



Department of Education

Picton High School Redevelopment

Traffic and Accessibility Impact Assessment

April 2018

Department of Education

Picton High School Redevelopment

Traffic and Accessibility Impact Assessment Quality Assurance Statement

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1. Executive Summary

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) and assesses the traffic and parking implications of the proposed school capacity increase.

TDG has been engaged to advise on the traffic and parking matters and contribute to the overall design of the proposed redevelopment of Picton High School. The NSW Department of Education proposes to increase the capacity of Picton High School in order to meet the growing demand for public education in South West Sydney.

The redevelopment will provide permanent teaching spaces (classroom space) for 1,500 students and will involve a major upgrade to the existing core facilities to accommodate growth in the school roll for up to 2,000 students, along with the necessary growth in teacher and staffing roles. Accordingly, the school would accommodate for a maximum 1,500 students at commencement of operation.

The planned redevelopment will see replacement of a significant portion of the existing building stock, with any retained buildings to be re-purposed and refurbishment. It is to include the following:

- The existing bus drop-off/pick-up facility adjacent to Argyle Street will be redesigned to improve safety and efficiency, separate different movement modes, and will continue to accommodate up to six buses;
- The site boundary adjacent to Argyle Street will be realigned so that the bus drop-off/pick-up area will be located within the road reserve;
- A right turn bay will be provided along Argyle Street to assist vehicles turning into the site, resulting in the relocation of the existing pedestrian crossing facility;
- Entrance to the south-western staff parking area will be discontinued from the bus area and a new entry-only access will be provided from Argyle Street;
- A new access will be provided via Wonga Road, which will connect with the south-western staff parking area;
- A bus parking facility will be provided on Wonga Road adjacent to the site to accommodate up to four buses, including a turning facility to enable buses to turn around;
- A total of 57 formal and 82 informal parking spaces are proposed on-site; and
- A loading area is provided at the southern end of the site adjacent to Building O, with service vehicles to access the site via the new Wonga Road access.

Based on the assessment provided within this report, it is concluded that:

- The proposed car park layout and access arrangements have been designed in accordance with the relevant standards and guidelines;
- The Wollondilly Development Contributions Plan indicates that Argyle Street is proposed to be upgraded to a four lane road, which is expected to largely mitigate the impacts of the increase in traffic generated by the school and the increase in background traffic;

- It is recommended that a Traffic Management Plan be prepared for the school to reduce the reliance on private vehicle use;
- It is also recommended that a Construction Traffic Management Plan be prepared to assess and manage the potential effects arising from the operation of the school during construction.

Overall, it is concluded that the proposed redevelopment of the school can be accommodated within the surrounding traffic and parking environments subject to adoption of these, and other more detailed recommendations, and the implementation of the road network improvements that are identified in the following assessment.

2. Introduction

TDG has been engaged to advise on the traffic and parking matters for the proposed redevelopment of Picton High School. The redevelopment will provide permanent teaching spaces (classroom space) for 1,500 students and will involve a major upgrade to the existing core facilities to accommodate growth in the school roll for up to 2,000 students, along with the necessary growth in teacher and staffing roles.

The redevelopment will incorporate the following key changes to the traffic and parking features of the school:

- The existing bus drop-off/pick-up facility adjacent to Argyle Street will be redesigned, and provision of a right turn lane from Argyle Street provided, in order to improve safety and efficiency;
- A new entry-only access from Argyle Street will be provided to allow access to the south-western staff parking area, which will have access to/from the bus area discontinued;
- A new access will be provided via Wonga Road, which will accommodate additional bus parking, and provide access to the south-western staff parking area and loading area;
- Changes to the parking layout will result in the provision of 11 visitor parking spaces, 44 spaces in the existing south-western car park, and 82 informal parking spaces within the northern car parking area and along the new accessway accessed via Wonga Road.

This report has been prepared to address the Secretary's Environmental Assessment Requirements and assesses the traffic and parking implications of the proposed school redevelopment.

3. Response to Secretary's Environmental Assessment Requirements

The SEARs required the preparation of a transport and accessibility impact assessment, which details, but is not limited to the following:

| Council Comments | Response |
|---|---|
| Accurate details of the current daily and peak hour vehicle, public transport, pedestrian and cycle movement and existing traffic and transport facilities provided on the road network located adjacent to the proposed development | Traffic and parking surveys have been undertaken in the vicinity of the site and are presented within Section 4.5. In addition, a travel mode survey has been undertaken for the existing student and staff population to determine the use of alternative transport modes to access the site. The results are presented in Section 4.5.3. |
| An assessment of the operation of existing and future transport networks including the bus network and their ability to accommodate the forecast number of trips to and from the development. | A detailed assessment of the road network has been provided within Section 8. This has included a SIDRA analysis of the school driveways and the intersection Argyle Street with Wonga Road. |
| Details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips based on surveys of the existing and similar schools within the local area. | An assessment of the traffic impacts generated by the redevelopment of the school is provided within Section 8. Based on the travel mode survey presented in Section 4.5.3, the school currently generates a minimal number of walking and cycling trips, with the majority of students and staff arriving to school by bus or private vehicles. The walking and cycling trips generated by the school are therefore expected to continue to be minimal. |
| The adequacy of public transport, pedestrian and bicycle networks and associated infrastructure within Argyle Street to meet the likely future demand of the proposed development. | As discussed above, the number of walking and cycling trips generated by the school is minimal and will remain relatively unchanged following the redevelopment. As such, the existing cycling and pedestrian infrastructure is adequate. Notwithstanding this, it is proposed to provide a pedestrian footpath along the western side of Argyle Street to facilitate pedestrian movements between the proposed pedestrian crossing facilities along Argyle Street. |
| The impact of the proposed development on existing and future public transport infrastructure within the vicinity of the site in consultation with Roads and Maritime Services and Transport for NSW and identify measures to integrate the development with the transport network. | No public bus facilities are provided within the vicinity of the site. Picton Buslines has been informed of the project and a meeting was held to discuss the impacts to the existing bus routes. The company has confirmed that they will provide additional services as required in the future. In addition, the comments from Picton Buslines have been accommodated into the design of the school. |

| Council Comments | Response |
|--|--|
| The identification of suitable infrastructure required to ameliorate any impacts on traffic efficiency and road safety impacts associated with the proposed development, including details on improvements required to affected intersections (including the potential for traffic signals and/or a round-a-bout at the Wonga Road, Remembrance Driveway and Argyle Street intersection) and the provision of supporting plans that demonstrate compliance with Austroads Guide to Road Design, Australian Standards and Roads and Maritime Services guidelines. | <p>The traffic assessment presented in Section 8 for the road network indicates that the road network will start to reach capacity as the school reaches capacity. However, it is proposed that Argyle Street will be upgraded to four lanes within the vicinity of the site, as identified in the Wollondilly Development Contributions Plan.</p> <p>It is also noted that the Argyle Street / Wonga Road intersection would need to be upgraded prior to the school reaching capacity. Based on discussion with Council it is understood that this would likely be in the form of a roundabout.</p> <p>It is proposed to provide a right turn bay for vehicles turning into the school from Argyle Street. The design is in accordance with the relevant guidelines and standards and is discussed within Section 9.</p> |
| Details of travel demand management measures to minimise the impact on general traffic and bus operations and to encourage sustainable travel choices and details programs for implementation. | A Traffic Management Plan is recommended as part of this assessment to assist in reducing the parking and traffic impacts of the proposal. |
| The impact of trips generated by the development on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for upgrading or road improvement works, if required. Traffic modelling is to be undertaken using SIDRA network modelling for current and future years. | A detailed assessment of the road network has been provided within Section 8. This has included a SIDRA analysis of the school driveways and the intersection Argyle Street with Wonga Road. |
| The proposed active transport access arrangements and connections to public transport services. | The school currently has one student who cycles to school and 14 students and staff who walk to school. The use of alternative modes is expected to remain low. The proposed design provides a clear entrance to the school by these modes. |
| Details of any proposed school bus routes along bus capable roads (i.e. travel lanes of 3.5 m minimum) and infrastructure (bus stops, bus layovers etc.) | Bus operations are managed by Picton Buslines, who have indicated that bus routes will be amended based on future demands on an ongoing basis. |
| The proposed access arrangements, including car and bus pick-up/drop-off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and bicycle networks, including pedestrian crossings and refuges and speed control devices and zones. | The proposed design provides a number of amendments to the layout of the Argyle Street bus stop for the school in order to improve safety and efficiency. In addition, another bus stop will be provided at the rear of the site via Wonga Road. A detailed description of the design and its operation is provided within the report. |
| Measures to maintain road and personal safety in line with CPTED principles. | This is discussed by other consultants. |
| Proposed bicycle parking provision, including end of trip facilities, in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance. | As discussed, only one student currently cycles to school. The required facilities for alternative travel modes is minimal. A Traffic Management Plan is recommended to be prepared at a later date to detail the required bicycle facilities. |

| Council Comments | Response |
|---|---|
| Proposed number of on-site car parking spaces for teaching staff, students and visitors and corresponding compliance with existing parking codes and justification for the level of car parking provided on-site. | The parking requirement, expected parking demand, and the impact on the surrounding on-street parking supply is discussed within Section 11. A Traffic Management Plan will be prepared to reduce the reliance on private vehicle use and the impact of the school on the available on-street parking supply. |
| Details of emergency vehicle access arrangements. | All emergency vehicles will be directed to the northern crossover on Argyle Street. This will be for: <ul style="list-style-type: none"> • Fire: Fire Booster assembly location; • Ambulance and Police: Direct access to the administration building. |
| An assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures. | The identified safety hazards identified as part of the initial assessment of the school, and the proposed amendments to the existing layout to address these issues, is discussed within this report. |
| Service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times), including consideration of the access off Wonga Road (east) for such movements. | Access by service vehicles will be provided via Wonga Road. An assessment of the accessibility off the site by these vehicles is provided within Section 13. |
| <p>In relation to construction traffic:</p> <ul style="list-style-type: none"> • Assessment of cumulative impacts associated with other construction activities (if any); • An assessment of road safety at key intersection and locations subject to heavy vehicle construction traffic movements and high pedestrian activity; • Details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process; • Details of anticipated peak hour and daily construction vehicle movements to and from the site; • Details of on-site car parking and access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle; • details of temporary cycling and pedestrian access during construction; • Traffic and transport impacts during construction, including cumulative impacts associated with other construction activities, and • How these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact. | An outline of the proposed construction program is provided within Section 15. A detailed Construction Traffic Management Plan will be prepared at a later stage. |

Table 1: SEARs Key Issues and Relative Comments

4. Transport Environment

The following sections describe the current and potential future traffic and transport environments within the vicinity of the site.

4.1 Site Location

Figure 1 shows the location of the site in relation to Picton and the surrounding transport network.



Figure 1: Site Location (Intramaps: <http://maps.wollondilly.nsw.gov.au/intramaps80public/>)

The current school site fronts Argyle Street and also has access at the rear of the site by way of Wonga Road and a partially formed paper road across the eastern site boundary. Wonga Road intersects Argyle Road at a Stop controlled intersection. Argyle Street has a painted right turn bay and left turn deceleration lane established to facilitate access to Wonga Road.

An aerial photo view of the site in relation to the local road network is shown in **Figure 2**.



Figure 2: Aerial Photo of the Site

Key features of the site and its surrounds are as follows:

- Established residential uses occupy the land to the north of the site;
- Land to the west, south and east is predominantly un-developed at present;
- Some commercial / industrial uses are located on Wonga Road, including the Picton Bus depot which is the bus service operating the school services;
- A paper road extension of Wonga Road extends about half way across the rear (eastern) boundary of the site.

4.2 Land Use Zoning

Figure 3 shows the land use zoning of the site and the surrounding lots. Key land use zoning features of the locality are:

- The subject site carries a R2 Low Density Residential zoning control;
- The site area is 5.69ha; and
- The site address is 480 Argyle Street, Picton.

The Objectives of the Zone include:

“To enable other land uses that provide facilities or services to meet the day to day needs of residents.”

“Educational Establishments” are permitted with consent in the zone.

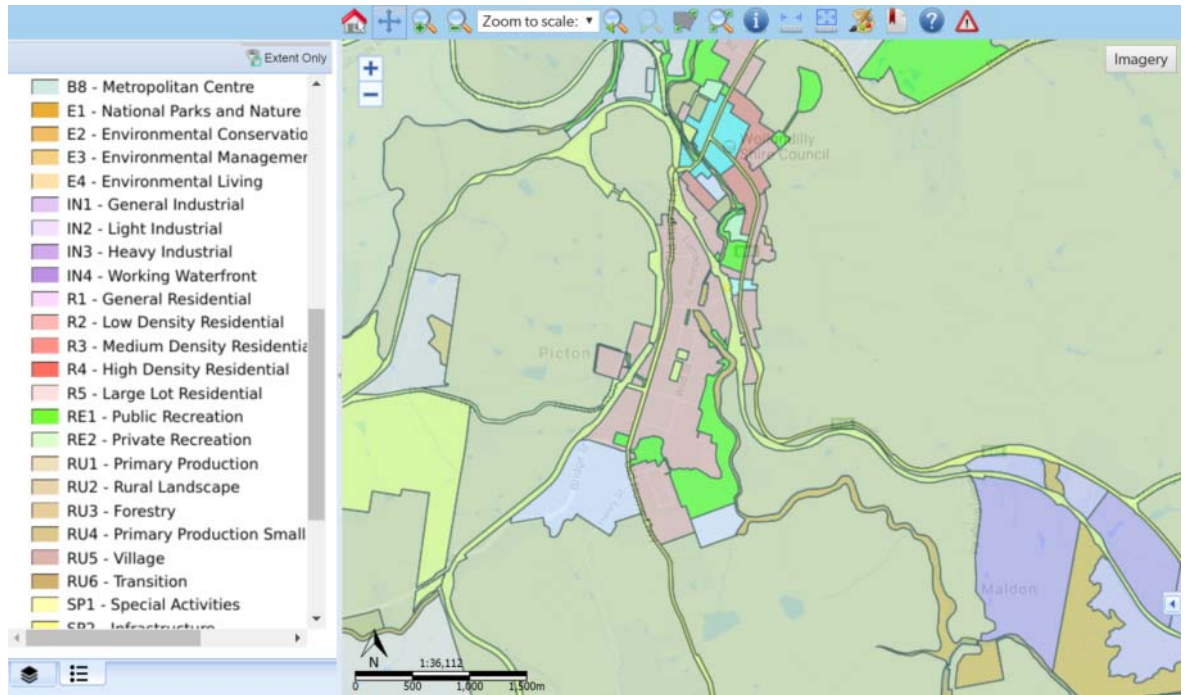


Figure 3: Land Use Zoning (Source: NSW Planning Portal)

4.3 Transport Network and Road Hierarchy

Engagement with RMS has identified that Argyle Street, at this location, is identified as a Regional Classified Road managed by Wollondilly Shire Council.

As such, RMS considers that it is more appropriate for Council to determine if proposed access arrangements are acceptable from a network perspective (i.e. acceptable in terms of safety and efficiency). It is however noted that the development will require referral to RMS in accordance with the provisions of Clause 104 of State Environmental Planning Policy (Infrastructure) 2007. Given the above, RMS has advised it considers that it has more of an advisory and support role in relation to developments on Classified Regional Roads.

Wonga Road is a Local Road by comparison, under the direct control of Wollondilly Shire Council.

4.4 Road Environment

The local road environment is described as follows:

- Both Argyle Street and Wonga Road carriageways have been measured at 13 metres kerb to kerb;
- The school currently has two vehicle access locations to/from Argyle Street. The northern crossing provides for entry only movements for staff, visitors and buses. The southern crossing similarly provides these egress movements;
- Existing sight distances have been measured on-site. These are summarised in **Table 2:**







| Site Location | Sight Distance to the South (m) | Sight Distance to the North (m) | Austrads ASD / DSD (m) 60km/h Speed Zone with 40km/h School Zoning | Comment |
|---|--|---|---|--|
| Wonga Road | 267  | 220  | ASD for 70km/h Design Speed: 95m DSD for 70km/h Design Speed: 165m | Complies with DSD |
| Southern School Driveway Crossing | 225  | 142  | | Complies with DSD |
| Existing School Pedestrian Crossing Islands | 220  | 290  | | Significantly exceeds DSD, measured to top of kerb on median islands |

Table 2: Existing Measured Sight Distances

- Street lighting is established at regular intervals along the site side of the Argyle Street carriageway;
- A continuous concrete footpath is established along Argyle Street on the school side of the road. It extends north from the southern school boundary connecting the school with the Picton town centre;
- Continuous double white centreline markings are established across the whole of the site frontage. In effect, these impose a no right turning restriction either to or from the driveway crossings. These current controls are somewhat impractical as established and evidence from site observations are that the control is ignored in the present environment;
- A school speed zone control that reduces the permissible speed limit to 40km/h between 8:00-9:30am and 2:30-4:00pm on school days extends from Wood Street in the north to a location about 90 metres north of Wonga Road. This covers the entire school frontage area and extends north over the marked kerbside parking environment;



- A bus layover area is established about 20 metres north of the school's northern driveway crossing on the east side of Argyle Street. Its defined operating times are: 8:30-9:30am and 3:00-4:00pm on school days;
- Cycling is currently provided for within the carriageway of Argyle Street, under the school speed zone controlled environment;
- The on-street parking controls on Argyle Street comprise the following elements:
 - On the west side of Argyle Street, five spaces with a P2: 8:00-9:30am and 2:30-4:00pm control;
 - On the immediate school frontage, a P2 drop-off zone of about 50 metres in length, catering for up to about eight vehicles at a time;
 - Otherwise, generally time un-restricted parking controls.



4.5 Existing Traffic Environment

The existing traffic environment has been surveyed to inform an understanding of the local environment. The key findings are summarised as follows:

4.5.1 Driveway Peak Hour Turning Movements

The school peak hour driveway turning movements were surveyed on Thursday 6 April 2017. The peak demand movements are summarised in **Figure 4** and **Figure 5**. The left image shows peak movement counts for all vehicles, and on the right the peak bus movements.

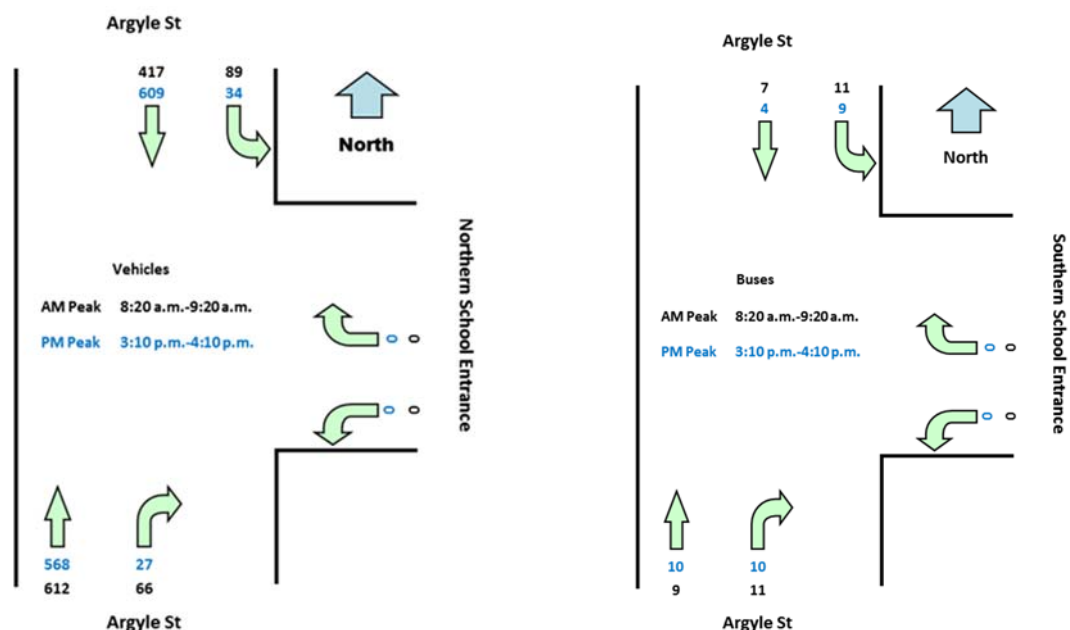


Figure 4: Peak Northern Driveway Turning Movements (All Vehicles and Buses)

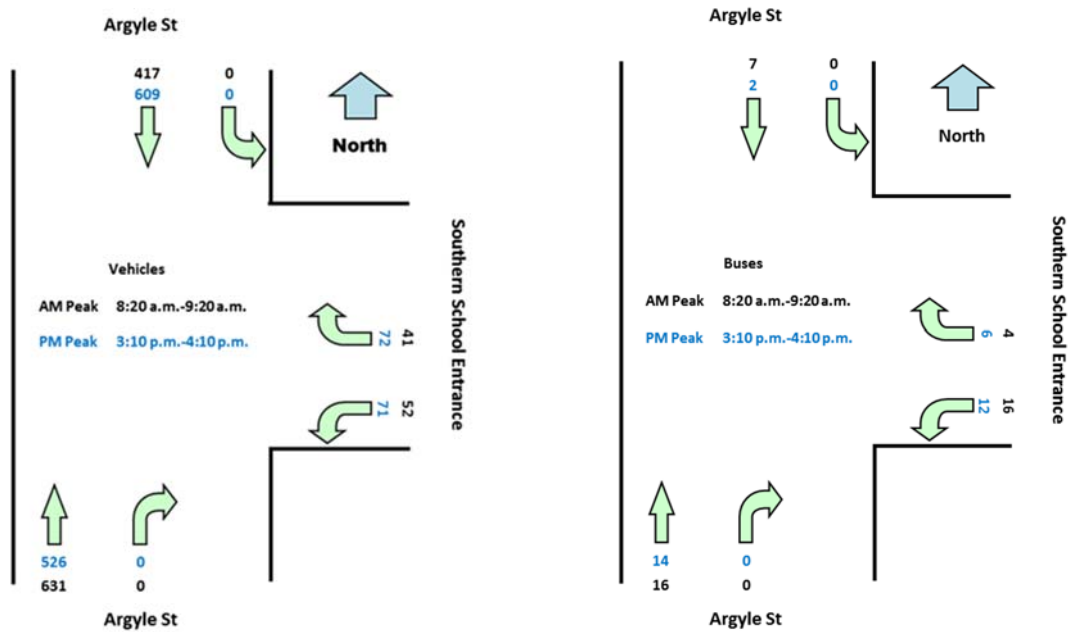


Figure 5: Peak Southern Driveway Turning Movements (All Vehicles and Buses)

The traffic surveys show a peak site trip generation demand for a total of:

- 248 vehicles in the AM peak, 63% arrivals, 38% departures;
- 204 vehicles in the PM peak, 30% arrival, 70% departures;
- 17 to 18% of trips involve bus movements.

Interpretation of the AM peak period data indicates an average daily traffic volume of about 11 to 12,000vpd on Argyle Street immediately north of the site frontage.

Additional turning movement surveys were undertaken on Tuesday 23 January 2018 at the intersection of Argyle Street and Wonga Road in order to determine the turning movements to/from Wonga Road. The results of the survey are presented below in **Figure 6**.

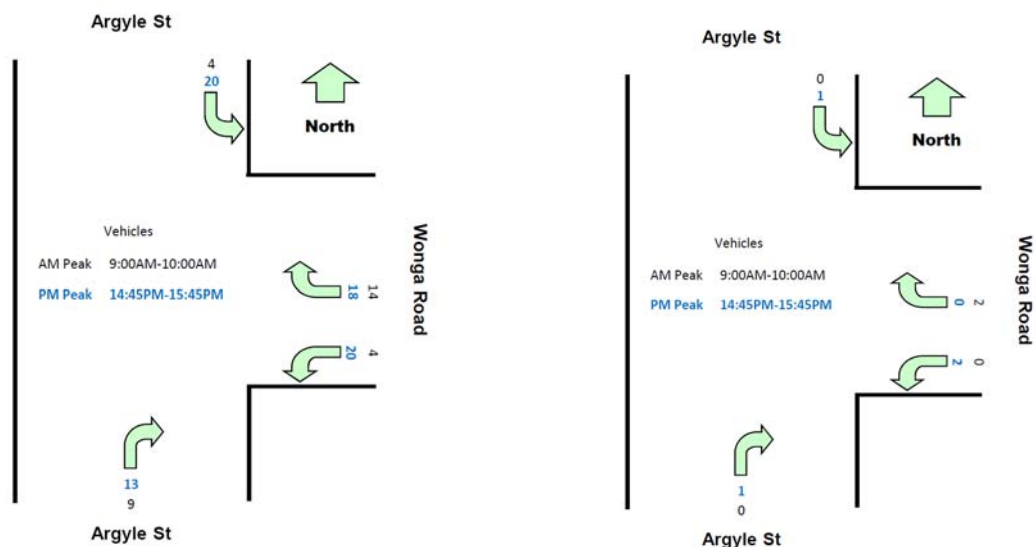


Figure 6: Peak Wonga Road Turning Movements (All Vehicles and Buses)

The survey results indicate that Wonga Road currently carries a low level of traffic, with 31 and 71 vehicle movements recorded in the AM and PM peak periods, respectively.

4.5.2 Existing Parking Environment

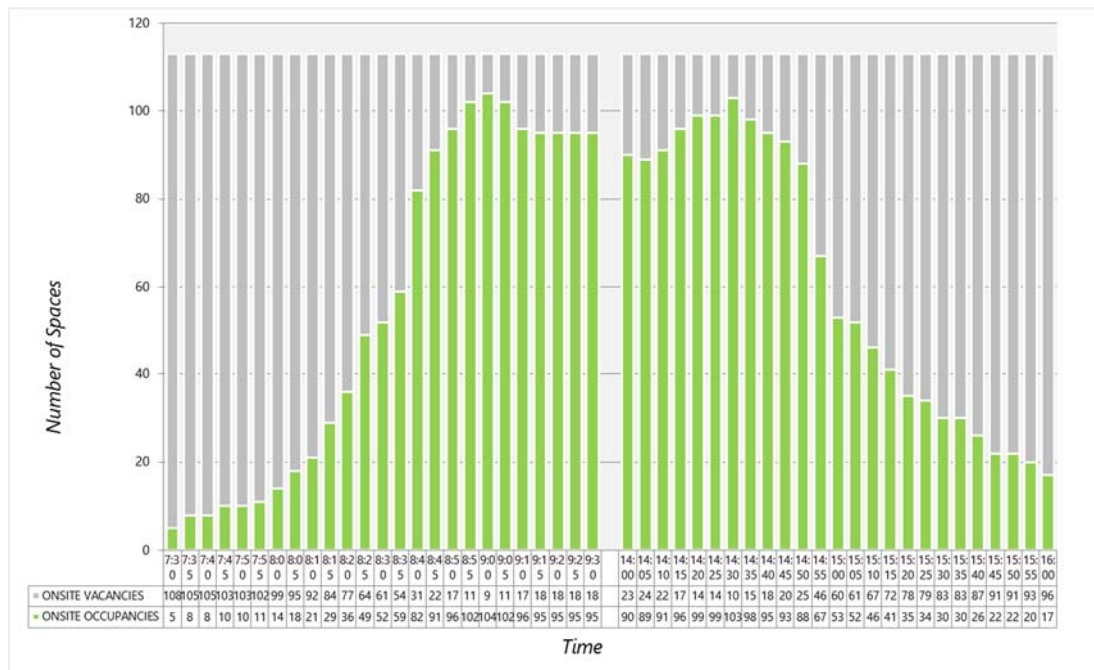
In addition to the traffic movement surveys, the AM and PM parking demand environments have also been measured. Parking surveys were undertaken to coincide with the traffic counts. The surveys were categorised by specific uses both on-site and on the street environment. The extent of the survey area and detailed survey results are provided within **Appendix A**.

The key findings from the surveys are summarised in the following graphs.

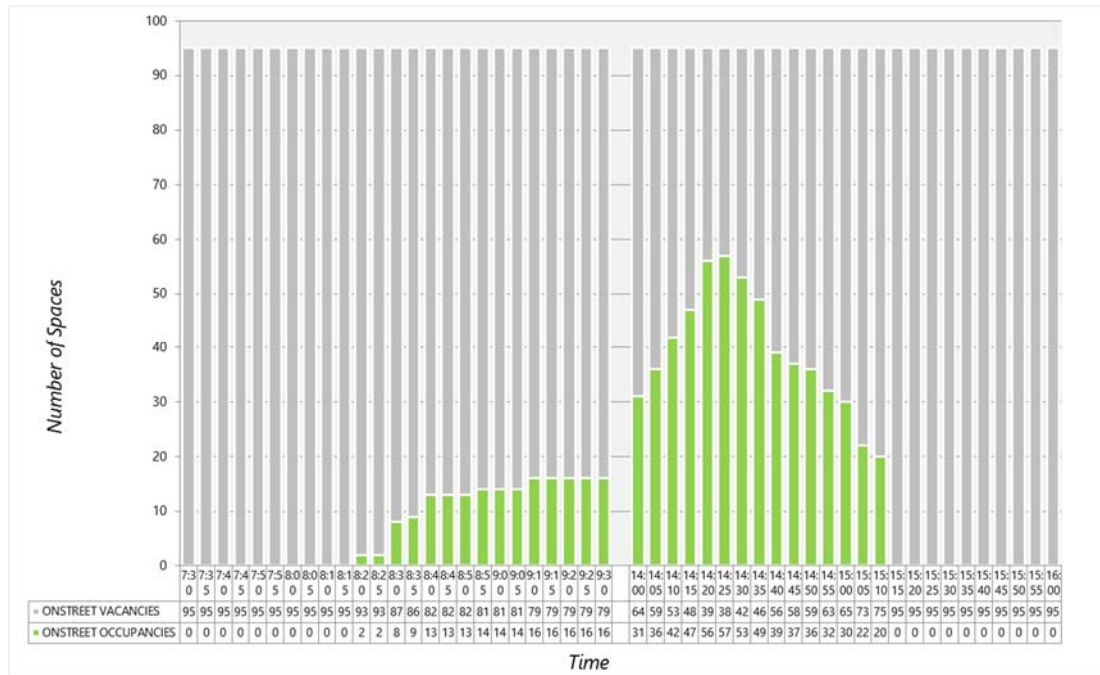
The graphs show the following key results:

- The on-site parking environment is currently well-utilised, reaching 92% occupancy of the total 113 space supply surveyed;
- The on-street environment indicates some surplus capacity, reaching 60% of the area surveyed. That said, utilisation closer to the school frontage is higher, although there is not an undue impact on the street parking environment; and
- The parking environment surveyed reached peak occupancy of 75%, this occurring for a short, isolated period at about 2:30pm in the afternoon.

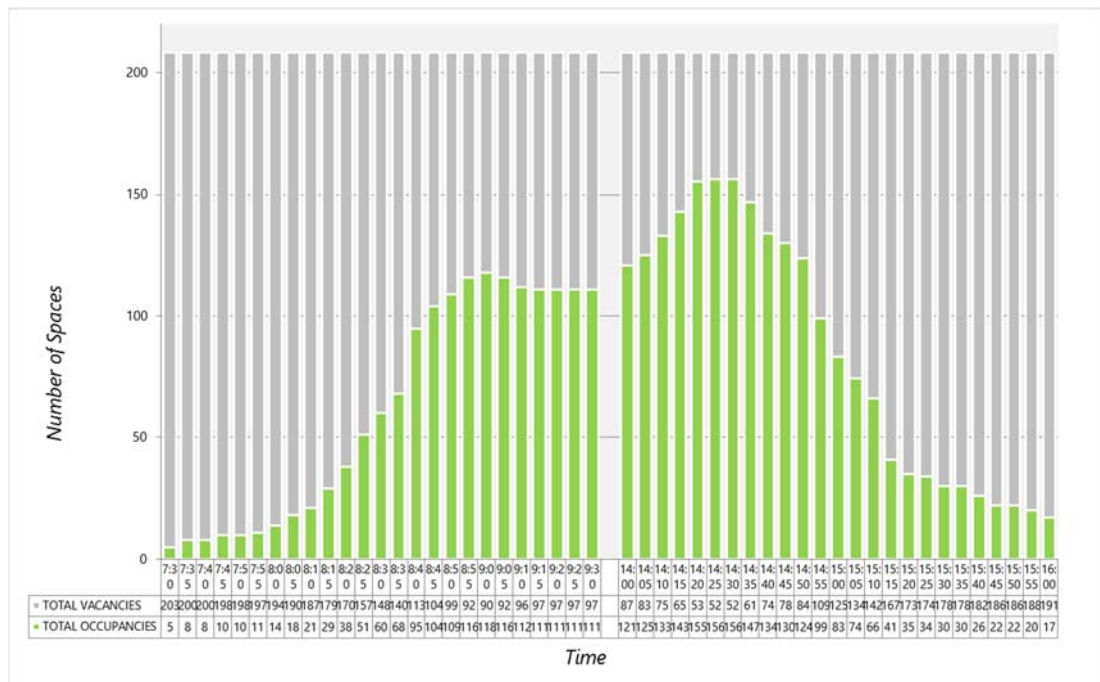
The overall parking demand profiles indicate the PM period generates a higher demand than the AM. The on-site demands build up in the morning and remain relatively constant through the day. By contrast, the off-site parking environment indicates a much lower demand in the morning, building to a peak afternoon demand at about 2:30pm.



