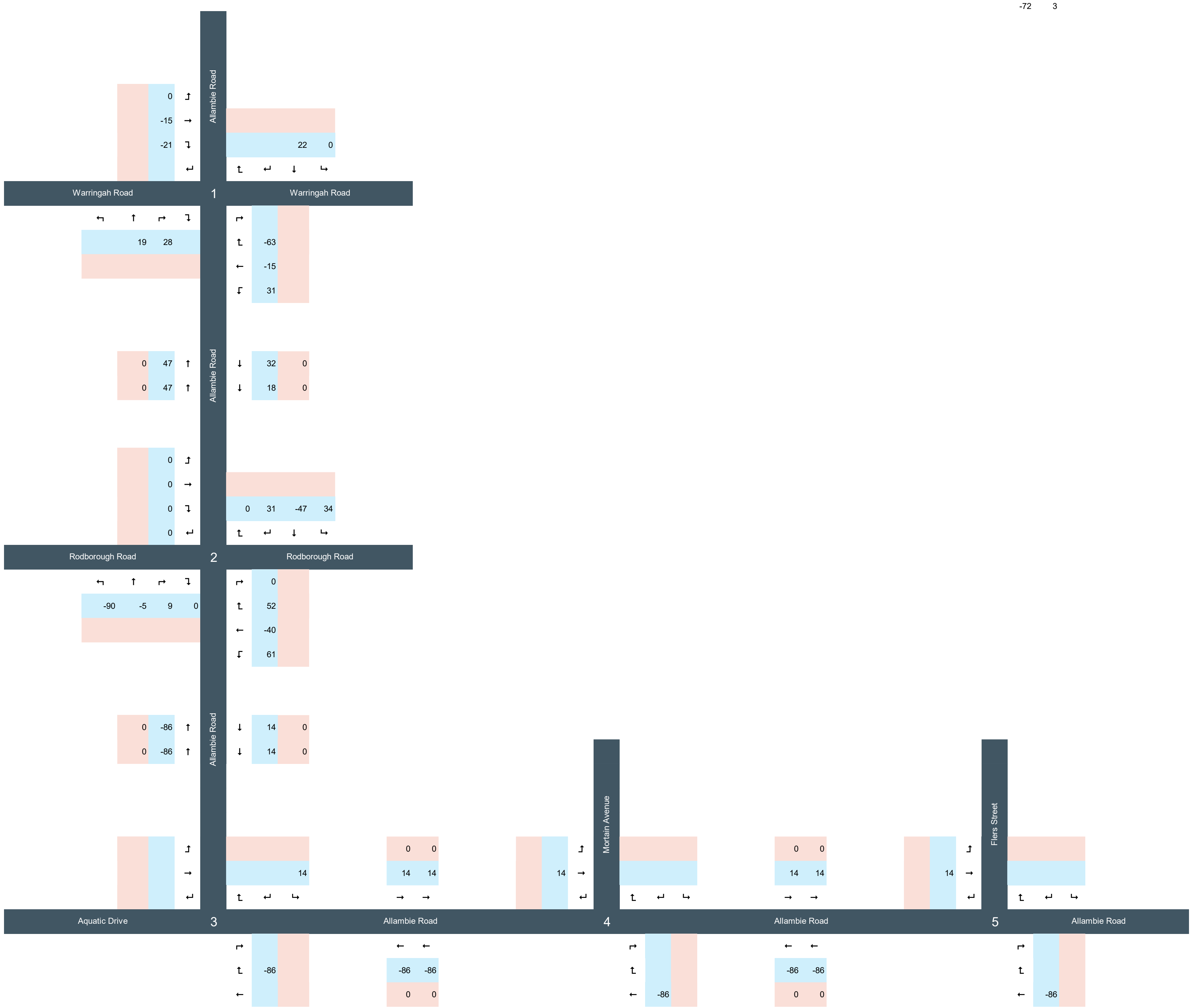
Land use	Dwellings/GFA	AM rate	AM trips/hr	PM rate	PM trips/hr
Residential – high-density	1,726 dwellings	0.4 per dwelling	690	0.45 per dwelling	777
Residential – med-density	199 dwellings	0.5 per dwelling	100	0.55 per dwelling	109
Commercial	9,116m² GFA	1.6 per 100m²	146	1.2 per 100m²	109
Retail – supermarket	5,007m² GLFA	3.4 per 100m²	170	9.8 per 100m²	491
Retail – other	11,466m² GLFA	2.2 per 100m²	252	6.1 per 100m²	699
Hotel	9,000m² GFA	0.3 per 100m²	27	0.3 per 100m²	27
Education	8,175m² GFA	0.8 per 100m²	65	0.8 per 100m²	65
Aged care / community	26,882m² GFA	1.0 per 100m²	269	1.6 per 100m²	430
Total			**1,720**		**2,705**

SCT Consulting

2025PM FY Bunnings 15:00-16:00

Data obtained directly from Bunnings DA traffic study

-14	1
5	2
-72	3



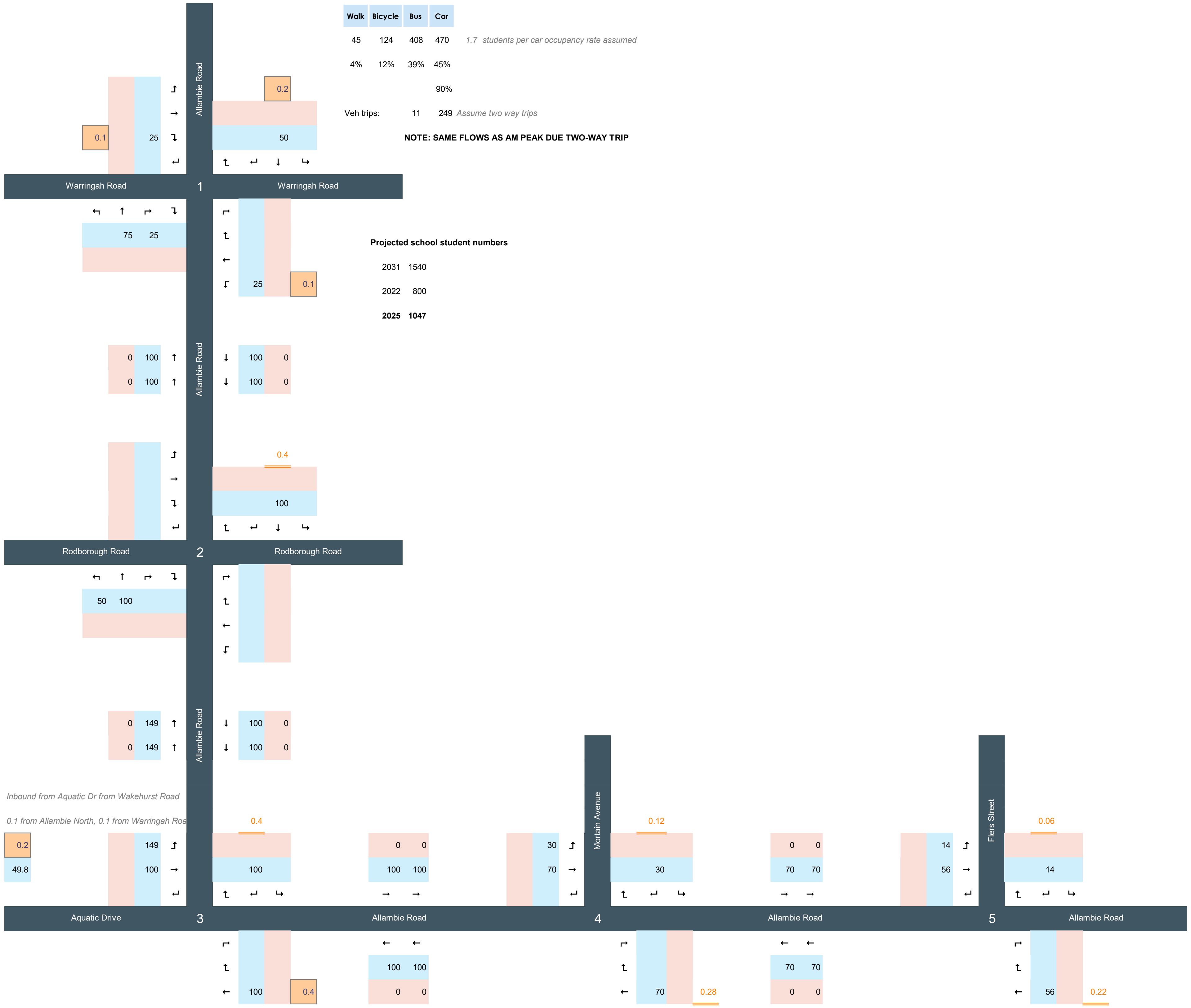
2025PM FY TFHS 15:00-16:00

Walk	Bicycle	Bus	Car	
45	124	408	470	*1.7 students per car occupancy rate assumed*
4%	12%	39%	45%	
			90%	
Veh trips:		11	249	*Assume two way trips*

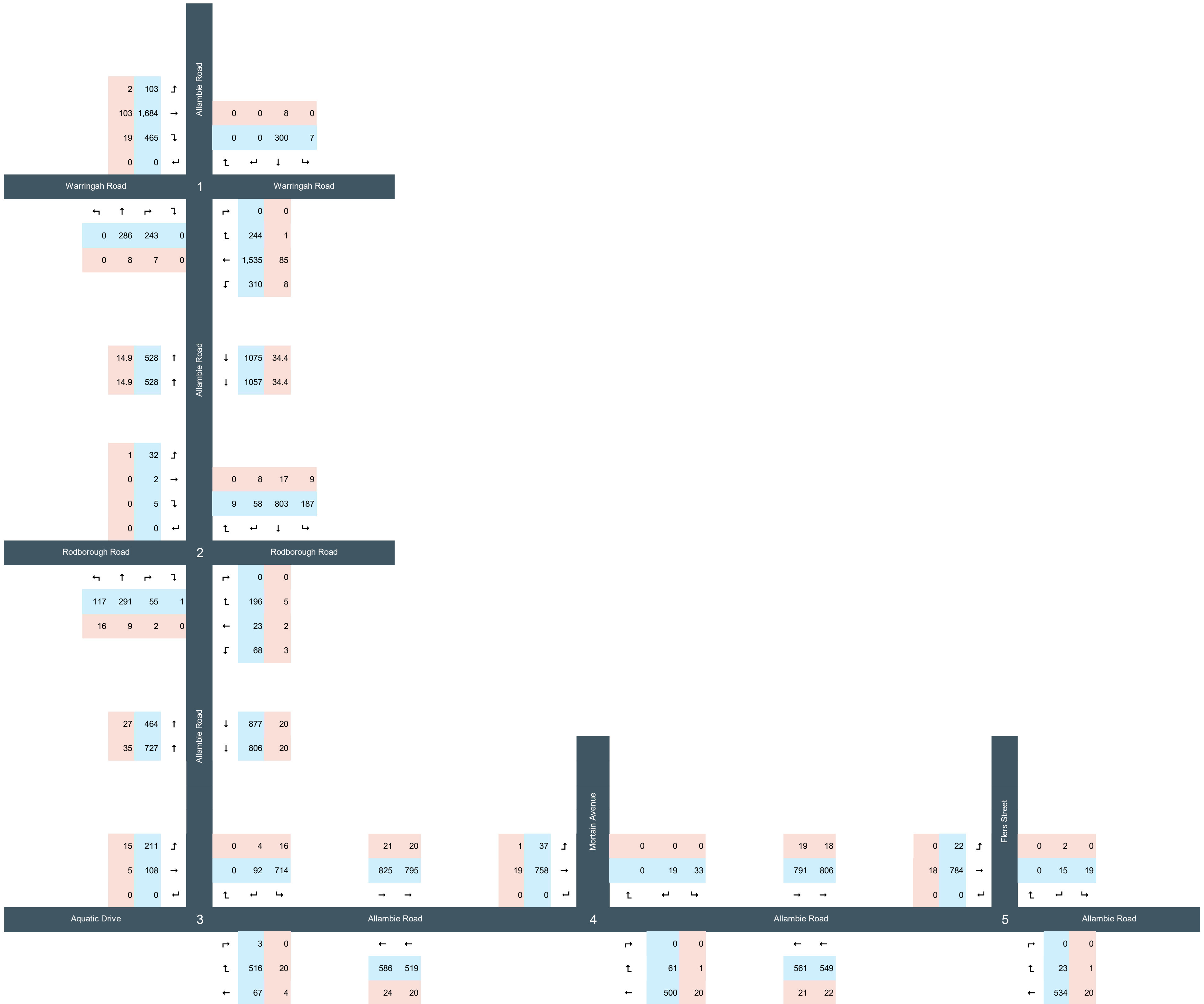
NOTE: SAME FLOWS AS AM PEAK DUE TWO-WAY TRIP

Projected school student numbers

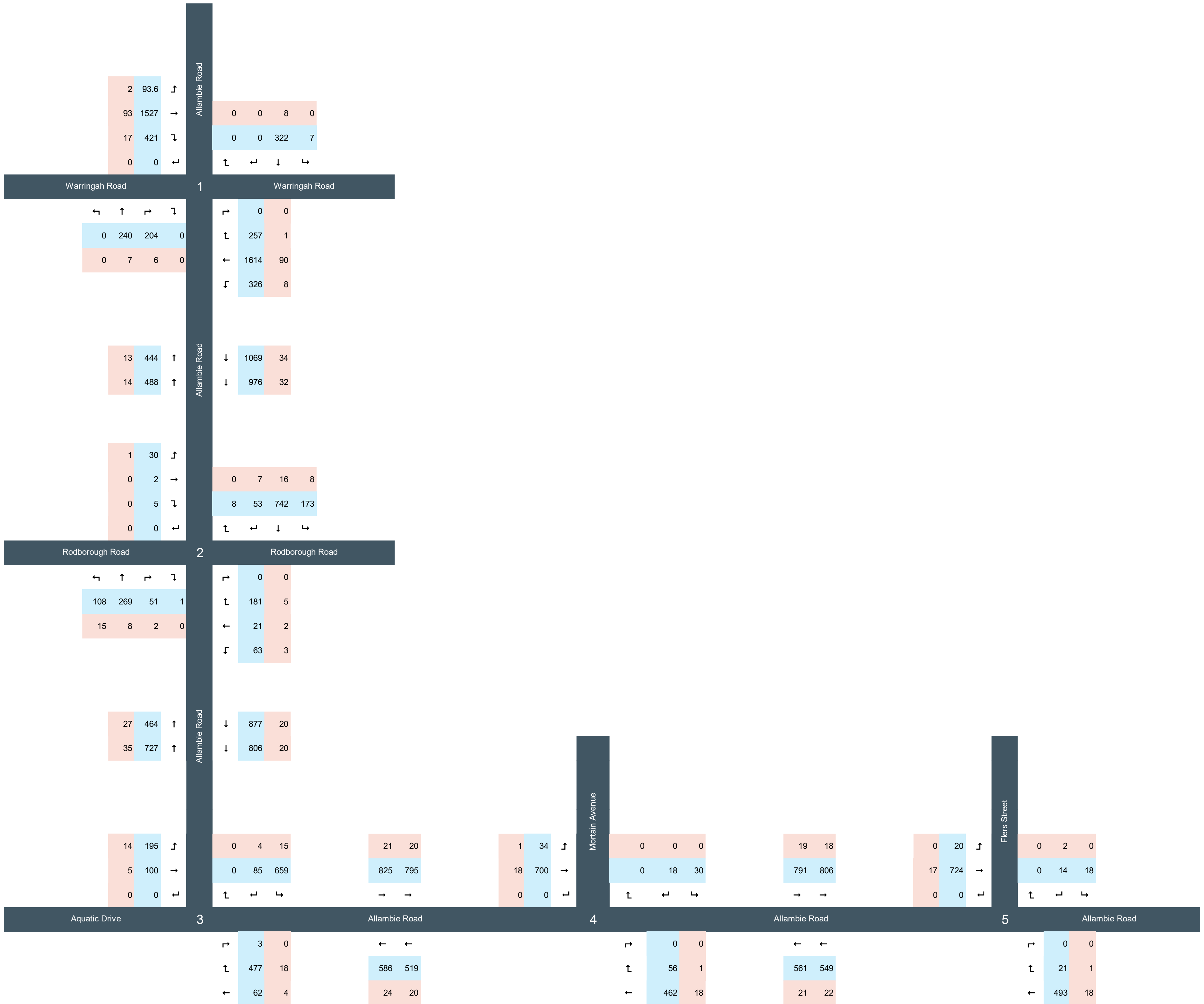
2031	1540
2022	800
2025	**1047**



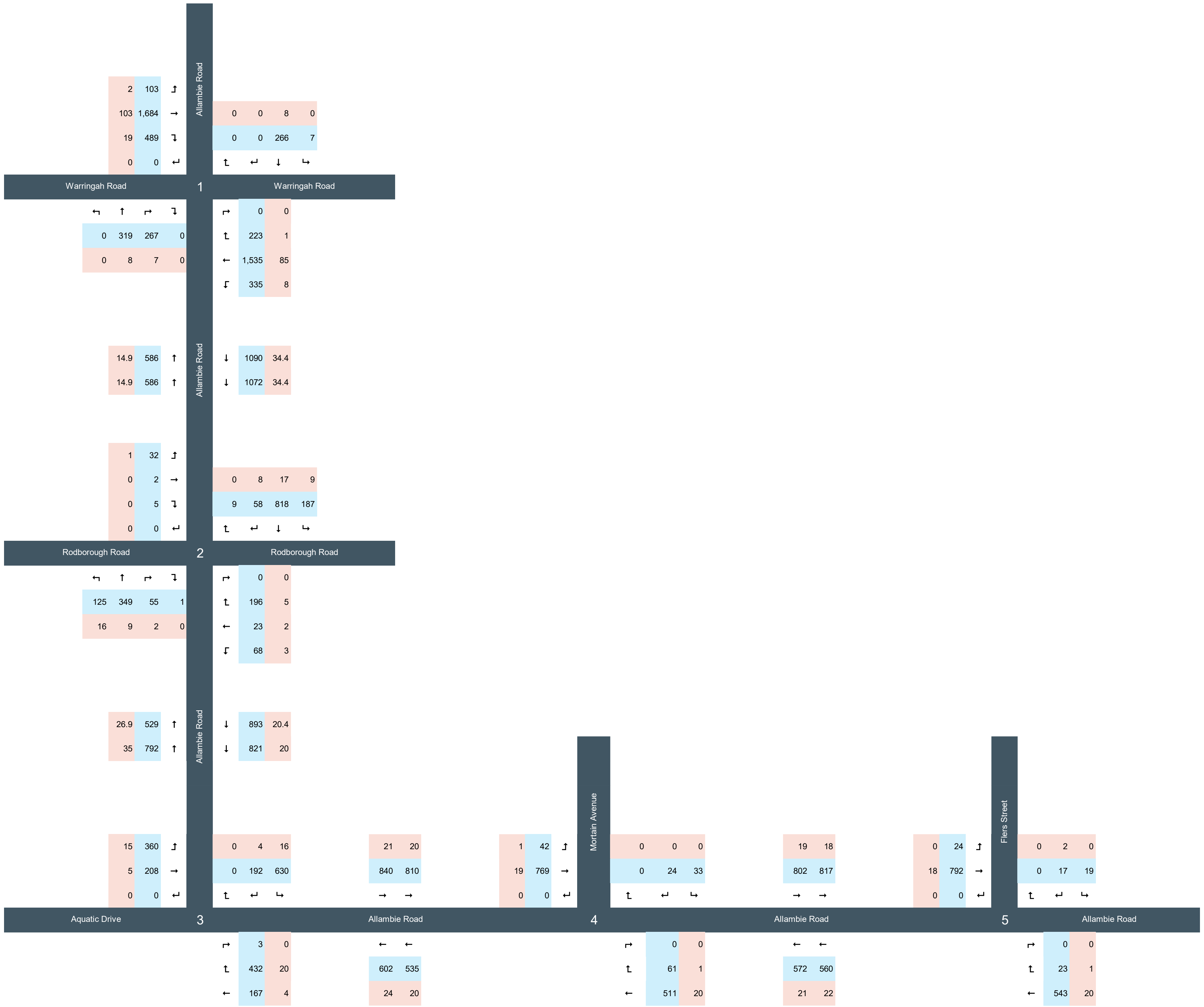
2025PM FY Base 15:00-16:00



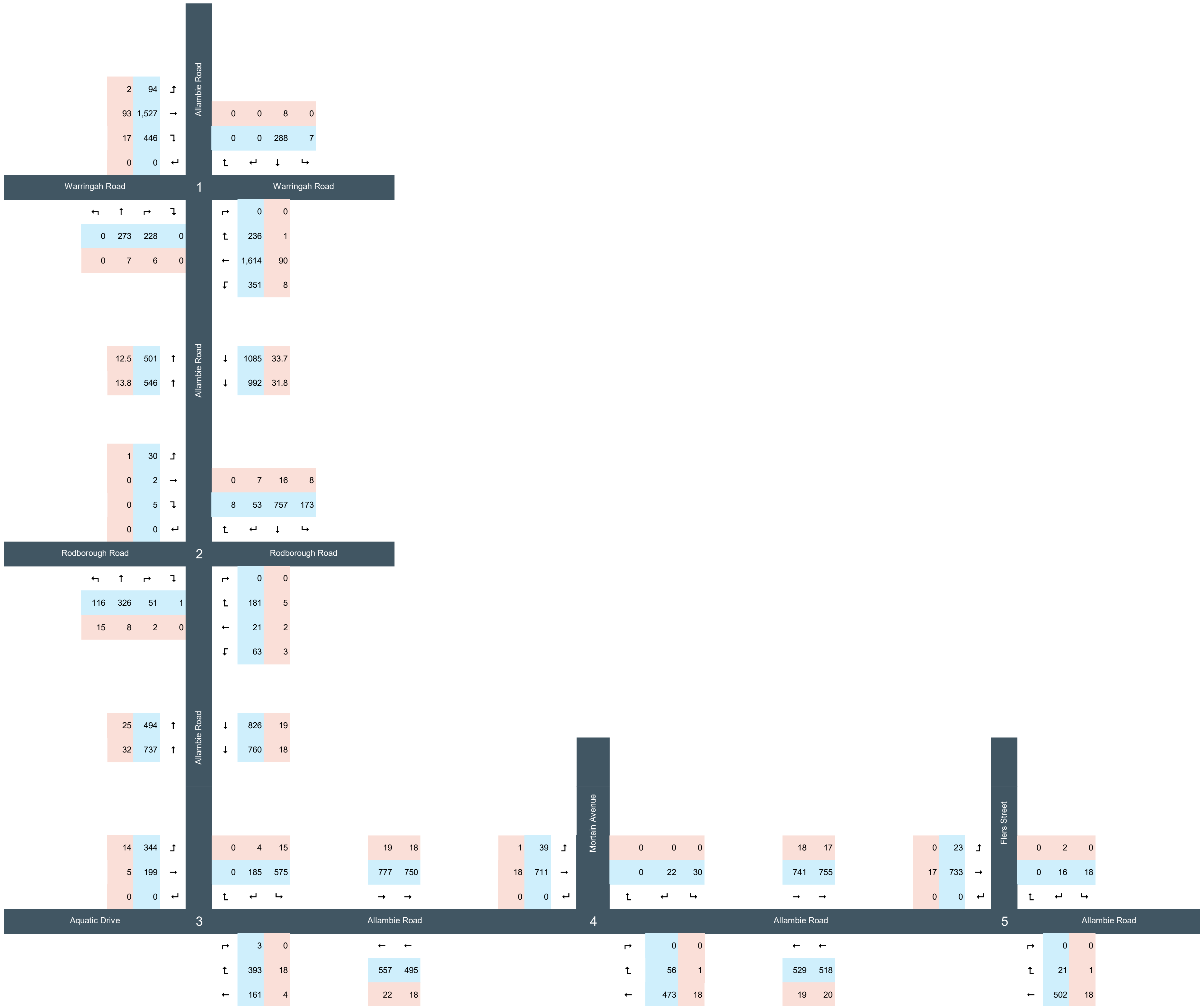
2025PM FY Base 14:30-15:30



2025PM FY Development 15:00-16:00

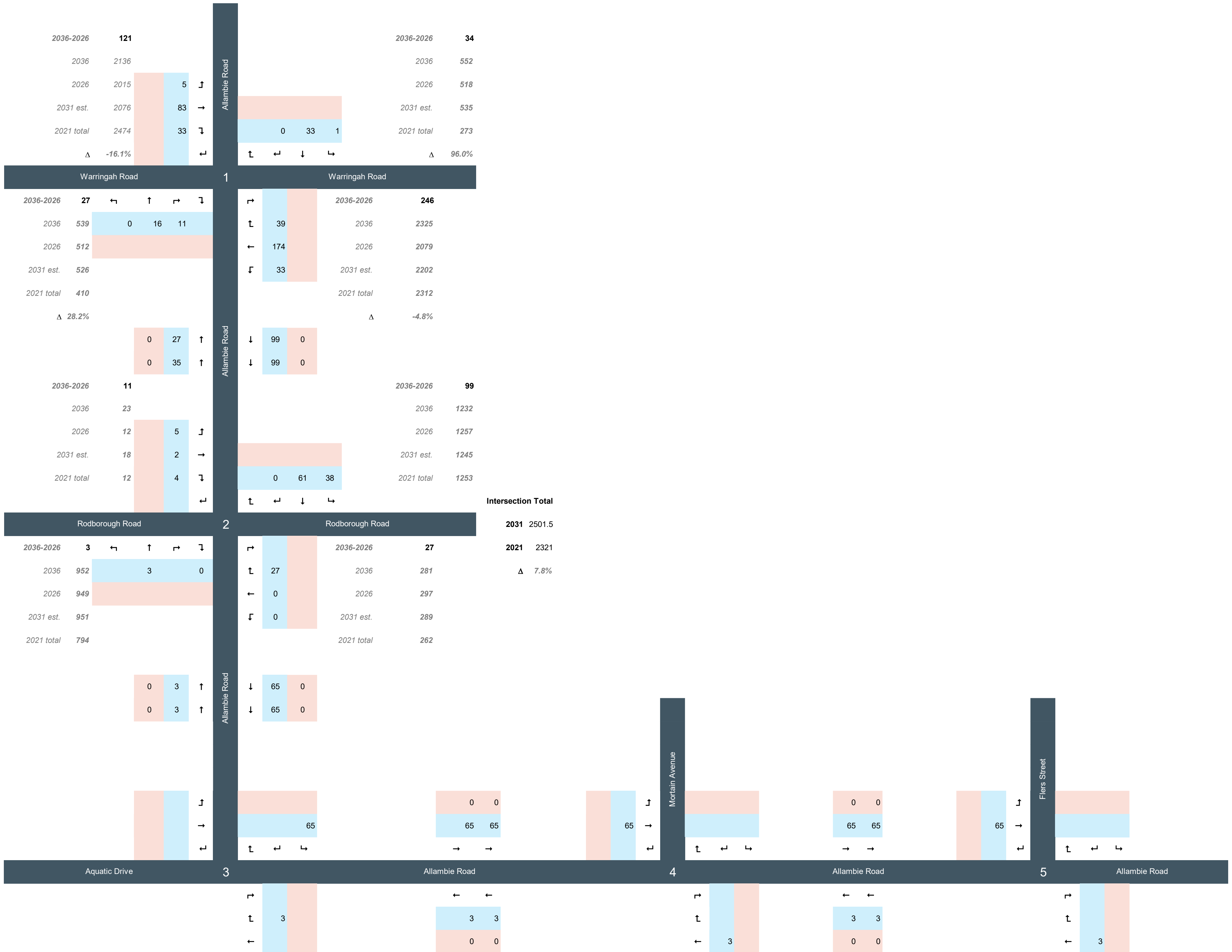


2025PM FY Development 14:30-15:30



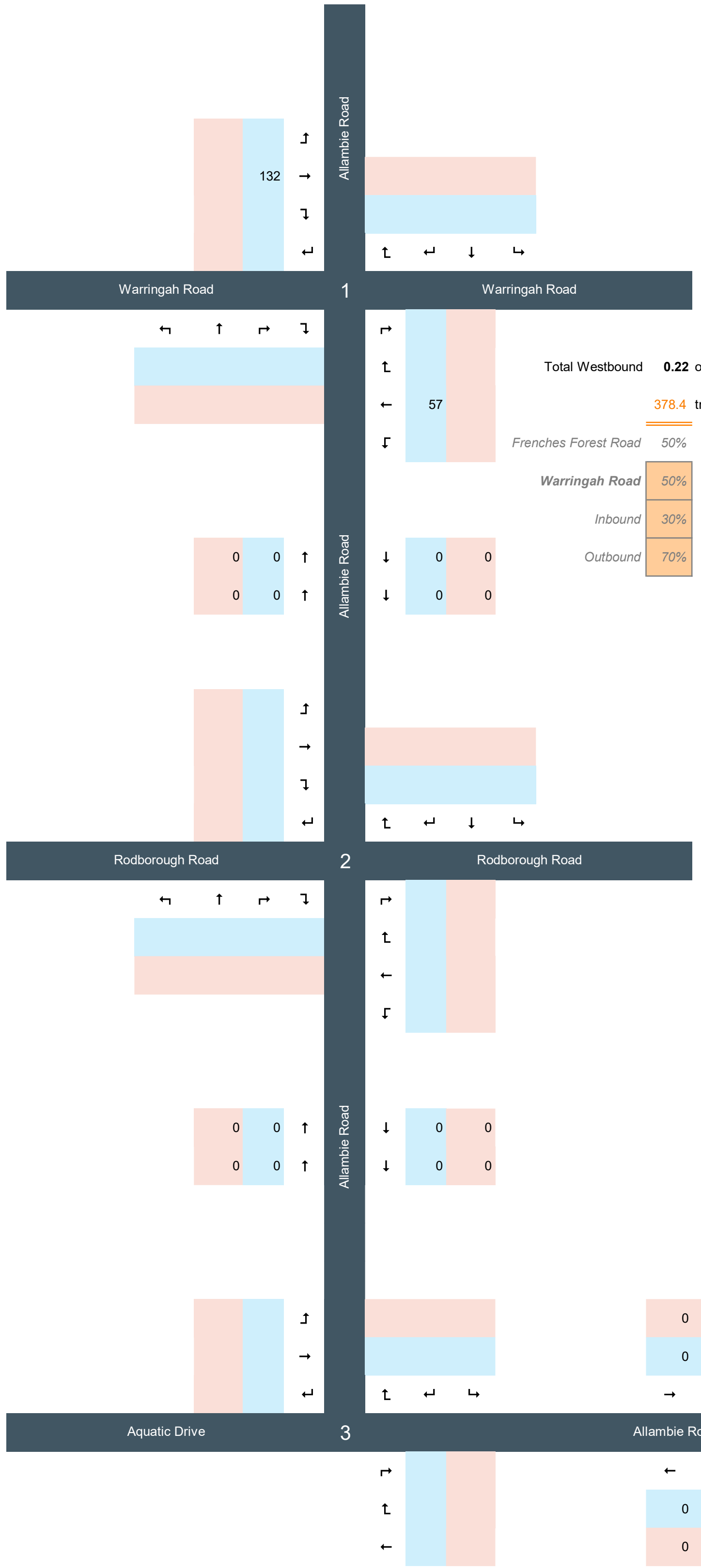
2031AM FY Do Minimum (Background Growth Only) 8:00-9:00

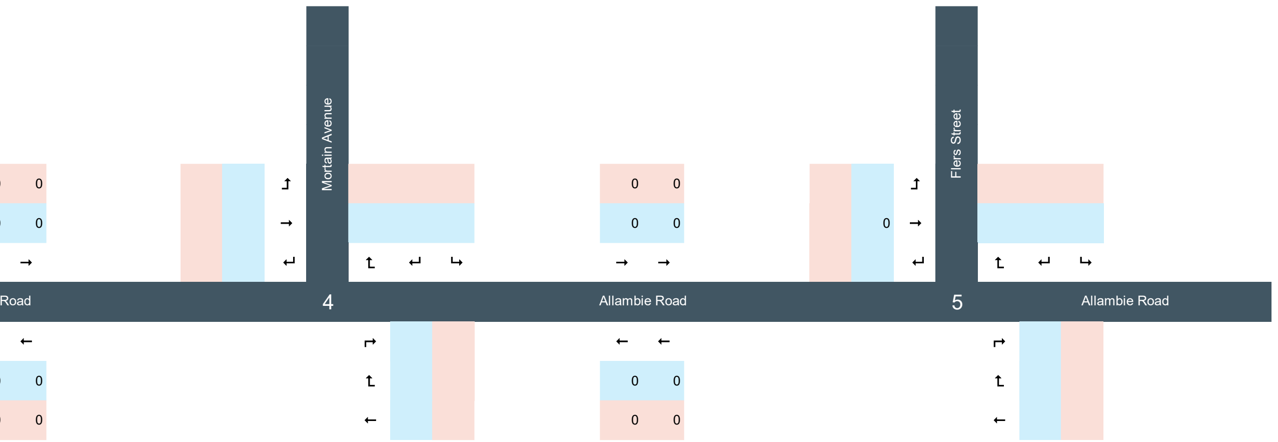
Growth between 2026 and 2036 in "Frenches Forest Planned Precinct Transport Strategy" as proxy for 2021 to 2031 growth, distributed per approach volumes



2031AM Frenches Forest Planned Precinct Traffic Only 8:00-9:00

Development Traffic, distributed based on Sydney Motorway Project Model (SMPM), an STM





Total Westbound **0.22** of precinct generation

378.4 trips

Frenches Forest Road	*50%*	=	189
Warringah Road	*50%*	=	**189**
Inbound	*30%*	=	**57**
Outbound	*70%*	=	**132**

Table 5.1: Traffic generation rates and peak hour vehicle trips

Land use	Dwellings/GFA	AM rate	AM trips/hr	PM rate	PM trips/hr
Residential – high-density	1,726 dwellings	0.4 per dwelling	690	0.45 per dwelling	777
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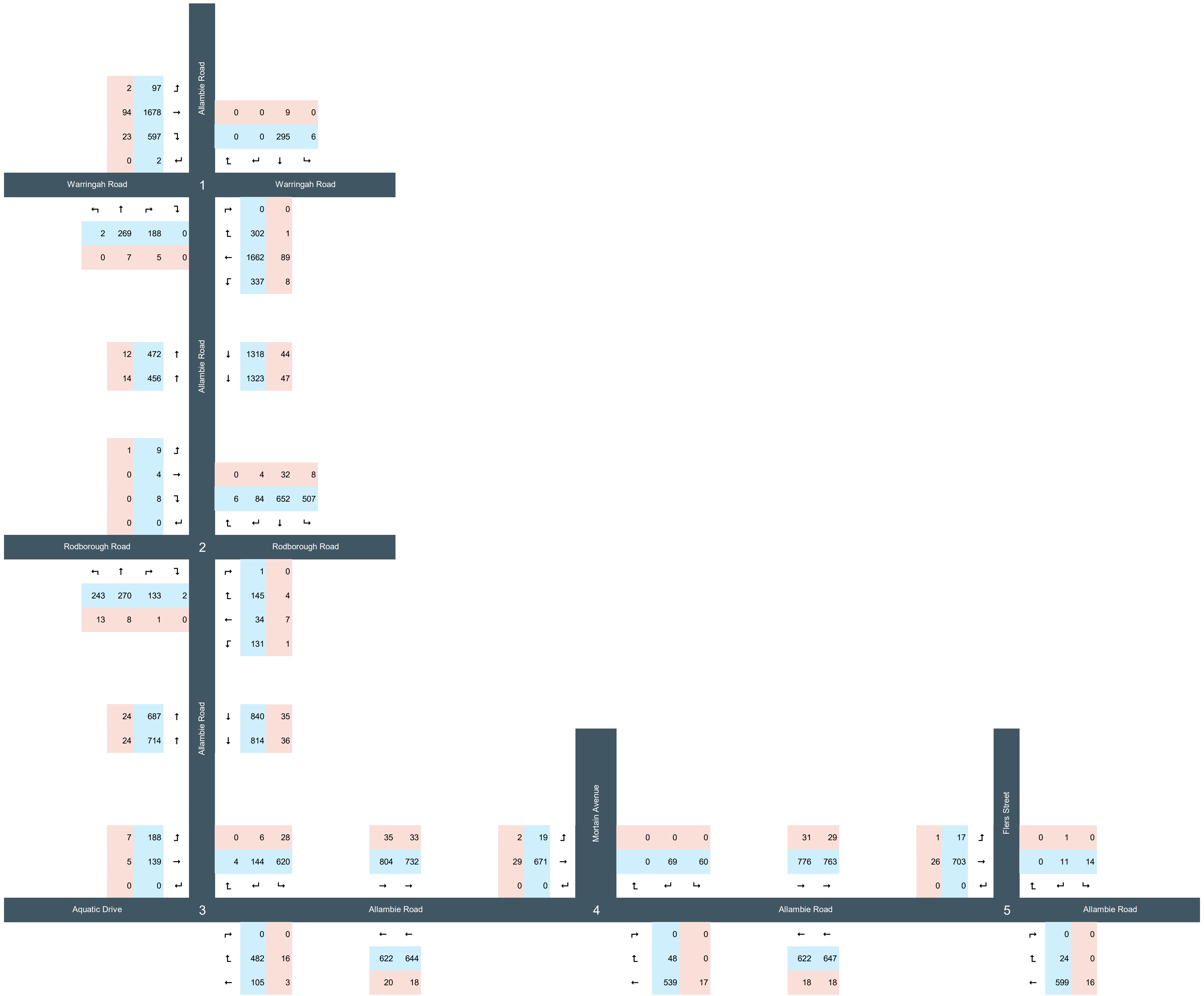
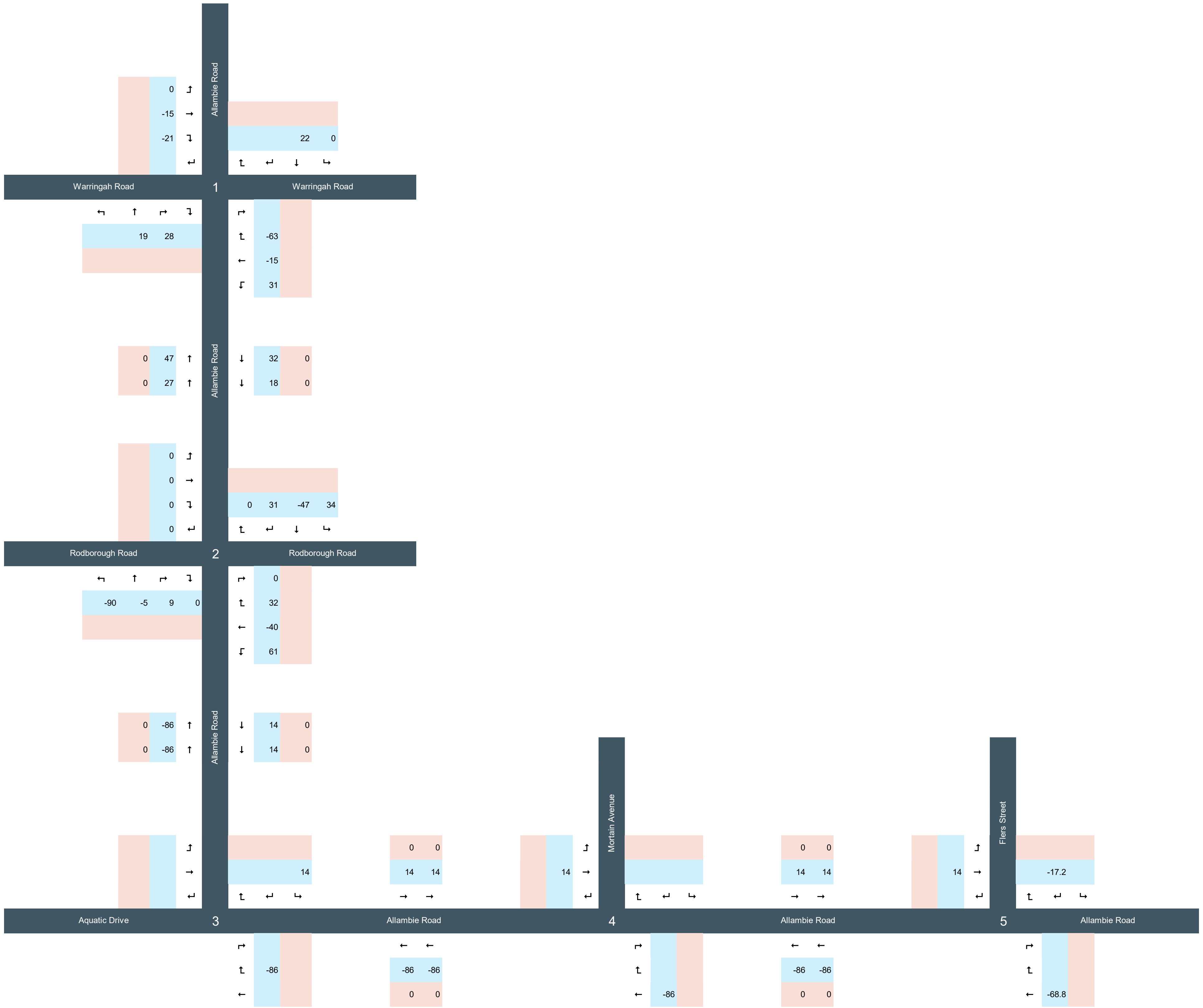
Aged care / community	26,882m² GFA	1.0 per 100m²	269	1.6 per 100m²	430
Total			**1,720**		**2,705**

