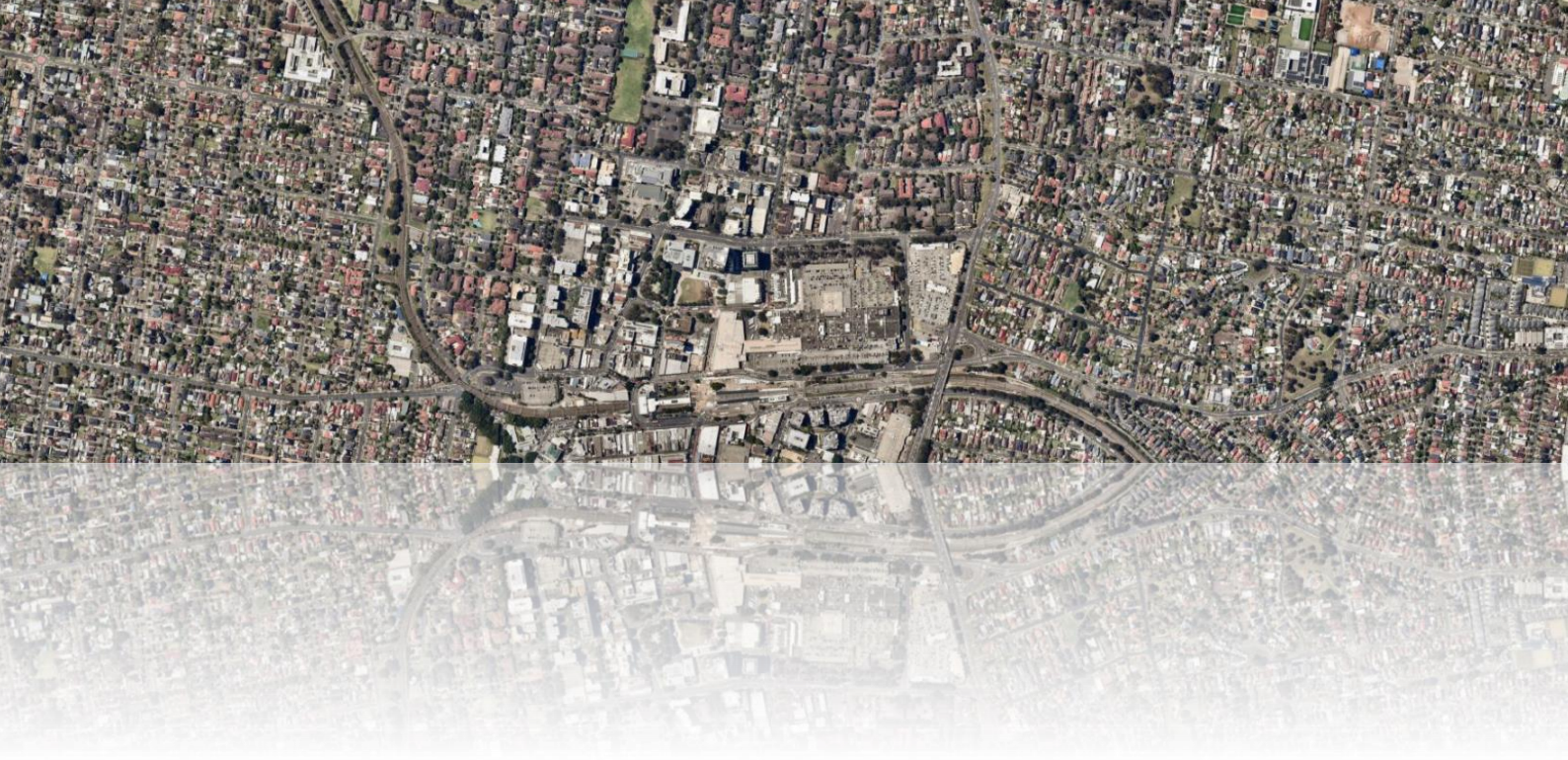

TRAFFIC AND PARKING IMPACT ASSESSMENT OF THE PROPOSED MIXED USE DEVELOPMENT AT 461 CHAPEL ROAD, BANKSTOWN

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Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

240874.02FE - 27 February 2026

Development Type: **Mixed Use Development**

Site Address: **461 Chapel Road, Bankstown**

Prepared for: **Sustainable Development Group Pty Ltd**

Document reference: **240874.02FE**

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Draft	D	SI	SI	AT	28 March 2025
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Draft	A	SI	SI	-	26 September 2025
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Final	C	SI	SI	SI	30 October 2025
Final	D	SI	SI	SI	5 February 2026
Final	E	SI	SI	SI	27 February 2026

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SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

The Secretary's Environmental Assessment Requirements relevant to traffic and transport are as follows and are addressed within the sections of this report described in **Table 1**.

TABLE 1: SEARS ITEMS

SEARs Requirements
9. Transport • Provide a Transport Impact Assessment (TIA) in accordance with processes and methodology recommended in the Guide to Transport Impact Assessment (GTIA) published by TfNSW.
• If the construction of the development would cause interruptions to regular pedestrian and transport routes (including public transport, active transport or general traffic), a preliminary Construction Traffic (or Transport) Management Plan (CTMP) should be prepared as part of the TIA to mitigate such impacts.

Reference is made to TfNSW's *GTIA* which outlines the transport impact assessment process as shown in **Table 2**.

TABLE 2: TFNSW GTIA – TRANSPORT IMPACT ASSESSMENT PROCESS

Phase	
Scoping and background conditions	**Step 1** – Document proposed development location, scale and access arrangements for all modes
	Step 2 – Identify the area of influence and surrounding transport networks
	Step 3 – Understand the existing and future baseline transport network conditions (for all modes in the area of influence)
Proposed development analysis	**Step 4** – Identify and select travel demand management measures
	Step 5 – Estimate trip generation to/from the development
Impact assessment and mitigation	**Step 6** – Assess the development impacts on the transport network (across all modes in the area of influence)
	Step 7 – Determine parking provision (including bicycle parking)
	Step 8 – Review and refine development design and site access points (incorporating findings of assessment, parking requirements and TDM)
	Step 9 – Impact mitigation (refined design, updated TDM measures, upgrade infrastructure)
Documentation	**Step 10** – Document findings and recommendations

This traffic and parking impact assessment report has been prepared with due consideration to the SEARs and GTIA requirements outlined above.

RESPONSE TO COUNCIL'S SUBMISSION TO SSD APPLICATION

Canterbury Bankstown Council provided a submission to the *State Significant Development Application (SSD-79709963) – St Paul's Anglican Church, Bankstown*. It is relevant to note that Council "*supports the design intent and civic purpose of the proposal"*. The comments made by Council relevant to traffic and parking are summarised below.

Council's Comments	MTE Response
Additional information requested: **Traffic:** • Provide Heavy Rigid Vehicle (HRV) swept paths detailing the left turn entry from French Avenue and left turn exit to French Avenue	See **Annexure G** and **Section 3.5.3**.
• Provide justification for the directional splits for development traffic shown in Section 4.2 Traffic Assignment	See **Section 4.2**.
• Provide a Lane Summary output from SIDRA for the intersection of Chapel Road & French Avenue and Chapel Road & Rickard Road to determine the impacts of queue lengths on each lane.	See **Annexure D.**
• Include pedestrian sight lines at driveways in accordance with AS 2890.1:2004 Figure 3.3	Amended.
Recommended design and/or plan changes **Traffic, Access, and Parking:** • Any proposed drop off zones should be accommodated on site	See **Section 3.6**
• Revise parking provisions to ensure they are consistent with the Canterbury Bankstown Development Control Plan (CBDCP) 2023.	See **Section 3** and **Section 3.2.7**.
• Revise the Vehicular Footway Crossing (VFC) design to include a minimum 2 metre offset from the site boundary to ensure consistency with Council's Standard Drawing (S-004).	Noted and to be updated during design development phase prior to the construction certificate application.
• Revise the car parking design to ensure that driveway access, maneuvering areas and parking areas for the childcare centre are separate from parking and maneuvering areas used by trucks	-
• Redesign the shared driveway for loading and car parking, as the current design raises safety concerns.	See **Section 3.5.3**.
Detailed Comments **Traffic Management Plans** A Construction Traffic Management Plan (CTMP) shall be required to be submitted six months prior to the commencement of works on the site, for both demolition and construction phases of the development	CTMP has been prepared (document reference: **250069.01FA**).
Relocation of Existing Signs Due to the removal/relocation of the power pole on French Avenue, to the west of the exiting driveway, the existing No Parking (L) and 2 Hour Parking (8:30am- 6pm, Monday to Friday, 8:30am to 12:30pm Saturday) signs are to be relocated further west to be adjacent to the new driveway. The person with the benefit of this Determination Notice is to submit a written application to Council regarding the relocation of the signs – council@cbcity.nsw.gov.au (Attention: Traffic and Transport Services) for review by Council's Traffic Committee. The application to relocate the signs is to be approved by Council's Traffic Committee before the issue of a construction certificate. All costs associated with the supply and installation of the appropriate signs are to be paid for by the person with the benefit of this Determination Notice	Changes in legislation have been adopted which permits Council to make decisions on "local traffic committee" matters.

before Traffic Committee consideration. This must be illustrated on plans to be submitted with the construction certificate	
Pedestrian Sight Lines • Section 3.6.1 of the traffic report states that "The proposed plans depict a structural column being located within the pedestrian sight triangle." This is not acceptable as compliance with the Australian Standards, which must be maintained to satisfy the minimum standards of safety	The plans have been amended to comply.
• Sight triangles are to be shown at the driveways, in accordance with AS 2890.1:2004 Figure 3.3 – Minimum Sight Lines for Pedestrian Safety. The sight triangles shall extend 2m from the driveway edge along the front boundary and 2.5m from the boundary along the driveway. Site triangles must be kept clear of any obstructions on either side of the driveway.	The plans have been amended to comply.
On-Street Parking Changes Section 3.7 of the traffic report states that "a 'drop-off' zone is provided along the frontage of the site for the length of three (3) car parking space. The 'drop-off' zone will serve as short-turnover spaces for visitors to the subject site." All parking requirements for the development are to be accommodated onsite, including a "drop-off" zone. Therefore, no changes to the on-street parking arrangements are supported	See **Section 3.6**.
Parking Provision • Section 3.6.1 of the traffic report states that "The proposed plans depict a structural column being located within the pedestrian sight triangle." This is not acceptable as compliance with the Australian Standards, which must be maintained to satisfy the minimum standards of safety.	The plans have been amended comply.
• According to CBDCP 2023 – Chapter 6.2: Bankstown City Centre, Section 5.2.1 C4 states that "All car parking within the Bankstown City Centre must be provided in accordance with the rates as specified in Figure 58. If a land use is not included in Figure 58 the car parking rates in Section 2 Chapter 3.2 of the CB DCP 2023 will apply." The proposal for 0 visitor parking spaces and subsequent shortfall of 95 car parking spaces for the place of worship is therefore not acceptable	See **Section 3.2.7**.
• Council's DCP Chapter 3.2 states that for places of worship "Car parking for ancillary uses and social/special events must be provided on-site on the basis of a parking study to be submitted with the application." The report states that the place of worship will have a maximum capacity of 509 patrons. The submitted parking study and travel survey is based on a "typical week" of the existing place of worship with only 60 adults and 30 children in attendance. Therefore, the parking study is to be revised to consider the maximum capacity of the proposed place of worship.	See **Section 3.2.7**. AGRD Part 11, 85th percentile parking demand is considered as the actual parking demand.
• In Section 3.2.1 Parking Study Limitations states that "it was observed that several patrons utilised off-street parking facilities at locations such as 'Little Saigon Plaza,' 'TAFE,' 'Aldi,' and 'Bankstown Central.' While this practice is not encouraged, it does alleviate some of the demand on on-street kerbside parking spaces." Therefore, the travel survey does not fully capture parking demand of the existing place of worship. Other private car parks must not be relied upon to accommodate the parking demand of the proposed place of worship. All parking demand must be accommodated on-site.	See **Section 3.2.7**. It is expected that significant increase in public transport utilisation will be a result of the new Bankstown Metro which is consistent with the objectives of the TOD and Bankstown CBD DCP.
• According to Austroads Guide to Traffic Management Part 11: Parking Management Techniques "parking is considered 'at capacity' when available spaces are 85% occupied at times of peak demand". In Section 2.3 Table 3 of the traffic report states that	

spare on-street parking capacity was from 11.6% to 26.8%, meaning that the existing on-street parking is already at capacity. Therefore, on-street parking cannot be used to accommodate the parking demand for the proposal.	
• Please clarify whether the below spaces labelled childcare (circled in red) is or staff or visitors	The spaces no longer exist and the car park has been redesigned.
Traffic Generation • According to the Guide to Transport Impact Assessment Version 1.1 Section 5.5.3, the first principles method is "Useful to supplement benchmarking approach or for land uses with a lack of survey data or comparable land uses, such as uncommon or special land use developments." Since there are trip generation rates in the Guide to Transport Impact Assessment for residential, childcare, office blocks and retail they are to be utilised instead. The benchmarking method is to be utilised for the place of worship since as stated above, the first principles method is used to supplement the benchmarking method.	There are no longer any retail or business premises. The traffic generation rates contained in the TDT 2013/04a consists of the same data that of which underpins the TfNSW Guide. Therefore, this is appropriate for the residential component.
• The traffic generation for the community facility needs to be included as this operates Monday to Friday according to Section 4 Hours of Operation of the Operational Management Plan – Community Facilities and Place of Public Worship	See **Section 4.1**.
Council requests further information regarding the following: • Justification for the directional splits for development traffic shown in Section 4.2 Traffic Assignment	See **Section 4.2**.
• Provision of a Lane Summary output from SIDRA for the intersection of Chapel Road & French Avenue and Chapel Road & Rickard Road to determine the impacts of queue lengths on each lane	See **Annexure D.**
Access Driveways • The driveway access width is to be designed for the largest vehicle accessing the site which in this case is an HRV. According to Figure 3.1 AS2890.2 a driveway width of 12.5 metres is required.	Swept paths demonstrate successful HRV access and egress of the proposed driveway.
• Please also show HRV swept paths for left turn entry from French Avenue and left turn exit to French Avenue	See **Annexure G**.
• According to Council's Standard Drawing (S-004), a minimum 2 metre offset from the side boundary to the VFCs are required for multi-dwellings and commercial properties. The plans are to be amended to reflect this.	Noted and to be updated during design development phase prior to the construction certificate application
Pedestrian Access to Childcare centre Council advises that in accordance with the NSW Child Care Planning Guideline (Section 3.8 - Traffic, parking and pedestrian circulation, Clause C35), the following design solutions should be incorporated into a development to help provide a safe pedestrian environment: • separate pedestrian access from the car park to the facility	See **Section 3.5.1**
• defined pedestrian crossings and defined/ separate paths included within large car parking areas	
• pedestrian paths that enable two prams to pass each other	
• delivery, loading and vehicle turnaround areas located away from the main pedestrian access to the building and in clearly designated, separate facilities	
• locations where pedestrians and vehicles cross each other should be avoided.	
• clear sightlines are maintained for drivers to child pedestrians, particularly at crossing locations.	
Clause C36 states that mixed use developments should include:	

• driveway access, maneuvering areas and parking areas for the facility that are separate to parking and maneuvering areas used by trucks • drop off and pick up zones that are exclusively available for use during the facility's operating hours with spaces clearly marked accordingly, close to the main entrance and preferably on the same floor level. Alternatively, direct access should avoid crossing driveways or maneuvering areas used by vehicles accessing other parts of the site • parking that is separate from other uses, located and grouped together and conveniently located near the entrance or access point to the facility	Trucks no longer encroach car parking spaces dedicated to child care centre use. It is recommended that the spaces are signposted and linemarked as per **Section 3.2.6** recommendation.
Car Park Layout Council notes safety concerns about the shared driveway for loading and parking. The shared driveway will create conflicting movements between heavy and light vehicles in the circulation area from the access driveway within the loading bay and the underground car park ramp and the ground level parking area. There may be limited visibility between vehicles at these conflict points, which presents a safety concern.	HRV loading is occasional and will temporarily utilise to the manoeuvring area to access or egress the dedicated loading dock. All vehicles can enter and exit the site in a forward direction, whilst the HRV is docked in the loading back. Trucks generate a sound when reversing and will also be quite obvious for drivers entering or exiting the car parking areas. Information regarding loading periods can be distributed to residents and child care centre members.

1 INTRODUCTION

M^CLaren Traffic Engineering was commissioned by *Sustainable Development Group Pty Ltd* to provide a revised traffic and parking impact assessment of the proposed mixed use development at 461 Chapel Road, Bankstown as depicted in **Annexure A**. This traffic and parking impact assessment has been prepared with consideration to Council's comments, where considered appropriate.

1.1 Description and Scale of Development

1.1.1 Existing Development

The existing development has the following characteristics relevant to traffic and parking:

- Place of public worship with an advised maximum capacity of 350 seats, currently operating with the following sessions:
  - 8am service;
  - 10am service;
  - 2pm service.
- One (1) driveway via French Avenue and two (2) driveways via Chapel Road facilitating access to existing hardstand areas.

1.1.2 Proposed Development

The proposed development has the following characteristics relevant to traffic and parking:

- A **186**-unit affordable rental housing development consisting of the following:
  - **93** x studio units;
  - **92** x one-bedroom units;
  - One (**1**) four-bedroom unit.
- An increase in the yield of the existing place of worship to accommodate a maximum of **476** seats over three (3) halls on the ground level and first floor;
- A child care centre accommodating **60** children and **11** staff, consisting of the following age split:
  - 20 children between 0-2 years old (5 educator staff, applied at a rate of 1 staff per 4 children);
  - 20 children between 2-3 years old (4 educator staff, applied at a rate of 1 staff per 5 children);
  - 20 children 3+ years old (2 educator staff, applied at a rate of 1 staff per 10 children).
- Vehicular access is proposed via a two-way driveway from French Avenue facilitating access to an at-grade and mezzanine level car park accommodating a total of **37** car parking spaces, including:
  - **15** x child care centre car parking spaces (8 visitor, 7 staff);

- Three (**3**) dedicated car parking spaces for the ministry (including one (1) rectory car parking space);
    - The ministry car parking spaces are shared with the child care centre parking spaces as their peak operation periods to not coincide at all (see **Section 3.2.6**).
- **19** x residential car parking space.

1.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The proposed development does not qualify as a traffic generating development with relevant size and/or capacity under *Clause 2.122* of the *SEPP (Transport and Infrastructure) 2021*. Accordingly, formal referral to Transport for NSW (TfNSW) is unnecessary, and the application can be assessed by Canterbury Bankstown Council officers.

1.3 Site Description

The subject site includes the three (3) lots legally identified as Lot 26/A/DP7058, Lot 27/A/DP7058 and Lot 28/A/7058 which are currently zoned *B4 – Mixed Use* under the *Canterbury Bankstown Local Environmental Plan 2023* (CBLEP 2023) and is currently occupied by a place of public worship. The site has frontages to French Avenue to the north and Chapel Road to the west.

The subject site is located within the Bankstown City Centre and is generally surrounded by retail and commercial developments in all directions with Bankstown Central Shopping Centre located southeast of the site, Aldi located east of the site and TAFE NSW Bankstown is located northwest of the site. Bankstown Train Station is located approximately 500m walking distance south of the subject site.

1.4 Site Context

The location of the site is shown on an aerial photo and a street map in **Figure 1** and **Figure 2** respectively.

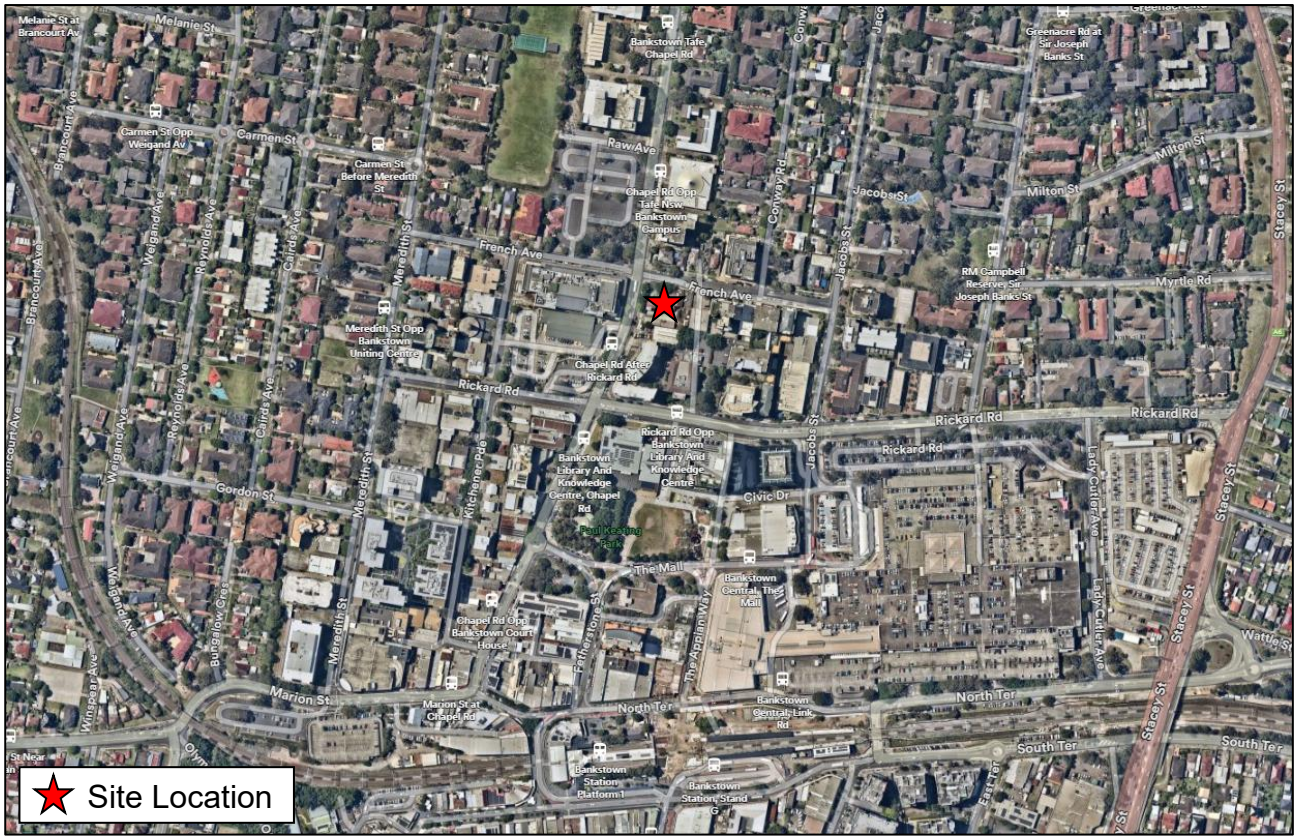

FIGURE 1: SITE CONTEXT – AERIAL PHOTO

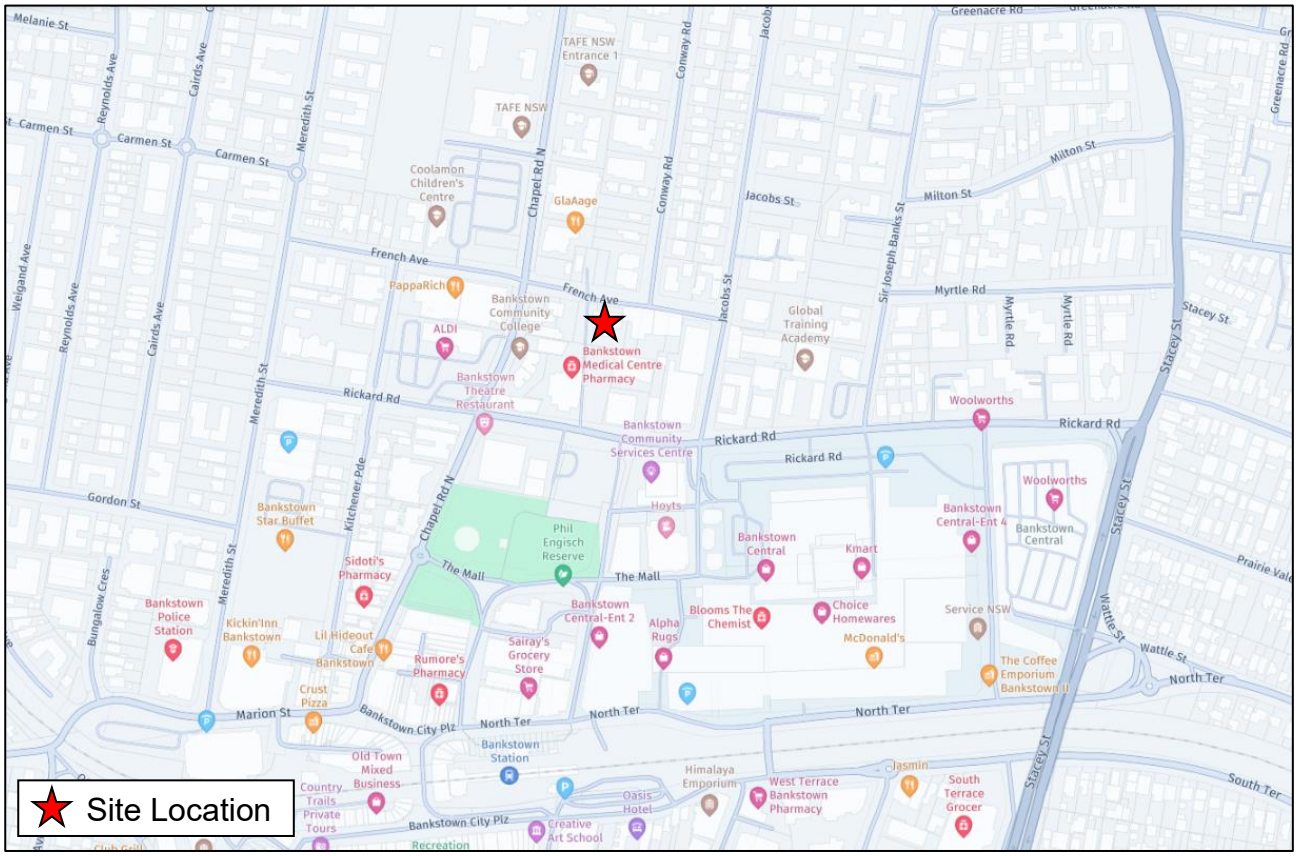

FIGURE 2: SITE CONTEXT – STREET MAP

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 Road Hierarchy

The road network servicing the site has characteristics as described in the following sub-sections.

2.1.1 Chapel Road

- TfNSW unclassified REGIONAL Road (No. 7122);
- Within close proximity of the site, Chapel Road has a 13m wide carriageway facilitating one (1) traffic flow lane in each direction and kerbside parking along both sides of the road;
- Signposted 40km/h "High Pedestrian Activity" speed limit, south of Rickard Road towards the Bankstown Centre;
- Generally, signposted 60km/h speed limit at all other areas;
- Parking restrictions are as follows:
    - "No Stopping" and "No Parking" restrictions along the site frontage, south of French Avenue;
    - "No Parking (3:30PM to 6PM, Monday to Friday)" restrictions along the western side of the road, south of French Avenue;
    - Generally, a combination of "1P (8:30AM to 3:30PM, Monday to Friday and 8:30AM to 12:30PM, Saturday)" parking restrictions and "2P (8:30AM to 3:30PM, Monday to Friday and 8:30AM to 12:30PM, Saturday)" parking restrictions along both sides of the road where parking is permitted.

2.1.2 French Avenue

- Unclassified LOCAL Road;
- Approximately 12m wide carriageway facilitating two-way traffic flow and kerbside parking along both sides of the road;
- Signposted 50km/h speed limit;
- Parking restrictions are as follows:
    - "No Stopping, Taxis Excepted (Limit 1 Minute)" restrictions along both sides of the road, east of Chapel Road";
    - "No Parking" restrictions apply along the frontage of the site at the French Avenue site driveway;
    - "2P (8:30AM to 6:00PM, Monday to Friday and 8:30AM to 12:30PM, Saturday)" parking restrictions along both sides of the road.

2.1.3 Rickard Road

- TfNSW Unclassified REGIONAL Road (No. 7123);
- Generally, 13-18m wide carriageways facilitating two (2) traffic flow lanes in each direction;
- Signposted and linemarked 60km/h speed limit;
- "No Stopping" restrictions along both sides of the road;
- No kerbside parking permitted along either side of the road.

2.1.4 Jacobs Street

- Unclassified LOCAL Road;
- Approximately 11m wide carriageway facilitating two-way traffic flow and kerbside parking on both sides of the road;
- Signposted 50km/h speed limit;
- Parking restrictions are as follows:
    - "1P (8:30AM to 6:00PM, Monday to Friday and 8:30AM to 12:30PM, Saturday)" parking restrictions along both sides of the road, south of French Avenue;
    - Generally, unrestricted kerbside parking permitted along both sides of the road at all other areas.

2.2 Existing Traffic Management

- Signalised intersection of French Avenue / Chapel Road;
- Signalised intersection of Chapel Road / Rickard Road;
- Priority controlled intersection of French Avenue / Jacobs Street.

2.3 Existing Traffic Environment

Turning movement count traffic surveys were conducted at the intersections of Chapel Road / French Avenue, Chapel Road / Rickard Road and French Avenue / Jacobs Street from 7:00AM to 9:30AM and 2:30PM to 6:00PM on Thursday 14 November 2024 and Sunday 17 November 2024 representing a typical operating weekday and weekend. The full survey results are shown in **Annexure B** for reference.

2.3.1 Existing Road Performance

The performance of the surrounding intersections under the existing traffic conditions has been assessed using SIDRA INTERSECTION 9.1. **Table 3** summarises the resultant intersection performance data, with full SIDRA results reproduced in **Annexure C**.