Graph 1: On-site Parking Demand vs. Supply



Graph 2: On-street Parking Demand vs. Supply



Graph 3: Total Surveyed Parking Demand vs. Supply

4.5.3 Travel Mode Split

Travel mode split interview surveys have been undertaken for both students and staff at the school. The surveys involved a sample of the school population. These were undertaken on 30 June 2017. The surveys identified the following travel mode distributions:

| Mode of Travel | Student Totals | Student Mode Split % | Staff Totals | Staff Mode Split % |
|---|----------------|----------------------|--------------|--------------------|
| Walk | 13 | 6.3% | 1 | 1.6% |
| Bus | 140 | 68.3% | 0 | 0.0% |
| Train | 1 | 0.5% | 0 | 0.0% |
| Bicycle | 1 | 0.5% | 0 | 0.0% |
| By car - dropped off in the morning | 46 | 22.4% | 0 | 0.0% |
| Passengers in another student's car | 2 | 1.0% | 0 | 0.0% |
| Passengers in a car driven by a member of staff | 2 | 1.0% | 2 | 3.2% |
| Car as a driver | 0 | 0.0% | 59 | 95.2% |
| Other | 0 | 0.0% | 0 | 0.0% |
| Total respondents (apparent number in class) | 205 | 100.0% | 62 | 100.0% |

Table 3: School Travel Mode Splits

Table 3 is relatively self-explanatory. The following characteristics are of particular note:

- About 68% of all student arrivals were by bus;
- Student drop-off by car accounted for 22% of arrivals;
- Accessible (walking/cycling) modes accounted for 6.8% of student arrivals, noting that cycling represents a very low (0.5%) utilisation. This is perhaps a function of the wide and rural nature of the area serviced; and
- By contrast, 98.4% of the staff arrived by car, either as the driver or passenger.

4.6 Future Traffic Environment

The future traffic demand environment to be expected by the school is assessed and described later in this report. With respect to the overall road environment it is evident there are wider community growth and developmental demands that are expected to add traffic demands to the transport network gradually over time.

The Wollondilly Development Contributions Plan indicates the current provisioning in relation to the Argyle Street environment:

- Argyle Street – Prince Street to Wood Street: T4: Upgrade MR620 to 4 lanes, Prince Street to Wonga Road (2km), scheduled for 2020 to 2025;
- Argyle – Picton High School to River Road: T5: Upgrade MR620 to 4 lanes, Wonga Road to River Rd (2km), scheduled for 2020 to 2025.

These works are currently provided for within the Section 94 provisions of the Development Contributions Plan and are indicative of forecast traffic demands in the corridor.

5. Road Safety

A search of the Road Safety Crash and Casualty Statistics Portal has been undertaken for the most recent four year period 2012 to 2015 inclusive. Data for the 2016 year is provisional and set down for confirmation by June 2018. A search radius of 400m from the school frontage has been assessed. **Figure 7** shows the results of the search.

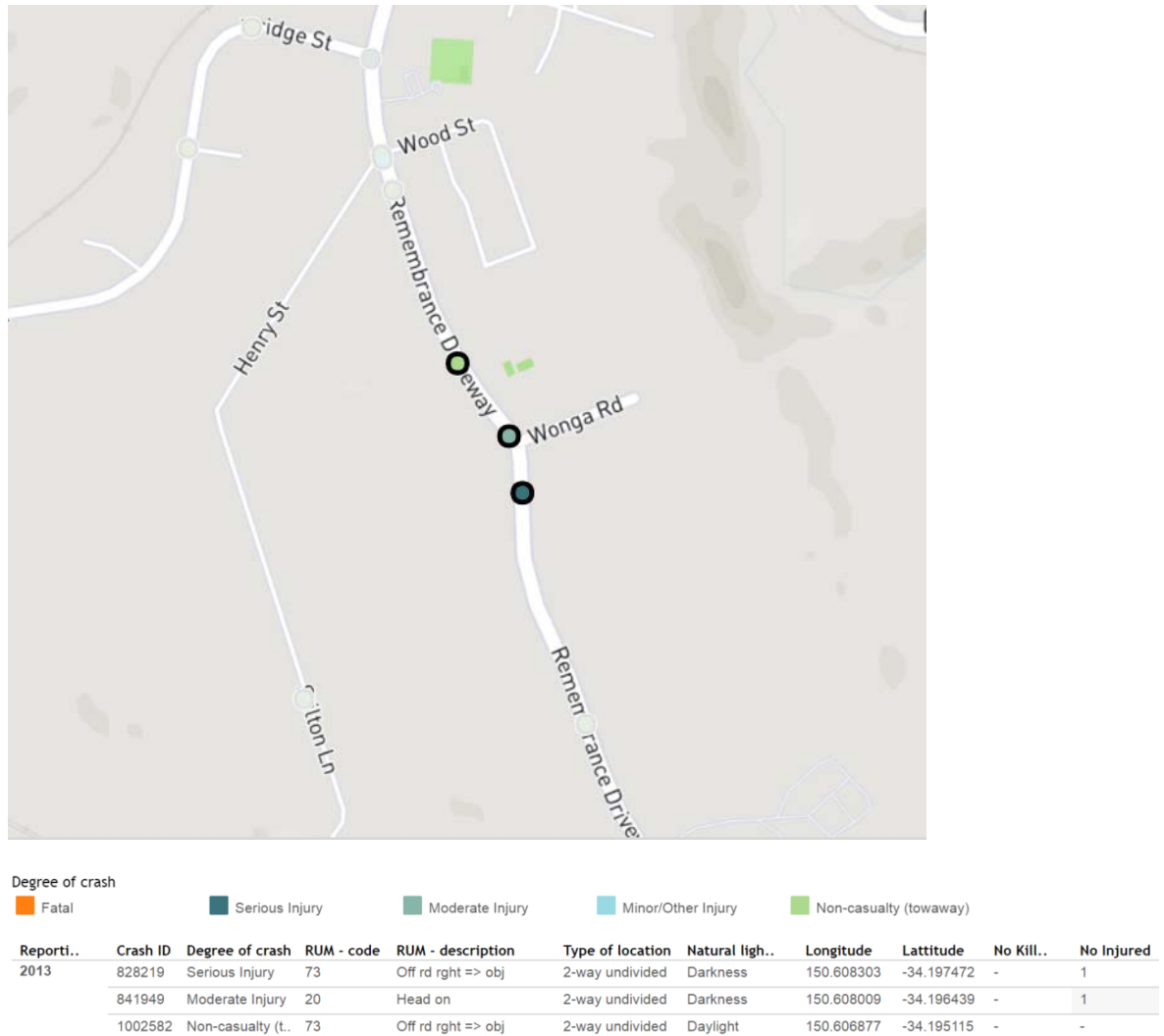


Figure 7: TfNSW Crash and Casualty Statistics Map and Data

Three crashes have been identified over the period. The key characteristics of these are as follows:

- All crashes occurred in 2013, there have been no recorded incidents since;
- Two crashes occurred in darkness, outside of the core school hours;
- Two crashes involved vehicles losing control and leaving the road to the right;
- One crash appeared to have involved a head on collision on or about the corner near Wonga Road, resulting in a moderate injury;
- There have been no crashes recorded on the immediate school frontage, and importantly, none involving pedestrians crossing the road environment.

Overall, there is no evidence of a recurrent, persistent or adverse road crash history that would raise a particular local road safety concern. There have been relatively recent improvements to school frontage traffic and pedestrian management on the road, the evidence indicates this is achieving its road safety purpose.

6. Development Proposal

6.1 Proposed Layout

The NSW Department of Education proposes to increase the capacity of Picton High School in order to meet the growing demand for public education in South West Sydney. The redevelopment will provide permanent teaching spaces (classroom space) for 1,500 students and will involve a major upgrade to the existing core facilities to accommodate growth in the school roll for up to 2,000 students, along with the necessary growth in teacher and staffing roles.

The proposal is a significant change to the current on-site environment. In broad terms, the transport elements of the site have been separated, with buses continuing to operate via the existing crossovers via Argyle Street, and new accesses provided via Argyle Street and Wonga Road for cars and trucks.

Figure 8 shows the proposed layout for the overall site.



Figure 8: Overall Site Design

Car parking for the school will continue to be provided via the car parking area along the northern boundary of the site, which will continue to gain access via the existing crossovers. The southern parking area will gain access via a new entry crossover from Argyle Street, and will exit the school via a new access via Wonga Road, at the south-eastern corner of the site. An additional 37 informal car parking will be provided along the new accessway that will link the existing car park with Wonga Road.

Changes to the parking layout will result in the provision of 11 visitor parking spaces (including one disabled space), 44 spaces in the existing south-western car park, and 82

informal parking spaces within the northern car parking area and along the new accessway accessed via Wonga Road.

A taxi drop-off area has been provided within the northern car parking area, which will service the taxi associated with the Special Needs class.

A loading area is provided at the southern end of the site adjacent to the Metals Block, with service vehicles to access the site via the new Wonga Road access.

6.1.1 Argyle Street Layout



Figure 9: Argyle Street Frontage Design

The key traffic and transport features of the proposed changes to the Argyle Street accesses includes the following:

- The bus drop-off / pick-up area will continue to accommodate six buses, and will remain in its current location;
- The bus stop area will be narrowed to prevent parents from choosing to park within the bus stop area;
- The central median between the bus stop area and Argyle Street will be redeveloped to provide clearer sight lines between pedestrians and drivers;
- The school boundary line will be amended so that the bus stop area is under control and ownership of Council. As part of this arrangement, the internal bus stop area and associated crossovers will be designed to Council standards. This will include a right turn lane from Argyle Street;
- In order to accommodate the turning bay, the pedestrian refuge island will be relocated to the south of the existing crossovers to facilitate pedestrian movements between the school and the western side of Argyle Street;

- Parking along the eastern side of Argyle Street, between the two existing crossovers, will be removed to accommodate the turning bay;
- Access to the car parking on the northern side of the school will continue to occur via the existing crossovers;
- Entrance to the south-western staff parking area will be discontinued from the bus area and a new entry-only access will be provided from Argyle Street, in order to reduce the number of movements within the bus stop area. A new entry only access will be created in order to access the parking area, with no exit movements permitted due to sight distance and gradient constraints at the access. Vehicles will utilise the new Wonga Road access to exit the site.

6.1.2 Wonga Road Layout

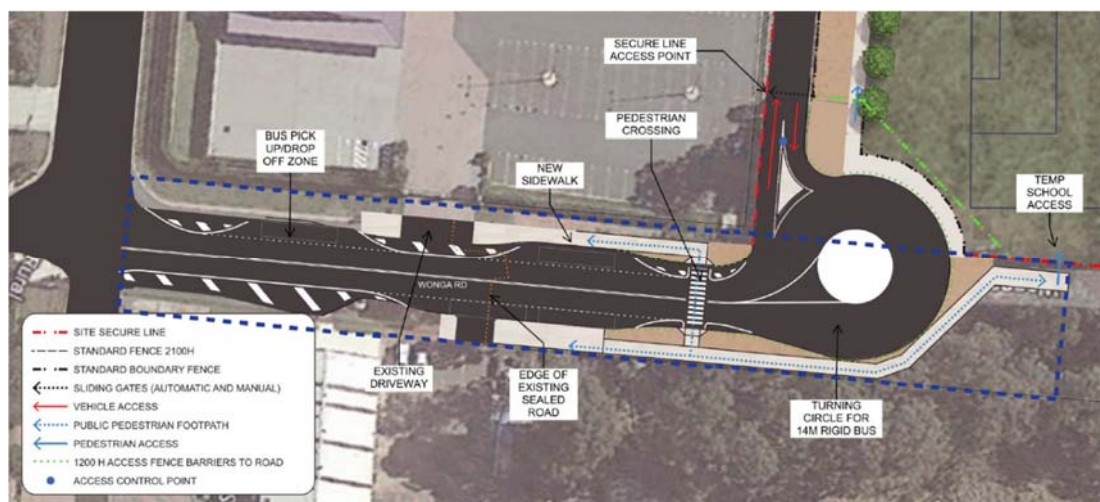


Figure 10: Wonga Road Frontage Design

A new access will be created via Wonga Road, by extending the existing paper road, which will include the following features:

- An access will run along the southern boundary of the site connecting the car park in the south-western corner of the site to Wonga Road, providing for exit and entry movements;
- Bus stops will be provided on both sides of the road near the school entrance, accommodating up to four buses, to allow for any overspill bus parking in the future;
- A turning facility will be provided for buses at the connection with the site, to prevent buses from having to access the site;
- Footpaths and pedestrian crossing facilities are to be provided for pedestrians.

6.2 School Role Projected Growth

The Ministry of Education has developed forecast growth projections for the school. These projections are summarised in **Table 4**.

| Characteristic | 2016 | 2021 | 2026 | 2031 | 2036 | Capacity |
|------------------------------|------|------|------|------|------|----------|
| Projected Student Enrolments | 1158 | 1245 | 1465 | 1670 | 1850 | 2000 |
| Projected Teaching Spaces | 58 | 61 | 72 | 82 | 91 | 98 |

Table 4: Projected Student and Teaching Numbers

The forecast growth numbers indicate a relatively steady rate of increase out to 2036 and the ultimate design capacity.

6.3 Alternate Design Options Considered

A range of alternate design options have been considered in the refinement and development of the proposed design. From a Traffic and Transport perspective, these principally included the measures described in **Table 5**.

| Alternate Design Measure | Comment |
|---|---|
| Full separation of the site access/egress crossings from the school bus service crossings. | This resulted in the adverse effect of creating multiple additional crossing points on Argyle Street. Vehicle movements became conflicted and a less safe and clear environment was determined to be the outcome. |
| Traffic management controls on the Argyle Street vehicle crossings. | While potentially contributing to a safe (or at least the perception of a safe) pedestrian environment, these were nonstandard crossings with the potential to impact vehicle movement and disrupt the Argyle Street traffic environment. Council indicated they would not accept a non-standard approach to road design. |
| A range of different Argyle Street pavement marking arrangements and parking controls to more safely facilitate movements to and from the site and to legalise turning movements. | The current markings are not able to be reasonably complied with and this creates a conflict and risk situation. Objectively, the safe separation of right turning movements to the site from the following traffic stream reintroduces capacity and safety to the Argyle Street environment. The developed markings arrangement will enable turning to be legally undertaken. |
| Alternate forms of control at the Argyle Street / Wonga Road intersection. | Alternate intersection controls were considered for this intersection including channelization and roundabout control. In short, the changes were significant infrastructure, and ultimately were determined to only be required to resolve other deficiencies in the access and movement arrangements. Alternate control is not required to accommodate the increased demands of the site. |

Table 5: Alternate Design Options Considered

7. Trip Generation and Distribution

7.1 Existing Trips

Traffic surveys of the existing environment have been undertaken and described in Section 3.5 of this report. The results show the following current trip generation demands due to the school:

| Time Period | Vehicle Movements | Light Vehicles | Buses | Total |
|-------------|-------------------|----------------|-----------|------------|
| AM Peak | AM Arrivals | 133 | 22 | 155 |
| | AM Departures | 73 | 20 | 93 |
| | AM Total | 206 | 42 | 248 |
| | | | | |
| PM Peak | PM Arrivals | 42 | 19 | 61 |
| | PM Departures | 125 | 18 | 143 |
| | PM Total | 167 | 37 | 204 |

Table 6: School Driveway Peak Hour Trip Generation Demands

The traffic surveys show a peak site trip generation demand for a total of:

- 248 vehicles in the AM peak, 63% arrivals, 38% departures;
- 204 vehicles in the PM peak, 30% arrival, 70% departures; and
- 17 to 18% of trips involve bus movements.

Travel mode splits are also separately reported in Section 3.6 of this report.

7.2 Forecast Trip Generation

The Department of Education has developed and advised forecast student role and teacher spaces. These are reported at Section 5.2 of this report.

Drawing from these baseline expectations of growth and the surveyed traffic demands, forecast trip generation expectations have been generated, and are summarised in **Table 7**. Forecasts have been based on a simple projection of the current demands based on the changing level of enrolments.

| PEAK TRAFFIC DEMANDS | | | | | | |
|-----------------------|---------------|------------|------------|------------|------------|------------|
| Characteristic | Year | | | | | |
| | Surveyed 2016 | 2021 | 2026 | 2031 | 2036 | Capacity |
| Projected Enrolments | 1158 | 1245 | 1465 | 1670 | 1850 | 2000 |
| Teaching Spaces | 58 | 61 | 72 | 82 | 91 | 98 |
| Light Vehicles | | | | | | |
| AM Arrivals | 133 | 143 | 168 | 192 | 212 | 230 |
| AM Departures | 73 | 78 | 92 | 105 | 117 | 126 |
| AM Total | 206 | 221 | 261 | 297 | 329 | 356 |
| PM Arrivals | 42 | 45 | 53 | 61 | 67 | 73 |
| PM Departures | 125 | 134 | 158 | 180 | 200 | 216 |
| PM Total | 167 | 180 | 211 | 241 | 267 | 288 |
| Buses | | | | | | |
| AM Arrivals | 22 | 24 | 28 | 32 | 35 | 38 |
| AM Departures | 20 | 22 | 25 | 29 | 32 | 35 |
| AM Total | 42 | 45 | 53 | 61 | 67 | 73 |
| PM Arrivals | 19 | 20 | 24 | 27 | 30 | 33 |
| PM Departures | 18 | 19 | 23 | 26 | 29 | 31 |
| PM Total | 37 | 40 | 47 | 53 | 59 | 64 |
| Total Vehicles | | | | | | |
| AM Arrivals | 155 | 167 | 196 | 224 | 248 | 268 |
| AM Departures | 93 | 100 | 118 | 134 | 149 | 161 |
| AM Total | 248 | 267 | 314 | 358 | 396 | 428 |
| PM Arrivals | 61 | 66 | 77 | 88 | 97 | 105 |
| PM Departures | 143 | 154 | 181 | 206 | 228 | 247 |
| PM Total | 204 | 219 | 258 | 294 | 326 | 352 |

Table 7: Forecast Trip Generation Demands by Future Year

The Table shows a forecast 73% increase in enrolments to 2,000 students in the ultimate design case. The total two-way traffic demands expected to be generated at full capacity for the site can therefore be summarised as follows:

- AM school peak: 428 movements including buses; and
- PM school peak: 352 movements including buses.

7.3 Trip Distribution

7.3.1 Existing Site Trip Distributions

The traffic surveys of the current school operations have produced the following trip distribution proportions:

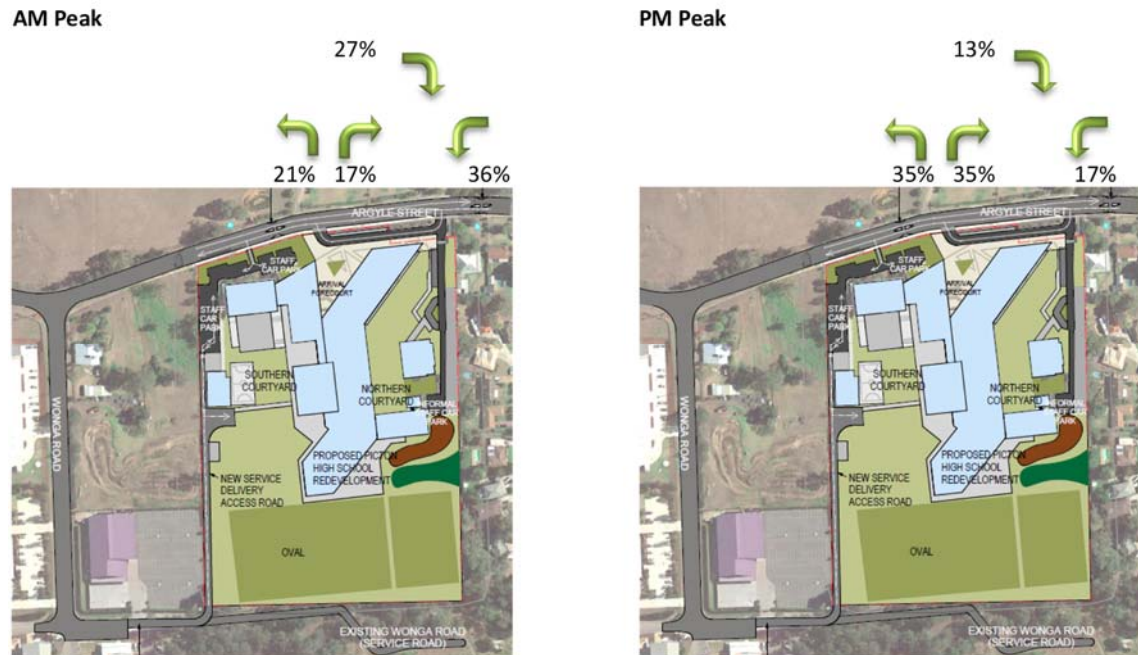


Figure 11: Existing School Site Trip Distributions

The following patterns are evident:

- 63% of AM peak movements are arrivals;
- 70% of PM peak movements are departures;
- Both periods indicate about a 52% northern and 48% southern catchment distribution.

7.3.2 Proposed Site Trip Distributions

The proposed site layout intends some alteration to the access and egress connections. The potential impact of these have been assessed resulting in the following expected future trip distributions. The overall network wide distribution model has been adopted as the principal baseline assumption in making these assessments.



Figure 12: Proposed School Site Trip Distributions

7.3.3 Proposed Site Traffic Movements

Based on the distributions determined above, the following site generated traffic movements are to be expected.

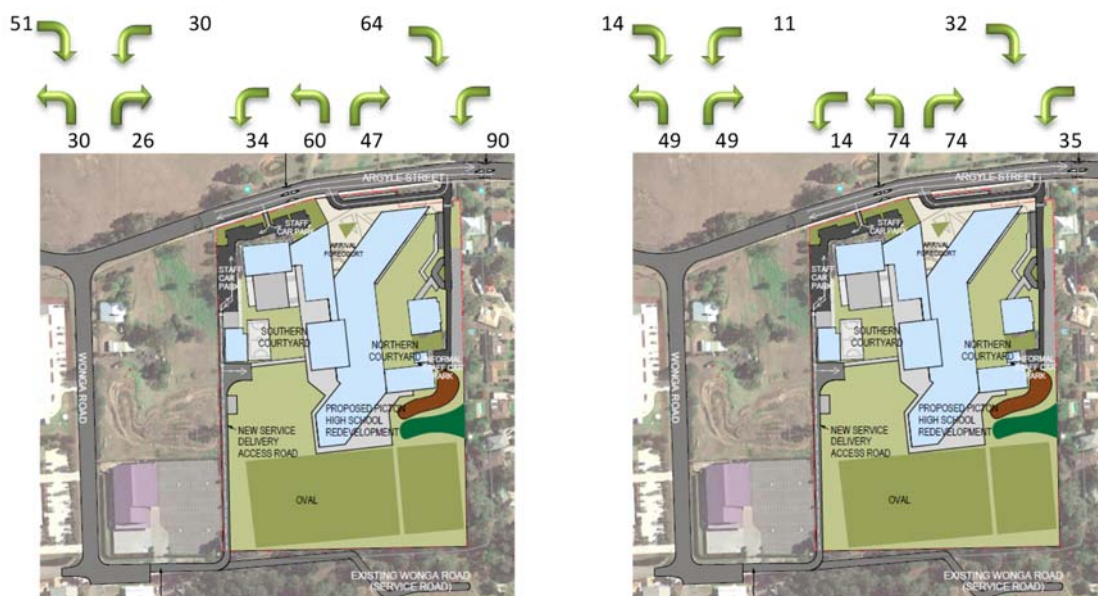


Figure 13: Proposed School Site Trip Distributions

These forecast total site generated traffic movements involve both the introduction of new trips arising from the increase in the school role to its capacity, and also some redistribution of trips within the local context.

In order to understand the nature of the changes that are to be expected, the following Figure has been prepared.

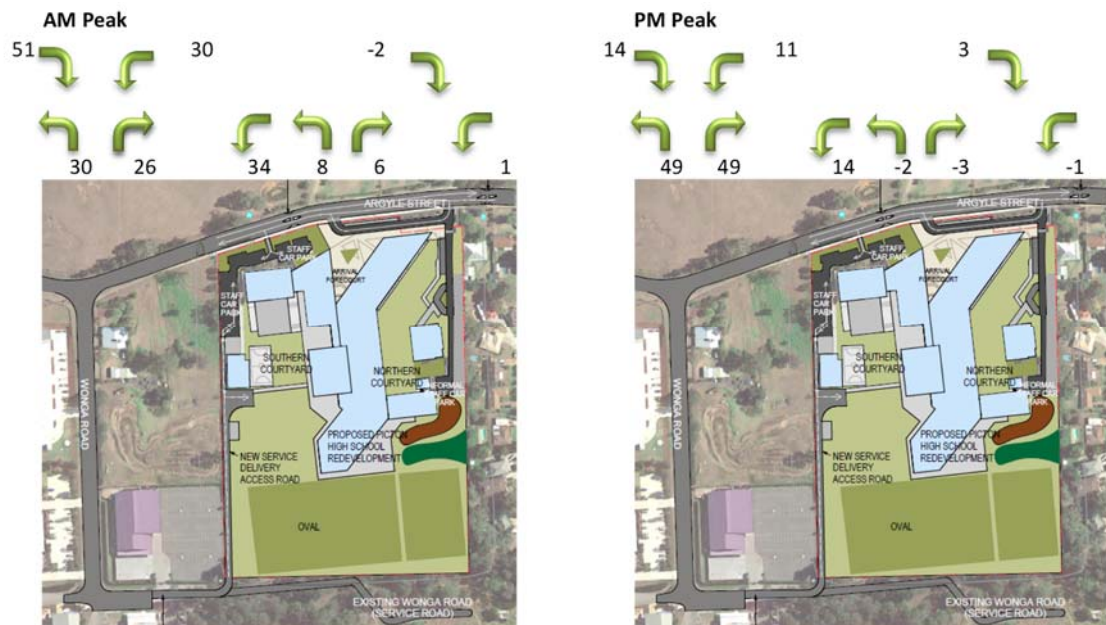


Figure 14: Net Change in Proposed School Site Trip Distributions

Figure 14 shows the following changes in trip distribution characteristics to be expected:

- On the whole, traffic demands at the northern Argyle Street driveway are expected to remain about the same as they are at present. The number of bus movements is expected to increase, however there is a corresponding reduction due to separation of the southern staff carpark and removal of the travel of these vehicles through the bus drop-off area;
- Similarly, demands at the existing southern bus crossing are expected to remain about the same, with the potential to increase slightly in the AM peak. This increase is due to the predominant arrival pattern and the increase in bus servicing activity;
- The proposed new staff only access located south of the bus exit crossing is expected to provide for the redistribution of staff generated trips away from the bus drop-off/pick-up area. Traffic demands are expected in the order of 34 left turn arrivals in the AM peak and 14 in the PM peak; and
- With establishment of the southern site boundary connection to the rear of the site, and its two way facility, some redistribution of trips is expected away from the site frontage to the Wonga Road intersection. The existing right turn bay facilities there are expected to provide for a safer and more convenient access option, particularly for those movements to and from the south.

8. Effects on the Transport Network

The concepts of intersection capacity and level of service, as defined in the Guidelines published by the RTA (Road and Traffic Authority Guidelines of New South Wales, now Roads and Maritime Services (RMS) (2002), are discussed in **Appendix B** together with criteria for their assessment. The assessment of the level of service of roundabouts and signed controlled intersections is based on the average delay (seconds per vehicle) of the critical movement.

An analysis of the operation of all critical intersections within the study area was carried out using the SIDRA computer modelling program and is discussed below.

8.1 Traffic Modelling Scenarios

TDG has identified four traffic modelling scenarios for the road network and modelled for the morning and evening school peak periods:

- **Scenario 1A: Existing Traffic (Base Case)** - This scenario includes the 2017 traffic survey volumes modelled over the existing road network and intersection configuration. This analysis has been performed for the morning and evening peak periods;
- **Scenario 1B: Existing Traffic (Base Case) with the Proposed School Expansion** - This scenario includes the 2017 Traffic volumes, and the additional school traffic based on 1,500 students. The layout of the relevant intersections is based on the existing road layout of Argyle Street, and with School access via Wonga Road;
- **Scenario 2A: Year 2028 without the Proposed School Expansion** - This analysis incorporates a 3.0% per annum increase in the background traffic volume up to the year 2028. The layout of the relevant intersections is based on the existing road layout of Argyle Street;
- **Scenario 2B: Year 2028 with the Proposed School Expansion** - This analysis incorporates a 3.0% per annum increase in the background traffic volume up to the year 2028, and the additional school traffic based on 1,547 students. The layout of the relevant intersections is based on the existing road layout of Argyle Street;
- **Scenario 3A: Year 2040 without the Proposed School Expansion** - This analysis incorporates a 3.0% per annum increase in the background traffic volume up to the year 2040. The layout of the relevant intersections is based on the existing road layout of Argyle Street.
- **Scenario 3B: Year 2040 with the Proposed School Expansion** - This analysis incorporates a 3.0% per annum increase in the background traffic volume up to the year 2040, and the additional school traffic based on 2,000 students. The layout of the relevant intersections is based on the existing road layout of Argyle Street;
- **Scenario 4A: Year 2040 without the Proposed School Expansion** - This analysis incorporates a 3.0% per annum increase in the background traffic volume up to the year 2040. The layout of the relevant intersections is based on the proposed road layout of Argyle Street;
- **Scenario 4B: Year 2040 with the Proposed School Expansion** - This analysis incorporates a 3.0% per annum increase in the background traffic volume up to the

year 2040, and the additional school traffic based on 2,000 students. The layout of the relevant intersections is based on the proposed road layout of Argyle Street.

The locations of these intersections being assessment is presented in **Figure 15**.



Figure 15: SIDRA Intersection Locations

8.2 Northern Access and Argyle Street Intersection

The existing and proposed intersection configuration for the purposes of the modelling exercise for the Northern Access and Argyle Street is shown in **Figure 16**.

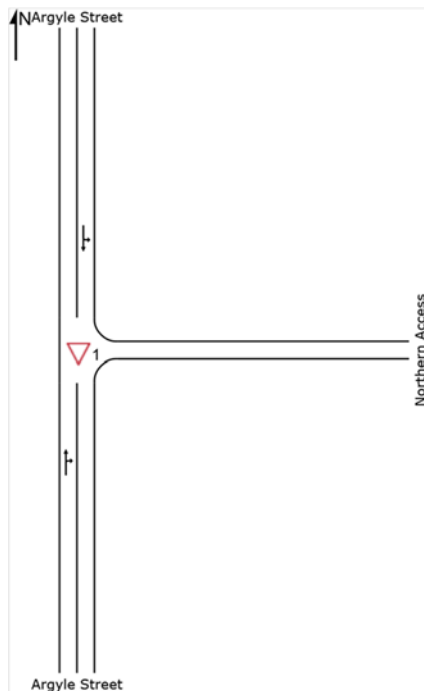


Figure 16: Northern Access and Argyle Street Intersection – Existing Layout

A summary of the SIDRA results is presented in **Table 8** for the Northern Access / Argyle Street intersection. The detailed SIDRA outputs for this analysis are provided in **Appendix D**.

| INTERSECTION | SCENARIOS | MORNING PEAK | | EVENING PEAK | |
|--|-------------|-------------------------|------------------------|-------------------------|------------------------|
| | | Average Delay (seconds) | Level of Service (LoS) | Average Delay (seconds) | Level of Service (LoS) |
| Argyle Street and Northern School Access | Scenario 1A | 10.0 | A | 13.1 | A |
| | Scenario 1B | 10.8 | A | 13.8 | A |
| | Scenario 2A | 15.8 | B | 24.9 | B |
| | Scenario 2B | 18.7 | B | 29.7 | C |
| | Scenario 3A | 68.1 | E | >70 | F |
| | Scenario 3B | >70 | F | >70 | F |

Table 8: Northern Access and Argyle Street Intersection - SIDRA Results

The results presented in **Table 8** indicate the following:

- The intersection is currently (Scenario 1) operating at an excellent Level of Service (LoS) for the morning and evening peak periods;
- The increase in base traffic to the Year 2028 will result in the intersection continuing to operate at an acceptable Level of Service, with the reduction in the average delay from Scenario being generated by the introduction of the right turn bay for vehicles turning right from Argyle Street;
- The additional traffic generated by the school in Scenario 2B will result in the intersection operating with a LoS B and C during the morning and evening peak periods, respectively;

- The intersection is forecast to operate at a LoS F in 2040 during the evening peak period. This is a result of the increase in southbound movements along Argyle Street, due to the increase in base traffic, limiting gaps for right turning vehicles. Subsequently the right turn queue length extends back into the through lane.