2031AM FY Base 8:30-9:30

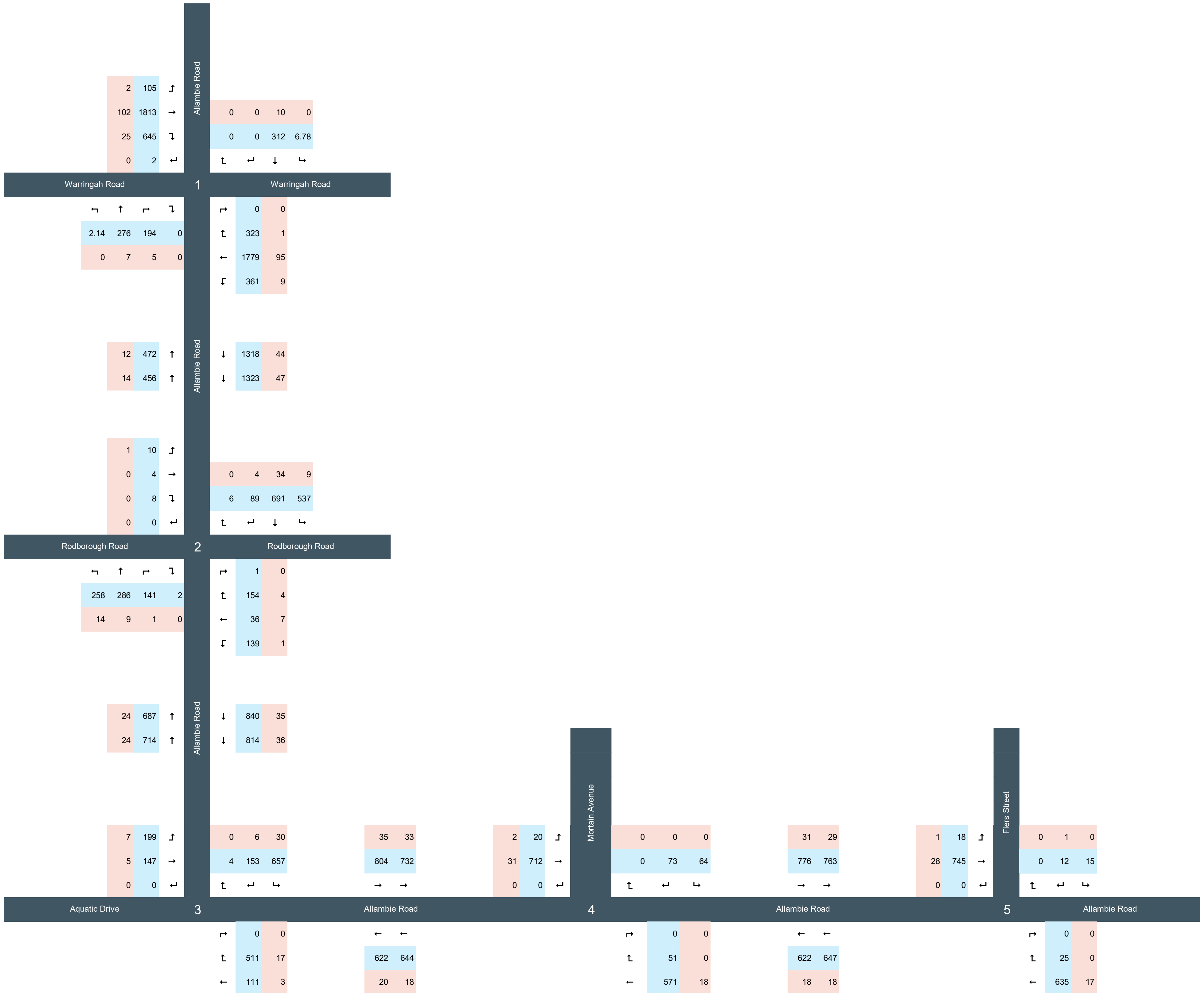


2031AM FY Bunnings 8:00-9:00

Data obtained directly from Bunnings DA traffic study



2031AM FY Base 8:00-9:00



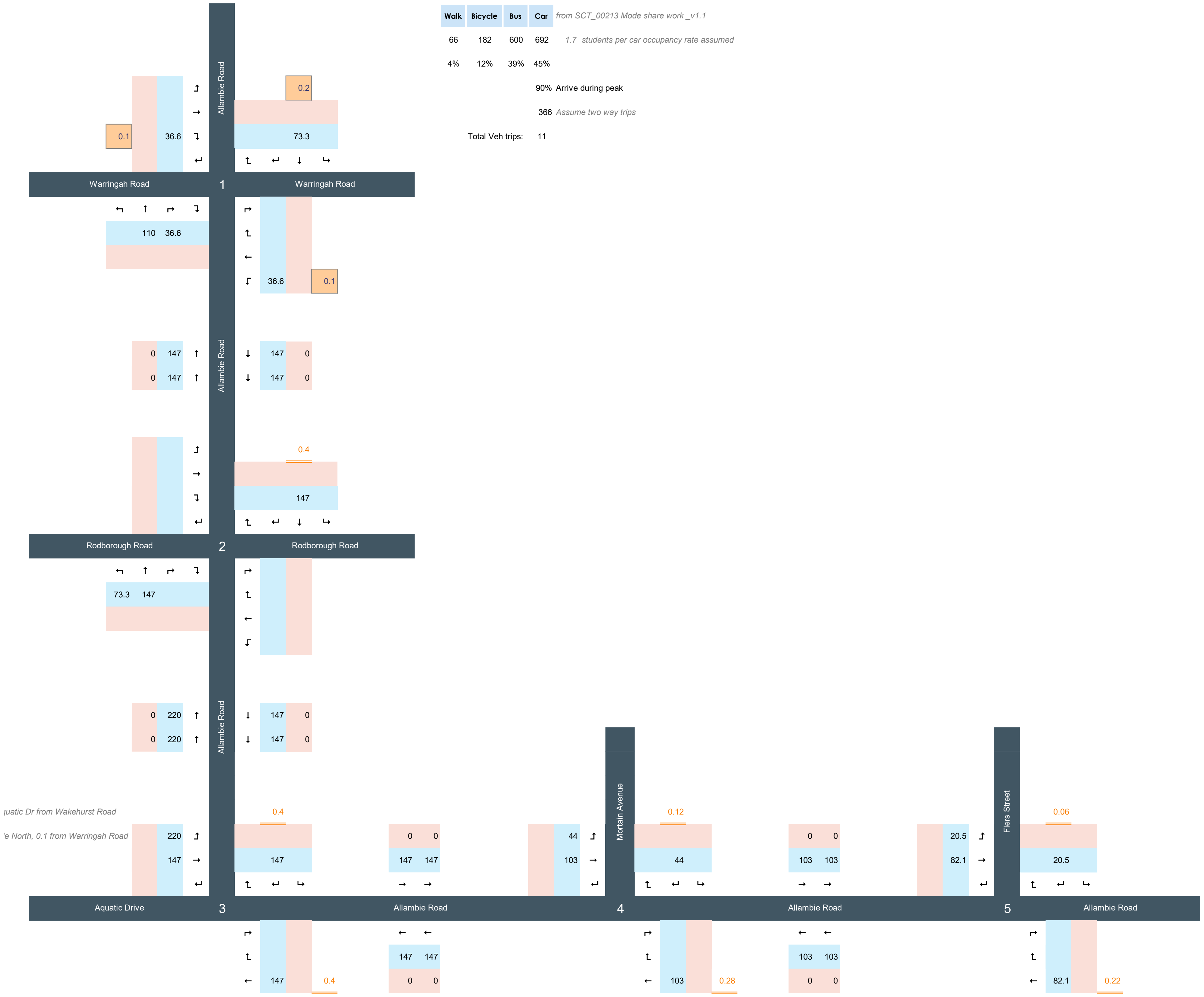
2031AM FY TFHS 8:00-9:00

Walk	Bicycle	Bus	Car	from SCT_00213 Mode share work _v1.1
66	182	600	692	1.7 students per car occupancy rate assumed
4%	12%	39%	45%	

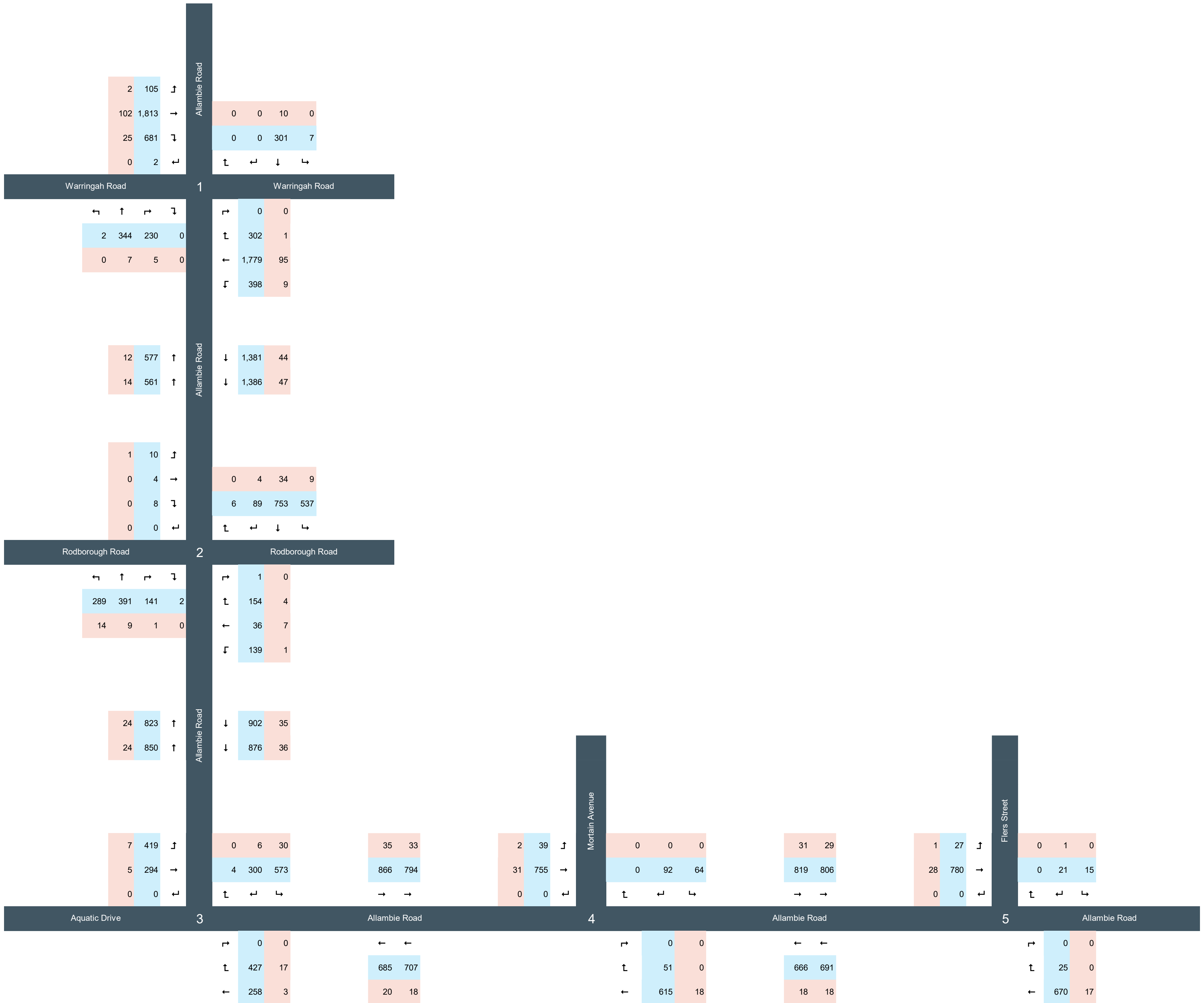
90% Arrive during peak

366 Assume two way trips

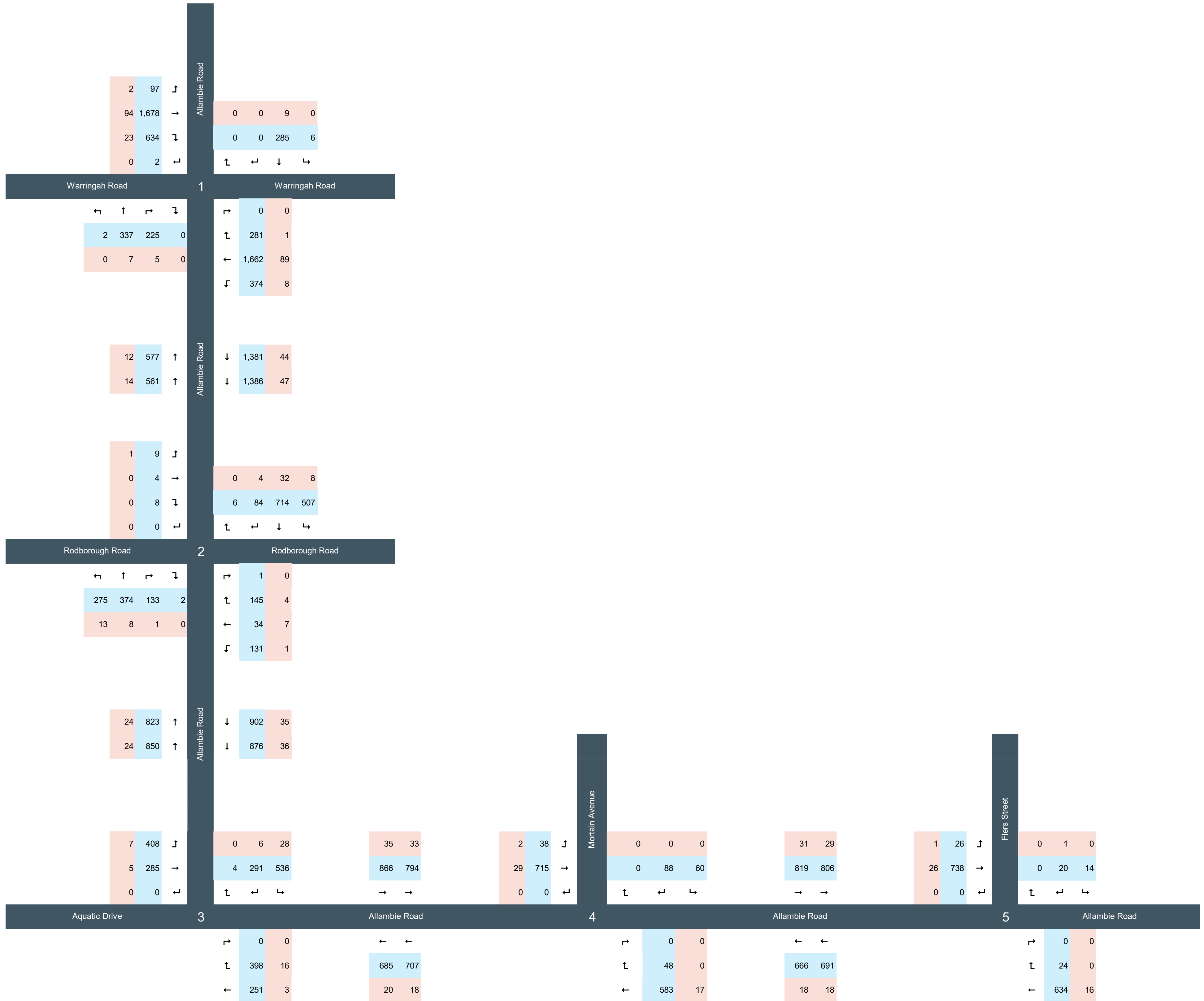
Total Veh trips: 11



2031AM FY Development 8:00-9:00

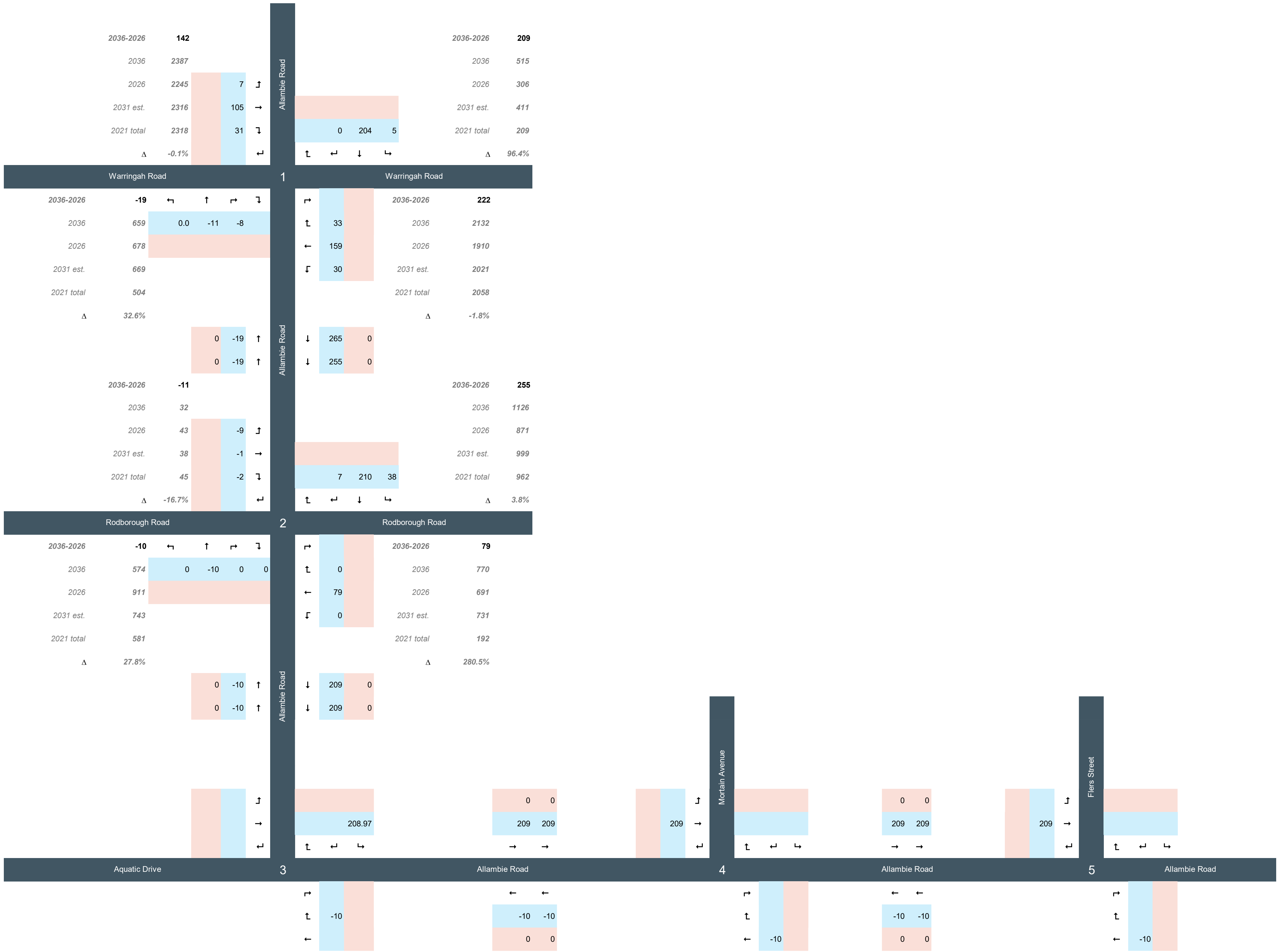


2031AM FY Development 8:30-9:30



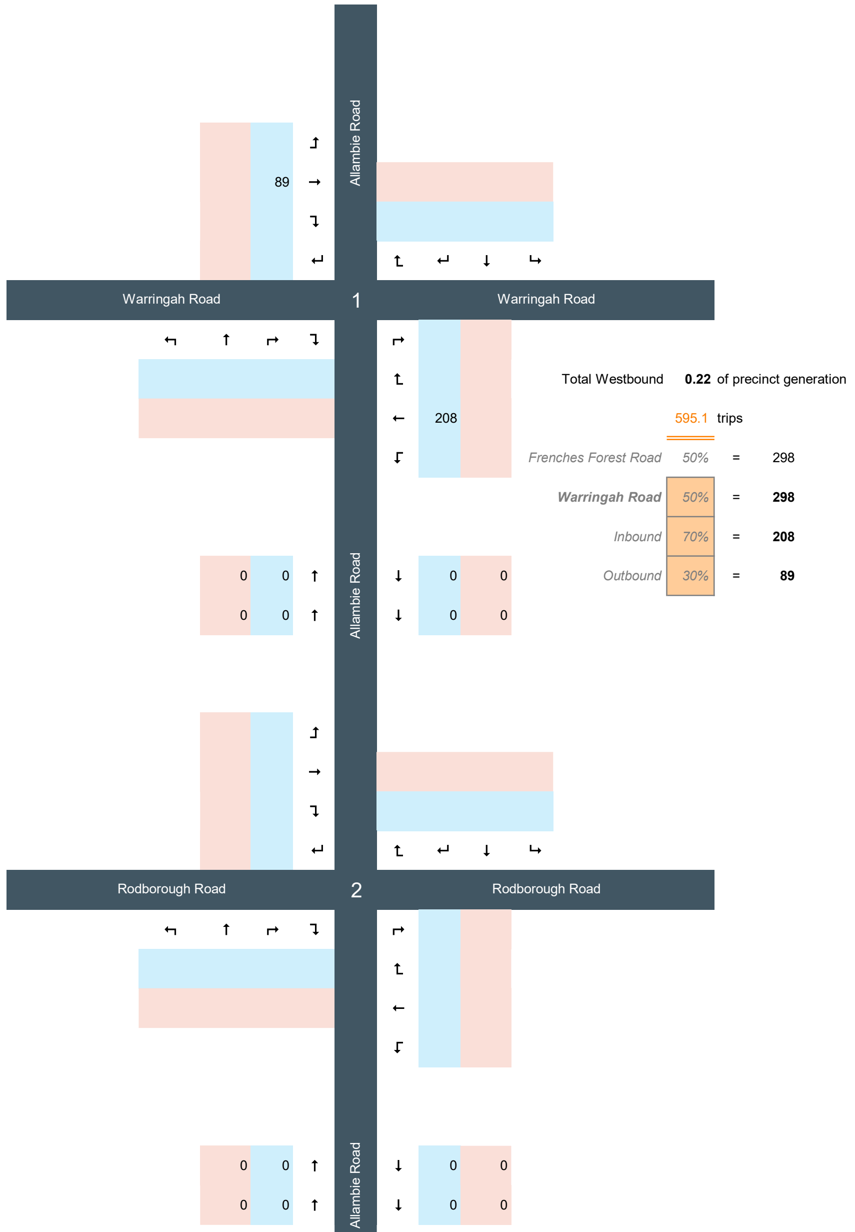
2031PM FY FY Do Minimum (Background Growth Only) 15:00-16:00

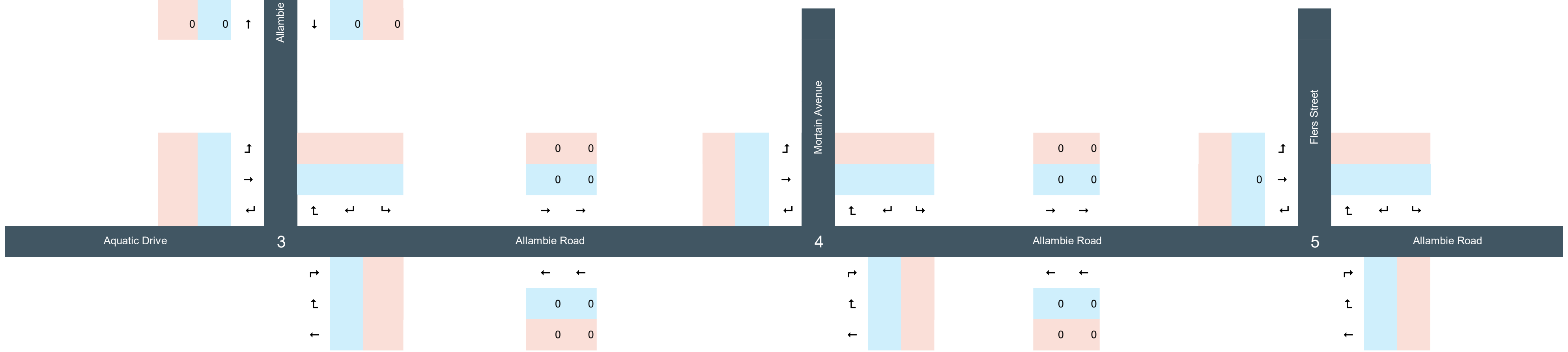
Growth between 2026 and 2036 in "Frenches Forest Planned Precinct Transport Strategy" as proxy for 2021 to 2031 growth, distributed per approach volumes



2031AM Frenches Forest Planned Precinct Traffic Only 15:00-16:00

Development Traffic, distributed based on Sydney Motorway Project Model (SMPM), an STM





Total Westbound	0.22	of precinct generation		
	595.1	trips		
Frenches Forest Road	*50%*	=	298	
Warringah Road	*50%*	=	**298**	
Inbound	*70%*	=	**208**	
Outbound	*30%*	=	**89**	

Table 5.1: Traffic generation rates and peak hour vehicle trips

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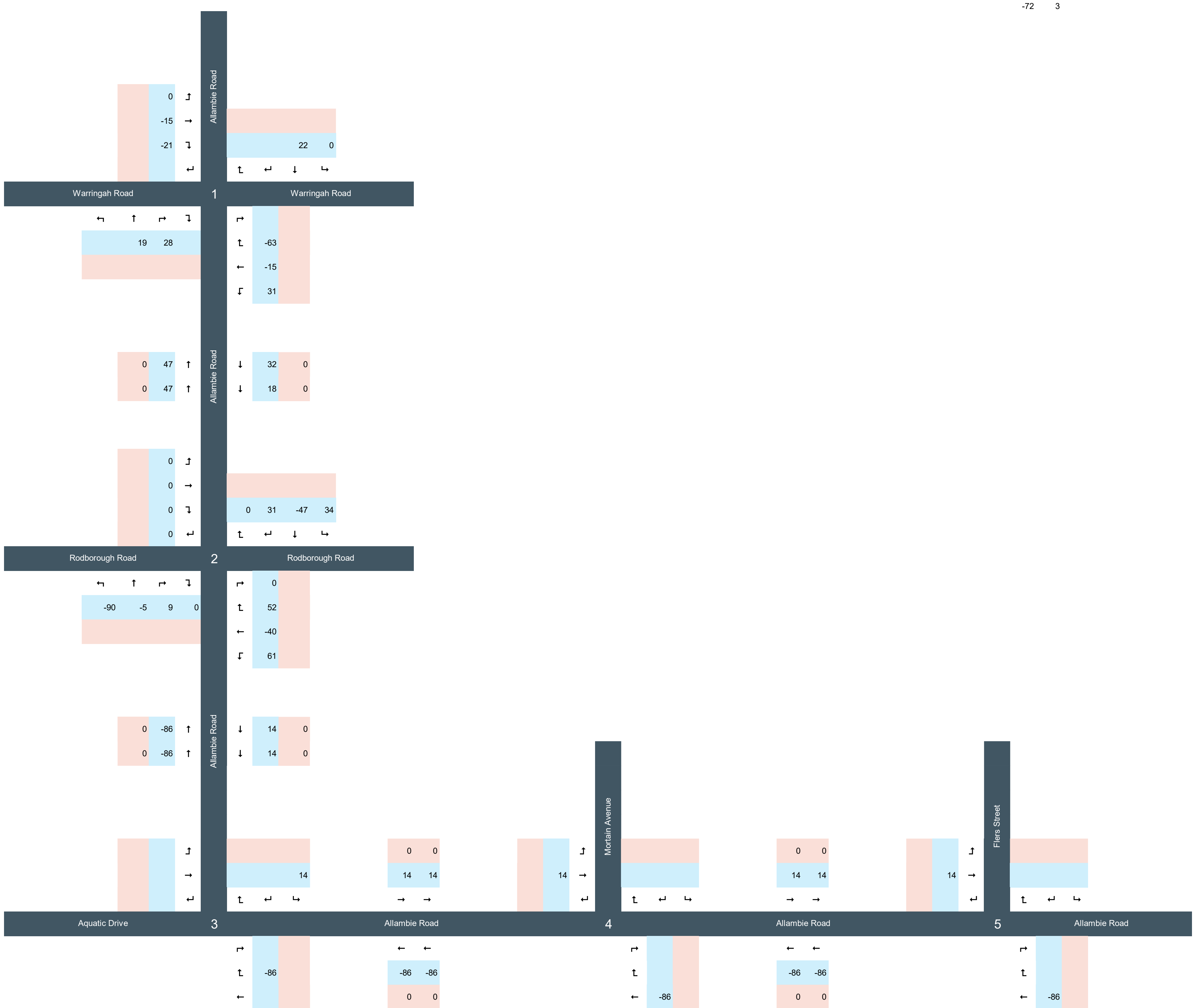
Education	8,175m² GFA	0.8 per 100m²	65	0.8 per 100m²	65
Aged care / community	26,882m² GFA	1.0 per 100m²	269	1.6 per 100m²	430
Total			**1,720**		**2,705**

SCT Consulting

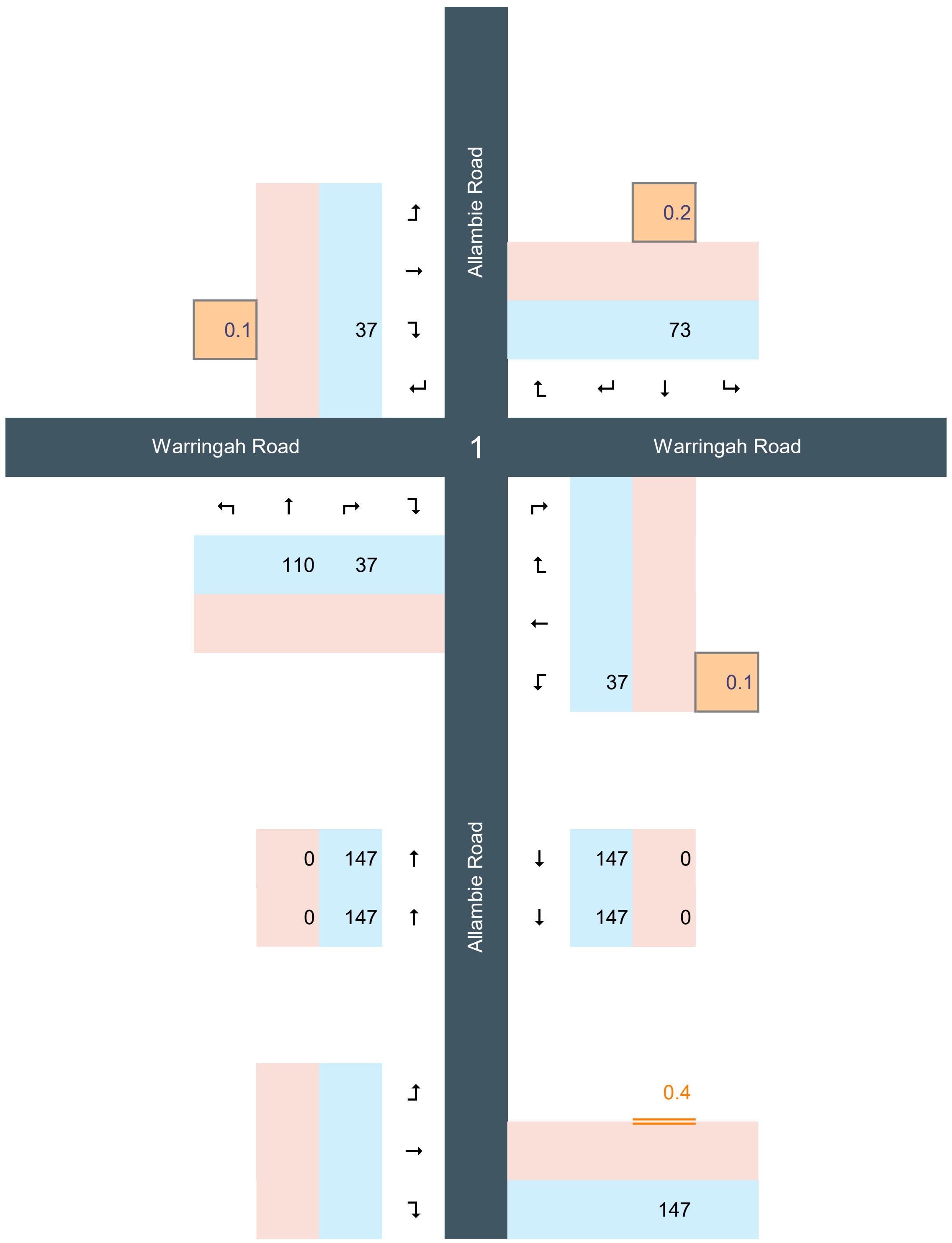
2031PM FY Bunnings 15:00-16:00

With development - Existing

-14	1
5	2
-72	3

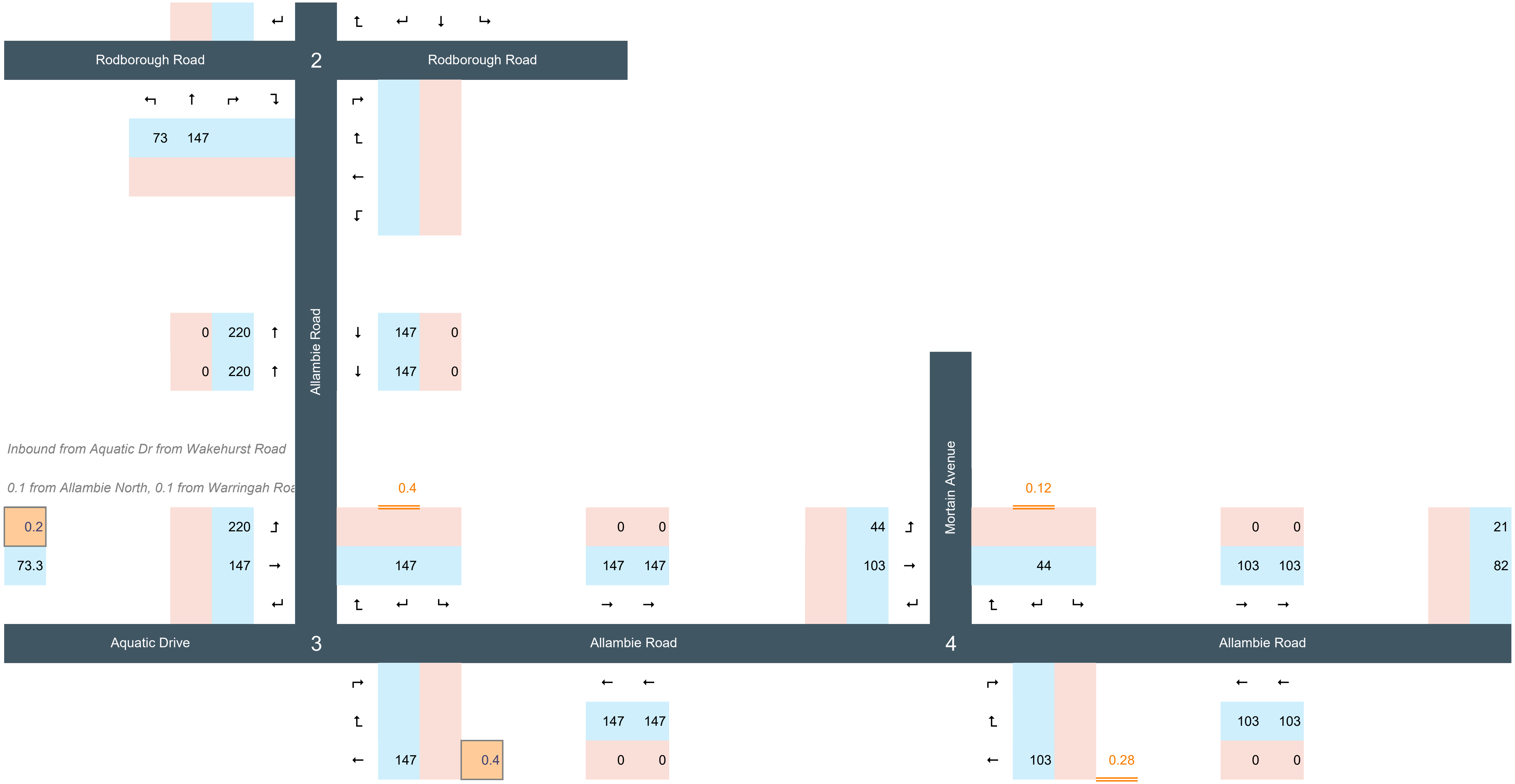


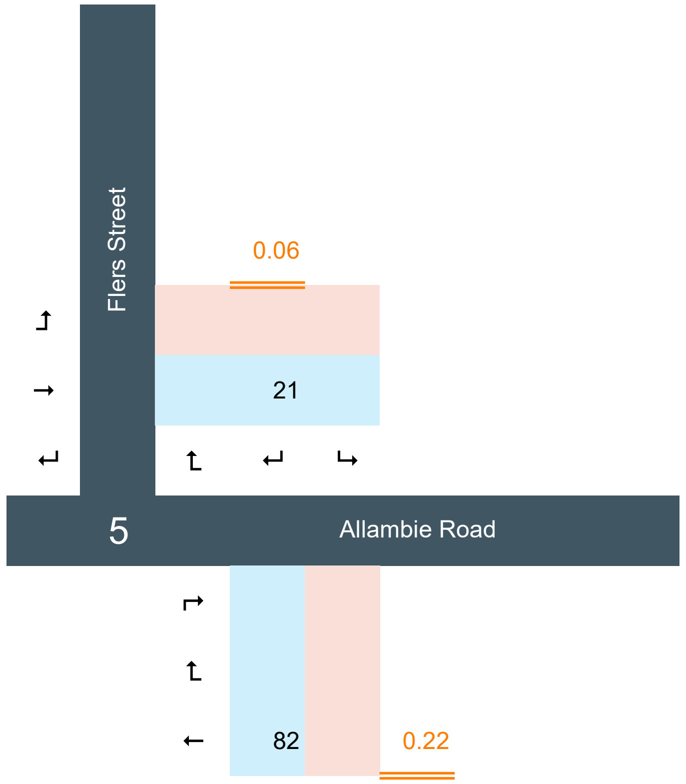
2031AM FY TFHS 15:00-16:00



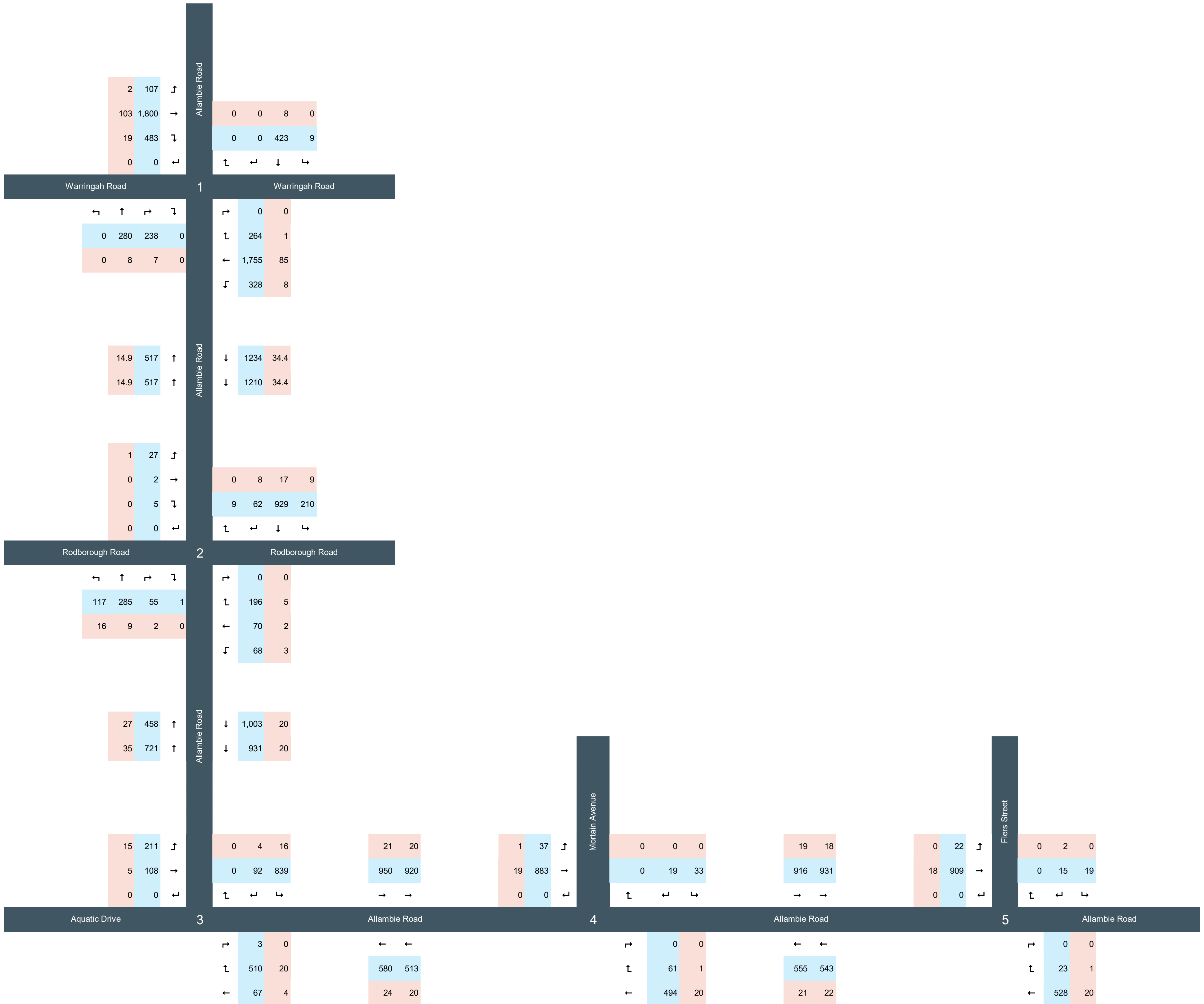
Walk	Bicycle	Bus	Car	*from SCT_00213 Mode share work _v1.1*
66	182	600	692	*1.7 students per car occupancy rate assumed*
4%	12%	39%	45%	
			90%	Arrive during peak
Total Veh trips:		11	366	*Assume two way trips*