The following considerations have been undertaken to ensure a realistic calibrated model:

- Consideration to the TCS Plan for signalised intersections Rickard Road & Chapel Road (**Annexure D**);
- A review of the phase length and cycle times based upon video footage.
- Validation of the model using approach queue lengths with consideration to the following input modifications:
    - Observed maximum queue lengths along Rickard Road, Chapel Road and French Avenue utilising video footage.

TABLE 3: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 9.1)

Intersection	Peak Hour	Degree of Saturation[1]	Average Delay[2] (sec/veh)	Level of Service[3][4]	Control Type	Worst Movement	95th Percentile Queue
EXISTING WEEKDAY PERFORMANCE							
Chapel Road / Rickard Road	AM	0.60	19.9	**B**	Signals	RT from Chapel Road	11.2 veh (79.4m) Rickard Road
	PM	0.77	29.1	**C**		RT from Chapel Road	21.3 veh (152m) Chapel Road
Chapel Road / French Avenue	AM	0.62	14.8	**B**	Signals	RT from French Avenue	7.1 veh (52.9m) Chapel Road
	PM	0.69	13.8	**A**		RT from French Avenue	7.3 veh (51.7m) French Avenue
Jacobs Street / French Avenue	AM	0.31	5.3 (Worst: 10.2)	**NA** (Worst: A)	Stop	RT from French Avenue	1.3 veh (9.5m) French Avenue
	PM	0.37	5.3 (Worst: 11.1)	**NA** (Worst: A)		RT from French Avenue	1.8 veh (12.9m) French Avenue
EXISTING SUNDAY PERFORMANCE							
Chapel Road / Rickard Road	SUN	0.37	16.4	**B**	Signals	RT from Chapel Road	7.7 veh (54.3m) Rickard Road
Chapel Road / French Avenue	SUN	0.39	9.6	**A**	Signals	RT from French Avenue	3.2 veh (22.8m) Chapel Road
Jacobs Street / French Avenue	SUN	0.14	4.9 (Worst: 8.5)	**NA** (Worst: A)	Stop	RT from French Avenue	0.5 veh (3.7m) French Avenue

Notes:

(1) The Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
(2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
(3) The Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
(4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

As shown, the signalised intersection of Chapel Road / Rickard Road currently performs at a Level of Service (Los) “B” during the AM peak hour weekday period and LoS “C” during the PM peak hour weekday period. The LoS “B” performance is characterised by low approach delays and spare capacity. The LoS “C” performance is characterised by satisfactory delays with some spare capacity.

The signalised intersection of Chapel Road / French Avenue currently performs at a LoS “B” during the AM peak hour weekday period and LoS “A” during the PM peak hour weekday period. The LoS “A” and “B” performance is characterised by low approach delays and spare capacity.

The intersection of Jacobs Street / French Avenue performs with a ‘worst movement’ LoS “A” during the AM and PM peak hour weekday periods.

During the weekend, the intersection of Chapel Road / Rickard Road performs at an LoS “B”, the intersection of Chapel Road / French Avenue performs at an LoS “A” and the intersection of Jacobs Street / French Avenue performs at a ‘worst movement’ LoS “A”, indicating that the road network is performing at a high level of efficiency.

2.4 Public Transport

2.4.1 Bus Services

The subject site is within convenient walking distance to several public transport facilities as depicted in **Figure 3**.

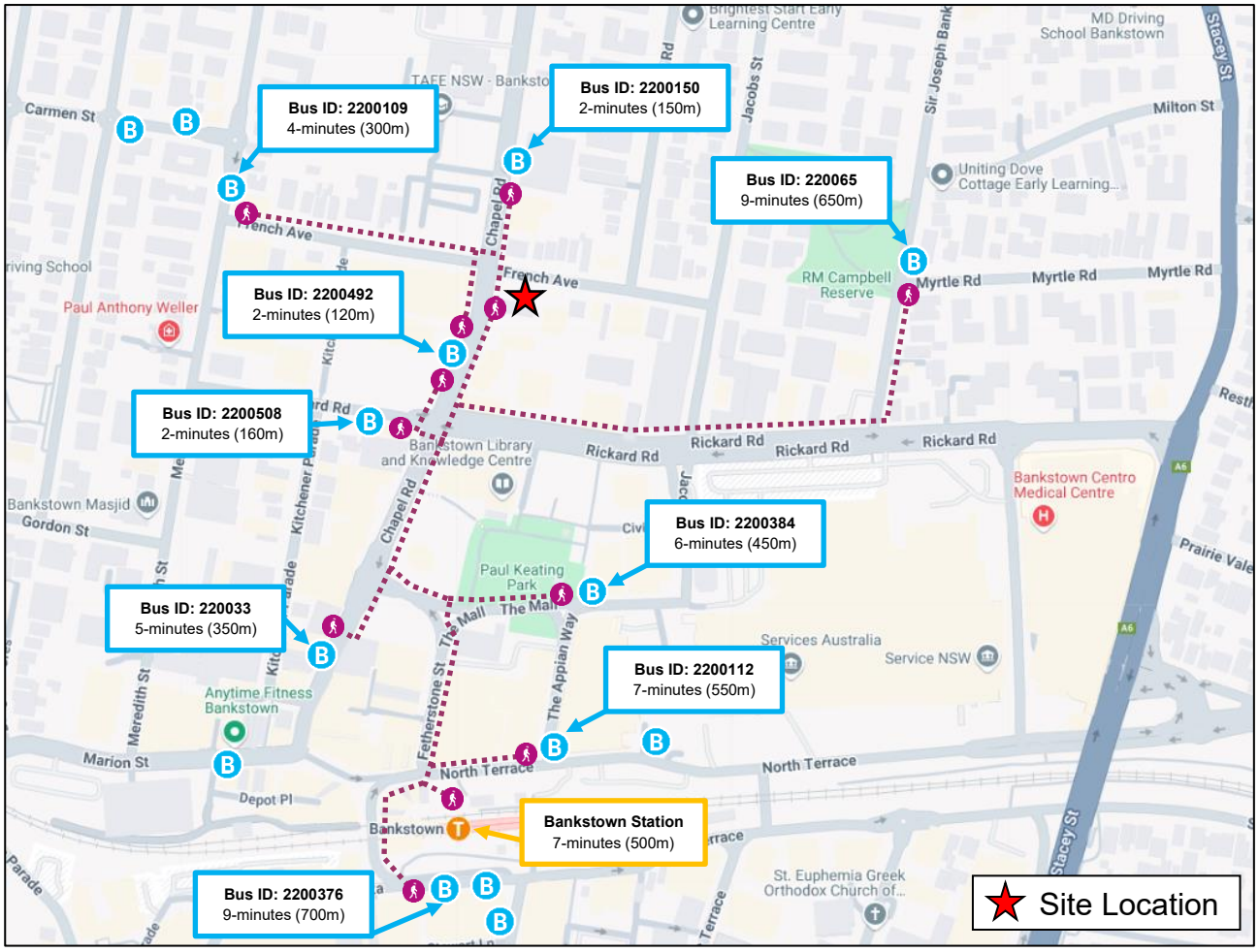

FIGURE 3: PUBLIC TRANSPORT MAP

The bus stops shown above service the following bus routes as shown in **Table 4**.

TABLE 4: BUS ROUTES

Bus Route Number	Bus Route	Bus Service Provider
905	Bankstown to Fairfield	Transit Systems NSW
907	Bankstown to Parramatta via Bass Hill	Transit Systems NSW
908	Merrylands to Bankstown via Auburn and Birrong	Transit Systems NSW
909	Bankstown to Parramatta via Auburn and Birrong	Transit Systems NSW
911	Auburn to Bankstown via Georges Hall	Transit Systems NSW
913	Strathfield to Bankstown	Transit Systems NSW
920	Bankstown to Parramatta	U-Go Mobility
925	East Hills to Lidcombe via Bankstown	Transit Systems NSW
939	Greenacre to Bankstown	U-Go Mobility
960	Sutherland Station to Bankstown Central	U-Go Mobility
M90	Burwood to Liverpool	Transit Systems NSW
M91	Hurstville to Parramatta via Chester Hill and Pads	Transit Systems NSW

As shown, the subject site is well serviced by bus services that are within convenient walking distance of the site. The bus operator map extracts for Transit Systems and U-Go Mobility are presented in **Figure 4** and **Figure 5**, respectively.

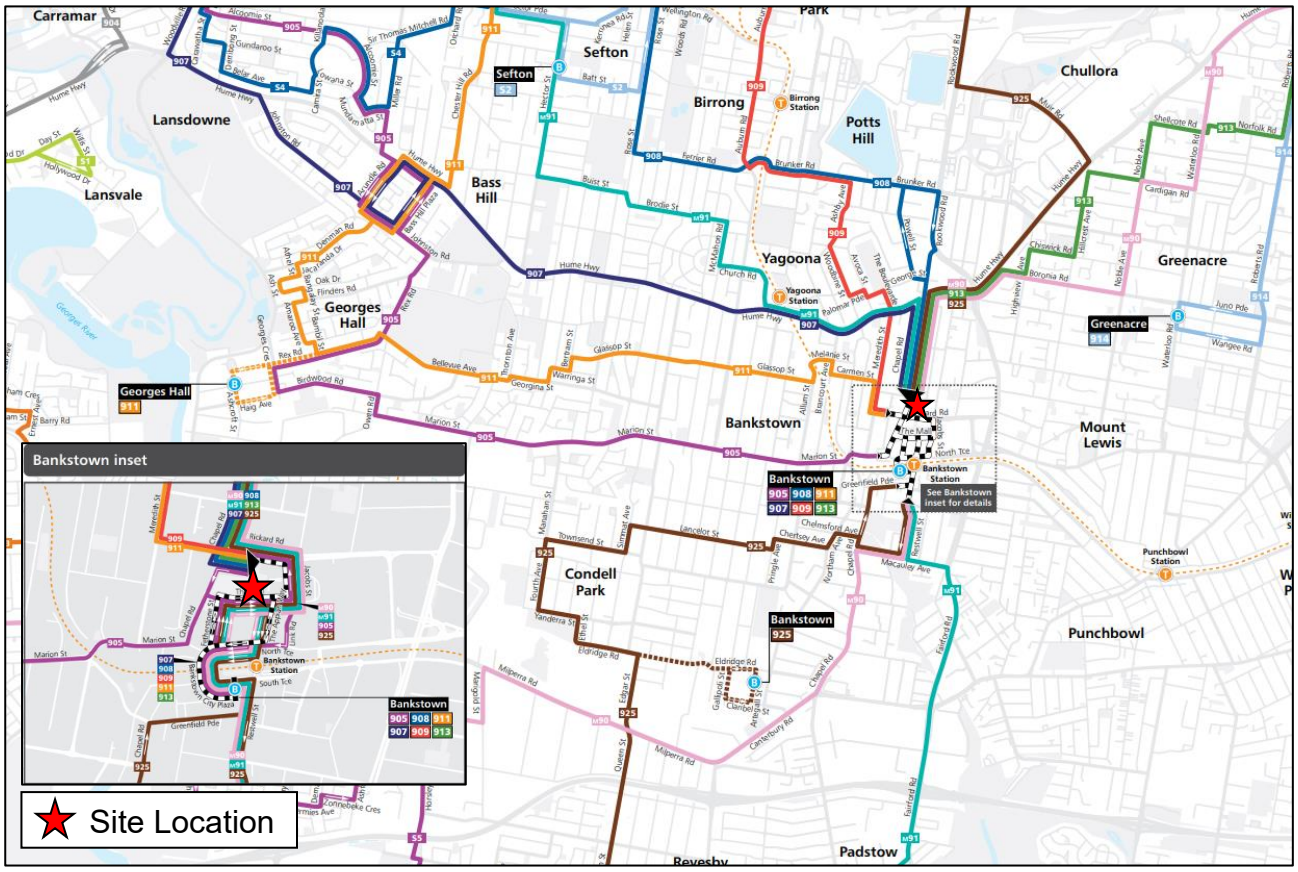

FIGURE 4: TRANSIT SYSTEMS NSW – BUS OPERATOR MAP

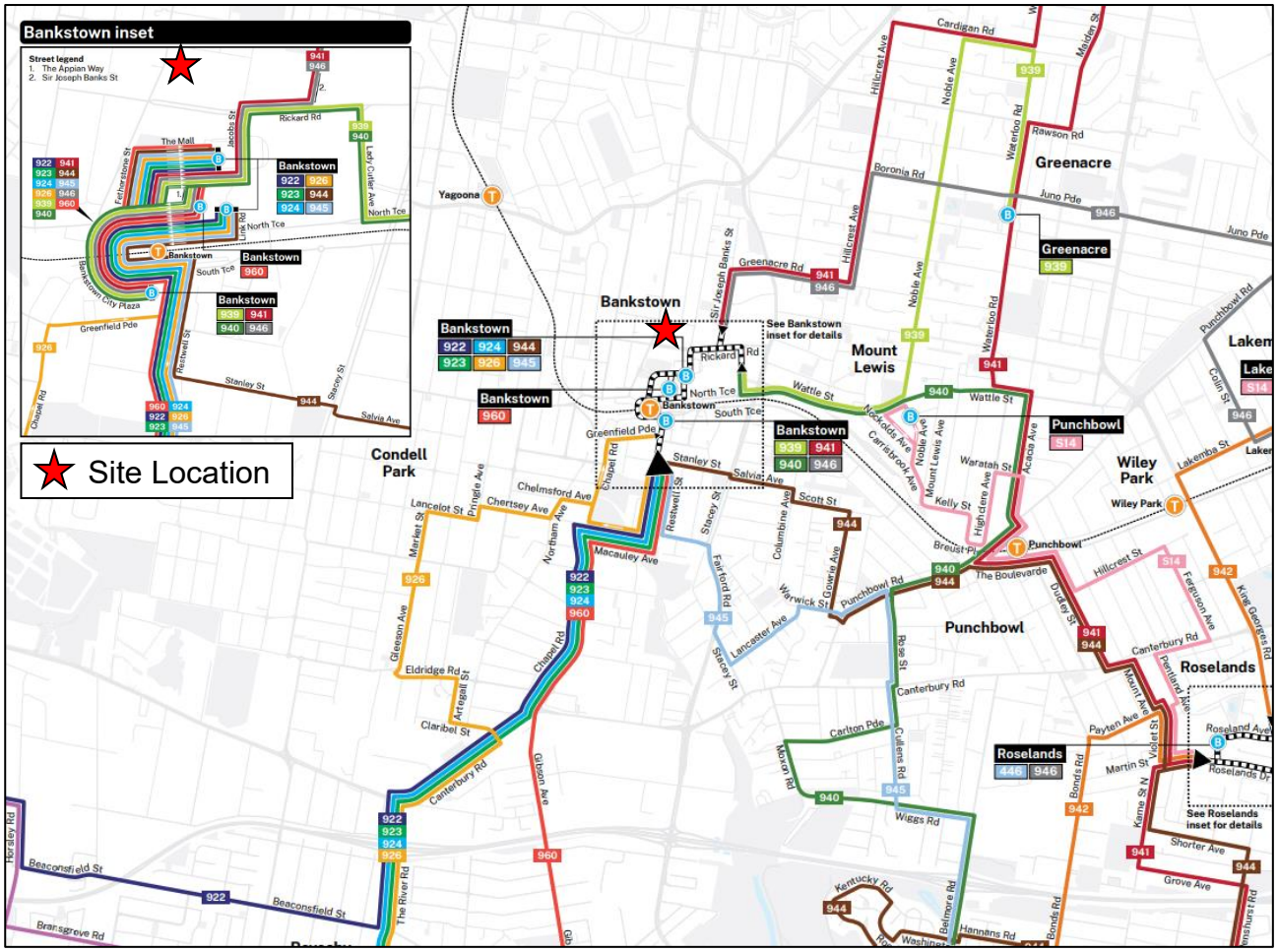

FIGURE 5: U-GO MOBILITY – BUS OPERATOR MAP

2.4.2 Train Services

Bankstown Train Station is within 7-minute (500m) walking distance of the site to the south. It is noted that at the date of the creation of this report, Bankstown Train Station is currently not in operation and is undergoing planned upgrades to incorporate a new Sydney Metro Station, further detailed in **Section 2.5**.

2.5 Future Road and Infrastructure Upgrades

2.5.1 Bankstown Metro Station

Bankstown Station is currently undergoing upgrades to incorporate a new Metro Station. In accordance with the NSW Sydney Metro website, Bankstown Station is expected to service "*15 trains per hour*" during the morning peak period. Further, the Metro services are expected to reduce travel time by up to 25-minutes to some destinations. The increased Metro service frequency and decreased travel times is likely to make the Metro an attractive travel mode for people which will reduce private vehicle reliance. The reduction of private vehicle reliance is in line with the objectives of the *Canterbury-Bankstown Development Control Plan 2023* for the Bankstown City Centre.

From the Canterbury-Bankstown Council Development Application tracker and TfNSW Projects website, it appears that there are no further future planned road or public transport changes that will affect traffic conditions within the immediate vicinity of the subject site.

3 PARKING ASSESSMENT

3.1 Council Car Parking Policy

3.1.1 Canterbury Bankstown Council Car Parking Policy

The subject site is located within the 'outside core' of Bankstown City Centre. As such, reference is made to the *Canterbury Bankstown Development Control Plan 2023* (CBDCP 2023) – *Chapter 6.2: Bankstown City Centre* which outlines the following car parking requirements:

Land Use	***Size / Description***	***Outside of Bankstown Core City***	
		Minimum car parking rate	***Maximum car parking rate***
Residential flat buildings / Shop top housing	***Studio***	*0 space per dwelling*	*0.75 space per dwelling*
	1 Bedroom	*0.2 space per dwelling*	*0.75 space per dwelling*
	2 Bedroom	*0.5 space per dwelling*	*1.5 space per dwelling*
	3 Bedrooms	*1 space per dwelling*	*2 space per dwelling*
	Visitor	*0*	*1 space per 5 dwelling*
All Other Land Uses	*Refer to Chapter 3.2 – Parking of the CBDCP 2023*		

Further reference is made to *CBDCP 2023 – Chapter 3.2: Parking* which outlines the car parking requirements for other land uses not considered above:

> ***Centre-based child care facilities***
>
> *1 car space per 4 children; and 2 additional car spaces for the exclusive use of any associated dwelling.*
>
> ***Place of public worship***
>
> *Place of public worship that is located outside a centre (B2, B4 Zone) and where the gross floor area of the assembly area greater than 500m^2:*
>
> - *1 car space per 5m^2 of the assembly area, however this rate is to be validated through a parking study, to be submitted with the application*
> - *In addition to the requirements of Chapter 10.5, the parking study must consider other comparable places of public worship in terms of building size, worshipper capacity, type of worship (i.e. seated or unseated). Accessibility and potential use of alternative means of transport, existing short term parking availability and vehicle occupancy rates. The parking study should correlate with the submitted plan of management.*
> - *Car parking for ancillary uses and social/special events must be provided on-site on the basis of a parking study to be submitted with the application.*

It is noted that car parking for 'affordable rental housing' is also provided within the *State Environmental Planning Policy Housing 2021 (SEPP Housing 2021)*. The CBDCP 2023 car parking requirements for the residential dwellings were utilised to determine car parking requirements as it is the lesser of the two (2) car parking rates for residential flat building dwellings.

Further it is relevant to note that there is no car parking rates applicable to 'community facilities' contained within the DCP, however the DCP recommends that a parking study for uses not contained in the DCP should be undertaken. The primary use of the community facility is expected to a place of worship and a car parking study of the existing place of worship has been undertaken (see **Section 3.2**). Car parking for the community centre is discussed in **Section 3.2.7**.

Table 5 presents the 'minimum' parking requirements of the proposal according to CBDCP 2023 above car parking rates.

TABLE 5: CBDCP 2023 CAR PARKING POLICY

Land Use	Type	Scale	Rate	Spaces Required	Spaces Provided
Residential Flat Building (Affordable Rental Housing Units) (1)	Studio	93 units	0 spaces per dwelling	0	19 (2)
	1-bedroom	92 units	0.2 spaces per dwelling	18.4	
	3+ bedroom	1 unit	1 space per dwelling	1	
Child Care Centre (1)	-	60 children	1 space per 4 children	15	15
SUB TOTAL	**-**	**-**	**-**	**34 (34.4)**	**37**
Place of Worship (3)	Assembly Area	533m^2	1 space per 5m^2 GFA	106.6	18 (4)(5)
TOTAL	**-**	**-**	**-**	**141**	**37**

NOTES:

(1) Minimum car parking rates applied.
(2) The 3+ bedroom unit refers to the rectory unit. The car parking space is provided on the ground floor.
(3) A car parking study for the proposed place of worship has been undertaken and is further detailed in **Section 3.2**.
(4) Place of Worship car parking is to be shared with the Child Care Centre as operational hours do not coincide.
(5) Includes three (3) additional ministry spaces.

As shown, strict application of the CBDCP 2023 car parking rates requires the provision of **141** car parking spaces. The proposed plans detail the provision of **37** car parking spaces, resulting in a numerical shortfall of **104** car parking spaces to CBDCP 2023 which is associated with the Place of Worship. A car parking study has been undertaken within **Section 3.2** to determine the appropriate car parking demand for the proposed Place of Worship component.

It is noted that from the initial submitted scheme, the capacity of the place of worship has reduced, however the updated scheme includes the increased provision of five (5) car parking spaces for place of worship use (shared with child care centre).

3.2 Place of Worship – Car Parking Demand Study

3.2.1 Place of Worship Proposal

The existing operational place of worship has advised MTE of a maximum capacity of **350** patrons. The proposed plans (as depicted in **Annexure A**) detail a maximum capacity of **476** patrons, which is an increase of **126** patrons from existing operations. The place of worship currently operates with three (3) services every Sunday including an 8am service, 10am service and 2pm service.

Under existing conditions, the place of worship provides a hardstand area via French Avenue to provide informal parking to the place of worship staff. The hardstand area can accommodate a maximum of nine (**9**) cars.

3.2.2 Scope of Place of Worship Parking Study

The existing place of worship can accommodate a maximum of 350 patrons on site at any one time. It is expected that the place of worship would only meet the maximum capacity during peak events (i.e. Christmas and Easter). This behaviour is still expected of the new place of worship facility however it is acknowledged that the place of worship would experience minor increases to “typical” Sunday services.

This car parking study assumes that the percentage of patron increase for a “typical” Sunday session is proportional to the existing ratio of Sunday service patrons to the maximum capacity.

For example, under existing conditions the place of worship accommodates 90 patrons during their peak “typical” Sunday service, with a maximum capacity of 350 patrons, which is equivalent to **26%** of maximum capacity attending a typical Sunday service. This study assumes that **26%** of patrons of the new maximum capacity increase would also attend the Sunday service.

The parking requirements of “peak events” are justified in **Section 3.2.8**. The complete study is detailed in the following sub-sections.

3.2.3 Existing Place of Worship – Travel Mode Survey

Travel mode surveys were conducted on Sunday, 24 November 2024 and Sunday, 1 December 2024. The 8am and 2pm service responses were manually collected on-site, and the 10am responses were collected via an online survey. The complete travel mode survey questionnaire is provided in **Annexure F** for reference.

It is acknowledged that the surveys may not have wholly captured the response of every individual in attendance. The existing place of worship has advised that the 10am session is the busiest with a typical attendance of 60 adults and 30 children, which aligns with the distribution of responses for the travel mode survey (i.e. the quanitiy of responses indicates that the 10am session was the busiest session).

The following questions were included within the travel mode survey:

- How did you arrive to church today?
    - Car (as driver), passenger in car, train (due to the closure of Bankstown Station, select this option if the train is your usual mode of transport), public bus, only walked, bicycle, motorcycle, taxi/uber, other.
- If you drove, how many passengers were in the car with you?
- If you drove, where did you park?
    - On-site, on-street, public car park,
- If you drove, parked 'On-Street' or 'Public Car Park', what street/car park did you park in?
- How will you depart church today?
    - Car (as driver), passenger in car, train (due to the closure of Bankstown Station, select this option if the train is your usual mode of transport), public bus, only walked, bicycle, motorcycle, taxi/uber, other.

The travel mode survey results are summarised in **Table 6**, below.

TABLE 6: TRAVEL MODE SURVEY SUMMARY

Travel Mode	Service		
	8am	10am	2pm
Sunday, 24 November 2024			
Car, as driver	9 (64%)	31 (66%)	9 (32%)
Car, as passenger	3 (22%)	12 (26%)	5 (18%)
Train	0	1 (2%)	1 (4%)
Bus	1 (7%)	0	4 (14%)
Walked	1 (7%)	3 (6%)	7 (25%)
Taxi/Uber	0	0	2 (7%)
Total Respondents	**14**	**47**	**28**
Sunday, 1 December 2024			
Car, as driver	11 (65%)	30 (67%)	11 (32%)
Car, as passenger	3 (17%)	13 (29%)	5 (15%)
Train	0	0	2 (6%)
Bus	1 (6%)	0	5 (15%)
Walked	2 (12%)	2 (4%)	9 (26%)
Taxi/Uber	0	0	2 (6%)
Total Respondents	**17**	**45**	**34**

The key findings from the travel mode surveys include the following:

- People attending the 8am and 10am session have similar travel mode choices with approximately 66% of adult patrons driving to the subject site on average;
- People attending the 2pm session are more likely to utilise alternate modes of transport with 32% of adult patrons driving to the subject site. Public and active transport modes are a viable transport mode for patrons attending the 2pm session.

- Very few people utilise public transport to travel to/from the subject site during the 10am session. There is a large potential to increase public transport usage.

3.2.4 Parking Study Limitations

The following limitations were determined as a part of this parking study:

- It is acknowledged that the survey responses may not have captured the response of every individual.
- The survey question about train use was designed to account for train users; however, the closure of Bankstown Station likely discouraged many individuals from using the train to travel to and from the subject site. The extent to which Bankstown Station influences the transport mode choices of patrons remains uncertain.
- It is difficult to estimate the number of patrons generated as a result of the additional maximum capacity. However, it is unlikely that the number of patrons driving to and from the site would rise significantly, given that the place of worship is currently operating at approximately 26% of its maximum capacity (as reported by the existing place of worship). As a result, the increased maximum capacity is expected to have minimal impact on traffic. Any additional patrons are more likely to result from the increased residential density associated with the proposed residential units, and these patrons are not expected to drive to the site.

3.2.5 Estimated Car Parking Demand

The following assumptions were considered for the purposes of estimating the car parking demand of the proposed place of worship:

- Only the 10am Sunday service is considered, as it is the busiest service.
- Existing Sunday service percentage of typical patrons to maximum patrons was determined to be **26%**;
- **126** place increase in place of worship capacity, which is assumed to translate to a 26% increase in patronage for the 10am Sunday service. This is equivalent to **33** additional patrons for the typical Sunday service.
- 66% of the additional patrons are adults. This is equivalent to an additional **22** adults.
- Drivership rate of 67% based on the travel mode survey results.

Application of the assumptions above, results in an additional **15** 'adult drivers' to the proposed place of worship for a typical 10am Sunday Service.

It is reiterated that there is very large potential for significant public transport increase for the 10am service due to the new Bankstown Metro such that these "drivers" may indeed choose to use a more convenient transport mode to access the CBD. The new Bankstown Metro is likely to encourage individuals to utilise public transport due to frequent services. Public transport utilisation aligns with the objectives of the TOD and Bankstown CBD DCP. It is recommended that a travel access guide is prepared and distributed for members of the place of worship.

3.2.6 Proposed Car Parking Provision for Place of Worship Patrons and Community Facility

Under existing conditions, the subject place of worship provides car parking for the ministry members only within the rear hardstand area accessed via French Avenue. The rear hardstand area was observed to informally accommodate nine (9) vehicles. Further the existing church already has an existing approved shortfall of parking.

Under future conditions, it is proposed that the site continues to provide nil (0) car parking spaces for visitors with all on-site spaces dedicated to the staff associated with the operation of the place of worship. The client has advised that the place of worship is not expected to demand a significant increase in staff, with one (1) additional staff expected per session under the future case.

In any case, the proposal includes the formalisation of **18** ministry car parking spaces (15 shared with child care centre development), encapsulating the nine (9) existing hardstand spaces and a further nine (9) additional spaces. The ground floor spaces are proposed to be shared with the child care centre. The child care centre and primary (i.e. Sunday Service) place of worship operation hours do not coincide at all and therefore the shared-use of the car parking spaces can be easily managed.

It is acknowledged that some community events and place of worship events may occasionally occur during centre hours. These events can be managed to occur outside of peak pick-up and drop-off periods (*7:00AM – 9:00AM & 2:30PM – 6:00PM, Monday to Friday)* if reliance on the car park is required, and visitors to the site will not be provided access to the car park without prior notification to the place of worship management/building manager. Permitted individuals who park during the weekday after 9:00AM to 2:30PM **must** clear the car park by 2:30PM for child care centre operation. Further community facility parking considerations are outlined in **Section 3.2.7**.

It is recommended that each of the child care centre / ministry car parking spaces on the ground floor be appropriately signposted/linemarked as "*Child Care Centre Car Parking (7:00AM – 9:00AM & 2:30PM – 6:00PM, Monday to Friday), Ministry Car Parking at All Other Times*".

3.2.7 Considerations for Community Facility Visitor Parking – Bankstown City Centre DCP Objectives

Reference is made *CBDCP 2023 – Chapter 6.2: Bankstown City Centre* which outlines the following objectives relevant to parking:

> ***5.2.1 On-site parking***
>
> ***Objectives***
>
> *O1. Promote sustainable transport use by restricting private parking and facilitating access to, and use of, communal modes of transport within the Bankstown City Centre.*
>
> *O2. Ensure that adequate parking is provided to service the needs of the development and reduce the impacts on local roads.*

O3. *Encourage basement vehicular parking throughout the centre.*

O4. *Provide flexibility for the efficient use of car parking in development by allow off-site users to use car parking.*

O5. *Where provided, design above ground car parking so that it can be adapted to alternate uses over time*

O6. *Limit vehicular movement through the city centre core*

O7. *Consider the location of car park and service vehicle entrances and exits to ensure the amenity of public domain is maintained and improved where possible*

O8. *Ensure that new car parking can be part of a unified parking system in Bankstown City Centre that includes both public and private car parks. This system will share data and use smart technology to make parking easier and more efficient.*

O9. *Ensure that all modes of transport—pedestrian, cycling, public transport, and freight—are well-connected to foster economic activity and enhance accessibility for everyone in Bankstown City Centre.*

The Bankstown City Centre is undergoing significant policy changes aimed at reducing reliance on private vehicle use. These changes include limiting the provision of private car parking spaces and ensuring strong connectivity across all modes of transport, with the Bankstown Metro envisioned as being a significant catalyst for alternate transport use.