It is proposed that Argyle Street will be upgraded to four lanes within the vicinity of the site, as identified in the Wollondilly Development Contributions Plan. Given the increase in base traffic on the surrounding road network it is likely that this would occur before the school reaches 100% capacity. As such, an additional assessment has been undertaken to determine the impact this would have on the operation of the intersection.

The intersection configuration for the modelling of the potential future layout for the Northern Access / Argyle Street intersection is shown in **Figure 17**.

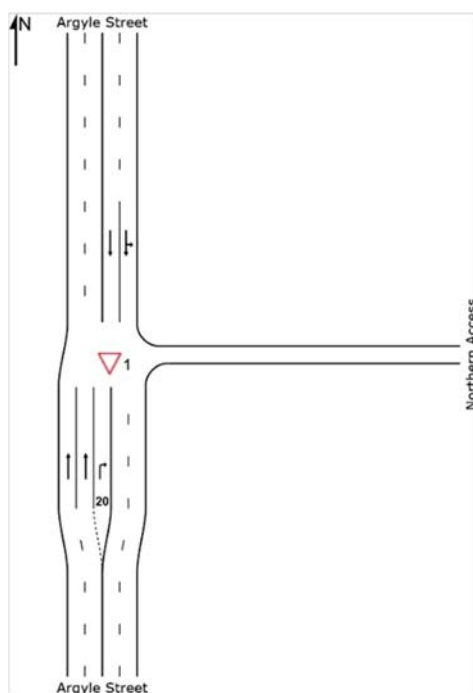


Figure 17: Northern Access and Argyle Street Intersection – Potential Layout

Table 9 gives a summary of the outputs for the proposed intersection configurations.

| INTERSECTION | SCENARIOS | MORNING PEAK | | EVENING PEAK | |
|-----------------------------------|-------------|-------------------------|------------------------|-------------------------|------------------------|
| | | Average Delay (seconds) | Level of Service (LoS) | Average Delay (seconds) | Level of Service (LoS) |
| Argyle Street and Northern Access | Scenario 4A | 17.5 | B | 43.2 | D |
| | Scenario 4B | 19.4 | B | 47.7 | D |

Table 9: Proposed Northern Access and Argyle Street Intersection Layout – SIDRA Results

Table 9 shows that the proposed intersection upgrade is expected to operate satisfactory in 2040 with a LoS B and D in the morning and evening peak periods, respectively. Further, the 95th percentile queue lengths of the right turn bay are 11.4 metres and 13.9 metres, respectively.

Accordingly, it is concluded that the intersection of the northern access with Argyle Street will operate in an acceptable manner with the additional traffic generated by the school. The intersection will reach capacity at some point between Year 2028 and 2040. However, it is expected that Argyle Street will be upgraded at some point before this occurs, and the intersection will continue to operate with an acceptable LoS.

8.3 Southern Access and Argyle Street Intersection

The intersection configuration of the Southern Access and Argyle Street is shown in **Figure 18**.

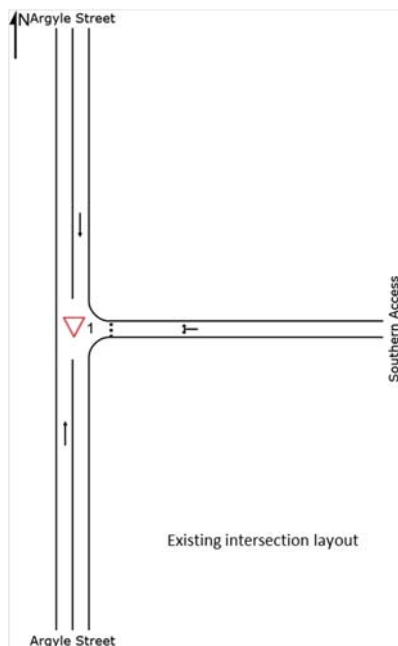


Figure 18: Southern Access and Argyle Street Intersection – Existing Layout

Based on the on-site observations there were up to 70 prohibited right turn movements onto Argyle Street from the Southern Access. The SIDRA intersection analysis for the existing conditions has incorporated the prohibited right turn movements for this assessment.

A summary of the SIDRA results is presented in **Table 10**, with the detailed outputs for this analysis provided in **Appendix D**.

| INTERSECTION | SCENARIOS | MORNING PEAK | | EVENING PEAK | |
|-----------------------------------|-------------|-------------------------|------------------------|-------------------------|------------------------|
| | | Average Delay (seconds) | Level of Service (LoS) | Average Delay (seconds) | Level of Service (LoS) |
| Argyle Street and Southern Access | Scenario 1A | 19.6 | B | 22.5 | B |
| | Scenario 1B | 21.1 | B | 23.4 | B |
| | Scenario 2A | 36.1 | C | >70 | F |
| | Scenario 2B | 61.2 | E | >70 | F |
| | Scenario 3A | >70 | F | >70 | F |

| INTERSECTION | SCENARIOS | MORNING PEAK | | EVENING PEAK | |
|--------------|-------------|-------------------------|------------------------|-------------------------|------------------------|
| | | Average Delay (seconds) | Level of Service (LoS) | Average Delay (seconds) | Level of Service (LoS) |
| | Scenario 3B | >70 | F | >70 | F |

Table 10: Southern Access and Argyle Street Intersection - SIDRA Results

The results presented in Table 10 indicate the following:

- The intersection is currently (Scenario 1) operating at a Level of Service B for the morning and evening peak periods;
- The increase in base traffic to the Year 2028 will result in the intersection operating at full capacity in the evening peak hour, caused by the prohibited right turn movements from the Southern Access;
- The additional traffic generated by the school in Scenario 2B will result in the intersection operating with a LoS E in the morning peak period;
- The intersection will operate at a LoS F (Scenario 3A / 3B) in 2040 during the morning and evening peak periods. This is a result of the increase in traffic movements along Argyle Street, limiting gaps for right turning vehicles.

Whilst the delays recorded within the modelling results indicate high delays for right turn vehicles exiting the school, it is noted that on-site observations indicate a high number of courtesy gaps.

It is anticipated that Argyle Street will be upgraded to four lanes within the vicinity of the site, as identified in the Wollondilly Development Contributions Plan. Given the increase in base traffic on the surrounding road network it is likely that this would occur before the school reaches 100% capacity. As such, an additional assessment has been undertaken to determine the impact this would have on the operation of the intersection.

The intersection configuration for the modelling of the potential future layout for the Northern Access and Argyle Street intersection is shown in **Figure 19**.

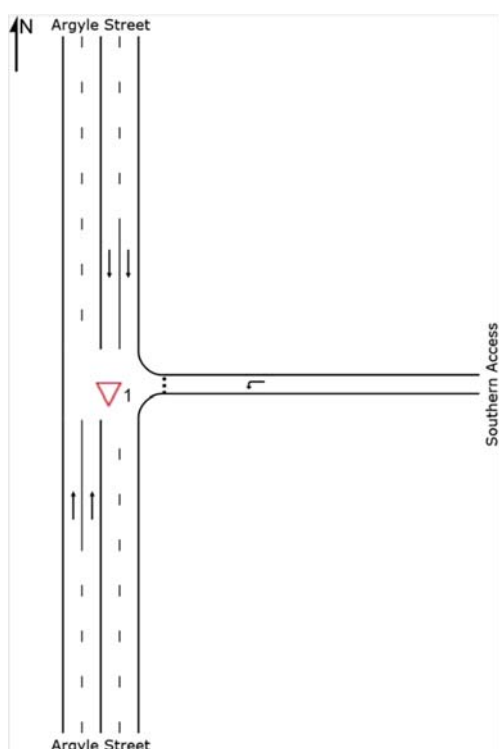


Figure 19: Southern Access and Argyle Street Intersection – Potential Layout

Table 11 gives a summary of the outputs for the proposed intersection configurations.

| INTERSECTION | SCENARIOS | MORNING PEAK | | EVENING PEAK | |
|-----------------------------------|-------------|-------------------------|------------------------|-------------------------|------------------------|
| | | Average Delay (seconds) | Level of Service (LoS) | Average Delay (seconds) | Level of Service (LoS) |
| Argyle Street and Southern Access | Scenario 4A | 8.9 | A | 11.0 | A |
| | Scenario 4B | 9.9 | A | 12.3 | A |

Table 11: Northern Access and Argyle Street – Proposed Intersection Layout

Table 11 shows that the proposed intersection upgrade will operate satisfactory in 2040 with a Level of Service A in the morning and evening peak periods, following the upgrade to Argyle Street.

Accordingly, it is concluded that the southern access will require road upgrades to be undertaken prior to the school reaching capacity in order to operate at an acceptable level.

8.4 Wonga Road and Argyle Street Intersection

The intersection has been modelled based on the existing layout as shown in **Figure 20**.

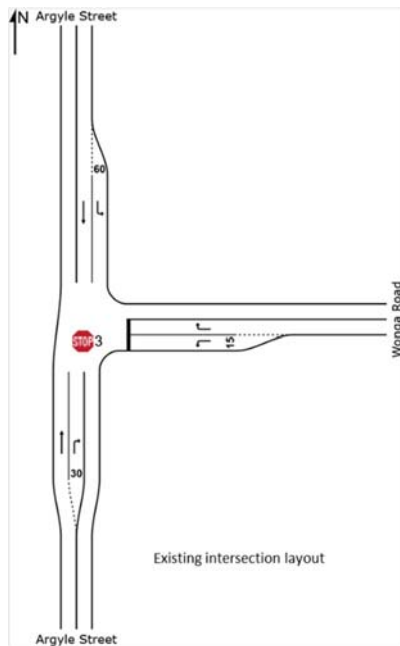


Figure 20: Wonga Road and Argyle Street Intersection – Existing Layout

A summary of the SIDRA results is presented in **Table 12** for the Argyle Street / Wonga Road intersection, with the detailed outputs provided in **Appendix D**.

| INTERSECTION | SCENARIOS | MORNING PEAK | | EVENING PEAK | |
|--------------------------------|-------------|-------------------------|------------------------|-------------------------|------------------------|
| | | Average Delay (seconds) | Level of Service (LoS) | Average Delay (seconds) | Level of Service (LoS) |
| Argyle Street and Wonga Street | Scenario 1A | 26.8 | B | 24.9 | B |
| | Scenario 1B | 22.0 | B | 25.0 | B |
| | Scenario 2A | 42.3 | C | 45.0 | D |
| | Scenario 2B | 39.3 | C | >70 | F |
| | Scenario 3A | >70 | F | >70 | F |
| | Scenario 3B | >70 | F | >70 | F |

Table 12: Wonga Road and Argyle Street – Existing Intersection Layout

The survey results show that the intersection will operate with LoS F during the PM peak in the Year 2028. This is due to the delay generated by vehicles turning right from Wonga Road, which reaches 92.3 seconds. Even with the high delay the 95th percentile queue length for right turn vehicles from Wonga Road remains low at 21.1 metres. It is noted that the delay for all other movements is low, with the intersection recording an average delay of 4.1 seconds.

An additional analysis was undertaken for the Year 2028 and 2040 scenarios assuming Argyle Street had been widened to four lanes. The LoS remained at F even with the additional lanes.

Through discussions with Council it is understood that a development is proposed that would potentially connect with the western side of the Argyle Street / Wonga Road

intersection. It is also understood that the preferred intersection treatment that would be considered is a roundabout. In order to test this scenario, the following layout was adopted for the intersection.

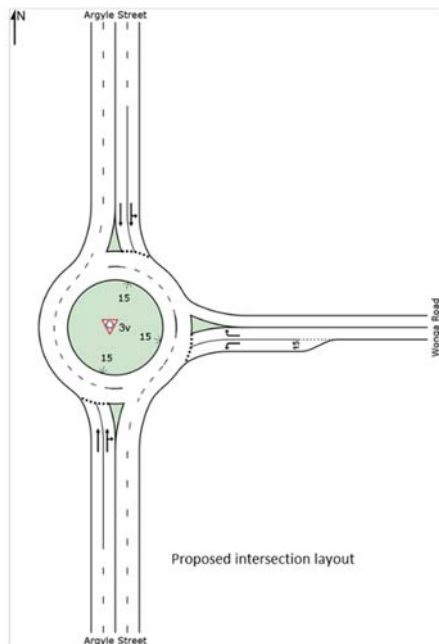


Figure 21: Wonga Road and Argyle Street Intersection – Proposed Roundabout Design

Table 13 gives a summary of the outputs for the proposed intersection configuration, for the Year 2040. The detailed outputs for this analysis are provided in Appendix D.

| INTERSECTION | SCENARIOS | MORNING PEAK | | EVENING PEAK | |
|--------------------------------|-------------|-------------------------|------------------------|-------------------------|------------------------|
| | | Average Delay (seconds) | Level of Service (LoS) | Average Delay (seconds) | Level of Service (LoS) |
| Argyle Street and Wonga Street | Scenario 4A | 4.8 | A | 5.0 | A |
| | Scenario 4B | 5.2 | A | 5.4 | A |

Table 13: Wonga Road and Argyle Street – Proposed Intersection Layout

In summary, the Argyle Street / Wonga Road intersection will need to be upgraded by 2028 to accommodate for future traffic growth and the traffic generation from the expansion of the school.

8.5 Impact on Major Approach Roads

The concepts of carriageway capacity and Level of Service are discussed in **Appendix C** together with criteria for their assessment.

The carriageway traffic volumes along Argyle Street for Scenario 2B (Year 2028 with the school traffic) is summarised in **Table 14**, together with the appropriate level of service. The use of interrupted traffic flows has been adopted to reflect the movement of vehicles to/from the on-street parking spaces associated with drop-off and pick-up movements.

| LOCATION | LANES | MORNING PEAK | | | EVENING PEAK | | |
|---|-------|--------------|------------|-----|--------------|------------|-----|
| | | Northbound | Southbound | LoS | Northbound | Southbound | LoS |
| Interrupted Volumes (refer to Table C1) | | | | | | | |
| Argyle Street (north of Picton High School) | 2U | 876 | 737 | E | 805 | 924 | F |
| Argyle Street (South of Wonga Road) | 2U | 915 | 606 | F | 770 | 1,005 | F |

Table 14: Future Carriageway Level of Service (Scenario 2B)

The assessment indicates that at Year 2028 Argyle Street will operate with a LoS F. As previously discussed, Argyle Street is proposed to be upgraded to a four lane road in the future. In order to assess the impact of the upgrade, an additional assessment has been undertaken for Scenario 3B (Year 2040 with school traffic) assuming Argyle Street has been upgraded. The assessment is provided within **Table 15**.

| LOCATION | LANES | MORNING PEAK | | | EVENING PEAK | | |
|---|-------|--------------|------------|-----|--------------|------------|-----|
| | | Northbound | Southbound | LoS | Northbound | Southbound | LoS |
| Interrupted Volumes (refer to Table C2) | | | | | | | |
| Argyle Street (north of Picton High School) | 4U | 1,242 | 1,066 | D | 1,135 | 1,334 | D |
| Argyle Street (South of Wonga Road) | 4U | 1,295 | 992 | D | 1,088 | 1,420 | E |

Table 15: Future Carriageway Level of Service (Scenario 3B)

Table 15 indicates that Argyle Street would operate with a LoS E or better in 2040. Therefore, Argyle Street will typically operate in an acceptable manner following the road being upgraded to four lanes, even when the school is operating at full capacity.

9. Access and Egress Arrangements

9.1 Argyle Street

Access and egress to the site is proposed to continue to occur via the separate entry and exit driveways that connect to/from Argyle Street. In addition, a new entry-only access will be provided to the existing south-western staff car park, as the connection via the bus parking area is proposed to be removed.

The accesses have been designed by Bonacci Group. An assessment of the proposed Argyle Street access arrangements is provided below.

9.1.1 Northern Access Driveway

The entry driveway located at the northern end of the site provides access to the bus parking area. In addition, it also provides access to the visitor parking area, taxi drop-off area (for the special needs class), and informal parking provided along the northern boundary of the site. The crossover has a width of 8.1 metres.

A right turn bay is proposed to facilitate right turn movements from Argyle Street to the site. The right turn bay has a width of 3.5 metres, and a length of 70 metres, in accordance with the *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*.

A swept path evaluation of the access has been undertaken using the software package 'AutoTurn'. The evaluation has assessed the ability for a 14.5 metre long coach to access the site, and is provided within **Appendix E**. The evaluation demonstrates that buses are able to enter the site using the right turn bay and access the bus parking area. In addition, buses are able to turn left and access the site from the north.

9.1.2 Southern Egress Driveway

The southern egress driveway accommodates buses exiting the site, as well as vehicles parking in the northern parking area, and taxis associated with the special needs class. The crossover has a width of 8.2 metres. In order to facilitate right turn movements from the site it is proposed to provide a break in the right turn bay line marking. A swept path evaluation of the access has been undertaken for a 14.5 metre long coach which demonstrates that buses are able to exit the site in either direction.

The sight distances at the driveway location are provided within Section 4.4, and are recorded as 142 metres and 225 metres to the north and south, respectively. The Safe Intersection Sight Distance (SISD) required at an intersection based on a 70km/h speed limit is 151 metres, as outlined within the *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*. The SISD required for a design speed of 40km/h is 40 metres.

Based on the requirements of the Austroads Guide the access currently falls short of the SISD requirement for a 70km/h speed limit by 9 metres. However, during peak school times when the speed limit is 40km/h the sight distance greatly exceeds the SISD requirement. No crashes have been recorded at the access within the past five years, as outlined within Section 5 of this report. Given the minimal shortfall in the SISD requirement and that there

is currently no evident safety issue at the drive, the access is expected to continue to operate in a safe manner.

9.1.3 Southern Car Park Access

In order to limit the number of vehicle movements within the bus parking area, the existing access to the southern staff parking area is proposed to be discontinued and a new access provided from Argyle Street. The driveway is proposed to have a width of 4.0 metres and a vertical alignment comprising of the following gradients:

- 1:50 gradient for 3.03 metres;
- 1:9.8 for 2.00 metres;
- 1:6 for 7.27 metres; and
- 1:10.6 for 2.00 metres.

The proposed access has generally been designed in accordance with AS 2890.1:2004, however the initial sections closest to Argyle Road do not strictly comply with Clause 3.3 (a), which requires a maximum gradient of 1:20 for the first 6.0 metres of the ramp. Notwithstanding this, the access as designed is considered to be appropriated given that the access will operate as an entry only access, and the maximum gradient across the first 6.0 metres is considered to be primarily for the interactions of exiting vehicles. The proposed ramp changes of grade are in accordance with AS 2890.1:2004.

All exiting vehicles proposed to exit the site via Wonga Road, as discussed in Section 9.2 below. The driveway has been located in order to minimise the gradients.

A swept path evaluation of the access has been undertaken to assess the ability for a B99 vehicle (99.8th percentile vehicle as defined within AS/NZS 2890.1:2004) to access the site, and is provided within **Appendix E**. The evaluation demonstrates that suitable access is provided to the car parking area.

In addition, a ground clearance assessment was conducted for the access and ramp as proposed, to assess the ability for a B99 vehicle to enter the site without any conflicts with the ramp. The evaluation demonstrates that the access has been suitably designed, and is also shown in Appendix E.

9.2 Wonga Road

A new access is proposed via Wonga Road at the eastern end of the site. The access will provide egress movements from the southern staff car park, and entry to the informal car parking along the southern boundary of the site. In addition, the access will provide access for all service vehicles. The access has a width of 6.8 metres and accommodates simultaneous two-way vehicle movement.

A roundabout has been provided at the termination of Wonga Road in order to facilitate U-turn movements, including for buses.

A swept path assessment has been provided to assess the ability for vehicles to access the school. It is understood that the largest service will be an 8.8 metre long Medium Rigid

Vehicle (MRV as defined within AS 2890.2:2002), which has been used to assess the ability for vehicles to access the site. In addition, an assessment has been undertaken for a 14.5 metre long coach at the roundabout. The assessment is provided within **Appendix E**. The evaluation demonstrates that vehicles are able to enter and exit the site in a forward direction, and that buses are able to turn around at the roundabout.

10. Parking Layout

10.1 Car Parking

The development proposal shows an intent to establish the following parking supply:

- 11 visitor parking spaces within the northern car park;
- 44 staff spaces in the existing south-western car park; and
- 82 informal parking spaces within the northern car parking area and along the new accessway accessed via Wonga Road.

The 11 visitor parking spaces have been designed in accordance with AS/NZS 2890.1:2004. The spaces have a length of 5.4 metres, a width of 2.6 metres, accessed via a 6.0 metre aisle.

No changes are proposed to the existing staff car parking area, aside from the provision of a new access from Argyle Street, which is expected to continue to operate in a suitable manner. Egress from the car park is now proposed to occur via the Wonga Road access. A one lane accessway is provided along the southern boundary of the site, which has a width of 3.7 metres in accordance with the Australian Standard and widens to a two-way access east of the loading area.

Informal parking is provided along the southern and northern boundaries, which be provided with a gravel surface, and will be managed by staff to ensure it operates in an efficient manner.

10.2 Bus Parking

The bus parking along Argyle Street will remain relatively unchanged and will continue to accommodate up to six buses. In order to prevent parents from parking within the bus parking area the width of the roadway has been narrowed to 6.9 metres.

Plans prepared by Bonacci show that allowance for four bus parking spaces is provided along Wonga Road, via two bus parking bays on either side of the road. The western bus bays have lengths of 15.0 metres, and are located on either side of the existing vehicle access of 15 Wonga Road. The eastern bus bay has a length of 30.0 metres, which is sufficient length to accommodate two buses. All bus bays have tapers on either side to allow efficient manoeuvring to/from Wonga Road.

A swept path assessment has been undertaken for all bus parking areas, presented in **Appendix E**, and demonstrates that buses are able to queue within the bus parking areas and manoeuvre to/from the road network in a suitable manner.

10.3 Taxi Drop-Off

A taxi drop-off area is provided along the northern boundary of the site for the special needs class. The taxi service will operate a mini-van. A swept path assessment has been

provided in **Appendix E**, which demonstrates that the vehicle can manoeuvre through the drop-off area and exit the site in a forwards manoeuvre.

11. Parking Assessment

The existing parking environment is described at Section 3.5.2 of this report. The following sections examine the future parking demand and related effects.

11.1 Existing On-site Parking Supply

An inventory of the existing on-site parking supply, as presented within the survey results provided within **Appendix A**, has identified the following parking spaces currently on-site:

| Map Ref (Refer Appendix A) | Restriction | Capacity (Spaces) |
|--------------------------------------|----------------------------|----------------------|
| A | None | 3 |
| | Staff Parking | 50 |
| | Special Transport Vehicles | 4 |
| B | Staff Parking | 6 |
| | Deputy Principal | 2 |
| | Principal | 1 |
| | Disable | 1 |
| | School Manager | 1 |
| C | Staff Parking | 45 |
| Total Existing Parking Supply | ALL | 113 |

Table 16: Inventory of Existing On-site Parking

11.2 Future Parking Demand Assessment

Using a similar methodology to that described in the section on trip generation, the future parking demands have been assessed. These are shown in **Table 17**.

| PEAK PARKING DEMANDS | | | | | | | |
|---------------------------------|-----------|------------|------|------|------|------|----------|
| CHARACTERISTIC | Location | Year | | | | | Capacity |
| | | 2016 | 2021 | 2026 | 2031 | 2036 | |
| Projected Enrolments | | 1158 | 1245 | 1465 | 1670 | 1850 | 2000 |
| Teaching Spaces | | 58 | 61 | 72 | 82 | 91 | 98 |
| | | | | | | | |
| Current Student Parking | On-street | 57 | | | | | |
| Current Teacher/Visitor Parking | On-site | 104 | | | | | |
| Total Parking Demand | | 161 | | | | | |
| P2 Drop-off Parking Demand | | 9 | | | | | |
| P15 Short Term Parking Spaces | | 4 | | | | | |

| PEAK PARKING DEMANDS | | | | | | | |
|----------------------------------|-----------|------------|------------|------------|------------|------------|------------|
| CHARACTERISTIC | | Year | | | | | |
| | Location | 2016 | 2021 | 2026 | 2031 | 2036 | Capacity |
| Current Student Bus Demand | | 5 | | | | | |
| Student Parking Rate | On-street | 0.049 | 0.049 | 0.049 | 0.049 | 0.049 | 0.049 |
| Teacher/Visitor Parking Rate | On-site | 1.793 | 1.793 | 1.793 | 1.793 | 1.793 | 1.793 |
| P2 Drop-off Parking Rate | | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| P15 Short Term Parking Rate | | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| Student Bus Demand Rate | | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| | | | | | | | |
| Forecast Student Parking | On-street | 57 | 61 | 72 | 82 | 91 | 98 |
| Forecast Teacher/Visitor Parking | On-site | 104 | 109 | 129 | 147 | 163 | 176 |
| Forecast Total Parking | | 161 | 171 | 201 | 229 | 254 | 275 |
| Forecast P2 Drop-off Parking | | 9 | 10 | 11 | 13 | 14 | 16 |
| Forecast P15 Short Term Parking | | 4 | 4 | 5 | 6 | 6 | 7 |
| Forecast Student Bus Demand | | 5 | 5 | 6 | 7 | 8 | 9 |

Table 17: Forecast Parking Demands by Future Year

Table 17 shows the following key features:

- There is currently no on-site student parking supply. The current on-street demand for 57 spaces is expected to increase to 98 spaces and extend to fully occupy the surveyed area;
- The total on-site demand for teacher/visitor parking is expected to be 176 spaces, this by way of the current 113 space supply;
- The current nine space on-site P2 drop-off facility is expected to need to increase to 16 spaces;
- The P15 spaces on-street are expected to increase demand to 15 spaces; and
- The forecast student bus demand shows a potential increase to nine spaces. This service is however quite different to the typical user parking demand and is able to be influenced and managed by way of timetabling the supply of services.

11.3 Development Control Plan Parking Requirements

The Wollondilly Development Control Plan, Volume 5 – Commercial and Community Uses, Part 2 – General Requirements for all Commercial and Community uses states at Section 2.10 Parking and Manoeuvring that schools shall provide the following parking:

Education Establishments – Schools (with students over 16 years of age):

- 1 car parking space per full time equivalent staff member; and
- 1 car parking space per 30 students; and

- *1 bicycle and 1 motorcycle space per 25 car parking spaces in excess of the first 25 car parking spaces.*

On this basis, the school is to provide the following parking facilities based on a school roll of 1,500 students:

- A total of 124 parking spaces are required, including 74 staff spaces and 50 student spaces;
- Three spaces for bicycles; and
- Three spaces for motorcycles.

Further, a search of the following documents has not yielded any other or alternate guidance as to the supply or a requirement to supply parking in relation to an educational establishment, including a school such as is proposed:

- Wollondilly Local Environmental Plan;
- Wollondilly Shire Council – Standard Drawings;
- Wollondilly Shire Council – Standard Specification;
- Wollondilly Shire Council – Design Specification;
- RMS Guide to Traffic Generating Developments;
- RMS Technical Direction, TDT 2013 O4a: Guide to Traffic Generating Developments Updated Traffic Surveys;
- Draft State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017;
- Environmental Planning and Assessment Amendment (Schools) Regulation 2017;
- Amendment (Schools) Regulation 2017; and the
- Draft Better Schools Design Guide.

The draft State Environmental Planning Policy provides for construction of at-grade parking as a permitted activity.

On this basis, it is appropriate therefore to consider the Development Control Plan requirement in the context of the forecast potential parking demand generation as set out in the following sections.

11.4 Development Proposal Parking Supply

The development proposal shows an intent to establish the following parking supply:

- 11 visitor parking spaces within the northern car park;
- 44 staff spaces in the existing south-western car park; and
- 82 informal parking spaces within the northern car parking area and along the new accessway accessed via Wonga Road.

Therefore, a total of 135 parking spaces are proposed to be provided on-site for staff and visitors, which exceeds the parking requirement for staff. No parking is proposed for

students which is proposed to be accommodated on-street, and no motorcycle parking is proposed which is expected to be accommodated within the informal parking areas.

11.5 Other Policies and Guidelines

The Department of Education has its own set of guidelines, called the Educational Facilities Standards and Guidelines (EFSG). The EFSG are intended to assist those responsible for the management, planning, design, construction and maintenance of new and refurbished school facilities. In relation to the provision of staff parking on-site, the documents state:

'In order to ensure that the available site area for teaching learning and play is maximised, to enable community use and to encourage the use of sustainable means of transport to and from the school, on school site parking should be kept to a minimum.'

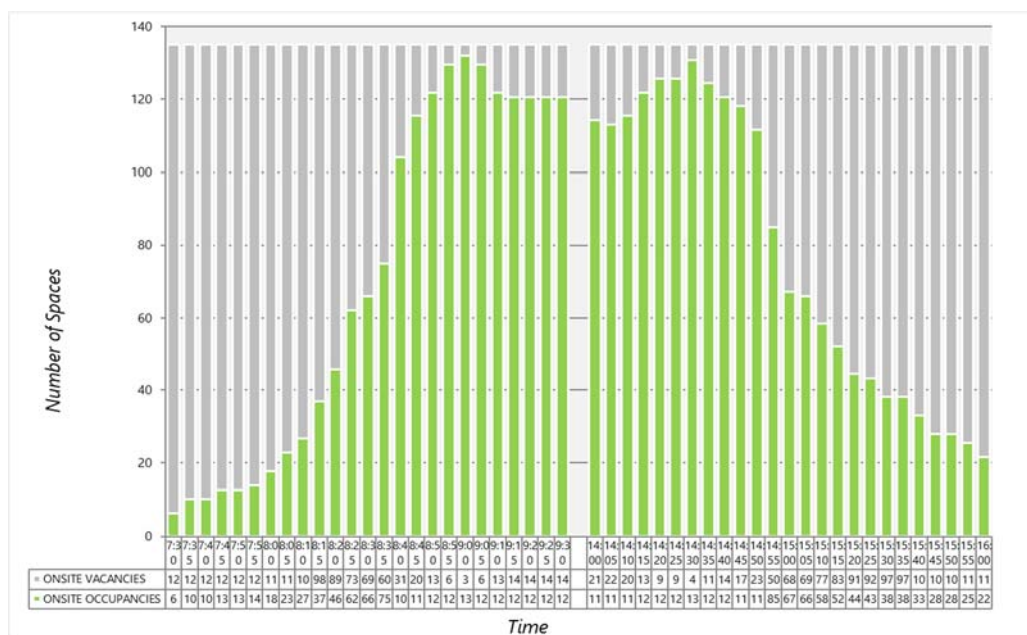
In addition to the EFSG, Clause 4.8 of the Motor Vehicle Policy for NSW Government Agencies (April 2014) states:

'For 100% private use vehicles (whether owned, novated or 100% Departmental or Agency packaged) are not entitled to a parking space on Government leased or owned premises'

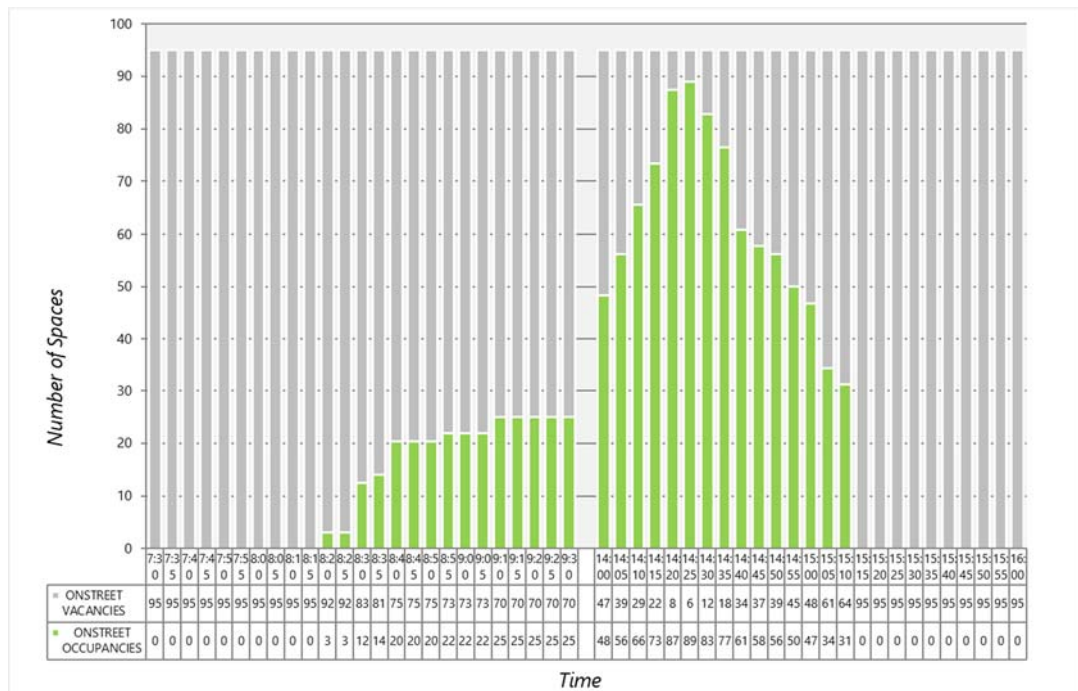
Therefore, the provision of no additional car parking on-site for staff as part of the proposal is assessed as being in line with these policies and guidelines.