NOTE: SAME FLOWS AS AM PEAK DUE TWO-WAY TRIP

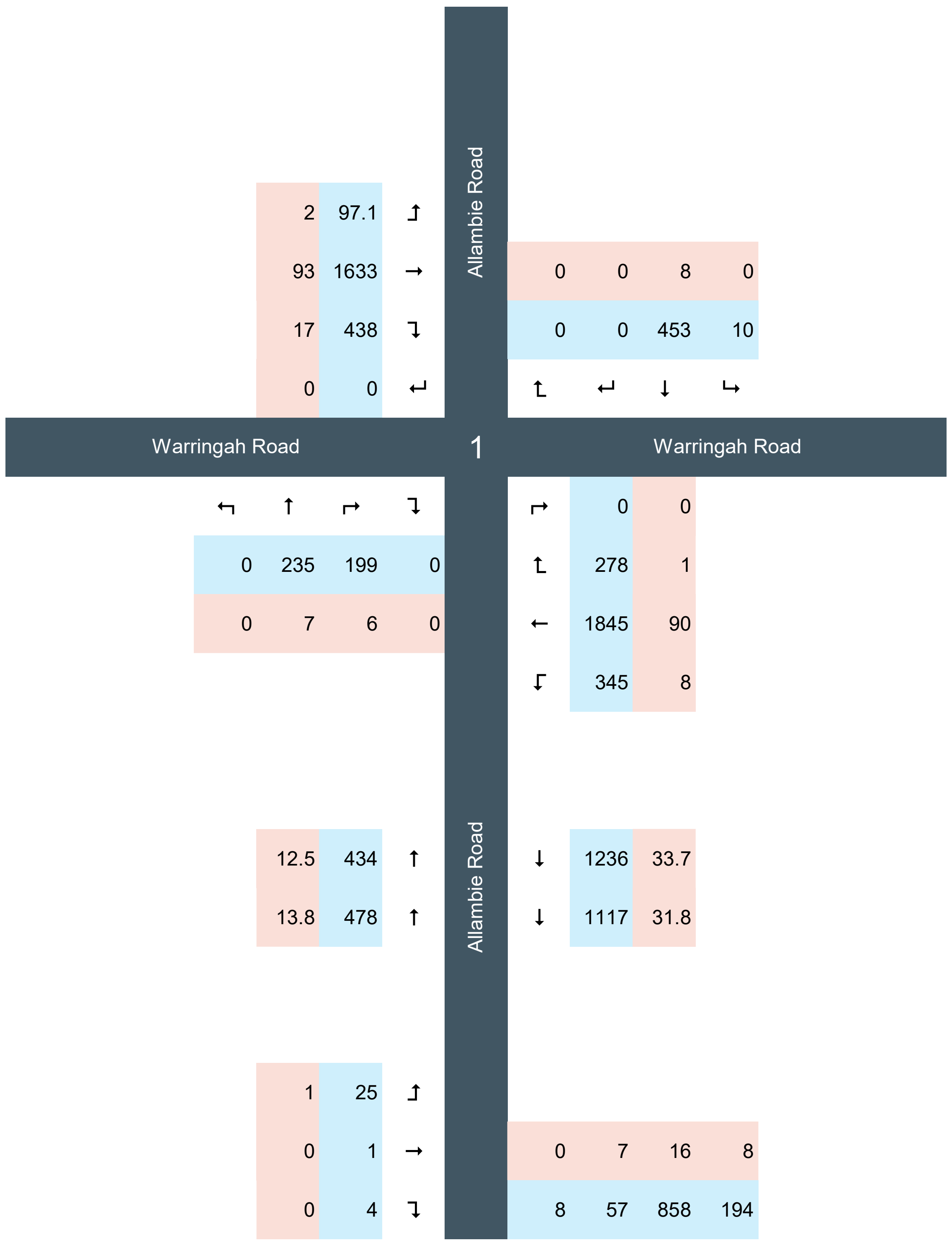

Rodborough Road
2
Rodborough Road
73 147
0 220
0 220
147 0
147 0
Allambie Road
Inbound from Aquatic Dr from Wakehurst Road
0.1 from Allambie North, 0.1 from Warringah Roa
0.4
0.2
73.3
220
147
147
0 0
147 147
44
103
Mortain Avenue
0.12
44
0 0
103 103
21
82
Aquatic Drive
3
Allambie Road
4
Allambie Road
147 147
0 0
147
0.4
103
0.28
103 103
0 0

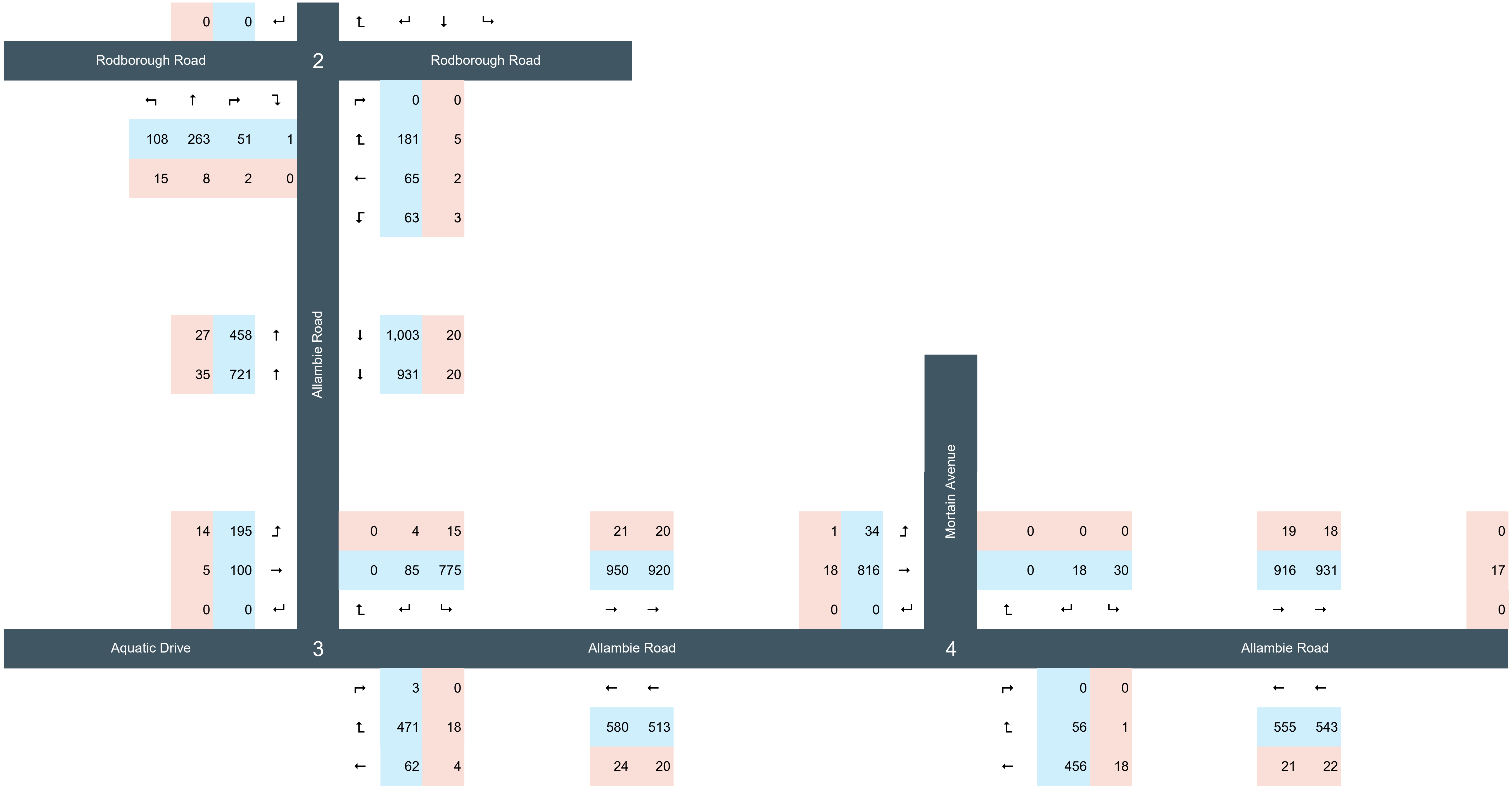

Flers Street
0.06
21
5
Allambie Road
82
0.22

2031PM FY Base 15:00-16:00



2031PM FY Base 14:30-15:30




0 0
Rodborough Road
2
Rodborough Road
108 263 51 1
15 8 2 0
0 0
181 5
65 2
63 3
Allambie Road
27 458
35 721
1,003 20
931 20
Mortain Avenue
14 195
5 100
0 0
0 4 15
0 85 775
21 20
950 920
1 34
18 816
0 0
0 0 0
0 18 30
19 18
916 931
0
17
0
Aquatic Drive
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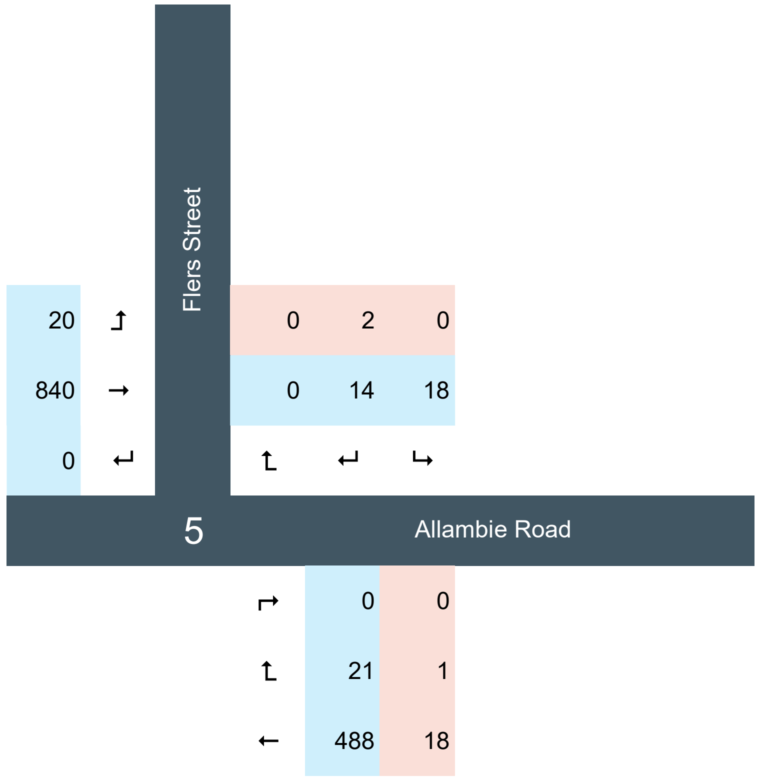
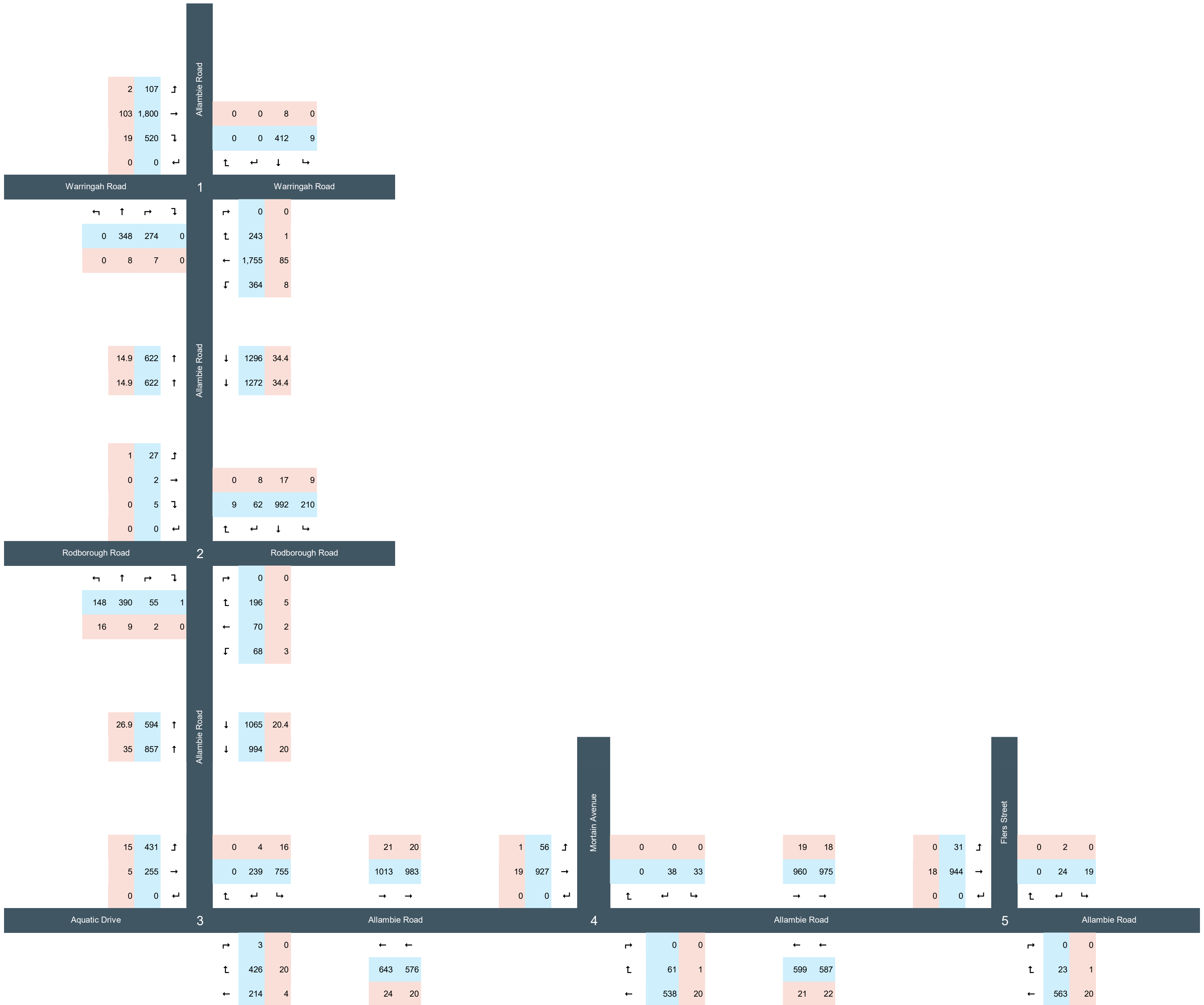
56 1
456 18
555 543
21 22

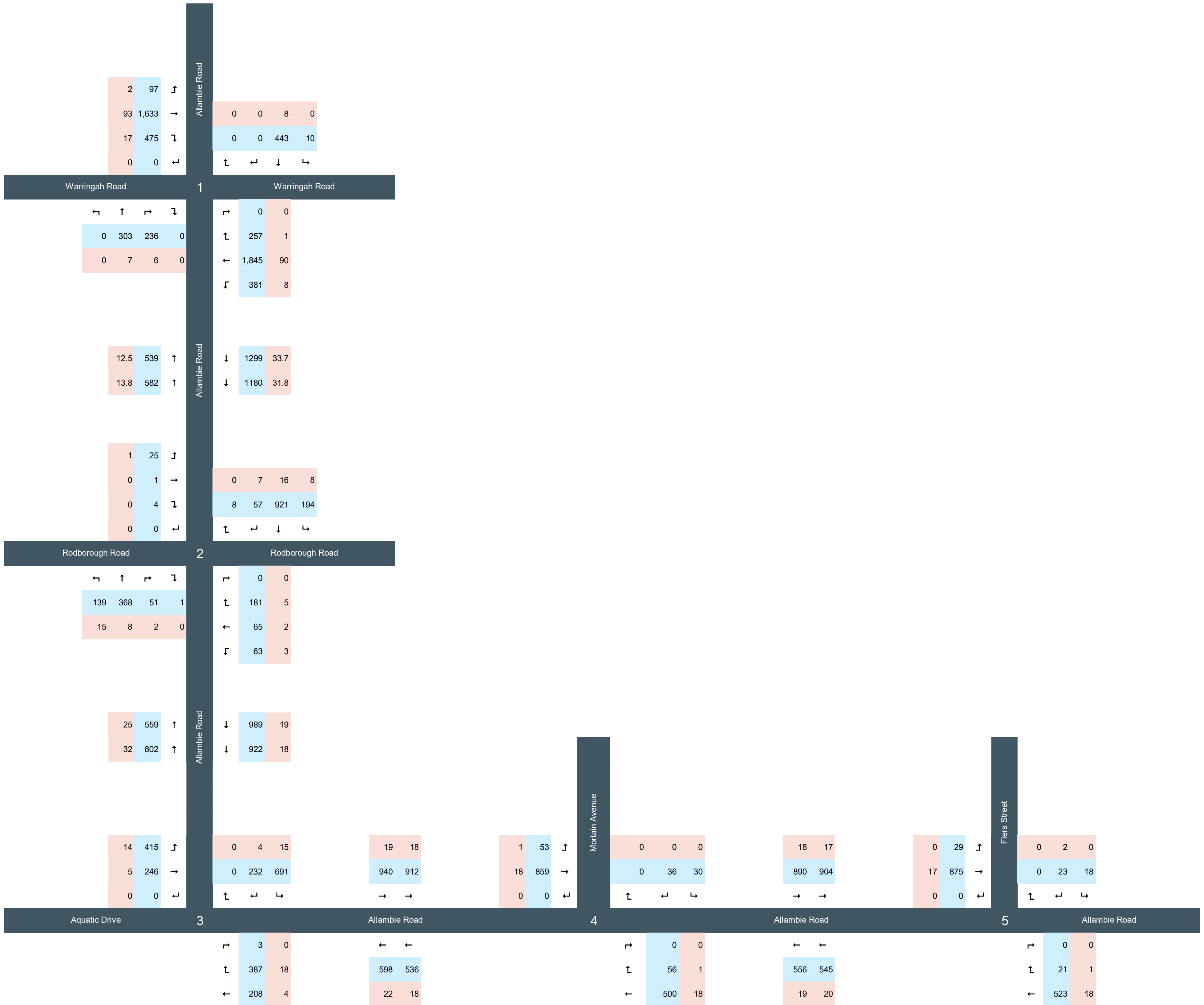

Flers Street
20
840
0
0 2 0
0 14 18
5
Allambie Road
0 0
21 1
488 18

2031PM FY Development 15:00-16:00



SCT Consulting

2031PM FY Development 14:30-15:30



APPENDIX D

SIDRA Network movement summaries

MOVEMENT SUMMARY

Site: 1AM_BY-P [ALL_WAR_21_AM_BY-Peak Spread (Site Folder: AM_BY-Peak Spread)]

Network: N101 [AM_BY-Peak Spread (Network Folder: AM_BY-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 160 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	254	2.8	254	2.8	0.617	59.3	LOS E	17.7	126.5	0.95	0.82	0.95	10.3
3	R2	164	3.1	164	3.1	0.447	81.2	LOS F	6.2	44.6	0.99	0.77	0.99	25.5
Approach		418	2.9	418	2.9	0.617	67.9	LOS E	17.7	126.5	0.96	0.80	0.96	18.5
East: Warringah Road (E)														
4	L2	301	2.9	301	2.9	* 0.840	54.4	LOS D	44.9	326.2	0.97	0.95	1.00	32.1
5	T1	1631	5.7	1631	5.7	* 0.840	47.9	LOS D	47.9	351.8	0.96	0.90	0.99	44.8
6	R2	342	0.3	342	0.3	0.620	65.6	LOS E	11.6	81.6	0.99	0.81	0.99	28.7
Approach		2274	4.5	2274	4.5	0.840	51.4	LOS D	47.9	351.8	0.97	0.89	0.99	41.4
North: Allambie Road (N)														
7	L2	6	0.0	6	0.0	* 0.722	85.1	LOS F	10.4	74.7	1.00	0.87	1.08	25.1
8	T1	266	3.7	266	3.7	* 0.722	79.5	LOS F	11.1	80.0	1.00	0.86	1.08	4.4
Approach		272	3.7	272	3.7	0.722	79.6	LOS F	11.1	80.0	1.00	0.86	1.08	5.1
West: Warringah Road (W)														
10	L2	99	2.0	99	2.0	0.766	22.9	LOS B	21.1	154.4	0.59	0.71	0.59	49.4
11	T1	1670	6.0	1670	6.0	* 0.766	16.6	LOS B	21.9	161.5	0.59	0.68	0.59	58.6
12	R2	641	3.8	641	3.8	* 0.819	63.5	LOS E	21.8	157.7	0.97	0.94	1.02	28.7
Approach		2411	5.2	2411	5.2	0.819	29.3	LOS C	21.9	161.5	0.69	0.75	0.70	50.0
All Vehicles		5375	4.7	5375	4.7	0.840	44.2	LOS D	47.9	351.8	0.84	0.82	0.86	42.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	69.5	LOS F	0.2	0.2	0.93	0.93	261.2	230.0	0.88
North: Allambie Road (N)											
P3	Full	53	71.4	LOS F	0.2	0.2	0.95	0.95	263.1	230.0	0.87
West: Warringah Road (W)											
P4	Full	53	64.9	LOS F	0.2	0.2	0.90	0.90	254.6	227.6	0.89
All Pedestrians		158	68.6	LOS F	0.2	0.2	0.93	0.93	259.6	229.2	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2AM_BY-P [ALL_ROD_21_AM_BY-Peak Spread (Site Folder: AM_BY-Peak Spread)]

Network: N101 [AM_BY-Peak Spread (Network Folder: AM_BY-Peak Spread)]

830-930 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	360	3.9	360	3.9	0.373	7.1	LOS A	2.9	21.1	0.64	0.65	0.64	42.5
2	T1	295	3.0	295	3.0	0.483	6.7	LOS A	3.2	22.8	0.63	0.64	0.63	38.4
3	R2	132	0.7	132	0.7	0.483	9.8	LOS A	3.2	22.8	0.63	0.64	0.63	44.7
3u	U	2	0.0	2	0.0	0.483	11.4	LOS A	3.2	22.8	0.63	0.64	0.63	38.4
Approach		789	3.0	789	3.0	0.483	7.4	LOS A	3.2	22.8	0.63	0.65	0.63	41.9
East: Rodborough Road (E)														
4	L2	78	1.3	78	1.3	0.153	15.8	LOS B	1.4	10.1	0.91	0.72	0.91	33.3
5	T1	82	8.4	82	8.4	0.332	13.3	LOS A	3.1	23.1	0.99	0.74	0.99	36.7
6	R2	98	4.0	98	4.0	0.332	16.3	LOS B	3.1	23.1	0.99	0.74	0.99	33.1
6u	U	1	0.0	1	0.0	0.332	17.6	LOS B	3.1	23.1	0.99	0.74	0.99	40.1
Approach		260	4.6	260	4.6	0.332	15.2	LOS B	3.1	23.1	0.97	0.73	0.97	34.6
North: Allambie Road (N)														
7	L2	471	1.9	471	1.9	0.443	6.3	LOS A	3.2	23.0	0.36	0.58	0.36	42.7
8	T1	706	4.8	706	4.8	0.609	6.2	LOS A	5.8	42.4	0.40	0.54	0.40	30.7
9	R2	62	6.4	62	6.4	0.609	9.4	LOS A	5.8	42.4	0.40	0.54	0.40	39.1
9u	U	6	0.0	6	0.0	0.609	11.0	LOS A	5.8	42.4	0.40	0.54	0.40	30.7
Approach		1245	3.8	1245	3.8	0.609	6.4	LOS A	5.8	42.4	0.38	0.55	0.38	38.6
West: Rodborough Road (W)														
10	L2	6	16.6	6	16.6	0.019	7.6	LOS A	0.1	0.6	0.58	0.64	0.58	31.8
11	T1	2	0.0	2	0.0	0.019	7.2	LOS A	0.1	0.6	0.58	0.64	0.58	43.0
12	R2	4	0.0	4	0.0	0.019	10.4	LOS A	0.1	0.6	0.58	0.64	0.58	31.8
12u	U	1	0.0	1	0.0	0.019	12.0	LOS A	0.1	0.6	0.58	0.64	0.58	40.3
Approach		13	7.6	13	7.6	0.019	8.7	LOS A	0.1	0.6	0.58	0.64	0.58	36.0
All Vehicles		2306	3.6	2306	3.6	0.609	7.7	LOS A	5.8	42.4	0.54	0.61	0.54	39.1

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

MOVEMENT SUMMARY

Site: 3AM_BY-P [ALL_AQU_21_AM_BY-Peak Spread (Site Folder: AM_BY-Peak Spread)]

Network: N101 [AM_BY-Peak Spread (Network Folder: AM_BY-Peak Spread)]

830-930 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	113	2.6	113	2.6	0.686	8.2	LOS A	7.9	56.7	0.75	0.72	0.79	43.6
6	R2	607	2.8	607	2.8	0.686	11.5	LOS A	7.9	56.7	0.75	0.72	0.79	46.3
6u	U	1	0.0	1	0.0	0.686	13.1	LOS A	7.9	56.7	0.75	0.72	0.79	46.3
Approach		721	2.8	721	2.8	0.686	11.0	LOS A	7.9	56.7	0.75	0.72	0.79	45.6
North: Allambie Road (N)														
7	L2	604	4.9	604	4.9	0.811	8.4	LOS A	10.8	78.5	0.80	0.73	0.88	37.2
9	R2	158	3.8	158	3.8	0.811	11.6	LOS A	10.8	78.5	0.80	0.73	0.88	39.9
9u	U	4	0.0	4	0.0	0.811	13.2	LOS A	10.8	78.5	0.80	0.73	0.88	37.2
Approach		766	4.7	766	4.7	0.811	9.1	LOS A	10.8	78.5	0.80	0.73	0.88	38.4
West: Aquatic Drive														
10	L2	205	3.4	205	3.4	0.478	10.8	LOS A	4.2	30.1	0.90	0.89	0.96	40.1
11	T1	151	3.3	151	3.3	0.478	10.3	LOS A	4.2	30.1	0.92	0.91	1.00	40.3
12u	U	1	0.0	1	0.0	0.478	15.0	LOS B	4.2	30.1	0.92	0.91	1.00	41.1
Approach		357	3.3	357	3.3	0.478	10.6	LOS A	4.2	30.1	0.91	0.90	0.98	40.2
All Vehicles		1844	3.7	1844	3.7	0.811	10.1	LOS A	10.8	78.5	0.80	0.76	0.86	42.2

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

MOVEMENT SUMMARY

Site: 4AM_BY-P [ALL_MOR_21_AM_BY-Peak Spread (Site Folder: AM_BY-Peak Spread)]

Network: N101 [AM_BY-Peak Spread (Network Folder: AM_BY-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 63 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	667	2.7	667	2.7	* 0.621	10.2	LOS A	11.8	84.2	0.68	0.61	0.68	44.9
6	R2	51	0.0	51	0.0	0.621	16.4	LOS B	11.8	84.2	0.74	0.68	0.74	35.7
Approach		718	2.5	718	2.5	0.621	10.7	LOS A	11.8	84.2	0.69	0.61	0.69	43.8
North: Mortain Avenue														
7	L2	64	0.0	64	0.0	0.331	23.2	LOS B	3.6	25.1	0.87	0.73	0.87	15.5
9	R2	73	0.0	73	0.0	* 0.331	23.5	LOS B	3.6	25.1	0.87	0.73	0.87	15.5
Approach		136	0.0	136	0.0	0.331	23.4	LOS B	3.6	25.1	0.87	0.73	0.87	15.5
West: Allambie Road (W)														
10	L2	22	9.1	22	9.1	0.131	12.3	LOS A	1.9	14.2	0.49	0.45	0.49	39.5
11	T1	660	4.7	660	4.7	0.521	8.8	LOS A	10.3	74.8	0.63	0.56	0.63	48.3
Approach		681	4.8	681	4.8	0.521	8.9	LOS A	10.3	74.8	0.62	0.55	0.62	47.9
All Vehicles		1536	3.3	1536	3.3	0.621	11.0	LOS A	11.8	84.2	0.67	0.60	0.67	42.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	203.4	213.1	1.05
North: Mortain Avenue											
P3	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	199.5	208.4	1.04
West: Allambie Road (W)											
P4	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	204.0	213.8	1.05
All Pedestrians		158	25.8	LOS C	0.1	0.1	0.91	0.91	202.3	211.8	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: S:\Projects\SCT_00213_The Forest HS\3. Technical Work Area\1. Network Optimisation\SCT_00213_TFHS_SSDA Traffic Modelling_v2.0.sip9

MOVEMENT SUMMARY

Site: 5AM_BY-P [ALL_FLE_21_AM_BY-Peak Spread (Site Folder: AM_BY-Peak Spread)]

Network: N101 [AM_BY-Peak Spread (Network Folder: AM_BY-Peak Spread)]

830-930 AM

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 62 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	713	2.4	713	2.4	0.546	9.4	LOS A	10.3	73.4	0.64	0.56	0.64	23.9
6	R2	25	0.0	25	0.0	* 0.546	13.3	LOS A	10.3	73.4	0.69	0.62	0.69	27.6
Approach		738	2.3	738	2.3	0.546	9.5	LOS A	10.3	73.4	0.64	0.57	0.64	24.1
North: Flers Street														
7	L2	15	0.0	15	0.0	0.105	23.6	LOS B	1.1	7.7	0.81	0.70	0.81	19.8
9	R2	30	3.3	30	3.3	* 0.105	23.7	LOS B	1.1	7.7	0.81	0.70	0.81	12.1
Approach		45	2.2	45	2.2	0.105	23.6	LOS B	1.1	7.7	0.81	0.70	0.81	15.2
West: Allambie Road (W)														
10	L2	19	5.2	19	5.2	0.190	10.5	LOS A	2.9	20.8	0.52	0.45	0.52	35.4
11	T1	689	4.0	689	4.0	0.474	8.6	LOS A	9.3	67.2	0.61	0.53	0.61	35.0
Approach		708	4.1	708	4.1	0.474	8.6	LOS A	9.3	67.2	0.60	0.53	0.60	35.0
All Vehicles		1491	3.1	1491	3.1	0.546	9.5	LOS A	10.3	73.4	0.63	0.55	0.63	31.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	203.8	214.1	1.05
West: Allambie Road (W)											
P4	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	202.8	213.0	1.05
All Pedestrians		105	25.3	LOS C	0.1	0.1	0.91	0.91	203.3	213.6	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1AM_BY [ALL_WAR_21_AM_BY (Site Folder: AM_BY)]

Network: N101 [AM_BY (Network Folder: AM_BY)]

800-900 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 160 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	261	2.8	261	2.8	0.634	59.6	LOS E	18.3	130.9	0.95	0.82	0.95	10.2
3	R2	168	3.1	168	3.1	0.460	81.3	LOS F	6.4	46.0	0.99	0.78	0.99	25.5
Approach		429	2.9	429	2.9	0.634	68.1	LOS E	18.3	130.9	0.97	0.80	0.97	18.5
East: Warringah Road (E)														
4	L2	322	2.9	322	2.9	* 0.899	64.4	LOS E	54.4	395.1	1.00	1.01	1.10	29.0
5	T1	1745	5.7	1745	5.7	* 0.899	57.5	LOS E	57.4	421.9	0.99	0.98	1.09	41.9
6	R2	366	0.3	366	0.3	0.664	66.1	LOS E	12.5	88.0	1.00	0.82	1.00	28.6
Approach		2434	4.5	2434	4.5	0.899	59.7	LOS E	57.4	421.9	0.99	0.96	1.08	38.8
North: Allambie Road (N)														
7	L2	6	0.0	6	0.0	* 0.763	86.7	LOS F	11.1	80.2	1.00	0.90	1.13	24.8
8	T1	281	3.7	281	3.7	* 0.763	81.0	LOS F	11.9	85.8	1.00	0.89	1.12	4.3
Approach		287	3.7	287	3.7	0.763	81.1	LOS F	11.9	85.8	1.00	0.89	1.12	5.0
West: Warringah Road (W)														
10	L2	107	2.0	107	2.0	0.828	24.6	LOS B	26.8	196.3	0.67	0.78	0.68	48.2
11	T1	1804	6.0	1804	6.0	* 0.828	18.0	LOS B	27.7	204.1	0.67	0.76	0.67	57.8
12	R2	693	3.8	693	3.8	* 0.884	68.1	LOS E	25.3	183.0	1.00	0.98	1.10	27.5
Approach		2604	5.2	2604	5.2	0.884	31.6	LOS C	27.7	204.1	0.76	0.82	0.79	48.9
All Vehicles		5755	4.7	5755	4.7	0.899	48.7	LOS D	57.4	421.9	0.88	0.88	0.94	40.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	69.5	LOS F	0.2	0.2	0.93	0.93	261.2	230.0	0.88
North: Allambie Road (N)											
P3	Full	53	71.4	LOS F	0.2	0.2	0.95	0.95	263.1	230.0	0.87
West: Warringah Road (W)											
P4	Full	53	64.9	LOS F	0.2	0.2	0.90	0.90	254.6	227.6	0.89
All Pedestrians		158	68.6	LOS F	0.2	0.2	0.93	0.93	259.6	229.2	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2AM_BY [ALL_ROD_21_AM_BY (Site Folder: AM_BY)]

Network: N101 [AM_BY (Network Folder: AM_BY)]