The subject proposal provides car parking that adequately satisfies the demand for the child care centre, and the net increase of the place of worship (understanding that the existing place of worship was approved with an existing shortfall), including satisfying the DCP car parking requirements for residents. In view of the potential community use of the development, the proposed provision of car parking can adequately service the residents, and the operational use of the child care centre and place of worship. It is important to consider that community facilities are typically ancillary to a town centre and support and enhance the primary commercial, civic, and transport functions of the centre, but are not usually the primary generator.

The proposal to provide nil (0) visitor parking spaces for the place of worship may encourage visitors to utilise alternative transport options, such as public buses and, in the future, the new Bankstown Metro. This approach aligns with current Bankstown car parking provision for office and retail premises, where car parking rates are capped at a ‘maximum’ to discourage excessive on-site parking and promote sustainable transport choices.

3.2.8 Car Parking Considerations for Peak Events

During special peak events (i.e. Christmas and Easter) alternate transport arrangements to and from the site would be made via public transport which is consistent with the existing use of the site and objectives for the future town centre. The new Bankstown Metro is expected to significantly benefit the town centre by reducing private vehicle utilisation due to more frequent services and better connectivity to surrounding suburbs.
A Travel Access Guide (TAG) can be prepared and made publicly available on public forums or websites to inform visitors of alternate transport methods.

3.2.9 Resulting Provision of Car Parking for the Proposed Development

In summary, the proposal includes the provision of car parking spaces as per the following:

- A total of **37** car parking spaces, including:
    - **19** car parking spaces allocated to residential component, satisfying CBDCP 2023 car parking requirements;
    - **15** car parking spaces associated with the child care centre, satisfying CBDCP 2023 car parking requirements;
        - These spaces are to be shared with the place of worship. Operationally, the child care centre and place of worship do not conflict with each other.
    - Three (**3**) car parking spaces allocated to Place of Worship Uses, with the **15** child care centre spaces available for ministry use outside of peak hour periods.

3.3 Bicycle & Motorcycle Parking Requirements

3.3.1 Bicycle Parking Requirements

Reference is made to *CBDCP 2023 – Chapter 6.2 – Section 5.2.3: Bicycle Parking and End of Trip Facilities* which outlines the following bicycle parking requirements:

Land Use	*Size / Description*	*Bicycle Parking Rates*	*End-of-trip Facility Rates*
Residential flat buildings / Shop top housing	***Studio***	*1 secure space per 3 dwellings*	-
	1 Bedroom	*1 secure space per 3 dwellings*	
	2 Bedroom	*1 secure space per 3 dwellings*	
	3 Bedrooms	*1 secure space per 3 dwellings*	
	Visitor	*1 visitor bicycle space per 10 dwellings*	

Further reference is made to *CBDCP 2023 – Chapter 3.2* which outlines the following bicycle parking rates for the child care centre and place of worship component:

Centre-based child care facilities

1 space per 4 staff

Places of Worship

Visitors: 1 space per 20

The resulting CBDCP 2023 bicycle parking requirements are summarised in **Table 7**.

TABLE 7: CBDCP 2023 BICYCLE PARKING PROVISION

Land Use	Type	Scale	Rate	Spaces Required	Spaces Provided
Residential Flat Building (Affordable Rental Housing Units)	Studio	93 units	1 space per 3 dwellings	62	**67**
	1-bedroom	92 units	1 space per 3 dwellings		
	3+ bedroom	1 unit	1 space per 3 dwellings		
	Visitors	186 units	1 visitor bicycle space per 10 dwellings	18.6	
Child Care Centre	-	11 staff	1 space per 4 staff	3.7	10
Place of Worship	-	126 patrons (1)	1 space per 20	6.4	
TOTAL	**-**	**-**	**-**	**90.7**	**91**

NOTE:

(1) Under existing conditions, the place of worship does not provide any bicycle parking. It is proposed that bicycle parking is provided for the 'typical' patronage of the Sunday 10am service, which is 126 patrons (90 existing + 36 future).

Applying the above rates, results in a bicycle parking requirement of **91** bicycle spaces. The proposed plans detail the provision of **91** bicycle parking spaces, satisfying CBDCP 2023 bicycle parking policy.

3.3.2 Motorcycle Parking Requirements

The CBDCP 2023 does not outline any motorcycle parking requirements. As such, nil (0) motorcycle parking spaces are proposed, satisfying CBDCP 2023 motorcycle parking requirements.

3.4 Servicing & Loading

Reference is made to *CBDCP 2023 – Chapter 6.2 – Section 5.8: Waste management* which outlines the following servicing and loading requirements:

> ***Controls***
>
> *C1. For large developments, or developments where Council determines collect and return is unsuitable, ensure that waste collection activities exclusively occur on-site via an HRV per the Australian Standards 2890.2 preventing disruptions to shared laneways and maintaining visual and functional quality of these spaces.*

A dedicated loading bay suitable for 12.5m length Heavy Rigid Vehicle (HRV) has been provided within the ground floor car park. Swept paths have been undertaken demonstrating successful HRV access and egress of the site and loading bay, with results presented in **Annexure G**.

Additional swept path tests have been undertaken to demonstrate HRV left turn access and left turn egress of the site via French Avenue.

It is recommended that servicing or loading activities involving an HRV be scheduled outside the peak operating hours of the childcare centre to minimize potential conflicts with visitors and ensure safety. Nevertheless, the design allows for the safe two-way passage between a B99 and B85, even when an HRV is parked within the dedicated loading bay.

3.5 Car Park Design & Compliance

The car parking layout as depicted in **Annexure A,** has been assessed to achieve the relevant clauses and objectives of *AS2890.1:2004*, *AS2890.2:2018, AS2890.3:2015* and *AS2890.6:2022*. Swept path testing has been undertaken, and the results are reproduced within **Annexure G** for reference.

The proposed car parking and vehicular access design achieves the following:

- 9.8m wide two-way driveway (measured at the property boundary) facilitating access to French Avenue;
- 2.0m x 2.5m pedestrian sight triangle along the egress side of the driveway;
- Minimum 3.6m wall-to-wall width for one-way ramps;
- Compliant ramp grades not exceeding 25% for private developments and no grade change greater than 12.5;
- Minimum 2.6m wide x 5.4m long car parking spaces for child care centre visitors;
- Minimum 2.4m wide x 5.4m long car parking spaces for residents and staff;
- Minimum 6.6m wide parking aisles designed in accordance with ‘User Class 3A’ requirements;
- Minimum headroom of 2.2m for general circulation and 2.5m headroom clearance provided over accessible and adaptable parking areas;
- Minimum headroom of 4.5m where manoeuvring is required by a Heavy Rigid Vehicle;
- Dedicated loading bay accommodating 12.5m Heavy Rigid Vehicles (HRV).

Whilst the plans have been assessed to comply with the relevant standards, it is usual and expected that a design certificate be required at the Construction Certificate stage to account for any changes following the development application.

3.5.1 Child Care Centre Car Park Design

The car park has been designed in accordance with ‘User Class 3A’ design which is typically the design requirement for shopping centre. One of the primary design aspects for this user class design is the widened aisle which consider pedestrian movement within the aisle. Considering the scale of the proposed child care centre and the size of the car park, it is highly unlikely that a parent would unload a pram out of their vehicle, push it 20m to the centre access, store the pram and drop of their child. For a centre of this size, parents are most likely to transport their child by carrying or walking them over to the centre. The requirements for passing prams in this instance is excessive and unnecessary.

It is reiterated that a User Class 3A design is for shopping centres, which consider pedestrian movements within the parking aisle.

3.5.2 Resident Car Park – Ramp Signal Operation

The residential car park is proposed to operate with a 3.6m wide one-way ramp and therefore is required to operate under ramp signalisation. It is recommended that a detailed ramp signal design is prepared by a qualified ramp signal designer. The resident car park is to operate under signalisation for the entirety of its development. The recommended waiting bay location on the ground floor is shown in **Figure 6**.

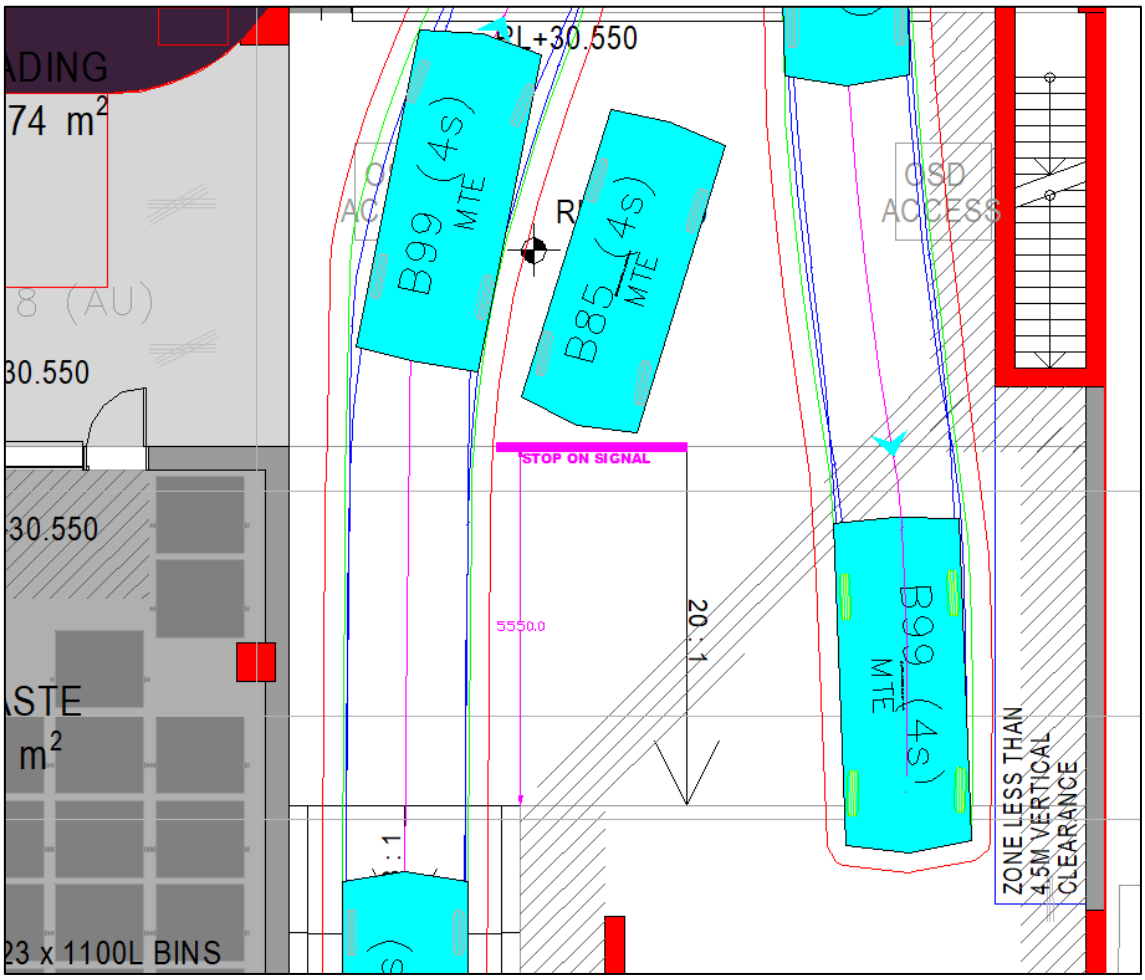

FIGURE 6: RECOMMENDED "STOP ON SIGNAL" DELINEATION

3.5.3 Occasional Service of Heavy Rigid Vehicles

Clause 3.2.3.2 – Minor Road Access of *AS2890.1* states the following:

> *The swept path of the maximum size design vehicle using the facility may be allowed to occupy the entire width (less specified clearances) of a two-way access driveway when the vehicle is entering or leaving the minor road.*

A heavy rigid vehicle is permitted to utilise the complete width of the driveway when entering or leaving French Avenue (the minor road) for occasional servicing. It is reiterated that HRV loading is infrequent and will only occur for waste collection operation.

3.5.4 Small Car Spaces Under the Mezzanine Ramp

The minimum headroom under the mezzanine ramp is measured to be approximately 1.8m, and a 2.2m headroom is achieved approximately 1.4m from the face of the wall in front of the car parking spaces. The bonnet of a B85 vehicle can access the reduced headroom, whilst a driver exiting their vehicle will have adequate headroom clearance to the ramp above. These spaces are recommended to be signposted as “Small Car – Front In Only” and is not expected to adversely impact the efficiency and operation of the car park. In view of the above, this minor variation from the standards is supportable.

3.5.5 Accessible Car Parking Spaces

The proposed accessible car parking arrangement has not been assessed by MTE. The design, geometry and compliance with *AS2890.6:2022* have are assessed by others.

3.6 Proposed Parking Restriction Change

It is proposed that a ‘drop-off’ zone is provided along the frontage of the site for the length of three (3) car parking space. The ‘drop-off’ zone will serve as short-turnover spaces for visitors to the subject site.

It should be noted that the provision of drop-off spaces on Chapel Road was implemented at the request of the State Design Review Panel (SDRP).

The request for parking restriction changes can be formally made to the Local Traffic Committee once development approval is obtained.

4 TRAFFIC ASSESSMENT

The impact of the expected traffic generation levels associated with the subject proposal is discussed in the following sub-sections.

4.1 Traffic Generation

4.1.1 Vehicle Trip Generation Rates

The traffic generation rates for the relevant land uses are provided in the *TfNSW Guide to Transport Impact Assessment* (TfNSW Guide), which supersedes the *RTA Guide to Traffic Generating Developments (2002)*. Where traffic generation rates are not provided in the TfNSW Guide, the RTA Guide has been referenced. The relevant traffic generation rates are as follows:

TfNSW Guide

Child care centres (2015)

Long-day care

Site AM peak hour	*0.81 vehicle trips/licensed child places*
Site PM peak hour	*0.80 vehicle trips/licensed child places*

TDT 2013/04a

High density residential flat dwellings – Weekday Rates

AM peak hour (Sydney)	*0.15 vehicle trips per car space*
PM peak hour (Sydney)	*0.12 vehicle trips per car space*

It should be noted that the traffic generation rates typically apply to unconstrained sites (i.e. sites which do not have any car parking restrictions). The subject site is a constrained site and as such, it is more appropriate to estimate the traffic generation based on a first principles approach specifically for the retail, commercial and place of worship land uses. The first principles assessment is outlined in **Section 4.1.2**.

The traffic generation rate contained in the TDT 2013/04a is the same data which underpins the TfNSW Guide to Transport Document and is therefore appropriate to be used to estimate the high-density residential component.

4.1.2 Traffic Generation Estimate

The traffic generation has been estimated utilising a combination of traffic generation rates contained in the TfNSW Guide, TDT 2013/04a and a first principles assessment (for the place of worship component).

To ensure a conservative assessment, the following assumptions are considered:

- **Weekday Assumptions:**
    - The *TDT 2013/04a* traffic generation rate for high-density residential units is applied;
    - The place of worship generates two (2) inbound vehicle trips during the AM peak hour period, and two (2) outbound vehicle trips during the PM peak hour period to account for admin staff;
    - The traffic generation rates outlined within the TfNSW guide for the child care centre is applied as usual;
    - The TfNSW Guide and RTA Guide does not provide Sunday traffic generation rates. As such, the weekday PM peak hour traffic generation rates have been applied to the Sunday network peak hour period;
    - Car parking from any community centre or place of worship events during the weekday would not coincide with the AM or PM weekday peak hour periods as non child care centre visitors are not permitted to access the car park during child care centre pick-up and drop-off periods.
- **Sunday Assumptions:**
    - The *TDT 2013/04a* traffic generation rate for high-density residential units is applied;
    - Each place of worship car parking space generates one vehicle trip during the Sunday network peak hour.
    - The child care centre does not generate any traffic during the Sunday network peak hour period.
    - The TfNSW Guide and RTA Guide does not provide Sunday traffic generation rates. As such, the weekday PM peak hour traffic generation rates have been applied to the Sunday network peak hour period.

The traffic generation estimate based on the assumptions above is summarised in in **Table 8**.

TABLE 8: FIRST PRINCIPLES – ESTIMATED TRAFFIC GENERATION

Use	Scale	Peak	Generation Rate	Trips[1]
Weekday Traffic Generation Estimate				
High Density Residential [1]	19 spaces	AM	0.15 trips per space	3 trips (1 in, 2 out)
		PM	0.12 trips per space	3 trips (2 in, 1 out)
Child Care Centre [2]	60 children	AM	0.81 trips per child	49 trips (25 in, 24 out)
		PM	0.8 trips per child	48 trips (24 in, 24 out)
Place of Worship Admin Staff	2 Staff	AM	1 inbound trip per space	2 trips (2 in, 0 out)
		PM	1 outbound trip per space	2 trips (0 in, 2 out)
TOTAL	**-**	**AM**	**-**	**54 trips (28 in, 26 out)**
		PM		**53 trips (26 in, 27 out)**
Sunday Traffic Generation Estimate				
High Density Residential [3]	19 spaces	Network Peak	0.15 trips per space	3 trips (2 in, 1 out)
Place of Worship	18 spaces	Network Peak	1 outbound trip per space	18 trips (0 in, 18 out)
TOTAL	**-**	**Network Peak**	**-**	**21 trips (2 in, 19 out)**

Notes:

(1) 20% inbound and 80% outbound assumed for the AM peak hour period, vice versa for the PM peak hour period;
(2) 50% inbound and 50% outbound assumed for the AM and PM peak hour periods;
(3) 80% inbound and 20% outbound assumed for the Sunday network peak hour period;
(4) 50% inbound and 50% outbound assumed for the Sunday network peak hour period.

As shown, the expected weekday traffic generation associated with the proposed development is in the order of **54** vehicle trips in the AM peak period (28 in, 26 out) and **53** vehicle trips in the PM peak period (26 in, 27 out).

The expected weekend (Sunday) traffic associated with the proposed development is in the order of **21** vehicle trips (2 in, 19 out) during the Sunday network peak hour period.

4.2 Traffic Assignment

The density of residential catchments is relatively consistent in all directions from the subject site. Understanding this, it is reasonable to assume that any traffic to/from the site would arrive/depart the site in all directions, with no traffic coming from one predominant direction.

The traffic surveys undertaken also indicate that the bi-directional traffic volumes from the north and south along Chapel Road is relatively similar during the peak hour periods. Evidently, at the intersection of Chapel Road / French Avenue traffic passes through the intersection equally from north/south.

Conservatively, traffic approaching the site from the west has been distributed to the signalised intersection of Rickard Road / Chapel Road, then onto Chapel Road / French Avenue, impacting two (2) signalised intersections.

In accordance with the route assessment of google maps, traffic arriving from the east would turn right at Rickard Road before turning left onto French Avenue, avoiding the intersection of Chapel Road / French Avenue. All other directions would approach the site utilising Chapel Road / French Avenue.

The road network, traffic surveys and locations of residential areas surrounding the site have been assessed and the following traffic assignment has been assumed for all traffic to and from the site as shown in **Figure 7** and **Figure 8**.

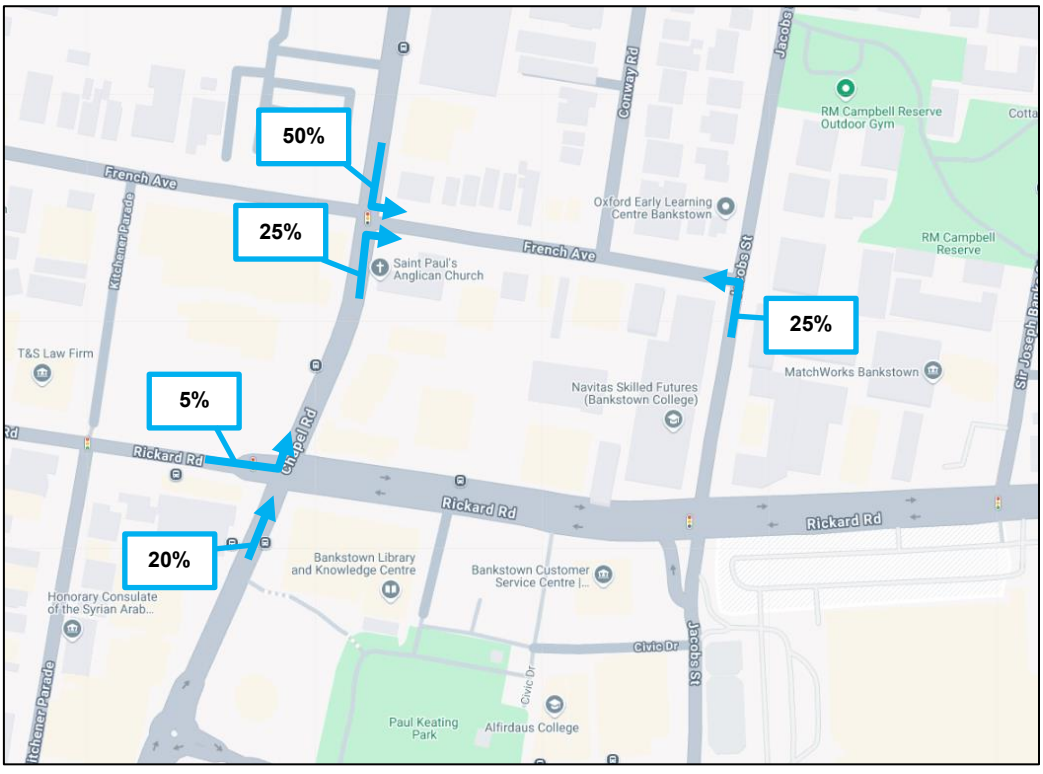

FIGURE 7: TRAFFIC DISTRIBUTION – INBOUND

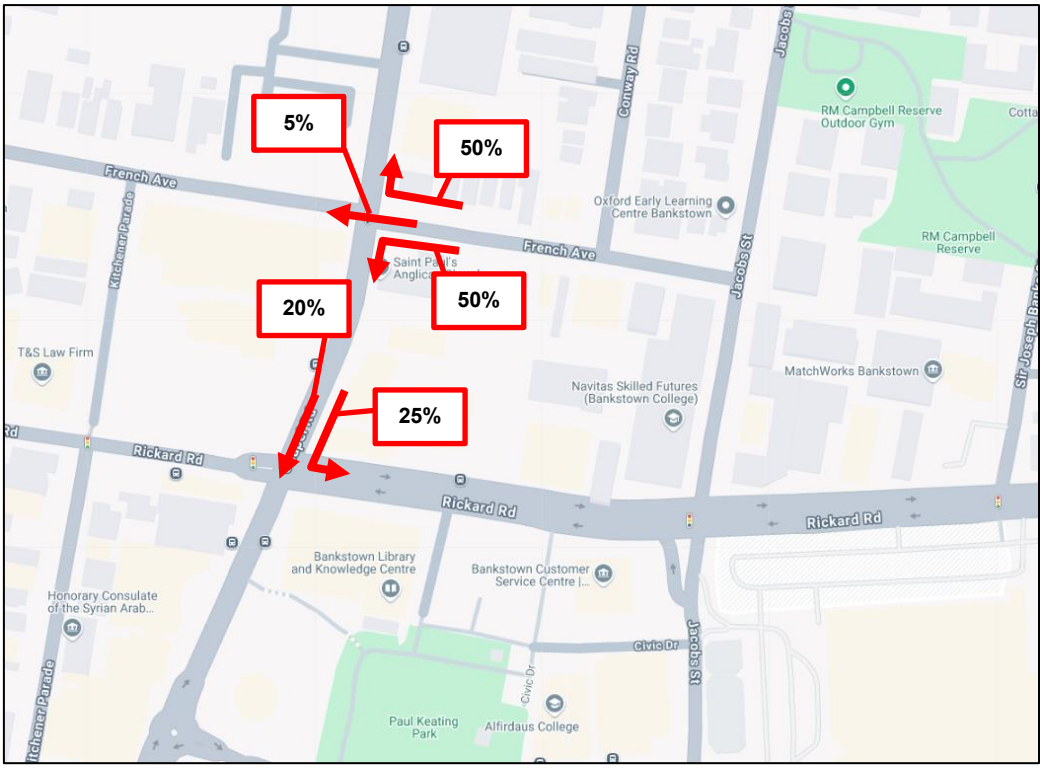

FIGURE 8: TRAFFIC DISTRIBUTION – OUTBOUND

4.3 Traffic Impact

The traffic generation outlined in **Section 4.1** & **4.2** above has been added to the existing traffic volumes recorded. SIDRA INTERSECTION 9.1 was used to assess the intersections performance. The purpose of this assessment is to compare the existing intersection operations to the future scenario under the increased traffic load. The results of this assessment are shown in **Table 9**.

TABLE 9: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 9.1)

Intersection	Peak Hour	Degree of Saturation[1]	Average Delay[2] (sec/veh)	Level of Service[3][4]	Control Type	Worst Movement	95th Percentile Queue
EXISTING WEEKDAY PERFORMANCE							
Chapel Road /Rickard Road	AM	0.60	19.9	**B**	Signals	RT from Chapel Road	11.2 veh (79.4m) Rickard Road
	PM	0.77	29.1	**C**		RT from Chapel Road	21.3 veh (152m) Chapel Road
Chapel Road /French Avenue	AM	0.62	14.8	**B**	Signals	RT from French Avenue	7.1 veh (52.9m) Chapel Road
	PM	0.69	13.8	**A**		RT from French Avenue	7.3 veh (51.7m) French Avenue
Jacobs Street /French Avenue	AM	0.31	5.3 (Worst: 10.2)	**NA** (Worst: A)	Stop	RT from French Avenue	1.3 veh (9.5m) French Avenue
	PM	0.37	5.3 (Worst: 11.1)	**NA** (Worst: A)		RT from French Avenue	1.8 veh (12.9m) French Avenue
EXISTING SUNDAY PERFORMANCE							
Chapel Road /Rickard Road	SUN	0.37	16.4	**B**	Signals	RT from Chapel Road	7.7 veh (54.3m) Rickard Road
Chapel Road /French Avenue	SUN	0.39	9.6	**A**	Signals	RT from French Avenue	3.2 veh (22.8m) Chapel Road
Jacobs Street /French Avenue	SUN	0.14	4.9 (Worst: 8.5)	**NA** (Worst: A)	Stop	RT from French Avenue	0.5 veh (3.7m) French Avenue
FUTURE (POST-DEVELOPMENT) WEEKDAY PERFORMANCE							
Chapel Road /Rickard Road	AM	0.60	19.9	**B**	Signals	RT from Chapel Road	11.2 veh (79.7m) Rickard Road
	PM	0.79	29.3	**C**		RT from Chapel Road	22 veh (156.6m) Chapel Road
Chapel Road /French Avenue	AM	0.62	15.3	**B**	Signals	RT from French Avenue	7.5 veh (55.9m) Chapel Road
	PM	0.70	19.2	**B**		RT from French Avenue	11.5 veh (84m) Chapel Road
Jacobs Street /French Avenue	AM	0.31	5.3 (Worst: 10.2)	**NA** (Worst: A)	Stop	RT from French Avenue	1.3 veh (9.5m) French Avenue
	PM	0.37	5.3 (Worst: 11.2)	**NA** (Worst: A)		RT from French Avenue	1.9 veh (13m) French Avenue
FUTURE (POST-DEVELOPMENT) SUNDAY PERFORMANCE							
Chapel Road /Rickard Road	SUN	0.38	16.4	**B**	Signals	RT from Chapel Road	7.7 veh (54.3m) Rickard Road
Chapel Road /French Avenue	SUN	0.39	10	**A**	Signals	RT from French Avenue	3.2 veh (23m) Chapel Road
Jacobs Street /French Avenue	SUN	0.14	4.9 (Worst: 8.5)	**NA** (Worst: A)	Stop	RT from French Avenue	0.5 veh (3.7m) French Avenue

NOTES: Refer to **Table 3**

As shown the intersections of Chapel Road / Rickard Road, Chapel Road / French Avenue and Jacobs Street / French Avenue all generally retain the same LoS during the AM weekday peak hour, PM weekday peak hour and Sunday network peak hour. The exception to this is the performance of Chapel Road / French Avenue during the peak hour which degrades from an LoS “A” to LoS “B”. An LoS “B” performance is still in the zone of free-flowing traffic with minimal delays and ample spare capacity.

The SIDRA INTERSECTION 9.1 assessment above indicates that there will be no adverse impact on the existing road network as a result of the proposed development.

5 CONCLUSIONS

In view of the foregoing, the subject Mixed Use Development proposal at 461 Chapel Road, Bankstown (as depicted in **Annexure A**) is fully supportable in terms of its traffic and parking impacts. The following outcomes of this traffic and parking impact assessment are relevant to note:

a) The proposal includes the provision of **37** car parking spaces within a proposed carpark, comprised of **15** for child care centre/place of worship use, **19** for residential use and three (**3**) for Ministry use (including one (1) rectory space). This provision of parking satisfies the CBDCP 2023 parking policy for residential use and child care centre use. A parking demand study for the place of worship/community facility is detailed in **Section 3.2**.

   i. It is expected that significant increase in public transport utilisation will be a result of the new Bankstown Metro which is consistent with the objectives of the TOD and Bankstown CBD DCP.

b) CBDCP 2023 requires the provision of **91** bicycle parking spaces. The proposed plans detail the provision of **91** bicycle parking spaces, satisfying CBDCP 2023 bicycle parking policy.

c) CBDCP 2023 does not require the provision motorcycle parking facilities. As such nil (**0**) motorcycle parking spaces have been provided.

d) The parking areas of the site have been assessed against the relevant sections of *AS2890.1:2004*, *AS2890.2:2018, AS2890.3:2015* and *AS2890.6:2022*. Swept path testing has been undertaken, and the results are reproduced within **Annexure G**.

e) The traffic generation of the proposed development has been estimated to be some **54** vehicle trips in the AM peak period (28 in, 26 out) and **53** vehicle trips in the PM peak period (26 in, 27 out) and **21** vehicle trips (2 in, 19 out) during the Sunday network peak hour period. The impacts of the traffic generation have been modelled using SIDRA INTERSECTION 9.1, indicating that there will be no adverse impact to the performance of the intersections as a result of the generated traffic.

f) It is noted as part of the SEARs a Construction Traffic Management Plan (CTMP) is required. The CTMP will be produced as a separate document associated with the application.