11.6 Future Parking Demand Differential

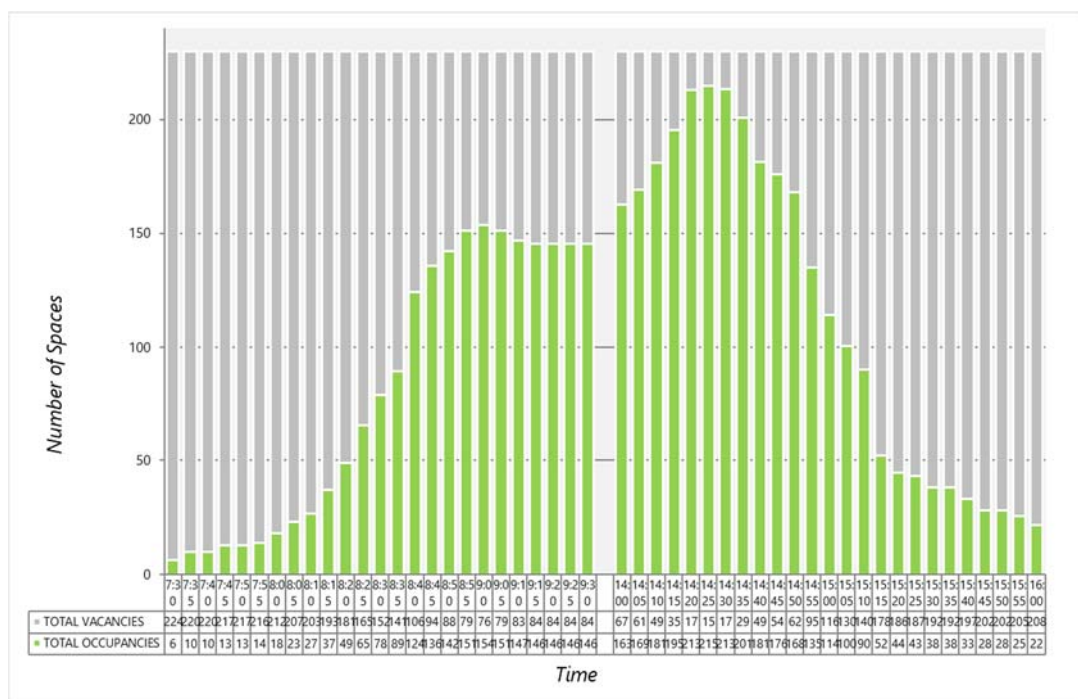
The proposal includes some changes to the supply of parking its distribution and access. The forecast parking demands and their demand profiles for 1,500 students and associated staff and visitors has been overlaid on the current parking supply. These are shown in the following graphs.



Graph 4: On-site Parking Demand vs. Supply



Graph 5: On-street Parking Demand vs. Supply



Graph 6: Total Surveyed Parking Demand vs. Supply

The graphs show the following key results:

- Based on the proposed supply of parking, the staff parking demand when the school is operating at capacity will be accommodated entirely on-site;
- The increase in the on-street parking demand will result in a parking occupancy of 94%; and

- The total on-street parking demand will be 89 parking spaces and will remain within the existing parking survey area.

11.7 Parking Conclusion

Based on the parking analysis the school will generate an on-street parking demand of 89 spaces. This will remain within the surveyed parking area presented within **Appendix A**. Given the additional access via Wonga Road and its proximity to the front of the school, it is likely/expected that a number of staff and students will choose to park in this area.

11.8 School Travel Plan

In order to reduce the staff and student parking demand and drive a travel mode change, it is recommended that a Travel Management Plan be prepared for the school to ensure staff are utilising alternative transport modes to access the site.

A Travel Management Plan is a collection of initiatives and actions to encourage travel behaviour change. The plan will provide students, staff and parents with information on sustainable transport and encourages them to make alternative transport choices than the use of a private vehicle. The implementation of the Travel Management Plan will be highly relied upon and will need to contribute to and will need to drive delivery of reduced traffic congestion and parking demands, as the school intends to increase the student population 2,000 students.

12. Pedestrians Facilities

12.1 Argyle Street

The primary pedestrian access to the school via Argyle Street and the bus parking area has been redesigned as part of the redevelopment of the school to improve pedestrian access and provide a clear entrance for staff, students, and visitors.

The existing pedestrian crossing facility on Argyle Street has been removed as its previous location required pedestrians to cross the internal bus parking area. In order to accommodate pedestrian movements across Argyle Street, two new pedestrian crossings are proposed to the north of the site and between the two southern crossovers.

The sight distance required at pedestrian crossings is based on the Approach Sight Distance, outlined within *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*. For a 70km/h design speed the sight distance requirement is 92 metres. The available sight distances at the new pedestrian crossing facilities is:

- Northern Location: 150 metres to the north and 140 metres to the south;
- Southern Location: 150 metres to the north and 140 metres to the south.

Accordingly, the sight distance readily complies with the requirements of the Austroads Guide.

A pedestrian footpath is proposed on the western side of Argyle Street in the vicinity of the school in order to facilitate pedestrian movements for staff and students parking on the western side of the road, and the pedestrian crossing facilities.

12.2 Wonga Road

In order to facilitate pedestrian movements from the bus stops proposed along Wonga Road, pedestrian footpaths will be provided on both sides of the road. In addition, pedestrian crossing facilities will be provided across the school access to ensure pedestrians are able to cross in a safe environment.

12.3 Pedestrian Movements

During peak drop-off and pick-up times the school generates a number of pedestrian movements across Argyle Street. This is generated by students parking on Argyle Street, and parents picking up and dropping off their children. During these times Argyle Street typically operates at a low travel speed as a result of the 40km/h school zone speed, movements to/from the school driveway, and drivers stopping to allow pedestrians to cross Argyle Street.

Based on the parking surveys presented in Section 4.5.2 and the expected increase in parking demand generated by the redevelopment of the school, it is estimated that the school will generate approximately 12 and 11 additional pedestrian movements at the northern and southern pedestrian crossing, respectively, in the afternoon peak. The additional crossing manoeuvres will be less during the morning peak as parking is more

readily available and parents are more likely to choose to park on the eastern side of Argyle Street adjacent to the school.

The impact generated by these additional pedestrian movements is anticipated to be minimal given the low pedestrian volumes and low travel speed along Argyle Street during peak times.

13. Loading and Servicing

An area has been provided on-site for loading and service vehicles adjacent to Building O. The area has an approximate width of 15 metres and a length of 20 metres.

It is understood that the largest service vehicle to access the loading bay is a 12.5 metre long Heavy Rigid Vehicle (HRV as defined within AS 2890.2:2002). In addition, the loading area will also be accessed by school vehicles for various sporting activities. This includes mini-van with trailers.

In order to assess the ability for these vehicles to access the loading area, a swept path assessment has been undertaken using the software package 'AutoTurn'. The evaluation has assessed the ability for a HRV and a mini-van with a trailer to access the site, and is provided within **Appendix E**. The evaluation demonstrates that vehicles are able to enter and exit the site in a forward direction. As such, the loading area is able to accommodate the vehicles expected to use the facility.

14. Potential Community Use of the School

The table presented within **Appendix F** highlights potential community uses of Picton High School Facilities as guided by the Department of Education regarding Community Use of Schools Implementation Procedures. This table is a guide only and requires consultation with the school regrading which facilities can be used, types of use and hours of operation.

These uses will predominantly operate outside of school hours when the parking demand on-site and on-street will be much lower. Further, the traffic demands on the surrounding road network will also be lower.

The start and finish times for these events will typically not coincide with the school start and finish times and with other activities occurring at the school. Accordingly, it is concluded that the impacts of these activities will be minimal given the proposed operating times. In the event they do coincide with school times or other activities there is additional parking and traffic capacity in the vicinity of the site to accommodate the temporary increase in demand.

15. Construction Program

A detailed Construction Traffic Management Plan will be prepared at a later time for the operation of the temporary school during construction.

A Construction Traffic Management Plan (CTMP) is prepared to ensure that the impacts of the construction activities on the public domain and road network, in particular with respect to temporary interruptions to vehicular and pedestrian traffic are limited and acceptable.

The preparation of the CTMP would focus on the following topic:

- Overall principles of construction traffic management;
- Construction activities;
- Work zones;
- Construction hours of operation;
- Construction vehicle haulage routes;
- Construction traffic volumes;
- Traffic and pedestrian management;
- Traffic and parking impacts;
- Traffic control plan (TCP).

The principles of traffic management during construction activities includes the following:

- Minimising the impact of traffic and pedestrian movements;
- Maintaining appropriate public transport access;
- Minimising the impact to existing traffic and parking;
- Maintaining access to and from any adjacent properties;
- Restricting construction vehicle movements to designated RMS routes to and from the subject site;
- Ensuring construction activities is carried out in accordance with Council requirements.

15.1 Background and Construction Stages

The redevelopment will incorporate the reconfiguration of a new public entry and arrival forecourt, major site infrastructure upgrades and improved outdoor amenity across the school. This will occur in two construction stages:

- **Stage 1:** A temporary school will be established on-site. Wonga Road works will enable school access for the duration of the Stage 1 phase. In addition, all works associated with the redevelopment excluding the Hall refurbishment and associated external works;

- **Stage 2:** Refurbishment of the existing Hall and construction of all associated external works including COLA structures. Decommissioning of the temporary school and reinstatement of green space.

15.2 Construction Period Management

15.2.1 Construction Duration

The construction works (including demolition and deliveries of building materials and equipment) will be between Monday to Friday 7:00am to 5:00pm, and Saturday from 8:00am to 4:00pm. The school will remain in operation during the construction works.

The maximum sized design vehicle for the project is a truck and dog, although various types of trucks will visit the site. At most, typical construction vehicles are expected to generate up to two to three heavy vehicle movements per hour during major excavation works. This is not forecast to occur for extended periods.

15.2.2 Vehicle Movement

It is proposed that construction vehicles during the Construction phase will:

Stage 1:

- Arrive at the existing northern access via Argyle Street;
- Unload and load materials within the site boundary;
- Depart at the existing north west Argyle Street via Argyle Street.

Stage 2:

- Arrive and depart at the rear of the school via Wonga Road;
- Unload and load materials within the site boundary;
- Depart from the site travelling along Wonga Road to Argyle Street.

15.3 Wonga Road Works

During the Wonga Road construction works, students and staff will access the site via the existing access off Argyle Street. Once the Wonga Road construction works has been completed, school access will be from the rear of the site including pedestrian access, bus and car drop off and pick up. Once Stage 1 works are complete, school access will return to Argyle Street.

15.4 Pedestrian Management

During the construction works, pedestrian movements around the site will be maintained as much as possible. Where works require the closure of an existing pedestrian route, a suitable alternative is to be provided.

In the event that this access is used for by heavy vehicle access or egress during major construction works, a Traffic Controller must be present at all times to manage pedestrian movements across the driveway.

16. Consultation and Engagement

The following section describes the Traffic and Transport based engagement with the Authorities, the feedback and commentary received, the resulting design considerations, and the Concept Design Traffic responses.

16.1 Initial Consultation

On 14 July 2017 a project team including specialist Traffic representation made an early consultative presentation to Council and RMS Planning and Traffic representatives. The presentation was made on the basis of the following early development concept plan.

Concept Design Proposed Campus Entry Plan

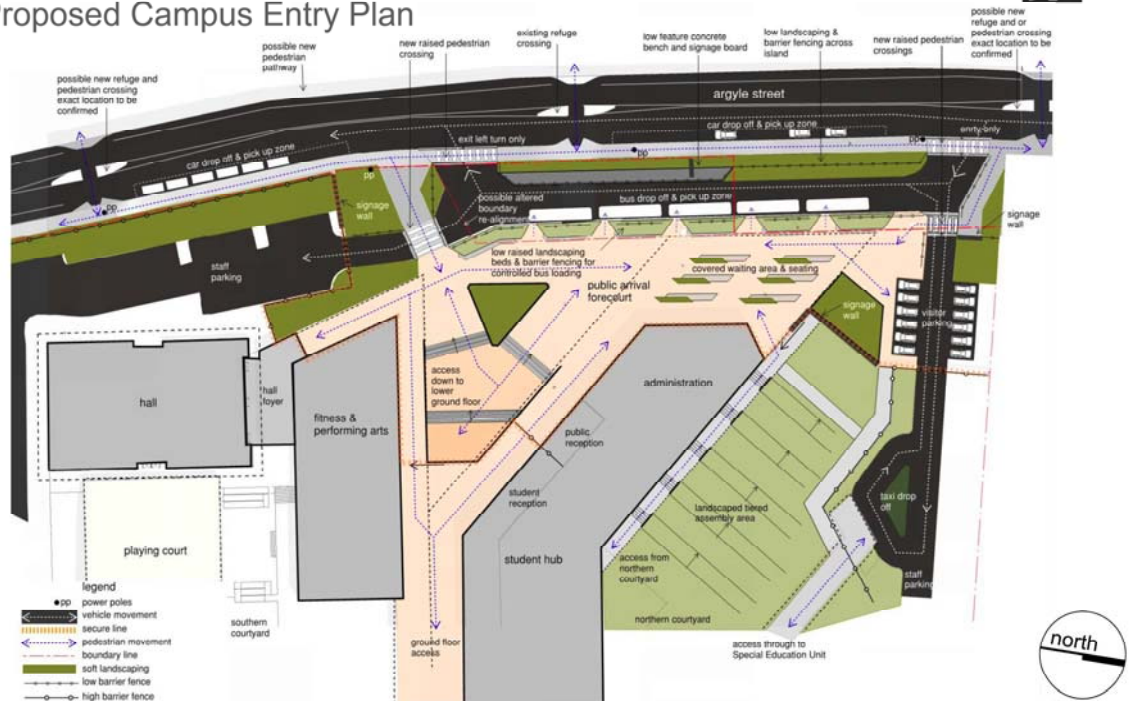


Figure 22: Preliminary Concept Design for Consultation and Feedback

The key consolidated traffic and transport feedback from the meeting provided by Council and RMS is summarised and assessed as follows:

| Council and RMS Comments | Provisional Response |
|--|--|
| RMS notes that Argyle Street, at this location, is identified as a regional classified road managed by Wollondilly Shire Council. As such, RMS considers that it is more appropriate for Council to determine if proposed access arrangements are acceptable from a network perspective (i.e. acceptable in terms of safety and efficiency). It is however noted that the development will require referral to RMS in accordance with the provisions of Clause 104 of State Environmental Planning Policy (Infrastructure) 2007. Given the above, RMS considers that it has more of an advisory and support role in relation to developments on classified regional roads; | Noted. |
| The provision of a footpath on the western side of Argyle Street is a positive outcome as it will facilitate pedestrians using the refuges; | Noted. |
| The provision of service/delivery access off Wonga Road is a positive outcome as it separates service vehicles from pedestrians/users of the school; | Noted. |
| A Traffic Impact Study (TIS) is required. As a guide, Table 2.1 of the RTA Guide to Traffic Generating Developments outlines the key issues that should be considered in preparing a TIS. This including, but not limited to, entry/exit treatments, etc; | Noted. |
| Suitable road infrastructure required to ameliorate any impacts on traffic efficiency and or road safety impacts should be clearly identified. In this regard a turnaround facility (e.g. a roundabout at Wonga Road) may be warranted noting the submitted design seeks to prevent right turn movements out of the development site (i.e. provision of left only arrangement out of the school); | The proposal does not intend to prevent right turns from the site. Rather, these are currently and impractically illegally established at present. The proposal addresses the whole of access safety and the legality of right turning. A roundabout at Wonga Road is not a necessary effects mitigation in respect of the proposal. |
| If right turn movement from the site onto Argyle Street are to be prevented, then consideration should be given to the provision of a physical barrier. In addition, consideration needs to be given to what route vehicles that are now turning right out of the site will be able to take to enable them to travel north along Argyle Street; | Right turn movements are not to be prevented, therefore there is no intention to barrier the road. |
| Turning path plans/a swept path analysis in accordance with Austroads turning templates is required to demonstrate that the largest vehicle likely to utilise each access can enter and exit the driveway in a forward direction without crossing the centre line of Argyle Street; | A swept path assessment has been provided within Section 9 of this report and demonstrates that suitable access is provided to/from the site and individual parking spaces. |
| Sight distances need to be checked. Sight distances should demonstrate compliance with Austroads Guide to Road Design with the design speed being 10km/h over the normal posted speed limit (i.e. 70km/h). Sight distances available may be restricted by the on-street parking. Plans showing sight distances that will be available for the proposed access/egress points are required; | Sight distance at the access locations has been assessed by Bonacci Group. |
| If there is a proposal to use Wonga Road as the sole access point for buses and cars (e.g. during construction, etc) then an assessment of the existing Wonga Road/Argyle Street intersection needs to be undertaken to ensure it complies with current design requirements as detailed in Austroads Guide to | A review has been undertaken for the Wonga Road / Argyle Street intersection and is provided within Section 8.4 of this report. |

| Council and RMS Comments | Provisional Response |
|--|--|
| Road Design; | |
| Pedestrian refuges provided must be in accordance with the RMS technical direction (TDT2011/01a - copy attached). Regard should be had for impacts the location of these may have on adjoining land in separate ownership (i.e. 468 Argyle Street) and available sight distances to the kerb ramps (refer to the Austroads Guide to Road Design Part 4 Table 8.1 and comment above); | Noted. The compliance and access implications are to be assessed by Bonacci Group. |
| Noting the growth of the area (current and future) as well as the indicated growth of the school, RMS is supportive and would strongly encourage additional parking spaces being provided on site; | An assessment of parking demands has been made and is provided within Section 11.6 of this report. |
| Concept designs for road works should be submitted with any development application. This enabling a preliminary assessment of the design, lane widths available, loss of on street parking, space to provide infrastructure within existing road reserve, legal property boundaries, etc. | Noted. The details are to be included in the final design and reporting. |
| Suitable infrastructure required to ameliorate any traffic impacts and safety impacts associated with the development should be clearly identified. This should include identification of pedestrian, cyclists and public transport infrastructure as well as safe pedestrian arrangements within the site; | The relevant infrastructure has been shown on the plans prepared by BLP, and discussed in detail within this report. |
| RMS recognises that works on classified regional roads require consent from councils and concurrence from RMS under Section 138 of the Roads Act, 1993. Generally, should a developer be able to demonstrate to a council that a proposed treatment on a classified regional road is acceptable and complies with relevant standards, RMS would issue its concurrence under Section 138; | Noted. |
| RMS has no current road proposal requiring any part of the subject site for road widening; | Noted. |
| The design of the internal driveway layouts needs to ensure that all vehicles can enter and exit the site in a forward manner; | The designs enable all vehicles to enter and egress the site in a forward manner. |
| The environmental impacts of any roadworks within the road reserve need to be adequately considered. These impacts include traffic and road safety impacts as well as other impacts such noise, flora and fauna, heritage and impact to community. | Noted, with respect to Traffic. |

Table 18: Council and RMS Engagement Notes and Responses

In written confirmation of the correspondence following the meeting, RMS helpfully and further advised:

“Please note that the above is preliminary advice based on the information that has been provided. RMS position is subject to change, dependant on the information provided in any discussion.”

By way of an overall assessment, the matters raised have either been addressed in full in the proposed design.

16.2 Further Consultation

Following further consultation between the Department of Education and Council, it has been agreed that the land currently occupied by the bus stop area at the front of the site will be reverted back to Council. As part of this agreement, Council have stated that as the roadway will fall within Council land it must be designed to Council design standards.

In addition, the paper road at the rear of the site will be utilised as a secondary access to/from the school car park, and in order to accommodate additional bus parking. As with the front bus area, the land will remain in the control of Council and will be designed to the relevant standards and design requirements.

Following submission of the plans and associated Traffic Report, comments were received from Council and RMS. The following provides a response to the comments from both Authorities.

16.2.1 Response to Council's Comments

The comments provided by Council within the letter, dated 16 January 2018, is provided below along with a corresponding response below.

| Council Comments | Response |
|--|---|
| The draft report lacks sufficient detail of supporting data of existing traffic / parking conditions within the area of influence of school related traffic impacts and technical assessment of both the existing and proposed scenarios in order for the impacts of the school expansion to be fully understood. | Noted. The submitted Traffic Report was incomplete and was for the purposes of keeping Council informed of the proposed traffic and parking aspects of the school. |
| The conducted traffic counts focus only on the Argyle Street school driveways. No assessment is provided with respect to the following intersections and critically sensitive road segments during the typical school zone 90 minute peaks and extended 30 minute shoulder periods of 7.30am to 10.00am and 2.00pm to 4.30pm: <ul style="list-style-type: none"> a) Argyle Street / School Driveways b) Argyle Street / School bus bay driveways c) Argyle Street / Wonga Road d) Old Hume Highway / Prince Street e) Prince Street single lane bridge, vehicle queuing on both approaches f) Menangle Street / Prince Street | Turning movement count surveys are presented within Section 4.5.1 of this report for the school accesses and the Argyle Street / Wonga Road intersection. The Princes Highway single lane bridge and associated intersections are located 1.5km to the north of the site. Given their distance from the school this assessment has not considered the impact of the school traffic as the movements from staff, parents, students, and buses will be distributed on the wider road network. |
| SIDRA and / or other microsimulation assessment of the listed junctions / road segment in point 2 above. Analysis to include adequacy of existing lane arrangements (lane discipline) and right turn storage bay lengths. A 10 year growth in background traffic shall be included in the analysis. | An assessment has been undertaken for the school driveways and the Argyle Street / Wonga Road intersection. This assessment is provided within Section 8. The assessment also includes an assessment year with 10 years background growth (i.e. Year 2028). |

| Council Comments | Response |
|--|---|
| Assessment of mid-block performance of Argyle Street, north of Wonga Road, where through traffic is affected by kerbside parking manoeuvres. The assessment shall include details of the number of parking and unparking manoeuvres that occurs for the time periods stated in point 2 above for each side of Argyle Street for the length of affectation by school related traffic. | An assessment of the mid-block performance has been undertaken for Argyle Street and is provided within Section 8.5. |
| Full details of sight distance calculations for design vehicle (cars and buses separately assessed) at proposed driveway locations for school traffic related access. Measured sight lines are to be accurately depicted on scaled plans and include impacts of parked vehicles on sight distances. | Sight distance at the access locations has been assessed by Bonacci Group. |
| Bus parking accumulation for both AM arrival and PM departure times for both existing and proposed student levels. Changes to bus routes, if any, are to be identified. | The expected bus parking demand is provided within Section 11.2. Through discussions with Picton Buslines it has been determined that the provision of 10 bus parking spaces for the site will be sufficient. Picton Buslines have also indicated that they will add new routes and increase frequency of services in the future based on the demand at the time. |
| Details of all consultation with bus companies, RMS, Council and emergency services (particularly for ambulance access to playing fields and fire brigade access planning [hydrant locations]) to be included in a separate section of the report, including any agreements. | Section 16 of this report addresses these matters. All emergency vehicles will be directed to the northern crossover on Argyle Street. This will be for: <ul style="list-style-type: none"> • Fire: Fire Booster assembly location. • Ambulance and Police: Direct access to the administration building. |
| Pedestrian crossing demand across Argyle Street for the existing and future student levels shall be quantified together with passing traffic flows that includes increased traffic associated with background growth for 10 years plus proposed school expansion. | The pedestrian crossing demands have been assessed based on the parking survey results. The impact of the additional pedestrian movements across Argyle Street is expected to be minimal given the low pedestrian volumes and low travel speed along Argyle Street. Refer to Section 12.3. |
| Cycling numbers to be also included and analysed. | The school currently generates a minimal cycling demand, with only one student and no staff cycling to school based on the travel mode surveys presented in Section 4.5.3. The low cycling demand is expected to remain unchanged with the increase in capacity. |

| Council Comments | Response |
|---|--|
| Parking management techniques to lessen impact of parking turnover of parallel parking spaces on both sides of Argyle Street. There should be no further increase in the usage of on-street parking within Argyle Street given its regional road status. The turn-over of kerbside parking on both sides of Argyle Street over extended length creates localised congestion, delay to through traffic along Argyle Street and less safe outcomes compared to providing on-site parking. Desirably the use of on-street parking along Argyle Street should be reduced and limited to the east side only. Parking for the set-down and pick-up of students for the expansion shall be provided within the school property, unless alternative strategies can be outlined in the assessment report that achieves this outcome. | A Traffic Management Plan is recommended as part of this assessment to assist in reducing the parking and traffic impacts of the proposal. The Department of Education policies do not allow for drop-off and pick-up within the school boundary. The proposed parking arrangements are discussed within Section 9, which suggests the continued use of on-street parking for these manoeuvres is satisfactory. |
| The internal traffic circulation, bus bay, car parking bays, pedestrian / bicycle facilities are to be assessed against compliance with relevant Australian Standards for both the temporary and future layouts. Any public road junctions to be assessed against AUSTROADS guidelines while driveways to be assessed against Australian Standards. | An assessment of the car park layout and access arrangement is provided within Section 9. This confirms that the proposed design is in accordance with the relevant standards and guidelines. |
| Internal service bays for deliveries and waste collection are to include swept path diagrams of intended function. | A swept path assessment has been provided within Section 13. |
| A Traffic Management Plan shall be prepared that addresses and provides strategies on how parents, staff and visitors to the school are to access the site, including details of bus routes, bicycle paths, parking areas, pedestrian crossing locations, internal traffic management within the school grounds, travel mode targets aimed at reducing the need for single occupant trips in private cars and maximising use of buses, bicycle, walk and car-pooling techniques. | A Traffic Management Plan is recommended as part of this assessment to assist in reducing the parking and traffic impacts of the proposal. |
| Construction traffic management plan for the stages of construction. | A Construction Traffic Management Plan will be prepared for the construction aspects of the school at a later stage. |

Table 19: Response to Council Comments Regarding Draft Traffic Report

16.2.2 Response to RMS Comments

The comments provided by RMS within the letter, dated 15 January 2018, is provided below along with a corresponding response below.

| Council Comments | Response |
|---|----------|
| Argyle Street: As has been previously advised, Argyle Street, at this location, is identified as a regional classified road managed by Wollondilly Shire Council. As such, RMS considers that it is more appropriate for council to determine if proposed access arrangements are acceptable from a network perspective (i.e. acceptable in terms of safety and efficiency). It is noted that the development will require referral to RMS in accordance with the provisions of Clause 104 of State Environmental Planning Policy (Infrastructure) 2007. Given the above, RMS is of the view that it has more of an advisory and support role in relation to developments on classified regional roads. The comments as | Noted. |

| Council Comments | Response |
|---|--|
| <p>detailed below and provided in previous correspondence should however be addressed in any updated assessment provided as part of the SSD application.</p> | |
| <p>Level of Detail: It is noted that the provided report is a draft and is currently incomplete/missing some detail (e.g. missing Section 1, missing Section 4.2, missing Figure 6, yellow highlighted sections are incomplete, missing Section 8, incomplete in Section 9.5, 10, 11, 12, 13 and 14, missing Appendix, etc). As such, RMS is unable to undertake a detailed review and provide comprehensive comments on the submitted report. In addition, the plans provided are diagrammatic/pictorial and as such they can only be assessed in principle as no dimensions or scaled layouts have been submitted.</p> | <p>Noted.</p> |
| <p>Intersection Modelling: SIDRA modelling should, at minimum, be provided for the intersection of Argyle Street/Wonga Road and Argyle Street/each proposed school access point (for both cars and buses). This being required as the amended design will generate additional traffic that will utilise these intersections which needs to be considered and adequately mitigated if an acceptable level of service is not maintained. If the development is to be undertaken in stages the modelling should be undertaken for each stage. The modelling provided needs to consider, but not be limited to, the following:</p> <ul style="list-style-type: none"> • Full development of the site (including full development for each stage); • AM and PM peaks volume; • Existing traffic volumes with and without development and 10 year projected volumes with and without the development; • Midblock performance of Argyle Street having regard for the impacts of kerbside parking and any other facilities associated with school access that are to be provided; and • The base SIDRA models must be calibrated with onsite observations in the AM and PM peak. This can be done by measuring existing queue lengths and delays. <p>Electronic copies of all SIDRA files need to be provided to RMS for review. The above analysis is to include an assessment of the adequacy of the lane arrangements, storage bay lengths, etc. The modelling must have regard for the typical school zone peaks and extended 30 minute shoulder periods of 7.30am to 10.00am and 2.00pm to 4.30pm as well as the impacts on through traffic as a result of any proposed kerbside parking. Please note that Wollondilly Shire Council may identify additional intersections that may require SIDRA modelling. Further discussions should be had with Council in this regard.</p> <p>Should the above modelling identify that an acceptable level of service is not maintained, the updated assessment will need to identify suitable infrastructure required to ameliorate any traffic impacts and safety impacts associated with the development.</p> | <p>An assessment has been undertaken for the school driveways and the Argyle Street / Wonga Road intersection using the computer modelling program SIDRA. This assessment is provided within Section 8. The assessment addresses all of the matters raised by RMS.</p> |

| Council Comments | Response |
|--|--|
| <p>Argyle Street Access: It is noted that a swept path analysis has not been submitted at this time. A preliminary review of the Argyle Street bus access arrangements has indicated that a 12.5m bus may potentially not be able to utilise the facility as it is currently shown (i.e. entry, internal manoeuvrability of that many buses at any one time). Confirmation will need to be provided as to the maximum size bus that will use the bus drop off/pick-up area for the life of the development. In addition, a swept path analysis needs to be undertaken to demonstrate that each proposed bus space is usable. If a long rigid bus (14.5m) will use the facility, it too should be shown in any swept path analysis provided.</p> <p>In addition, RMS is of the view that the geometry along Argyle Street as shown in the Traffic Schematic Designs (i.e. exit end of the bus set down area) can be improved. Specifically, the edge line for the shoulder and the redundant pavement due to the right turn bay provision. Available sight distances to all proposed access points must be checked and detailed in any updated report (refer to comments below under the 'Sight Distance' heading for additional details). It is noted that access to the southern staff car parking area will be entry only. Details are required on how this access point will be constrained to entry only (i.e. prevent the exit of vehicles).</p> | <p>An assessment of the layout of the accesses and bus facilities, including a swept path assessment, is provided within Section 9.</p> <p>Sight distance at the access locations has been assessed by Bonacci Group.</p> |
| <p>Wonga Road Access: RMS notes that the amended design proposes an additional access for pedestrians/students, cars, trucks and buses via Wonga Road. As this access point will provide the school with a direct access to a public road that has a speed limit of above 40km/h, a school zone is required to be provided in Wonga Road. No details have been provided as part of the information that has been reviewed. The extent of the school zone must be determined in consultation with RMS's Safer Around Schools Project Officer. It is therefore suggested that contact be made with Kristian Pinochet on 4221 2580.</p> <p>In addition, a preliminary review of the proposed bus drop off/pick-up area in Wonga Road has indicated that the bus that parks to rear of the first bus may not be able to be contained in the designated area (potentially overhang into the travel lane). A longer splay approach is needed so that a bus can park properly and not impede through movements (refer to Austroads Guide to Road Design Part 3 - Figure 4.51). A swept path analysis has not been submitted at this time and should be provided for both the proposed bus bays as well as the roundabout/turning circle area.</p> <p>Available sight distances at the Argyle Street/Wonga Road intersection must be checked and detailed in any updated report (refer to comments below under the 'Sight Distance' heading for additional details).</p> | <p>TDG have forward the relevant information to RMS's Safer Around Schools Project Officer in relation to extending the 40km/h speed limit area. In response to this, RMS has advised that as the project is currently in the pre-DA stage no formal action by RMS is required with regards to the school zone. If the application is approved, RMS will review the final plans and determine the extent of the school zone extension.</p> <p>An assessment of the layout of the accesses and bus facilities, including a swept path assessment, is provided within Section 9.</p> |
| <p>Sight Distance: It is noted that a sight distance assessment at the proposed access points onto Argyle Street has not been provided at this time. Sight distance needs to be checked to all proposed access and egress points as it may be restricted by on street parking, etc (refer to Austroads Guide to Road Design Part 4A - Section 3). Plans showing sight distances that will be available for the proposed access/egress points are required. Cars and buses are to be separately assessed. The assessment provided must identify any necessary works required to achieve safe</p> | <p>Sight distance at the access locations has been assessed by Bonacci Group.</p> |