800-900 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	381	3.9	381	3.9	0.402	7.3	LOS A	3.2	23.2	0.67	0.67	0.67	42.3
2	T1	313	3.0	313	3.0	0.536	6.8	LOS A	3.5	25.0	0.66	0.66	0.66	38.2
3	R2	140	0.8	140	0.8	0.536	10.0	LOS A	3.5	25.0	0.66	0.66	0.66	44.6
3u	U	2	0.0	2	0.0	0.536	11.6	LOS A	3.5	25.0	0.66	0.66	0.66	38.2
Approach		836	3.0	836	3.0	0.536	7.6	LOS A	3.5	25.0	0.66	0.66	0.66	41.8
East: Rodborough Road (E)														
4	L2	83	1.3	83	1.3	0.169	17.7	LOS B	1.7	12.2	0.97	0.73	0.97	32.0
5	T1	87	8.4	87	8.4	0.379	15.1	LOS B	3.9	28.4	1.00	0.74	1.00	35.6
6	R2	104	4.0	104	4.0	0.379	18.1	LOS B	3.9	28.4	1.00	0.74	1.00	31.8
6u	U	1	0.0	1	0.0	0.379	19.4	LOS B	3.9	28.4	1.00	0.74	1.00	39.1
Approach		276	4.6	276	4.6	0.379	17.0	LOS B	3.9	28.4	0.99	0.74	0.99	33.3
North: Allambie Road (N)														
7	L2	499	1.9	499	1.9	0.474	6.4	LOS A	3.6	25.5	0.38	0.59	0.38	42.5
8	T1	748	4.8	748	4.8	0.652	6.3	LOS A	6.6	48.2	0.42	0.55	0.42	30.5
9	R2	65	6.5	65	6.5	0.652	9.6	LOS A	6.6	48.2	0.42	0.55	0.42	38.9
9u	U	6	0.0	6	0.0	0.652	11.1	LOS A	6.6	48.2	0.42	0.55	0.42	30.5
Approach		1319	3.8	1319	3.8	0.652	6.6	LOS A	6.6	48.2	0.40	0.56	0.40	38.4
West: Rodborough Road (W)														
10	L2	6	16.7	6	16.7	0.021	7.8	LOS A	0.1	0.7	0.60	0.65	0.60	31.5
11	T1	2	0.0	2	0.0	0.021	7.4	LOS A	0.1	0.7	0.60	0.65	0.60	42.8
12	R2	4	0.0	4	0.0	0.021	10.6	LOS A	0.1	0.7	0.60	0.65	0.60	31.5
12u	U	1	0.0	1	0.0	0.021	12.2	LOS A	0.1	0.7	0.60	0.65	0.60	40.0
Approach		14	7.7	14	7.7	0.021	8.9	LOS A	0.1	0.7	0.60	0.65	0.60	35.6
All Vehicles		2444	3.6	2444	3.6	0.652	8.1	LOS A	6.6	48.2	0.56	0.62	0.56	38.7

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

MOVEMENT SUMMARY

Site: 3AM_BY [ALL_AQU_21_AM_BY (Site Folder: AM_BY)]

Network: N101 [AM_BY (Network Folder: AM_BY)]

800-900 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	120	2.6	120	2.6	0.745	9.7	LOS A	10.4	74.5	0.82	0.76	0.92	43.0
6	R2	643	2.8	643	2.8	0.745	13.0	LOS A	10.4	74.5	0.82	0.76	0.92	45.0
6u	U	1	0.0	1	0.0	0.745	14.5	LOS B	10.4	74.5	0.82	0.76	0.92	45.0
Approach		764	2.8	764	2.8	0.745	12.5	LOS A	10.4	74.5	0.82	0.76	0.92	44.4
North: Allambie Road (N)														
7	L2	640	4.9	640	4.9	0.869	10.3	LOS A	14.6	106.5	0.95	0.80	1.10	34.4
9	R2	167	3.8	167	3.8	0.869	13.5	LOS A	14.6	106.5	0.95	0.80	1.10	38.9
9u	U	4	0.0	4	0.0	0.869	15.1	LOS B	14.6	106.5	0.95	0.80	1.10	34.4
Approach		812	4.7	812	4.7	0.869	11.0	LOS A	14.6	106.5	0.95	0.80	1.10	36.4
West: Aquatic Drive														
10	L2	217	3.4	217	3.4	0.540	12.6	LOS A	5.2	37.7	0.94	0.97	1.08	38.8
11	T1	160	3.3	160	3.3	0.540	12.3	LOS A	5.2	37.7	0.97	1.00	1.14	38.8
12u	U	1	0.0	1	0.0	0.540	17.0	LOS B	5.2	37.7	0.97	1.00	1.14	40.4
Approach		378	3.3	378	3.3	0.540	12.5	LOS A	5.2	37.7	0.95	0.98	1.11	38.8
All Vehicles		1954	3.7	1954	3.7	0.869	11.8	LOS A	14.6	106.5	0.90	0.82	1.03	40.7

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

MOVEMENT SUMMARY

Site: 4AM_BY [ALL_MOR_21_AM_BY (Site Folder: AM_BY)]

Network: N101 [AM_BY (Network Folder: AM_BY)]

800-900 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 63 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	707	2.7	707	2.7	* 0.676	11.0	LOS A	13.1	93.5	0.71	0.63	0.71	44.1
6	R2	54	0.0	54	0.0	0.676	17.5	LOS B	13.1	93.5	0.79	0.71	0.79	35.3
Approach		761	2.5	761	2.5	0.676	11.5	LOS A	13.1	93.5	0.72	0.64	0.72	43.0
North: Mortain Avenue														
7	L2	67	0.0	67	0.0	0.351	23.3	LOS B	3.8	26.8	0.87	0.74	0.87	15.4
9	R2	77	0.0	77	0.0	* 0.351	23.6	LOS B	3.8	26.8	0.87	0.74	0.87	15.4
Approach		144	0.0	144	0.0	0.351	23.5	LOS B	3.8	26.8	0.87	0.74	0.87	15.4
West: Allambie Road (W)														
10	L2	23	9.1	23	9.1	0.138	12.4	LOS A	2.1	15.2	0.49	0.45	0.49	39.5
11	T1	699	4.7	699	4.7	0.552	9.0	LOS A	11.2	81.4	0.64	0.57	0.64	48.1
Approach		722	4.8	722	4.8	0.552	9.1	LOS A	11.2	81.4	0.64	0.57	0.64	47.7
All Vehicles		1627	3.3	1627	3.3	0.676	11.5	LOS A	13.1	93.5	0.69	0.62	0.69	41.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	203.4	213.1	1.05
North: Mortain Avenue											
P3	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	199.5	208.4	1.04
West: Allambie Road (W)											
P4	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	204.0	213.8	1.05
All Pedestrians		158	25.8	LOS C	0.1	0.1	0.91	0.91	202.3	211.8	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 5AM_BY [ALL_FLE_21_AM_BY (Site Folder: AM_BY)]

Network: N101 [AM_BY (Network Folder: AM_BY)]

800-900 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 62 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	756	2.4	756	2.4	0.582	9.6	LOS A	11.2	79.9	0.65	0.58	0.65	23.7
6	R2	26	0.0	26	0.0	* 0.582	13.6	LOS A	11.2	79.9	0.71	0.64	0.71	27.4
Approach		782	2.3	782	2.3	0.582	9.8	LOS A	11.2	79.9	0.66	0.58	0.66	23.8
North: Flers Street														
7	L2	16	0.0	16	0.0	0.112	23.6	LOS B	1.1	8.2	0.81	0.70	0.81	19.8
9	R2	32	3.3	32	3.3	* 0.112	23.7	LOS B	1.1	8.2	0.81	0.70	0.81	12.1
Approach		47	2.2	47	2.2	0.112	23.7	LOS B	1.1	8.2	0.81	0.70	0.81	15.2
West: Allambie Road (W)														
10	L2	20	5.3	20	5.3	0.202	10.6	LOS A	3.1	22.2	0.52	0.46	0.52	35.4
11	T1	731	4.0	731	4.0	0.502	8.8	LOS A	10.1	72.8	0.62	0.55	0.62	34.9
Approach		751	4.1	751	4.1	0.502	8.8	LOS A	10.1	72.8	0.62	0.54	0.62	34.9
All Vehicles		1580	3.1	1580	3.1	0.582	9.7	LOS A	11.2	79.9	0.64	0.57	0.64	31.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	203.8	214.1	1.05
West: Allambie Road (W)											
P4	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	202.8	213.0	1.05
All Pedestrians		105	25.3	LOS C	0.1	0.1	0.91	0.91	203.3	213.6	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1PM_BY-P [ALL_WAR_21_PM_BY-Peak Spread (Site Folder: PM_BY-Peak Spread)]

Network: N101 [PM_BY-Peak Spread (Network Folder: PM_BY-Peak Spread)]

0230-0330 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 149 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	246	2.8	246	2.8	0.604	55.5	LOS D	16.0	114.5	0.94	0.81	0.94	10.8
3	R2	199	3.1	199	3.1	0.506	75.7	LOS F	7.0	50.6	0.99	0.78	0.99	26.6
Approach		445	3.0	445	3.0	0.604	64.5	LOS E	16.0	114.5	0.97	0.80	0.97	20.3
East: Warringah Road (E)														
4	L2	304	2.9	304	2.9	* 0.879	60.4	LOS E	45.2	328.3	1.00	1.01	1.09	30.1
5	T1	1647	5.7	1647	5.7	* 0.879	52.6	LOS D	49.7	364.9	0.99	0.97	1.08	43.3
6	R2	327	0.3	327	0.3	0.673	75.7	LOS F	11.7	81.8	1.00	0.82	1.03	26.4
Approach		2278	4.6	2278	4.6	0.879	56.9	LOS E	49.7	364.9	0.99	0.95	1.07	39.7
North: Allambie Road (N)														
7	L2	5	0.0	5	0.0	* 0.717	81.7	LOS F	8.5	61.1	1.00	0.87	1.10	25.7
8	T1	231	3.7	231	3.7	* 0.717	76.1	LOS F	9.1	65.4	1.00	0.86	1.10	4.6
Approach		236	3.7	236	3.7	0.717	76.2	LOS F	9.1	65.4	1.00	0.86	1.10	5.3
West: Warringah Road (W)														
10	L2	98	2.0	98	2.0	0.753	20.5	LOS B	21.5	157.6	0.57	0.56	0.57	51.2
11	T1	1646	6.0	1646	6.0	0.753	14.1	LOS A	22.4	164.6	0.57	0.53	0.57	60.0
12	R2	470	3.8	470	3.8	* 0.777	53.7	LOS D	11.8	85.2	0.98	0.91	1.03	31.6
Approach		2214	5.3	2214	5.3	0.777	22.8	LOS B	22.4	164.6	0.66	0.61	0.67	53.7
All Vehicles		5173	4.7	5173	4.7	0.879	43.9	LOS D	49.7	364.9	0.85	0.79	0.89	42.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	64.0	LOS F	0.2	0.2	0.93	0.93	255.7	230.0	0.90
North: Allambie Road (N)											
P3	Full	53	65.9	LOS F	0.2	0.2	0.94	0.94	257.6	230.0	0.89
West: Warringah Road (W)											
P4	Full	53	59.5	LOS E	0.2	0.2	0.89	0.89	249.2	227.6	0.91
All Pedestrians		158	63.2	LOS F	0.2	0.2	0.92	0.92	254.2	229.2	0.90

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2PM_BY-P [ALL_ROD_21_PM_BY-Peak Spread (Site Folder: PM_BY-Peak Spread)]

Network: N101 [PM_BY-Peak Spread (Network Folder: PM_BY-Peak Spread)]

0230-0330 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	217	7.2	217	7.2	0.235	6.8	LOS A	1.6	12.0	0.55	0.62	0.55	42.6
2	T1	300	2.9	300	2.9	0.361	6.3	LOS A	2.3	16.8	0.56	0.59	0.56	39.6
3	R2	47	4.2	47	4.2	0.361	9.6	LOS A	2.3	16.8	0.56	0.59	0.56	45.2
3u	U	1	0.0	1	0.0	0.361	11.1	LOS A	2.3	16.8	0.56	0.59	0.56	39.6
Approach		565	4.6	565	4.6	0.361	6.8	LOS A	2.3	16.8	0.55	0.60	0.55	41.7
East: Rodborough Road (E)														
4	L2	10	30.0	10	30.0	0.024	14.9	LOS B	0.2	1.3	0.73	0.64	0.73	34.2
5	T1	32	6.1	32	6.1	0.259	10.2	LOS A	2.2	15.6	0.83	0.70	0.83	38.5
6	R2	145	3.4	145	3.4	0.259	13.3	LOS A	2.2	15.6	0.83	0.70	0.83	34.9
6u	U	1	0.0	1	0.0	0.259	14.7	LOS B	2.2	15.6	0.83	0.70	0.83	41.4
Approach		188	5.2	188	5.2	0.259	12.8	LOS A	2.2	15.6	0.82	0.69	0.82	35.7
North: Allambie Road (N)														
7	L2	143	6.1	143	6.1	0.219	5.5	LOS A	1.3	9.3	0.20	0.52	0.20	43.3
8	T1	761	2.2	761	2.2	0.499	5.4	LOS A	4.3	31.0	0.21	0.48	0.21	33.0
9	R2	31	25.0	31	25.0	0.499	8.6	LOS A	4.3	31.0	0.22	0.48	0.22	38.3
9u	U	9	0.0	9	0.0	0.499	10.1	LOS A	4.3	31.0	0.22	0.48	0.22	33.0
Approach		944	3.5	944	3.5	0.499	5.6	LOS A	4.3	31.0	0.21	0.49	0.21	36.8
West: Rodborough Road (W)														
10	L2	36	2.7	36	2.7	0.061	7.1	LOS A	0.3	1.9	0.55	0.66	0.55	33.3
11	T1	2	0.0	2	0.0	0.061	7.1	LOS A	0.3	1.9	0.55	0.66	0.55	44.0
12	R2	6	0.0	6	0.0	0.061	10.3	LOS A	0.3	1.9	0.55	0.66	0.55	33.3
12u	U	1	0.0	1	0.0	0.061	12.0	LOS A	0.3	1.9	0.55	0.66	0.55	41.8
Approach		45	2.2	45	2.2	0.061	7.6	LOS A	0.3	1.9	0.55	0.66	0.55	34.7
All Vehicles		1742	4.0	1742	4.0	0.499	6.8	LOS A	4.3	31.0	0.40	0.55	0.40	38.4

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

MOVEMENT SUMMARY

Site: 3PM_BY-P [ALL_AQU_21_PM_BY-Peak Spread (Site Folder: PM_BY-Peak Spread)]

Network: N101 [PM_BY-Peak Spread (Network Folder: PM_BY-Peak Spread)]

0230-0330 PM
Site Category: (None)
Roundabout

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	69	5.6	69	5.6	0.563	6.3	LOS A	5.7	41.4	0.56	0.62	0.56	44.2
6	R2	609	3.2	609	3.2	0.563	9.5	LOS A	5.7	41.4	0.56	0.62	0.56	47.5
6u	U	3	0.0	3	0.0	0.563	11.1	LOS A	5.7	41.4	0.56	0.62	0.56	47.5
Approach		681	3.4	681	3.4	0.563	9.2	LOS A	5.7	41.4	0.56	0.62	0.56	46.9
North: Allambie Road (N)														
7	L2	614	2.5	614	2.5	0.709	6.0	LOS A	6.6	47.5	0.58	0.62	0.58	40.0
9	R2	93	4.2	93	4.2	0.709	9.3	LOS A	6.6	47.5	0.58	0.62	0.58	40.8
9u	U	1	0.0	1	0.0	0.709	10.9	LOS A	6.6	47.5	0.58	0.62	0.58	40.0
Approach		709	2.7	709	2.7	0.709	6.4	LOS A	6.6	47.5	0.58	0.62	0.58	40.3
West: Aquatic Drive														
10	L2	220	6.6	220	6.6	0.432	10.3	LOS A	3.4	24.8	0.86	0.85	0.88	40.5
11	T1	110	4.4	110	4.4	0.432	9.6	LOS A	3.4	24.8	0.88	0.86	0.90	40.8
12u	U	1	0.0	1	0.0	0.432	13.4	LOS A	3.4	24.8	0.88	0.86	0.90	41.4
Approach		331	5.9	331	5.9	0.432	10.0	LOS A	3.4	24.8	0.86	0.85	0.88	40.6
All Vehicles		1720	3.6	1720	3.6	0.709	8.2	LOS A	6.6	47.5	0.63	0.66	0.63	43.6

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

MOVEMENT SUMMARY

Site: 4PM_BY-P [ALL_MOR_21_PM_BY-Peak Spread (Site Folder: PM_BY-Peak Spread)]

Network: N101 [PM_BY-Peak Spread (Network Folder: PM_BY-Peak Spread)]

0230-0330 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 78 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	593	3.3	593	3.3	* 0.514	8.4	LOS A	10.5	75.7	0.55	0.50	0.55	46.8
6	R2	60	1.6	60	1.6	0.514	14.6	LOS B	10.5	75.7	0.61	0.57	0.61	36.5
Approach		653	3.1	653	3.1	0.514	8.9	LOS A	10.5	75.7	0.55	0.51	0.55	45.2
North: Mortain Avenue														
7	L2	32	0.0	32	0.0	0.156	30.9	LOS C	1.7	11.7	0.88	0.69	0.88	13.8
9	R2	18	0.0	18	0.0	* 0.156	31.2	LOS C	1.7	11.7	0.88	0.69	0.88	13.8
Approach		51	0.0	51	0.0	0.156	31.0	LOS C	1.7	11.7	0.88	0.69	0.88	13.8
West: Allambie Road (W)														
10	L2	37	2.6	37	2.6	0.115	10.9	LOS A	2.0	14.1	0.40	0.42	0.40	39.9
11	T1	660	2.8	660	2.8	0.461	7.1	LOS A	10.4	74.8	0.51	0.47	0.51	50.1
Approach		697	2.8	697	2.8	0.461	7.3	LOS A	10.4	74.8	0.51	0.47	0.51	49.2
All Vehicles		1401	2.8	1401	2.8	0.514	8.9	LOS A	10.5	75.7	0.54	0.49	0.54	45.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	210.9	213.1	1.01
North: Mortain Avenue											
P3	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	207.0	208.4	1.01
West: Allambie Road (W)											
P4	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	211.5	213.8	1.01
All Pedestrians		158	33.3	LOS D	0.1	0.1	0.93	0.93	209.8	211.8	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: S:\Projects\SCT_00213_The Forest HS\3. Technical Work Area\1. Network Optimisation\SCT_00213_TFHS_SSDA Traffic Modelling_v2.0.sip9

MOVEMENT SUMMARY

Site: 5PM_BY-P [ALL_FLE_21_PM_BY-Peak Spread (Site Folder: PM_BY-Peak Spread)]

Network: N101 [PM_BY-Peak Spread (Network Folder: PM_BY-Peak Spread)]

0230-0330 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 85 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	626	3.1	626	3.1	0.401	6.5	LOS A	8.5	61.1	0.45	0.40	0.45	27.2
6	R2	23	4.2	23	4.2	* 0.401	10.2	LOS A	8.5	61.1	0.48	0.44	0.48	30.4
Approach		649	3.1	649	3.1	0.401	6.7	LOS A	8.5	61.1	0.45	0.41	0.45	27.4
North: Flers Street														
7	L2	18	0.0	18	0.0	0.119	36.8	LOS C	1.3	9.3	0.88	0.71	0.88	15.4
9	R2	17	11.8	17	11.8	* 0.119	36.9	LOS C	1.3	9.3	0.88	0.71	0.88	8.7
Approach		35	5.6	35	5.6	0.119	36.8	LOS C	1.3	9.3	0.88	0.71	0.88	12.6
West: Allambie Road (W)														
10	L2	21	0.0	21	0.0	0.156	8.5	LOS A	2.8	20.1	0.38	0.35	0.38	36.6
11	T1	684	2.6	684	2.6	0.387	6.2	LOS A	9.0	64.7	0.44	0.40	0.44	36.3
Approach		706	2.5	706	2.5	0.387	6.3	LOS A	9.0	64.7	0.44	0.40	0.44	36.3
All Vehicles		1390	2.9	1390	2.9	0.401	7.2	LOS A	9.0	64.7	0.46	0.41	0.46	33.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	215.2	214.1	0.99
West: Allambie Road (W)											
P4	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	214.3	213.0	0.99
All Pedestrians		105	36.8	LOS D	0.1	0.1	0.93	0.93	214.8	213.6	0.99

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1PM_BY [ALL_WAR_21_PM_BY (Site Folder: PM_BY)]

Network: N101 [PM_BY (Network Folder: PM_BY)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 149 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	294	2.8	294	2.8	0.763	59.5	LOS E	20.3	145.2	0.98	0.88	1.03	10.2
3	R2	237	3.1	237	3.1	0.603	76.5	LOS F	8.5	61.0	1.00	0.79	1.00	26.5
Approach		531	3.0	531	3.0	0.763	67.1	LOS E	20.3	145.2	0.99	0.84	1.02	19.8
East: Warringah Road (E)														
4	L2	289	2.9	289	2.9	* 0.836	54.2	LOS D	39.6	287.4	0.98	0.96	1.02	32.1
5	T1	1567	5.7	1567	5.7	* 0.836	46.6	LOS D	43.7	321.2	0.97	0.91	1.00	45.3
6	R2	311	0.3	311	0.3	0.640	74.9	LOS F	11.0	77.0	1.00	0.81	1.00	26.6
Approach		2166	4.6	2166	4.6	0.836	51.7	LOS D	43.7	321.2	0.97	0.90	1.00	41.3
North: Allambie Road (N)														
7	L2	5	0.0	5	0.0	0.669	80.4	LOS F	7.8	56.2	1.00	0.84	1.06	26.0
8	T1	215	3.7	215	3.7	* 0.669	74.9	LOS F	8.3	60.3	1.00	0.83	1.06	4.6
Approach		220	3.7	220	3.7	0.669	75.1	LOS F	8.3	60.3	1.00	0.83	1.06	5.4
West: Warringah Road (W)														
10	L2	108	2.0	108	2.0	0.830	22.7	LOS B	28.6	209.5	0.67	0.66	0.69	49.5
11	T1	1814	6.0	1814	6.0	0.830	16.2	LOS B	29.6	217.7	0.67	0.63	0.68	58.8
12	R2	518	3.8	518	3.8	* 0.857	58.4	LOS E	14.4	103.8	1.00	0.95	1.10	30.1
Approach		2440	5.3	2440	5.3	0.857	25.4	LOS B	29.6	217.7	0.74	0.70	0.77	52.4
All Vehicles		5357	4.7	5357	4.7	0.857	42.2	LOS C	43.7	321.2	0.87	0.80	0.90	42.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	64.0	LOS F	0.2	0.2	0.93	0.93	255.7	230.0	0.90
North: Allambie Road (N)											
P3	Full	53	65.9	LOS F	0.2	0.2	0.94	0.94	257.6	230.0	0.89
West: Warringah Road (W)											
P4	Full	53	59.5	LOS E	0.2	0.2	0.89	0.89	249.2	227.6	0.91
All Pedestrians		158	63.2	LOS F	0.2	0.2	0.92	0.92	254.2	229.2	0.90

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Organisation: SCT CONSULTING PTY LTD | Licence: NETWORK / 1PC | Processed: Wednesday, 10 August 2022 4:56:24 PM
Project: S:\Projects\SCT_00213_The Forest HS\3. Technical Work Area\1. Network Optimisation\SCT_00213_TFHS_SSDA Traffic Modelling_v2.0.sip9

MOVEMENT SUMMARY

Site: 2PM_BY [ALL_ROD_21_PM_BY (Site Folder: PM_BY)]

Network: N101 [PM_BY (Network Folder: PM_BY)]

3-4 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	235	7.2	235	7.2	0.261	7.0	LOS A	1.8	13.6	0.59	0.63	0.59	42.4
2	T1	325	2.9	325	2.9	0.526	6.5	LOS A	2.7	19.2	0.60	0.62	0.60	39.2
3	R2	51	4.2	51	4.2	0.526	9.7	LOS A	2.7	19.2	0.60	0.62	0.60	45.0
3u	U	1	0.0	1	0.0	0.526	11.3	LOS A	2.7	19.2	0.60	0.62	0.60	39.2
Approach		612	4.6	612	4.6	0.526	7.0	LOS A	2.7	19.2	0.59	0.62	0.59	41.4
East: Rodborough Road (E)														
4	L2	11	30.0	11	30.0	0.026	16.4	LOS B	0.2	1.6	0.77	0.64	0.77	33.2
5	T1	35	6.1	35	6.1	0.380	11.5	LOS A	2.7	19.3	0.90	0.72	0.90	37.5
6	R2	157	3.4	157	3.4	0.380	14.6	LOS B	2.7	19.3	0.90	0.72	0.90	33.9
6u	U	1	0.0	1	0.0	0.380	16.0	LOS B	2.7	19.3	0.90	0.72	0.90	40.7
Approach		203	5.2	203	5.2	0.380	14.2	LOS A	2.7	19.3	0.89	0.72	0.89	34.6
North: Allambie Road (N)														
7	L2	155	6.1	155	6.1	0.240	5.6	LOS A	1.4	10.4	0.21	0.52	0.21	43.3
8	T1	824	2.2	824	2.2	0.546	5.5	LOS A	5.1	36.5	0.23	0.49	0.23	32.8
9	R2	34	25.0	34	25.0	0.546	8.7	LOS A	5.1	36.5	0.24	0.48	0.24	38.1
9u	U	9	0.0	9	0.0	0.546	10.2	LOS A	5.1	36.5	0.24	0.48	0.24	32.8
Approach		1022	3.5	1022	3.5	0.546	5.7	LOS A	5.1	36.5	0.23	0.49	0.23	36.7
West: Rodborough Road (W)														
10	L2	39	2.7	39	2.7	0.089	7.4	LOS A	0.3	2.1	0.58	0.69	0.58	32.8
11	T1	2	0.0	2	0.0	0.089	7.4	LOS A	0.3	2.1	0.58	0.69	0.58	43.7
12	R2	6	0.0	6	0.0	0.089	10.6	LOS A	0.3	2.1	0.58	0.69	0.58	32.8
12u	U	1	0.0	1	0.0	0.089	12.3	LOS A	0.3	2.1	0.58	0.69	0.58	41.3
Approach		48	2.2	48	2.2	0.089	7.9	LOS A	0.3	2.1	0.58	0.69	0.58	34.2
All Vehicles		1885	4.0	1885	4.0	0.546	7.1	LOS A	5.1	36.5	0.43	0.56	0.43	38.0

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

MOVEMENT SUMMARY

Site: 3PM_BY [ALL_AQU_21_PM_BY (Site Folder: PM_BY)]

Network: N101 [PM_BY (Network Folder: PM_BY)]

3-4 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	75	5.6	75	5.6	0.619	6.5	LOS A	6.8	49.2	0.62	0.63	0.62	44.1
6	R2	659	3.2	659	3.2	0.619	9.7	LOS A	6.8	49.2	0.62	0.63	0.62	47.3
6u	U	3	0.0	3	0.0	0.619	11.3	LOS A	6.8	49.2	0.62	0.63	0.62	47.3
Approach		737	3.4	737	3.4	0.619	9.4	LOS A	6.8	49.2	0.62	0.63	0.62	46.7
North: Allambie Road (N)														
7	L2	665	2.5	665	2.5	0.776	6.8	LOS A	9.0	64.6	0.70	0.65	0.72	39.2
9	R2	101	4.2	101	4.2	0.776	10.1	LOS A	9.0	64.6	0.70	0.65	0.72	40.6
9u	U	1	0.0	1	0.0	0.776	11.7	LOS A	9.0	64.6	0.70	0.65	0.72	39.2
Approach		767	2.7	767	2.7	0.776	7.2	LOS A	9.0	64.6	0.70	0.65	0.72	39.7
West: Aquatic Drive														
10	L2	238	6.6	238	6.6	0.498	12.2	LOS A	4.5	33.0	0.91	0.94	1.02	39.1
11	T1	119	4.4	119	4.4	0.498	11.7	LOS A	4.5	33.0	0.93	0.96	1.06	39.2
12u	U	1	0.0	1	0.0	0.498	15.5	LOS B	4.5	33.0	0.93	0.96	1.06	40.6
Approach		358	5.9	358	5.9	0.498	12.1	LOS A	4.5	33.0	0.92	0.95	1.04	39.1
All Vehicles		1862	3.6	1862	3.6	0.776	9.0	LOS A	9.0	64.6	0.71	0.70	0.74	42.9

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

MOVEMENT SUMMARY

Site: 4PM_BY [ALL_MOR_21_PM_BY (Site Folder: PM_BY)]

Network: N101 [PM_BY (Network Folder: PM_BY)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 78 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	642	3.3	642	3.3	* 0.572	9.1	LOS A	12.2	87.6	0.58	0.53	0.58	46.0
6	R2	65	1.6	65	1.6	0.572	15.7	LOS B	12.2	87.6	0.65	0.61	0.65	36.0
Approach		707	3.1	707	3.1	0.572	9.7	LOS A	12.2	87.6	0.59	0.54	0.59	44.4
North: Mortain Avenue														
7	L2	35	0.0	35	0.0	0.169	31.0	LOS C	1.8	12.7	0.88	0.70	0.88	13.8
9	R2	20	0.0	20	0.0	* 0.169	31.3	LOS C	1.8	12.7	0.88	0.70	0.88	13.8
Approach		55	0.0	55	0.0	0.169	31.1	LOS C	1.8	12.7	0.88	0.70	0.88	13.8
West: Allambie Road (W)														
10	L2	40	2.6	40	2.6	0.125	11.0	LOS A	2.1	15.4	0.40	0.42	0.40	39.9
11	T1	715	2.8	715	2.8	0.499	7.3	LOS A	11.7	84.0	0.53	0.49	0.53	49.9
Approach		755	2.8	755	2.8	0.499	7.5	LOS A	11.7	84.0	0.52	0.48	0.52	49.0
All Vehicles		1517	2.8	1517	2.8	0.572	9.4	LOS A	12.2	87.6	0.57	0.52	0.57	45.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	210.9	213.1	1.01
North: Mortain Avenue											
P3	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	207.0	208.4	1.01
West: Allambie Road (W)											
P4	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	211.5	213.8	1.01
All Pedestrians		158	33.3	LOS D	0.1	0.1	0.93	0.93	209.8	211.8	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 5PM_BY [ALL_FLE_21_PM_BY (Site Folder: PM_BY)]

Network: N101 [PM_BY (Network Folder: PM_BY)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 85 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	678	3.1	678	3.1	0.438	6.7	LOS A	9.5	68.3	0.46	0.42	0.46	27.0
6	R2	25	4.2	25	4.2	* 0.438	10.5	LOS A	9.5	68.3	0.50	0.46	0.50	30.2
Approach		703	3.1	703	3.1	0.438	6.9	LOS A	9.5	68.3	0.47	0.42	0.47	27.2
North: Flers Street														
7	L2	20	0.0	20	0.0	0.129	36.8	LOS C	1.4	10.1	0.89	0.71	0.89	15.4
9	R2	18	11.8	18	11.8	* 0.129	37.0	LOS C	1.4	10.1	0.89	0.71	0.89	8.7
Approach		38	5.6	38	5.6	0.129	36.9	LOS C	1.4	10.1	0.89	0.71	0.89	12.6
West: Allambie Road (W)														
10	L2	23	0.0	23	0.0	0.168	8.5	LOS A	3.1	22.0	0.38	0.35	0.38	36.6
11	T1	741	2.6	741	2.6	0.419	6.4	LOS A	10.1	72.2	0.45	0.41	0.45	36.2
Approach		764	2.5	764	2.5	0.419	6.5	LOS A	10.1	72.2	0.45	0.41	0.45	36.2
All Vehicles		1505	2.9	1505	2.9	0.438	7.4	LOS A	10.1	72.2	0.47	0.42	0.47	33.5

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	215.2	214.1	0.99
West: Allambie Road (W)											
P4	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	214.3	213.0	0.99
All Pedestrians		105	36.8	LOS D	0.1	0.1	0.93	0.93	214.8	213.6	0.99

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [ROD_25_AM_FYD_UPG-Peak Spread (Site Folder: AM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Rodborough Road (E)														
2	T1	414	6.1	414	6.1	0.677	5.3	LOS A	8.5	62.4	0.49	0.54	0.54	49.2
Approach		414	6.1	414	6.1	0.677	5.3	LOS A	8.5	62.4	0.49	0.54	0.54	49.2
West: Rodborough Road (W)														
8	T1	17	6.3	17	6.3	0.028	4.9	LOS A	0.1	0.7	0.19	0.51	0.19	51.8
Approach		17	6.3	17	6.3	0.028	4.9	LOS A	0.1	0.7	0.19	0.51	0.19	51.8
All Vehicles		431	6.1	431	6.1	0.677	5.3	NA	8.5	62.4	0.47	0.54	0.52	49.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1AM_FY_25 [ALL_WAR_25_AM_FYD_UPG-Peak Spread (Site Folder: AM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 160 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	314	2.3	314	2.3	0.927	88.3	LOS F	22.9	163.2	1.00	1.08	1.31	7.3
3	R2	223	2.3	223	2.3	0.649	84.3	LOS F	8.7	62.3	1.00	0.80	1.03	25.0
Approach		537	2.3	537	2.3	0.927	86.6	LOS F	22.9	163.2	1.00	0.97	1.19	15.9
East: Warringah Road (E)														
4	L2	371	2.4	371	2.4	* 0.907	64.9	LOS E	55.3	399.6	1.00	1.01	1.11	28.8
5	T1	1707	5.5	1707	5.5	* 0.907	59.7	LOS E	58.4	428.1	0.99	0.99	1.11	41.2
6	R2	273	0.4	273	0.4	0.642	81.9	LOS F	10.5	73.6	1.00	0.80	1.01	25.1
Approach		2351	4.4	2351	4.4	0.907	63.1	LOS E	58.4	428.1	0.99	0.97	1.10	37.9
North: Allambie Road (N)														
7	L2	6	0.0	6	0.0	0.889	96.1	LOS F	11.4	82.2	1.00	1.01	1.35	23.2
8	T1	265	3.8	265	3.8	* 0.889	91.1	LOS F	12.1	87.8	1.00	1.01	1.34	3.9
Approach		271	3.7	271	3.7	0.889	91.3	LOS F	12.1	87.8	1.00	1.01	1.34	4.5
West: Warringah Road (W)														
10	L2	101	1.9	101	1.9	0.796	14.8	LOS B	16.6	121.1	0.62	0.60	0.62	56.1
11	T1	1740	5.7	1740	5.7	* 0.796	8.5	LOS A	17.3	127.2	0.62	0.57	0.62	63.5
12	R2	660	3.7	660	3.7	0.709	54.1	LOS D	21.6	155.8	0.90	0.83	0.90	31.5
Approach		2501	5.0	2501	5.0	0.796	20.7	LOS B	21.6	155.8	0.69	0.64	0.69	54.6
All Vehicles		5661	4.4	5661	4.4	0.927	48.0	LOS D	58.4	428.1	0.86	0.83	0.94	40.5

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	69.5	LOS F	0.2	0.2	0.93	0.93	261.2	230.0	0.88
North: Allambie Road (N)											
P3	Full	53	71.4	LOS F	0.2	0.2	0.95	0.95	263.1	230.0	0.87
West: Warringah Road (W)											
P4	Full	53	64.9	LOS F	0.2	0.2	0.90	0.90	254.6	227.6	0.89

All Pedestrians	158	68.6	LOS F	0.2	0.2	0.93	0.93	259.6	229.2	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2AM_FY_25 [ALL_ROD_25_AM_FYD_UPG-Peak Spread (Site Folder: AM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

830-930 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	278	5.0	278	5.0	0.533	7.6	LOS A	2.0	14.3	0.47	0.66	0.47	39.4
2	T1	352	2.5	352	2.5	0.770	9.7	LOS A	3.8	27.1	0.49	0.71	0.62	35.4
3	R2	141	0.7	141	0.7	0.770	12.8	LOS A	3.8	27.1	0.49	0.71	0.62	43.0
3u	U	2	0.0	2	0.0	0.770	14.5	LOS A	3.8	27.1	0.49	0.71	0.62	35.4
Approach		773	3.1	773	3.1	0.770	9.5	LOS A	3.8	27.1	0.48	0.69	0.57	39.0
East: Rodborough Road (E)														
4	L2	139	0.7	139	0.7	0.201	8.6	LOS A	1.3	9.1	0.73	0.76	0.73	38.3
5	T1	43	16.3	43	16.3	0.468	9.2	LOS A	2.3	17.1	0.75	0.85	0.80	36.1
6	R2	141	2.8	141	2.8	0.468	11.9	LOS A	2.3	17.1	0.75	0.85	0.80	36.1
6u	U	1	0.0	1	0.0	0.468	13.3	LOS A	2.3	17.1	0.75	0.85	0.80	42.3
Approach		324	3.7	324	3.7	0.468	10.1	LOS A	2.3	17.1	0.74	0.81	0.77	37.0
North: Allambie Road (N)														
7	L2	501	1.8	501	1.8	0.576	6.2	LOS A	5.7	40.5	0.39	0.55	0.39	42.6
8	T1	719	4.7	719	4.7	0.576	6.4	LOS A	5.7	40.5	0.39	0.55	0.39	30.5
9	R2	92	4.3	92	4.3	0.576	9.6	LOS A	4.5	32.6	0.39	0.56	0.39	30.3
9u	U	6	0.0	6	0.0	0.576	11.2	LOS A	4.5	32.6	0.39	0.56	0.39	30.3
Approach		1318	3.5	1318	3.5	0.576	6.6	LOS A	5.7	40.5	0.39	0.55	0.39	38.2
West: Rodborough Road (W)														
10	L2	8	12.5	8	12.5	0.034	6.0	LOS A	0.1	1.0	0.66	0.64	0.66	17.2
11	T1	3	0.0	3	0.0	0.034	6.2	LOS A	0.1	1.0	0.66	0.64	0.66	41.5
12	R2	6	0.0	6	0.0	0.034	8.9	LOS A	0.1	1.0	0.66	0.64	0.66	17.2
12u	U	1	0.0	1	0.0	0.034	10.6	LOS A	0.1	1.0	0.66	0.64	0.66	17.2
Approach		17	5.7	17	5.7	0.034	7.2	LOS A	0.1	1.0	0.66	0.64	0.66	27.1
All Vehicles		2432	3.4	2432	3.4	0.770	8.0	LOS A	5.7	40.5	0.47	0.63	0.50	38.2

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

MOVEMENT SUMMARY

Site: 3AM_FYC_25 [ALL_AQU_25_AM_FYD__UPG-Peak Spread (Site Folder: AM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 90 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	218	1.4	218	1.4	0.253	8.8	LOS A	3.8	27.0	0.43	0.57	0.43	43.8
6	R2	434	3.9	434	3.9	* 0.646	27.8	LOS B	13.8	99.6	0.88	0.93	0.88	33.9
Approach		651	3.0	651	3.0	0.646	21.5	LOS B	13.8	99.6	0.73	0.81	0.73	38.2
North: Allambie Road (N)														
7	L2	574	5.1	574	5.1	0.610	21.3	LOS B	17.4	127.0	0.74	0.81	0.74	25.1
9	R2	263	2.4	263	2.4	* 0.878	55.9	LOS D	13.4	95.8	1.00	0.99	1.38	24.3
Approach		837	4.3	837	4.3	0.878	32.1	LOS C	17.4	127.0	0.82	0.86	0.94	24.6
West: Aquatic Drive														
10	L2	362	2.0	362	2.0	* 0.890	47.9	LOS D	17.4	123.6	0.88	0.99	1.25	23.7
11	T1	256	2.1	256	2.1	0.773	30.2	LOS C	9.8	69.5	0.82	0.79	0.99	29.4
Approach		618	2.0	618	2.0	0.890	40.6	LOS C	17.4	123.6	0.86	0.91	1.14	25.8
All Vehicles		2106	3.2	2106	3.2	0.890	31.3	LOS C	17.4	127.0	0.80	0.86	0.94	29.3