ANNEXURE A: PROPOSED PLANS
(4 SHEETS)

ANNEXURE B: TRAFFIC SURVEY DATA
(6 SHEETS)

FRENCH AVENUE

CHAPEL ROAD

SITE BOUNDARY

REFER TO CIVIL DRAWINGS FOR DRIVEWAY RLs

REFER TO LANDSCAPE & CIVIL DRAWINGS

BUILDING ABOVE

TREE 08
Canopy: 72 m²
Canopy Encroachment: 7 m² (8.3%)

COMMUNITY HALL 01
A: 104 m²
60 SEATS
RL +30.110

FIRE BOOSTER
4.05
10.00
RL +30.630

FCR
A: 10 m²

SUBSTATION

OSD BELOW
BUILDING ABOVE
ROLLER SHUTTER

FIRE PUMP ROOM
A: 44 m²

1.55

COLD WATER PUMP
A: 28 m²

RESIDENTIAL FOYER
A: 57 m²
3.20

NON-RESI WASTE
A: 5 m²

ROLLER SHUTTER

LOADING
A: 74 m²
RL+30.550

indicative mail zone
RL+30.550

ROLLER SHUTTER

AIRLOCK
A: 13 m²

BULKY WASTE/ FOGO HOLD
12 m²

SPECIALTY FOGO HOLD
11 m²

LINEAR SYSTEM
LINEAR SYSTEM

27 x 1100L BINS

RESI WASTE
A: 130 m²

RL+30.825

TREE 09

FORECOURT
REFER TO LANDSCAPE & CIVIL DRAWINGS

FOYER
A: 140 m²
RL +30.110

M WC
A: 12 m²

F WC
A: 17 m²

DDA WC
A: 6 m²

EXISTING DROP-OFF ZONE (REFER TO TRAFFIC REPORT)

TREE 10

BUILDING ABOVE

servery

cafe kiosk

reception

STORAGE
A: 20 m²

CHILDCARE + MINISTRY BIKES (10) TURNING BAY/ SHARED

2600 x 5400

RL +30.110

FOR LOADING ACCESS

GREASE ARRESTOR BELOW

RL +30.110

COMMUNITY MULTI-PURPOSE 02
A: 140 m²
126 SEATS

MINISTRY/ELC PARKING 18 TOTAL
(18 MINISTRY/15 ELC SHARED)

B85 (4s) MTE

B99 (4s) MTE

STG
6 m²

STG 9 m²

2500 x 5400
2400 x 5400
2600 x 5400

MINISTRY / BIKE (1)

TREE 14

LEGEND

EXISTING TREES

PROPOSED TREES

DATE	REVISION	BY	CHK	NO.
9/10/2024	FOR COORDINATION	IC	GH	01
18/10/2024	FOR COORDINATION	IC	GH	02
28/10/2024	FOR COORDINATION	IC	GH	03
26/03/2025	FOR COORDINATION	IC	GH, JW	11
4/04/2025	FOR DA SUBMISSION	IC, JW	GH	A
2/10/2025	FOR SSDA RFI SUBMISSION	IC, JW, WS	GH	B
22/01/2026	FOR SSDA SUBMISSION	MDS, JW	SK	C

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CIVIL	☐	INTEGRATED GROUP SERVICES	T (02) 8488 4600
STRUCTURAL	☐	CADIGAL GROUP	T (02) 8018 5252
ARBORIST	☐	MOORE TREES	T (02) 4268 0425
PLANNING	☐	BEAM PLANNING	T 0403 043 345
BCA	☐	NEW CROWN CONSULTING	T (02) 8529 0892

PROJECT
461 CHAPEL ROAD, BANKSTOWN
SYDNEY NSW 2200 AUSTRALIA

DRAWING TITLE
GROUND

Revision C

NOT FOR CONSTRUCTION

FOR SSDA SUBMISSION

DATE	PLOT DATE	SCALE
27/02/2026	27/02/2026	1:100 @A1
DRAWN: MDS, JW	CHECKED: SK	

JOB NO.
20451

N

DRG. NO.
PLA-DA-1000
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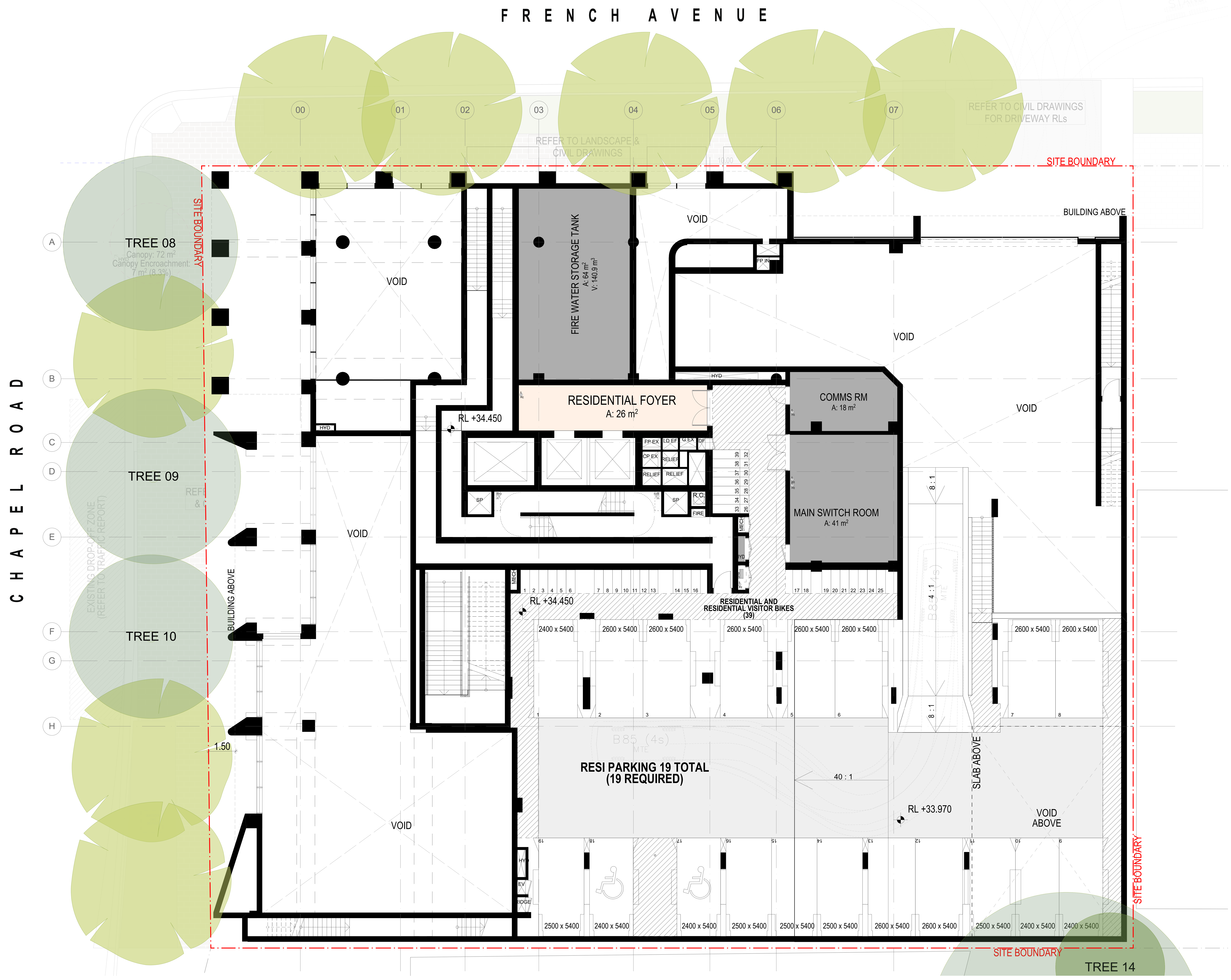
C



LEGEND

- EXISTING TREES
- PROPOSED TREES

DATE	REVISION	BY	CHK	NO.
2/10/2025	FOR SSDA RFI SUBMISSION	IC, JW, WS	GH	B
22/01/2026	FOR SSDA SUBMISSION	MDS, JW	SK	C

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ARBORIST	MOORE TREES	T (02) 4268 0425
PLANNING	BEAM PLANNING	T 0403 043 345
BCA	NEW CROWN CONSULTING	T (02) 8529 0892

PROJECT
461 CHAPEL ROAD, BANKSTOWN
SYDNEY NSW 2200 AUSTRALIA

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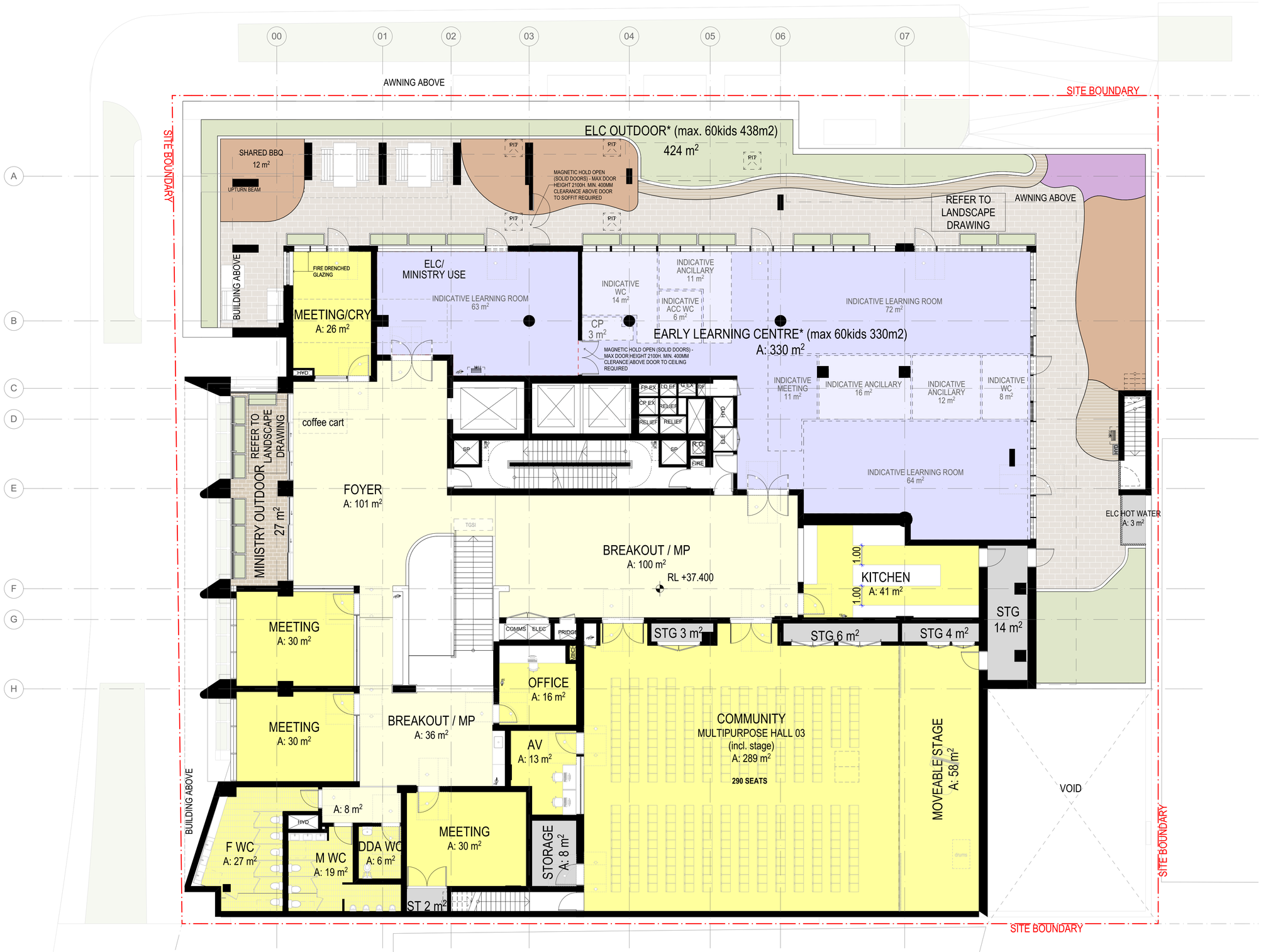

Note:
* Early Learning Centre Indoor and Outdoor Space layouts subject to change with engagement of a Childcare Operator during Design Development and Construction Documentation.

DATE	REVISION	BY	CHK	NO.
9/10/2024	FOR COORDINATION	IC	GH	01
18/10/2024	FOR COORDINATION	IC	GH	02
28/10/2024	FOR COORDINATION	IC	GH	03
26/03/2025	FOR COORDINATION	IC	GH, JW	11
4/04/2025	FOR DA SUBMISSION	IC, JW	GH	A
2/10/2025	FOR SSDA RFI SUBMISSION	IC, JW, WS	GH	B
22/01/2026	FOR SSDA SUBMISSION	MDS, JW	SK	C

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PLANNING	☐	BEAM PLANNING	T 0403 043 345
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PROJECT
461 CHAPEL ROAD, BANKSTOWN
SYDNEY NSW 2200 AUSTRALIA

DRAWING TITLE
LEVEL 01

Revision C

NOT FOR CONSTRUCTION

FOR SSDA SUBMISSION

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26/02/2026	**26/02/2026**	**1:100 @A1**
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JOB NO.
20451

DRG. NO.
PLA-DA-1001
REVISION
C

FRENCH AVENUE

CHAPEL ROAD

00 01 02 03 04 05 06 07

A B C D E F G H

SITE BOUNDARY

3.00

3M CHAPEL RD SETBACK

3M FRENCH AVE SETBACK

12.00
ADG BLDG SEPARATION

B: 8 m²

1 BED
02.01
53 m²

1 BED
02.02
53 m²

B: 8 m²

B: 7 m²

STUDIO
02.03
35 m²

B: 8 m²

1 BED
02.04
55 m²

STUDIO
02.05
36 m²

B: 5 m²

RL +41.900

OPEN SMOKE DOOR MAGNETIC RELEASE

ROOF (PV ZONE IF REQUIRED)
A: 104 m²

ELEC

COMMS

HYD

OA

RELIEF

FP EX

LD EF

LD EX

DF

CP EX

RELIEF

RELIEF

RELIEF

SP

SP

R.C.

FIRE

B: 124 m²

A/C

B: 9 m²

1 BED
02.06
53 m²

RESIDENTIAL AND RESIDENTIAL VISITOR BIKES (42)

STUDIO
02.07
35 m²

B: 7 m²

HIGH LEVEL WINDOW

LIFTS

RECTORY
02.08
175 m²

MECH

REFER TO LANDSCAPE DRAWING

INDICATIVE MINISTRY AC
A: 59 m²

12.00
ADG BLDG SEPARATION

ROOF (PV ZONE IF REQUIRED)
A: 134 m²

SITE BOUNDARY

SITE BOUNDARY

DATE	REVISION	BY	CHK	NO.
9/10/2024	FOR COORDINATION	IC	GH	01
18/10/2024	FOR COORDINATION	IC	GH	02
28/10/2024	FOR COORDINATION	IC	GH	03
26/03/2025	FOR COORDINATION	IC	GH, JW	11
4/04/2025	FOR DA SUBMISSION	IC, JW	GH	A
2/10/2025	FOR SSDA RFI SUBMISSION	IC, JW, WS	GH	B
22/01/2026	FOR SSDA SUBMISSION	MDS, JW	SK	C

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PLANNING	☐	BEAM PLANNING	T 0403 043 345
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PROJECT
461 CHAPEL ROAD, BANKSTOWN
SYDNEY NSW 2200 AUSTRALIA

DRAWING TITLE
LEVEL 02

Revision C

NOT FOR CONSTRUCTION

FOR SSDA SUBMISSION

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26/02/2026	**26/02/2026**	**1:100 @A1**
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JOB NO.
20451

N

DRG. NO.
PLA-DA-1002
REVISION
C

ANNEXURE C: SIDRA RESULTS
(18 SHEETS)

MOVEMENT SUMMARY

Site: 1 [(ExAM) Chapel Road / Rickard Road (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing AM Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 68 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	57	5.6	57	5.6	0.159	18.6	LOS B	2.3	16.9	0.72	0.67	0.72	18.7
2	T1	All MCs	219	5.3	219	5.3	0.302	20.0	LOS B	4.5	33.1	0.79	0.66	0.79	27.7
Approach			276	5.3	276	5.3	0.302	19.7	LOS B	4.5	33.1	0.77	0.66	0.77	25.6
East: Rickard Road (E)															
4	L2	All MCs	224	1.9	224	1.9	0.449	21.5	LOS B	8.5	60.4	0.76	0.74	0.76	29.6
5	T1	All MCs	502	1.7	502	1.7	0.449	15.0	LOS B	8.8	62.2	0.76	0.67	0.76	31.7
6	R2	All MCs	159	11.9	159	11.9	* 0.386	17.6	LOS B	3.0	23.3	0.80	0.76	0.80	30.0
Approach			885	3.6	885	3.6	0.449	17.1	LOS B	8.8	62.2	0.76	0.71	0.76	30.8
North: Chapel Road (N)															
7	L2	All MCs	177	10.1	177	10.1	0.193	14.7	LOS B	3.1	23.4	0.56	0.72	0.56	31.8
8	T1	All MCs	324	3.6	324	3.6	* 0.556	21.6	LOS B	9.2	66.6	0.89	0.75	0.89	26.3
9	R2	All MCs	1	100.0	1	100.0	0.556	32.1	LOS C	9.2	66.6	0.89	0.75	0.89	17.2
Approach			502	6.1	502	6.1	0.556	19.2	LOS B	9.2	66.6	0.77	0.74	0.77	28.2
West: Rickard Road (W)															
10	L2	All MCs	55	1.9	55	1.9	0.598	25.6	LOS B	11.2	79.4	0.87	0.76	0.87	22.2
11	T1	All MCs	695	1.4	695	1.4	* 0.598	23.3	LOS B	11.2	79.4	0.87	0.75	0.87	28.2
12	R2	All MCs	71	3.0	71	3.0	0.189	23.4	LOS B	1.3	9.5	0.71	0.71	0.71	24.9
Approach			820	1.5	820	1.5	0.598	23.4	LOS B	11.2	79.4	0.86	0.75	0.86	25.1
All Vehicles			2483	3.6	2483	3.6	0.598	19.9	LOS B	11.2	79.4	0.80	0.72	0.80	27.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												
P1	Full	50	53	28.3	LOS C	0.1	0.1	0.91	0.91	182.2	200.0	1.10

East: Rickard Road (E)												
P2	Full	50	53	28.3	LOS C	0.1	0.1	0.91	0.91	182.2	200.0	1.10
North: Chapel Road (N)												
P3	Full	50	53	28.3	LOS C	0.1	0.1	0.91	0.91	182.2	200.0	1.10
West: Rickard Road (W)												
P4	Full	50	53	28.3	LOS C	0.1	0.1	0.91	0.91	182.2	200.0	1.10
All Pedestrians		200	211	28.3	LOS C	0.1	0.1	0.91	0.91	182.2	200.0	1.10

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

MOVEMENT SUMMARY

Site: 2 [(ExAM) Chapel Road / French Avenue (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing AM Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 51 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	31	3.4	31	3.4	0.341	12.8	LOS A	4.8	36.1	0.59	0.53	0.59	40.8
2	T1	All MCs	314	8.7	314	8.7	0.341	7.2	LOS A	4.8	36.1	0.59	0.53	0.59	41.8
3	R2	All MCs	53	2.0	53	2.0	0.125	16.8	LOS B	0.9	6.2	0.67	0.71	0.67	30.7
Approach			397	7.4	397	7.4	0.341	8.9	LOS A	4.8	36.1	0.60	0.55	0.60	39.4
East: French Avenue (E)															
4	L2	All MCs	76	1.4	76	1.4	0.191	24.0	LOS B	1.6	11.4	0.85	0.74	0.85	26.0
5	T1	All MCs	87	0.0	87	0.0	0.486	20.1	LOS B	3.3	23.1	0.95	0.77	0.95	31.5
6	R2	All MCs	49	0.0	49	0.0	0.486	30.8	LOS C	3.3	23.1	0.95	0.77	0.95	26.6
Approach			213	0.5	213	0.5	0.486	24.0	LOS B	3.3	23.1	0.91	0.76	0.91	28.5
North: Chapel Road (N)															
7	L2	All MCs	36	2.9	36	2.9	0.474	14.2	LOS A	7.1	52.9	0.65	0.59	0.65	39.3
8	T1	All MCs	426	7.7	426	7.7	* 0.474	8.7	LOS A	7.1	52.9	0.65	0.59	0.65	40.8
9	R2	All MCs	82	1.3	82	1.3	0.158	15.8	LOS B	1.2	8.8	0.62	0.71	0.62	34.1
Approach			544	6.4	544	6.4	0.474	10.1	LOS A	7.1	52.9	0.65	0.60	0.65	37.8
West: French Avenue (W)															
10	L2	All MCs	142	0.7	142	0.7	0.357	24.9	LOS B	3.2	22.2	0.89	0.77	0.89	27.4
11	T1	All MCs	217	0.0	217	0.0	0.615	20.6	LOS B	5.7	40.2	0.95	0.81	1.00	33.2
12	R2	All MCs	21	0.0	21	0.0	* 0.615	30.4	LOS C	5.7	40.2	0.95	0.81	1.00	29.0
Approach			380	0.3	380	0.3	0.615	22.7	LOS B	5.7	40.2	0.93	0.80	0.96	30.7
All Vehicles			1534	4.3	1534	4.3	0.615	14.8	LOS B	7.1	52.9	0.74	0.66	0.75	34.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												

P1	Full	5	5	19.9	LOS B	0.0	0.0	0.88	0.88	173.7	200.0	1.15
East: French Avenue (E)												
P2	Full	5	5	19.9	LOS B	0.0	0.0	0.88	0.88	173.7	200.0	1.15
North: Chapel Road (N)												
P3	Full	5	5	19.9	LOS B	0.0	0.0	0.88	0.88	173.7	200.0	1.15
West: French Avenue (W)												
P4	Full	5	5	19.9	LOS B	0.0	0.0	0.88	0.88	173.7	200.0	1.15
All Pedestrians		20	21	19.9	LOS B	0.0	0.0	0.88	0.88	173.7	200.0	1.15

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

MOVEMENT SUMMARY

Site: 3 [(ExAM) French Avenue / Jacobs Street (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing AM Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Jacobs Street (S)															
1	L2	All MCs	108	1.0	108	1.0	0.125	5.6	LOS A	0.0	0.0	0.00	0.27	0.00	47.3
2	T1	All MCs	128	0.0	128	0.0	0.125	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	56.2
Approach			237	0.4	237	0.4	0.125	2.5	NA	0.0	0.0	0.00	0.27	0.00	53.2
North: Jacobs Street (N)															
8	T1	All MCs	134	0.0	134	0.0	0.115	0.4	LOS A	0.4	3.0	0.24	0.28	0.24	55.9
9	R2	All MCs	65	0.0	65	0.0	0.115	6.3	LOS A	0.4	3.0	0.24	0.28	0.24	52.8
Approach			199	0.0	199	0.0	0.115	2.3	NA	0.4	3.0	0.24	0.28	0.24	54.8
West: French Avenue (W)															
10	L2	All MCs	121	0.9	121	0.9	0.309	8.7	LOS A	1.3	9.5	0.39	0.87	0.39	47.3
12	R2	All MCs	166	1.9	166	1.9	0.309	10.2	LOS A	1.3	9.5	0.39	0.87	0.39	37.4
Approach			287	1.5	287	1.5	0.309	9.6	LOS A	1.3	9.5	0.39	0.87	0.39	42.9
All Vehicles			723	0.7	723	0.7	0.309	5.3	NA	1.3	9.5	0.22	0.51	0.22	49.4

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

MOVEMENT SUMMARY

Site: 1 [(ExPM) Chapel Road / Rickard Road (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing PM Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 108 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	85	0.0	85	0.0	0.241	40.9	LOS C	5.5	38.9	0.78	0.72	0.78	14.4
2	T1	All MCs	264	1.6	264	1.6	0.457	43.6	LOS D	9.0	63.8	0.85	0.72	0.85	19.9
Approach			349	1.2	349	1.2	0.457	43.0	LOS D	9.0	63.8	0.83	0.72	0.83	15.7
East: Rickard Road (E)															
4	L2	All MCs	208	2.0	208	2.0	0.445	22.9	LOS B	14.3	101.1	0.65	0.67	0.65	29.5
5	T1	All MCs	706	0.7	706	0.7	0.445	16.2	LOS B	14.7	103.3	0.65	0.61	0.65	30.7
6	R2	All MCs	320	6.9	320	6.9	* 0.586	21.1	LOS B	8.4	62.1	0.85	0.82	0.85	27.8
Approach			1235	2.6	1235	2.6	0.586	18.6	LOS B	14.7	103.3	0.70	0.67	0.70	29.6
North: Chapel Road (N)															
7	L2	All MCs	291	9.4	291	9.4	0.300	19.3	LOS B	8.1	61.0	0.57	0.74	0.57	28.5
8	T1	All MCs	423	1.7	423	1.7	0.771	40.1	LOS C	21.3	152.0	0.98	0.89	1.03	17.7
9	R2	All MCs	1	100.0	1	100.0	* 0.771	58.5	LOS E	21.3	152.0	0.98	0.89	1.03	12.4
Approach			715	5.0	715	5.0	0.771	31.7	LOS C	21.3	152.0	0.81	0.83	0.84	21.4
West: Rickard Road (W)															
10	L2	All MCs	55	0.0	55	0.0	0.577	37.6	LOS C	16.4	116.0	0.88	0.77	0.88	16.9
11	T1	All MCs	605	1.2	605	1.2	* 0.577	38.2	LOS C	16.4	116.0	0.87	0.76	0.87	21.6
12	R2	All MCs	63	1.7	63	1.7	0.217	34.2	LOS C	1.5	10.9	0.69	0.71	0.69	22.9
Approach			723	1.2	723	1.2	0.577	37.8	LOS C	16.4	116.0	0.86	0.75	0.86	18.6
All Vehicles			3022	2.6	3022	2.6	0.771	29.1	LOS C	21.3	152.0	0.78	0.74	0.79	22.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												
P1	Full	50	53	48.3	LOS E	0.2	0.2	0.95	0.95	202.1	200.0	0.99

East: Rickard Road (E)												
P2	Full	50	53	48.3	LOS E	0.2	0.2	0.95	0.95	202.1	200.0	0.99
North: Chapel Road (N)												
P3	Full	50	53	48.3	LOS E	0.2	0.2	0.95	0.95	202.1	200.0	0.99
West: Rickard Road (W)												
P4	Full	50	53	48.3	LOS E	0.2	0.2	0.95	0.95	202.1	200.0	0.99
All Pedestrians		200	211	48.3	LOS E	0.2	0.2	0.95	0.95	202.1	200.0	0.99

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

MOVEMENT SUMMARY

Site: 2 [(ExPM) Chapel Road / French Avenue (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing PM Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 84 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	46	0.0	46	0.0	0.386	8.1	LOS A	3.9	28.1	0.21	0.23	0.21	48.2
2	T1	All MCs	438	5.5	438	5.5	0.386	2.5	LOS A	3.9	28.1	0.21	0.23	0.21	51.3
3	R2	All MCs	111	1.0	111	1.0	0.235	13.9	LOS A	2.1	15.0	0.49	0.70	0.49	33.1
Approach			595	4.2	595	4.2	0.386	5.0	LOS A	3.9	28.1	0.26	0.32	0.26	45.8
East: French Avenue (E)															
4	L2	All MCs	49	0.0	49	0.0	0.140	36.7	LOS C	1.7	12.0	0.87	0.73	0.87	20.6
5	T1	All MCs	75	0.0	75	0.0	0.693	37.5	LOS C	5.9	41.6	1.00	0.86	1.13	22.6
6	R2	All MCs	63	1.7	63	1.7	* 0.693	51.8	LOS D	5.9	41.6	1.00	0.86	1.13	18.7
Approach			187	0.6	187	0.6	0.693	42.1	LOS C	5.9	41.6	0.96	0.83	1.06	20.8
North: Chapel Road (N)															
7	L2	All MCs	51	6.3	51	6.3	0.477	8.0	LOS A	5.3	38.7	0.24	0.25	0.24	46.3
8	T1	All MCs	544	5.6	544	5.6	* 0.477	2.5	LOS A	5.3	38.7	0.24	0.25	0.24	51.4
9	R2	All MCs	135	0.0	135	0.0	0.241	13.4	LOS A	2.5	17.6	0.48	0.70	0.48	35.5
Approach			729	4.6	729	4.6	0.477	4.9	LOS A	5.3	38.7	0.28	0.33	0.28	46.2
West: French Avenue (W)															
10	L2	All MCs	73	1.4	73	1.4	0.207	37.3	LOS C	2.6	18.2	0.88	0.75	0.88	22.0
11	T1	All MCs	132	1.6	132	1.6	0.681	36.8	LOS C	7.3	51.7	1.00	0.86	1.08	23.8
12	R2	All MCs	43	2.4	43	2.4	0.681	51.2	LOS D	7.3	51.7	1.00	0.86	1.08	20.6
Approach			247	1.7	247	1.7	0.681	39.4	LOS C	7.3	51.7	0.96	0.82	1.02	22.7
All Vehicles			1759	3.7	1759	3.7	0.693	13.8	LOS A	7.3	51.7	0.44	0.45	0.46	34.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												