| Council Comments | Response |
|---|--|
| <p>intersection sight distance at the access points in accordance with Austroads Guide to Road Design.</p> <p>Pedestrian Access: Consideration should be given to minimising the number of pedestrian crossing points across Argyle Street. Details on how pedestrians/school children will be directed to any identified pedestrian crossing point also needs to be detailed (e.g. provision of pedestrian fencing to help minimise hazard crossing of the road by school children). All pedestrian refuges provided should be designed in accordance with TDT2011/01a. Regard must be had for impacts the location of these may have on adjoining land in separate ownership (i.e. 468 Argyle Street). Available sight distances to any new pedestrian kerb ramps needs to be checked and detailed on the submitted plans (refer to Austroads Guide to Road Design Part 4 - Table 8.1).</p> <p>It is noted that the plans provided do not show a footpath on the western side of Argyle Street. A footpath on the western side of Argyle Street should be provided, if car parking to be used by the school is to be provided, as it will assist in facilitating pedestrians using the refuges to be provided. Pedestrian access within and through the site also needs to be considered and addressed in any updated assessment provided (e.g. the visitor parking area and taxi drop off zone should be linked via footpath so as to ensure pedestrians do not need to walk through the car park area where vehicles would be reversing).</p> | <p>The existing pedestrian crossing is to be removed and relocated for two reasons. The first is to allow the provision of a right turn bay into the site. The second is to improve safety. Currently pedestrians are required to cross the road and then cross the internal bus stop area. Therefore, a pedestrian crossing facility has been provided to the north and south of the accesses to prevent this manoeuvre. Fencing will be provided between the accesses to prevent pedestrians from continuing to attempt this manoeuvre. Sight distance at the pedestrian crossing facilities has been assessed by Bonacci Group.</p> <p>Clear pedestrian paths are provided within the site, connecting with the visitor parking and taxi drop-off area.</p> |
| <p>Car Parking Provision: RMS notes that the assessment of car parking to be provided to service the proposed development is currently incomplete. RMS recognised that there is a limited ability to further increase car parking on Argyle Street. Any updated assessment provided must demonstrate that sufficient space will be provided to cater for the car parking demand the development will generate (e.g. teacher, visitor and students for each stage and the whole development). Car parking areas referenced in any updated report should be identified on the supporting plans.</p> <p>RMS would encourage the provision of a space for a set-down and pick up area for students including details on any associated strategies to be implemented (refer to http://roadsafety.transport.nsw.gov.au/staying-safe/schools/dropoff_pickup.html for additional details). RMS would also encourage sufficient car parking and any associated facilities to be provided within the development site, noting that the expansion of existing facilities/providing more facilities within Argyle Street may have adverse impacts on efficiency and safety along Argyle Street. Regard should also be had for potential parking implications the proposed development may have on adjoining land uses.</p> | <p>The Department of Education policies do not allow for drop-off and pick-up within the school boundary. The proposed parking arrangements are discussed within Section 9, which suggests the continued use of on-street parking is satisfactory.</p> |
| <p>Service Vehicles: Limited information is provided within the draft assessment on service vehicle access, type of service vehicles that will require access, associated swept path diagrams, etc. Any updated assessment provided must detail how servicing of the site will occur.</p> | <p>A swept path assessment has been provided within Section 13 for the service vehicles.</p> |

| Council Comments | Response |
|--|--|
| <p>Road Works: Any changes to the existing road infrastructure (e.g. in Argyle Street and Wonga Road) must be clearly identified. As such, scaled concept plans are required that show legal lot/road reserve boundaries, existing line marking, proposed new line marking, new signage, location of existing infrastructure (i.e. power poles, light poles, etc), road carriageway/lane widths at various locations, etc. The plans provided must demonstrate that the works proposed can be constructed within the road reserve. If required works cannot be constructed within the road reserve details on appropriate legally binding agreements that will be put in place to ensure that the appropriate land required to construct the works can be obtained must be detailed. The environmental impacts of any road works within the road reserve must be adequately considered. These impacts include, but are not limited to traffic and road safety impacts as well as other impacts such as noise, flora and fauna, heritage and impact to the community.</p> | <p>The design of the changes to the road infrastructure is being undertaken and detailed by Bonacci Group.</p> <p>A Construction Traffic Management Plan will be prepared for the construction aspects of the school at a later stage.</p> |
| <p>Survey Work: The Draft Transport and Accessibility Assessment Report details that survey work was undertaken on 3 July 2017 (refer to Section 3.5.3 on Page 10). A review of the Picton High School website has indicated that this date was during a period when the school was not operational (last day of Term 2 was 30 June 2017). Clarification is therefore required.</p> | <p>We confirm the survey was undertaken on 6 June 2017.</p> |
| <p>Application Type: From the information that has been provided it is unclear as to what planning pathway is to be taken (e.g. is the proposal for a concept development application that does not seek to carry out works, is it for a concept proposal and one or more stages of the development, etc). The information submitted with the SSD application must clearly detail what approval is being sought, the scope of works and the associated application process. It is the view of RMS that the consideration of impacts, including construction impacts, needs to be undertaken as part of any initial concept/masterplan stage. As detailed in Planning Circular PS17-003, further discussion may be required with Council/the consent authority in this regard.</p> | <p>The planning pathway for the proposed works are not being taken under a concept (formerly 'staged') DA process, rather, the SSD application is provided for the following development:</p> <ul style="list-style-type: none"> • Necessary early works including demolition of Buildings A-H, L and Q and associated excavation; • Retention, repurposing or refurbishment of Buildings I, J, K, M and N; • Reconfiguration of car and bus drop off / pick up areas, including a new access point from Wonga Road and internal access road; • Increasing floor space incorporating permanent teaching spaces to accommodate 1,500 students and core facilities for 2,000 students; • Realignment of boundary subdivision; • Construction of a two to three storey building located along the central spine of the site connecting with existing retained buildings; and • Associated landscaping works throughout the site. <p>Any development outside that described above is subject to a separate planning approval process.</p> |

Table 20: Response to RMS Comments Regarding Draft Traffic Report

16.3 Picton Buslines Liaison

A meeting was held between Mace, BLP, and Picton Buslines on 24 January 2018 to discuss the proposed school redevelopment. Key notes from the meeting include:

- Picton Buslines queried if the P2 parking directly in front of the school was being retained, in the event of this being removed Picton Buslines expect parents to utilise the bus zone instead. It is confirmed that this parking is to be removed and that parents will be informed not to use the bus parking area through the Traffic Management Plan that will be prepared, and will be enforced by staff.
- It is intended that vehicles such as garbage trucks and delivery trucks will no longer use the bus zone as an entrance to the school.

The comments from Picton Buslines have been accommodated into the design of the school.

17. Summary and Conclusions

TDG NSW Pty Ltd has reviewed the traffic and parking matters of the proposed redevelopment of Picton High School. The redevelopment will provide permanent teaching spaces (classroom space) for 1,500 students and will involve a major upgrade to the existing core facilities to accommodate growth in the school roll for up to 2,000 students, along with the necessary growth in teacher and staffing roles.

The redevelopment will incorporate a number of key changes to the traffic and parking features of the school. In particular, the existing bus drop-off/pick-up facility adjacent to Argyle Street will be redesigned, and a right turn lane will be provided from Argyle Street. A new access will also be provided via Wonga Road, which will accommodate additional bus parking, and provide access to the south-western staff parking area and loading area. A total of 135 parking spaces will be provided on-site.

Based on the above assessments, it is concluded that:

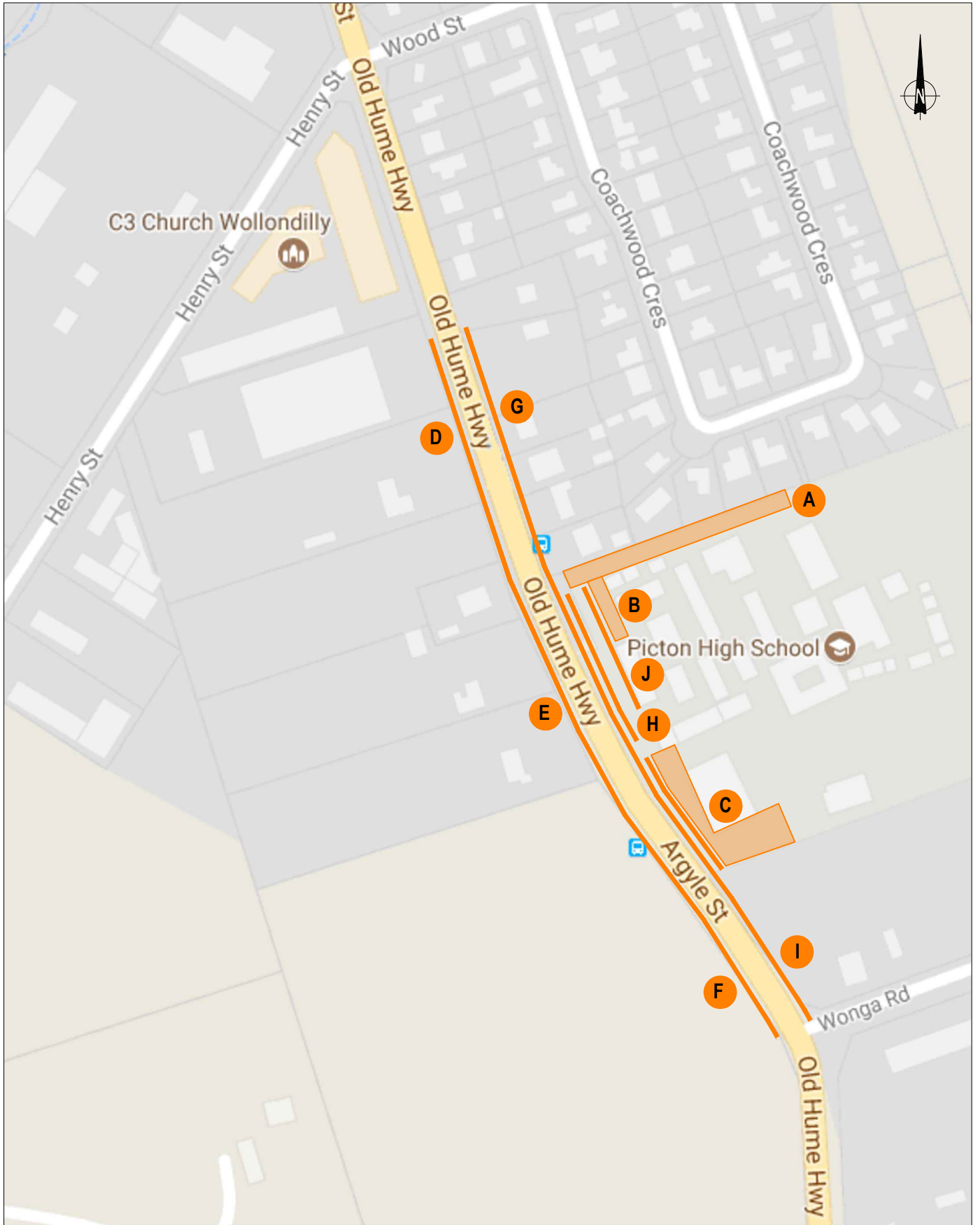
- The increase in the staff and student car parking demand is expected to be mitigated by the implementation of a Green Travel Plan;
- The proposed car park layout and access arrangements have been designed in accordance with the relevant standards and guidelines, and the swept path assessment demonstrates that suitable access is provided to/from the site and car parking and loading areas;
- The surrounding road network will experience an increase in traffic in conjunction with the increased traffic movements generated by the school as it reaches capacity. The Wollondilly Development Contributions Plan indicates that Argyle Street is proposed to be upgraded to a four lane road, which is expected to largely mitigate the impacts of the increase in traffic;
- A temporary school will be established on-site during the construction of the new school. During this time all vehicle movements, including buses, will occur via the new rear access. A Construction Traffic Management Plan is proposed to be prepared to assess the traffic and parking impacts of the proposal during construction.

Overall, it is concluded that the proposed redevelopment of the school can be accommodated within the surrounding traffic and parking environments, following the adoption of the recommendations within this report, and the expected upgrades to the road network.

TDG

Appendix A

Parking Surveys



PICTON HIGH SCHOOL REDEVELOPMENT - TRAFFIC STUDY

SURVEY LOCATIONS



1

SCALE: NTS

Parking Survey



QUALITY ASSURED COMPANY BY AS/NZS ISO 9001:2008
DH&S SYSTEM CERTIFIED TO AS/NZS ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO AS/NZS ISO 14001:2004
IAS-ANZ ISO REGN. Number 3537, cm3 REGN. Number 6054

Parking Occupancy Survey

| | |
|-----------|----------------------------|
| Date: | Thursday, 8 September 2016 |
| Location: | Picton High School |
| Weather: | Fine |
| Customer: | TDG |

[illegible]

not available for public parking

Appendix B

Guidelines for Evaluation of Intersection Capacity

The *RTA Guide to Traffic Generating Developments (October 2002, Issue 2.2)*, details the assessment of intersections. The assessment of the level of service of an intersection is based on the evaluation of the following Measures of Effectiveness:

- (a) Average delay (seconds/veh) (all forms of control)
- (b) Delay to critical movement (seconds/veh) (all forms of control)
- (c) Degree of saturation (traffic signals and roundabouts)
- (d) Cycle length (traffic signals)

SIDRA was used to calculate the relevant intersection parameters. The SIDRA software is an advanced lane-based micro-analytical tool for design and evaluation of individual intersections and networks of intersections including modelling of separate movement classes (light vehicles, heavy vehicles, buses, cyclists, large trucks, light rail / trams and so on). It provides estimates of capacity, level of service and a wide range of performance measures, including; delay, queue length and stops for vehicles and pedestrians, as well as fuel consumption, pollution emissions and operating costs.

It can be used to analyse signalised intersections (fixed-time / pretimed and actuated), signalised and unsignalised pedestrian crossings, roundabouts (unsignalised), roundabouts with metering signals, fully-signalised roundabouts, two-way stop sign and give-way / yield sign control, all-way stop sign control, single point interchanges (signalised), freeway diamond interchanges (signalised, roundabout, sign control), diverging diamond interchanges and other alternative intersections and interchanges. It can also be used for uninterrupted traffic flow conditions and merge analysis.

The best indicator of the level of service at an intersection is the average delay experienced by vehicles at that intersection. For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections (with Stop and Give Way signs or operating under the T-junction rule) the critical movement for level of service assessment should be that with the highest average delay.

With traffic signals, delays per approach tend to be equalised, subject to any over-riding requirements of signal co-ordination as well as to variations within individual movements. With roundabouts and priority - control intersections, the critical criterion for assessment is the movement with the highest delay per vehicle. With this type of control the volume balance might be such that some movements suffer high levels of delay while other movements have minimal delay. An overall average delay for the intersection of 25 seconds might not be satisfactory if the average delay on one movement is 60 seconds.

The average delay for level of service E should be no more than 70 seconds. The accepted maximum practical cycle length for traffic signals under saturated conditions is 120 - 140 seconds. Under these conditions 120 seconds is near maximum for two and three phase intersections and 140 seconds near maximum for more complex phase designs. Drivers and pedestrians expect cycle lengths of these magnitudes and their inherent delays in peak hours. A cycle length of 140 seconds for an intersection which is almost saturated has an average vehicle delay of about 70 seconds, although this can vary. If the average vehicle delay is more than 70 seconds, the intersection is assumed to be at Level of Service F.

Table B1 sets out average delays for different levels of service. There is no consistent correlation between definitions of levels of service for road links as defined elsewhere in this section, and the

ranges set out in Table B1. In assigning a level of service, the average delay to the motoring public needs to be considered, keeping in mind the location of the intersection. For example, drivers in inner urban areas of Sydney have a higher tolerance of delay than drivers in country areas. Table B1 provides a recommended baseline for assessment.

| Level of Service | Average Delay per Vehicle (seconds/veh) | Traffic Signals, Roundabout | Give Way and Stop Signs |
|------------------|---|--|---|
| A | less than 14 | Good operation | Good operation |
| B | 15 to 28 | Good with acceptable delays and spare capacity | Acceptable delays and spare capacity |
| C | 29 - 42 | Satisfactory | Satisfactory, but accident study required |
| D | 43 to 56 | Operating near capacity | Near capacity and accident study required |
| E | 57 to 70 | At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode | At capacity, required other control mode |

Table B1: Level of Service Criteria for Intersections

The figures in Table B1 are intended as a guide only. Any particular assessment should take into account site-specific factors including maximum queue lengths (and their effect on lane blocking), the influence of nearby intersections and the sensitivity of the location to delays. In many situations, a comparison of the current and future average delay provides a better appreciation of the impact of a proposal, and not simply the change in the level of service.

Appendix C

Concept of Carriageway Capacity and Level of Service

The capacity of major streets within an urban area can be based on an assessment of their operating Level of Service.

Level of service is defined within the *Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis* as:

‘... a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A level of service definition generally describes these conditions in terms of factors such as speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety.’

Levels of service are designated from A to F from best (free flow conditions) to worst (forced flow with stop start operation, long queues and delays) as follows:

LEVELS OF SERVICE

- A - Free flow (almost no delays)
- B - Stable flow (slight delays)
- C - Stable flow (acceptable delays)
- D - Approaching unstable flow (tolerable delays)
- E - Unstable flow (congestion; intolerable delays), and
- F - Forced flow (jammed)

A service volume, as defined by Austroads, is the maximum number of vehicles that can pass over a given section of roadway in one direction during one hour while operating conditions are maintained at a specified level of service. It is suggested that ideally arterial and sub-arterial roads should not exceed service volumes at level of service C. At this level, whilst most drivers are restricted in their freedom to manoeuvre, operating speeds are still reasonable and acceptable delays experienced. However, in urban situations, arterial and sub-arterial roads operating at Level of Service D are still considered adequate. Traffic volumes along urban roads with interrupted and uninterrupted flow conditions are included in **Table C1** and **C2** respectively.

| | DESCRIPTION | LEVEL OF SERVICE | | | | | |
|-----|---|------------------|------|------|------|------|---|
| | | A | B | C | D | E | F |
| 2U | 2 Lane Undivided | 540 | 630 | 720 | 810 | 900 | - |
| 4UP | 4 Lane Undivided with Two Parking Lanes | 540 | 630 | 720 | 810 | 900 | - |
| 4U | 4 Lane Undivided with Some Parking | 900 | 1050 | 1200 | 1350 | 1500 | - |
| 4UC | 4 Lane Undivided with Clearways | 1080 | 1260 | 1440 | 1620 | 1800 | - |
| 4D | 4 Lane Divided with Clearways | 1140 | 1330 | 1520 | 1710 | 1900 | - |
| 6U | 6 Lane Undivided | 1440 | 1680 | 1920 | 2160 | 2400 | - |
| 6D | 6 Lane Divided with Clearway | 1740 | 2030 | 2320 | 2610 | 2900 | - |

Table C1: Level of Service Interrupted Flow Conditions along Urban Roads (One Way Hourly Volumes)

| | DESCRIPTION | LEVEL OF SERVICE | | | | | |
|------|------------------------------------|------------------|------|------|------|------|---|
| | | A | B | C | D | E | F |
| 2U | 2 Lane Undivided | 760 | 880 | 1000 | 1130 | 1260 | - |
| 4U | 4 Lane Undivided with Some Parking | 1260 | 1470 | 1680 | 1890 | 2100 | - |
| 4UC | 4 Lane Undivided with Clearways | 1510 | 1760 | 2010 | 2270 | 2520 | - |
| 4DC | 4 Lane Divided with Clearways | 1600 | 1860 | 2130 | 2400 | 2660 | - |
| 4DCL | 6 Lane Undivided with Clearways | 2250 | 2620 | 3000 | 3380 | 3740 | - |
| 6DC | 6 Lane Divided with Clearway | 2440 | 2840 | 3250 | 3660 | 4060 | - |

Table C2: Level of Service Uninterrupted Flow Conditions along Urban Roads (One Way Hourly Volumes)

Appendix D

SIDRA Results

MOVEMENT SUMMARY

▽ Site: 1 [AM Base - S1A Northern Access]

Base: Morning Peak (2017 Traffic Volumes)
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 686 | 6.1 | 0.474 | 1.6 | LOS A | 2.3 | 17.4 | 0.27 | 0.08 | 39.0 |
| 3 | R2 | 84 | 17.5 | 0.474 | 10.0 | LOS A | 2.3 | 17.4 | 0.27 | 0.08 | 38.6 |
| Approach | | 771 | 7.4 | 0.474 | 2.5 | NA | 2.3 | 17.4 | 0.27 | 0.08 | 38.9 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 109 | 14.4 | 0.315 | 3.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.09 | 39.8 |
| 8 | T1 | 468 | 6.3 | 0.315 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.09 | 39.7 |
| Approach | | 578 | 7.8 | 0.315 | 0.7 | NA | 0.0 | 0.0 | 0.00 | 0.09 | 39.7 |
| All Vehicles | | 1348 | 7.6 | 0.474 | 1.7 | NA | 2.3 | 17.4 | 0.15 | 0.08 | 39.3 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM Base Year - S1B Northern Access]

Base Year plus School expansion at full capacity
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 701 | 6.0 | 0.467 | 1.4 | LOS A | 2.1 | 15.3 | 0.23 | 0.06 | 39.1 |
| 3 | R2 | 66 | 22.2 | 0.467 | 10.8 | LOS A | 2.1 | 15.3 | 0.23 | 0.06 | 38.7 |
| Approach | | 767 | 7.4 | 0.467 | 2.3 | NA | 2.1 | 15.3 | 0.23 | 0.06 | 39.0 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 87 | 18.1 | 0.330 | 3.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.07 | 39.9 |
| 8 | T1 | 520 | 5.7 | 0.330 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.07 | 39.8 |
| Approach | | 607 | 7.5 | 0.330 | 0.5 | NA | 0.0 | 0.0 | 0.00 | 0.07 | 39.8 |
| All Vehicles | | 1375 | 7.4 | 0.467 | 1.5 | NA | 2.1 | 15.3 | 0.13 | 0.06 | 39.4 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2028 - S.2A. Northern Access - without School Traffic]

Scenario 2A - Year 2028 Background Traffic Only
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 860 | 6.1 | 0.607 | 3.0 | LOS A | 4.3 | 31.9 | 0.38 | 0.07 | 38.3 |
| 3 | R2 | 86 | 19.5 | 0.607 | 15.8 | LOS B | 4.3 | 31.9 | 0.38 | 0.07 | 37.9 |
| Approach | | 946 | 7.3 | 0.607 | 4.2 | NA | 4.3 | 31.9 | 0.38 | 0.07 | 38.2 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 113 | 16.8 | 0.403 | 3.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.07 | 39.9 |
| 8 | T1 | 628 | 6.2 | 0.403 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.07 | 39.7 |
| Approach | | 741 | 7.8 | 0.403 | 0.6 | NA | 0.0 | 0.0 | 0.00 | 0.07 | 39.8 |
| All Vehicles | | 1687 | 7.5 | 0.607 | 2.6 | NA | 4.3 | 31.9 | 0.21 | 0.07 | 38.9 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2028 - S.2B. Northern Access - with School Traffic (1,547 Students)]

Scenario 2B - Year 2028 Background Traffic Plus School Traffic for 1,547 Students increase
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 922 | 6.1 | 0.630 | 3.2 | LOS A | 4.4 | 32.7 | 0.35 | 0.05 | 38.2 |
| 3 | R2 | 71 | 25.4 | 0.630 | 18.7 | LOS B | 4.4 | 32.7 | 0.35 | 0.05 | 37.9 |
| Approach | | 993 | 7.4 | 0.630 | 4.3 | NA | 4.4 | 32.7 | 0.35 | 0.05 | 38.2 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 93 | 20.5 | 0.421 | 3.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 39.9 |
| 8 | T1 | 683 | 6.0 | 0.421 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 39.8 |
| Approach | | 776 | 7.7 | 0.421 | 0.5 | NA | 0.0 | 0.0 | 0.00 | 0.05 | 39.8 |
| All Vehicles | | 1768 | 7.6 | 0.630 | 2.6 | NA | 4.4 | 32.7 | 0.20 | 0.05 | 38.9 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2040 - S.3A. Northern Access - without School Traffic]

Scenario 3A - Year 2040 Background Traffic Only
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1227 | 6.2 | 0.982 | 28.7 | LOS C | 40.2 | 300.2 | 1.00 | 0.11 | 29.7 |
| 3 | R2 | 95 | 26.7 | 0.982 | 68.1 | LOS E | 40.2 | 300.2 | 1.00 | 0.11 | 29.5 |
| Approach | | 1322 | 7.6 | 0.982 | 31.5 | NA | 40.2 | 300.2 | 1.00 | 0.11 | 29.7 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 116 | 19.1 | 0.549 | 3.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 39.9 |
| 8 | T1 | 897 | 6.2 | 0.549 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 39.8 |
| Approach | | 1013 | 7.7 | 0.549 | 0.5 | NA | 0.0 | 0.0 | 0.00 | 0.05 | 39.8 |
| All Vehicles | | 2335 | 7.7 | 0.982 | 18.1 | NA | 40.2 | 300.2 | 0.57 | 0.08 | 33.4 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2040 - S.3B. Northern Access - with School Traffic (Full Capacity)]

Scenario S.3B - Year 2040 Background Traffic Plus School Traffic (Full Capacity)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1307 | 6.0 | 1.063 | 80.2 | LOS F | 85.4 | 635.7 | 1.00 | 0.14 | 20.8 |
| 3 | R2 | 93 | 27.3 | 1.063 | 124.6 | LOS F | 85.4 | 635.7 | 1.00 | 0.14 | 20.7 |
| Approach | | 1400 | 7.4 | 1.063 | 83.1 | NA | 85.4 | 635.7 | 1.00 | 0.14 | 20.8 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 121 | 21.7 | 0.574 | 3.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 39.8 |
| 8 | T1 | 935 | 6.2 | 0.574 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 39.8 |
| Approach | | 1056 | 8.0 | 0.574 | 0.5 | NA | 0.0 | 0.0 | 0.00 | 0.05 | 39.8 |
| All Vehicles | | 2456 | 7.7 | 1.063 | 47.6 | NA | 85.4 | 635.7 | 0.57 | 0.10 | 26.1 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2040 - S.4A Northern Access Four Lane - Future]

Scenario 4A Year 2040 Background Traffic with Argyle Street Upgrade
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1227 | 6.2 | 0.327 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| 3 | R2 | 95 | 26.7 | 0.315 | 17.5 | LOS B | 1.2 | 10.7 | 0.82 | 0.98 | 33.5 |
| Approach | | 1322 | 7.6 | 0.327 | 1.3 | NA | 1.2 | 10.7 | 0.06 | 0.07 | 39.4 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 116 | 19.1 | 0.275 | 3.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.11 | 39.8 |
| 8 | T1 | 897 | 6.2 | 0.275 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 39.8 |
| Approach | | 1013 | 7.7 | 0.275 | 0.4 | NA | 0.0 | 0.0 | 0.00 | 0.05 | 39.8 |
| All Vehicles | | 2335 | 7.7 | 0.327 | 0.9 | NA | 1.2 | 10.7 | 0.03 | 0.06 | 39.6 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2040 - S.4B Northern Access Four Lane - Future]

Scenario 4B - 2040 Background Traffic Plus School Traffic for 2,000 Students with Argyle Street Upgrade
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1307 | 6.0 | 0.348 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| 3 | R2 | 93 | 27.3 | 0.337 | 19.4 | LOS B | 1.3 | 11.4 | 0.85 | 1.00 | 32.9 |
| Approach | | 1400 | 7.4 | 0.348 | 1.3 | NA | 1.3 | 11.4 | 0.06 | 0.07 | 39.4 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 121 | 21.7 | 0.287 | 3.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.11 | 39.8 |
| 8 | T1 | 935 | 6.2 | 0.287 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 39.8 |
| Approach | | 1056 | 8.0 | 0.287 | 0.4 | NA | 0.0 | 0.0 | 0.00 | 0.05 | 39.8 |
| All Vehicles | | 2456 | 7.7 | 0.348 | 0.9 | NA | 1.3 | 11.4 | 0.03 | 0.06 | 39.6 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

Site: 1 [PM Base - S1A Northern Access]

Base: Evening Peak (2017 Traffic Volumes)
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 638 | 6.3 | 0.417 | 1.6 | LOS A | 1.6 | 12.2 | 0.21 | 0.04 | 39.0 |
| 3 | R2 | 42 | 27.5 | 0.417 | 13.1 | LOS A | 1.6 | 12.2 | 0.21 | 0.04 | 38.7 |
| Approach | | 680 | 7.6 | 0.417 | 2.3 | NA | 1.6 | 12.2 | 0.21 | 0.04 | 39.0 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 51 | 22.9 | 0.391 | 3.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.03 | 40.0 |
| 8 | T1 | 677 | 5.3 | 0.391 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.03 | 39.9 |
| Approach | | 727 | 6.5 | 0.391 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.03 | 39.9 |
| All Vehicles | | 1407 | 7.0 | 0.417 | 1.3 | NA | 1.6 | 12.2 | 0.10 | 0.04 | 39.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 1 [PM Base Year - S1B Northern Access]

Base Year plus School expansion at full capacity
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 654 | 6.1 | 0.419 | 1.5 | LOS A | 1.6 | 11.6 | 0.19 | 0.03 | 39.1 |
| 3 | R2 | 37 | 31.4 | 0.419 | 13.8 | LOS A | 1.6 | 11.6 | 0.19 | 0.03 | 38.7 |
| Approach | | 691 | 7.5 | 0.419 | 2.2 | NA | 1.6 | 11.6 | 0.19 | 0.03 | 39.1 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 39 | 29.7 | 0.394 | 3.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 40.0 |
| 8 | T1 | 696 | 5.1 | 0.394 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| Approach | | 735 | 6.4 | 0.394 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| All Vehicles | | 1425 | 6.9 | 0.419 | 1.2 | NA | 1.6 | 11.6 | 0.09 | 0.03 | 39.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [PM 2028 - S.2A. Northern Access - without School Traffic]

Scenario 2A - Year 2028 Background Traffic Only
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 742 | 6.5 | 0.535 | 4.6 | LOS A | 4.1 | 30.3 | 0.34 | 0.04 | 37.6 |
| 3 | R2 | 44 | 31.0 | 0.535 | 24.9 | LOS B | 4.1 | 30.3 | 0.34 | 0.04 | 37.3 |
| Approach | | 786 | 7.9 | 0.535 | 5.7 | NA | 4.1 | 30.3 | 0.34 | 0.04 | 37.6 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 52 | 24.5 | 0.515 | 3.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| 8 | T1 | 909 | 5.3 | 0.515 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| Approach | | 961 | 6.4 | 0.515 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| All Vehicles | | 1747 | 7.0 | 0.535 | 2.7 | NA | 4.1 | 30.3 | 0.15 | 0.03 | 38.8 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

▽ Site: 1 [PM 2028 - S.2B. Northern Access - with School Traffic (1,547 Students)]

Scenario 2B - Year 2028 Background Traffic Plus School Traffic for 1,547 Students increase
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 847 | 6.3 | 0.594 | 5.1 | LOS A | 4.9 | 36.3 | 0.33 | 0.03 | 37.5 |
| 3 | R2 | 41 | 35.9 | 0.594 | 29.7 | LOS C | 4.9 | 36.3 | 0.33 | 0.03 | 37.1 |
| Approach | | 888 | 7.7 | 0.594 | 6.2 | NA | 4.9 | 36.3 | 0.33 | 0.03 | 37.4 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 42 | 32.5 | 0.522 | 3.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| 8 | T1 | 931 | 5.3 | 0.522 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| Approach | | 973 | 6.5 | 0.522 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| All Vehicles | | 1861 | 7.1 | 0.594 | 3.1 | NA | 4.9 | 36.3 | 0.16 | 0.02 | 38.7 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [PM 2040 - S.3A. Northern Access - without School Traffic]