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	421	39.9	LOS D	1.0	1.0	0.95	0.95	202.7	211.6	1.04
North: Allambie Road (N)											
P3	Full	105	39.4	LOS D	0.3	0.3	0.94	0.94	201.7	211.0	1.05
P3B	Slip/ Bypass	421	39.9	LOS D	1.0	1.0	0.95	0.95	196.8	204.0	1.04
West: Aquatic Drive											
P4	Full	105	39.4	LOS D	0.3	0.3	0.94	0.94	204.5	214.7	1.05
All Pedestrians		1053	39.8	LOS D	1.0	1.0	0.95	0.95	200.4	208.8	1.04

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 4AM_FY_25 [ALL_MOR_25_AM_FYD_UPG-Peak Spread (Site Folder: AM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 63 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	595	3.0	595	3.0	0.516	7.8	LOS A	8.9	64.1	0.58	0.52	0.58	47.7
6	R2	51	0.0	51	0.0	0.516	13.9	LOS A	8.9	64.1	0.64	0.59	0.64	37.0
Approach		645	2.8	645	2.8	0.516	8.2	LOS A	8.9	64.1	0.58	0.53	0.58	46.2
North: Mortain Avenue														
7	L2	64	0.0	64	0.0	0.478	27.7	LOS B	4.1	28.9	0.95	0.77	0.95	14.4
9	R2	77	0.0	77	0.0	* 0.478	28.0	LOS B	4.1	28.9	0.95	0.77	0.95	14.4
Approach		141	0.0	141	0.0	0.478	27.9	LOS B	4.1	28.9	0.95	0.77	0.95	14.4
West: Allambie Road (W)														
10	L2	27	7.4	27	7.4	0.130	10.5	LOS A	1.8	13.5	0.42	0.41	0.42	40.4
11	T1	730	4.2	730	4.2	* 0.519	6.7	LOS A	10.1	73.6	0.56	0.50	0.56	50.7
Approach		756	4.3	756	4.3	0.519	6.9	LOS A	10.1	73.6	0.55	0.50	0.55	50.1
All Vehicles		1543	3.3	1543	3.3	0.519	9.4	LOS A	10.1	73.6	0.60	0.54	0.60	43.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	203.4	213.1	1.05
North: Mortain Avenue											
P3	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	199.5	208.4	1.04
West: Allambie Road (W)											
P4	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	204.0	213.8	1.05
All Pedestrians		158	25.8	LOS C	0.1	0.1	0.91	0.91	202.3	211.8	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 5AM_FY_25 [ALL_FLE_25_AM_FYD_UPG-Peak Spread (Site Folder: AM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

830-930 AM

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 62 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	655	2.6	655	2.6	0.403	4.0	LOS A	5.9	42.3	0.41	0.37	0.41	31.2
6	R2	25	0.0	25	0.0	* 0.403	7.4	LOS A	5.9	42.3	0.44	0.40	0.44	33.6
Approach		680	2.5	680	2.5	0.403	4.1	LOS A	5.9	42.3	0.41	0.37	0.41	31.3
North: Flers Street														
7	L2	15	0.0	15	0.0	0.204	33.6	LOS C	0.9	6.5	0.95	0.71	0.95	16.3
9	R2	15	6.6	15	6.6	* 0.204	33.7	LOS C	0.9	6.5	0.95	0.71	0.95	9.4
Approach		30	3.3	30	3.3	0.204	33.7	LOS C	0.9	6.5	0.95	0.71	0.95	13.2
West: Allambie Road (W)														
10	L2	21	4.7	21	4.7	0.166	6.6	LOS A	2.1	15.3	0.35	0.32	0.35	37.8
11	T1	757	3.7	757	3.7	0.413	4.1	LOS A	7.0	50.5	0.42	0.38	0.42	37.5
Approach		778	3.7	778	3.7	0.413	4.2	LOS A	7.0	50.5	0.42	0.37	0.42	37.5
All Vehicles		1488	3.1	1488	3.1	0.413	4.8	LOS A	7.0	50.5	0.42	0.38	0.42	35.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	203.8	214.1	1.05
West: Allambie Road (W)											
P4	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	202.8	213.0	1.05
All Pedestrians		105	25.3	LOS C	0.1	0.1	0.91	0.91	203.3	213.6	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: ROD_S1_PM [ROD_25_PM_FYD_UPG-Peak Spread (Site Folder: PM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Rodborough Road (E)														
2	T1	225	11.2	225	11.2	0.379	3.1	LOS A	2.0	15.4	0.29	0.49	0.29	51.8
Approach		225	11.2	225	11.2	0.379	3.1	LOS A	2.0	15.4	0.29	0.49	0.29	51.8
West: Rodborough Road (W)														
8	T1	40	2.6	40	2.6	0.064	4.9	LOS A	0.2	1.7	0.20	0.51	0.20	51.8
Approach		40	2.6	40	2.6	0.064	4.9	LOS A	0.2	1.7	0.20	0.51	0.20	51.8
All Vehicles		265	9.9	265	9.9	0.379	3.3	NA	2.0	15.4	0.27	0.49	0.27	51.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1PM_FY_25 [ALL_WAR_25_PM_FYD_UPG-Peak Spread (Site Folder: PM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 160 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	294	2.4	294	2.4	0.735	58.6	LOS E	20.7	147.6	0.95	0.84	0.97	10.3
3	R2	247	2.5	247	2.5	0.671	83.8	LOS F	9.7	69.1	1.00	0.81	1.04	25.1
Approach		541	2.4	541	2.4	0.735	70.1	LOS E	20.7	147.6	0.97	0.83	1.00	19.4
East: Warringah Road (E)														
4	L2	378	2.4	378	2.4	* 0.851	50.7	LOS D	48.3	349.0	0.97	0.95	0.99	33.2
5	T1	1793	5.3	1793	5.3	* 0.851	43.8	LOS D	53.1	388.7	0.95	0.89	0.97	46.2
6	R2	249	0.4	249	0.4	0.433	74.2	LOS F	9.0	62.9	0.96	0.79	0.96	26.7
Approach		2420	4.3	2420	4.3	0.851	48.0	LOS D	53.1	388.7	0.96	0.89	0.98	42.7
North: Allambie Road (N)														
7	L2	7	0.0	7	0.0	0.709	82.2	LOS F	11.9	85.4	1.00	0.86	1.06	25.7
8	T1	312	2.8	312	2.8	* 0.709	76.5	LOS F	12.8	91.4	1.00	0.86	1.05	4.6
Approach		319	2.7	319	2.7	0.709	76.6	LOS F	12.8	91.4	1.00	0.86	1.05	5.3
West: Warringah Road (W)														
10	L2	100	1.9	100	1.9	0.837	28.6	LOS C	32.4	236.5	0.75	0.72	0.77	45.6
11	T1	1706	5.7	1706	5.7	0.837	22.0	LOS B	33.5	245.8	0.75	0.70	0.77	55.7
12	R2	488	3.7	488	3.7	* 0.866	75.7	LOS F	19.3	139.4	1.00	0.88	1.11	25.8
Approach		2294	5.1	2294	5.1	0.866	33.7	LOS C	33.5	245.8	0.80	0.74	0.84	48.4
All Vehicles		5574	4.4	5574	4.4	0.866	45.9	LOS D	53.1	388.7	0.90	0.82	0.93	41.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	69.5	LOS F	0.2	0.2	0.93	0.93	261.2	230.0	0.88
North: Allambie Road (N)											
P3	Full	53	71.4	LOS F	0.2	0.2	0.95	0.95	263.1	230.0	0.87
West: Warringah Road (W)											
P4	Full	53	64.9	LOS F	0.2	0.2	0.90	0.90	254.6	227.6	0.89

All Pedestrians	158	68.6	LOS F	0.2	0.2	0.93	0.93	259.6	229.2	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2PM_FY_25 [ALL_ROD_25_PM_FYD_UPG-Peak Spread (Site Folder: PM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

3-4 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	138	11.3	138	11.3	0.196	8.2	LOS A	1.0	8.0	0.46	0.65	0.46	38.5
2	T1	352	2.5	352	2.5	0.605	7.0	LOS A	2.7	19.0	0.48	0.62	0.48	40.0
3	R2	55	3.5	55	3.5	0.605	10.3	LOS A	2.7	19.0	0.48	0.62	0.48	45.4
3u	U	1	0.0	1	0.0	0.605	11.8	LOS A	2.7	19.0	0.48	0.62	0.48	40.0
Approach		546	4.8	546	4.8	0.605	7.7	LOS A	2.7	19.0	0.47	0.63	0.48	40.7
East: Rodborough Road (E)														
4	L2	69	4.2	69	4.2	0.127	9.7	LOS A	0.7	5.2	0.69	0.74	0.69	37.2
5	T1	24	8.1	24	8.1	0.421	7.9	LOS A	1.8	13.1	0.72	0.79	0.72	36.8
6	R2	195	2.5	195	2.5	0.421	10.9	LOS A	1.8	13.1	0.72	0.79	0.72	36.8
6u	U	1	0.0	1	0.0	0.421	12.4	LOS A	1.8	13.1	0.72	0.79	0.72	42.8
Approach		289	3.4	289	3.4	0.421	10.4	LOS A	1.8	13.1	0.71	0.78	0.71	36.9
North: Allambie Road (N)														
7	L2	191	4.6	191	4.6	0.401	5.3	LOS A	3.2	23.1	0.21	0.49	0.21	43.3
8	T1	814	2.1	814	2.1	0.401	5.3	LOS A	3.2	23.1	0.22	0.49	0.22	32.8
9	R2	64	12.2	64	12.2	0.401	8.6	LOS A	3.1	22.1	0.22	0.50	0.22	32.5
9u	U	9	0.0	9	0.0	0.401	10.2	LOS A	3.1	22.1	0.22	0.50	0.22	32.5
Approach		1077	3.1	1077	3.1	0.401	5.5	LOS A	3.2	23.1	0.21	0.49	0.21	37.0
West: Rodborough Road (W)														
10	L2	32	3.0	32	3.0	0.078	5.6	LOS A	0.3	2.2	0.63	0.66	0.63	17.4
11	T1	2	0.0	2	0.0	0.078	6.0	LOS A	0.3	2.2	0.63	0.66	0.63	42.6
12	R2	5	0.0	5	0.0	0.078	8.7	LOS A	0.3	2.2	0.63	0.66	0.63	17.4
12u	U	1	0.0	1	0.0	0.078	10.4	LOS A	0.3	2.2	0.63	0.66	0.63	17.4
Approach		41	2.4	41	2.4	0.078	6.2	LOS A	0.3	2.2	0.63	0.66	0.63	21.3
All Vehicles		1953	3.6	1953	3.6	0.605	6.9	LOS A	3.2	23.1	0.37	0.58	0.37	38.0

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

MOVEMENT SUMMARY

Site: 4PM_FY_25 [ALL_MOR_25_PM_FYD_UPG-Peak Spread (Site Folder: PM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 78 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	517	3.8	517	3.8	0.419	4.8	LOS A	6.8	49.0	0.41	0.39	0.41	51.4
6	R2	60	1.6	60	1.6	0.419	10.7	LOS A	6.8	49.0	0.45	0.45	0.45	38.5
Approach		577	3.5	577	3.5	0.419	5.4	LOS A	6.8	49.0	0.41	0.39	0.41	49.0
North: Mortain Avenue														
7	L2	32	0.0	32	0.0	0.344	39.4	LOS C	2.1	14.8	0.98	0.74	0.98	12.3
9	R2	23	0.0	23	0.0	* 0.344	39.7	LOS C	2.1	14.8	0.98	0.74	0.98	12.3
Approach		55	0.0	55	0.0	0.344	39.6	LOS C	2.1	14.8	0.98	0.74	0.98	12.3
West: Allambie Road (W)														
10	L2	42	2.3	42	2.3	0.117	8.5	LOS A	1.7	12.2	0.30	0.36	0.30	41.2
11	T1	767	2.4	767	2.4	* 0.468	4.3	LOS A	9.6	68.4	0.40	0.38	0.40	53.7
Approach		808	2.4	808	2.4	0.468	4.5	LOS A	9.6	68.4	0.40	0.38	0.40	52.6
All Vehicles		1441	2.8	1441	2.8	0.468	6.2	LOS A	9.6	68.4	0.43	0.40	0.43	48.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	210.9	213.1	1.01
North: Mortain Avenue											
P3	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	207.0	208.4	1.01
West: Allambie Road (W)											
P4	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	211.5	213.8	1.01
All Pedestrians		158	33.3	LOS D	0.1	0.1	0.93	0.93	209.8	211.8	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 5PM_FY_25 [ALL_FLE_25_PM_FYD_UPG-Peak Spread (Site Folder: PM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 85 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	548	3.5	548	3.5	0.328	3.9	LOS A	5.6	40.4	0.34	0.31	0.34	31.2
6	R2	23	4.2	23	4.2	* 0.328	7.5	LOS A	5.6	40.4	0.37	0.34	0.37	33.5
Approach		571	3.6	571	3.6	0.328	4.1	LOS A	5.6	40.4	0.34	0.31	0.34	31.3
North: Flers Street														
7	L2	18	0.0	18	0.0	0.221	43.0	LOS D	1.5	10.9	0.95	0.73	0.95	14.0
9	R2	19	10.3	19	10.3	* 0.221	43.1	LOS D	1.5	10.9	0.95	0.73	0.95	7.7
Approach		37	5.2	37	5.2	0.221	43.1	LOS D	1.5	10.9	0.95	0.73	0.95	11.1
West: Allambie Road (W)														
10	L2	24	0.0	24	0.0	0.162	6.5	LOS A	2.6	18.2	0.30	0.29	0.30	37.8
11	T1	789	2.2	789	2.2	0.403	4.1	LOS A	8.5	60.8	0.36	0.33	0.36	37.5
Approach		812	2.2	812	2.2	0.403	4.2	LOS A	8.5	60.8	0.36	0.33	0.36	37.5
All Vehicles		1421	2.8	1421	2.8	0.403	5.2	LOS A	8.5	60.8	0.37	0.33	0.37	35.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	215.2	214.1	0.99
West: Allambie Road (W)											
P4	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	214.3	213.0	0.99
All Pedestrians		105	36.8	LOS D	0.1	0.1	0.93	0.93	214.8	213.6	0.99

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3PM_FYC_25 [ALL_AQU_25_PM_FYD_UPG-Peak Spread (Site Folder: PM_FYD_Opening_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_Opening_UPG (Network Folder: FYD_2025_School Opening-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 90 seconds (Network Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	174	2.4	174	2.4	0.195	7.8	LOS A	2.7	19.5	0.38	0.54	0.38	44.3
6	R2	433	4.4	433	4.4	* 0.624	26.5	LOS B	13.5	97.9	0.86	0.91	0.86	34.6
Approach		606	3.8	606	3.8	0.624	21.2	LOS B	13.5	97.9	0.73	0.81	0.73	38.3
North: Allambie Road (N)														
7	L2	621	2.5	621	2.5	0.662	22.5	LOS B	19.9	142.2	0.79	0.82	0.79	24.2
9	R2	199	2.1	199	2.1	* 0.765	49.9	LOS D	9.2	65.6	1.00	0.89	1.18	25.5
Approach		820	2.4	820	2.4	0.765	29.1	LOS C	19.9	142.2	0.84	0.84	0.88	24.9
West: Aquatic Drive														
10	L2	377	3.9	377	3.9	* 0.848	40.8	LOS C	16.5	119.7	0.88	0.94	1.13	25.7
11	T1	215	2.5	215	2.5	0.648	24.2	LOS B	7.1	50.9	0.78	0.67	0.81	32.0
Approach		592	3.4	592	3.4	0.848	34.8	LOS C	16.5	119.7	0.85	0.84	1.01	27.7
All Vehicles		2018	3.1	2018	3.1	0.848	28.4	LOS B	19.9	142.2	0.81	0.83	0.87	30.1

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	421	39.9	LOS D	1.0	1.0	0.95	0.95	202.7	211.6	1.04
North: Allambie Road (N)											
P3	Full	105	39.4	LOS D	0.3	0.3	0.94	0.94	201.7	211.0	1.05
P3B	Slip/ Bypass	421	39.9	LOS D	1.0	1.0	0.95	0.95	196.8	204.0	1.04
West: Aquatic Drive											
P4	Full	105	39.4	LOS D	0.3	0.3	0.94	0.94	204.5	214.7	1.05
All Pedestrians		1053	39.8	LOS D	1.0	1.0	0.95	0.95	200.4	208.8	1.04

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1AM_FY [ALL_WAR_31_AM_FY-Peak Spread (Site Folder: AM_FY-Peak Spread)]

Network: N101 [AM_FY (Network Folder: AM_FY-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 160 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	290	2.5	290	2.5	0.898	82.6	LOS F	22.8	163.2	1.00	1.03	1.25	7.8
3	R2	203	2.5	203	2.5	0.921	103.2	LOS F	9.1	65.1	1.00	0.99	1.46	21.9
Approach		493	2.5	493	2.5	0.921	91.1	LOS F	22.8	163.2	1.00	1.01	1.34	15.3
East: Warringah Road (E)														
4	L2	364	2.4	364	2.4	* 0.909	63.5	LOS E	58.7	424.2	1.00	1.01	1.11	29.2
5	T1	1843	5.1	1843	5.1	* 0.909	57.4	LOS E	62.0	453.0	0.99	0.99	1.10	41.9
6	R2	318	0.3	318	0.3	0.635	79.1	LOS F	12.0	84.2	1.00	0.81	1.00	25.7
Approach		2526	4.1	2526	4.1	0.909	61.0	LOS E	62.0	453.0	0.99	0.97	1.09	38.6
North: Allambie Road (N)														
7	L2	7	0.0	7	0.0	0.869	91.8	LOS F	13.5	96.7	1.00	0.99	1.28	23.9
8	T1	321	3.1	321	3.1	* 0.869	86.8	LOS F	14.4	103.2	1.00	0.99	1.27	4.1
Approach		328	3.0	328	3.0	0.869	86.9	LOS F	14.4	103.2	1.00	0.99	1.27	4.7
West: Warringah Road (W)														
10	L2	104	1.9	104	1.9	0.861	18.4	LOS B	21.5	156.8	0.73	0.71	0.76	53.0
11	T1	1866	5.3	1866	5.3	* 0.861	11.8	LOS A	22.3	163.3	0.73	0.69	0.76	61.4
12	R2	653	3.7	653	3.7	0.740	56.7	LOS E	22.1	159.6	0.92	0.84	0.93	30.6
Approach		2623	4.8	2623	4.8	0.861	23.2	LOS B	22.3	163.3	0.78	0.73	0.80	53.3
All Vehicles		5970	4.2	5970	4.2	0.921	48.3	LOS D	62.0	453.0	0.90	0.87	0.99	40.5

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	69.5	LOS F	0.2	0.2	0.93	0.93	261.2	230.0	0.88
North: Allambie Road (N)											
P3	Full	53	71.4	LOS F	0.2	0.2	0.95	0.95	263.1	230.0	0.87
West: Warringah Road (W)											
P4	Full	53	64.9	LOS F	0.2	0.2	0.90	0.90	254.6	227.6	0.89
All Pedestrians		158	68.6	LOS F	0.2	0.2	0.93	0.93	259.6	229.2	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2AM_FY [ALL_ROD_31_AM_FY-Peak Spread (Site Folder: AM_FY-Peak Spread)]

Network: N101 [AM_FY (Network Folder: AM_FY-Peak Spread)]

830-930 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	270	5.1	270	5.1	0.315	7.6	LOS A	2.3	16.8	0.66	0.68	0.66	41.9
2	T1	293	3.1	293	3.1	0.688	8.8	LOS A	4.1	29.1	0.68	0.74	0.78	36.5
3	R2	141	0.7	141	0.7	0.688	12.0	LOS A	4.1	29.1	0.68	0.74	0.78	43.6
3u	U	2	0.0	2	0.0	0.688	13.6	LOS A	4.1	29.1	0.68	0.74	0.78	36.5
Approach		706	3.4	706	3.4	0.688	9.0	LOS A	4.1	29.1	0.67	0.71	0.73	40.7
East: Rodborough Road (E)														
4	L2	139	0.7	139	0.7	0.250	16.7	LOS B	2.7	18.8	1.00	0.76	1.00	32.8
5	T1	43	16.3	43	16.3	0.580	19.2	LOS B	4.3	31.7	1.00	0.87	1.15	32.6
6	R2	157	2.5	157	2.5	0.580	21.7	LOS B	4.3	31.7	1.00	0.87	1.15	29.0
6u	U	1	0.0	1	0.0	0.580	23.1	LOS B	4.3	31.7	1.00	0.87	1.15	36.9
Approach		340	3.5	340	3.5	0.580	19.4	LOS B	4.3	31.7	1.00	0.82	1.09	31.0
North: Allambie Road (N)														
7	L2	543	1.6	543	1.6	0.510	6.5	LOS A	4.0	28.6	0.40	0.59	0.40	42.4
8	T1	720	4.7	720	4.7	0.657	6.4	LOS A	6.6	48.2	0.44	0.56	0.44	30.2
9	R2	92	4.3	92	4.3	0.657	9.6	LOS A	6.6	48.2	0.44	0.56	0.44	38.9
9u	U	6	0.0	6	0.0	0.657	11.2	LOS A	6.6	48.2	0.44	0.56	0.44	30.2
Approach		1361	3.4	1361	3.4	0.657	6.7	LOS A	6.6	48.2	0.42	0.57	0.42	38.5
West: Rodborough Road (W)														
10	L2	11	9.1	11	9.1	0.046	7.8	LOS A	0.2	1.2	0.62	0.69	0.62	31.4
11	T1	4	0.0	4	0.0	0.046	7.7	LOS A	0.2	1.2	0.62	0.69	0.62	42.8
12	R2	8	0.0	8	0.0	0.046	10.9	LOS A	0.2	1.2	0.62	0.69	0.62	31.4
12u	U	1	0.0	1	0.0	0.046	12.5	LOS A	0.2	1.2	0.62	0.69	0.62	39.9
Approach		24	4.1	24	4.1	0.046	9.0	LOS A	0.2	1.2	0.62	0.69	0.62	35.5
All Vehicles		2430	3.4	2430	3.4	0.688	9.2	LOS A	6.6	48.2	0.58	0.65	0.61	37.5

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

MOVEMENT SUMMARY

Site: 3AM_FY [ALL_AQU_31_AM_FY-Peak Spread (Site Folder: AM_FY-Peak Spread)]

Network: N101 [AM_FY (Network Folder: AM_FY-Peak Spread)]

830-930 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	113	2.6	113	2.6	0.618	7.3	LOS A	6.3	45.6	0.74	0.70	0.74	44.0
6	R2	524	3.2	524	3.2	0.618	10.6	LOS A	6.3	45.6	0.74	0.70	0.74	47.1
6u	U	1	0.0	1	0.0	0.618	12.2	LOS A	6.3	45.6	0.74	0.70	0.74	47.1
Approach		639	3.1	639	3.1	0.618	10.0	LOS A	6.3	45.6	0.74	0.70	0.74	46.1
North: Allambie Road (N)														
7	L2	682	4.4	682	4.4	0.884	10.5	LOS A	15.9	115.7	0.97	0.79	1.12	34.1
9	R2	158	3.8	158	3.8	0.884	13.8	LOS A	15.9	115.7	0.97	0.79	1.12	38.8
9u	U	4	0.0	4	0.0	0.884	15.4	LOS B	15.9	115.7	0.97	0.79	1.12	34.1
Approach		844	4.2	844	4.2	0.884	11.2	LOS A	15.9	115.7	0.97	0.79	1.12	36.0
West: Aquatic Drive														
10	L2	205	3.4	205	3.4	0.436	9.1	LOS A	3.4	24.6	0.84	0.81	0.84	41.4
11	T1	151	3.3	151	3.3	0.436	8.4	LOS A	3.4	24.6	0.86	0.82	0.86	41.7
12u	U	1	0.0	1	0.0	0.436	13.1	LOS A	3.4	24.6	0.86	0.82	0.86	41.9
Approach		357	3.3	357	3.3	0.436	8.8	LOS A	3.4	24.6	0.85	0.81	0.85	41.5
All Vehicles		1839	3.7	1839	3.7	0.884	10.3	LOS A	15.9	115.7	0.87	0.76	0.94	41.5

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

MOVEMENT SUMMARY

Site: 4AM_FY [ALL_MOR_31_AM_FY-Peak Spread (Site Folder: AM_FY-Peak Spread)]

Network: N101 [AM_FY (Network Folder: AM_FY-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 63 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	585	3.1	585	3.1	0.495	6.7	LOS A	8.2	58.6	0.54	0.49	0.54	49.0
6	R2	51	0.0	51	0.0	0.495	12.6	LOS A	8.2	58.6	0.59	0.55	0.59	37.6
Approach		636	2.8	636	2.8	0.495	7.2	LOS A	8.2	58.6	0.54	0.50	0.54	47.3
North: Mortain Avenue														
7	L2	64	0.0	64	0.0	0.514	28.8	LOS C	4.1	28.5	0.96	0.78	0.96	14.2
9	R2	73	0.0	73	0.0	* 0.514	29.1	LOS C	4.1	28.5	0.96	0.78	0.96	14.2
Approach		136	0.0	136	0.0	0.514	29.0	LOS C	4.1	28.5	0.96	0.78	0.96	14.2
West: Allambie Road (W)														
10	L2	22	9.1	22	9.1	0.127	10.1	LOS A	1.8	13.0	0.40	0.38	0.40	40.8
11	T1	738	4.2	738	4.2	* 0.508	6.2	LOS A	9.7	70.7	0.53	0.48	0.53	51.4
Approach		759	4.3	759	4.3	0.508	6.3	LOS A	9.7	70.7	0.53	0.48	0.53	50.9
All Vehicles		1531	3.3	1531	3.3	0.514	8.7	LOS A	9.7	70.7	0.57	0.51	0.57	44.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	203.4	213.1	1.05
North: Mortain Avenue											
P3	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	199.5	208.4	1.04
West: Allambie Road (W)											
P4	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	204.0	213.8	1.05
All Pedestrians		158	25.8	LOS C	0.1	0.1	0.91	0.91	202.3	211.8	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: S:\Projects\SCT_00213_The Forest HS\3. Technical Work Area\1. Network Optimisation\SCT_00213_TFHS_SSDA Traffic Modelling_v2.0.sip9

MOVEMENT SUMMARY

Site: 5AM_FY [ALL_FLE_31_AM_FY-Peak Spread (Site Folder: AM_FY-Peak Spread)]

Network: N101 [AM_FY (Network Folder: AM_FY-Peak Spread)]

830-930 AM

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 62 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	648	2.6	648	2.6	0.399	4.0	LOS A	5.8	41.6	0.41	0.37	0.41	31.2
6	R2	25	0.0	25	0.0	* 0.399	7.4	LOS A	5.8	41.6	0.43	0.40	0.43	33.7
Approach		673	2.5	673	2.5	0.399	4.1	LOS A	5.8	41.6	0.41	0.37	0.41	31.3
North: Flers Street														
7	L2	15	0.0	15	0.0	0.192	34.5	LOS C	0.8	6.1	0.96	0.70	0.96	16.0
9	R2	13	7.8	13	7.8	* 0.192	34.6	LOS C	0.8	6.1	0.96	0.70	0.96	9.2
Approach		28	3.6	28	3.6	0.192	34.5	LOS C	0.8	6.1	0.96	0.70	0.96	13.3
West: Allambie Road (W)														
10	L2	19	5.2	19	5.2	0.168	6.6	LOS A	2.1	15.5	0.35	0.32	0.35	37.8
11	T1	767	3.6	767	3.6	0.417	4.1	LOS A	7.1	51.2	0.42	0.38	0.42	37.5
Approach		786	3.7	786	3.7	0.417	4.2	LOS A	7.1	51.2	0.42	0.37	0.42	37.5
All Vehicles		1486	3.1	1486	3.1	0.417	4.7	LOS A	7.1	51.2	0.42	0.38	0.42	35.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	203.8	214.1	1.05
West: Allambie Road (W)											
P4	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	202.8	213.0	1.05
All Pedestrians		105	25.3	LOS C	0.1	0.1	0.91	0.91	203.3	213.6	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1AM_FYD [ALL_WAR_31_AM_FYD-Peak Spread (Site Folder: AM_FYD-Peak Spread)]

Network: N101 [AM_FYD (Network Folder: AM_FYD-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 160 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	361	2.0	361	2.0	* 1.033	139.3	LOS F	22.9	163.2	1.00	1.32	1.62	4.8
3	R2	242	2.1	241	2.1	0.983	119.9	LOS F	11.8	84.3	1.00	1.06	1.61	19.8
Approach		603	2.0	603	2.0	1.033	131.5	LOS F	22.9	163.2	1.00	1.22	1.61	11.2
East: Warringah Road (E)														
4	L2	403	2.2	403	2.2	0.994	103.2	LOS F	76.9	554.3	1.00	1.15	1.34	21.1
5	T1	1843	5.1	1843	5.1	* 0.994	96.8	LOS F	80.2	585.9	1.00	1.17	1.34	32.9
6	R2	296	0.3	296	0.3	0.695	83.1	LOS F	11.5	80.9	1.00	0.82	1.05	24.9
Approach		2542	4.1	2542	4.1	0.994	96.2	LOS F	80.2	585.9	1.00	1.13	1.31	30.6
North: Allambie Road (N)														
7	L2	7	0.0	7	0.0	1.006	129.9	LOS F	21.6	155.5	1.00	1.24	1.60	18.7
8	T1	310	3.2	310	3.2	1.006	129.1	LOS F	21.6	155.5	1.00	1.23	1.65	2.8
Approach		316	3.1	316	3.1	1.006	129.2	LOS F	21.6	155.5	1.00	1.23	1.65	3.2
West: Warringah Road (W)														
10	L2	104	1.9	104	1.9	0.861	18.6	LOS B	22.7	165.2	0.73	0.71	0.76	52.8
11	T1	1866	5.3	1866	5.3	* 0.861	12.0	LOS A	23.5	172.1	0.73	0.69	0.76	61.3
12	R2	691	3.5	691	3.5	0.989	90.5	LOS F	43.5	313.9	1.00	0.99	1.32	22.9
Approach		2662	4.7	2662	4.7	0.989	32.7	LOS C	43.5	313.9	0.80	0.77	0.90	48.5
All Vehicles		6123	4.1	6123	4.1	1.033	73.8	LOS F	80.2	585.9	0.91	0.98	1.18	32.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance											
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	69.5	LOS F	0.2	0.2	0.93	0.93	261.2	230.0	0.88
North: Allambie Road (N)											
P3	Full	53	71.4	LOS F	0.2	0.2	0.95	0.95	263.1	230.0	0.87
West: Warringah Road (W)											
P4	Full	53	64.9	LOS F	0.2	0.2	0.90	0.90	254.6	227.6	0.89
All Pedestrians		158	68.6	LOS F	0.2	0.2	0.93	0.93	259.6	229.2	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2AM_FYD [ALL_ROD_31_AM_FYD-Peak Spread (Site Folder: AM_FYD-Peak Spread)]

Network: N101 [AM_FYD (Network Folder: AM_FYD-Peak Spread)]

830-930 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	303	4.6	303	4.6	0.363	7.7	LOS A	2.6	18.8	0.67	0.70	0.67	41.8
2	T1	403	2.2	403	2.2	0.887	18.3	LOS B	18.0	127.9	0.72	0.98	1.26	26.6
3	R2	141	0.7	141	0.7	0.887	21.5	LOS B	18.0	127.9	0.72	0.98	1.26	37.0
3u	U	2	0.0	2	0.0	0.887	23.1	LOS B	18.0	127.9	0.72	0.98	1.26	26.6
Approach		849	2.8	849	2.8	0.887	15.1	LOS B	18.0	127.9	0.70	0.88	1.05	34.1
East: Rodborough Road (E)														
4	L2	139	0.7	139	0.7	0.338	13.2	LOS A	2.3	16.0	0.92	0.95	0.92	35.6
5	T1	43	16.3	43	16.3	0.768	27.2	LOS B	4.6	33.7	0.96	1.27	1.61	28.9
6	R2	157	2.5	157	2.5	0.768	29.6	LOS C	4.6	33.7	0.96	1.27	1.61	25.1
6u	U	1	0.0	1	0.0	0.768	31.0	LOS C	4.6	33.7	0.96	1.27	1.61	33.4
Approach		340	3.5	340	3.5	0.768	22.6	LOS B	4.6	33.7	0.94	1.14	1.33	29.0
North: Allambie Road (N)														
7	L2	543	1.6	543	1.6	0.518	6.6	LOS A	4.1	29.4	0.40	0.59	0.40	42.4
8	T1	786	4.3	786	4.3	1.122	124.5	LOS F	34.3	248.5	1.00	2.27	4.22	3.3
9	R2	92	4.3	92	4.3	1.122	127.7	LOS F	34.3	248.5	1.00	2.27	4.22	6.8
9u	U	6	0.0	6	0.0	1.122	129.2	LOS F	34.3	248.5	1.00	2.27	4.22	3.3
Approach		1427	3.3	1427	3.3	1.122	79.9	LOS F	34.3	248.5	0.77	1.63	2.77	9.9
West: Rodborough Road (W)														
10	L2	11	9.1	11	9.1	0.060	8.7	LOS A	0.5	3.5	0.69	0.73	0.69	30.1
11	T1	4	0.0	4	0.0	0.060	8.5	LOS A	0.5	3.5	0.69	0.73	0.69	42.0
12	R2	8	0.0	8	0.0	0.060	11.7	LOS A	0.5	3.5	0.69	0.73	0.69	30.1
12u	U	1	0.0	1	0.0	0.060	13.3	LOS A	0.5	3.5	0.69	0.73	0.69	38.8
Approach		24	4.1	24	4.1	0.060	9.8	LOS A	0.5	3.5	0.69	0.73	0.69	34.3
All Vehicles		2639	3.2	2639	3.2	1.122	51.0	LOS D	34.3	248.5	0.77	1.32	2.01	15.9

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

MOVEMENT SUMMARY

Site: 3AM_FYD [ALL_AQU_31_AM_FYD-Peak Spread (Site Folder: AM_FYD-Peak Spread)]

Network: N101 [AM_FYD (Network Folder: AM_FYD-Peak Spread)]

830-930 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	267	1.1	267	1.1	1.098	118.4	LOS F	61.9	443.5	1.00	2.81	5.43	20.7
6	R2	436	3.9	436	3.9	1.098	121.8	LOS F	61.9	443.5	1.00	2.81	5.43	14.1
6u	U	1	0.0	1	0.0	1.098	123.2	LOS F	61.9	443.5	1.00	2.81	5.43	14.1
Approach		705	2.8	705	2.8	1.098	120.5	LOS F	61.9	443.5	1.00	2.81	5.43	17.0
North: Allambie Road (N)														
7	L2	594	5.0	562	5.0	1.082	93.3	LOS F	64.6	467.5	1.00	2.44	4.73	8.1
9	R2	312	1.9	296	1.9	1.082	96.5	LOS F	64.6	467.5	1.00	2.44	4.73	18.6
9u	U	4	0.0	4	0.0	1.082	98.1	LOS F	64.6	467.5	1.00	2.44	4.73	8.1
Approach		910	3.9	862 N1	3.9	1.082	94.4	LOS F	64.6	467.5	1.00	2.44	4.73	12.7
West: Aquatic Drive														
10	L2	436	1.6	436	1.6	1.048	72.3	LOS F	46.5	329.8	0.96	2.41	3.82	18.7
11	T1	305	1.6	305	1.6	1.048	83.3	LOS F	46.5	329.8	1.00	2.71	4.38	17.0
12u	U	1	0.0	1	0.0	1.048	88.0	LOS F	46.5	329.8	1.00	2.71	4.38	24.1
Approach		742	1.6	742	1.6	1.048	76.8	LOS F	46.5	329.8	0.97	2.53	4.05	18.0
All Vehicles		2357	2.9	2309 N1	2.9	1.098	96.7	LOS F	64.6	467.5	0.99	2.58	4.73	15.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 4AM_FYD [ALL_MOR_31_AM_FYD-Peak Spread (Site Folder: AM_FYD-Peak Spread)]

Network: N101 [AM_FYD (Network Folder: AM_FYD-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 63 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	631	2.8	631	2.8	* 0.539	7.9	LOS A	9.7	69.2	0.59	0.53	0.59	47.6
6	R2	51	0.0	51	0.0	0.539	14.0	LOS A	9.7	69.2	0.65	0.60	0.65	36.9
Approach		682	2.6	682	2.6	0.539	8.4	LOS A	9.7	69.2	0.59	0.54	0.59	46.1
North: Mortain Avenue														
7	L2	64	0.0	64	0.0	* 0.524	27.9	LOS B	4.6	32.2	0.96	0.78	0.96	14.4
9	R2	92	0.0	92	0.0	0.524	28.2	LOS B	4.6	32.2	0.96	0.78	0.96	14.4
Approach		156	0.0	156	0.0	0.524	28.1	LOS B	4.6	32.2	0.96	0.78	0.96	14.4
West: Allambie Road (W)														
10	L2	42	4.8	38	4.6	0.129	10.5	LOS A	1.8	13.2	0.42	0.43	0.42	40.2
11	T1	784	3.9	712	3.8	0.514	6.7	LOS A	10.0	72.4	0.56	0.51	0.56	50.6
Approach		825	4.0	750 N1	3.8	0.514	6.9	LOS A	10.0	72.4	0.55	0.50	0.55	49.7
All Vehicles		1663	3.0	1587 N1	3.2	0.539	9.6	LOS A	10.0	72.4	0.61	0.55	0.61	43.2

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	203.4	213.1	1.05
North: Mortain Avenue											
P3	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	199.5	208.4	1.04
West: Allambie Road (W)											
P4	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	204.0	213.8	1.05
All Pedestrians		158	25.8	LOS C	0.1	0.1	0.91	0.91	202.3	211.8	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 5AM_FYD [ALL_FLE_31_AM_FYD-Peak Spread (Site Folder: AM_FYD-Peak Spread)]

Network: N101 [AM_FYD (Network Folder: AM_FYD-Peak Spread)]

830-930 AM

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 62 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	685	2.5	685	2.5	0.418	4.1	LOS A	6.3	44.8	0.41	0.37	0.41	31.1
6	R2	25	0.0	25	0.0	* 0.418	7.5	LOS A	6.3	44.8	0.44	0.41	0.44	33.6
Approach		709	2.4	709	2.4	0.418	4.2	LOS A	6.3	44.8	0.41	0.37	0.41	31.2
North: Flers Street														
7	L2	15	0.0	15	0.0	0.241	33.7	LOS C	1.1	8.0	0.96	0.72	0.96	16.2
9	R2	22	4.5	22	4.5	* 0.241	33.8	LOS C	1.1	8.0	0.96	0.72	0.96	9.3
Approach		37	2.7	37	2.7	0.241	33.8	LOS C	1.1	8.0	0.96	0.72	0.96	12.5
West: Allambie Road (W)														
10	L2	28	3.5	26	3.4	0.162	6.6	LOS A	2.1	14.9	0.35	0.33	0.35	37.8
11	T1	804	3.5	736	3.3	0.404	4.1	LOS A	6.8	48.8	0.42	0.37	0.42	37.5
Approach		832	3.5	762 N1	3.3	0.404	4.2	LOS A	6.8	48.8	0.41	0.37	0.41	37.5
All Vehicles		1579	3.0	1508 N1	3.1	0.418	4.9	LOS A	6.8	48.8	0.43	0.38	0.43	35.5