P1	Full	5	5	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
East: French Avenue (E)												
P2	Full	5	5	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
North: Chapel Road (N)												
P3	Full	5	5	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
West: French Avenue (W)												
P4	Full	5	5	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
All Pedestrians		20	21	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05

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

MOVEMENT SUMMARY

Site: 3 [(ExPM) French Avenue / Jacobs Street (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing PM Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Jacobs Street (S)															
1	L2	All MCs	156	0.0	156	0.0	0.164	5.5	LOS A	0.0	0.0	0.00	0.30	0.00	47.0
2	T1	All MCs	156	0.0	156	0.0	0.164	0.0	LOS A	0.0	0.0	0.00	0.30	0.00	55.9
Approach			312	0.0	312	0.0	0.164	2.8	NA	0.0	0.0	0.00	0.30	0.00	52.5
North: Jacobs Street (N)															
8	T1	All MCs	176	0.0	176	0.0	0.120	0.3	LOS A	0.3	2.1	0.17	0.20	0.17	57.4
9	R2	All MCs	39	0.0	39	0.0	0.120	6.6	LOS A	0.3	2.1	0.17	0.20	0.17	54.0
Approach			215	0.0	215	0.0	0.120	1.5	NA	0.3	2.1	0.17	0.20	0.17	56.7
West: French Avenue (W)															
10	L2	All MCs	100	0.0	100	0.0	0.367	9.1	LOS A	1.8	12.9	0.48	0.90	0.53	46.6
12	R2	All MCs	207	1.0	207	1.0	0.367	11.1	LOS A	1.8	12.9	0.48	0.90	0.53	36.5
Approach			307	0.7	307	0.7	0.367	10.5	LOS A	1.8	12.9	0.48	0.90	0.53	41.1
All Vehicles			834	0.3	834	0.3	0.367	5.3	NA	1.8	12.9	0.22	0.49	0.24	49.2

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

MOVEMENT SUMMARY

Site: 1 [(ExSunday) Chapel Road / Rickard Road (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing Sunday Network Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 74 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	41	0.0	41	0.0	0.117	23.6	LOS B	1.7	12.1	0.76	0.68	0.76	17.0
2	T1	All MCs	133	2.4	133	2.4	0.221	24.0	LOS B	3.2	22.5	0.82	0.66	0.82	24.9
Approach			174	1.8	174	1.8	0.221	23.9	LOS B	3.2	22.5	0.80	0.66	0.80	22.7
East: Rickard Road (E)															
4	L2	All MCs	186	1.1	186	1.1	0.359	16.4	LOS B	7.5	53.0	0.61	0.65	0.61	34.0
5	T1	All MCs	558	0.2	558	0.2	0.359	10.4	LOS A	7.7	54.3	0.61	0.57	0.61	36.7
6	R2	All MCs	186	6.2	186	6.2	* 0.316	14.6	LOS B	3.3	24.5	0.65	0.73	0.65	32.6
Approach			931	1.6	931	1.6	0.359	12.4	LOS A	7.7	54.3	0.62	0.62	0.62	35.1
North: Chapel Road (N)															
7	L2	All MCs	201	5.8	201	5.8	0.232	17.4	LOS B	4.2	30.9	0.61	0.74	0.61	30.0
8	T1	All MCs	179	2.4	179	2.4	* 0.368	24.8	LOS B	5.4	39.1	0.87	0.71	0.87	24.2
9	R2	All MCs	1	100.0	1	100.0	0.368	34.3	LOS C	5.4	39.1	0.87	0.71	0.87	16.1
Approach			381	4.4	381	4.4	0.368	20.9	LOS B	5.4	39.1	0.73	0.72	0.73	27.3
West: Rickard Road (W)															
10	L2	All MCs	39	0.0	39	0.0	0.310	22.5	LOS B	5.9	41.4	0.73	0.64	0.73	24.1
11	T1	All MCs	427	0.2	427	0.2	* 0.310	17.2	LOS B	5.9	41.4	0.73	0.63	0.73	30.5
12	R2	All MCs	41	7.7	41	7.7	0.116	15.5	LOS B	0.8	5.6	0.62	0.67	0.62	25.8
Approach			507	0.8	507	0.8	0.310	17.5	LOS B	5.9	41.4	0.72	0.63	0.72	29.4
All Vehicles			1993	2.0	1993	2.0	0.368	16.4	LOS B	7.7	54.3	0.68	0.64	0.68	30.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												
P1	Full	50	53	31.3	LOS D	0.1	0.1	0.92	0.92	185.2	200.0	1.08

East: Rickard Road (E)												
P2	Full	50	53	31.3	LOS D	0.1	0.1	0.92	0.92	185.2	200.0	1.08
North: Chapel Road (N)												
P3	Full	50	53	31.3	LOS D	0.1	0.1	0.92	0.92	185.2	200.0	1.08
West: Rickard Road (W)												
P4	Full	50	53	31.3	LOS D	0.1	0.1	0.92	0.92	185.2	200.0	1.08
All Pedestrians		200	211	31.3	LOS D	0.1	0.1	0.92	0.92	185.2	200.0	1.08

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

MOVEMENT SUMMARY

Site: 2 [(ExSunday) Chapel Road / French Avenue (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing Sunday Network Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 44 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	72	2.9	72	2.9	0.362	9.1	LOS A	3.2	22.8	0.40	0.41	0.40	45.0
2	T1	All MCs	317	3.7	317	3.7	* 0.362	3.5	LOS A	3.2	22.8	0.40	0.41	0.40	47.6
3	R2	All MCs	31	0.0	31	0.0	0.046	10.7	LOS A	0.3	2.2	0.49	0.66	0.49	36.3
Approach			419	3.3	419	3.3	0.362	5.0	LOS A	3.2	22.8	0.40	0.43	0.40	45.9
East: French Avenue (E)															
4	L2	All MCs	27	7.7	27	7.7	0.098	23.8	LOS B	0.5	4.0	0.88	0.70	0.88	26.0
5	T1	All MCs	51	0.0	51	0.0	0.307	18.8	LOS B	1.7	11.8	0.92	0.73	0.92	33.4
6	R2	All MCs	31	3.4	31	3.4	0.307	25.3	LOS B	1.7	11.8	0.92	0.73	0.92	28.0
Approach			108	2.9	108	2.9	0.307	21.9	LOS B	1.7	11.8	0.91	0.72	0.91	30.1
North: Chapel Road (N)															
7	L2	All MCs	16	0.0	16	0.0	0.244	8.4	LOS A	1.8	12.8	0.33	0.30	0.33	46.9
8	T1	All MCs	246	4.7	246	4.7	0.244	3.0	LOS A	1.8	12.8	0.33	0.30	0.33	50.5
9	R2	All MCs	64	1.6	64	1.6	0.114	12.1	LOS A	0.8	5.4	0.56	0.69	0.56	36.5
Approach			326	3.9	326	3.9	0.244	5.0	LOS A	1.8	12.8	0.37	0.38	0.37	45.9
West: French Avenue (W)															
10	L2	All MCs	59	0.0	59	0.0	0.200	24.1	LOS B	1.2	8.2	0.90	0.73	0.90	27.9
11	T1	All MCs	73	0.0	73	0.0	* 0.389	19.0	LOS B	2.2	15.5	0.94	0.74	0.94	33.4
12	R2	All MCs	34	0.0	34	0.0	0.389	25.6	LOS B	2.2	15.5	0.94	0.74	0.94	29.2
Approach			165	0.0	165	0.0	0.389	22.1	LOS B	2.2	15.5	0.92	0.74	0.92	30.5
All Vehicles			1019	2.9	1019	2.9	0.389	9.6	LOS A	3.2	22.8	0.53	0.49	0.53	39.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												

P1	Full	5	5	16.4	LOS B	0.0	0.0	0.86	0.86	170.3	200.0	1.17
East: French Avenue (E)												
P2	Full	5	5	16.4	LOS B	0.0	0.0	0.86	0.86	170.3	200.0	1.17
North: Chapel Road (N)												
P3	Full	5	5	16.4	LOS B	0.0	0.0	0.86	0.86	170.3	200.0	1.17
West: French Avenue (W)												
P4	Full	5	5	16.4	LOS B	0.0	0.0	0.86	0.86	170.3	200.0	1.17
All Pedestrians		20	21	16.4	LOS B	0.0	0.0	0.86	0.86	170.3	200.0	1.17

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

MOVEMENT SUMMARY

Site: 3 [(ExSunday) French Avenue / Jacobs Street (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing Sunday Network Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Jacobs Street (S)															
1	L2	All MCs	102	0.0	102	0.0	0.094	5.5	LOS A	0.0	0.0	0.00	0.34	0.00	46.3
2	T1	All MCs	77	0.0	77	0.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	55.4
Approach			179	0.0	179	0.0	0.094	3.2	NA	0.0	0.0	0.00	0.34	0.00	51.3
North: Jacobs Street (N)															
8	T1	All MCs	54	2.0	54	2.0	0.040	0.2	LOS A	0.1	0.8	0.16	0.20	0.16	56.8
9	R2	All MCs	19	0.0	19	0.0	0.040	6.0	LOS A	0.1	0.8	0.16	0.20	0.16	53.5
Approach			73	1.4	73	1.4	0.040	1.7	NA	0.1	0.8	0.16	0.20	0.16	55.9
West: French Avenue (W)															
10	L2	All MCs	41	0.0	41	0.0	0.144	8.3	LOS A	0.5	3.7	0.26	0.89	0.26	48.0
12	R2	All MCs	108	0.0	108	0.0	0.144	8.5	LOS A	0.5	3.7	0.26	0.89	0.26	38.5
Approach			149	0.0	149	0.0	0.144	8.4	LOS A	0.5	3.7	0.26	0.89	0.26	42.3
All Vehicles			401	0.3	401	0.3	0.144	4.9	NA	0.5	3.7	0.12	0.52	0.12	48.8

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

MOVEMENT SUMMARY

Site: 1 [(FutAM) Chapel Road / Rickard Road (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future AM Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 68 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	57	5.6	57	5.6	0.163	18.5	LOS B	2.4	17.3	0.72	0.67	0.72	18.8
2	T1	All MCs	226	5.1	226	5.1	0.310	20.0	LOS B	4.7	34.1	0.79	0.66	0.79	27.7
Approach			283	5.2	283	5.2	0.310	19.7	LOS B	4.7	34.1	0.78	0.66	0.78	25.6
East: Rickard Road (E)															
4	L2	All MCs	224	1.9	224	1.9	0.449	21.5	LOS B	8.5	60.4	0.76	0.74	0.76	29.6
5	T1	All MCs	502	1.7	502	1.7	0.449	15.0	LOS B	8.8	62.2	0.76	0.67	0.76	31.7
6	R2	All MCs	160	11.8	160	11.8	* 0.389	17.6	LOS B	3.0	23.5	0.80	0.76	0.80	30.0
Approach			886	3.6	886	3.6	0.449	17.1	LOS B	8.8	62.2	0.76	0.71	0.76	30.8
North: Chapel Road (N)															
7	L2	All MCs	183	9.8	183	9.8	0.199	14.7	LOS B	3.2	24.3	0.56	0.72	0.56	31.8
8	T1	All MCs	329	3.5	329	3.5	* 0.565	21.6	LOS B	9.4	67.9	0.89	0.76	0.89	26.2
9	R2	All MCs	1	100.0	1	100.0	0.565	32.2	LOS C	9.4	67.9	0.89	0.76	0.89	17.2
Approach			514	5.9	514	5.9	0.565	19.2	LOS B	9.4	67.9	0.77	0.74	0.77	28.2
West: Rickard Road (W)															
10	L2	All MCs	57	1.9	57	1.9	0.599	25.6	LOS B	11.2	79.7	0.88	0.77	0.88	22.2
11	T1	All MCs	695	1.4	695	1.4	* 0.599	23.3	LOS B	11.2	79.7	0.87	0.76	0.87	28.2
12	R2	All MCs	71	3.0	71	3.0	0.189	23.4	LOS B	1.3	9.5	0.71	0.71	0.71	24.9
Approach			822	1.5	822	1.5	0.599	23.5	LOS B	11.2	79.7	0.86	0.75	0.86	25.1
All Vehicles			2505	3.6	2505	3.6	0.599	19.9	LOS B	11.2	79.7	0.80	0.72	0.80	27.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												
P1	Full	50	53	28.3	LOS C	0.1	0.1	0.91	0.91	182.2	200.0	1.10

East: Rickard Road (E)												
P2	Full	50	53	28.3	LOS C	0.1	0.1	0.91	0.91	182.2	200.0	1.10
North: Chapel Road (N)												
P3	Full	50	53	28.3	LOS C	0.1	0.1	0.91	0.91	182.2	200.0	1.10
West: Rickard Road (W)												
P4	Full	50	53	28.3	LOS C	0.1	0.1	0.91	0.91	182.2	200.0	1.10
All Pedestrians		200	211	28.3	LOS C	0.1	0.1	0.91	0.91	182.2	200.0	1.10

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

MOVEMENT SUMMARY

Site: 2 [(FutAM) Chapel Road / French Avenue (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future AM Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 51 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	31	3.4	31	3.4	0.342	12.8	LOS A	4.8	36.1	0.59	0.53	0.59	40.8
2	T1	All MCs	314	8.7	314	8.7	0.342	7.2	LOS A	4.8	36.1	0.59	0.53	0.59	41.8
3	R2	All MCs	63	1.7	63	1.7	0.156	16.9	LOS B	1.1	7.6	0.68	0.72	0.68	30.6
Approach			407	7.2	407	7.2	0.342	9.1	LOS A	4.8	36.1	0.60	0.56	0.60	39.1
East: French Avenue (E)															
4	L2	All MCs	87	1.2	87	1.2	0.220	24.1	LOS B	1.9	13.2	0.86	0.75	0.86	26.0
5	T1	All MCs	89	0.0	89	0.0	0.561	20.4	LOS B	3.7	26.2	0.96	0.80	0.99	31.0
6	R2	All MCs	62	0.0	62	0.0	0.561	31.2	LOS C	3.7	26.2	0.96	0.80	0.99	26.1
Approach			239	0.4	239	0.4	0.561	24.6	LOS B	3.7	26.2	0.92	0.78	0.94	28.0
North: Chapel Road (N)															
7	L2	All MCs	56	1.9	56	1.9	0.499	14.7	LOS B	7.6	56.1	0.66	0.61	0.66	39.0
8	T1	All MCs	426	7.7	426	7.7	* 0.499	9.2	LOS A	7.6	56.1	0.66	0.61	0.66	40.2
9	R2	All MCs	82	1.3	82	1.3	0.158	16.1	LOS B	1.2	8.8	0.62	0.71	0.62	34.1
Approach			564	6.2	564	6.2	0.499	10.8	LOS A	7.6	56.1	0.66	0.62	0.66	37.0
West: French Avenue (W)															
10	L2	All MCs	142	0.7	142	0.7	0.357	24.9	LOS B	3.2	22.2	0.89	0.77	0.89	27.4
11	T1	All MCs	217	0.0	217	0.0	0.617	20.6	LOS B	5.8	40.3	0.95	0.81	1.00	33.1
12	R2	All MCs	21	0.0	21	0.0	* 0.617	30.4	LOS C	5.8	40.3	0.95	0.81	1.00	29.0
Approach			380	0.3	380	0.3	0.617	22.7	LOS B	5.8	40.3	0.93	0.80	0.96	30.7
All Vehicles			1591	4.2	1591	4.2	0.617	15.3	LOS B	7.6	56.1	0.75	0.67	0.76	33.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												

P1	Full	5	5	19.9	LOS B	0.0	0.0	0.88	0.88	173.7	200.0	1.15
East: French Avenue (E)												
P2	Full	5	5	19.9	LOS B	0.0	0.0	0.88	0.88	173.7	200.0	1.15
North: Chapel Road (N)												
P3	Full	5	5	19.9	LOS B	0.0	0.0	0.88	0.88	173.7	200.0	1.15
West: French Avenue (W)												
P4	Full	5	5	19.9	LOS B	0.0	0.0	0.88	0.88	173.7	200.0	1.15
All Pedestrians		20	21	19.9	LOS B	0.0	0.0	0.88	0.88	173.7	200.0	1.15

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

MOVEMENT SUMMARY

Site: 3 [(FutAM) French Avenue / Jacobs Street (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future AM Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Jacobs Street (S)															
1	L2	All MCs	118	0.9	118	0.9	0.130	5.6	LOS A	0.0	0.0	0.00	0.28	0.00	47.1
2	T1	All MCs	128	0.0	128	0.0	0.130	0.0	LOS A	0.0	0.0	0.00	0.28	0.00	56.0
Approach			246	0.4	246	0.4	0.130	2.7	NA	0.0	0.0	0.00	0.28	0.00	52.8
North: Jacobs Street (N)															
8	T1	All MCs	134	0.0	134	0.0	0.115	0.4	LOS A	0.4	3.0	0.25	0.29	0.25	55.9
9	R2	All MCs	65	0.0	65	0.0	0.115	6.3	LOS A	0.4	3.0	0.25	0.29	0.25	52.8
Approach			199	0.0	199	0.0	0.115	2.4	NA	0.4	3.0	0.25	0.29	0.25	54.7
West: French Avenue (W)															
10	L2	All MCs	121	0.9	121	0.9	0.310	8.7	LOS A	1.3	9.5	0.40	0.87	0.40	47.3
12	R2	All MCs	166	1.9	166	1.9	0.310	10.2	LOS A	1.3	9.5	0.40	0.87	0.40	37.4
Approach			287	1.5	287	1.5	0.310	9.6	LOS A	1.3	9.5	0.40	0.87	0.40	42.9
All Vehicles			733	0.7	733	0.7	0.310	5.3	NA	1.3	9.5	0.22	0.51	0.22	49.3

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

MOVEMENT SUMMARY

Site: 1 [(FutPM) Chapel Road / Rickard Road (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future PM Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 108 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	85	0.0	85	0.0	0.246	41.2	LOS C	5.6	39.7	0.78	0.72	0.78	14.4
2	T1	All MCs	269	1.6	269	1.6	0.467	44.1	LOS D	9.1	64.9	0.85	0.72	0.85	19.9
Approach			355	1.2	355	1.2	0.467	43.4	LOS D	9.1	64.9	0.84	0.72	0.84	15.6
East: Rickard Road (E)															
4	L2	All MCs	208	2.0	208	2.0	0.445	22.9	LOS B	14.3	101.1	0.65	0.67	0.65	29.5
5	T1	All MCs	706	0.7	706	0.7	0.445	16.2	LOS B	14.7	103.3	0.65	0.61	0.65	30.7
6	R2	All MCs	320	6.9	320	6.9	* 0.587	21.1	LOS B	8.4	62.1	0.85	0.82	0.85	27.8
Approach			1235	2.6	1235	2.6	0.587	18.6	LOS B	14.7	103.3	0.70	0.67	0.70	29.6
North: Chapel Road (N)															
7	L2	All MCs	300	9.1	300	9.1	0.310	19.3	LOS B	8.4	63.2	0.57	0.74	0.57	28.5
8	T1	All MCs	431	1.7	431	1.7	0.785	40.9	LOS C	22.0	156.6	0.98	0.90	1.05	17.5
9	R2	All MCs	1	100.0	1	100.0	* 0.785	59.3	LOS E	22.0	156.6	0.98	0.90	1.05	12.3
Approach			732	4.9	732	4.9	0.785	32.1	LOS C	22.0	156.6	0.82	0.84	0.85	21.3
West: Rickard Road (W)															
10	L2	All MCs	57	0.0	57	0.0	0.579	37.7	LOS C	16.5	116.4	0.88	0.77	0.88	16.9
11	T1	All MCs	605	1.2	605	1.2	* 0.579	38.3	LOS C	16.5	116.4	0.87	0.76	0.87	21.6
12	R2	All MCs	63	1.7	63	1.7	0.217	34.2	LOS C	1.5	10.9	0.69	0.71	0.69	22.9
Approach			725	1.2	725	1.2	0.579	37.9	LOS C	16.5	116.4	0.86	0.75	0.86	18.6
All Vehicles			3046	2.6	3046	2.6	0.785	29.3	LOS C	22.0	156.6	0.78	0.74	0.79	22.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												
P1	Full	50	53	48.3	LOS E	0.2	0.2	0.95	0.95	202.1	200.0	0.99

East: Rickard Road (E)												
P2	Full	50	53	48.3	LOS E	0.2	0.2	0.95	0.95	202.1	200.0	0.99
North: Chapel Road (N)												
P3	Full	50	53	48.3	LOS E	0.2	0.2	0.95	0.95	202.1	200.0	0.99
West: Rickard Road (W)												
P4	Full	50	53	48.3	LOS E	0.2	0.2	0.95	0.95	202.1	200.0	0.99
All Pedestrians		200	211	48.3	LOS E	0.2	0.2	0.95	0.95	202.1	200.0	0.99

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

MOVEMENT SUMMARY

Site: 2 [(FutPM) Chapel Road / French Avenue (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future PM Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 84 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	46	0.0	46	0.0	0.529	13.9	LOS A	7.6	55.6	0.42	0.40	0.42	42.7
2	T1	All MCs	438	5.5	438	5.5	0.529	8.3	LOS A	7.6	55.6	0.42	0.40	0.42	43.5
3	R2	All MCs	117	0.9	117	0.9	0.349	27.1	LOS B	3.4	24.3	0.73	0.77	0.73	25.5
Approach			601	4.2	601	4.2	0.529	12.4	LOS A	7.6	55.6	0.48	0.47	0.48	35.0
East: French Avenue (E)															
4	L2	All MCs	66	0.0	66	0.0	0.130	30.5	LOS C	2.1	14.4	0.79	0.73	0.79	22.9
5	T1	All MCs	77	0.0	77	0.0	0.700	33.0	LOS C	6.7	47.5	1.00	0.87	1.12	22.8
6	R2	All MCs	82	1.3	82	1.3	* 0.700	53.2	LOS D	6.7	47.5	1.00	0.87	1.12	18.8
Approach			225	0.5	225	0.5	0.700	39.6	LOS C	6.7	47.5	0.94	0.83	1.02	21.3
North: Chapel Road (N)															
7	L2	All MCs	63	5.0	63	5.0	0.674	15.7	LOS B	11.5	84.0	0.50	0.48	0.50	40.0
8	T1	All MCs	544	5.6	544	5.6	* 0.674	10.2	LOS A	11.5	84.0	0.50	0.48	0.50	42.0
9	R2	All MCs	135	0.0	135	0.0	0.308	24.4	LOS B	3.5	24.8	0.66	0.75	0.66	29.6
Approach			742	4.5	742	4.5	0.674	13.3	LOS A	11.5	84.0	0.53	0.53	0.53	34.3
West: French Avenue (W)															
10	L2	All MCs	73	1.4	73	1.4	0.144	30.8	LOS C	2.3	16.1	0.79	0.74	0.79	24.6
11	T1	All MCs	132	1.6	132	1.6	0.583	31.5	LOS C	6.8	48.6	0.97	0.79	0.97	25.1
12	R2	All MCs	43	2.4	43	2.4	0.583	53.1	LOS D	6.8	48.6	0.97	0.79	0.97	21.8
Approach			247	1.7	247	1.7	0.583	35.0	LOS C	6.8	48.6	0.92	0.78	0.92	24.4
All Vehicles			1816	3.5	1816	3.5	0.700	19.2	LOS B	11.5	84.0	0.61	0.58	0.63	29.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												

P1	Full	5	5	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
East: French Avenue (E)												
P2	Full	5	5	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
North: Chapel Road (N)												
P3	Full	5	5	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
West: French Avenue (W)												
P4	Full	5	5	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
All Pedestrians		20	21	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05

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

MOVEMENT SUMMARY

Site: 3 [(FutPM) French Avenue / Jacobs Street (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future PM Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Jacobs Street (S)															
1	L2	All MCs	162	0.0	162	0.0	0.167	5.5	LOS A	0.0	0.0	0.00	0.30	0.00	46.9
2	T1	All MCs	156	0.0	156	0.0	0.167	0.0	LOS A	0.0	0.0	0.00	0.30	0.00	55.8
Approach			318	0.0	318	0.0	0.167	2.8	NA	0.0	0.0	0.00	0.30	0.00	52.3
North: Jacobs Street (N)															
8	T1	All MCs	176	0.0	176	0.0	0.120	0.3	LOS A	0.3	2.1	0.18	0.20	0.18	57.4
9	R2	All MCs	39	0.0	39	0.0	0.120	6.6	LOS A	0.3	2.1	0.18	0.20	0.18	54.0
Approach			215	0.0	215	0.0	0.120	1.5	NA	0.3	2.1	0.18	0.20	0.18	56.6
West: French Avenue (W)															
10	L2	All MCs	100	0.0	100	0.0	0.368	9.1	LOS A	1.9	13.0	0.48	0.90	0.53	46.6
12	R2	All MCs	207	1.0	207	1.0	0.368	11.2	LOS A	1.9	13.0	0.48	0.90	0.53	36.5
Approach			307	0.7	307	0.7	0.368	10.5	LOS A	1.9	13.0	0.48	0.90	0.53	41.0
All Vehicles			840	0.3	840	0.3	0.368	5.3	NA	1.9	13.0	0.22	0.50	0.24	49.2

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

MOVEMENT SUMMARY

Site: 1 [(FutSunday) Chapel Road / Rickard Road (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Sunday Network Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 74 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	41	0.0	41	0.0	0.119	23.6	LOS B	1.7	12.3	0.76	0.68	0.76	17.0
2	T1	All MCs	136	2.3	136	2.3	0.225	24.0	LOS B	3.2	23.0	0.82	0.66	0.82	24.8
Approach			177	1.8	177	1.8	0.225	23.9	LOS B	3.2	23.0	0.80	0.66	0.80	22.8
East: Rickard Road (E)															
4	L2	All MCs	186	1.1	186	1.1	0.359	16.4	LOS B	7.5	53.0	0.61	0.65	0.61	34.0
5	T1	All MCs	558	0.2	558	0.2	0.359	10.4	LOS A	7.7	54.3	0.61	0.57	0.61	36.7
6	R2	All MCs	186	6.2	186	6.2	* 0.316	14.6	LOS B	3.3	24.5	0.65	0.73	0.65	32.6
Approach			931	1.6	931	1.6	0.359	12.4	LOS A	7.7	54.3	0.62	0.62	0.62	35.1
North: Chapel Road (N)															
7	L2	All MCs	208	5.6	208	5.6	0.240	17.5	LOS B	4.4	32.1	0.62	0.74	0.62	30.0
8	T1	All MCs	184	2.3	184	2.3	* 0.379	24.9	LOS B	5.6	40.4	0.87	0.71	0.87	24.2
9	R2	All MCs	1	100.0	1	100.0	0.379	34.4	LOS C	5.6	40.4	0.87	0.71	0.87	16.1
Approach			394	4.3	394	4.3	0.379	21.0	LOS B	5.6	40.4	0.74	0.73	0.74	27.2
West: Rickard Road (W)															
10	L2	All MCs	40	0.0	40	0.0	0.311	22.6	LOS B	5.9	41.5	0.73	0.64	0.73	24.0
11	T1	All MCs	427	0.2	427	0.2	* 0.311	17.3	LOS B	5.9	41.5	0.73	0.63	0.73	30.5
12	R2	All MCs	41	7.7	41	7.7	0.116	15.5	LOS B	0.8	5.6	0.62	0.67	0.62	25.8
Approach			508	0.8	508	0.8	0.311	17.5	LOS B	5.9	41.5	0.73	0.63	0.73	29.3
All Vehicles			2009	1.9	2009	1.9	0.379	16.4	LOS B	7.7	54.3	0.68	0.65	0.68	30.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												
P1	Full	50	53	31.3	LOS D	0.1	0.1	0.92	0.92	185.2	200.0	1.08

East: Rickard Road (E)												
P2	Full	50	53	31.3	LOS D	0.1	0.1	0.92	0.92	185.2	200.0	1.08
North: Chapel Road (N)												
P3	Full	50	53	31.3	LOS D	0.1	0.1	0.92	0.92	185.2	200.0	1.08
West: Rickard Road (W)												
P4	Full	50	53	31.3	LOS D	0.1	0.1	0.92	0.92	185.2	200.0	1.08
All Pedestrians		200	211	31.3	LOS D	0.1	0.1	0.92	0.92	185.2	200.0	1.08

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

MOVEMENT SUMMARY

Site: 2 [(FutSunday) Chapel Road / French Avenue (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Sunday Network Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 44 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (S)															
1	L2	All MCs	72	2.9	72	2.9	0.365	9.1	LOS A	3.2	23.0	0.40	0.41	0.40	45.0
2	T1	All MCs	320	3.6	320	3.6	* 0.365	3.5	LOS A	3.2	23.0	0.40	0.41	0.40	47.7
3	R2	All MCs	31	0.0	31	0.0	0.046	10.7	LOS A	0.3	2.2	0.49	0.66	0.49	36.3
Approach			422	3.2	422	3.2	0.365	5.0	LOS A	3.2	23.0	0.40	0.43	0.40	45.9
East: French Avenue (E)															
4	L2	All MCs	40	5.3	40	5.3	0.140	23.9	LOS B	0.8	5.8	0.89	0.72	0.89	26.0
5	T1	All MCs	53	0.0	53	0.0	0.372	19.0	LOS B	2.0	14.3	0.93	0.74	0.93	32.9
6	R2	All MCs	44	2.4	44	2.4	0.372	25.5	LOS B	2.0	14.3	0.93	0.74	0.93	27.6
Approach			137	2.3	137	2.3	0.372	22.5	LOS B	2.0	14.3	0.92	0.74	0.92	29.2
North: Chapel Road (N)															
7	L2	All MCs	22	0.0	22	0.0	0.250	8.5	LOS A	1.8	13.4	0.34	0.32	0.34	46.6
8	T1	All MCs	246	4.7	246	4.7	0.250	3.0	LOS A	1.8	13.4	0.34	0.32	0.34	50.0
9	R2	All MCs	64	1.6	64	1.6	0.115	12.1	LOS A	0.8	5.4	0.56	0.69	0.56	36.5
Approach			333	3.8	333	3.8	0.250	5.1	LOS A	1.8	13.4	0.38	0.39	0.38	45.7
West: French Avenue (W)															
10	L2	All MCs	59	0.0	59	0.0	0.200	24.1	LOS B	1.2	8.2	0.90	0.73	0.90	27.9
11	T1	All MCs	73	0.0	73	0.0	* 0.391	19.0	LOS B	2.2	15.5	0.94	0.74	0.94	33.4
12	R2	All MCs	34	0.0	34	0.0	0.391	25.6	LOS B	2.2	15.5	0.94	0.74	0.94	29.2
Approach			165	0.0	165	0.0	0.391	22.2	LOS B	2.2	15.5	0.93	0.74	0.93	30.5
All Vehicles			1057	2.8	1057	2.8	0.391	10.0	LOS A	3.2	23.0	0.54	0.50	0.54	38.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (S)												