Scenario 3A - Year 2040 Background Traffic Only
 Giveaway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------|------------------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1059 | 6.6 | 1.382 | 399.9 | LOS F | 247.6 | 1854.3 | 1.00 | 0.08 | 7.1 |
| 3 | R2 | 52 | 40.8 | 1.382 | 454.8 | LOS F | 247.6 | 1854.3 | 1.00 | 0.08 | 7.1 |
| Approach | | 1111 | 8.2 | 1.382 | 402.5 | NA | 247.6 | 1854.3 | 1.00 | 0.08 | 7.1 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 59 | 33.9 | 0.728 | 3.8 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 39.8 |
| 8 | T1 | 1298 | 5.4 | 0.728 | 0.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 39.8 |
| Approach | | 1357 | 6.6 | 0.728 | 0.4 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 39.8 |
| All Vehicles | | 2467 | 7.3 | 1.382 | 181.4 | NA | 247.6 | 1854.3 | 0.45 | 0.05 | 13.0 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [PM 2040 - S.3B. Northern Access - with School Traffic (Full Capacity)]

Scenario 3B - Year 2040 Background Traffic Plus School Traffic (Full Capacity)
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1195 | 6.3 | 1.632 | 619.9 | LOS F | 367.1 | 2741.8 | 1.00 | 0.09 | 4.9 |
| 3 | R2 | 56 | 39.6 | 1.632 | 668.8 | LOS F | 367.1 | 2741.8 | 1.00 | 0.09 | 4.9 |
| Approach | | 1251 | 7.8 | 1.632 | 622.1 | NA | 367.1 | 2741.8 | 1.00 | 0.09 | 4.9 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 57 | 35.2 | 0.742 | 3.8 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 39.8 |
| 8 | T1 | 1326 | 5.4 | 0.742 | 0.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 39.7 |
| Approach | | 1383 | 6.6 | 0.742 | 0.4 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 39.7 |
| All Vehicles | | 2634 | 7.2 | 1.632 | 295.6 | NA | 367.1 | 2741.8 | 0.47 | 0.05 | 9.1 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [PM 2040 - S.4A Northern Access Four Lane - Future]

Scenario 4A Year 2040 Background Traffic with Argyle Street Upgrade
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1059 | 6.6 | 0.283 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| 3 | R2 | 52 | 40.8 | 0.423 | 43.2 | LOS D | 1.5 | 13.9 | 0.94 | 1.05 | 27.1 |
| Approach | | 1111 | 8.2 | 0.423 | 2.0 | NA | 1.5 | 13.9 | 0.04 | 0.05 | 39.1 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 59 | 33.9 | 0.364 | 3.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.04 | 39.9 |
| 8 | T1 | 1298 | 5.4 | 0.364 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| Approach | | 1357 | 6.6 | 0.364 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| All Vehicles | | 2467 | 7.3 | 0.423 | 1.0 | NA | 1.5 | 13.9 | 0.02 | 0.03 | 39.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [PM 2040 - S.4B Northern Access Four Lane - Future]

Scenario 4B - 2040 Background Traffic Plus School Traffic for 2,000 Students with Argyle Street Upgrade
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1195 | 6.3 | 0.319 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| 3 | R2 | 56 | 39.6 | 0.480 | 47.7 | LOS D | 1.7 | 15.9 | 0.95 | 1.07 | 26.2 |
| Approach | | 1251 | 7.8 | 0.480 | 2.2 | NA | 1.7 | 15.9 | 0.04 | 0.05 | 39.0 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 57 | 35.2 | 0.371 | 3.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.04 | 39.9 |
| 8 | T1 | 1326 | 5.4 | 0.371 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| Approach | | 1383 | 6.6 | 0.371 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 39.9 |
| All Vehicles | | 2634 | 7.2 | 0.480 | 1.1 | NA | 1.7 | 15.9 | 0.02 | 0.03 | 39.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM Base - S1A Southern Access]

Base: Morning Peak (2017 Traffic Volumes)
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 715 | 7.1 | 0.383 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 715 | 7.1 | 0.383 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 72 | 23.5 | 0.264 | 8.9 | LOS A | 1.0 | 7.8 | 0.65 | 0.86 | 48.2 |
| 6 | R2 | 47 | 8.9 | 0.264 | 19.6 | LOS B | 1.0 | 7.8 | 0.65 | 0.86 | 47.7 |
| Approach | | 119 | 17.7 | 0.264 | 13.2 | LOS A | 1.0 | 7.8 | 0.65 | 0.86 | 48.0 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 468 | 6.3 | 0.250 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 468 | 6.3 | 0.250 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| All Vehicles | | 1302 | 7.8 | 0.383 | 1.2 | NA | 1.0 | 7.8 | 0.06 | 0.08 | 40.6 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM Base Year - S1B Southern Access]

Base Year plus School expansion at full capacity
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 717 | 7.0 | 0.384 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 717 | 7.0 | 0.384 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 64 | 26.2 | 0.259 | 9.5 | LOS A | 0.9 | 7.6 | 0.68 | 0.89 | 47.6 |
| 6 | R2 | 42 | 10.0 | 0.259 | 21.1 | LOS B | 0.9 | 7.6 | 0.68 | 0.89 | 47.1 |
| Approach | | 106 | 19.8 | 0.259 | 14.1 | LOS A | 0.9 | 7.6 | 0.68 | 0.89 | 47.4 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 520 | 5.7 | 0.276 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 520 | 5.7 | 0.276 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| All Vehicles | | 1343 | 7.5 | 0.384 | 1.2 | NA | 0.9 | 7.6 | 0.05 | 0.07 | 40.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2028 - S.2A. Southern Access - Without School Traffic]

Scenario 2A - Year 2028 Background Traffic Only
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 862 | 7.3 | 0.463 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| Approach | | 862 | 7.3 | 0.463 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 72 | 23.5 | 0.444 | 13.8 | LOS A | 1.7 | 13.7 | 0.82 | 1.02 | 42.8 |
| 6 | R2 | 47 | 8.9 | 0.444 | 36.1 | LOS C | 1.7 | 13.7 | 0.82 | 1.02 | 42.4 |
| Approach | | 119 | 17.7 | 0.444 | 22.7 | LOS B | 1.7 | 13.7 | 0.82 | 1.02 | 42.6 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 628 | 6.2 | 0.335 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 628 | 6.2 | 0.335 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| All Vehicles | | 1609 | 7.7 | 0.463 | 1.7 | NA | 1.7 | 13.7 | 0.06 | 0.08 | 40.1 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2028 - S.2B. Southern Access - With School Traffic (1,547 Students)]

Scenario 2B - Year 2028 Background Traffic Plus School Traffic for 1,547 Students increase
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 939 | 7.1 | 0.504 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| Approach | | 939 | 7.1 | 0.504 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 74 | 34.3 | 0.642 | 24.5 | LOS B | 2.7 | 23.1 | 0.89 | 1.14 | 36.1 |
| 6 | R2 | 45 | 16.3 | 0.642 | 61.2 | LOS E | 2.7 | 23.1 | 0.89 | 1.14 | 35.8 |
| Approach | | 119 | 27.4 | 0.642 | 38.5 | LOS C | 2.7 | 23.1 | 0.89 | 1.14 | 36.0 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 683 | 6.0 | 0.364 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 683 | 6.0 | 0.364 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| All Vehicles | | 1741 | 8.0 | 0.642 | 2.7 | NA | 2.7 | 23.1 | 0.06 | 0.08 | 39.6 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2040 - S.3A. Southern Access - Without School Traffic]

Scenario 3A - Year 2040 Background Traffic Only
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1229 | 7.3 | 0.660 | 0.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| Approach | | 1229 | 7.3 | 0.660 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 72 | 23.5 | 2.585 | 1479.9 | LOS F | 52.3 | 421.4 | 1.00 | 3.22 | 2.3 |
| 6 | R2 | 47 | 8.9 | 2.585 | 1541.4 | LOS F | 52.3 | 421.4 | 1.00 | 3.22 | 2.3 |
| Approach | | 119 | 17.7 | 2.585 | 1504.4 | LOS F | 52.3 | 421.4 | 1.00 | 3.22 | 2.3 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 897 | 6.2 | 0.479 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| Approach | | 897 | 6.2 | 0.479 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| All Vehicles | | 2245 | 7.4 | 2.585 | 79.8 | NA | 52.3 | 421.4 | 0.05 | 0.17 | 21.2 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2040 - S.3B. Southern Access - With School Traffic (Full Capacity)]

Scenario 3B - Year 2040 Background Traffic Plus School Traffic (Full Capacity)
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1329 | 7.1 | 0.713 | 0.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.8 |
| Approach | | 1329 | 7.1 | 0.713 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.8 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 96 | 34.1 | 7.768 | 6159.1 | LOS F | 101.2 | 870.7 | 1.00 | 2.45 | 0.6 |
| 6 | R2 | 58 | 14.5 | 7.768 | 6207.5 | LOS F | 101.2 | 870.7 | 1.00 | 2.45 | 0.6 |
| Approach | | 154 | 26.7 | 7.768 | 6177.3 | LOS F | 101.2 | 870.7 | 1.00 | 2.45 | 0.6 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 967 | 6.1 | 0.516 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| Approach | | 967 | 6.1 | 0.516 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| All Vehicles | | 2451 | 7.9 | 7.768 | 387.6 | NA | 101.2 | 870.7 | 0.06 | 0.15 | 7.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2040 - S.4A. Southern Access - Four Lanes - No Right Turn]

Scenario 4A Year 2040 Background Traffic with Argyle Street Upgrade
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1229 | 7.3 | 0.330 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 1229 | 7.3 | 0.330 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 72 | 23.5 | 0.105 | 8.9 | LOS A | 0.4 | 3.1 | 0.50 | 0.73 | 51.1 |
| Approach | | 72 | 23.5 | 0.105 | 8.9 | LOS A | 0.4 | 3.1 | 0.50 | 0.73 | 51.1 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 897 | 6.2 | 0.239 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 897 | 6.2 | 0.239 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| All Vehicles | | 2198 | 7.4 | 0.330 | 0.3 | NA | 0.4 | 3.1 | 0.02 | 0.02 | 40.3 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [AM 2040 - S.4B. Southern Access - Four Lanes - No Right Turn]

Scenario 4B - 2040 Background Traffic Plus School Traffic for 2,000 Students with Argyle Street Upgrade
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1329 | 7.1 | 0.357 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 1329 | 7.1 | 0.357 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 96 | 34.1 | 0.160 | 9.9 | LOS A | 0.6 | 5.2 | 0.54 | 0.79 | 50.4 |
| Approach | | 96 | 34.1 | 0.160 | 9.9 | LOS A | 0.6 | 5.2 | 0.54 | 0.79 | 50.4 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 967 | 6.1 | 0.258 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 967 | 6.1 | 0.258 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| All Vehicles | | 2393 | 7.8 | 0.357 | 0.4 | NA | 0.6 | 5.2 | 0.02 | 0.03 | 40.3 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

Site: 1 [PM Base - S1A Southern Access]

Base: Evening Peak (2017 Traffic Volumes)
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 596 | 7.1 | 0.320 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 596 | 7.1 | 0.320 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 93 | 13.6 | 0.462 | 12.2 | LOS A | 2.0 | 15.2 | 0.78 | 1.02 | 45.7 |
| 6 | R2 | 87 | 7.2 | 0.462 | 22.5 | LOS B | 2.0 | 15.2 | 0.78 | 1.02 | 45.3 |
| Approach | | 180 | 10.5 | 0.462 | 17.2 | LOS B | 2.0 | 15.2 | 0.78 | 1.02 | 45.5 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 651 | 1.5 | 0.337 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 651 | 1.5 | 0.337 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| All Vehicles | | 1426 | 4.9 | 0.462 | 2.2 | NA | 2.0 | 15.2 | 0.10 | 0.13 | 40.6 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [PM Base Year - S1B Southern Access]

Base Year plus School expansion at full capacity
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 629 | 6.7 | 0.337 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 629 | 6.7 | 0.337 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 71 | 17.9 | 0.382 | 11.9 | LOS A | 1.5 | 11.6 | 0.78 | 0.98 | 45.6 |
| 6 | R2 | 64 | 9.8 | 0.382 | 23.4 | LOS B | 1.5 | 11.6 | 0.78 | 0.98 | 45.2 |
| Approach | | 135 | 14.1 | 0.382 | 17.4 | LOS B | 1.5 | 11.6 | 0.78 | 0.98 | 45.4 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 669 | 1.4 | 0.346 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 669 | 1.4 | 0.346 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| All Vehicles | | 1434 | 4.9 | 0.382 | 1.7 | NA | 1.5 | 11.6 | 0.07 | 0.09 | 40.4 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [PM 2028 - S.2A. Southern Access - Without School Traffic]

Scenario 2A - Year 2028 Background Traffic Only
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 758 | 7.2 | 0.407 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| Approach | | 758 | 7.2 | 0.407 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 93 | 13.6 | 1.098 | 152.1 | LOS F | 17.0 | 129.8 | 1.00 | 2.38 | 15.8 |
| 6 | R2 | 87 | 7.2 | 1.098 | 181.0 | LOS F | 17.0 | 129.8 | 1.00 | 2.38 | 15.7 |
| Approach | | 180 | 10.5 | 1.098 | 166.1 | LOS F | 17.0 | 129.8 | 1.00 | 2.38 | 15.8 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 914 | 5.8 | 0.486 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| Approach | | 914 | 5.8 | 0.486 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| All Vehicles | | 1852 | 6.8 | 1.098 | 16.2 | NA | 17.0 | 129.8 | 0.10 | 0.23 | 34.7 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [PM 2028 - S.2B. Southern Access - With School Traffic (1,547 Students)]

Scenario 2B - Year 2028 Background Traffic Plus School Traffic for 1,547 Students increase
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 828 | 7.1 | 0.444 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| Approach | | 828 | 7.1 | 0.444 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 80 | 25.0 | 1.277 | 303.0 | LOS F | 25.9 | 213.6 | 1.00 | 2.92 | 9.4 |
| 6 | R2 | 72 | 16.2 | 1.277 | 338.9 | LOS F | 25.9 | 213.6 | 1.00 | 2.92 | 9.3 |
| Approach | | 152 | 20.8 | 1.277 | 319.9 | LOS F | 25.9 | 213.6 | 1.00 | 2.92 | 9.4 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 935 | 5.7 | 0.497 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| Approach | | 935 | 5.7 | 0.497 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| All Vehicles | | 1915 | 7.5 | 1.277 | 25.4 | NA | 25.9 | 213.6 | 0.08 | 0.23 | 31.7 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

Site: 1 [PM 2040 - S.3A. Southern Access - Without School Traffic]

Scenario 3A - Year 2040 Background Traffic Only
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1081 | 7.3 | 0.581 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| Approach | | 1081 | 7.3 | 0.581 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 93 | 13.6 | 10.972 | 9035.9 | LOS F | 126.7 | 966.8 | 1.00 | 2.10 | 0.4 |
| 6 | R2 | 87 | 7.2 | 10.972 | 9065.7 | LOS F | 126.7 | 966.8 | 1.00 | 2.10 | 0.4 |
| Approach | | 180 | 10.5 | 10.972 | 9050.3 | LOS F | 126.7 | 966.8 | 1.00 | 2.10 | 0.4 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 1303 | 5.7 | 0.693 | 0.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.8 |
| Approach | | 1303 | 5.7 | 0.693 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.8 |
| All Vehicles | | 2564 | 6.7 | 10.972 | 635.5 | NA | 126.7 | 966.8 | 0.07 | 0.15 | 4.9 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [PM 2040 - S.3B. Southern Access - With School Traffic (Full Capacity)]

Scenario 3B - Year 2040 Background Traffic Plus School Traffic (Full Capacity)
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1171 | 7.1 | 0.628 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| Approach | | 1171 | 7.1 | 0.628 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.9 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 102 | 23.7 | 15.946 | 13523.2 | LOS F | 146.6 | 1190.8 | 1.00 | 1.87 | 0.3 |
| 6 | R2 | 89 | 12.9 | 15.946 | 13551.1 | LOS F | 146.6 | 1190.8 | 1.00 | 1.87 | 0.3 |
| Approach | | 192 | 18.7 | 15.946 | 13536.3 | LOS F | 146.6 | 1190.8 | 1.00 | 1.87 | 0.3 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 1332 | 5.8 | 0.708 | 0.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 39.8 |
| Approach | | 1332 | 5.8 | 0.708 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 39.8 |
| All Vehicles | | 2694 | 7.3 | 15.946 | 962.9 | NA | 146.6 | 1190.8 | 0.07 | 0.13 | 3.4 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [PM 2040 - S.4A. Southern Access - Four Lanes - No Right Turn]

Scenario 4A Year 2040 Background Traffic with Argyle Street Upgrade
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1081 | 7.3 | 0.290 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 1081 | 7.3 | 0.290 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 93 | 13.6 | 0.175 | 11.0 | LOS A | 0.6 | 4.7 | 0.62 | 0.84 | 49.7 |
| Approach | | 93 | 13.6 | 0.175 | 11.0 | LOS A | 0.6 | 4.7 | 0.62 | 0.84 | 49.7 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 1303 | 5.7 | 0.347 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 1303 | 5.7 | 0.347 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| All Vehicles | | 2477 | 6.7 | 0.347 | 0.4 | NA | 0.6 | 4.7 | 0.02 | 0.03 | 40.3 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

▽ Site: 1 [PM 2040 - S.4B. Southern Access - Four Lanes - No Right Turn]

Scenario 4B - 2040 Background Traffic Plus School Traffic for 2,000 Students with Argyle Street Upgrade
 Giveway / Yield (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1171 | 7.1 | 0.314 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 1171 | 7.1 | 0.314 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| East: Southern Access | | | | | | | | | | | |
| 4 | L2 | 102 | 23.7 | 0.218 | 12.3 | LOS A | 0.8 | 6.5 | 0.66 | 0.87 | 48.8 |
| Approach | | 102 | 23.7 | 0.218 | 12.3 | LOS A | 0.8 | 6.5 | 0.66 | 0.87 | 48.8 |
| North: Argyle Street | | | | | | | | | | | |
| 8 | T1 | 1332 | 5.8 | 0.354 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| Approach | | 1332 | 5.8 | 0.354 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 40.0 |
| All Vehicles | | 2604 | 7.1 | 0.354 | 0.5 | NA | 0.8 | 6.5 | 0.03 | 0.03 | 40.3 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY



Site: 3 [AM Base - S.1A Wonga Road]

Base: Morning Peak (2017 Traffic Volumes)
Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 715 | 7.1 | 0.383 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| 3 | R2 | 4 | 50.0 | 0.006 | 9.9 | LOS A | 0.0 | 0.2 | 0.58 | 0.65 | 48.7 |
| Approach | | 719 | 7.3 | 0.383 | 0.1 | NA | 0.0 | 0.2 | 0.00 | 0.00 | 59.8 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 8 | 87.5 | 0.016 | 16.1 | LOS B | 0.1 | 0.8 | 0.61 | 0.89 | 47.9 |
| 6 | R2 | 9 | 33.3 | 0.051 | 26.8 | LOS B | 0.2 | 1.4 | 0.85 | 1.00 | 41.7 |
| Approach | | 18 | 58.8 | 0.051 | 21.8 | LOS B | 0.2 | 1.4 | 0.74 | 0.95 | 44.4 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 15 | 14.3 | 0.009 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 53.3 |
| 8 | T1 | 542 | 8.9 | 0.294 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| Approach | | 557 | 9.1 | 0.294 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 59.7 |
| All Vehicles | | 1294 | 8.8 | 0.383 | 0.4 | NA | 0.2 | 1.4 | 0.01 | 0.02 | 59.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY



Site: 3 [AM Base Year - S.1B Wonga Road]

Base Year plus School expansion at full capacity
Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 697 | 7.3 | 0.374 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| 3 | R2 | 45 | 4.7 | 0.048 | 8.1 | LOS A | 0.2 | 1.4 | 0.55 | 0.70 | 51.3 |
| Approach | | 742 | 7.1 | 0.374 | 0.5 | NA | 0.2 | 1.4 | 0.03 | 0.04 | 59.3 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 33 | 22.6 | 0.039 | 11.6 | LOS A | 0.2 | 1.3 | 0.55 | 0.89 | 50.2 |
| 6 | R2 | 29 | 10.7 | 0.122 | 22.0 | LOS B | 0.4 | 2.9 | 0.83 | 1.00 | 43.9 |
| Approach | | 62 | 16.9 | 0.122 | 16.6 | LOS B | 0.4 | 2.9 | 0.69 | 0.94 | 47.0 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 39 | 5.4 | 0.022 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 53.5 |
| 8 | T1 | 535 | 9.1 | 0.290 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| Approach | | 574 | 8.8 | 0.290 | 0.4 | NA | 0.0 | 0.0 | 0.00 | 0.04 | 59.4 |
| All Vehicles | | 1378 | 8.3 | 0.374 | 1.2 | NA | 0.4 | 2.9 | 0.05 | 0.08 | 58.7 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

 **Site: 3 [AM 2028 - S.2A. Wonga Road - without School Traffic]**

Scenario 2A - Year 2028 Background Traffic Only
Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 862 | 7.3 | 0.463 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| 3 | R2 | 6 | 50.0 | 0.012 | 11.4 | LOS A | 0.0 | 0.4 | 0.63 | 0.72 | 47.7 |
| Approach | | 868 | 7.6 | 0.463 | 0.2 | NA | 0.0 | 0.4 | 0.00 | 0.01 | 59.7 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 12 | 90.9 | 0.029 | 18.9 | LOS B | 0.1 | 1.4 | 0.69 | 0.95 | 46.3 |
| 6 | R2 | 13 | 33.3 | 0.124 | 42.3 | LOS C | 0.3 | 3.1 | 0.92 | 1.00 | 35.5 |
| Approach | | 24 | 60.9 | 0.124 | 31.1 | LOS C | 0.3 | 3.1 | 0.81 | 0.98 | 39.9 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 19 | 11.1 | 0.011 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 53.4 |
| 8 | T1 | 652 | 9.5 | 0.355 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| Approach | | 671 | 9.6 | 0.355 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 59.7 |
| All Vehicles | | 1563 | 9.3 | 0.463 | 0.7 | NA | 0.3 | 3.1 | 0.02 | 0.03 | 59.3 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

 **Site: 3 [AM 2028 - S.2B. Wonga Road - With School Traffic (1,547 Students)]**

Scenario 2B - Year 2028 Background Traffic Plus School Traffic for 1,547 Students increase
Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 915 | 6.9 | 0.490 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.8 |
| 3 | R2 | 48 | 6.5 | 0.058 | 8.8 | LOS A | 0.2 | 1.7 | 0.58 | 0.75 | 50.7 |
| Approach | | 963 | 6.9 | 0.490 | 0.5 | NA | 0.2 | 1.7 | 0.03 | 0.04 | 59.3 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 36 | 29.4 | 0.051 | 12.8 | LOS A | 0.2 | 1.7 | 0.59 | 0.93 | 49.5 |
| 6 | R2 | 34 | 12.5 | 0.268 | 39.3 | LOS C | 0.8 | 6.3 | 0.93 | 1.02 | 36.4 |
| Approach | | 69 | 21.2 | 0.268 | 25.7 | LOS B | 0.8 | 6.3 | 0.75 | 0.97 | 42.2 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 40 | 7.9 | 0.023 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 53.4 |
| 8 | T1 | 602 | 10.0 | 0.329 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| Approach | | 642 | 9.8 | 0.329 | 0.4 | NA | 0.0 | 0.0 | 0.00 | 0.04 | 59.5 |
| All Vehicles | | 1675 | 8.6 | 0.490 | 1.5 | NA | 0.8 | 6.3 | 0.05 | 0.08 | 58.4 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY



Site: 3 [AM 2040 - S.3A. Wonga Road - Without School Traffic]

Scenario 3A - Year 2040 Background Traffic Only
Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1229 | 7.3 | 0.660 | 0.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.7 |
| 3 | R2 | 8 | 50.0 | 0.030 | 18.3 | LOS B | 0.1 | 1.0 | 0.81 | 0.92 | 43.8 |
| Approach | | 1238 | 7.6 | 0.660 | 0.3 | NA | 0.1 | 1.0 | 0.01 | 0.01 | 59.5 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 17 | 87.5 | 0.092 | 30.8 | LOS C | 0.3 | 3.7 | 0.87 | 1.01 | 40.4 |
| 6 | R2 | 18 | 35.3 | 1.361 | 773.6 | LOS F | 6.5 | 59.3 | 1.00 | 1.30 | 4.1 |
| Approach | | 35 | 60.6 | 1.361 | 413.4 | LOS F | 6.5 | 59.3 | 0.93 | 1.16 | 7.2 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 28 | 14.8 | 0.017 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 53.3 |
| 8 | T1 | 929 | 9.5 | 0.506 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.8 |
| Approach | | 958 | 9.7 | 0.506 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 59.6 |
| All Vehicles | | 2231 | 9.3 | 1.361 | 6.7 | NA | 6.5 | 59.3 | 0.02 | 0.03 | 53.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

 **Site: 3 [AM 2040 - S.3B. Wonga Road - Without School Traffic (Full Capacity)]**

Scenario 3B - Year 2040 Background Traffic Plus School Traffic (Full Capacity)
Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|--------------------------|------------|---------------|-------------------|------------------|--------------------------------|------------------|--------------|-----------------------------|--------------------|
| Mov ID | OD Mov | Demand Flows Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1300 | 7.1 | 0.698 | 0.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.6 |
| 3 | R2 | 62 | 6.8 | 0.160 | 14.9 | LOS B | 0.6 | 4.2 | 0.81 | 0.92 | 46.7 |
| Approach | | 1362 | 7.1 | 0.698 | 0.9 | NA | 0.6 | 4.2 | 0.04 | 0.04 | 58.9 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 48 | 30.4 | 0.166 | 21.5 | LOS B | 0.6 | 5.0 | 0.84 | 1.00 | 44.6 |
| 6 | R2 | 45 | 14.0 | 3.731 | 2665.9 | LOS F | 29.5 | 231.1 | 1.00 | 1.62 | 1.3 |
| Approach | | 94 | 22.5 | 3.731 | 1299.1 | LOS F | 29.5 | 231.1 | 0.92 | 1.30 | 2.5 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 63 | 11.7 | 0.037 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 53.5 |
| 8 | T1 | 996 | 9.2 | 0.541 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.8 |
| Approach | | 1059 | 9.3 | 0.541 | 0.4 | NA | 0.0 | 0.0 | 0.00 | 0.03 | 59.4 |
| All Vehicles | | 2515 | 8.6 | 3.731 | 49.1 | NA | 29.5 | 231.1 | 0.05 | 0.09 | 32.2 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

 **Site: 3v [AM 2040 - Wonga Road - 4A Roundabout]**

Scenario 4A Year 2040 Background Traffic with Argyle Street Upgrade Roundabout

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1229 | 7.3 | 0.418 | 4.7 | LOS A | 3.5 | 25.8 | 0.16 | 0.42 | 55.4 |
| 3 | R2 | 8 | 50.0 | 0.418 | 9.3 | LOS A | 3.4 | 25.6 | 0.17 | 0.42 | 53.9 |
| Approach | | 1238 | 7.6 | 0.418 | 4.7 | LOS A | 3.5 | 25.8 | 0.16 | 0.42 | 55.4 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 17 | 87.5 | 0.044 | 12.7 | LOS A | 0.2 | 2.0 | 0.65 | 0.81 | 48.4 |
| 6 | R2 | 18 | 35.3 | 0.028 | 12.8 | LOS A | 0.1 | 1.0 | 0.60 | 0.77 | 49.7 |
| Approach | | 35 | 60.6 | 0.044 | 12.8 | LOS A | 0.2 | 2.0 | 0.62 | 0.79 | 49.1 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 28 | 14.8 | 0.318 | 4.6 | LOS A | 2.0 | 15.2 | 0.08 | 0.42 | 54.3 |
| 8 | T1 | 929 | 9.5 | 0.318 | 4.6 | LOS A | 2.0 | 15.2 | 0.08 | 0.42 | 55.8 |
| Approach | | 958 | 9.7 | 0.318 | 4.6 | LOS A | 2.0 | 15.2 | 0.08 | 0.42 | 55.8 |
| All Vehicles | | 2231 | 9.3 | 0.418 | 4.8 | LOS A | 3.5 | 25.8 | 0.13 | 0.42 | 55.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

 **Site: 3v [AM 2040 - Wonga Road - 4B Future Roundabout]**

Scenario 4B - 2040 Background Traffic Plus School Traffic for 2,000 Students with Argyle Street Upgrade Roundabout

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1300 | 7.1 | 0.485 | 4.9 | LOS A | 4.4 | 32.4 | 0.29 | 0.44 | 54.8 |
| 3 | R2 | 62 | 6.8 | 0.485 | 9.0 | LOS A | 4.3 | 32.0 | 0.29 | 0.45 | 54.3 |
| Approach | | 1362 | 7.1 | 0.485 | 5.1 | LOS A | 4.4 | 32.4 | 0.29 | 0.44 | 54.7 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 48 | 30.4 | 0.078 | 8.8 | LOS A | 0.3 | 2.9 | 0.65 | 0.79 | 51.3 |
| 6 | R2 | 45 | 14.0 | 0.077 | 13.1 | LOS A | 0.3 | 2.5 | 0.65 | 0.85 | 49.7 |
| Approach | | 94 | 22.5 | 0.078 | 10.9 | LOS A | 0.3 | 2.9 | 0.65 | 0.82 | 50.5 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 63 | 11.7 | 0.393 | 4.9 | LOS A | 2.8 | 20.9 | 0.26 | 0.44 | 53.6 |
| 8 | T1 | 996 | 9.2 | 0.393 | 5.0 | LOS A | 2.8 | 20.9 | 0.27 | 0.44 | 55.0 |
| Approach | | 1059 | 9.3 | 0.393 | 5.0 | LOS A | 2.8 | 20.9 | 0.27 | 0.44 | 54.9 |
| All Vehicles | | 2515 | 8.6 | 0.485 | 5.2 | LOS A | 4.4 | 32.4 | 0.29 | 0.45 | 54.6 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY



Site: 3 [PM Base - S.1A Wonga Road]

Base: Evening Peak (2017 Traffic Volumes)
Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 596 | 7.1 | 0.320 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| 3 | R2 | 8 | 0.0 | 0.012 | 9.6 | LOS A | 0.0 | 0.3 | 0.62 | 0.72 | 50.4 |
| Approach | | 604 | 7.0 | 0.320 | 0.2 | NA | 0.0 | 0.3 | 0.01 | 0.01 | 59.8 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 18 | 5.9 | 0.027 | 12.7 | LOS A | 0.1 | 0.8 | 0.63 | 0.93 | 49.3 |
| 6 | R2 | 22 | 9.5 | 0.110 | 24.9 | LOS B | 0.3 | 2.5 | 0.86 | 1.00 | 42.5 |
| Approach | | 40 | 7.9 | 0.110 | 19.5 | LOS B | 0.3 | 2.5 | 0.76 | 0.97 | 45.3 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 24 | 30.4 | 0.016 | 5.9 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 52.5 |
| 8 | T1 | 777 | 7.2 | 0.417 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| Approach | | 801 | 7.9 | 0.417 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 59.6 |
| All Vehicles | | 1445 | 7.5 | 0.417 | 0.7 | NA | 0.3 | 2.5 | 0.02 | 0.04 | 59.2 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY



Site: 3 [PM Base Year - S.1B. Wonga Road]

Base: Evening Peak (2017 Traffic Volumes)

Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 591 | 7.1 | 0.317 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| 3 | R2 | 20 | 0.0 | 0.028 | 9.6 | LOS A | 0.1 | 0.8 | 0.62 | 0.76 | 50.4 |
| Approach | | 611 | 6.9 | 0.317 | 0.4 | NA | 0.1 | 0.8 | 0.02 | 0.02 | 59.6 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 57 | 1.9 | 0.081 | 12.3 | LOS A | 0.3 | 2.2 | 0.62 | 0.98 | 49.6 |
| 6 | R2 | 61 | 3.4 | 0.269 | 25.0 | LOS B | 0.9 | 6.4 | 0.87 | 1.03 | 42.4 |
| Approach | | 118 | 2.7 | 0.269 | 18.9 | LOS B | 0.9 | 6.4 | 0.75 | 1.00 | 45.6 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 33 | 22.6 | 0.020 | 5.8 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 52.8 |
| 8 | T1 | 755 | 7.4 | 0.406 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| Approach | | 787 | 8.0 | 0.406 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 59.6 |
| All Vehicles | | 1516 | 7.2 | 0.406 | 1.8 | NA | 0.9 | 6.4 | 0.07 | 0.10 | 58.2 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY