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	203.8	214.1	1.05
West: Allambie Road (W)											
P4	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	202.8	213.0	1.05
All Pedestrians		105	25.3	LOS C	0.1	0.1	0.91	0.91	203.3	213.6	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: S:\Projects\SCT_00213_The Forest HS\3. Technical Work Area\1. Network Optimisation\SCT_00213_TFHS_SSDA Traffic Modelling_v2.0.sip9

MOVEMENT SUMMARY

Site: 7AM_Ped [ROD_31_AM_FYD_UPG-Peak Spread (Site Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_UPG (Network Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Rodborough Road (E)														
2	T1	439	5.8	439	5.8	0.717	6.3	LOS A	9.5	69.6	0.54	0.56	0.62	48.0
Approach		439	5.8	439	5.8	0.717	6.3	LOS A	9.5	69.6	0.54	0.56	0.62	48.0
West: Rodborough Road (W)														
8	T1	23	4.5	23	4.5	0.062	4.9	LOS A	0.1	1.0	0.19	0.51	0.19	51.8
Approach		23	4.5	23	4.5	0.062	4.9	LOS A	0.1	1.0	0.19	0.51	0.19	51.8
All Vehicles		462	5.7	462	5.7	0.717	6.2	NA	9.5	69.6	0.52	0.56	0.60	48.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1AM_FYD [ALL_WAR_31_AM_FYD_UPG-Peak Spread (Site Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_UPG (Network Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 160 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	361	2.0	361	2.0	0.906	78.4	LOS F	22.9	163.2	1.00	1.05	1.23	8.1
3	R2	242	2.1	242	2.1	0.492	76.8	LOS F	8.9	63.7	0.98	0.79	0.98	26.4
Approach		603	2.0	603	2.0	0.906	77.8	LOS F	22.9	163.2	0.99	0.95	1.13	17.0
East: Warringah Road (E)														
4	L2	403	2.2	403	2.2	* 0.962	84.5	LOS F	67.7	488.4	1.00	1.08	1.24	24.2
5	T1	1843	5.1	1843	5.1	0.962	77.6	LOS F	73.8	539.2	1.00	1.09	1.23	36.7
6	R2	296	0.3	296	0.3	0.407	68.7	LOS E	10.2	71.8	0.93	0.80	0.93	28.0
Approach		2542	4.1	2542	4.1	0.962	77.7	LOS F	73.8	539.2	0.99	1.06	1.20	34.3
North: Allambie Road (N)														
7	L2	7	0.0	7	0.0	0.956	113.1	LOS F	14.5	104.1	1.00	1.13	1.50	20.7
8	T1	310	3.2	310	3.2	* 0.956	106.0	LOS F	15.3	110.2	1.00	1.12	1.49	3.4
Approach		316	3.1	316	3.1	0.956	106.2	LOS F	15.3	110.2	1.00	1.12	1.49	3.9
West: Warringah Road (W)														
10	L2	104	1.9	104	1.9	0.996	71.4	LOS F	63.0	459.2	1.00	1.11	1.27	28.9
11	T1	1866	5.3	1866	5.3	* 0.996	64.5	LOS E	65.3	477.7	1.00	1.12	1.27	40.0
12	R2	691	3.5	691	3.5	* 0.972	87.7	LOS F	31.3	226.0	1.00	0.96	1.27	23.4
Approach		2662	4.7	2662	4.7	0.996	70.8	LOS F	65.3	477.7	1.00	1.08	1.27	35.7
All Vehicles		6123	4.1	6123	4.1	0.996	76.1	LOS F	73.8	539.2	1.00	1.06	1.24	32.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	69.5	LOS F	0.2	0.2	0.93	0.93	261.2	230.0	0.88
North: Allambie Road (N)											
P3	Full	53	71.4	LOS F	0.2	0.2	0.95	0.95	263.1	230.0	0.87
West: Warringah Road (W)											
P4	Full	53	64.9	LOS F	0.2	0.2	0.90	0.90	254.6	227.6	0.89
All Pedestrians		158	68.6	LOS F	0.2	0.2	0.93	0.93	259.6	229.2	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2AM_FYD [ALL_ROD_31_AM_FYD_UPG-Peak Spread (Site Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_UPG (Network Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

830-930 AM
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	303	4.6	303	4.6	0.714	10.9	LOS A	2.9	21.3	0.50	0.74	0.64	34.2
2	T1	403	2.2	403	2.2	0.876	15.2	LOS B	5.7	40.3	0.53	0.84	0.89	29.3
3	R2	141	0.7	141	0.7	0.876	18.3	LOS B	5.7	40.3	0.53	0.84	0.89	39.0
3u	U	2	0.0	2	0.0	0.876	20.0	LOS B	5.7	40.3	0.53	0.84	0.89	29.3
Approach		849	2.8	849	2.8	0.876	14.2	LOS A	5.7	40.3	0.52	0.81	0.80	33.4
East: Rodborough Road (E)														
4	L2	139	0.7	139	0.7	0.220	9.1	LOS A	1.4	9.9	0.76	0.78	0.76	37.8
5	T1	43	16.3	43	16.3	0.538	11.3	LOS A	3.5	25.7	0.79	0.92	0.94	34.3
6	R2	157	2.5	157	2.5	0.538	14.0	LOS A	3.5	25.7	0.79	0.92	0.94	34.3
6u	U	1	0.0	1	0.0	0.538	15.4	LOS B	3.5	25.7	0.79	0.92	0.94	41.0
Approach		340	3.5	340	3.5	0.538	11.7	LOS A	3.5	25.7	0.78	0.86	0.87	35.6
North: Allambie Road (N)														
7	L2	543	1.6	543	1.6	0.642	6.4	LOS A	6.7	47.9	0.41	0.55	0.41	42.5
8	T1	786	4.3	786	4.3	0.642	6.5	LOS A	6.7	47.9	0.40	0.56	0.40	30.4
9	R2	92	4.3	92	4.3	0.642	9.8	LOS A	5.0	36.3	0.40	0.56	0.40	30.2
9u	U	6	0.0	6	0.0	0.642	11.3	LOS A	5.0	36.3	0.40	0.56	0.40	30.2
Approach		1427	3.3	1427	3.3	0.642	6.7	LOS A	6.7	47.9	0.41	0.56	0.41	38.1
West: Rodborough Road (W)														
10	L2	11	9.1	11	9.1	0.050	6.6	LOS A	0.2	1.1	0.71	0.67	0.71	16.2
11	T1	4	0.0	4	0.0	0.050	6.8	LOS A	0.2	1.1	0.71	0.67	0.71	40.9
12	R2	8	0.0	8	0.0	0.050	9.6	LOS A	0.2	1.1	0.71	0.67	0.71	16.2
12u	U	1	0.0	1	0.0	0.050	11.3	LOS A	0.2	1.1	0.71	0.67	0.71	16.2
Approach		24	4.1	24	4.1	0.050	7.8	LOS A	0.2	1.1	0.71	0.67	0.71	26.3
All Vehicles		2639	3.2	2639	3.2	0.876	9.8	LOS A	6.7	47.9	0.49	0.68	0.60	35.9

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

MOVEMENT SUMMARY

Site: 3AM_FYDv [ALL_AQU_31_AM_FYD_UPG-Peak Spread (Site Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_UPG (Network Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	267	1.1	267	1.1	0.293	11.0	LOS A	7.1	50.2	0.40	0.56	0.40	42.9
6	R2	436	3.9	436	3.9	* 0.667	43.5	LOS D	23.6	170.3	0.90	0.96	0.90	27.3
Approach		703	2.8	703	2.8	0.667	31.1	LOS C	23.6	170.3	0.71	0.81	0.71	34.1
North: Allambie Road (N)														
7	L2	594	5.0	594	5.0	0.655	34.0	LOS C	31.3	228.7	0.79	0.83	0.79	18.6
9	R2	312	1.9	312	1.9	* 0.927	90.4	LOS F	26.8	190.8	1.00	0.98	1.32	19.0
Approach		906	3.9	906	3.9	0.927	53.4	LOS D	31.3	228.7	0.86	0.88	0.98	18.8
West: Aquatic Drive														
10	L2	436	1.6	436	1.6	* 0.921	67.6	LOS E	32.4	229.7	0.83	0.94	1.10	19.5
11	T1	305	1.6	305	1.6	0.864	50.3	LOS D	19.4	137.6	0.75	0.81	0.96	23.1
Approach		741	1.6	741	1.6	0.921	60.4	LOS E	32.4	229.7	0.80	0.89	1.04	20.9
All Vehicles		2350	2.9	2350	2.9	0.927	49.0	LOS D	32.4	229.7	0.80	0.86	0.92	23.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	421	70.4	LOS F	1.8	1.8	0.98	0.98	233.1	211.6	0.91
North: Allambie Road (N)											
P3	Full	105	69.4	LOS F	0.4	0.4	0.96	0.96	231.7	211.0	0.91
P3B	Slip/ Bypass	421	70.4	LOS F	1.8	1.8	0.98	0.98	227.3	204.0	0.90
West: Aquatic Drive											
P4	Full	105	69.4	LOS F	0.4	0.4	0.96	0.96	234.6	214.7	0.92
All Pedestrians		1053	70.2	LOS F	1.8	1.8	0.97	0.97	230.8	208.8	0.90

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 4AM_FYD [ALL_MOR_31_AM_FYD_UPG-Peak Spread (Site Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_UPG (Network Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

830-930 AM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 63 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	631	2.8	631	2.8	0.552	8.0	LOS A	9.7	69.5	0.59	0.54	0.59	47.5
6	R2	51	0.0	51	0.0	0.552	14.1	LOS A	9.7	69.5	0.66	0.60	0.66	36.8
Approach		682	2.6	682	2.6	0.552	8.4	LOS A	9.7	69.5	0.60	0.54	0.60	46.1
North: Mortain Avenue														
7	L2	64	0.0	64	0.0	* 0.524	27.9	LOS B	4.6	32.2	0.96	0.78	0.96	14.4
9	R2	92	0.0	92	0.0	0.524	28.2	LOS B	4.6	32.2	0.96	0.78	0.96	14.4
Approach		156	0.0	156	0.0	0.524	28.1	LOS B	4.6	32.2	0.96	0.78	0.96	14.4
West: Allambie Road (W)														
10	L2	42	4.8	42	4.8	0.142	10.5	LOS A	2.0	14.7	0.42	0.44	0.42	40.2
11	T1	784	3.9	784	3.9	* 0.566	7.0	LOS A	11.6	84.0	0.58	0.53	0.58	50.3
Approach		825	4.0	825	4.0	0.566	7.2	LOS A	11.6	84.0	0.58	0.53	0.58	49.4
All Vehicles		1663	3.0	1663	3.0	0.566	9.7	LOS A	11.6	84.0	0.62	0.56	0.62	43.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	203.4	213.1	1.05
North: Mortain Avenue											
P3	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	199.5	208.4	1.04
West: Allambie Road (W)											
P4	Full	53	25.8	LOS C	0.1	0.1	0.91	0.91	204.0	213.8	1.05
All Pedestrians		158	25.8	LOS C	0.1	0.1	0.91	0.91	202.3	211.8	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 5AM_FYD [ALL_FLE_31_AM_FYD_UPG-Peak Spread (Site Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [AM_FYD_UPG (Network Folder: AM_FYD_Infrastructure Upgrade-Peak Spread)]

830-930 AM

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 62 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	685	2.5	685	2.5	0.422	4.1	LOS A	6.3	44.8	0.41	0.37	0.41	31.1
6	R2	25	0.0	25	0.0	* 0.422	7.5	LOS A	6.3	44.8	0.45	0.41	0.45	33.5
Approach		709	2.4	709	2.4	0.422	4.2	LOS A	6.3	44.8	0.42	0.37	0.42	31.2
North: Flers Street														
7	L2	15	0.0	15	0.0	0.241	33.7	LOS C	1.1	8.0	0.96	0.72	0.96	16.2
9	R2	22	4.5	22	4.5	* 0.241	33.8	LOS C	1.1	8.0	0.96	0.72	0.96	9.3
Approach		37	2.7	37	2.7	0.241	33.8	LOS C	1.1	8.0	0.96	0.72	0.96	12.5
West: Allambie Road (W)														
10	L2	28	3.5	28	3.5	0.177	6.6	LOS A	2.3	16.5	0.35	0.34	0.35	37.7
11	T1	804	3.5	804	3.5	0.441	4.2	LOS A	7.7	55.5	0.43	0.39	0.43	37.5
Approach		832	3.5	832	3.5	0.441	4.3	LOS A	7.7	55.5	0.43	0.39	0.43	37.5
All Vehicles		1579	3.0	1579	3.0	0.441	5.0	LOS A	7.7	55.5	0.43	0.39	0.43	35.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	203.8	214.1	1.05
West: Allambie Road (W)											
P4	Full	53	25.3	LOS C	0.1	0.1	0.91	0.91	202.8	213.0	1.05
All Pedestrians		105	25.3	LOS C	0.1	0.1	0.91	0.91	203.3	213.6	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1PM_FY [ALL_WAR_31_PM_FY-Peak Spread (Site Folder: PM_FY-Peak Spread)]

Network: N101 [PM_FY (Network Folder: PM_FY-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 160 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	303	2.7	303	2.7	0.711	55.3	LOS D	20.6	147.8	0.93	0.82	0.93	10.8
3	R2	257	2.9	257	2.9	0.620	80.9	LOS F	9.9	70.7	1.00	0.80	1.00	25.6
Approach		560	2.8	560	2.8	0.711	67.1	LOS E	20.6	147.8	0.96	0.81	0.96	20.0
East: Warringah Road (E)														
4	L2	353	2.4	353	2.4	* 0.922	67.8	LOS E	61.4	442.9	1.00	1.03	1.13	28.1
5	T1	1937	4.6	1937	4.6	0.922	59.8	LOS E	66.7	485.3	0.99	1.01	1.12	41.2
6	R2	279	0.3	279	0.3	0.506	75.9	LOS F	10.2	71.7	0.98	0.80	0.98	26.3
Approach		2570	3.9	2570	3.9	0.922	62.6	LOS E	66.7	485.3	0.99	0.99	1.10	38.4
North: Allambie Road (N)														
7	L2	10	0.0	10	0.0	* 0.972	116.7	LOS F	22.0	156.3	1.00	1.19	1.49	20.3
8	T1	453	1.8	453	1.8	* 0.972	109.7	LOS F	23.3	165.6	1.00	1.18	1.48	3.3
Approach		463	1.7	463	1.7	0.972	109.8	LOS F	23.3	165.6	1.00	1.18	1.48	3.8
West: Warringah Road (W)														
10	L2	115	1.8	115	1.8	1.008	74.3	LOS F	70.1	511.1	1.00	1.14	1.30	28.1
11	T1	2003	5.4	2003	5.4	* 1.008	67.4	LOS E	72.6	531.6	1.00	1.15	1.30	39.2
12	R2	528	3.7	528	3.7	0.980	96.6	LOS F	24.4	175.9	1.00	0.96	1.32	22.0
Approach		2646	4.9	2646	4.9	1.008	73.5	LOS F	72.6	531.6	1.00	1.11	1.30	35.6
All Vehicles		6238	4.1	6238	4.1	1.008	71.1	LOS F	72.6	531.6	0.99	1.04	1.20	33.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	69.5	LOS F	0.2	0.2	0.93	0.93	261.2	230.0	0.88
North: Allambie Road (N)											
P3	Full	53	71.4	LOS F	0.2	0.2	0.95	0.95	263.1	230.0	0.87
West: Warringah Road (W)											
P4	Full	53	64.9	LOS F	0.2	0.2	0.90	0.90	254.6	227.6	0.89
All Pedestrians		158	68.6	LOS F	0.2	0.2	0.93	0.93	259.6	229.2	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2PM_FY [ALL_ROD_31_PM_FY-Peak Spread (Site Folder: PM_FY-Peak Spread)]

Network: N101 [PM_FY (Network Folder: PM_FY-Peak Spread)]

3-4 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	140	12.0	140	12.0	0.214	8.9	LOS A	1.4	10.8	0.69	0.72	0.69	39.8
2	T1	309	3.0	309	3.0	0.600	8.5	LOS A	3.4	24.6	0.74	0.75	0.80	37.6
3	R2	60	3.5	60	3.5	0.600	11.7	LOS A	3.4	24.6	0.74	0.75	0.80	44.2
3u	U	1	0.0	1	0.0	0.600	13.3	LOS A	3.4	24.6	0.74	0.75	0.80	37.6
Approach		511	5.5	511	5.5	0.600	9.0	LOS A	3.4	24.6	0.73	0.74	0.77	39.6
East: Rodborough Road (E)														
4	L2	75	4.2	75	4.2	0.172	22.0	LOS B	1.8	12.8	0.97	0.73	0.97	29.8
5	T1	76	2.8	76	2.8	0.631	20.7	LOS B	7.0	50.3	1.00	0.77	1.09	32.2
6	R2	212	2.5	212	2.5	0.631	23.9	LOS B	7.0	50.3	1.00	0.77	1.09	28.0
6u	U	1	0.0	1	0.0	0.631	25.3	LOS B	7.0	50.3	1.00	0.77	1.09	36.0
Approach		363	2.9	363	2.9	0.631	22.8	LOS B	7.0	50.3	0.99	0.76	1.06	29.4
North: Allambie Road (N)														
7	L2	230	4.1	230	4.1	0.336	5.6	LOS A	2.3	16.5	0.24	0.52	0.24	43.2
8	T1	996	1.8	996	1.8	0.766	5.9	LOS A	8.0	57.0	0.29	0.50	0.29	32.0
9	R2	73	11.5	73	11.5	0.766	8.8	LOS A	8.0	57.0	0.30	0.49	0.30	39.2
9u	U	9	0.0	9	0.0	0.766	10.4	LOS A	8.0	57.0	0.30	0.49	0.30	31.9
Approach		1310	2.8	1310	2.8	0.766	6.0	LOS A	8.0	57.0	0.28	0.50	0.28	36.7
West: Rodborough Road (W)														
10	L2	29	3.6	29	3.6	0.074	7.7	LOS A	0.2	1.8	0.61	0.70	0.61	32.2
11	T1	2	0.0	2	0.0	0.074	7.7	LOS A	0.2	1.8	0.61	0.70	0.61	43.4
12	R2	5	0.0	5	0.0	0.074	10.9	LOS A	0.2	1.8	0.61	0.70	0.61	32.2
12u	U	1	0.0	1	0.0	0.074	12.5	LOS A	0.2	1.8	0.61	0.70	0.61	40.9
Approach		37	2.9	37	2.9	0.074	8.2	LOS A	0.2	1.8	0.61	0.70	0.61	33.7
All Vehicles		2220	3.4	2220	3.4	0.766	9.5	LOS A	8.0	57.0	0.51	0.60	0.53	35.1

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

MOVEMENT SUMMARY

Site: 3PM_FY [ALL_AQU_31_PM_FY-Peak Spread (Site Folder: PM_FY-Peak Spread)]

Network: N101 [PM_FY (Network Folder: PM_FY-Peak Spread)]

3-4 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	75	5.6	75	5.6	0.549	6.3	LOS A	5.9	42.8	0.62	0.62	0.62	44.1
6	R2	558	3.8	558	3.8	0.549	9.6	LOS A	5.9	42.8	0.62	0.62	0.62	47.3
6u	U	3	0.0	3	0.0	0.549	11.1	LOS A	5.9	42.8	0.62	0.62	0.62	47.3
Approach		636	4.0	636	4.0	0.549	9.2	LOS A	5.9	42.8	0.62	0.62	0.62	46.6
North: Allambie Road (N)														
7	L2	900	1.9	900	1.9	0.994	24.5	LOS B	42.4	302.2	1.00	0.90	1.53	22.2
9	R2	101	4.2	101	4.2	0.994	27.8	LOS B	42.4	302.2	1.00	0.90	1.53	32.9
9u	U	1	0.0	1	0.0	0.994	29.4	LOS C	42.4	302.2	1.00	0.90	1.53	22.2
Approach		1002	2.1	1002	2.1	0.994	24.8	LOS B	42.4	302.2	1.00	0.90	1.53	24.4
West: Aquatic Drive														
10	L2	238	6.6	238	6.6	0.456	10.0	LOS A	3.6	26.7	0.85	0.85	0.89	40.7
11	T1	119	4.4	119	4.4	0.456	9.3	LOS A	3.6	26.7	0.87	0.87	0.91	41.0
12u	U	1	0.0	1	0.0	0.456	13.2	LOS A	3.6	26.7	0.87	0.87	0.91	41.5
Approach		358	5.9	358	5.9	0.456	9.8	LOS A	3.6	26.7	0.86	0.86	0.90	40.8
All Vehicles		1996	3.4	1996	3.4	0.994	17.2	LOS B	42.4	302.2	0.85	0.81	1.13	35.3

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

MOVEMENT SUMMARY

Site: 4PM_FY [ALL_MOR_31_PM_FY-Peak Spread (Site Folder: PM_FY-Peak Spread)]

Network: N101 [PM_FY (Network Folder: PM_FY-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 78 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	541	3.9	541	3.9	0.487	5.9	LOS A	8.2	58.8	0.46	0.43	0.46	49.8
6	R2	65	1.6	65	1.6	0.487	12.4	LOS A	8.2	58.8	0.53	0.52	0.53	37.5
Approach		606	3.6	606	3.6	0.487	6.6	LOS A	8.2	58.8	0.46	0.44	0.46	47.5
North: Mortain Avenue														
7	L2	35	0.0	35	0.0	0.345	39.5	LOS C	2.1	14.7	0.98	0.74	0.98	12.3
9	R2	20	0.0	20	0.0	* 0.345	39.8	LOS C	2.1	14.7	0.98	0.74	0.98	12.3
Approach		55	0.0	55	0.0	0.345	39.6	LOS C	2.1	14.7	0.98	0.74	0.98	12.3
West: Allambie Road (W)														
10	L2	40	2.6	40	2.6	0.143	8.6	LOS A	2.1	15.3	0.31	0.34	0.31	41.4
11	T1	949	2.1	949	2.1	* 0.572	4.9	LOS A	13.3	94.7	0.45	0.42	0.45	53.1
Approach		989	2.1	989	2.1	0.572	5.0	LOS A	13.3	94.7	0.45	0.42	0.45	52.3
All Vehicles		1650	2.6	1650	2.6	0.572	6.8	LOS A	13.3	94.7	0.47	0.44	0.47	48.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	210.9	213.1	1.01
North: Mortain Avenue											
P3	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	207.0	208.4	1.01
West: Allambie Road (W)											
P4	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	211.5	213.8	1.01
All Pedestrians		158	33.3	LOS D	0.1	0.1	0.93	0.93	209.8	211.8	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: S:\Projects\SCT_00213_The Forest HS\3. Technical Work Area\1. Network Optimisation\SCT_00213_TFHS_SSDA Traffic Modelling_v2.0.sip9

MOVEMENT SUMMARY

Site: 5PM_FY [ALL_FLE_31_PM_FY-Peak Spread (Site Folder: PM_FY-Peak Spread)]

Network: N101 [PM_FY (Network Folder: PM_FY-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 85 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	577	3.6	577	3.6	0.360	4.3	LOS A	6.2	45.1	0.36	0.33	0.36	30.6
6	R2	25	4.2	25	4.2	0.360	8.0	LOS A	6.2	45.1	0.39	0.37	0.39	32.9
Approach		602	3.7	602	3.7	0.360	4.5	LOS A	6.2	45.1	0.36	0.33	0.36	30.7
North: Flers Street														
7	L2	20	0.0	20	0.0	0.227	43.9	LOS D	1.5	11.3	0.96	0.72	0.96	13.8
9	R2	18	11.8	18	11.8	* 0.227	44.1	LOS D	1.5	11.3	0.96	0.72	0.96	7.6
Approach		38	5.6	38	5.6	0.227	44.0	LOS D	1.5	11.3	0.96	0.72	0.96	11.2
West: Allambie Road (W)														
10	L2	23	0.0	23	0.0	0.206	6.7	LOS A	3.4	24.2	0.31	0.30	0.31	37.8
11	T1	976	1.9	976	1.9	* 0.513	4.6	LOS A	11.4	80.9	0.39	0.36	0.39	37.4
Approach		999	1.9	999	1.9	0.513	4.7	LOS A	11.4	80.9	0.39	0.36	0.39	37.4
All Vehicles		1639	2.6	1639	2.6	0.513	5.5	LOS A	11.4	80.9	0.39	0.36	0.39	35.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	215.2	214.1	0.99
West: Allambie Road (W)											
P4	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	214.3	213.0	0.99
All Pedestrians		105	36.8	LOS D	0.1	0.1	0.93	0.93	214.8	213.6	0.99

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1PM_FYD [ALL_WAR_31_PM_FYD-Peak Spread (Site Folder: PM_FYD-Peak Spread)]

Network: N101 [PM_FYD (Network Folder: PM_FYD-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 160 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	374	2.2	374	2.2	0.953	93.5	LOS F	22.9	163.2	1.00	1.14	1.35	7.0
3	R2	296	2.5	296	2.5	0.824	89.2	LOS F	12.2	87.2	1.00	0.89	1.20	24.1
Approach		670	2.3	669 [N1]	2.3	0.953	91.6	LOS F	22.9	163.2	1.00	1.03	1.29	15.7
East: Warringah Road (E)														
4	L2	392	2.2	392	2.2	* 0.909	62.2	LOS E	59.6	429.5	1.00	1.01	1.10	29.5
5	T1	1937	4.6	1937	4.6	0.909	54.5	LOS D	64.9	472.6	0.99	0.98	1.08	42.7
6	R2	257	0.3	257	0.3	0.446	74.4	LOS F	9.3	65.0	0.96	0.80	0.96	26.7
Approach		2586	3.8	2586	3.8	0.909	57.6	LOS E	64.9	472.6	0.99	0.97	1.07	39.7
North: Allambie Road (N)														
7	L2	10	0.0	10	0.0	0.999	129.3	LOS F	22.7	161.3	1.00	1.24	1.57	18.8
8	T1	442	1.8	442	1.8	* 0.999	122.4	LOS F	24.0	170.9	1.00	1.23	1.56	2.9
Approach		452	1.8	452	1.8	0.999	122.6	LOS F	24.0	170.9	1.00	1.23	1.56	3.4
West: Warringah Road (W)														
10	L2	115	1.8	115	1.8	0.979	57.1	LOS E	62.5	455.7	1.00	1.07	1.21	32.9
11	T1	2003	5.4	2003	5.4	* 0.979	50.1	LOS D	64.6	473.4	1.00	1.08	1.20	44.2
12	R2	567	3.5	567	3.5	* 1.004	106.9	LOS F	27.7	199.6	1.00	0.99	1.39	20.4
Approach		2684	4.8	2684	4.8	1.004	62.4	LOS E	64.6	473.4	1.00	1.06	1.24	38.4
All Vehicles		6392	4.0	6391 [N1]	4.0	1.004	67.8	LOS E	64.9	473.4	0.99	1.03	1.20	34.3

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	69.5	LOS F	0.2	0.2	0.93	0.93	261.2	230.0	0.88
North: Allambie Road (N)											
P3	Full	53	71.4	LOS F	0.2	0.2	0.95	0.95	263.1	230.0	0.87
West: Warringah Road (W)											
P4	Full	53	64.9	LOS F	0.2	0.2	0.90	0.90	254.6	227.6	0.89

All Pedestrians	158	68.6	LOS F	0.2	0.2	0.93	0.93	259.6	229.2	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2PM_FYD [ALL_ROD_31_PM_FYD-Peak Spread (Site Folder: PM_FYD-Peak Spread)]

Network: N101 [PM_FYD (Network Folder: PM_FYD-Peak Spread)]

3-4 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	173	9.7	173	9.7	0.268	9.0	LOS A	1.7	12.9	0.71	0.75	0.71	39.8
2	T1	420	2.2	419	2.2	0.925	28.5	LOS C	11.9	84.7	0.78	1.28	1.81	20.7
3	R2	60	3.5	60	3.5	0.925	31.8	LOS C	11.9	84.7	0.78	1.28	1.81	31.9
3u	U	1	0.0	1	0.0	0.925	33.3	LOS C	11.9	84.7	0.78	1.28	1.81	20.7
Approach		653	4.3	653	4.3	0.925	23.7	LOS B	11.9	84.7	0.76	1.14	1.52	26.3
East: Rodborough Road (E)														
4	L2	75	4.2	75	4.2	0.255	16.5	LOS B	1.3	9.4	0.83	0.92	0.83	33.2
5	T1	76	2.8	76	2.8	0.913	41.0	LOS C	8.1	57.6	0.93	1.63	2.46	24.2
6	R2	212	2.5	212	2.5	0.913	44.2	LOS D	8.1	57.6	0.93	1.63	2.46	20.2
6u	U	1	0.0	1	0.0	0.913	45.6	LOS D	8.1	57.6	0.93	1.63	2.46	28.6
Approach		363	2.9	363	2.9	0.913	37.8	LOS C	8.1	57.6	0.91	1.48	2.13	22.9
North: Allambie Road (N)														
7	L2	230	4.1	220	4.1	0.451	5.5	LOS A	3.6	26.0	0.26	0.50	0.26	43.1
8	T1	1062	1.7	1013	1.7	1.027	28.9	LOS C	34.7	248.5	0.76	0.65	1.10	12.2
9	R2	73	11.5	70	11.5	1.027	42.4	LOS C	34.7	248.5	1.00	0.72	1.49	16.8
9u	U	9	0.0	9	0.0	1.027	43.6	LOS D	34.7	248.5	1.00	0.72	1.49	9.5
Approach		1375	2.6	1312 N1	2.6	1.027	25.8	LOS B	34.7	248.5	0.69	0.63	0.98	18.2
West: Rodborough Road (W)														
10	L2	29	3.6	29	3.6	0.103	8.5	LOS A	0.8	6.0	0.69	0.75	0.69	30.8
11	T1	2	0.0	2	0.0	0.103	8.5	LOS A	0.8	6.0	0.69	0.75	0.69	42.6
12	R2	5	0.0	5	0.0	0.103	11.7	LOS A	0.8	6.0	0.69	0.75	0.69	30.8
12u	U	1	0.0	1	0.0	0.103	13.4	LOS A	0.8	6.0	0.69	0.75	0.69	39.6
Approach		37	2.9	37	2.9	0.103	9.1	LOS A	0.8	6.0	0.69	0.75	0.69	32.3
All Vehicles		2429	3.1	2365 N1	3.2	1.027	26.8	LOS B	34.7	248.5	0.74	0.90	1.30	21.6

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Organisation: SCT CONSULTING PTY LTD | Licence: NETWORK / 1PC | Processed: Wednesday, 10 August 2022 4:56:44 PM
Project: S:\Projects\SCT_00213_The Forest HS\3. Technical Work Area\1. Network Optimisation\SCT_00213_TFHS_SSDA Traffic Modelling_v2.0.sip9

MOVEMENT SUMMARY

Site: 3PM_FYD [ALL_AQU_31_PM_FYD-Peak Spread (Site Folder: PM_FYD-Peak Spread)]

Network: N101 [PM_FYD (Network Folder: PM_FYD-Peak Spread)]

3-4 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	229	1.8	229	1.8	0.882	17.8	LOS B	15.6	112.4	0.93	0.98	1.41	40.0
6	R2	469	4.5	469	4.5	0.882	21.2	LOS B	15.6	112.4	0.93	0.98	1.41	38.9
6u	U	3	0.0	3	0.0	0.882	22.7	LOS B	15.6	112.4	0.93	0.98	1.41	38.9
Approach		702	3.6	702	3.6	0.882	20.1	LOS B	15.6	112.4	0.93	0.98	1.41	39.4
North: Allambie Road (N)														
7	L2	812	2.1	754	2.1	1.191	185.5	LOS F	80.3	571.6	1.00	3.64	7.62	4.4
9	R2	255	1.6	237	1.7	1.191	188.8	LOS F	80.3	571.6	1.00	3.64	7.62	11.8
9u	U	1	0.0	1	0.0	1.191	190.4	LOS F	80.3	571.6	1.00	3.64	7.62	4.4
Approach		1068	2.0	993 N1	2.0	1.191	186.3	LOS F	80.3	571.6	1.00	3.64	7.62	6.5
West: Aquatic Drive														
10	L2	469	3.4	469	3.4	1.058	81.9	LOS F	50.1	359.4	0.96	2.62	4.28	17.2
11	T1	273	1.9	273	1.9	1.058	93.9	LOS F	50.1	359.4	1.00	2.93	4.89	15.7
12u	U	1	0.0	1	0.0	1.058	97.7	LOS F	50.1	359.4	1.00	2.93	4.89	22.7
Approach		744	2.8	744	2.8	1.058	86.3	LOS F	50.1	359.4	0.98	2.73	4.50	16.6
All Vehicles		2513	2.7	2438 N1	2.8	1.191	108.0	LOS F	80.3	571.6	0.97	2.60	4.88	13.9

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 4PM_FYD [ALL_MOR_31_PM_FYD-Peak Spread (Site Folder: PM_FYD-Peak Spread)]

Network: N101 [PM_FYD (Network Folder: PM_FYD-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 78 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	587	3.6	587	3.6	0.484	5.4	LOS A	8.4	60.8	0.44	0.42	0.44	50.7
6	R2	65	1.6	65	1.6	0.484	11.5	LOS A	8.4	60.8	0.50	0.49	0.50	38.1
Approach		652	3.4	652	3.4	0.484	6.0	LOS A	8.4	60.8	0.45	0.42	0.45	48.4
North: Mortain Avenue														
7	L2	35	0.0	35	0.0	0.447	39.1	LOS C	2.9	20.0	0.98	0.76	0.98	12.3
9	R2	40	0.0	40	0.0	* 0.447	39.4	LOS C	2.9	20.0	0.98	0.76	0.98	12.3
Approach		74	0.0	74	0.0	0.447	39.2	LOS C	2.9	20.0	0.98	0.76	0.98	12.3
West: Allambie Road (W)														
10	L2	60	1.8	50	1.8	0.127	8.6	LOS A	1.9	13.2	0.30	0.37	0.30	41.1
11	T1	996	2.0	826	2.0	* 0.506	4.5	LOS A	10.9	77.3	0.42	0.40	0.42	53.5
Approach		1055	2.0	876 [N1]	2.0	0.506	4.7	LOS A	10.9	77.3	0.42	0.40	0.42	52.2
All Vehicles		1782	2.4	1603 [N1]	2.7	0.506	6.8	LOS A	10.9	77.3	0.45	0.42	0.45	47.4

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	210.9	213.1	1.01
North: Mortain Avenue											
P3	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	207.0	208.4	1.01
West: Allambie Road (W)											
P4	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	211.5	213.8	1.01
All Pedestrians		158	33.3	LOS D	0.1	0.1	0.93	0.93	209.8	211.8	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 5PM_FYD [ALL_FLE_31_PM_FYD-Peak Spread (Site Folder: PM_FYD-Peak Spread)]

Network: N101 [PM_FYD (Network Folder: PM_FYD-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 85 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	614	3.4	614	3.4	0.369	4.1	LOS A	6.5	47.0	0.35	0.32	0.35	30.9
6	R2	25	4.2	25	4.2	* 0.369	7.7	LOS A	6.5	47.0	0.38	0.36	0.38	33.3
Approach		639	3.5	639	3.5	0.369	4.3	LOS A	6.5	47.0	0.36	0.32	0.36	31.1
North: Flers Street														
7	L2	20	0.0	20	0.0	0.272	43.2	LOS D	1.9	13.8	0.96	0.74	0.96	13.9
9	R2	27	7.8	27	7.8	* 0.272	43.4	LOS D	1.9	13.8	0.96	0.74	0.96	7.7
Approach		47	4.5	47	4.5	0.272	43.3	LOS D	1.9	13.8	0.96	0.74	0.96	10.6
West: Allambie Road (W)														
10	L2	32	0.0	27	0.0	0.174	6.6	LOS A	2.8	19.8	0.30	0.30	0.30	37.8
11	T1	1013	1.9	849	1.8	0.433	4.3	LOS A	9.5	67.7	0.37	0.34	0.37	37.5
Approach		1045	1.8	876 N1	1.8	0.433	4.3	LOS A	9.5	67.7	0.37	0.34	0.37	37.5
All Vehicles		1731	2.5	1562 N1	2.8	0.433	5.5	LOS A	9.5	67.7	0.38	0.35	0.38	35.3

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	215.2	214.1	0.99
West: Allambie Road (W)											
P4	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	214.3	213.0	0.99
All Pedestrians		105	36.8	LOS D	0.1	0.1	0.93	0.93	214.8	213.6	0.99

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: ROD_S1_PM [ROD_31_PM_FYD__UPG-Peak Spread (Site Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_UPG (Network Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

New Site
Site Category: (None)
Pedestrian Crossing (Unsignalised)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Rodborough Road (E)														
2	T1	300	8.4	300	8.4	0.497	3.3	LOS A	3.2	23.7	0.34	0.50	0.34	51.7
Approach		300	8.4	300	8.4	0.497	3.3	LOS A	3.2	23.7	0.34	0.50	0.34	51.7
West: Rodborough Road (W)														
8	T1	33	3.2	33	3.2	0.087	4.9	LOS A	0.2	1.4	0.19	0.52	0.19	51.8
Approach		33	3.2	33	3.2	0.087	4.9	LOS A	0.2	1.4	0.19	0.52	0.19	51.8
All Vehicles		333	7.9	333	7.9	0.497	3.4	NA	3.2	23.7	0.33	0.50	0.33	51.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: Akçelik M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1PM_FYD [ALL_WAR_31_PM_FYD_UPG-Peak Spread (Site Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_UPG (Network Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 160 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
2	T1	374	2.2	374	2.2	0.954	94.0	LOS F	22.9	163.2	1.00	1.14	1.35	6.9
3	R2	296	2.5	296	2.5	0.826	89.3	LOS F	12.2	87.4	1.00	0.90	1.21	24.1
Approach		670	2.3	670	2.3	0.954	91.9	LOS F	22.9	163.2	1.00	1.03	1.29	15.7
East: Warringah Road (E)														
4	L2	392	2.2	392	2.2	* 0.909	62.2	LOS E	59.6	429.5	1.00	1.01	1.10	29.5
5	T1	1937	4.6	1937	4.6	0.909	54.5	LOS D	64.9	472.6	0.99	0.98	1.08	42.7
6	R2	257	0.3	257	0.3	0.446	74.4	LOS F	9.3	65.0	0.96	0.80	0.96	26.7
Approach		2586	3.8	2586	3.8	0.909	57.6	LOS E	64.9	472.6	0.99	0.97	1.07	39.7
North: Allambie Road (N)														
7	L2	10	0.0	10	0.0	0.999	129.3	LOS F	22.7	161.3	1.00	1.24	1.57	18.8
8	T1	442	1.8	442	1.8	* 0.999	122.4	LOS F	24.0	170.9	1.00	1.23	1.56	2.9
Approach		452	1.8	452	1.8	0.999	122.6	LOS F	24.0	170.9	1.00	1.23	1.56	3.4
West: Warringah Road (W)														
10	L2	115	1.8	115	1.8	0.979	57.1	LOS E	62.5	455.7	1.00	1.07	1.21	32.9
11	T1	2003	5.4	2003	5.4	* 0.979	50.1	LOS D	64.6	473.4	1.00	1.08	1.20	44.2
12	R2	567	3.5	567	3.5	* 1.004	106.9	LOS F	27.7	199.6	1.00	0.99	1.39	20.4
Approach		2684	4.8	2684	4.8	1.004	62.4	LOS E	64.6	473.4	1.00	1.06	1.24	38.4
All Vehicles		6392	4.0	6392	4.0	1.004	67.8	LOS E	64.9	473.4	0.99	1.03	1.20	34.3