P1	Full	5	5	16.4	LOS B	0.0	0.0	0.86	0.86	170.3	200.0	1.17
East: French Avenue (E)												
P2	Full	5	5	16.4	LOS B	0.0	0.0	0.86	0.86	170.3	200.0	1.17
North: Chapel Road (N)												
P3	Full	5	5	16.4	LOS B	0.0	0.0	0.86	0.86	170.3	200.0	1.17
West: French Avenue (W)												
P4	Full	5	5	16.4	LOS B	0.0	0.0	0.86	0.86	170.3	200.0	1.17
All Pedestrians		20	21	16.4	LOS B	0.0	0.0	0.86	0.86	170.3	200.0	1.17

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

MOVEMENT SUMMARY

Site: 3 [(FutSunday) French Avenue / Jacobs Street (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Sunday Network Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Jacobs Street (S)															
1	L2	All MCs	102	0.0	102	0.0	0.094	5.5	LOS A	0.0	0.0	0.00	0.34	0.00	46.3
2	T1	All MCs	77	0.0	77	0.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	55.4
Approach			179	0.0	179	0.0	0.094	3.2	NA	0.0	0.0	0.00	0.34	0.00	51.3
North: Jacobs Street (N)															
8	T1	All MCs	54	2.0	54	2.0	0.040	0.2	LOS A	0.1	0.8	0.16	0.20	0.16	56.8
9	R2	All MCs	19	0.0	19	0.0	0.040	6.0	LOS A	0.1	0.8	0.16	0.20	0.16	53.5
Approach			73	1.4	73	1.4	0.040	1.7	NA	0.1	0.8	0.16	0.20	0.16	55.9
West: French Avenue (W)															
10	L2	All MCs	41	0.0	41	0.0	0.144	8.3	LOS A	0.5	3.7	0.26	0.89	0.26	48.0
12	R2	All MCs	108	0.0	108	0.0	0.144	8.5	LOS A	0.5	3.7	0.26	0.89	0.26	38.5
Approach			149	0.0	149	0.0	0.144	8.4	LOS A	0.5	3.7	0.26	0.89	0.26	42.3
All Vehicles			401	0.3	401	0.3	0.144	4.9	NA	0.5	3.7	0.12	0.52	0.12	48.8

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

ANNEXURE D: SIDRA LANE SUMMARY
(48 SHEETS)

LANE SUMMARY

Site: 1 [(ExAM) Chapel Road / Rickard Road (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing AM Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 68 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	100	5.4	100	5.4	630	0.159	53[6]	19.9	LOS B	2.3	16.9	Short (P)	25	0.0	NA
Lane 2	176	5.3	176	5.3	582	0.302	100	19.6	LOS B	4.5	33.1	Full	130	0.0	0.0
Approach	276	5.3	276	5.3		0.302		19.7	LOS B	4.5	33.1				
East: Rickard Road (E)															
Lane 1	357	1.8	357	1.8	796	0.449	100	19.1	LOS B	8.5	60.4	Full	200	0.0	0.0
Lane 2	369	1.7	369	1.7	823	0.449	100	15.0	LOS B	8.8	62.2	Full	200	0.0	0.0
Lane 3	159	11.9	159	11.9	412	0.386	100	17.6	LOS B	3.0	23.3	Short	125	0.0	NA
Approach	885	3.6	885	3.6		0.449		17.1	LOS B	8.8	62.2				
North: Chapel Road (N)															
Lane 1	177	10.1	177	10.1	917	0.193	35[5]	14.7	LOS B	3.1	23.4	Short (P)	90	0.0	NA
Lane 2	325	3.9	325	3.9	585	0.556	100	21.6	LOS B	9.2	66.6	Full	130	0.0	0.0
Approach	502	6.1	502	6.1		0.556		19.2	LOS B	9.2	66.6				
West: Rickard Road (W)															
Lane 1	405	1.4	405	1.4	677	0.598	100	20.6	LOS B	11.2	79.4	Full	80	0.0	4.3
Lane 2	345	1.4	345	1.4	577[1]	0.598	100	26.8	LOS B	9.5	67.5	Full	80	0.0	0.0
Lane 3	71	3.0	71	3.0	373	0.189	100	23.4	LOS B	1.3	9.5	Short	22	0.0	NA
Approach	820	1.5	820	1.5		0.598		23.4	LOS B	11.2	79.4				
All Vehicles	2483	3.6	2483	3.6		0.598		19.9	LOS B	11.2	79.4				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S	L2	T1	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.

To Exit:	W	N								
Lane 1	57	43	100	5.4		630	0.159	53[6]	0.0	2
Lane 2	-	176	176	5.3		582	0.302	100	NA	NA
Approach	57	219	276	5.3			0.302			

East: Rickard Road (E)

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	224	133	-	357	1.8	796	0.449	100	NA	NA
Lane 2	-	369	-	369	1.7	823	0.449	100	NA	NA
Lane 3	-	-	159	159	11.9	412	0.386	100	0.0	2
Approach	224	502	159	885	3.6		0.449			

North: Chapel Road (N)

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	177	-	-	177	10.1	917	0.193	35[5]	0.0	2
Lane 2	-	324	1	325	3.9	585	0.556	100	NA	NA
Approach	177	324	1	502	6.1		0.556			

West: Rickard Road (W)

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	55	350	-	405	1.4	677	0.598	100	NA	NA
Lane 2	-	345	-	345	1.4	577[1]	0.598	100	NA	NA
Lane 3	-	-	71	71	3.0	373	0.189	100	0.0	2
Approach	55	695	71	820	1.5		0.598			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	2483	3.6	0.598

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	395	402	3.03	2.02	224	1371	0.164	0.6	0.9
Merge Lane	2	-	100.0	Merge Lane is not Opposed				395	1800	0.219	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	90	0.0	335	349	3.05	2.03	98	1411	0.070	0.5	0.7
Merge Lane	2	-	100.0	Merge Lane is not Opposed				335	1800	0.186	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec

South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Rickard Road (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Rickard Road (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 2 [(ExAM) Chapel Road / French Avenue (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing AM Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 51 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	344	8.3	344	8.3	1008[1]	0.341	100	7.6	LOS A	4.8	36.1	Short (P)	20	0.0	NA
Lane 2	53	2.0	53	2.0	422	0.125	100	16.8	LOS B	0.9	6.2	Full	130	0.0	0.0
Approach	397	7.4	397	7.4		0.341		8.9	LOS A	4.8	36.1				
East: French Avenue (E)															
Lane 1	76	1.4	76	1.4	397	0.191	100	24.0	LOS B	1.6	11.4	Full	195	0.0	0.0
Lane 2	137	0.0	137	0.0	282	0.486	100	24.0	LOS B	3.3	23.1	Full	195	0.0	0.0
Approach	213	0.5	213	0.5		0.486		24.0	LOS B	3.3	23.1				
North: Chapel Road (N)															
Lane 1	462	7.3	462	7.3	976[1]	0.474	100	9.1	LOS A	7.1	52.9	Short (P)	25	0.0	NA
Lane 2	82	1.3	82	1.3	520	0.158	100	15.8	LOS B	1.2	8.8	Full	140	0.0	0.0
Approach	544	6.4	544	6.4		0.474		10.1	LOS A	7.1	52.9				
West: French Avenue (W)															
Lane 1	142	0.7	142	0.7	398	0.357	100	24.9	LOS B	3.2	22.2	Full	230	0.0	0.0
Lane 2	238	0.0	238	0.0	387	0.615	100	21.4	LOS B	5.7	40.2	Full	230	0.0	0.0
Approach	380	0.3	380	0.3		0.615		22.7	LOS B	5.7	40.2				
All Vehicles	1534	4.3	1534	4.3		0.615		14.8	LOS B	7.1	52.9				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	31	314	-	344	8.3	1008[1]	0.341	100	59.4	2
Lane 2	-	-	53	53	2.0	422	0.125	100	NA	NA
Approach	31	314	53	397	7.4		0.341			

East: French Avenue (E)										
Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	76	-	-	76	1.4	397	0.191	100	NA	NA
Lane 2	-	87	49	137	0.0	282	0.486	100	NA	NA
Approach	76	87	49	213	0.5		0.486			
North: Chapel Road (N)										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	36	426	-	462	7.3	976[1]	0.474	100	74.7	2
Lane 2	-	-	82	82	1.3	520	0.158	100	NA	NA
Approach	36	426	82	544	6.4		0.474			
West: French Avenue (W)										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	142	-	-	142	0.7	398	0.357	100	NA	NA
Lane 2	-	217	21	238	0.0	387	0.615	100	NA	NA
Approach	142	217	21	380	0.3		0.615			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1534	4.3	0.615

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	30	0.0	21	21	3.10	2.07	502	1720	0.292	0.0	0.0
Merge Lane	2	-	100.0	Merge Lane is not Opposed				21	1800	0.012	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	49	49	3.09	2.06	456	1695	0.269	0.1	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				49	1800	0.027	0.0	0.0
West Exit: French Avenue (W) Merge Type: **Priority**												
Exit Short Lane	1	20	0.0	82	83	3.01	2.01	118	1709	0.069	0.1	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				82	1800	0.046	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

East: French Avenue (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 3 [(ExAM) French Avenue / Jacobs Street (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing AM Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Jacobs Street (S)															
Lane 1	237	0.4	237	0.4	1900	0.125	100	2.5	LOS A	0.0	0.0	Full	120	0.0	0.0
Approach	237	0.4	237	0.4		0.125		2.5	NA	0.0	0.0				
North: Jacobs Street (N)															
Lane 1	199	0.0	199	0.0	1735	0.115	100	2.3	LOS A	0.4	3.0	Full	500	0.0	0.0
Approach	199	0.0	199	0.0		0.115		2.3	NA	0.4	3.0				
West: French Avenue (W)															
Lane 1	287	1.5	287	1.5	929	0.309	100	9.6	LOS A	1.3	9.5	Full	195	0.0	0.0
Approach	287	1.5	287	1.5		0.309		9.6	LOS A	1.3	9.5				
All Vehicles	723	0.7	723	0.7		0.309		5.3	NA	1.3	9.5				

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

Approach Lane Flows (veh/h)

South: Jacobs Street (S)

Mov. From S To Exit:	L2 W	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	108	128	237	0.4	1900	0.125	100	NA	NA
Approach	108	128	237	0.4		0.125			

North: Jacobs Street (N)

Mov. From N To Exit:	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	134	65	199	0.0	1735	0.115	100	NA	NA
Approach	134	65	199	0.0		0.115			

West: French Avenue (W)

Mov. From W	L2	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	N	S			veh/h	v/c	%	%	No.
Lane 1	121	166	287	1.5	929	0.309	100	NA	NA
Approach	121	166	287	1.5		0.309			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	723	0.7	0.309

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

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Jacobs Street (S)				
Lane 1	0.0	0.0	0.0	0.0
North: Jacobs Street (N)				
Lane 1	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 1 [(ExPM) Chapel Road / Rickard Road (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing PM Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 108 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	142	0.6	142	0.6	588	0.241	53[6]	42.5	LOS C	5.5	38.9	Short (P)	25	0.0	NA
Lane 2	208	1.6	208	1.6	454[1]	0.457	100	43.3	LOS D	9.0	63.8	Full	130	0.0	0.0
Approach	349	1.2	349	1.2		0.457		43.0	LOS D	9.0	63.8				
East: Rickard Road (E)															
Lane 1	451	1.3	451	1.3	1014	0.445	100	19.3	LOS B	14.3	101.1	Full	200	0.0	0.0
Lane 2	464	0.7	464	0.7	1042	0.445	100	16.1	LOS B	14.7	103.3	Full	200	0.0	0.0
Lane 3	320	6.9	320	6.9	546	0.586	100	21.1	LOS B	8.4	62.1	Short	125	0.0	NA
Approach	1235	2.6	1235	2.6		0.586		18.6	LOS B	14.7	103.3				
North: Chapel Road (N)															
Lane 1	291	9.4	291	9.4	967	0.300	39[5]	19.3	LOS B	8.1	61.0	Short (P)	90	0.0	NA
Lane 2	424	2.0	424	2.0	550	0.771	100	40.2	LOS C	21.3	152.0	Full	130	0.0	19.2
Approach	715	5.0	715	5.0		0.771		31.7	LOS C	21.3	152.0				
West: Rickard Road (W)															
Lane 1	380	1.0	380	1.0	659	0.577	100	32.2	LOS C	16.4	116.0	Full	80	0.0	39.0
Lane 2	280	1.2	280	1.2	485[1]	0.577	100	46.3	LOS D	12.1	85.2	Full	80	0.0	10.7
Lane 3	63	1.7	63	1.7	291	0.217	100	34.2	LOS C	1.5	10.9	Short	22	0.0	NA
Approach	723	1.2	723	1.2		0.577		37.8	LOS C	16.4	116.0				
All Vehicles	3022	2.6	3022	2.6		0.771		29.1	LOS C	21.3	152.0				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S	L2	T1	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.

To Exit:	W	N								
Lane 1	85	57	142	0.6		588	0.241	53[6]	45.6	2
Lane 2	-	208	208	1.6		454[1]	0.457	100	NA	NA
Approach	85	264	349	1.2			0.457			

East: Rickard Road (E)

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	208	243	-	451	1.3	1014	0.445	100	NA	NA
Lane 2	-	464	-	464	0.7	1042	0.445	100	NA	NA
Lane 3	-	-	320	320	6.9	546	0.586	100	0.0	2
Approach	208	706	320	1235	2.6		0.586			

North: Chapel Road (N)

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	291	-	-	291	9.4	967	0.300	39[5]	0.0	2
Lane 2	-	423	1	424	2.0	550	0.771	100	NA	NA
Approach	291	423	1	715	5.0		0.771			

West: Rickard Road (W)

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	55	326	-	380	1.0	659	0.577	100	NA	NA
Lane 2	-	280	-	280	1.2	485[1]	0.577	100	NA	NA
Lane 3	-	-	63	63	1.7	291	0.217	100	0.0	2
Approach	55	605	63	723	1.2		0.577			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	3022	2.6	0.771

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	486	491	3.03	2.02	208	1276	0.163	0.8	1.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				486	1800	0.270	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	90	0.0	528	540	3.01	2.01	111	1235	0.090	0.9	1.2
Merge Lane	2	-	100.0	Merge Lane is not Opposed				528	1800	0.293	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec

South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Rickard Road (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Rickard Road (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 2 [(ExPM) Chapel Road / French Avenue (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing PM Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 84 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	484	5.0	484	5.0	1253	0.386	100	3.0	LOS A	3.9	28.1	Short (P)	20	0.0	NA
Lane 2	111	1.0	111	1.0	471	0.235	100	13.9	LOS A	2.1	15.0	Full	130	0.0	0.0
Approach	595	4.2	595	4.2		0.386		5.0	LOS A	3.9	28.1				
East: French Avenue (E)															
Lane 1	49	0.0	49	0.0	354	0.140	100	36.7	LOS C	1.7	12.0	Full	195	0.0	0.0
Lane 2	138	0.8	138	0.8	199	0.693	100	44.0	LOS D	5.9	41.6	Full	195	0.0	0.0
Approach	187	0.6	187	0.6		0.693		42.1	LOS C	5.9	41.6				
North: Chapel Road (N)															
Lane 1	595	5.7	595	5.7	1248	0.477	100	3.0	LOS A	5.3	38.7	Short (P)	25	0.0	NA
Lane 2	135	0.0	135	0.0	559	0.241	100	13.4	LOS A	2.5	17.6	Full	140	0.0	0.0
Approach	729	4.6	729	4.6		0.477		4.9	LOS A	5.3	38.7				
West: French Avenue (W)															
Lane 1	73	1.4	73	1.4	350	0.207	100	37.3	LOS C	2.6	18.2	Full	230	0.0	0.0
Lane 2	175	1.8	175	1.8	256	0.681	100	40.3	LOS C	7.3	51.7	Full	230	0.0	0.0
Approach	247	1.7	247	1.7		0.681		39.4	LOS C	7.3	51.7				
All Vehicles	1759	3.7	1759	3.7		0.693		13.8	LOS A	7.3	51.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	46	438	-	484	5.0	1253	0.386	100	36.1	2
Lane 2	-	-	111	111	1.0	471	0.235	100	NA	NA
Approach	46	438	111	595	4.2		0.386			
East: French Avenue (E)										

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	49	-	-	49	0.0	354	0.140	100	NA	NA
Lane 2	-	75	63	138	0.8	199	0.693	100	NA	NA
Approach	49	75	63	187	0.6		0.693			
North: Chapel Road (N)										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	51	544	-	595	5.7	1248	0.477	100	45.0	2
Lane 2	-	-	135	135	0.0	559	0.241	100	NA	NA
Approach	51	544	135	729	4.6		0.477			
West: French Avenue (W)										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	73	-	-	73	1.4	350	0.207	100	NA	NA
Lane 2	-	132	43	175	1.8	256	0.681	100	NA	NA
Approach	73	132	43	247	1.7		0.681			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1759	3.7	0.693

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

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	30	0.0	43	44	3.08	2.05	594	1711	0.347	0.1	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				43	1800	0.024	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	63	64	3.07	2.05	511	1692	0.302	0.1	0.2
Merge Lane	2	-	100.0	Merge Lane is not Opposed				63	1800	0.035	0.0	0.0
West Exit: French Avenue (W) Merge Type: **Priority**												
Exit Short Lane	1	20	0.0	135	135	3.00	2.00	121	1664	0.073	0.2	0.2
Merge Lane	2	-	100.0	Merge Lane is not Opposed				135	1800	0.075	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: French Avenue (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 3 [(ExPM) French Avenue / Jacobs Street (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing PM Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Jacobs Street (S)															
Lane 1	312	0.0	312	0.0	1902	0.164	100	2.8	LOS A	0.0	0.0	Full	120	0.0	0.0
Approach	312	0.0	312	0.0		0.164		2.8	NA	0.0	0.0				
North: Jacobs Street (N)															
Lane 1	215	0.0	215	0.0	1790	0.120	100	1.5	LOS A	0.3	2.1	Full	500	0.0	0.0
Approach	215	0.0	215	0.0		0.120		1.5	NA	0.3	2.1				
West: French Avenue (W)															
Lane 1	307	0.7	307	0.7	838	0.367	100	10.5	LOS A	1.8	12.9	Full	195	0.0	0.0
Approach	307	0.7	307	0.7		0.367		10.5	LOS A	1.8	12.9				
All Vehicles	834	0.3	834	0.3		0.367		5.3	NA	1.8	12.9				

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

Approach Lane Flows (veh/h)

South: Jacobs Street (S)

Mov. From S To Exit:	L2 W	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	156	156	312	0.0	1902	0.164	100	NA	NA
Approach	156	156	312	0.0		0.164			

North: Jacobs Street (N)

Mov. From N To Exit:	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	176	39	215	0.0	1790	0.120	100	NA	NA
Approach	176	39	215	0.0		0.120			

West: French Avenue (W)

Mov. From W	L2	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	N	S			veh/h	v/c	%	%	No.
Lane 1	100	207	307	0.7	838	0.367	100	NA	NA
Approach	100	207	307	0.7		0.367			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	834	0.3	0.367

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

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Jacobs Street (S)				
Lane 1	0.0	0.0	0.0	0.0
North: Jacobs Street (N)				
Lane 1	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 1 [(ExSunday) Chapel Road / Rickard Road (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing Sunday Network Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 74 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	65	0.9	65	0.9	554	0.117	53[6]	24.2	LOS B	1.7	12.1	Short (P)	25	0.0	NA
Lane 2	109	2.4	109	2.4	493	0.221	100	23.7	LOS B	3.2	22.5	Full	130	0.0	0.0
Approach	174	1.8	174	1.8		0.221		23.9	LOS B	3.2	22.5				
East: Rickard Road (E)															
Lane 1	367	0.7	367	0.7	1023	0.359	100	13.4	LOS A	7.5	53.0	Full	200	0.0	0.0
Lane 2	377	0.2	377	0.2	1053	0.359	100	10.4	LOS A	7.7	54.3	Full	200	0.0	0.0
Lane 3	186	6.2	186	6.2	590	0.316	100	14.6	LOS B	3.3	24.5	Short	125	0.0	NA
Approach	931	1.6	931	1.6		0.359		12.4	LOS A	7.7	54.3				
North: Chapel Road (N)															
Lane 1	201	5.8	201	5.8	868	0.232	63[5]	17.4	LOS B	4.2	30.9	Short (P)	90	0.0	NA
Lane 2	180	2.9	180	2.9	489	0.368	100	24.9	LOS B	5.4	39.1	Full	130	0.0	0.0
Approach	381	4.4	381	4.4		0.368		20.9	LOS B	5.4	39.1				
West: Rickard Road (W)															
Lane 1	235	0.2	235	0.2	757	0.310	100	17.8	LOS B	5.9	41.4	Full	80	0.0	0.0
Lane 2	232	0.2	232	0.2	747[1]	0.310	100	17.6	LOS B	5.8	40.8	Full	80	0.0	0.0
Lane 3	41	7.7	41	7.7	354	0.116	100	15.5	LOS B	0.8	5.6	Short	22	0.0	NA
Approach	507	0.8	507	0.8		0.310		17.5	LOS B	5.9	41.4				
All Vehicles	1993	2.0	1993	2.0		0.368		16.4	LOS B	7.7	54.3				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S	L2	T1	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.

To Exit:	W	N								
Lane 1	41	24	65	0.9		554	0.117	53[6]	0.0	2
Lane 2	-	109	109	2.4		493	0.221	100	NA	NA
Approach	41	133	174	1.8			0.221			

East: Rickard Road (E)

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	186	180	-	367	0.7	1023	0.359	100	NA	NA
Lane 2	-	377	-	377	0.2	1053	0.359	100	NA	NA
Lane 3	-	-	186	186	6.2	590	0.316	100	0.0	2
Approach	186	558	186	931	1.6		0.359			

North: Chapel Road (N)

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	201	-	-	201	5.8	868	0.232	63[5]	0.0	2
Lane 2	-	179	1	180	2.9	489	0.368	100	NA	NA
Approach	201	179	1	381	4.4		0.368			

West: Rickard Road (W)

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	39	196	-	235	0.2	757	0.310	100	NA	NA
Lane 2	-	232	-	232	0.2	747[1]	0.310	100	NA	NA
Lane 3	-	-	41	41	7.7	354	0.116	100	0.0	2
Approach	39	427	41	507	0.8		0.310			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1993	2.0	0.368

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	220	224	3.02	2.01	186	1563	0.119	0.3	0.4
Merge Lane	2	-	100.0	Merge Lane is not Opposed				220	1800	0.122	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	90	0.0	295	302	3.01	2.01	63	1484	0.042	0.4	0.5
Merge Lane	2	-	100.0	Merge Lane is not Opposed				295	1800	0.164	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec

South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Rickard Road (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Rickard Road (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 2 [(ExSunday) Chapel Road / French Avenue (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing Sunday Network Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 44 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	388	3.5	388	3.5	1073	0.362	100	4.5	LOS A	3.2	22.8	Short (P)	20	0.0	NA
Lane 2	31	0.0	31	0.0	665	0.046	100	10.7	LOS A	0.3	2.2	Full	130	0.0	0.0
Approach	419	3.3	419	3.3		0.362		5.0	LOS A	3.2	22.8				
East: French Avenue (E)															
Lane 1	27	7.7	27	7.7	280	0.098	100	23.8	LOS B	0.5	4.0	Full	195	0.0	0.0
Lane 2	81	1.3	81	1.3	264	0.307	100	21.2	LOS B	1.7	11.8	Full	195	0.0	0.0
Approach	108	2.9	108	2.9		0.307		21.9	LOS B	1.7	11.8				
North: Chapel Road (N)															
Lane 1	262	4.4	262	4.4	1074	0.244	100	3.3	LOS A	1.8	12.8	Short (P)	25	0.0	NA
Lane 2	64	1.6	64	1.6	561	0.114	100	12.1	LOS A	0.8	5.4	Full	140	0.0	0.0
Approach	326	3.9	326	3.9		0.244		5.0	LOS A	1.8	12.8				
West: French Avenue (W)															
Lane 1	59	0.0	59	0.0	295	0.200	100	24.1	LOS B	1.2	8.2	Full	230	0.0	0.0
Lane 2	106	0.0	106	0.0	274	0.389	100	21.1	LOS B	2.2	15.5	Full	230	0.0	0.0
Approach	165	0.0	165	0.0		0.389		22.1	LOS B	2.2	15.5				
All Vehicles	1019	2.9	1019	2.9		0.389		9.6	LOS A	3.2	22.8				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	72	317	-	388	3.5	1073	0.362	100	16.8	2
Lane 2	-	-	31	31	0.0	665	0.046	100	NA	NA
Approach	72	317	31	419	3.3		0.362			
East: French Avenue (E)										

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	27	-	-	27	7.7	280	0.098	100	NA	NA
Lane 2	-	51	31	81	1.3	264	0.307	100	NA	NA
Approach	27	51	31	108	2.9		0.307			
North: Chapel Road (N)										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	16	246	-	262	4.4	1074	0.244	100	0.0	2
Lane 2	-	-	64	64	1.6	561	0.114	100	NA	NA
Approach	16	246	64	326	3.9		0.244			
West: French Avenue (W)										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	59	-	-	59	0.0	295	0.200	100	NA	NA
Lane 2	-	73	34	106	0.0	274	0.389	100	NA	NA
Approach	59	73	34	165	0.0		0.389			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1019	2.9	0.389

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

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	30	0.0	34	34	3.08	2.05	274	1722	0.159	0.0	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				34	1800	0.019	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	31	31	3.05	2.03	376	1741	0.216	0.0	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				31	1800	0.017	0.0	0.0
West Exit: French Avenue (W) Merge Type: **Priority**												
Exit Short Lane	1	20	0.0	64	65	3.03	2.02	122	1719	0.071	0.1	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				64	1800	0.036	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: French Avenue (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 3 [(ExSunday) French Avenue / Jacobs Street (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing Sunday Network Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Jacobs Street (S)															
Lane 1	179	0.0	179	0.0	1896	0.094	100	3.2	LOS A	0.0	0.0	Full	120	0.0	0.0
Approach	179	0.0	179	0.0		0.094		3.2	NA	0.0	0.0				
North: Jacobs Street (N)															
Lane 1	73	1.4	73	1.4	1794	0.040	100	1.7	LOS A	0.1	0.8	Full	500	0.0	0.0
Approach	73	1.4	73	1.4		0.040		1.7	NA	0.1	0.8				
West: French Avenue (W)															
Lane 1	149	0.0	149	0.0	1039	0.144	100	8.4	LOS A	0.5	3.7	Full	195	0.0	0.0
Approach	149	0.0	149	0.0		0.144		8.4	LOS A	0.5	3.7				
All Vehicles	401	0.3	401	0.3		0.144		4.9	NA	0.5	3.7				

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

Approach Lane Flows (veh/h)

South: Jacobs Street (S)

Mov. From S To Exit:	L2 W	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	102	77	179	0.0	1896	0.094	100	NA	NA
Approach	102	77	179	0.0		0.094			

North: Jacobs Street (N)

Mov. From N To Exit:	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	54	19	73	1.4	1794	0.040	100	NA	NA
Approach	54	19	73	1.4		0.040			

West: French Avenue (W)

Mov. From W	L2	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	N	S			veh/h	v/c	%	%	No.
Lane 1	41	108	149	0.0	1039	0.144	100	NA	NA
Approach	41	108	149	0.0		0.144			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	401	0.3	0.144

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

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Jacobs Street (S)				
Lane 1	0.0	0.0	0.0	0.0
North: Jacobs Street (N)				
Lane 1	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 1 [(FutAM) Chapel Road / Rickard Road (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future AM Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 68 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	103	5.4	103	5.4	627	0.163	53[6]	19.8	LOS B	2.4	17.3	Short (P)	25	0.0	NA
Lane 2	181	5.1	181	5.1	583	0.310	100	19.7	LOS B	4.7	34.1	Full	130	0.0	0.0
Approach	283	5.2	283	5.2		0.310		19.7	LOS B	4.7	34.1				
East: Rickard Road (E)															
Lane 1	357	1.8	357	1.8	796	0.449	100	19.1	LOS B	8.5	60.4	Full	200	0.0	0.0
Lane 2	369	1.7	369	1.7	823	0.449	100	15.0	LOS B	8.8	62.2	Full	200	0.0	0.0
Lane 3	160	11.8	160	11.8	412	0.389	100	17.6	LOS B	3.0	23.5	Short	125	0.0	NA
Approach	886	3.6	886	3.6		0.449		17.1	LOS B	8.8	62.2				
North: Chapel Road (N)															
Lane 1	183	9.8	183	9.8	919	0.199	35[5]	14.7	LOS B	3.2	24.3	Short (P)	90	0.0	NA
Lane 2	331	3.8	331	3.8	585	0.565	100	21.7	LOS B	9.4	67.9	Full	130	0.0	0.0
Approach	514	5.9	514	5.9		0.565		19.2	LOS B	9.4	67.9				
West: Rickard Road (W)															
Lane 1	406	1.4	406	1.4	677	0.599	100	20.6	LOS B	11.2	79.7	Full	80	0.0	4.7
Lane 2	346	1.4	346	1.4	577[1]	0.599	100	26.9	LOS B	9.6	67.8	Full	80	0.0	0.0
Lane 3	71	3.0	71	3.0	373	0.189	100	23.4	LOS B	1.3	9.5	Short	22	0.0	NA
Approach	822	1.5	822	1.5		0.599		23.5	LOS B	11.2	79.7				
All Vehicles	2505	3.6	2505	3.6		0.599		19.9	LOS B	11.2	79.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S	L2	T1	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.