Site: 3 [PM 2028 - S.2A. Wonga Road - without School Traffic]

Scenario 2A - Year 2028 Background Traffic Only
Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 758 | 7.2 | 0.407 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| 3 | R2 | 13 | 8.3 | 0.027 | 12.6 | LOS A | 0.1 | 0.7 | 0.74 | 0.85 | 48.1 |
| Approach | | 771 | 7.2 | 0.407 | 0.3 | NA | 0.1 | 0.7 | 0.01 | 0.01 | 59.6 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 24 | 4.3 | 0.050 | 14.9 | LOS B | 0.2 | 1.3 | 0.73 | 1.00 | 48.0 |
| 6 | R2 | 29 | 7.1 | 0.276 | 45.0 | LOS D | 0.8 | 6.1 | 0.94 | 1.02 | 34.5 |
| Approach | | 54 | 5.9 | 0.276 | 31.4 | LOS C | 0.8 | 6.1 | 0.85 | 1.01 | 39.5 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 33 | 29.0 | 0.021 | 5.9 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 52.5 |
| 8 | T1 | 931 | 7.5 | 0.500 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.8 |
| Approach | | 963 | 8.2 | 0.500 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 59.6 |
| All Vehicles | | 1787 | 7.7 | 0.500 | 1.2 | NA | 0.8 | 6.1 | 0.03 | 0.05 | 58.7 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

 **Site: 3 [PM 2028 - S.2B. Wonga Road - With School Traffic (1,547 Students)]**

Scenario 2B - Year 2028 Background Traffic Plus School Traffic for 1,547 Students increase
Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 786 | 7.2 | 0.422 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| 3 | R2 | 24 | 4.3 | 0.057 | 13.6 | LOS A | 0.2 | 1.5 | 0.77 | 0.91 | 47.6 |
| Approach | | 811 | 7.1 | 0.422 | 0.5 | NA | 0.2 | 1.5 | 0.02 | 0.03 | 59.4 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 64 | 1.6 | 0.147 | 16.2 | LOS B | 0.5 | 3.7 | 0.78 | 1.00 | 47.4 |
| 6 | R2 | 69 | 3.0 | 0.781 | 92.3 | LOS F | 2.9 | 21.1 | 0.98 | 1.16 | 23.8 |
| Approach | | 134 | 2.4 | 0.781 | 55.7 | LOS D | 2.9 | 21.1 | 0.89 | 1.08 | 31.3 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 41 | 23.1 | 0.026 | 5.8 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 52.8 |
| 8 | T1 | 994 | 7.3 | 0.534 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.8 |
| Approach | | 1035 | 7.9 | 0.534 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 59.5 |
| All Vehicles | | 1979 | 7.2 | 0.781 | 4.1 | NA | 2.9 | 21.1 | 0.07 | 0.10 | 56.1 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY



Site: 3 [PM 2040 - S.3B. Wonga Road - Without School Traffic (Full Capacity)]

Scenario 3B - Year 2040 Background Traffic Plus School Traffic (Full Capacity)
Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1115 | 7.1 | 0.598 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.7 |
| 3 | R2 | 31 | 0.0 | 0.229 | 35.5 | LOS C | 0.7 | 4.9 | 0.94 | 0.99 | 37.1 |
| Approach | | 1145 | 6.9 | 0.598 | 1.1 | NA | 0.7 | 4.9 | 0.03 | 0.03 | 58.8 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 86 | 2.4 | 0.810 | 90.5 | LOS F | 3.3 | 23.9 | 0.99 | 1.19 | 24.2 |
| 6 | R2 | 94 | 4.5 | 13.010 | 10979.3 | LOS F | 83.2 | 604.7 | 1.00 | 1.45 | 0.3 |
| Approach | | 180 | 3.5 | 13.010 | 5757.7 | LOS F | 83.2 | 604.7 | 0.99 | 1.32 | 0.6 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 58 | 23.6 | 0.036 | 5.8 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 52.8 |
| 8 | T1 | 1408 | 7.3 | 0.757 | 0.3 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.5 |
| Approach | | 1466 | 8.0 | 0.757 | 0.5 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 59.2 |
| All Vehicles | | 2792 | 7.2 | 13.010 | 372.0 | NA | 83.2 | 604.7 | 0.07 | 0.11 | 8.2 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY



Site: 3 [PM 2040 - S3A. Wonga Road - Without School Traffic]

Scenario 3A - Year 2040 Background Traffic Only
Stop (Two-Way)

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1081 | 7.3 | 0.581 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.8 |
| 3 | R2 | 16 | 0.0 | 0.087 | 25.4 | LOS B | 0.3 | 1.9 | 0.91 | 0.96 | 41.4 |
| Approach | | 1097 | 7.2 | 0.581 | 0.5 | NA | 0.3 | 1.9 | 0.01 | 0.01 | 59.4 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 35 | 6.1 | 0.244 | 36.6 | LOS C | 0.8 | 5.6 | 0.94 | 1.02 | 37.6 |
| 6 | R2 | 42 | 10.0 | 3.868 | 2809.0 | LOS F | 28.5 | 216.8 | 1.00 | 1.56 | 1.2 |
| Approach | | 77 | 8.2 | 3.868 | 1555.7 | LOS F | 28.5 | 216.8 | 0.97 | 1.31 | 2.1 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 46 | 29.5 | 0.030 | 5.9 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 52.6 |
| 8 | T1 | 1326 | 7.5 | 0.713 | 0.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.6 |
| Approach | | 1373 | 8.2 | 0.713 | 0.4 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 59.3 |
| All Vehicles | | 2546 | 7.8 | 3.868 | 47.4 | NA | 28.5 | 216.8 | 0.03 | 0.06 | 32.6 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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MOVEMENT SUMMARY

 **Site: 3v [PM 2040 - Wonga Road - 4A Roundabout]**

Scenario 4A Year 2040 Background Traffic with Argyle Street Upgrade Roundabout

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID | OD Mov | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1081 | 7.3 | 0.391 | 4.8 | LOS A | 3.1 | 23.1 | 0.24 | 0.43 | 55.0 |
| 3 | R2 | 16 | 0.0 | 0.391 | 8.8 | LOS A | 3.1 | 22.8 | 0.25 | 0.43 | 54.9 |
| Approach | | 1097 | 7.2 | 0.391 | 4.9 | LOS A | 3.1 | 23.1 | 0.24 | 0.43 | 55.0 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 35 | 6.1 | 0.064 | 10.1 | LOS A | 0.3 | 1.9 | 0.68 | 0.83 | 50.5 |
| 6 | R2 | 42 | 10.0 | 0.063 | 13.1 | LOS A | 0.3 | 2.0 | 0.67 | 0.85 | 49.7 |
| Approach | | 77 | 8.2 | 0.064 | 11.7 | LOS A | 0.3 | 2.0 | 0.67 | 0.84 | 50.0 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 46 | 29.5 | 0.456 | 4.8 | LOS A | 3.5 | 26.7 | 0.12 | 0.42 | 53.7 |
| 8 | T1 | 1326 | 7.5 | 0.456 | 4.6 | LOS A | 3.6 | 26.5 | 0.13 | 0.42 | 55.6 |
| Approach | | 1373 | 8.2 | 0.456 | 4.7 | LOS A | 3.6 | 26.7 | 0.13 | 0.42 | 55.5 |
| All Vehicles | | 2546 | 7.8 | 0.456 | 5.0 | LOS A | 3.6 | 26.7 | 0.19 | 0.44 | 55.1 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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Organisation: TRAFFIC DESIGN GROUP LTD (TDG) | Processed: Wednesday, 4 April 2018 2:40:42 PM

Project: C:\Users\kirkmarti\Dropbox (TDG)\Australia Business\Australia Jobs\14500 - 14999\14584 - Picton High School Redevelopment NSW - FOR BLP\Supporting Data\SIDRA\14584sid01.sip7

MOVEMENT SUMMARY

 **Site: 3v [PM 2040 - Wonga Road - 4B Future Roundabout]**

Scenario 4B - 2040 Background Traffic Plus School Traffic for 2,000 Students with Argyle Street Upgrade Roundabout

| Movement Performance - Vehicles | | | | | | | | | | | |
|---------------------------------|--------|--------------------------|------------|---------------|-------------------|------------------|--------------------------------|------------------|--------------|-----------------------------|--------------------|
| Mov ID | OD Mov | Demand Flows Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Argyle Street | | | | | | | | | | | |
| 2 | T1 | 1115 | 7.1 | 0.444 | 5.2 | LOS A | 3.6 | 27.0 | 0.39 | 0.47 | 54.3 |
| 3 | R2 | 31 | 0.0 | 0.444 | 9.2 | LOS A | 3.6 | 26.6 | 0.40 | 0.48 | 54.1 |
| Approach | | 1145 | 6.9 | 0.444 | 5.3 | LOS A | 3.6 | 27.0 | 0.39 | 0.47 | 54.3 |
| East: Wonga Road | | | | | | | | | | | |
| 4 | L2 | 86 | 2.4 | 0.165 | 10.5 | LOS A | 0.7 | 5.0 | 0.72 | 0.86 | 50.3 |
| 6 | R2 | 94 | 4.5 | 0.143 | 13.3 | LOS A | 0.6 | 4.6 | 0.71 | 0.90 | 49.6 |
| Approach | | 180 | 3.5 | 0.165 | 11.9 | LOS A | 0.7 | 5.0 | 0.71 | 0.88 | 49.9 |
| North: Argyle Street | | | | | | | | | | | |
| 7 | L2 | 58 | 23.6 | 0.503 | 4.8 | LOS A | 4.4 | 33.0 | 0.20 | 0.42 | 53.5 |
| 8 | T1 | 1408 | 7.3 | 0.503 | 4.8 | LOS A | 4.4 | 33.0 | 0.21 | 0.42 | 55.2 |
| Approach | | 1466 | 8.0 | 0.503 | 4.8 | LOS A | 4.4 | 33.0 | 0.21 | 0.42 | 55.2 |
| All Vehicles | | 2792 | 7.2 | 0.503 | 5.4 | LOS A | 4.4 | 33.0 | 0.32 | 0.47 | 54.4 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

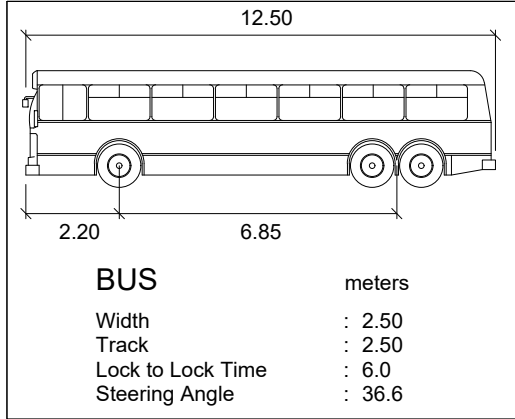
SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: TRAFFIC DESIGN GROUP LTD (TDG) | Processed: Wednesday, 4 April 2018 2:40:43 PM

Project: C:\Users\kirkmarti\Dropbox (TDG)\Australia Business\Australia Jobs\14500 - 14999\14584 - Picton High School Redevelopment NSW - FOR BLP\Supporting Data\SIDRA\14584sid01.sip7

Appendix E

Swept Path Assessment



Tuesday, February 20, 2018 16:16:56

| REV | DATE | DRN | CHK | DESCRIPTION |
|------|----------|------|------|-------------|
| 00 | 22/02/18 | TJG | ---- | ---- |
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Picton High School
Swept Path Assessment
On-site Bus Parking

| | | |
|--------------------|-------------|-----|
| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | |
| SCALE: 1:400 @ A3 | | |
| DWG NO: 14584-0S2B | | |



LONG RIGID BUS_{mm}

Width : 2500

Track : 2500

Lock to Lock Time : 6.0

Steering Angle : 46.4



Tuesday, February 20, 2018 16:16:56

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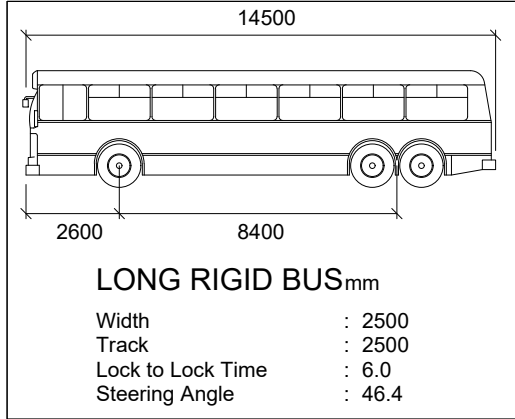
Picton High School

Swept Path Assessment

14.5m Bus Entry - Left Turn

| | | |
|-------------------|-------------|-----|
| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | |
| SCALE: 1:400 @ A3 | | |
| DWG NO:14584-0S2B | | |





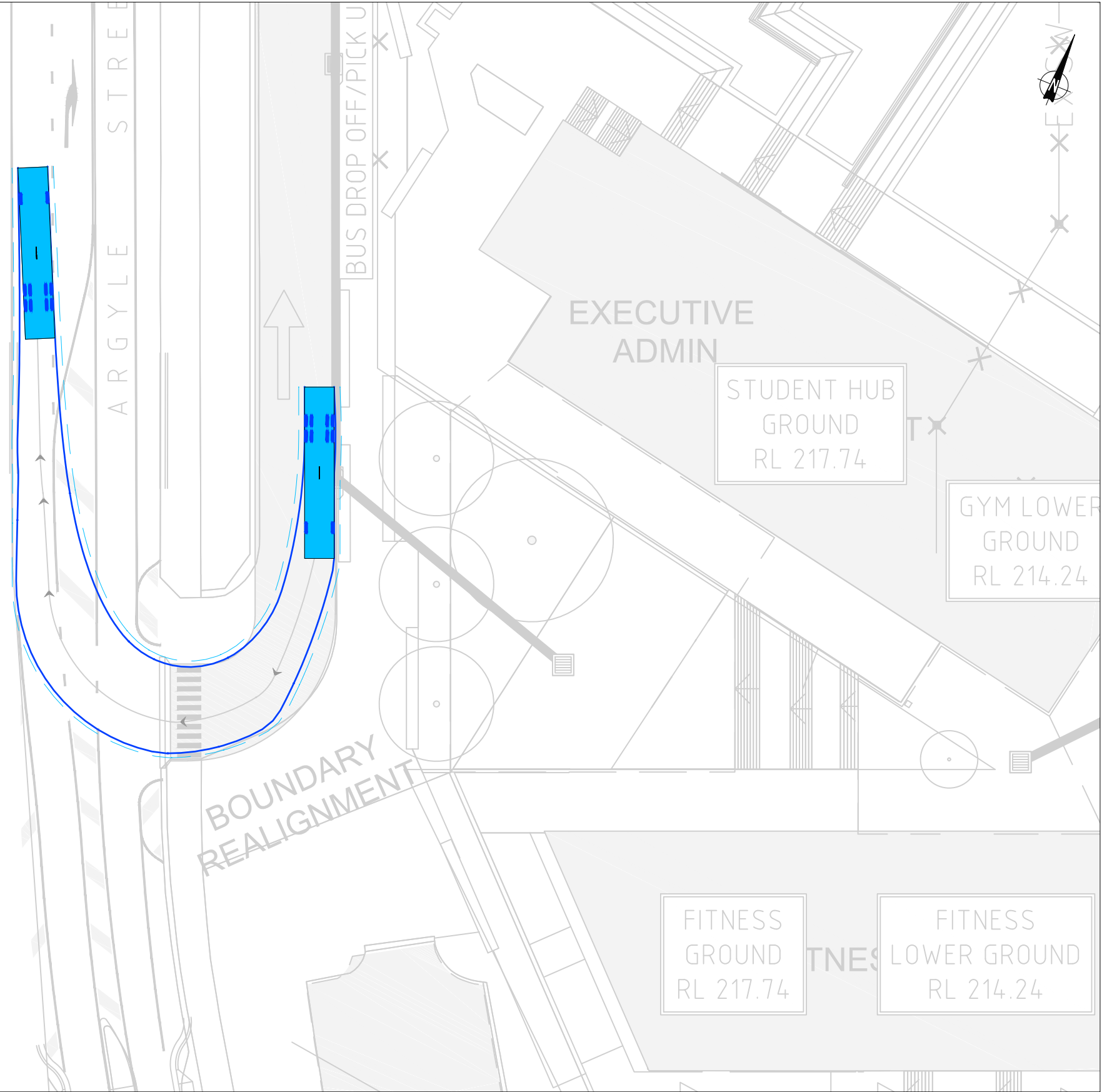
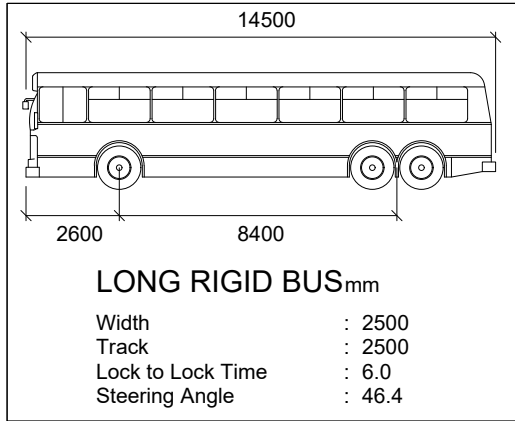
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Picton High School
Swept Path Assessment
14.5m Bus Entry - Right Turn

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|--------------------|-------------|-----|
| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | |
| SCALE: 1:400 @ A3 | | |
| DWG NO: 14584-0S2B | | |





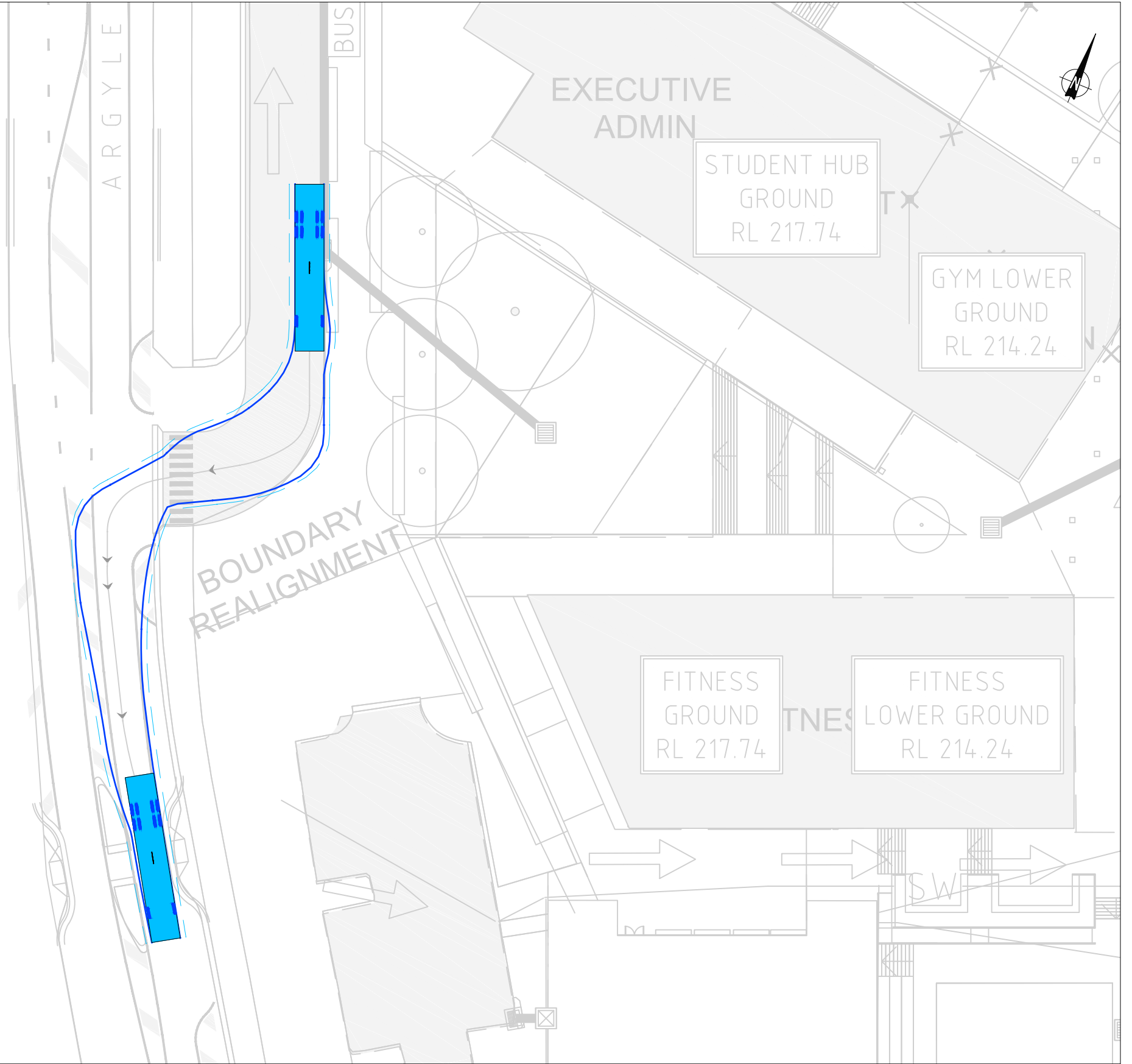
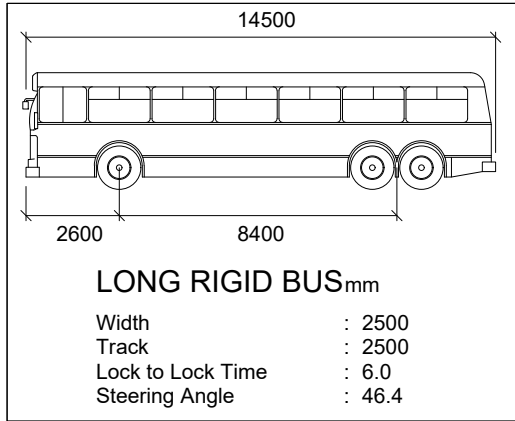
Tuesday, February 20, 2018 16:16:56

| REV | DATE | DRN | CHK | DESCRIPTION |
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Picton High School
Swept Path Assessment
14.5m Bus Exit - Right Turn

| | | |
|--------------------|-------------|-----|
| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | |
| SCALE: 1:400 @ A3 | | |
| DWG NO: 14584-0S2B | | |





Tuesday, February 20, 2018 16:16:56

| REV | DATE | DRN | CHK | DESCRIPTION |
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Picton High School
Swept Path Assessment
14.5m Bus Exit - Left Turn

| | | |
|--------------------|-------------|-----|
| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | |
| SCALE: 1:400 @ A3 | | |
| DWG NO: 14584-0S2B | | |



5

Tuesday, February 20, 2018 16:16:56

5200

950 3050

B99

Width

Track

Lock to Lock Time

Steering Angle

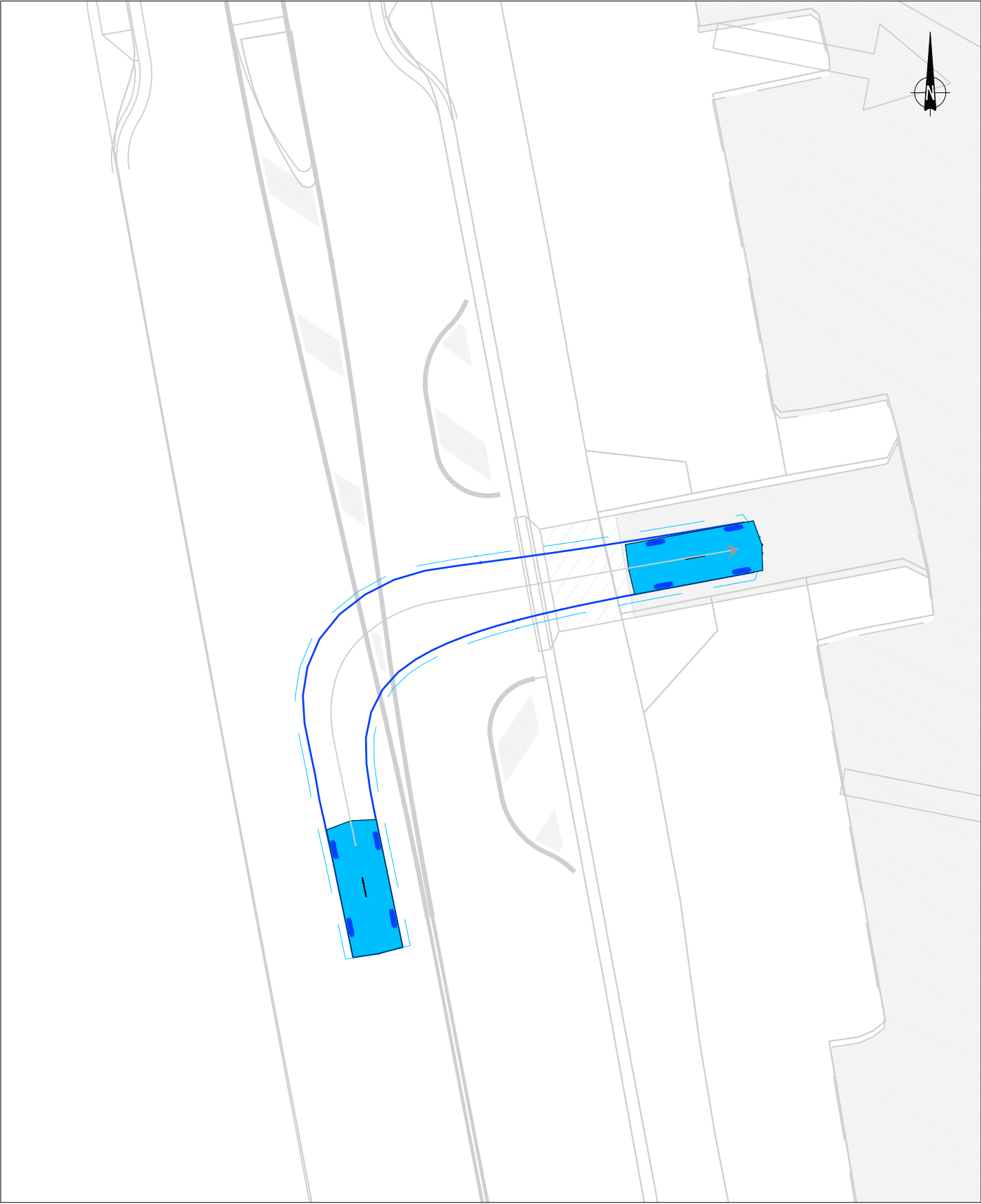
: 1940

: 1840

: 6.0

: 33.9

mm

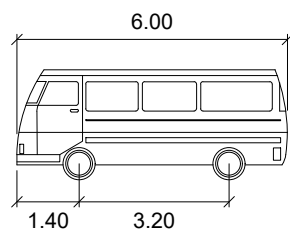


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Picton High School
Swept Path Assessment
Southern Access - B99 Vehicle - Entry from North / South

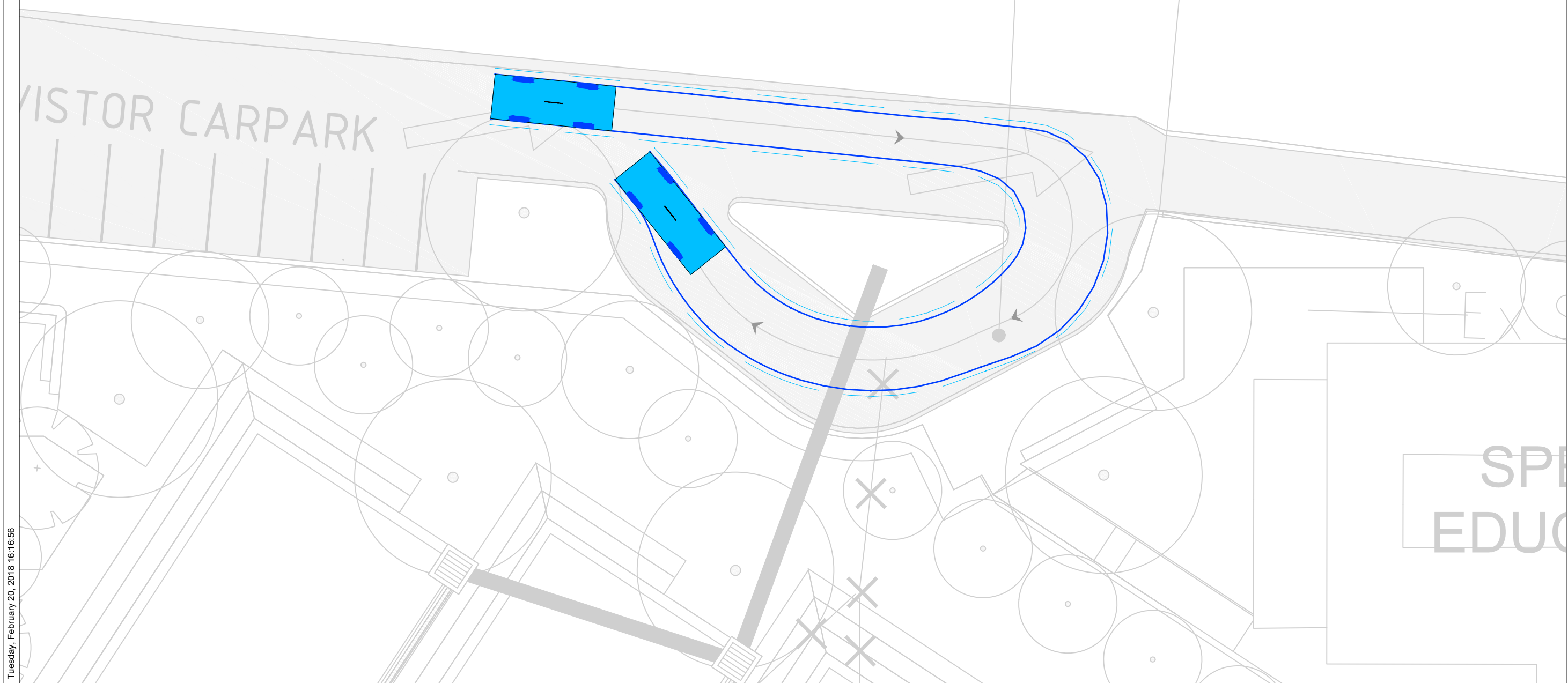
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| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | |
| SCALE: 1:200 @ A3 | | |
| DWG NO:14584-0S2B | | |





| 6M VAN | | metres |
|-------------------|---|--------|
| Width | : | 2.20 |
| Track | : | 2.20 |
| Lock to Lock Time | : | 6.0 |
| Steering Angle | : | 40.0 |

TAXI DROP OFF/PICK UP



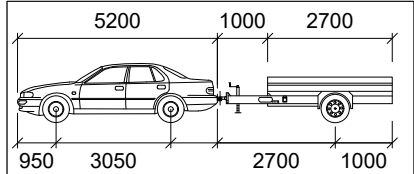
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| REV | DATE | DRN | CHK | DESCRIPTION |
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Picton High School
Swept Path Assessment
6m Van - Circulation

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| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | |
| SCALE: 1:200 @ A3 | | |
| DWG NO:14584-0S2B | | |