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Allambie Road (S)											
P1	Full	53	69.5	LOS F	0.2	0.2	0.93	0.93	261.2	230.0	0.88
North: Allambie Road (N)											
P3	Full	53	71.4	LOS F	0.2	0.2	0.95	0.95	263.1	230.0	0.87
West: Warringah Road (W)											
P4	Full	53	64.9	LOS F	0.2	0.2	0.90	0.90	254.6	227.6	0.89
All Pedestrians		158	68.6	LOS F	0.2	0.2	0.93	0.93	259.6	229.2	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2PM_FYD [ALL_ROD_31_PM_FYD_UPG-Peak Spread (Site Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_UPG (Network Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

3-4 PM
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Allambie Road (S)														
1	L2	173	9.7	173	9.7	0.265	9.0	LOS A	1.5	11.4	0.53	0.69	0.53	37.1
2	T1	420	2.2	420	2.2	0.916	23.5	LOS B	7.9	56.2	0.59	1.06	1.31	23.3
3	R2	60	3.5	60	3.5	0.916	26.8	LOS B	7.9	56.2	0.59	1.06	1.31	34.3
3u	U	1	0.0	1	0.0	0.916	28.3	LOS B	7.9	56.2	0.59	1.06	1.31	23.3
Approach		653	4.3	653	4.3	0.916	20.0	LOS B	7.9	56.2	0.57	0.96	1.11	27.4
East: Rodborough Road (E)														
4	L2	75	4.2	75	4.2	0.221	14.3	LOS A	1.3	9.1	0.85	0.79	0.85	33.2
5	T1	76	2.8	76	2.8	0.674	22.4	LOS B	6.1	43.9	0.99	1.01	1.40	27.1
6	R2	212	2.5	212	2.5	0.674	25.6	LOS B	6.1	43.9	0.99	1.01	1.40	27.1
6u	U	1	0.0	1	0.0	0.674	27.0	LOS B	6.1	43.9	0.99	1.01	1.40	35.2
Approach		363	2.9	363	2.9	0.674	22.6	LOS B	6.1	43.9	0.96	0.97	1.29	28.2
North: Allambie Road (N)														
7	L2	230	4.1	230	4.1	0.563	5.5	LOS A	4.0	28.4	0.25	0.50	0.25	43.1
8	T1	1062	1.7	1060	1.7	0.563	5.4	LOS A	5.6	40.4	0.25	0.49	0.25	32.4
9	R2	73	11.5	73	11.5	0.563	8.7	LOS A	5.6	40.4	0.26	0.49	0.26	32.3
9u	U	9	0.0	9	0.0	0.563	10.2	LOS A	5.6	40.4	0.26	0.49	0.26	32.3
Approach		1375	2.6	1373 N1	2.6	0.563	5.6	LOS A	5.6	40.4	0.25	0.49	0.25	36.5
West: Rodborough Road (W)														
10	L2	29	3.6	29	3.6	0.092	6.4	LOS A	0.6	4.0	0.70	0.70	0.70	16.0
11	T1	2	0.0	2	0.0	0.092	6.7	LOS A	0.6	4.0	0.70	0.70	0.70	41.7
12	R2	5	0.0	5	0.0	0.092	9.5	LOS A	0.6	4.0	0.70	0.70	0.70	16.0
12u	U	1	0.0	1	0.0	0.092	11.1	LOS A	0.6	4.0	0.70	0.70	0.70	16.0
Approach		37	2.9	37	2.9	0.092	6.9	LOS A	0.6	4.0	0.70	0.70	0.70	19.8
All Vehicles		2429	3.1	2427 N1	3.1	0.916	12.1	LOS A	7.9	56.2	0.45	0.69	0.65	30.9

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 4PM_FYD [ALL_MOR_31_PM_FYD_UPG-Peak Spread (Site Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_UPG (Network Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 78 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	587	3.6	587	3.6	0.532	6.5	LOS A	9.4	67.5	0.48	0.45	0.48	49.2
6	R2	65	1.6	65	1.6	0.532	13.3	LOS A	9.4	67.5	0.57	0.55	0.57	37.2
Approach		652	3.4	652	3.4	0.532	7.2	LOS A	9.4	67.5	0.49	0.46	0.49	47.0
North: Mortain Avenue														
7	L2	35	0.0	35	0.0	0.447	39.1	LOS C	2.9	20.0	0.98	0.76	0.98	12.3
9	R2	40	0.0	40	0.0	* 0.447	39.4	LOS C	2.9	20.0	0.98	0.76	0.98	12.3
Approach		74	0.0	74	0.0	0.447	39.2	LOS C	2.9	20.0	0.98	0.76	0.98	12.3
West: Allambie Road (W)														
10	L2	60	1.8	60	1.8	0.153	8.6	LOS A	2.3	16.3	0.31	0.38	0.31	41.1
11	T1	996	2.0	994	2.0	* 0.609	5.1	LOS A	14.9	106.2	0.48	0.45	0.48	52.8
Approach		1055	2.0	1054 N1	2.0	0.609	5.3	LOS A	14.9	106.2	0.47	0.45	0.47	51.6
All Vehicles		1782	2.4	1781 N1	2.4	0.609	7.4	LOS A	14.9	106.2	0.50	0.47	0.50	47.1

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	210.9	213.1	1.01
North: Mortain Avenue											
P3	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	207.0	208.4	1.01
West: Allambie Road (W)											
P4	Full	53	33.3	LOS D	0.1	0.1	0.93	0.93	211.5	213.8	1.01
All Pedestrians		158	33.3	LOS D	0.1	0.1	0.93	0.93	209.8	211.8	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 5PM_FYD [ALL_FLE_31_PM_FYD_UPG-Peak Spread (Site Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_UPG (Network Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 85 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	614	3.4	614	3.4	0.382	4.4	LOS A	6.8	48.8	0.37	0.33	0.37	30.5
6	R2	25	4.2	25	4.2	0.382	8.1	LOS A	6.8	48.8	0.40	0.38	0.40	32.8
Approach		639	3.5	639	3.5	0.382	4.6	LOS A	6.8	48.8	0.37	0.34	0.37	30.6
North: Flers Street														
7	L2	20	0.0	20	0.0	0.272	43.2	LOS D	1.9	13.8	0.96	0.74	0.96	13.9
9	R2	27	7.8	27	7.8	* 0.272	43.4	LOS D	1.9	13.8	0.96	0.74	0.96	7.7
Approach		47	4.5	47	4.5	0.272	43.3	LOS D	1.9	13.8	0.96	0.74	0.96	10.6
West: Allambie Road (W)														
10	L2	32	0.0	32	0.0	0.220	6.7	LOS A	3.7	26.1	0.32	0.31	0.32	37.7
11	T1	1013	1.9	1012	1.9	* 0.547	4.8	LOS A	12.0	85.7	0.40	0.37	0.40	37.3
Approach		1045	1.8	1044 N1	1.8	0.547	4.8	LOS A	12.0	85.7	0.40	0.37	0.40	37.3
All Vehicles		1731	2.5	1730 N1	2.5	0.547	5.8	LOS A	12.0	85.7	0.40	0.37	0.40	35.4

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	215.2	214.1	0.99
West: Allambie Road (W)											
P4	Full	53	36.8	LOS D	0.1	0.1	0.93	0.93	214.3	213.0	0.99
All Pedestrians		105	36.8	LOS D	0.1	0.1	0.93	0.93	214.8	213.6	0.99

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Organisation: SCT CONSULTING PTY LTD | Licence: NETWORK / 1PC | Processed: Tuesday, 13 September 2022 4:06:22 PM
Project: S:\Projects\SCT_00213_The Forest HS\3. Technical Work Area\1. Network Optimisation\SCT_00213_TFHS_SSDA Traffic Modelling_v3.0.sip9

MOVEMENT SUMMARY

Site: 3PM_FYD [ALL_AQU_31_PM_FYD_UPG-Peak Spread (Site Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

Network: N101 [PM_FYD_UPG (Network Folder: PM_FYD_Infrastructure Upgrade-Peak Spread)]

3-4 PM
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Allambie Road (E)														
5	T1	223	1.9	223	1.9	0.239	8.8	LOS A	4.7	33.1	0.36	0.54	0.36	43.8
6	R2	426	4.4	426	4.4	* 0.637	37.0	LOS C	19.7	142.9	0.88	0.94	0.88	29.7
Approach		649	3.6	649	3.6	0.637	27.3	LOS B	19.7	142.9	0.70	0.80	0.70	35.5
North: Allambie Road (N)														
7	L2	743	2.1	742	2.1	0.824	36.5	LOS C	40.6	289.3	0.92	0.89	0.94	17.6
9	R2	248	1.7	248	1.7	* 0.893	76.9	LOS F	17.8	126.7	1.00	0.96	1.31	20.7
Approach		992	2.0	990 N1	2.0	0.893	46.6	LOS D	40.6	289.3	0.94	0.91	1.03	19.1
West: Aquatic Drive														
10	L2	452	3.3	452	3.3	* 0.896	55.3	LOS D	28.4	204.2	0.84	0.93	1.08	21.9
11	T1	264	2.0	264	2.0	0.790	35.5	LOS C	13.0	92.3	0.73	0.71	0.86	27.4
Approach		716	2.8	716	2.8	0.896	48.0	LOS D	28.4	204.2	0.80	0.85	1.00	23.7
All Vehicles		2357	2.7	2355 N1	2.7	0.896	41.7	LOS C	40.6	289.3	0.83	0.86	0.93	25.2

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

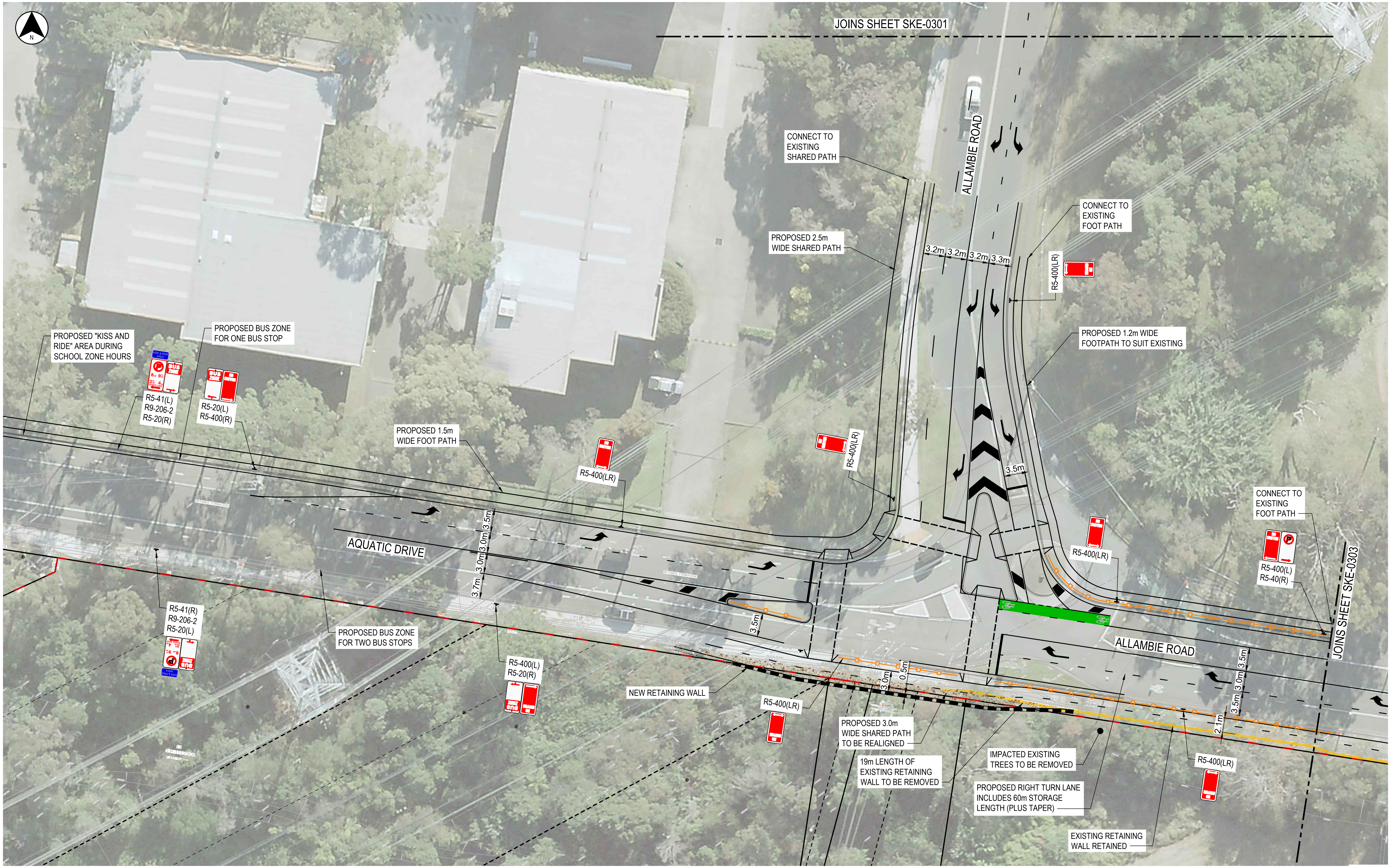
Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Allambie Road (E)											
P2	Full	421	60.2	LOS F	1.5	1.5	0.97	0.97	223.0	211.6	0.95
North: Allambie Road (N)											
P3	Full	105	59.4	LOS E	0.4	0.4	0.96	0.96	221.7	211.0	0.95
P3B	Slip/ Bypass	421	60.2	LOS F	1.5	1.5	0.97	0.97	217.1	204.0	0.94
West: Aquatic Drive											
P4	Full	105	59.4	LOS E	0.4	0.4	0.96	0.96	224.6	214.7	0.96
All Pedestrians		1053	60.0	LOS F	1.5	1.5	0.97	0.97	220.7	208.8	0.95

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

APPENDIX E

Schematic design for offsite transport upgrades



FOR INFORMATION ONLY

CLIENT

SCT Consulting

SUITE 1 LEVEL 10
99 MOUNT STREET, NORTH SYDNEY 2060

DESIGNER

BTE CONSULTING

BTE CONSULTING PTY LTD
ABN 48 641 009 681 ACN 641 009 681

SCALES

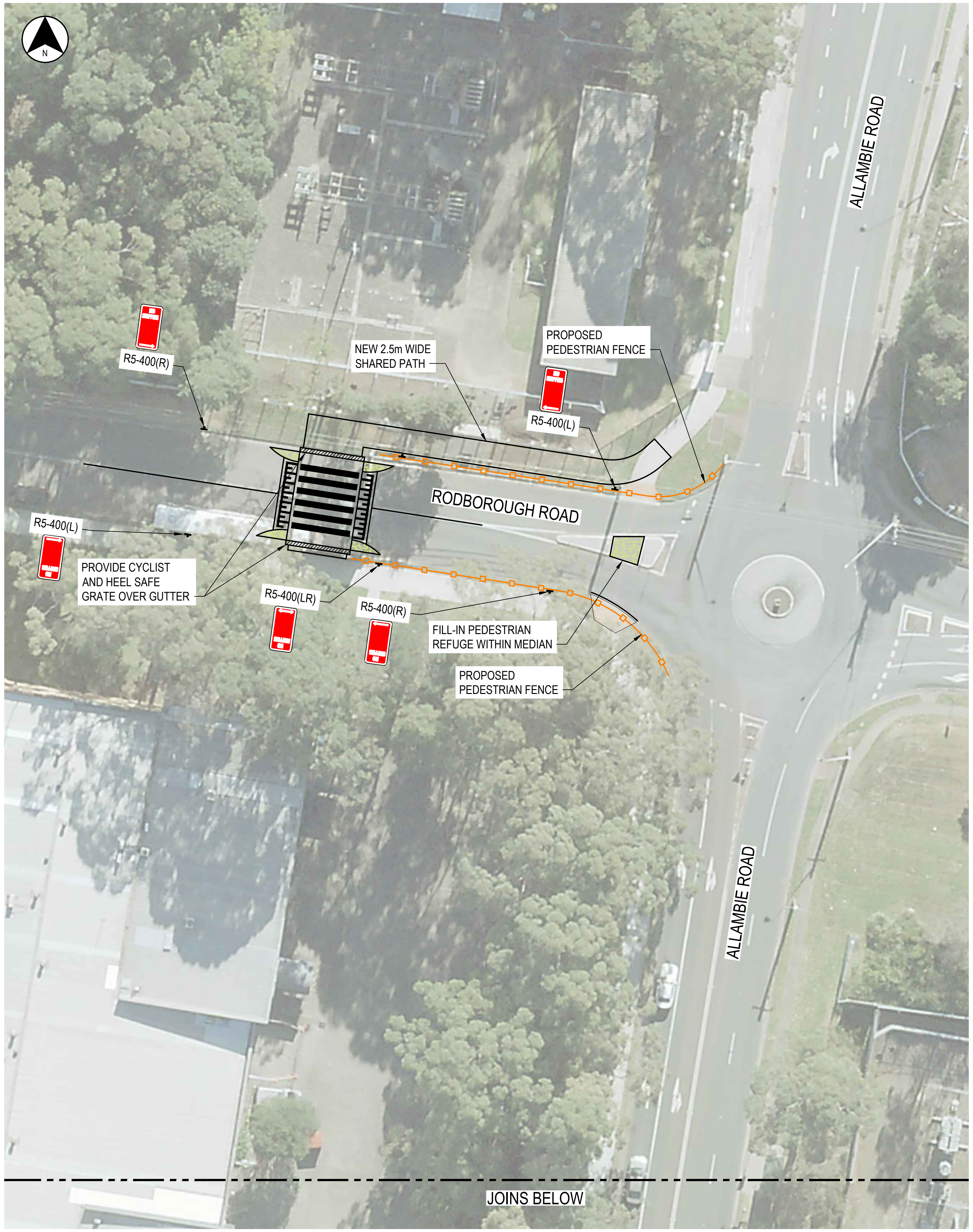
2.5 0 2.5 5 7.5m
1 : 250 (A1) 1 : 500 (A3)

PROJECT NO	BTE-210022		
REVISION	03 - 14-09-2022		
STATUS	FOR INFORMATION		
SCALE	1:250		
DESIGNED	TB	DRAWN	TB

THE FOREST HIGH SCHOOL

ROAD CORRIDOR UPGRADES
GENERAL ARRANGEMENT PLAN

FIGURE NO
SKE-0302



FOR INFORMATION ONLY

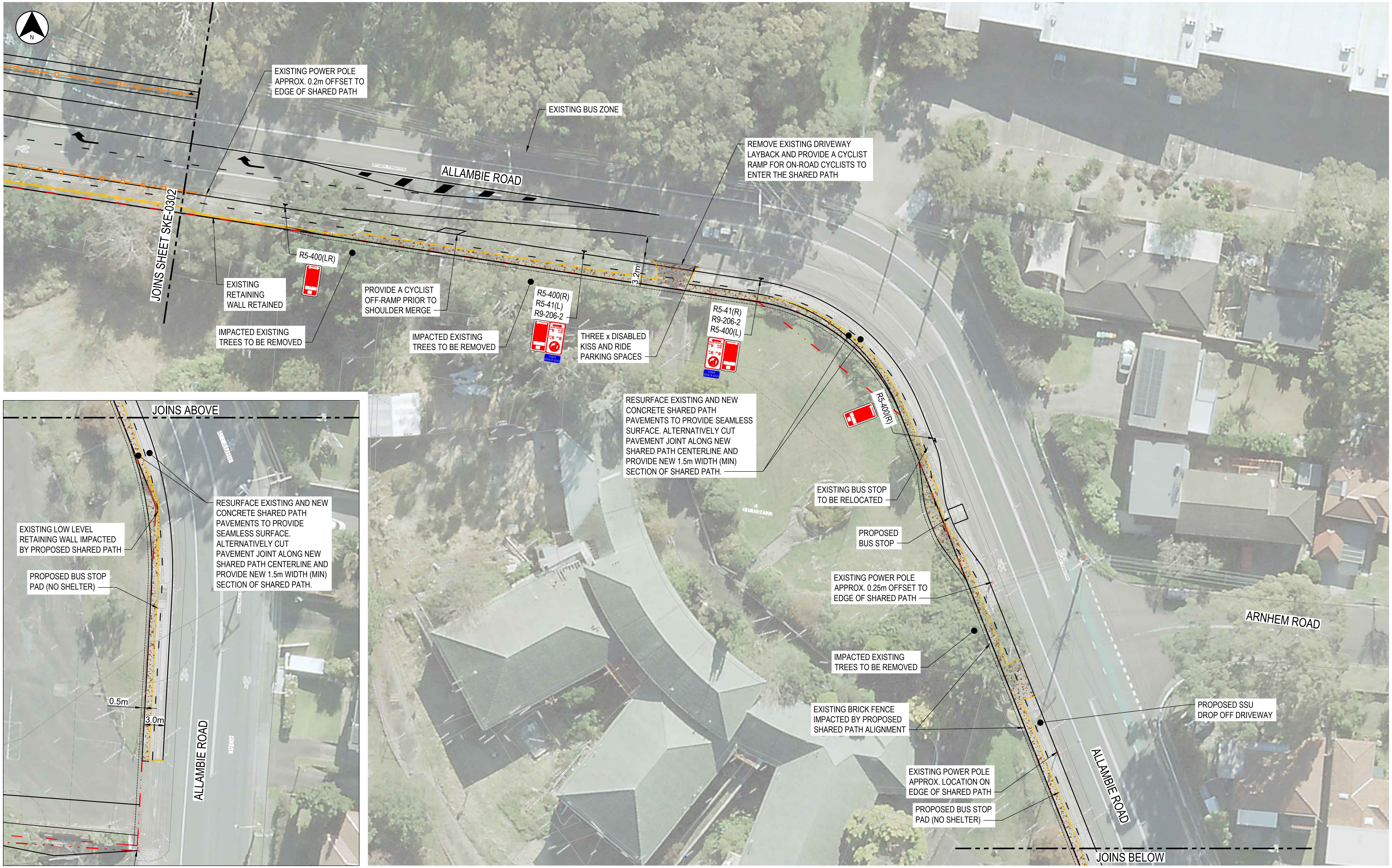
CLIENT SCT Consulting SUITE 1 LEVEL 10 99 MOUNT STREET, NORTH SYDNEY 2060	DESIGNER BTE CONSULTING BTE CONSULTING PTY LTD ABN 48 641 009 681 ACN 641 009 681	SCALES 2.5 0 2.5 5 7.5m 1 : 250 (A1) 1 : 500 (A3)	

PROJECT NO	BTE-210022		
REVISION	03 - 14-09-2022		
STATUS	FOR INFORMATION		
SCALE	1:250		
DESIGNED	TB	DRAWN	TB

THE FOREST HIGH SCHOOL

ROAD CORRIDOR UPGRADES
GENERAL ARRANGEMENT PLAN

FIGURE NO
SKE-0301



FOR INFORMATION ONLY

CLIENT

SCT Consulting

SUITE 1 LEVEL 10
99 MOUNT STREET, NORTH SYDNEY 2060

DESIGNER

BTE CONSULTING

BTE CONSULTING PTY LTD
ABN 48 641 009 681 ACN 641 009 681

SCALES

2.5 0 2.5 5 7.5m
1 : 250 (A1) 1 : 500 (A3)

PROJECT NO	BTE-210022		
REVISION	03 - 14-09-2022		
STATUS	FOR INFORMATION		
SCALE	1:250		
DESIGNED	TB	DRAWN	TB

THE FOREST HIGH SCHOOL

ROAD CORRIDOR UPGRADES
GENERAL ARRANGEMENT PLAN

FIGURE NO
SKE-0303

APPENDIX F

Car park audit and swept path assessments

Technical Advisory Note

Quality Information			
Project:	The Forest High School		
Project Number:			
Document Name:	AS 2890 Car Park Review		
Version:	3.0	**Date:**	15 September 2022
Author:	JB	Associate Director	JDB
Reviewer:	AY	Director	AY
Authoriser:	JB	Associate Director	JDB

Overview

SCT Consulting has been engaged to undertake an AS2890 car park review for The Forest High School. The drawings being reviewed are the 60 per cent work in progress schematic design set.

The car park does not currently meet the AS2890.1, AS2890.2 and AS2890.6 in all respects. Items that require action are listed in **bold** in the comments column in the coming pages. All remaining items are minor and can be addressed in detailed design.

AS2890.1 Off Street Car Parking Review

An AS2890.1 review has been undertaken using the sections of AS2890.1 that impose a requirement.

Table 1 AS2890.1 Review

Section of AS2890.1	Comments
1.4 Classification of off-street parking facilities (Table 1.1 below)	Being a staff parking area for the proposed high school, the site is identified as a User Class 1/1A structure. The width of the aisle for User Class 1 and User Class 1A are 6.2m and 5.8m, respectively. Either width could be considered depending on the area availability and the level of constraints.

TABLE 1.1

CLASSIFICATION OF OFF-STREET CAR PARKING FACILITIES

User class	Required door opening	Required aisle width	Examples of uses (Note 1)
1	Front door, first stop	Minimum for single manoeuvre entry and exit	Employee and commuter parking (generally, all-day parking)
1A	Front door, first stop	Three-point turn entry and exit into 90° parking spaces only, otherwise as for User Class 1	Residential, domestic and employee parking
2	Full opening, all doors	Minimum for single manoeuvre entry and exit	Long-term city and town centre parking, sports facilities, entertainment centres, hotels, motels, airport visitors (generally medium-term parking)
3	Full opening, all doors	Minimum for single manoeuvre entry and exit	Short-term city and town centre parking, parking stations, hospital and medical centres
3A	Full opening, all doors	Additional allowance above minimum single manoeuvre width to facilitate entry and exit	Short term, high turnover parking at shopping centres
4	Size requirements are specified in AS/NZS 2890.6 (Note 2)		Parking for people with disabilities

Section 2 Design of Parking Modules, Circulation Roadways and Ramps

Section of AS2890.1	Comments

2.4 Design of Parking Modules

2.4.1 Angle parking spaces

(b) *Width* The minimum width of parking spaces required for each user class is shown in Figure 2.2 except as follows:

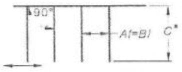
(i) *Spaces for small cars* The specified minimum width is given in Item (a)(iii).

(ii) *Adjacent obstruction* If the side boundary of a space is a wall or fence, or if there are obstructions such as columns placed so as to restrict door opening, 300 mm shall be added to the width of the space.

(iii) *Parking spaces for people with disabilities* See AS/NZS 2890.6*.

90 degree angled parking spaces generally has the dimensions of 5.4m in length and 2.4m in width, which complies with the minimum requirements.

2.4.2 Angle parking aisle

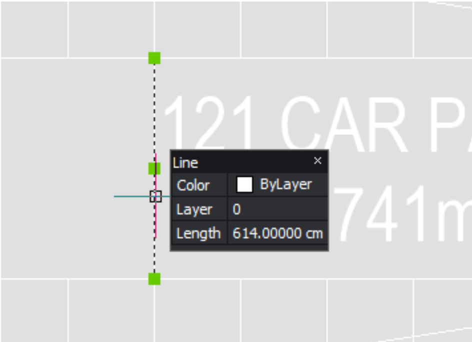


(d) Bays at 90°

User class (Note 1)	A (Note 3)	B	C_1	C_2	C_3	Aisle width (Note 4)
1	2.4	2.4	5.4	4.8	5.4	6.2
1A	2.4	2.4	5.4	4.8	5.4	5.8
2	2.5	2.5	5.4	4.8	5.4	5.8
3	2.6	2.6	5.4	4.8	5.4	5.8
3A	2.6	2.6	5.4	4.8	5.4	6.6
3A	2.7	2.7	5.4	4.8	5.4	6.2
4	(See Note 5)					

Aisles are a minimum of 6.14m in width, which satisfies the aisle width requirement. An additional 0.06cm would meet the criteria for User Class 1, which would be desirable.

Figure 1 Aisle width of 6.14m



2.4.3 Angle parking module layout

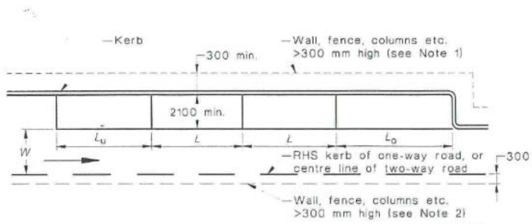
Acceptable

2.4.4 Parallel parking

(a) *Parallel parking one or both sides, one-way or two-way aisle*

Layout requirements for parallel parking on one or both sides of a one-way aisle s be as set out in Figure 2.5.

Where the aisle is two-way but parking is on one side only, its width shal increased by 3.0 m minimum.



metres

Aisle width (one-way), W	Space length, L	Space length obstructed end spaces, L_o	Space length unobstructed end spaces, L_u (Note 4)
3.0	6.3	6.6	5.4
3.3	6.1	6.4	5.4
3.6	5.9	6.2	5.4

Previous traffic studies recommended a total of 124 parking spaces for the staff parking including four disabled spaces.

Four spaces are provided in the current design, so this meets the requirement.

2.4.5 Physical control

TABLE 2.1

WHEEL STOP DISTANCES

millimetres

Parking direction	Wheel stop distance to front of parking space			
	Parking to kerb ≤150 high		Parking to kerb >150 high or wall	
	Wheel stop height		Wheel stop height	
	90	100	90	100
Front-in	630	620	830	820
Rear-in	910	900	1110	1100

Wheel stops are not provided.

Assuming rear-in parking and 90mm wheel stop heights, **wheel stops should be provided 900mm from the end of the parking space.**

This can be addressed in detailed design.

<table>
<tr><th>Section of AS2890.1</th><th>Comments</th></tr>
<tr><td>

2.4.6 Gradients within parking modules

(a) Measured parallel to the angle of parking—1 in 20 (5%).

(b) Measured in any other direction—1 in 16 (6.25%).

</td><td>The plan identifies that the maximum gradient across the parking spaces is 1:20 or less, which satisfies this requirement.</td></tr>
<tr><td>

2.4.7 Provision for motorcycles

</td><td>N/A</td></tr>
<tr><td>

2.5 Design of Circulation Roadways and Ramps

</td><td></td></tr>
<tr><td>

2.5.1 General

</td><td>Acceptable</td></tr>
<tr><td>

2.5.2 Layout design of circulation roadways and ramps

Curved roadways or ramps

2.5.2 Layout design of circulation roadways and ramps

Cross sections of circulation roadways and ramps shall be as illustrated in Figure 2.8. Design requirements and dimensions shall be as follows:

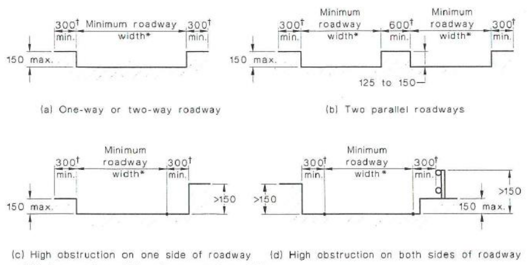
(a) *Straight roadways and ramps*—as follows:

(i) One-way roadways or ramps—3.0 m minimum between kerbs (see also Item (c)).

(ii) Two-way roadways or ramps—5.5 m minimum between kerbs (see also Item (c)).

(iii) Double roadways or ramps—where there are to be two parallel roadways or ramps, separated by a raised median or separator, each roadway or ramp shall be designed as a one-way roadway or ramp, and the median or separator shall be 600 mm minimum in width and between 125 mm and 150 mm in height, the preferred height being 125 mm.

Where there is to be a kerb or barrier higher than 150 mm and closer than 300 mm from one edge of the roadway or ramp, the roadway or ramp shall be widened to provide a minimum of 300 mm clearance to the obstruction. If there is to be a high kerb or barrier on both sides, the width increase shall be sufficient to provide 300 mm on both sides.



* Minimum roadway width: One-way roadway—3000 mm
Two-way roadway—5500 mm
On curve—see Table 2.2

† Increase clearance to 500 mm if on the outside of a curve.

</td><td>

Roadway widths are set to 7m wall to wall, which satisfies the requirement, i.e.:

- 5.5m between kerbs (two-way ramps)
- A minimum width from the front of the kerb to any vertical obstruction of 300mm.

There are no curved ramps.

</td></tr>
<tr><td>

2.5.3 Circulation roadways and ramp grades

(b) *Straight ramps: private or residential car parks (other than domestic driveways, see Clause 2.6)*—as follows:

(i) Longer than 20 m—1 in 5 (20%) maximum.

(ii) Up to 20 m long—1 in 4 (25%) maximum. The allowable 20 m maximum length shall include any parts of grade change transitions at each end that exceed 1 in 5 (20%).

(iii) A stepped ramp comprising a series of lengths each exceeding 1 in 5 (20%) grade shall have each two lengths separated by a grade of not more than 1 in 8 (12½%) and at least 10 m long.

(d) *Changes of grade*—To prevent vehicles scraping or bottoming, changes in grade in excess of—

(i) 12.5 percent algebraically (1 in 8) for summit grade changes; or

(ii) 15 percent algebraically (1 in 6.7) for sag grade changes;

require introduction of a grade transition between the main grade lines as illustrated in Figure 2.10.

</td><td>The ramp between parking levels is identified as 1:6. While this meets the requirement of the maximum gradient of a ramp. The ramp meets the maximum grade requirements.</td></tr>
<tr><td>

2.6 Design of Domestic Driveways

</td><td>N/A</td></tr>
<tr><td>

2.6.1 Width

</td><td>N/A</td></tr>
<tr><td>

2.6.2 Gradients

</td><td>N/A</td></tr>
</table>

Section of AS2890.1	Comments
Section 3 Access Facilitates Off-street Parking Areas and Queuing Areas	
3.1 General	N/A
3.1.1 Access design principles	N/A
3.1.2 Categories of access facilities (see Table 3.1 below)	The car park would be classified as a category 2 facility based on the user class and the number of parking spaces.

TABLE 3.1

SELECTION OF ACCESS FACILITY CATEGORY

Class of parking facility (see Table 1.1)	Frontage road type	Access facility category: Number of parking spaces (Note 1) <25	25 to 100	101 to 300	301 to 600	>600
1,1A	Arterial	1	2	3	4	5
	Local	1	1	2	3	4
2	Arterial	2	2	3	4	5
	Local	1	2	3	4	4
3,3A	Arterial	2	3	4	4	5
	Local	1	2	3	4	4

Section of AS2890.1	Comments
3.2 Access Driveways- Width and Location	N/A
3.2.1 Access driveway width (see Table 3.2 below)	The driveway on Aquatic Drive is 7.5m wide which is compliant with the width required according to Category 2. However, consideration should be also given to the access of an HRV (see AS2890.2 review).

TABLE 3.2

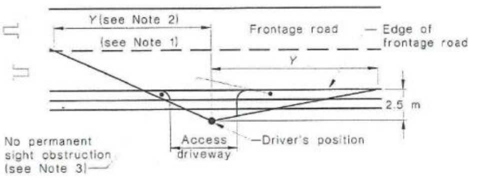
ACCESS DRIVEWAY WIDTHS

metres

Category	Entry width	Exit width	Separation of driveways
1	3.0 to 5.5	(Combined) (see Note)	N/A
2	6.0 to 9.0	(Combined) (see Note)	N/A
3	6.0	4.0 to 6.0	1 to 3
4	6.0 to 8.0	6.0 to 8.0	1 to 3
5	To be provided as an intersection, not an access driveway, see Clause 3.1.1.		

NOTE: Driveways are normally combined, but if separate, both entry and exit widths should be 3.0 m min.

Section of AS2890.1	Comments
3.2.2 Width requirements at low volume (Category 1) access driveways and connecting roadways	N/A
3.2.3 Access driveway location	The location is considered acceptable.
3.2.4 Sight distance at access driveway exits (see figure and table below)	The access driveway is perpendicular to the frontage road with 20m “No Stopping” zones on both sides of the access driveway. Assuming vehicles move forward to view oncoming traffic sightlines are satisfied. However, consideration should be also given to the access of an HRV (see AS2890.2 review). Pedestrian sight distance triangles are satisfied.



Frontage road speed (Note 4) km/h	Distance (Y) along frontage road m: Access driveways other than domestic (Note 5) Desirable 5 s gap	Access driveways other than domestic (Note 5) Minimum SSD	Domestic property access (Note 6)
40	55	35	30
50	69	45	40
60	83	65	55
70	97	85	70
80	111	105	95
90	125	130	Use values from 2nd and 3rd columns
100	139	160	
110	153	190	

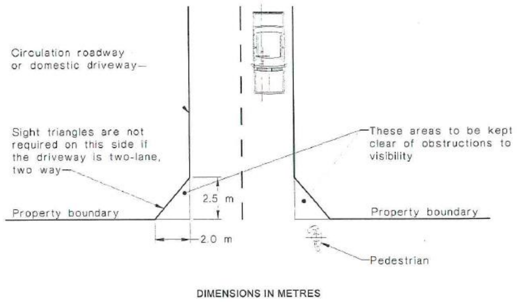
Section of AS2890.1	Comments
	

FIGURE 3.3 MINIMUM SIGHT LINES FOR PEDESTRIAN SAFETY

3.3 Gradients of Access Driveways

(b) *Vehicular control points*—max. 1 in 20 (5%) for at least 6 m prior to the c point.

(c) *Queuing area*—max. 1 in 10 (10%) for not less than 0.8 of the queue l determined in Table 3.3.

Comments: There is no control point, so the design meets this requirement.

3.4 Queuing Areas

TABLE 3.3

MINIMUM QUEUING LENGTH AT A CAR PARK WITH CONTROL POINTS AT ENTRANCES

Capacity of car park (Note 1)	Peak hourly in-flow of traffic	
	Up to 75% of capacity (Note 2)	More than 75% of capacity (Note 3)
Not more than 100 cars	The greater of a minimum of 2 cars or 3% of capacity	The greater of a minimum of 2 cars or 4% of capacity
More than 100 cars	1st 100 cars: 3% of capacity 2nd 100 cars: 2% of capacity Additional cars: 1% of capacity A minimum queuing length of 3 cars/lane	1st 100 cars: 4% of capacity 2nd 100 cars: 2% of capacity Additional cars: 1.5% of capacity A minimum queuing length of 3 cars/lane

Comments: There is no control point, so the design meets this requirement.

3.5 Access to mechanical parking installations

Comments: N/A

Section 4 Other Considerations

4.1 Pedestrian Service

Comments: N/A

4.1.1 General

Comments: N/A

4.1.2 Parking Structures

4.1.2 Parking structures

NOTE: Requirements for pedestrian access and egress including stairs, lifts and exits are given in relevant building codes and Standards.