To Exit:	W	N								
Lane 1	57	46	103	5.4		627	0.163	53[6]	0.0	2
Lane 2	-	181	181	5.1		583	0.310	100	NA	NA
Approach	57	226	283	5.2			0.310			

East: Rickard Road (E)

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	224	133	-	357	1.8	796	0.449	100	NA	NA
Lane 2	-	369	-	369	1.7	823	0.449	100	NA	NA
Lane 3	-	-	160	160	11.8	412	0.389	100	0.0	2
Approach	224	502	160	886	3.6		0.449			

North: Chapel Road (N)

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	183	-	-	183	9.8	919	0.199	35[5]	0.0	2
Lane 2	-	329	1	331	3.8	585	0.565	100	NA	NA
Approach	183	329	1	514	5.9		0.565			

West: Rickard Road (W)

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	57	349	-	406	1.4	677	0.599	100	NA	NA
Lane 2	-	346	-	346	1.4	577[1]	0.599	100	NA	NA
Lane 3	-	-	71	71	3.0	373	0.189	100	0.0	2
Approach	57	695	71	822	1.5		0.599			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	2505	3.6	0.599

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	400	407	3.03	2.02	224	1365	0.164	0.7	0.9
Merge Lane	2	-	100.0	Merge Lane is not Opposed				400	1800	0.222	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	90	0.0	341	355	3.05	2.03	103	1406	0.073	0.6	0.7
Merge Lane	2	-	100.0	Merge Lane is not Opposed				341	1800	0.189	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec

South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Rickard Road (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Rickard Road (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 2 [(FutAM) Chapel Road / French Avenue (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future AM Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 51 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	344	8.3	344	8.3	1007[1]	0.342	100	7.7	LOS A	4.8	36.1	Short (P)	20	0.0	NA
Lane 2	63	1.7	63	1.7	406	0.156	100	16.9	LOS B	1.1	7.6	Full	130	0.0	0.0
Approach	407	7.2	407	7.2		0.342		9.1	LOS A	4.8	36.1				
East: French Avenue (E)															
Lane 1	87	1.2	87	1.2	397	0.220	100	24.1	LOS B	1.9	13.2	Full	195	0.0	0.0
Lane 2	152	0.0	152	0.0	270	0.561	100	24.8	LOS B	3.7	26.2	Full	195	0.0	0.0
Approach	239	0.4	239	0.4		0.561		24.6	LOS B	3.7	26.2				
North: Chapel Road (N)															
Lane 1	482	7.0	482	7.0	965[1]	0.499	100	9.9	LOS A	7.6	56.1	Short (P)	25	0.0	NA
Lane 2	82	1.3	82	1.3	520	0.158	100	16.1	LOS B	1.2	8.8	Full	140	0.0	0.0
Approach	564	6.2	564	6.2		0.499		10.8	LOS A	7.6	56.1				
West: French Avenue (W)															
Lane 1	142	0.7	142	0.7	398	0.357	100	24.9	LOS B	3.2	22.2	Full	230	0.0	0.0
Lane 2	238	0.0	238	0.0	386	0.617	100	21.5	LOS B	5.8	40.3	Full	230	0.0	0.0
Approach	380	0.3	380	0.3		0.617		22.7	LOS B	5.8	40.3				
All Vehicles	1591	4.2	1591	4.2		0.617		15.3	LOS B	7.6	56.1				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	31	314	-	344	8.3	1007[1]	0.342	100	59.5	2
Lane 2	-	-	63	63	1.7	406	0.156	100	NA	NA
Approach	31	314	63	407	7.2		0.342			

East: French Avenue (E)										
Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	87	-	-	87	1.2	397	0.220	100	NA	NA
Lane 2	-	89	62	152	0.0	270	0.561	100	NA	NA
Approach	87	89	62	239	0.4		0.561			
North: Chapel Road (N)										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	56	426	-	482	7.0	965[1]	0.499	100	80.5	2
Lane 2	-	-	82	82	1.3	520	0.158	100	NA	NA
Approach	56	426	82	564	6.2		0.499			
West: French Avenue (W)										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	142	-	-	142	0.7	398	0.357	100	NA	NA
Lane 2	-	217	21	238	0.0	386	0.617	100	NA	NA
Approach	142	217	21	380	0.3		0.617			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1591	4.2	0.617

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	30	0.0	21	21	3.10	2.07	514	1721	0.298	0.0	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				21	1800	0.012	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	62	62	3.09	2.06	456	1682	0.271	0.1	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				62	1800	0.035	0.0	0.0
West Exit: French Avenue (W) Merge Type: **Priority**												
Exit Short Lane	1	20	0.0	82	83	3.01	2.01	120	1709	0.070	0.1	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				82	1800	0.046	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

East: French Avenue (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 3 [(FutAM) French Avenue / Jacobs Street (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future AM Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Jacobs Street (S)															
Lane 1	246	0.4	246	0.4	1898	0.130	100	2.7	LOS A	0.0	0.0	Full	120	0.0	0.0
Approach	246	0.4	246	0.4		0.130		2.7	NA	0.0	0.0				
North: Jacobs Street (N)															
Lane 1	199	0.0	199	0.0	1728	0.115	100	2.4	LOS A	0.4	3.0	Full	500	0.0	0.0
Approach	199	0.0	199	0.0		0.115		2.4	NA	0.4	3.0				
West: French Avenue (W)															
Lane 1	287	1.5	287	1.5	926	0.310	100	9.6	LOS A	1.3	9.5	Full	195	0.0	0.0
Approach	287	1.5	287	1.5		0.310		9.6	LOS A	1.3	9.5				
All Vehicles	733	0.7	733	0.7		0.310		5.3	NA	1.3	9.5				

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

Approach Lane Flows (veh/h)

South: Jacobs Street (S)

Mov. From S To Exit:	L2 W	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	118	128	246	0.4	1898	0.130	100	NA	NA
Approach	118	128	246	0.4		0.130			

North: Jacobs Street (N)

Mov. From N To Exit:	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	134	65	199	0.0	1728	0.115	100	NA	NA
Approach	134	65	199	0.0		0.115			

West: French Avenue (W)

Mov. From W	L2	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	N	S			veh/h	v/c	%	%	No.
Lane 1	121	166	287	1.5	926	0.310	100	NA	NA
Approach	121	166	287	1.5		0.310			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	733	0.7	0.310

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

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Jacobs Street (S)				
Lane 1	0.0	0.0	0.0	0.0
North: Jacobs Street (N)				
Lane 1	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 1 [(FutPM) Chapel Road / Rickard Road (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future PM Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 108 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	144	0.6	144	0.6	586	0.246	53[6]	42.8	LOS D	5.6	39.7	Short (P)	25	0.0	NA
Lane 2	210	1.6	210	1.6	450[1]	0.467	100	43.8	LOS D	9.1	64.9	Full	130	0.0	0.0
Approach	355	1.2	355	1.2		0.467		43.4	LOS D	9.1	64.9				
East: Rickard Road (E)															
Lane 1	451	1.3	451	1.3	1014	0.445	100	19.3	LOS B	14.3	101.1	Full	200	0.0	0.0
Lane 2	464	0.7	464	0.7	1042	0.445	100	16.1	LOS B	14.7	103.3	Full	200	0.0	0.0
Lane 3	320	6.9	320	6.9	545	0.587	100	21.1	LOS B	8.4	62.1	Short	125	0.0	NA
Approach	1235	2.6	1235	2.6		0.587		18.6	LOS B	14.7	103.3				
North: Chapel Road (N)															
Lane 1	300	9.1	300	9.1	969	0.310	39[5]	19.3	LOS B	8.4	63.2	Short (P)	90	0.0	NA
Lane 2	432	2.0	432	2.0	550	0.785	100	40.9	LOS C	22.0	156.6	Full	130	0.0	21.9
Approach	732	4.9	732	4.9		0.785		32.1	LOS C	22.0	156.6				
West: Rickard Road (W)															
Lane 1	381	1.0	381	1.0	659	0.579	100	32.3	LOS C	16.5	116.4	Full	80	0.0	39.3
Lane 2	281	1.2	281	1.2	485[1]	0.579	100	46.4	LOS D	12.1	85.6	Full	80	0.0	11.1
Lane 3	63	1.7	63	1.7	291	0.217	100	34.2	LOS C	1.5	10.9	Short	22	0.0	NA
Approach	725	1.2	725	1.2		0.579		37.9	LOS C	16.5	116.4				
All Vehicles	3046	2.6	3046	2.6		0.785		29.3	LOS C	22.0	156.6				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S	L2	T1	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.

To Exit:	W	N							
Lane 1	85	59	144	0.6	586	0.246	53[6]	47.4	2
Lane 2	-	210	210	1.6	450[1]	0.467	100	NA	NA
Approach	85	269	355	1.2		0.467			

East: Rickard Road (E)

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	208	243	-	451	1.3	1014	0.445	100	NA	NA
Lane 2	-	464	-	464	0.7	1042	0.445	100	NA	NA
Lane 3	-	-	320	320	6.9	545	0.587	100	0.0	2
Approach	208	706	320	1235	2.6		0.587			

North: Chapel Road (N)

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	300	-	-	300	9.1	969	0.310	39[5]	0.0	2
Lane 2	-	431	1	432	2.0	550	0.785	100	NA	NA
Approach	300	431	1	732	4.9		0.785			

West: Rickard Road (W)

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	57	325	-	381	1.0	659	0.579	100	NA	NA
Lane 2	-	281	-	281	1.2	485[1]	0.579	100	NA	NA
Lane 3	-	-	63	63	1.7	291	0.217	100	0.0	2
Approach	57	605	63	725	1.2		0.579			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	3046	2.6	0.785

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	494	498	3.03	2.02	208	1268	0.164	0.9	1.2
Merge Lane	2	-	100.0	Merge Lane is not Opposed				494	1800	0.274	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	90	0.0	530	543	3.01	2.01	116	1233	0.094	0.9	1.2
Merge Lane	2	-	100.0	Merge Lane is not Opposed				530	1800	0.295	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec

South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Rickard Road (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Rickard Road (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 2 [(FutPM) Chapel Road / French Avenue (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future PM Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 84 seconds (Site User-Given Cycle Time)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	484	5.0	484	5.0	915[1]	0.529	100	8.9	LOS A	7.6	55.6	Short (P)	20	0.0	NA
Lane 2	117	0.9	117	0.9	335	0.349	100	27.1	LOS B	3.4	24.3	Full	130	0.0	0.0
Approach	601	4.2	601	4.2		0.529		12.4	LOS A	7.6	55.6				
East: French Avenue (E)															
Lane 1	66	0.0	66	0.0	509	0.130	100	30.5	LOS C	2.1	14.4	Full	195	0.0	0.0
Lane 2	159	0.7	159	0.7	227	0.700	100	43.4	LOS D	6.7	47.5	Full	195	0.0	0.0
Approach	225	0.5	225	0.5		0.700		39.6	LOS C	6.7	47.5				
North: Chapel Road (N)															
Lane 1	607	5.5	607	5.5	901[1]	0.674	100	10.8	LOS A	11.5	84.0	Short (P)	25	0.0	NA
Lane 2	135	0.0	135	0.0	437	0.308	100	24.4	LOS B	3.5	24.8	Full	140	0.0	0.0
Approach	742	4.5	742	4.5		0.674		13.3	LOS A	11.5	84.0				
West: French Avenue (W)															
Lane 1	73	1.4	73	1.4	503	0.144	100	30.8	LOS C	2.3	16.1	Full	230	0.0	0.0
Lane 2	175	1.8	175	1.8	300	0.583	100	36.8	LOS C	6.8	48.6	Full	230	0.0	0.0
Approach	247	1.7	247	1.7		0.583		35.0	LOS C	6.8	48.6				
All Vehicles	1816	3.5	1816	3.5		0.700		19.2	LOS B	11.5	84.0				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	46	438	-	484	5.0	915[1]	0.529	100	100.0	2
Lane 2	-	-	117	117	0.9	335	0.349	100	NA	NA
Approach	46	438	117	601	4.2		0.529			

East: French Avenue (E)										
Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	66	-	-	66	0.0	509	0.130	100	NA	NA
Lane 2	-	77	82	159	0.7	227	0.700	100	NA	NA
Approach	66	77	82	225	0.5		0.700			
North: Chapel Road (N)										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	63	544	-	607	5.5	901[1]	0.674	100	100.0	2
Lane 2	-	-	135	135	0.0	437	0.308	100	NA	NA
Approach	63	544	135	742	4.5		0.674			
West: French Avenue (W)										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	73	-	-	73	1.4	503	0.144	100	NA	NA
Lane 2	-	132	43	175	1.8	300	0.583	100	NA	NA
Approach	73	132	43	247	1.7		0.583			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1816	3.5	0.700

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	30	0.0	43	44	3.08	2.05	611	1712	0.357	0.1	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				43	1800	0.024	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	82	83	3.07	2.05	511	1673	0.305	0.1	0.2
Merge Lane	2	-	100.0	Merge Lane is not Opposed				82	1800	0.046	0.0	0.0
West Exit: French Avenue (W) Merge Type: **Priority**												
Exit Short Lane	1	20	0.0	135	135	3.00	2.00	123	1664	0.074	0.2	0.2
Merge Lane	2	-	100.0	Merge Lane is not Opposed				135	1800	0.075	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

East: French Avenue (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 3 [(FutPM) French Avenue / Jacobs Street (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future PM Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Jacobs Street (S)															
Lane 1	318	0.0	318	0.0	1902	0.167	100	2.8	LOS A	0.0	0.0	Full	120	0.0	0.0
Approach	318	0.0	318	0.0		0.167		2.8	NA	0.0	0.0				
North: Jacobs Street (N)															
Lane 1	215	0.0	215	0.0	1787	0.120	100	1.5	LOS A	0.3	2.1	Full	500	0.0	0.0
Approach	215	0.0	215	0.0		0.120		1.5	NA	0.3	2.1				
West: French Avenue (W)															
Lane 1	307	0.7	307	0.7	836	0.368	100	10.5	LOS A	1.9	13.0	Full	195	0.0	0.0
Approach	307	0.7	307	0.7		0.368		10.5	LOS A	1.9	13.0				
All Vehicles	840	0.3	840	0.3		0.368		5.3	NA	1.9	13.0				

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

Approach Lane Flows (veh/h)

South: Jacobs Street (S)

Mov. From S To Exit:	L2 W	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	162	156	318	0.0	1902	0.167	100	NA	NA
Approach	162	156	318	0.0		0.167			

North: Jacobs Street (N)

Mov. From N To Exit:	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	176	39	215	0.0	1787	0.120	100	NA	NA
Approach	176	39	215	0.0		0.120			

West: French Avenue (W)

Mov. From W	L2	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	N	S			veh/h	v/c	%	%	No.
Lane 1	100	207	307	0.7	836	0.368	100	NA	NA
Approach	100	207	307	0.7		0.368			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	840	0.3	0.368

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

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Jacobs Street (S)				
Lane 1	0.0	0.0	0.0	0.0
North: Jacobs Street (N)				
Lane 1	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 1 [(FutSunday) Chapel Road / Rickard Road (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Sunday Network Peak Hour Period
Chapel Road / Rickard Road
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 74 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	66	0.9	66	0.9	552	0.119	53[6]	24.2	LOS B	1.7	12.3	Short (P)	25	0.0	NA
Lane 2	111	2.3	111	2.3	493	0.225	100	23.7	LOS B	3.2	23.0	Full	130	0.0	0.0
Approach	177	1.8	177	1.8		0.225		23.9	LOS B	3.2	23.0				
East: Rickard Road (E)															
Lane 1	367	0.7	367	0.7	1023	0.359	100	13.4	LOS A	7.5	53.0	Full	200	0.0	0.0
Lane 2	377	0.2	377	0.2	1053	0.359	100	10.4	LOS A	7.7	54.3	Full	200	0.0	0.0
Lane 3	186	6.2	186	6.2	590	0.316	100	14.6	LOS B	3.3	24.5	Short	125	0.0	NA
Approach	931	1.6	931	1.6		0.359		12.4	LOS A	7.7	54.3				
North: Chapel Road (N)															
Lane 1	208	5.6	208	5.6	869	0.240	63[5]	17.5	LOS B	4.4	32.1	Short (P)	90	0.0	NA
Lane 2	185	2.8	185	2.8	489	0.379	100	24.9	LOS B	5.6	40.4	Full	130	0.0	0.0
Approach	394	4.3	394	4.3		0.379		21.0	LOS B	5.6	40.4				
West: Rickard Road (W)															
Lane 1	235	0.2	235	0.2	757	0.311	100	17.8	LOS B	5.9	41.5	Full	80	0.0	0.0
Lane 2	232	0.2	232	0.2	746[1]	0.311	100	17.6	LOS B	5.8	40.9	Full	80	0.0	0.0
Lane 3	41	7.7	41	7.7	354	0.116	100	15.5	LOS B	0.8	5.6	Short	22	0.0	NA
Approach	508	0.8	508	0.8		0.311		17.5	LOS B	5.9	41.5				
All Vehicles	2009	1.9	2009	1.9		0.379		16.4	LOS B	7.7	54.3				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.
5 Lane under-utilisation found by the program
6 Lane under-utilisation due to downstream effects

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S	L2	T1	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.

To Exit:	W	N								
Lane 1	41	25	66	0.9		552	0.119	53[6]	0.0	2
Lane 2	-	111	111	2.3		493	0.225	100	NA	NA
Approach	41	136	177	1.8			0.225			

East: Rickard Road (E)

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	186	180	-	367	0.7	1023	0.359	100	NA	NA
Lane 2	-	377	-	377	0.2	1053	0.359	100	NA	NA
Lane 3	-	-	186	186	6.2	590	0.316	100	0.0	2
Approach	186	558	186	931	1.6		0.359			

North: Chapel Road (N)

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	208	-	-	208	5.6	869	0.240	63[5]	0.0	2
Lane 2	-	184	1	185	2.8	489	0.379	100	NA	NA
Approach	208	184	1	394	4.3		0.379			

West: Rickard Road (W)

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	40	195	-	235	0.2	757	0.311	100	NA	NA
Lane 2	-	232	-	232	0.2	746[1]	0.311	100	NA	NA
Lane 3	-	-	41	41	7.7	354	0.116	100	0.0	2
Approach	40	427	41	508	0.8		0.311			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	2009	1.9	0.379

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

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	225	229	3.02	2.01	186	1557	0.120	0.3	0.4
Merge Lane	2	-	100.0	Merge Lane is not Opposed				225	1800	0.125	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	90	0.0	297	305	3.01	2.01	65	1482	0.044	0.5	0.5
Merge Lane	2	-	100.0	Merge Lane is not Opposed				297	1800	0.165	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec

South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Rickard Road (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Rickard Road (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 2 [(FutSunday) Chapel Road / French Avenue (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Sunday Network Peak Hour Period
Chapel Road / French Avenue
Job No. 240874
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 44 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Chapel Road (S)															
Lane 1	392	3.5	392	3.5	1073	0.365	100	4.5	LOS A	3.2	23.0	Short (P)	20	0.0	NA
Lane 2	31	0.0	31	0.0	660	0.046	100	10.7	LOS A	0.3	2.2	Full	130	0.0	0.0
Approach	422	3.2	422	3.2		0.365		5.0	LOS A	3.2	23.0				
East: French Avenue (E)															
Lane 1	40	5.3	40	5.3	285	0.140	100	23.9	LOS B	0.8	5.8	Full	195	0.0	0.0
Lane 2	97	1.1	97	1.1	260	0.372	100	21.9	LOS B	2.0	14.3	Full	195	0.0	0.0
Approach	137	2.3	137	2.3		0.372		22.5	LOS B	2.0	14.3				
North: Chapel Road (N)															
Lane 1	268	4.3	268	4.3	1073	0.250	100	3.5	LOS A	1.8	13.4	Short (P)	25	0.0	NA
Lane 2	64	1.6	64	1.6	559	0.115	100	12.1	LOS A	0.8	5.4	Full	140	0.0	0.0
Approach	333	3.8	333	3.8		0.250		5.1	LOS A	1.8	13.4				
West: French Avenue (W)															
Lane 1	59	0.0	59	0.0	295	0.200	100	24.1	LOS B	1.2	8.2	Full	230	0.0	0.0
Lane 2	106	0.0	106	0.0	272	0.391	100	21.1	LOS B	2.2	15.5	Full	230	0.0	0.0
Approach	165	0.0	165	0.0		0.391		22.2	LOS B	2.2	15.5				
All Vehicles	1057	2.8	1057	2.8		0.391		10.0	LOS A	3.2	23.0				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Approach Lane Flows (veh/h)

South: Chapel Road (S)

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	72	320	-	392	3.5	1073	0.365	100	17.7	2
Lane 2	-	-	31	31	0.0	660	0.046	100	NA	NA
Approach	72	320	31	422	3.2		0.365			
East: French Avenue (E)										

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	40	-	-	40	5.3	285	0.140	100	NA	NA
Lane 2	-	53	44	97	1.1	260	0.372	100	NA	NA
Approach	40	53	44	137	2.3		0.372			
North: Chapel Road (N)										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	22	246	-	268	4.3	1073	0.250	100	0.0	2
Lane 2	-	-	64	64	1.6	559	0.115	100	NA	NA
Approach	22	246	64	333	3.8		0.250			
West: French Avenue (W)										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	59	-	-	59	0.0	295	0.200	100	NA	NA
Lane 2	-	73	34	106	0.0	272	0.391	100	NA	NA
Approach	59	73	34	165	0.0		0.391			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1057	2.8	0.391

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

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: Chapel Road (S) Merge Type: **Priority**												
Exit Short Lane	1	30	0.0	34	34	3.07	2.05	286	1724	0.166	0.0	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				34	1800	0.019	0.0	0.0
North Exit: Chapel Road (N) Merge Type: **Priority**												
Exit Short Lane	1	15	0.0	44	45	3.05	2.03	379	1728	0.219	0.1	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				44	1800	0.025	0.0	0.0
West Exit: French Avenue (W) Merge Type: **Priority**												
Exit Short Lane	1	20	0.0	64	65	3.03	2.02	124	1720	0.072	0.1	0.1
Merge Lane	2	-	100.0	Merge Lane is not Opposed				64	1800	0.036	0.0	0.0

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Chapel Road (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: French Avenue (E)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

North: Chapel Road (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 3 [(FutSunday) French Avenue / Jacobs Street (Site Folder: Future (Post Development))]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Future Sunday Network Peak Hour Period
French Avenue / Jacobs Street
Job No. 240874
Site Category: (None)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Jacobs Street (S)															
Lane 1	179	0.0	179	0.0	1896	0.094	100	3.2	LOS A	0.0	0.0	Full	120	0.0	0.0
Approach	179	0.0	179	0.0		0.094		3.2	NA	0.0	0.0				
North: Jacobs Street (N)															
Lane 1	73	1.4	73	1.4	1794	0.040	100	1.7	LOS A	0.1	0.8	Full	500	0.0	0.0
Approach	73	1.4	73	1.4		0.040		1.7	NA	0.1	0.8				
West: French Avenue (W)															
Lane 1	149	0.0	149	0.0	1039	0.144	100	8.4	LOS A	0.5	3.7	Full	195	0.0	0.0
Approach	149	0.0	149	0.0		0.144		8.4	LOS A	0.5	3.7				
All Vehicles	401	0.3	401	0.3		0.144		4.9	NA	0.5	3.7				

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

Approach Lane Flows (veh/h)

South: Jacobs Street (S)

Mov. From S To Exit:	L2 W	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	102	77	179	0.0	1896	0.094	100	NA	NA
Approach	102	77	179	0.0		0.094			

North: Jacobs Street (N)

Mov. From N To Exit:	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	54	19	73	1.4	1794	0.040	100	NA	NA
Approach	54	19	73	1.4		0.040			

West: French Avenue (W)

Mov. From W	L2	R2	Total	%HV	Cap.	Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane

To Exit:	N	S			veh/h	v/c	%	%	No.
Lane 1	41	108	149	0.0	1039	0.144	100	NA	NA
Approach	41	108	149	0.0		0.144			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	401	0.3	0.144

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

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Jacobs Street (S)				
Lane 1	0.0	0.0	0.0	0.0
North: Jacobs Street (N)				
Lane 1	0.0	0.0	0.0	0.0
West: French Avenue (W)				
Lane 1	0.0	0.0	0.0	0.0

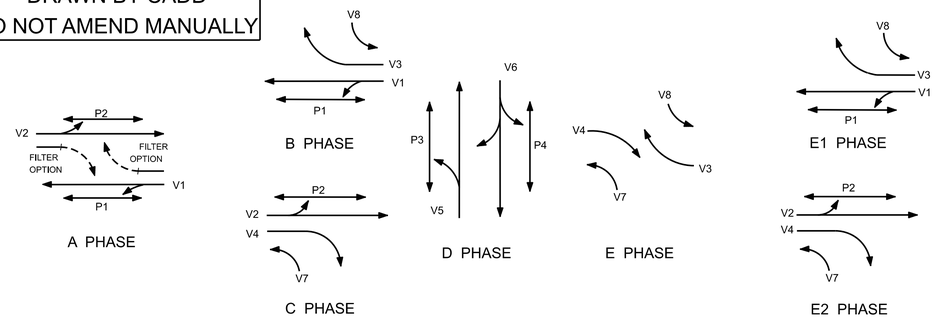
ANNEXURE E: TCS PLANS
(2 SHEETS)

TCS 1203

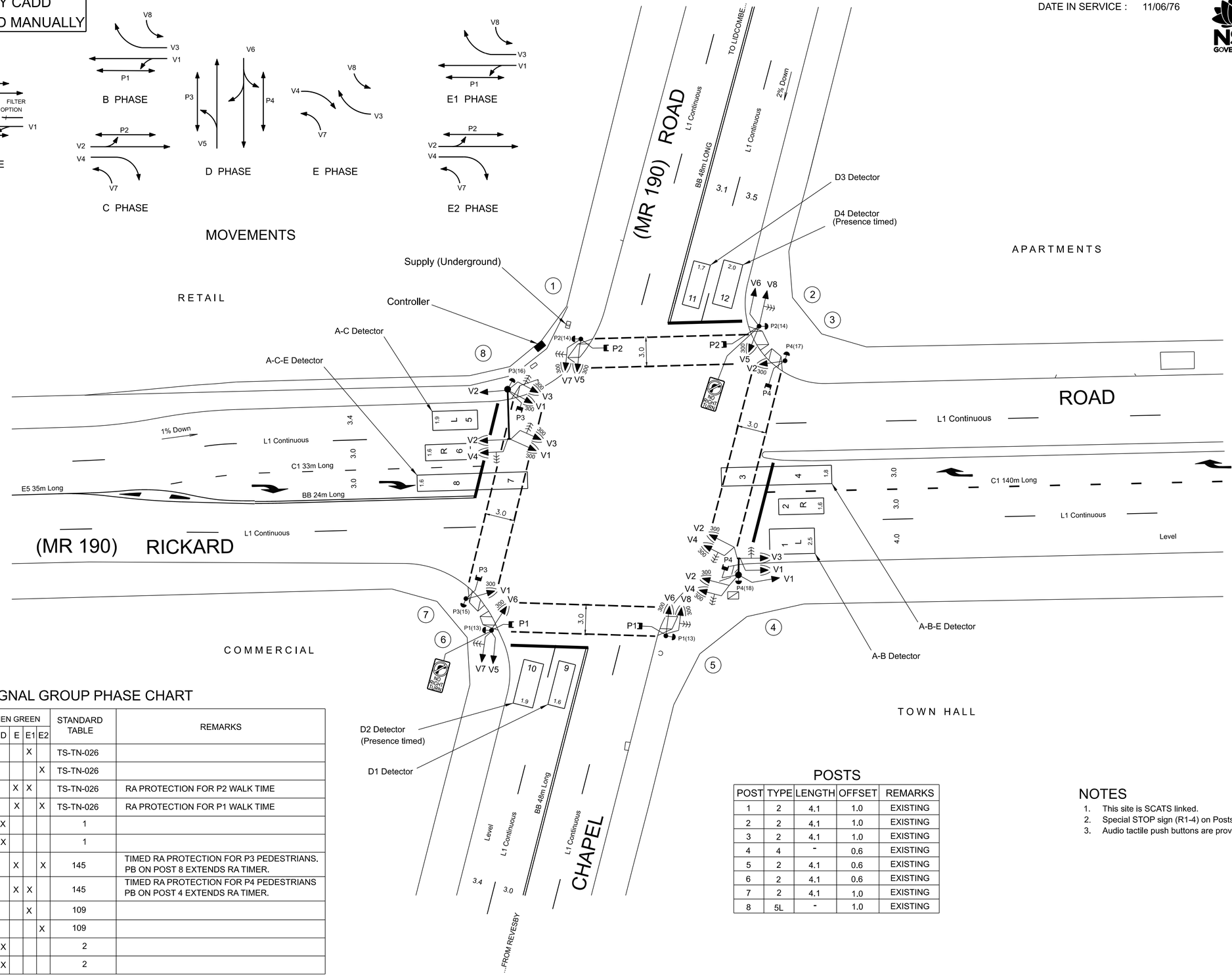
DRAWN BY CADD
DO NOT AMEND MANUALLY

DATE IN SERVICE : 11/06/76

Transport Roads & Maritime Services
NSW GOVERNMENT



MOVEMENTS



SIGNAL GROUP PHASE CHART

SIGNAL GROUP	PHASE WHEN GREEN							STANDARD TABLE	REMARKS
	A	B	C	D	E	E1	E2		
V1	X	X				X		TS-TN-026	
V2	X		X				X	TS-TN-026	
V3		X			X	X		TS-TN-026	RA PROTECTION FOR P2 WALK TIME
V4			X		X		X	TS-TN-026	RA PROTECTION FOR P1 WALK TIME
V5				X				1	
V6				X				1	
V7			X		X		X	145	TIMED RA PROTECTION FOR P3 PEDESTRIANS. PB ON POST 8 EXTENDS RA TIMER.
V8		X			X	X		145	TIMED RA PROTECTION FOR P4 PEDESTRIANS PB ON POST 4 EXTENDS RA TIMER.
P1	X	X				X		109	
P2	X		X				X	109	
P3				X				2	
P4				X				2	

POSTS

POST	TYPE	LENGTH	OFFSET	REMARKS
1	2	4.1	1.0	EXISTING
2	2	4.1	1.0	EXISTING
3	2	4.1	1.0	EXISTING
4	4	-	0.6	EXISTING
5	2	4.1	0.6	EXISTING
6	2	4.1	0.6	EXISTING
7	2	4.1	1.0	EXISTING
8	5L	-	1.0	EXISTING

NOTES

1. This site is SCATS linked.
2. Special STOP sign (R1-4) on Posts 2 and 6.
3. Audio tactile push buttons are provided on all posts.