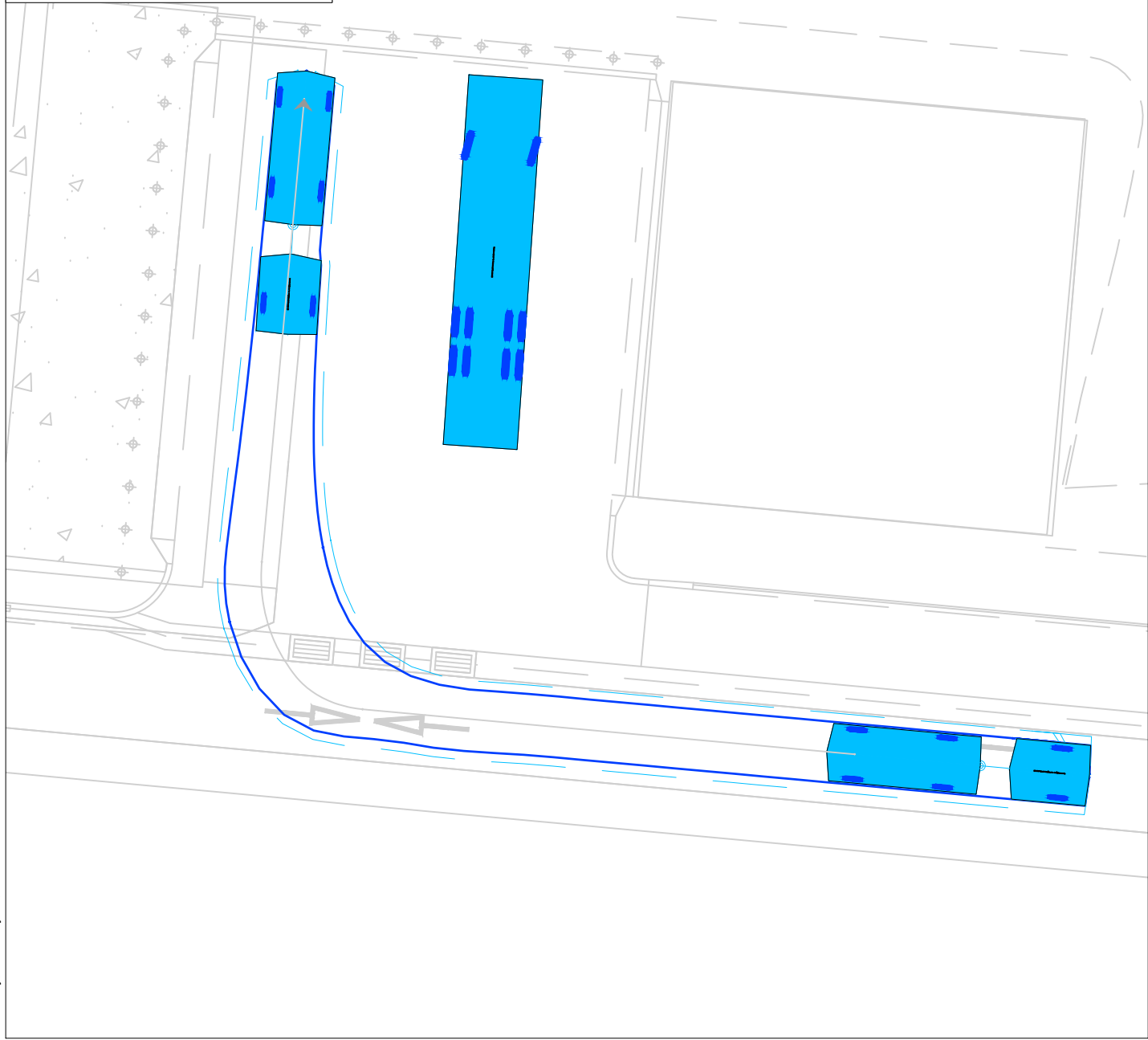




B99 Vehicle + trailer

mm

Car Width : 1940
 Trailer Width : 2050
 Car Track : 1840
 Trailer Track : 1840
 Lock to Lock Time : 4.0
 Steering Angle : 33.9
 Articulating Angle : 70.0



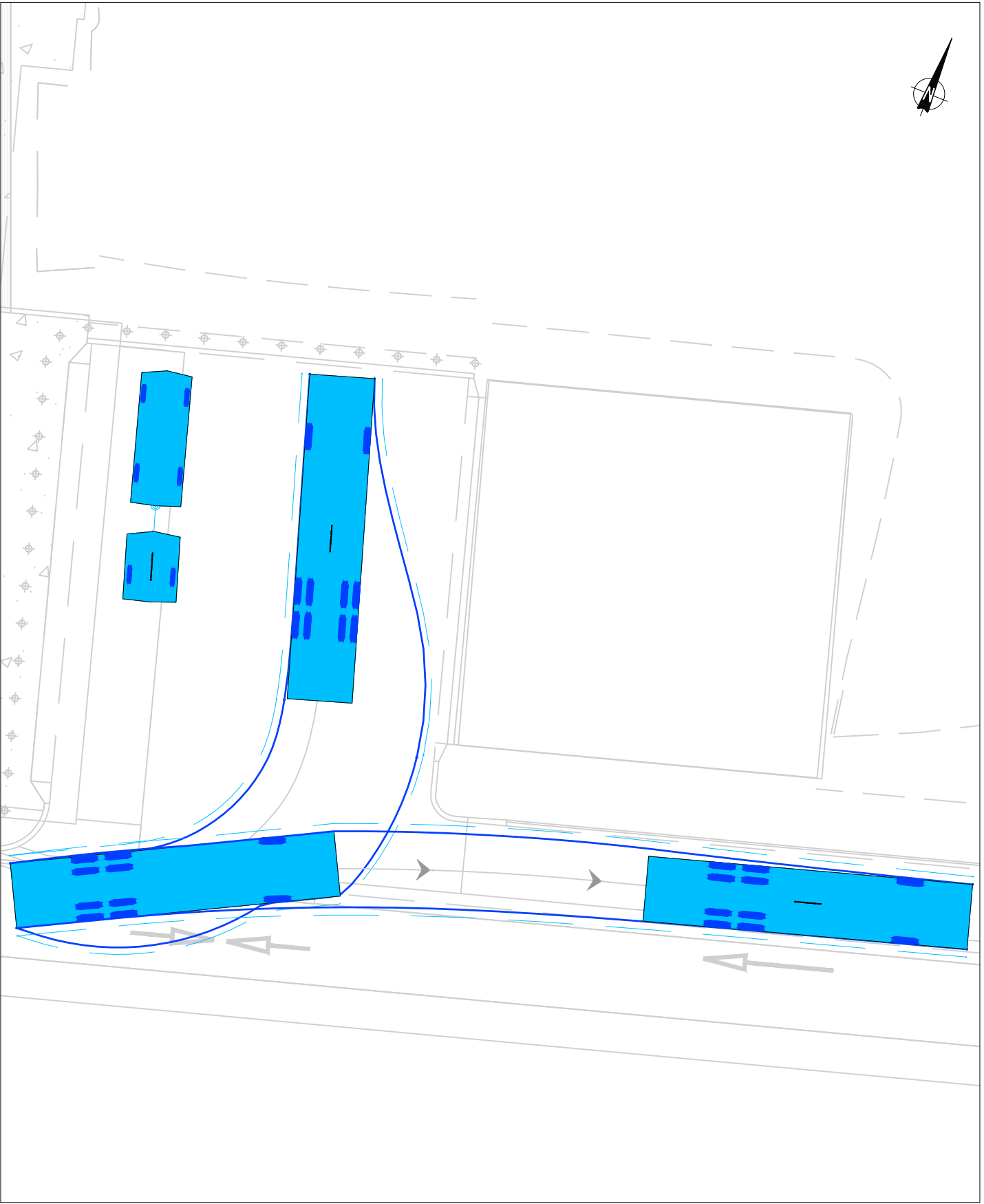
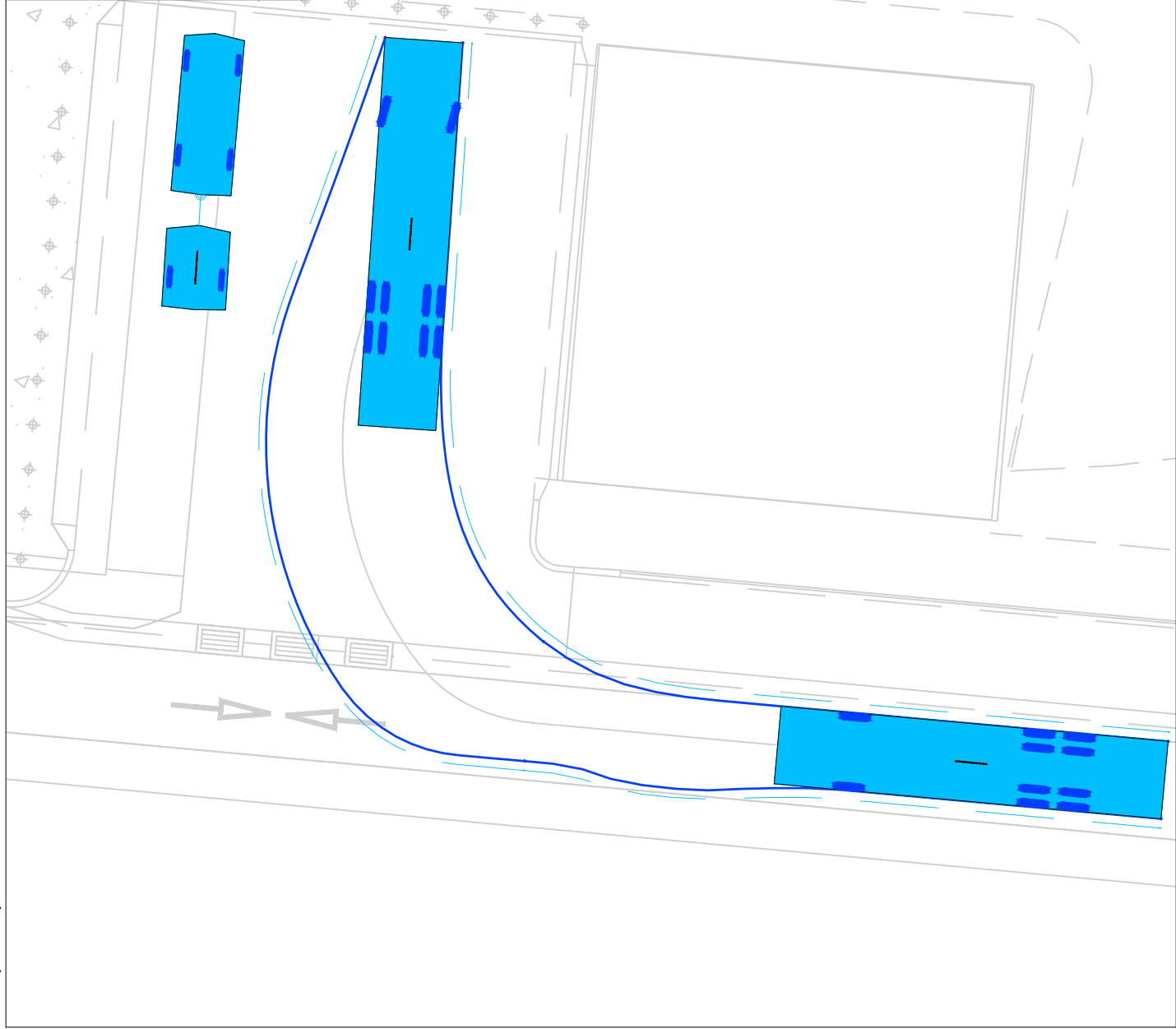
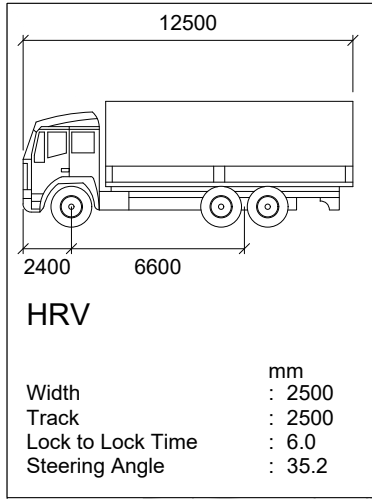
Tuesday, February 20, 2018 16:16:56

| REV | DATE | DRN | CHK | DESCRIPTION |
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Picton High School
 Swept Path Assessment
 Loading Area - B99 Vehicle + Trailer - Entry / Exit

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| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | --- |
| SCALE: 1:200 @ A3 | --- | --- |
| DWG NO: 14584-0S2B | --- | --- |





Tuesday, February 20, 2018 16:16:56

| REV | DATE | DRN | CHK | DESCRIPTION |
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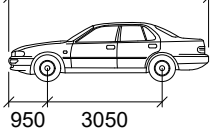
Picton High School
 Swept Path Assessment
 Loading Area - Heavy Vehicle (HRV) - Entry / Exit

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| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | --- |
| SCALE: 1:200 @ A3 | --- | --- |
| DWG NO:14584-0S2B | --- | --- |



Tuesday, February 20, 2018 16:16:56

5200



950 3050

B99

Width

Track

Lock to Lock Time

Steering Angle

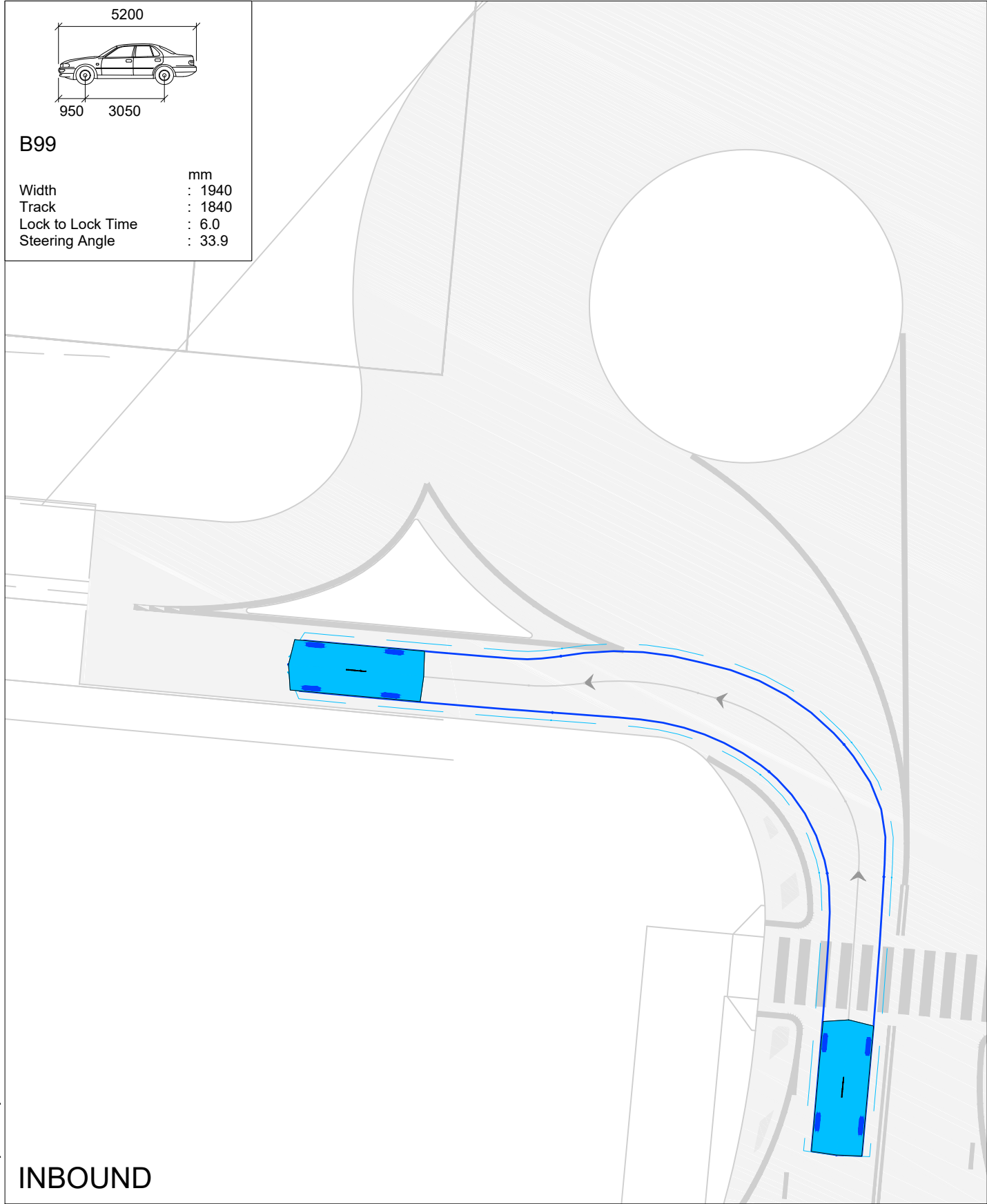
: 1940

: 1840

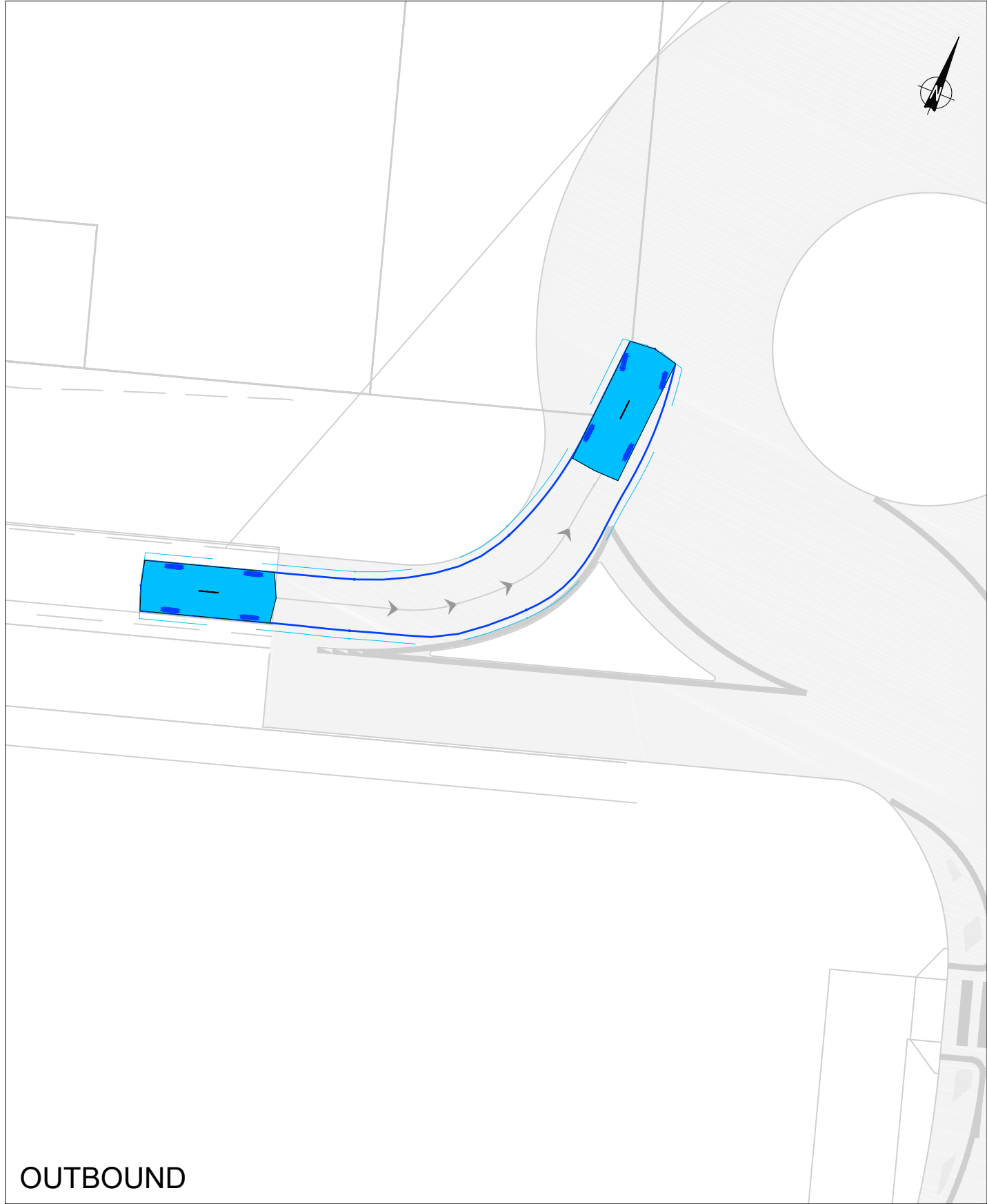
: 6.0

: 33.9

mm



INBOUND



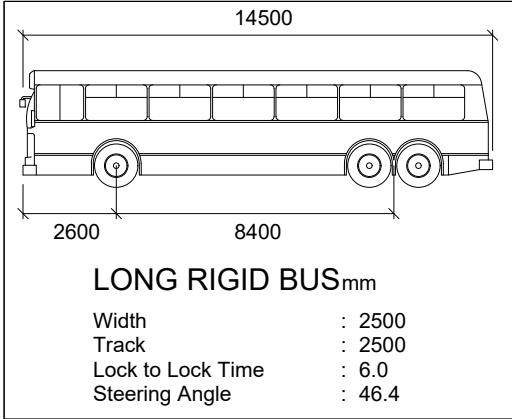
OUTBOUND

| REV | DATE | DRN | CHK | DESCRIPTION |
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Picton High School
Swept Path Assessment
Wonga Road Access - B99 Entry / Exit

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| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | --- |
| SCALE: 1:200 @ A3 | --- | --- |
| DWG NO:14584-0S2B | --- | --- |





INBOUND



OUTBOUND

Tuesday, February 20, 2018 16:16:56

| REV | DATE | DRN | CHK | DESCRIPTION |
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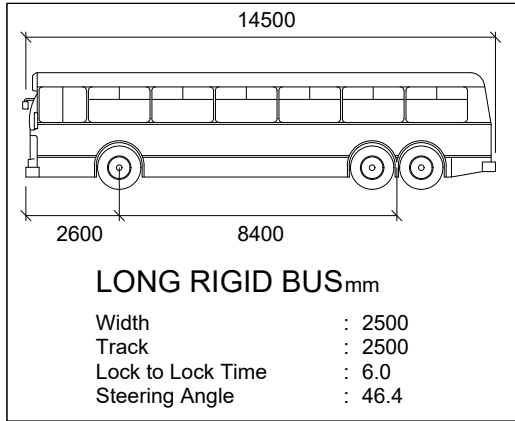
Picton High School
Swept Path Assessment
Wonga Road Access - 14.5m Bus - Bus Bay 1 Entry / Exit

DRAWN: TJG --- ---
DATE: 22/02/18 STATUS: ---
SCALE: 1:200 @ A3
DWG NO:14584-0S2B

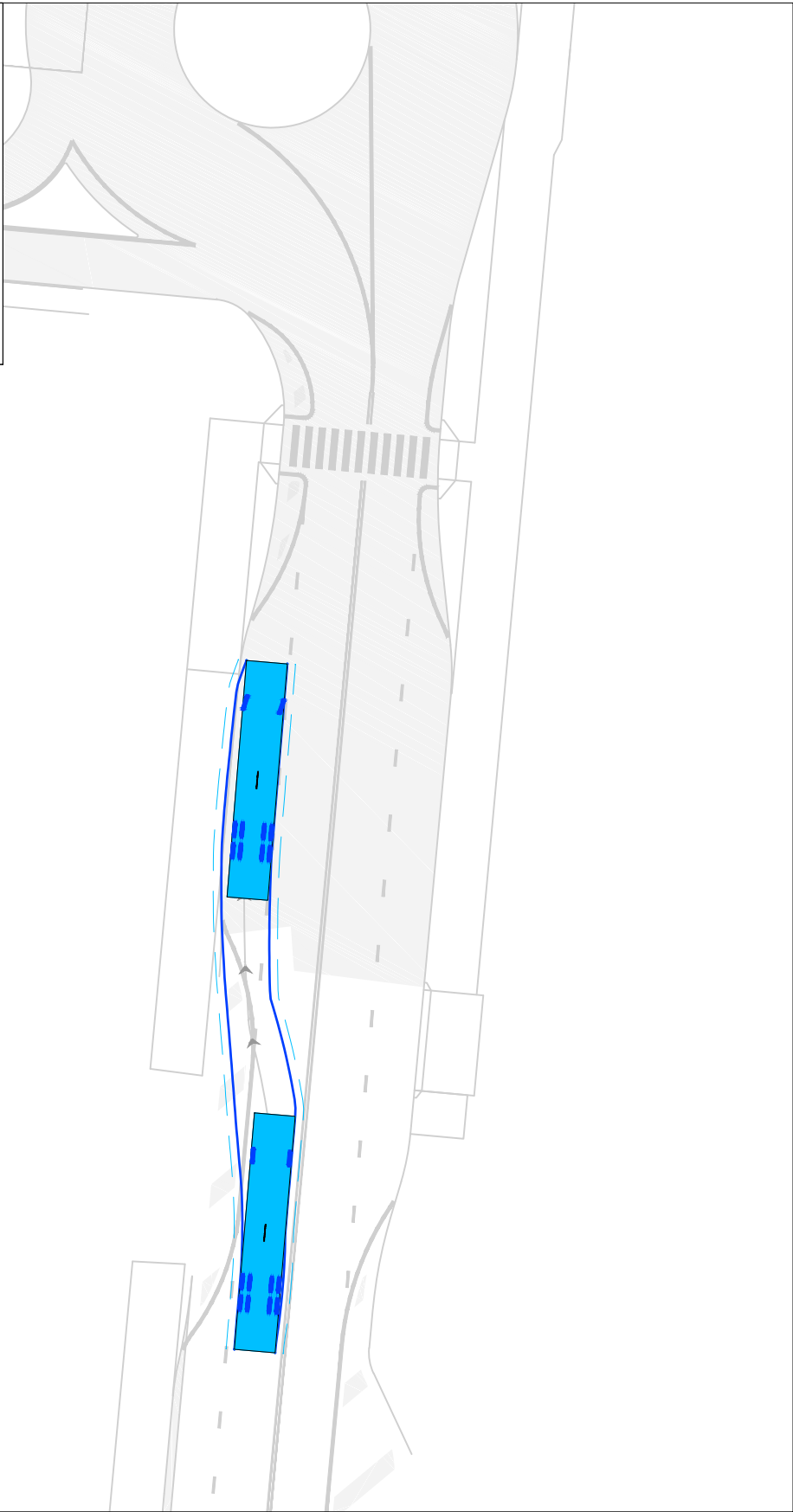


11

Tuesday, February 20, 2018 16:16:56



INBOUND



OUTBOUND



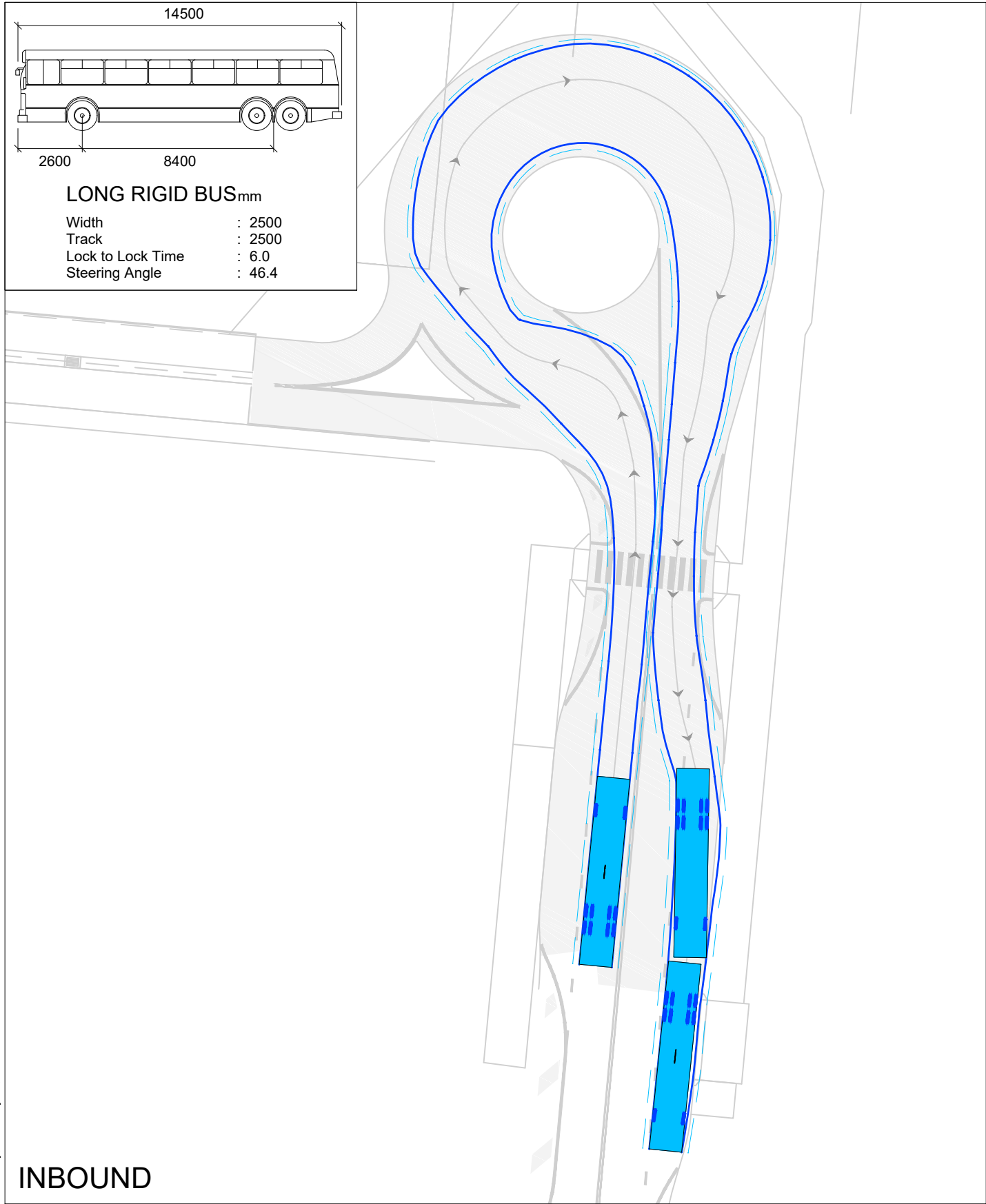
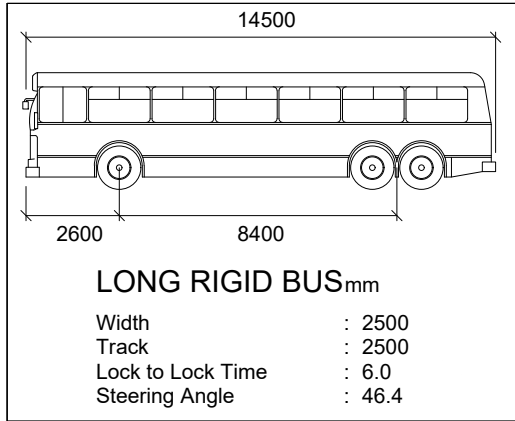
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Picton High School
Swept Path Assessment
Wonga Road Access - 14.5m Bus - Bus Bay 2 Entry / Exit

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| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | |
| SCALE: 1:200 @ A3 | | |
| DWG NO: 14584-0S2B | | |



Tuesday, February 20, 2018 16:16:56



INBOUND



OUTBOUND

| REV | DATE | DRN | CHK | DESCRIPTION |
|------|----------|------|------|-------------|
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Picton High School
Swept Path Assessment
Wonga Road Access - 14.5m Bus - Bus Bay 3 Entry / Exit

| | | |
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| DRAWN: TJG | --- | --- |
| DATE: 22/02/18 | STATUS: --- | |
| SCALE: 1:200 @ A3 | | |
| DWG NO:14584-0S2B | | |



13

Appendix F

Potential Community Use

| School Facilities | Types of Functions/Activities | Indoor/Outdoor | Occupancy | Hours of Operation |
|---|--|----------------|--|--|
| Hall | <ul style="list-style-type: none"> Community Language Schools Dance, music or drama lessons Community education and training Community productions Community Meetings Sporting events Vacation Care | Indoor | Max 200 approx | <p>School Hours: 8:00am – 4pm</p> <p>After School Hours 4:00pm – 10:00pm (Times are indicative only and will have to be confirmed with school)</p> |
| Performance/Fitness Hub Performance Workshop | <ul style="list-style-type: none"> Community Language Schools Dance, music or drama lessons Community education and training Community productions Community Meetings | Indoor | <p>Fitness and Performance Hub: Max 120 approx.</p> <p>Performance Workshop Max: 75 approx</p> | <p>School Hours: 8:00am – 4pm</p> <p>After School Hours 4:00pm – 10:00pm (Times are indicative only and will have to be confirmed with school)</p> |
| Fitness Lab | <ul style="list-style-type: none"> Community education and training Sporting events Sports Training | Indoor | Fitness Lab: Max 80 approx | <p>School Hours: 8:00am – 4pm</p> <p>After School Hours 4:00pm – 10:00pm (Times are indicative only and will have to be confirmed with school)</p> |
| Student Hub Library | <ul style="list-style-type: none"> Community Language Schools Community education and training Community productions Community Meetings | Indoor | Student Hub Max: 100 approx | <p>School Hours: 8:00am – 4pm</p> <p>After School Hours 4:00pm – 10:00pm (Times are indicative only and will have to be confirmed with school)</p> |
| Public Forecourt | <ul style="list-style-type: none"> Community education and training Community productions Community Meetings | Outdoor | Public Forecourt Max: 400 approx | <p>School Hours: 8:00am – 4pm</p> <p>After School Hours 4:00pm – 10:00pm (Times are indicative only and will have to be confirmed with school)</p> |