In split-level car parks, a stairway or pedestrian ramp shall be located at the split-level for pedestrian access between levels and so that pedestrians do not have to use vehicular ramps.

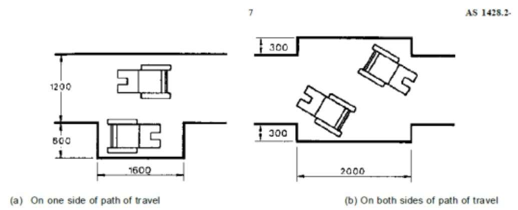


FIGURE 3 PASSING SPACE FOR WHEELCHAIRS

Source: AS1428.2_1992

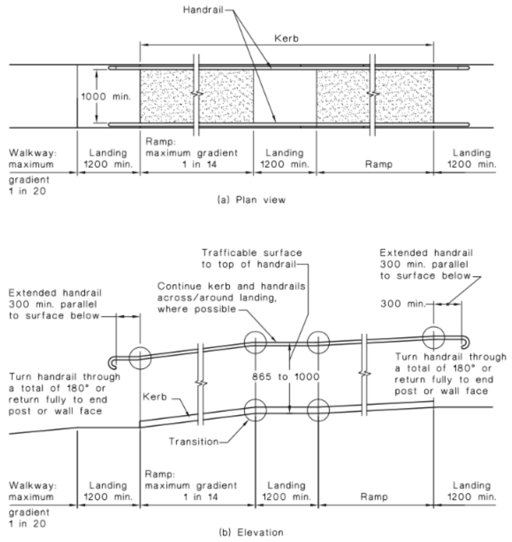
Comments:

The car park design shows a pedestrian ramp between the car parking and goods/passenger lift, which is expected to further connect buildings and facilities.

The width of the pedestrian ramp is 1.1m (measured from PDF), which is less than the minimum provision required for wheelchair users (1.2m). The width does not allow two wheelchairs to pass each other.

With the relatively short ramp length, passing areas are not considered necessary.

Except for the lift, the provisions of other connections between the car park and the building are not clear in the current design. One lift may have limited capacity to service the staff, resulting in long waiting during peak hours.

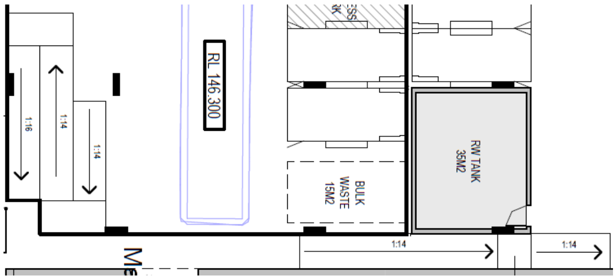
<table>
<tr><th>Section of AS2890.1</th><th>Comments</th></tr>
<tr><td>


DIMENSIONS IN MILLIMETRES

FIGURE 14 RAMP HANDRAILS

Source: AS1428.1_2009
</td><td>
The gradient of the pedestrian ramp was not provided.

The maximum gradient is 1:14 and the minimum length of a landing is 1.2m.



The design meets these requirements.
</td></tr>
<tr><td>
4.1.3 Surface car park

4.1.3 Surface car parks

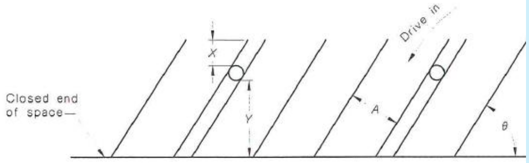
When considering pedestrian provisions in the planning of surface car parks, the follov principles apply:

(a) Pedestrians shall be directed and encouraged to cross circulating aisles and roadv at right angles at points were there is acceptable sight distance to circulating traffi

NOTE: Crossing points should be provided at locations remote from the major concentra of vehicular movement.

(b) Service yards shall be accessed separately from the car park.
</td><td>N/A</td></tr>
<tr><td>4.2 Bicycle Parking
AS2890.3 (2015)</td><td>Bicycle parking is provided in other areas.</td></tr>
<tr><td>4.3 Signposting</td><td>Signage should be provided including rear-in parking as part of the next stage of design.</td></tr>
<tr><td>4.4 Pavement Markings</td><td>Pavement markings should be provided in the next stage of the design</td></tr>
<tr><td>4.5 Parcel Pick up</td><td>N/A</td></tr>
<tr><td>4.6 Shopping Trolley Requirements</td><td>N/A</td></tr>
<tr><td>4.7 Lighting</td><td>Lighting should be provided for the car park.</td></tr>
<tr><td>4.8 Landscaping</td><td>No planting is currently provided.</td></tr>
<tr><td>4.9 Humps</td><td>Speed humps should be considered if the total parking aisle is over 100m to discourage speeding.</td></tr>
<tr><td>4.10 Special Loading/ Unloading Parking Spaces</td><td>N/A</td></tr>
<tr><th colspan="2">5 Additional Requirements for Car Parking Structures</th></tr>
<tr><td>5.1 General</td><td>-</td></tr>
<tr><td>5.2 Column Location and Spacing</td><td>Columns are located appropriately using the car template.</td></tr>
</table>

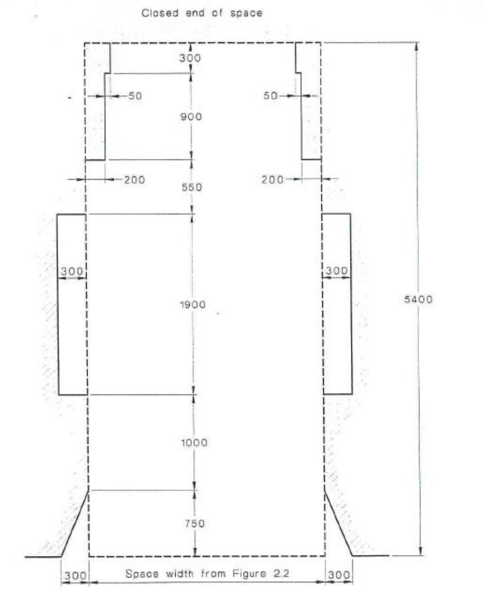
Section of AS2890.1	Comments



A = parking space width (see Figure 2.2)

Parking angle, θ, degrees	Dimensions, mm	
	X, min.	Y, min.
30	375	1825
45	530	2581
60	650	3161
75	724	3526
90	750	3650

FIGURE 5.1 COLUMN LOCATION



NOTE: The design envelope provides for structural elements to be clear of all four side doors.

DIMENSIONS IN MILLIMETRES

FIGURE 5.2 DESIGN ENVELOPE AROUND PARKED VEHICLE TO BE KEPT CLEAR OF COLUMNS, WALLS AND OBSTRUCTIONS

5.3 Headroom

5.3 HEADROOM

5.3.1 General requirements

To permit access for both cars and light vans, the height between the floor and an overhead obstruction shall be a minimum of 2200 mm.

NOTE: AS/NZS 2890.6* requires that any vehicular path of travel to or from a parking space for people with disabilities has a clearance of 2300 mm.

The minimum available clearance shall be signposted at all entrances. Appropriate warning devices such as flexible striker bars shall be provided in conjunction with the signs wherever the clearance shown on the signs is less than 2.3 m. Low clearance signs are specified in Clause 4.3.4(a).

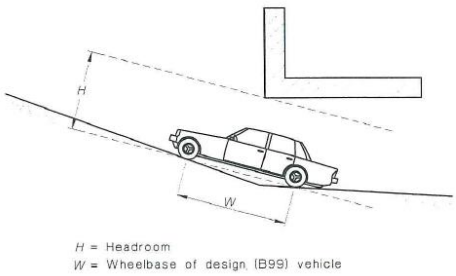
Clearances shall be measured to the lowest projection from the roof, e.g. fire sprinkler, lighting fixture, sign.

NOTE: A considerable amount of inconvenience can be caused by collisions with overhead appurtenances such as fire sprinklers. Care should be exercised in the location of these devices where headroom is limited.

Headroom at a 'sag' type grade change shall be measured as illustrated in Figure 5.3. It shall be measured perpendicular to a chord of length equal to the wheelbase of the B99 vehicle (see Appendix B) located longitudinally such that the dimension *H* is a minimum.

NOTE: Road humps should not be located near points where the headroom is critical.

Comments: A minimum of 2.3m headroom is provided for the car park.

Section of AS2890.1	Comments
	
5.4 Design of Enclosed Garages	N/A
SSU Drop off pick up	It is expected that there is a limited change to the existing access driveway. The sight distance is assumed satisfactory. **It is recommended to provide a drop-off/pick up space (6.4m*3.5m) for a small rigid vehicle (SRV), which could accommodate the parking by a minibus. Hence, a bigger space is required for the vehicle's manoeuvring (Figure 2). This can be dealt with in detailed design.** Figure 2 SSU drop off/pick up 

AS2890.2 Off-Street Commercial Vehicles Review

Table 2 AS2890.2 Review

Section of AS2890.2	Comment
2.1 General	A 12.5m long Heavy Rigid Vehicle (HRV) has been confirmed as the design vehicle for servicing.
3.3.1 Width	The roadway width is 7.1-7.5m, which satisfies the minimum width (6.5m) for a two-way HRV movement.
3.3.2 Parking on circulation roadway Where parallel parking is to be provided, the roadway shall be widened by the following amounts: (a) 2.4 m for each lane of car parking. (b) 3.0 m for each lane of truck parking. Angle parking for cars may be permitted on a circulation roadway provided it is limited to User Class (all-day) parking as specified in AS/NZS 2890.1 and there are both adequate gaps in passing traffic an adequate sight distance to enter and leave parking spaces safely.	N/A

Section of AS2890.2	Comment
3.3.3.2 Maximum roadway and ramp grades (see Table 3.2 below)	Gradients are all less than maximum requirements.
3.3.4 Maximum rates of change of grade on circulation roadways (see Table 3.3 below)	Gradient transitions are all less than maximum requirements.
3.4.3 (driveway) layout design requirements (see diagram below)	**Arranounbai Driveway connection with Aquatic Drive does not meet design requirements for fully independent operation of the design vehicle (see attached swept paths). This is proposed to be dealt with by ensuring there is no overlapping demand for the driveway as outlined in the School Transport Plan.** As shown in **Figure 3** and **Figure 4**, a car and heavy vehicle can access the driveway to the car park from Arranounbai driveway with minimal conflict. During truck exit, there is an area of overlap between the car and the truck, indicating that the truck would not be able to exit if there was an oncoming vehicle. Given the truck would need to give way to the right, it would be unlikely to turn until the car is out of the way, so this is not an issue.

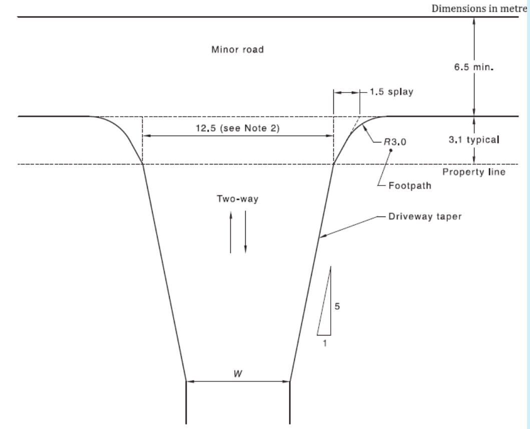
Table 3.2 — Maximum roadway and ramp grades

Design vehicle	Roadway/ramp grade[a] (max)
SRV	1:6.5 (15.4 %)
MRV, HRV	1:6.5 (15.4 %)
AV	1:6.5 (15.4 %)
BD	1:8.3 (12 %)
A-double	1:10 (10 %)
A-triple	1:20 (5 %)

[a] The grade on a curve is measured along the inside of the curve. If reverse manoeuvres are permitted on a ramp, the maximum grade shall be 1:8 (12.5 %).

Table 3.3 — Maximum rates of change of grade for roadways and ramps

Design vehicle	Rate of change of grade (max)
SRV	1:12 (8.3 %) in 4.0 m of travel
MRV, HRV	1:16 (6.25 %) in 7.0 m of travel
AV	1:16 (6.25 %) in 10 m of travel
BD	1:16 (6.25 %) in 10 m of travel
A-double	1:16 (6.25 %) in 10 m of travel
A-triple	1:16 (6.25 %) in 10 m of travel

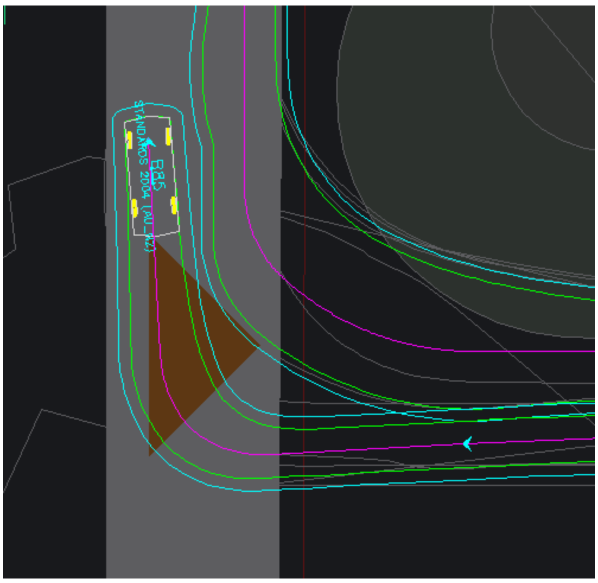


Key
W = width of circulation roadway (see Table 3.1)

NOTE 1 Figure 3.1 shows the HRV can turn left into the driveway from the left-hand side of the public road. Th design (20.0 m long) AV will take up most of the public road width when turning left into or out of the driveway as will the HRV when turning out.

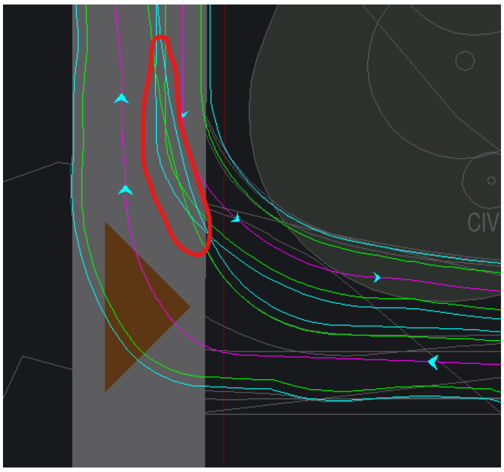
NOTE 2 Corresponding dimensions for the MRV and SRV are 9 m and 6 m respectively. Larger vehicles may b able to use these narrower driveways depending on the width of public road available for manoeuvring in or ou

Figure 3 Truck entering and car exiting



Section of AS2890.2	Comment

Figure 4 Truck exiting and car entering



3.4.5 Sight distance requirements

Frontage road speed (see Note 4) km/h	Distance (Y) along frontage road (see Note 5) m	
	5 s gap	8 s gap
40	55	89
50	69	111
60	83	133
70	97	156
80	111	178
90	125	200
100	139	222
110	153	244

It is assumed that there is no sight obstruction to an approaching vehicle within the sight distance triangle (**Figure 5** and **Figure 6**).

It is noted that standards for commercial vehicle access are higher than the car. Therefore, the sight distance is satisfactory for both types of vehicles.

Figure 5 Sight distance review (westbound)

Figure 6 Sight distance review (eastbound)

This was confirmed on site.

4.1 (Service areas) General

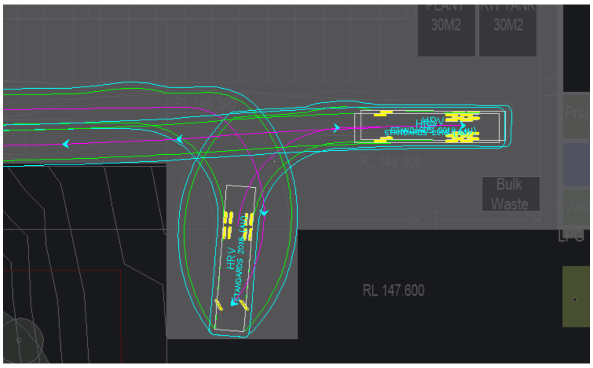
A minor service area may be located on part of the internal roadway system at the site provic
occasional obstruction to other traffic by manoeuvring trucks can be tolerated.

The swept path in **Figure 7** shows the minimum area needed for an HRV's maneuvering. It is more sensible to locate the loading dock to the south side close to the goods lift such that the delivery distance can be shortened.

Alternatively, a turntable could be introduced, which could further reduce the required space for the truck's maneuvering.

Section of AS2890.2	Comment

Figure 7 Swept path for the service area



4.2 dimensions of service bays	The design provides a service bay with the specified dimensions.

Table 4.1 — Service bay dimensions

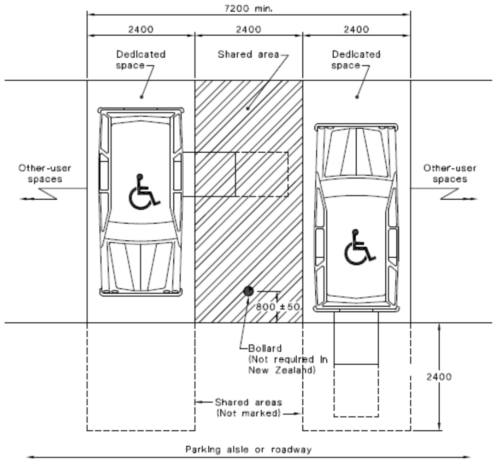
Vehicle class	Bay width m min.	Bay length m min.	Platform height m	Vertical cleara[nce] m min.
SRV	3.5	6.4	0.75 to 0.90	3.5
MRV	3.5	8.8	0.95 to 1.10	4.5[a]
HRV	3.5	12.5	1.10 to 1.40	4.5[a]
AV	3.5	20.0	1.10 to 1.40	4.5[a]

[a] 4.8 m for animal transport vehicles, vehicle carriers and 4.6 m high vehicles or where ac to the top of a tall vehicle, e.g. pantechnicon or load is required.

5. Design turning paths	See attached drawings

AS2890.6 Off-street car parking for people with disabilities

Table 3 AS2890.6 Review

Section of AS2890.6	Comment
2.2.1 Angled parking spaces An angle parking space shall comprise a combination of areas as illustrated in Figure 2.1 as follows: (a) A dedicated (non-shared) space as follows: (i) *In Australia*—2400 mm wide by 5400 mm long. 	Four spaces are provided at the specified dimensions.
2.3 Pavement slope and surface Each parking space for people with disabilities and related walking and wheelchair unloading areas shall comprise a firm plane surface with a fall not exceeding 1:40 in any direction (1:33 if the surface is a bituminous seal and the parking space is out of doors). These areas shall have a slip-resistant surface.	A maximum fall of 1:40 is provided.
3.1 Space identification	**Appropriate line marking is to be provided in the next stage of design.**
3.2 Space delineation	**Appropriate line marking is to be provided in the next stage of design.**
Number of spaces required	Defined by the Building Code of Australia. Four spaces are provided.

REV	DESCRIPTION	DATE
01	Draft issue	31.08.2022

PREPARED FOR
School Infrastructure NSW

QUALITY INFORMATION

DATE	08/22
PREPARED	JB
REVIEWED	AY
AUTHORISED	JB

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PROJECT
The Forest High School
State Significant Development Application

TITLE
Arranounbai Driveway Swept Path Assessment
Heavy Rigid Vehicle (12.5m) access

DRAWING NUMBER
SCT_00213-SP-03-001

SHEET 01 OF 04

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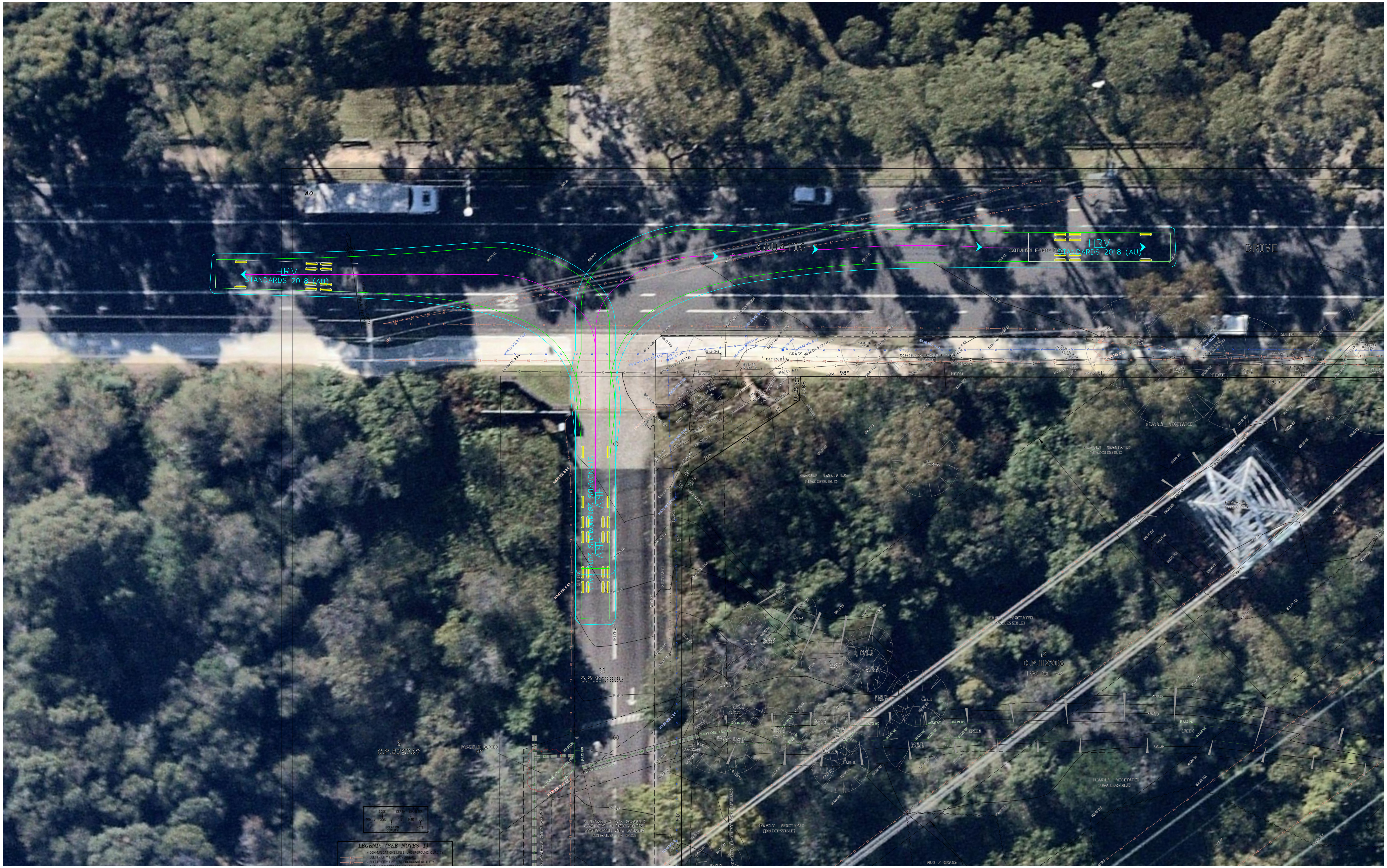

REV	DESCRIPTION	DATE
01	Draft issue	31.08.2022

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QUALITY INFORMATION	
DATE	08/22
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PROJECT
The Forest High School
State Significant Development Application

TITLE
Arranounbai Driveway Swept Path Assessment
Heavy Rigid Vehicle (12.5m) egress

DRAWING NUMBER
SCT_00213-SP-03-001

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01	Draft issue	31.08.2022

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DATE	08/22
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AUTHORISED	JB

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SCALE -

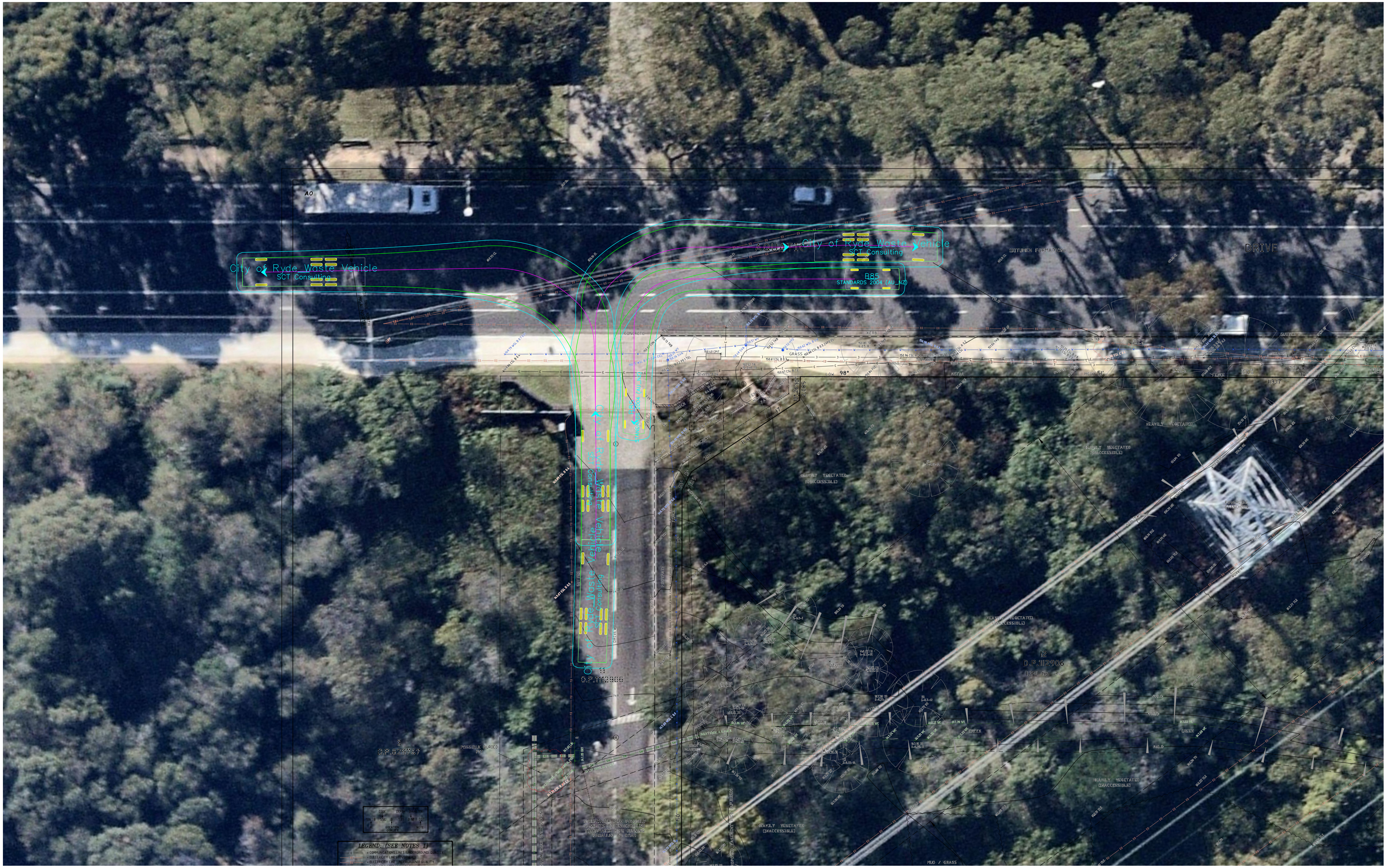
PROJECT
The Forest High School
State Significant Development Application

TITLE
Arranounbai Driveway Swept Path Assessment
City of Ryde Waste Vehicle (10.8m) access

DRAWING NUMBER
SCT_00213-SP-03-001

SHEET 03 OF 04

A1



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REV	DESCRIPTION	DATE
01	Draft issue	31.08.2022

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QUALITY INFORMATION	
DATE	08/22
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PROJECT
The Forest High School
State Significant Development Application

TITLE
Arranounbai Driveway Swept Path Assessment
City of Ryde Waste Vehicle (10.8m) egress

DRAWING NUMBER
SCT_00213-SP-03-001

SHEET 03 OF 04

A1

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Nominated Architect
Ray Brown, NSWARB 6359

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issue	amendment	date
A	FOR INFORMATION	10/06/2022
B	FOR INFORMATION	17/06/2022
C	50% SCHEMATIC DESIGN ISSUE	01/07/2022
D	60% SCHEMATIC DESIGN ISSUE	08/07/2022
E	100% SCHEMATIC DESIGN	22/07/2022
F	100% SCHEMATIC DESIGN - CONSULTANT COORDINATION ISSUE	29/07/2022
G	100% SCHEMATIC DESIGN - REISSUE	05/08/2022
H	COORDINATION UPDATES	02/09/2022
I	SCHEMATIC DESIGN - ISSUE FOR TENDER	09/09/2022

FLOOR FINISH TYPES

- CP01- CARPET FINISH
- CP02 - GUC CARPET - SOUND IMPACT ABSORPTION
- CF02 - CC STEEL TROWELLED FINISHED CONCRETE
- PV01 - GENERAL PAVING
- RS01 - VINYL SHEET FLOORING (REFER TO BASE PALETTE)
- RS02 - VINYL SHEET FLOORING (REFER TO IDENTITY PALETTE)
- RS03 - LINOLEUM SHEET FLOORING
- TL01 - CERAMIC TILES
- TF01 - SPRUNG TIMBER FLOOR

WALL LINING TYPES

- WALL LINING 01
- WALL LINING 01a
- WALL LINING 01b
- WALL LINING 01c
- WALL LINING 02
- WALL LINING 02a
- WALL LINING 03
- WALL LINING 03a
- WALL LINING 04
- WALL LINING 04a
- WALL LINING 05
- WALL LINING 06
- WALL LINING 07
- WALL LINING 08

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scale As indicated@A1
drawn IT JL RW KG
project no 200420.01

project
THE FOREST HIGH SCHOOL

drawing
STAFF CAR PARK AND LOADING - GA PLAN

drawing no. **SD-1280**
issue **I**

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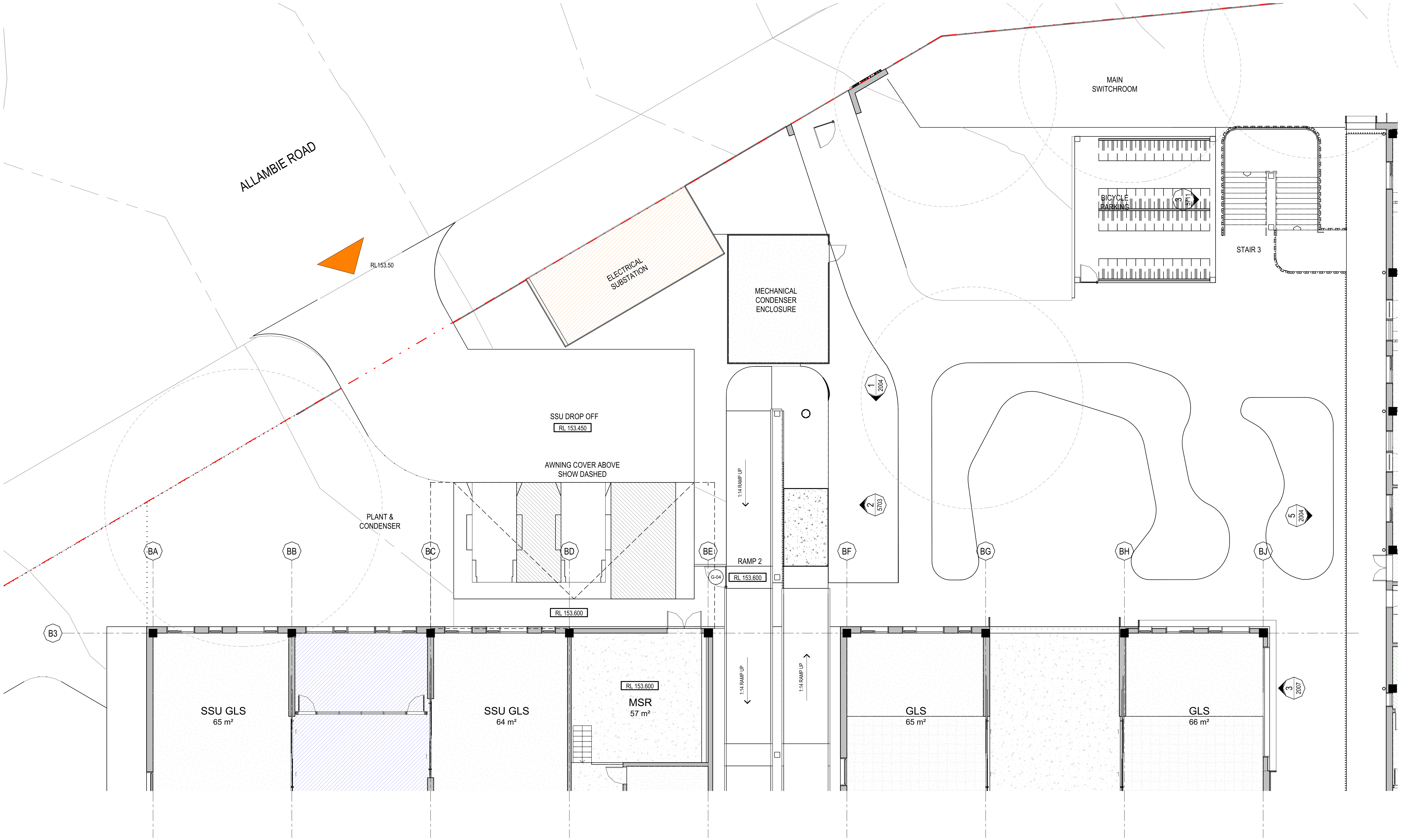

Nominated Architect
Ray Brown, NSWARB 6359

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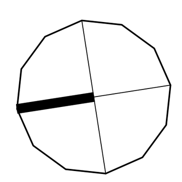
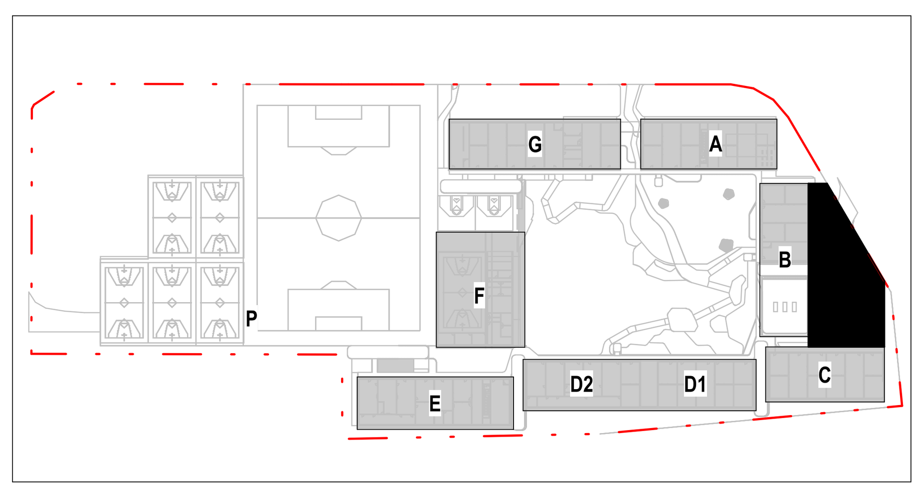
issue	amendment	date
A	100% SCHEMATIC DESIGN	22/07/2022
B	100% SCHEMATIC DESIGN - REISSUE	05/08/2022
C	SCHEMATIC DESIGN - ISSUE FOR TENDER	09/09/2022





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drawn	Author	project no	200420.01

project
THE FOREST HIGH SCHOOL

drawing
SSU DROP OFF - UPPER GROUND

drawing no.	issue
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APPENDIX G

Transport Access Guide

The Forest High School

Travel Access Guide

24/08/2022

Project overview

The Forest High School is being relocated to a portion of 187 Allambie Road, Allambie Heights. The relocation is a part of the re-zoning and planning framework for Frenchs Forest, to create a new town centre for the community.

Active ways to get to school

Walking is an active and healthy way to get to school

- Stop! Look! Listen! Think! every time you cross the road and keep checking until safely across.

Ride your bike

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

Ride your scooter

- Always wear a helmet when you ride your scooter.
- Take special care at driveways where vehicles may be driving in or out.
- Ride your scooter away from the roads.

Kiss and drop expectations

- It's important we all model safe road user behaviour.
- When we're driving around schools, we need to remember that children don't always understand the road rules. Always take extra care in school zones.

Message from your Principal

- Did you know that children who walk to school have been found to be more attentive and focused in class? Walking is also good for mental health.
- Walking is a great opportunity to social with others. Help keep yourself and your friends safe by focusing on your surroundings, and acting safely on and near roads.
- There are some great resources on the Department's website about safe travel to school: **https://education.nsw.gov.au/teaching-and-learning/curriculum/learning-across-the-curriculum/road-safety-education/**.
- Getting to school safely is everyone's responsibility. We all need to be taking extra care when we're driving around our school. Please make sure you don't call out to your children across the road - always cross at a safe place.

For more information contact:

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

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Useful links

Bicycle nsw membership (insurance, discounts) and other resources: **https://bicyclensw.org.au/**. Use discount code tnswtag to receive 15% off.

You can find tips and resources for safe school travel at **https://education.nsw.gov.au/parents-and-carers/wellbeing/health-and-safety/safe-travel/starting-high-school-safely-never-too-old-to-be-safe**.

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The Forest High School

Travel Access Guide

24/08/2022

Project overview

The Forest High School is being relocated to a portion of 187 Allambie Road, Allambie Heights. The relocation is a part of the re-zoning and planning framework for Frenchs Forest, to create a new town centre for the community.

Using public transport to get to school

School buses and public buses

- Routes 141, 142, 174X, 280 are available on Allambie Rd. Available school routes include 210, 213, 720n, 730n, 621n, 739n and 777n.
- Always wait until the bus has gone, then use a safe place to cross.
- Plan ahead, allow plenty of travel time and slow down to avoid slips and falls.

Apply for a School Opal Card | School Term Bus Pass

- School Opal cards provides free school travel and can be used as a School Term Bus Pass, for travel within the Opal network. Visit transportnsw.info/school-travel-apply to see if you are eligible.
- Students are expected to be courteous and responsible, and follow the school student's code of conduct when travelling on public transport.

Message from your Principal

- Stand a few steps back from the edge of the road when waiting at the bus stop.
- There are some great resources on the Department's website about safe travel to school: **https://education.nsw.gov.au/teaching-and-learning/curriculum/learning-across-the-curriculum/road-safety-education/**.
- Getting to school safely is everyone's responsibility. We all need to be taking extra care when we're driving around our school. Please make sure you don't call out to your children across the road - always cross at a safe place.
- To reduce risk, please talk to your children about what to do if they catch the wrong bus, get off the bus at the wrong stop or you are delayed and cannot meet them as usual.

Kiss and drop code of conduct

- It's important we all model safe road user behaviour.
- When we're driving around schools, we need to remember that children don't always understand the road rules. Always take extra care in school zones.

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Something broken on the way to school?

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

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

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

Useful links

Trip planner (**https://transportnsw.info/trip**).

School Student Transport Scheme **https://apps.transport.nsw.gov.au/ssts/#/**.

For more information contact:

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

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