A ORIGINAL ISSUE
J.SWR 5477 1.4.93
ADDED SDO
ALTERED KERBLINES TO SUIT ROADWORKS.
TH CHECKED CE 15233

B Issue J.SWR80 17/10/1995
Add=Reg.Stop Sign on posts 2,5 and 6.
K.K. 26/10/1995

C ISSUE J.SH 570
ADDED NRT SIGNS TO POSTS 2 & 6 (BOTH DIRECTIONS), P3 & P4 PB'S SPLIT.
COUNCIL (B+LINE) 18/8/2015
A.P 18/9/15

D ISSUE OFFICE INSTRUCTION
SOUTHBOUND NRT SIGNS REMOVED AS PER COUNCIL'S TMP
COUNCIL (B+LINE) 3/12/2015

E Issues: WAE
Post 4 type changed.
TL NSW 09/2019
KP 24/07/2020 AL

PUBLIC UTILITY LEGEND	
HYDRANT	□
STOP VALVE	▲
GAS VALVE	#
SEWER MANHOLE	Ⓢ
TELECOM PIT	◪
ELECT LIGHT POLE	☼
POWER POLE	○
STAY POLE	⊘
TELEPHONE BOX	T
TELECOM PILLAR	◕

REFERENCE PLANS	
SYMBOLS/ABBS.	VD003-6
STD POSIT.	VD001-5
DET SCHED EXP	VD018-10
PRES. DETECT	VC005-17
SSG DIS. SEQ.	VD018-8
CABLE INSTALL.	SHEET 7
CABLE CHART	SHEET 9
SURVEYOR : DIGITISER	
DATE : 14/12/92	

U.B.D. Ref. MAP 251 Q15
I.S.G. E: 303 050
CO-ORDS N: 1 254 850

DESIGNED T.HUFTON
CHECKED G.EYRE
T.HUFTON
SITE CHECKED
F.D.REID
RECOMMENDED

APPROVED
A.J. WESLEY
DESIGN ENGINEER
10.06.93

ACCEPTED
10.6.93
DATE

ROADS AND MARITIME SERVICES

BANKSTOWN COUNCIL AREA
TRAFFIC SIGNALS AT
(MR 190) CHAPEL ROAD AND
(MR 190) RICKARD ROAD
BANKSTOWN

DESIGN LAYOUT

EXISTING ☒ PROPOSED ☐

CADD FILE: VV1800_5E_DES.dgn

SCALE 5 0 (1:200) 5 10

ISSUE E

FILE SF2014/010021

SUPERSEDES SHEET/ISSUE 5/D

REGN. DS2014/001594

TCS No. 1203

SHEET 5

7000.026.VV.4408

DRAWN BY CADD
DO NOT AMEND MANUALLY

DATE IN SERVICE : 20 JUNE 2011

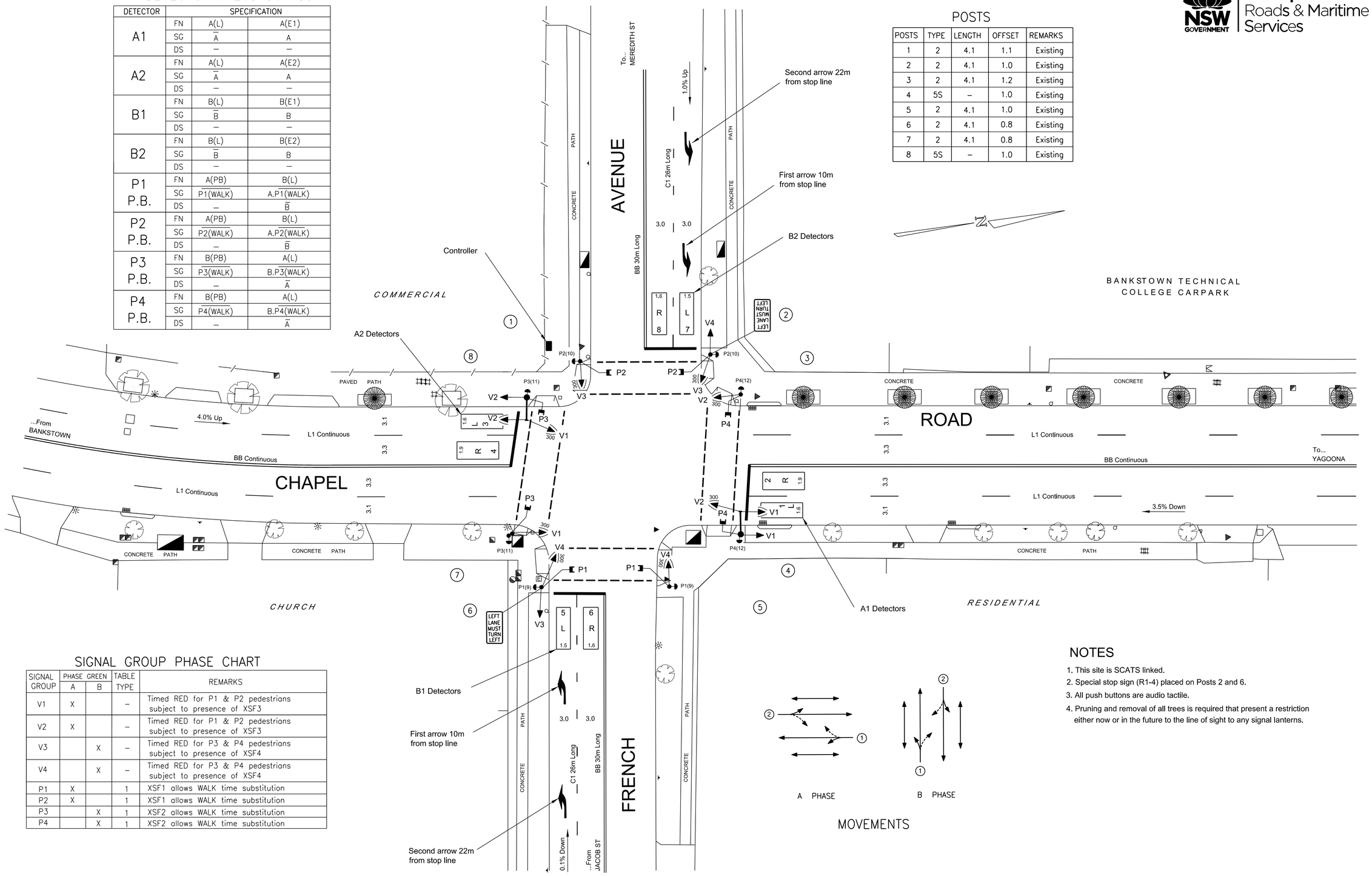
NSW GOVERNMENT Transport Roads & Maritime Services

DETECTOR SPECIFICATION

DETECTOR		SPECIFICATION	
A1	FN	A(L)	A(E1)
	SG	$\overline{A}$	A
	DS	–	–
A2	FN	A(L)	A(E2)
	SG	$\overline{A}$	A
	DS	–	–
B1	FN	B(L)	B(E1)
	SG	$\overline{B}$	B
	DS	–	–
B2	FN	B(L)	B(E2)
	SG	$\overline{B}$	B
	DS	–	–
P1 P.B.	FN	A(PB)	B(L)
	SG	P1(WALK)	A.P1(WALK)
	DS	–	$\overline{B}$
P2 P.B.	FN	A(PB)	B(L)
	SG	P2(WALK)	A.P2(WALK)
	DS	–	$\overline{B}$
P3 P.B.	FN	B(PB)	A(L)
	SG	P3(WALK)	B.P3(WALK)
	DS	–	$\overline{A}$
P4 P.B.	FN	B(PB)	A(L)
	SG	P4(WALK)	B.P4(WALK)
	DS	–	$\overline{A}$

POSTS

POSTS	TYPE	LENGTH	OFFSET	REMARKS
1	2	4.1	1.1	Existing
2	2	4.1	1.0	Existing
3	2	4.1	1.2	Existing
4	5S	–	1.0	Existing
5	2	4.1	1.0	Existing
6	2	4.1	0.8	Existing
7	2	4.1	0.8	Existing
8	5S	–	1.0	Existing



SIGNAL GROUP PHASE CHART

SIGNAL GROUP	PHASE GREEN A	PHASE GREEN B	TABLE TYPE	REMARKS
V1	X		–	Timed RED for P1 & P2 pedestrians subject to presence of XSF3
V2	X		–	Timed RED for P1 & P2 pedestrians subject to presence of XSF3
V3		X	–	Timed RED for P3 & P4 pedestrians subject to presence of XSF4
V4		X	–	Timed RED for P3 & P4 pedestrians subject to presence of XSF4
P1	X		1	XSF1 allows WALK time substitution
P2	X		1	XSF1 allows WALK time substitution
P3		X	1	XSF2 allows WALK time substitution
P4		X	1	XSF2 allows WALK time substitution

MOVEMENTS

NOTES

1. This site is SCATS linked.
2. Special stop sign (R1-4) placed on Posts 2 and 6.
3. All push buttons are audio tactile.
4. Pruning and removal of all trees is required that present a restriction either now or in the future to the line of sight to any signal lanterns.

A ORIGINAL ISSUE WAE 05/11

'B' ISSUE WAE 05/11
MINOR POST POSITION CHANGES.
NOTES AMENDED TO SUIT WAE
CORRIGAN

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	▲	STD POSIT	VD001-5
GAS VALVE	#	DET SCHED EXP	VD018-10
SEWER MANHOLE	Ⓢ	PRES. DETECT	VC005-17
TELECOM PIT	◪	SSG DIS. SEQ.	VD018-8
ELECT LIGHT POLE	☾	CABLE CHART	SHEET 3
POWER POLE	○	INSTALL LAYOUT	SHEET 2
STAY POLE	⊘		
TELEPHONE BOX	T	SURVEYOR : BCC	
TELECOM PILLAR	◕	DATE : 2010	

U.B.D. Ref. MAP 251 Q14
I.S.G. E: 303 134
CO-ORDS N: 1 246 009
DESIGNED J BATES
CHECKED -
J BATES
SITE CHECKED
RECOMMENDED

DESIGN APPROVAL
APPROVED
POSITION MANAGER
DATE 10/12/10
B-Line Drafting behalf of Council

RMS ACCEPTANCE
RECOMMENDED
POSITION Network Operations Leader
DATE 23/12/10
ACCEPTED
POSITION RNL
DATE 23/12/10

ROADS AND MARITIME SERVICES

BANKSTOWN CITY COUNCIL AREA
TRAFFIC SIGNALS AT THE INTERSECTION OF CHAPEL ROAD AND FRENCH AVENUE
BANKSTOWN

DESIGN LAYOUT TCS No 4408

EXISTING ☒ PROPOSED ☐
CADD FILE: VV4408_1B.dgn
SCALE 5 0 (1:200) 5 10
ISSUE B
FILE 26 TS 382
SUPERSEDES SHEET/ISSUE 1/A
REGN. 7000.026.VV.4408
SHEET 1

ANNEXURE F: TRAVEL MODE DURVEY QUESTIONAIRE
(2 SHEETS)

TRAVEL MODE SURVEY QUESTIONS

How did you arrive to church today?

- Car (as Driver)
- Passenger in Car
- Train (Due to the closure of Bankstown Station, select this option if the train is your usual mode of transport)
- Public Bus
- Only Walked
- Bicycle
- Motorcycle
- Taxi, Uber or other on-demand transport services
- Other – Please specify _____

If you drove, how many passengers were in the car with you? _____

If you drove, where did you park?

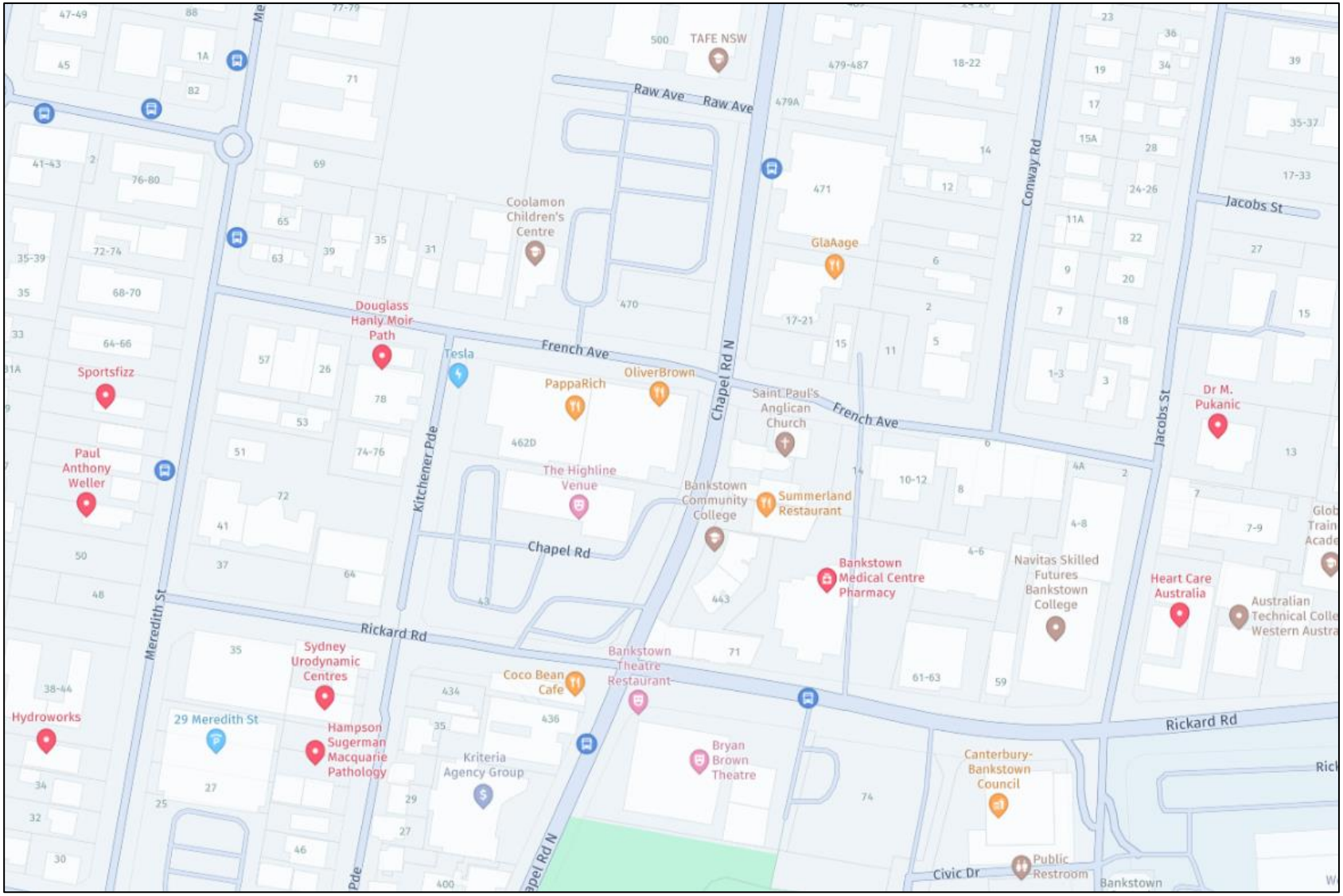
- On-Site
- On-Street
- Public Car Park

If you drove, parked 'On-Street' or 'Public Car Park', what street/car park did you park in? _____

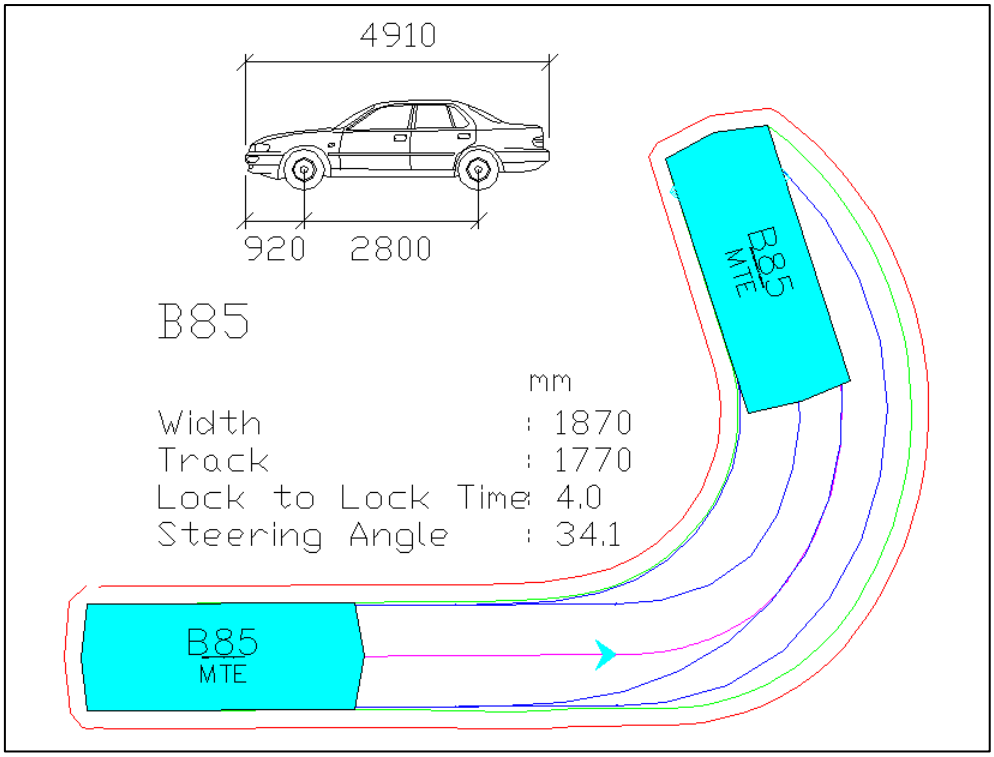
How will you depart church today?

- Car (as Driver)
- Passenger in Car
- Train (Due to the closure of Bankstown Station, select this option if the train is your usual mode of transport)
- Public Bus
- Only Walked
- Bicycle
- Motorcycle
- Taxi, Uber or other on-demand transport services
- Other – Please specify _____

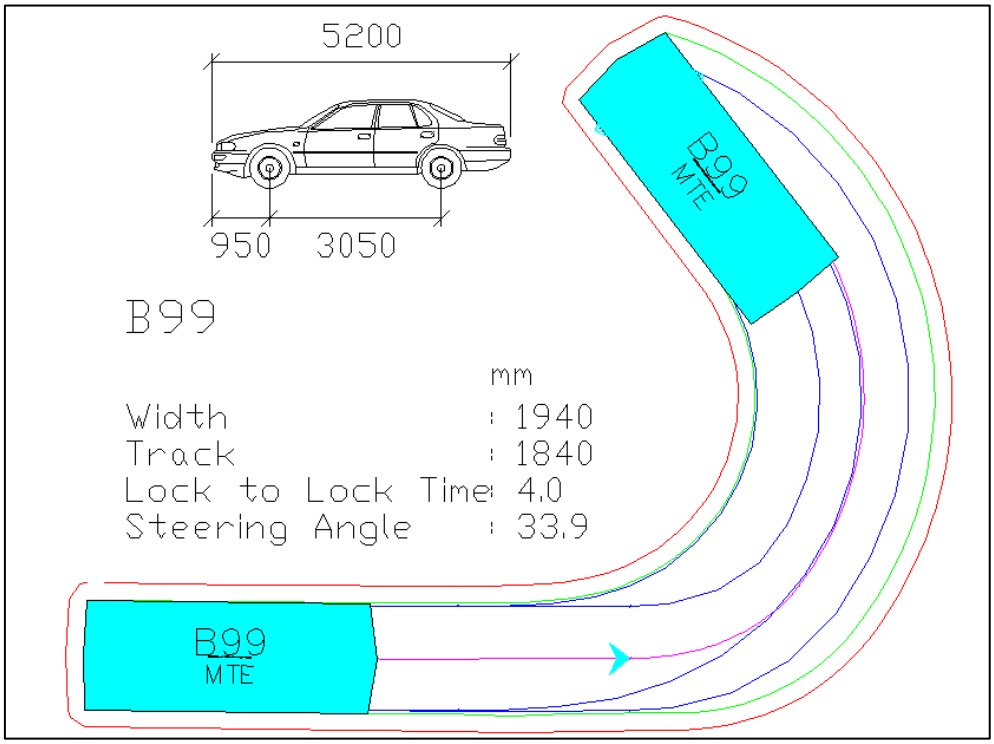
MAP OF SURROUNDING STREETS



ANNEXURE G: SWEPT PATH TEST RESULTS
(9 SHEETS)



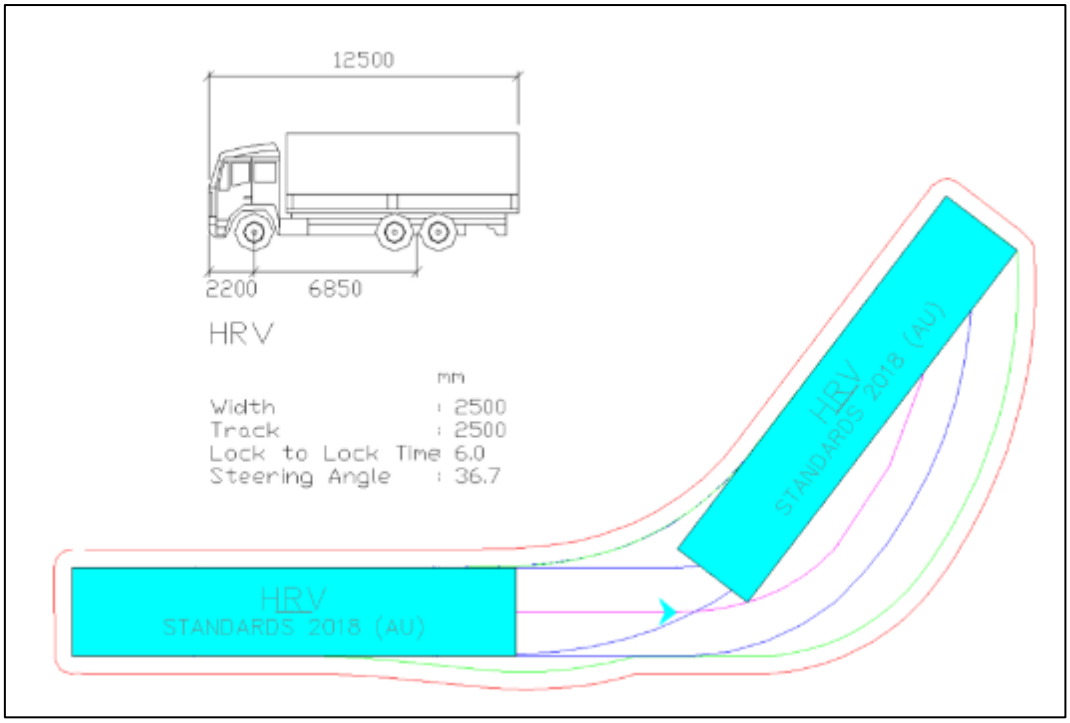
AUSTRALIAN STANDARD 85TH PERCENTILE SIZE VEHICLE (B85)



AUSTRALIAN STANDARD 99.8TH PERCENTILE SIZE VEHICLE (B99)

Blue – Tyre Path
Green – Vehicle Body
Red – 300mm Clearance

All tests performed at 10km/h on public roads and 5km/h internally.

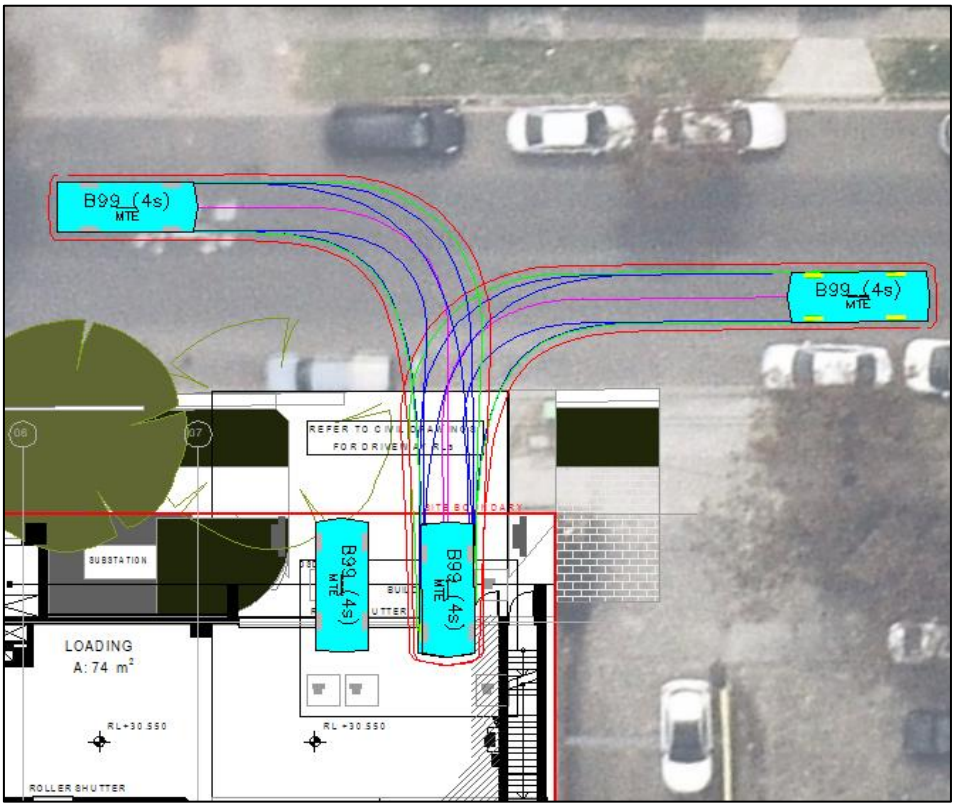


AUSTRALIAN STANDARD HEAVY RIGID VEHICLE (HRV)

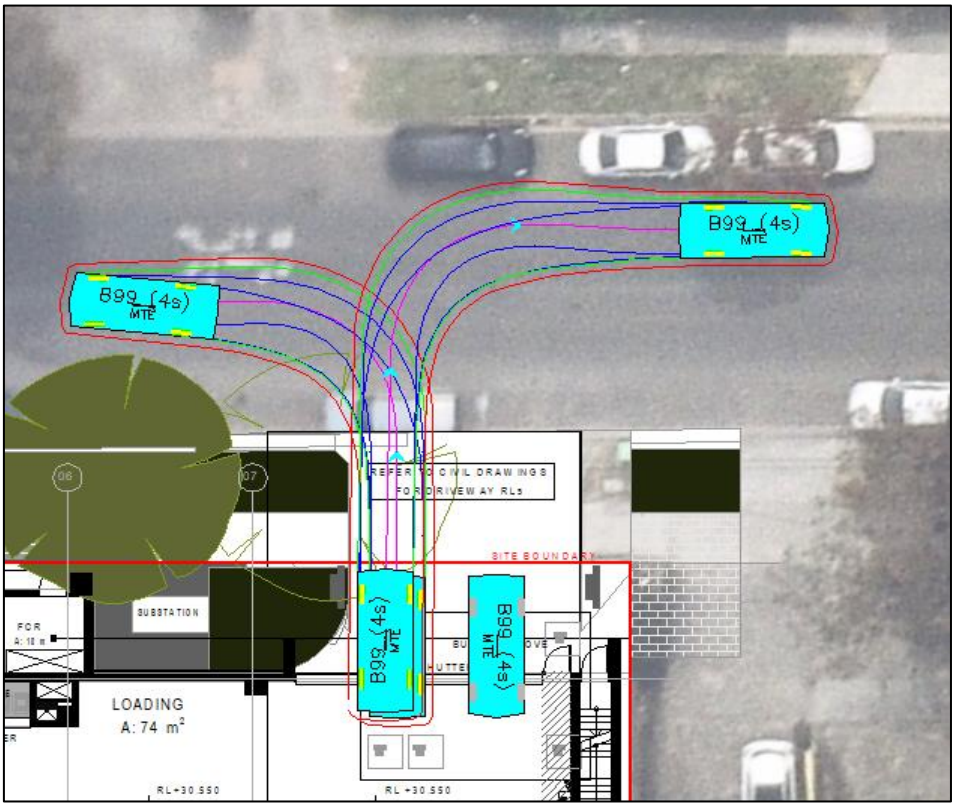
Blue – Tyre Path
Green – Vehicle Body
Red – 500mm Clearance

All tests performed at 10km/h on public roads and 5km/h internally.

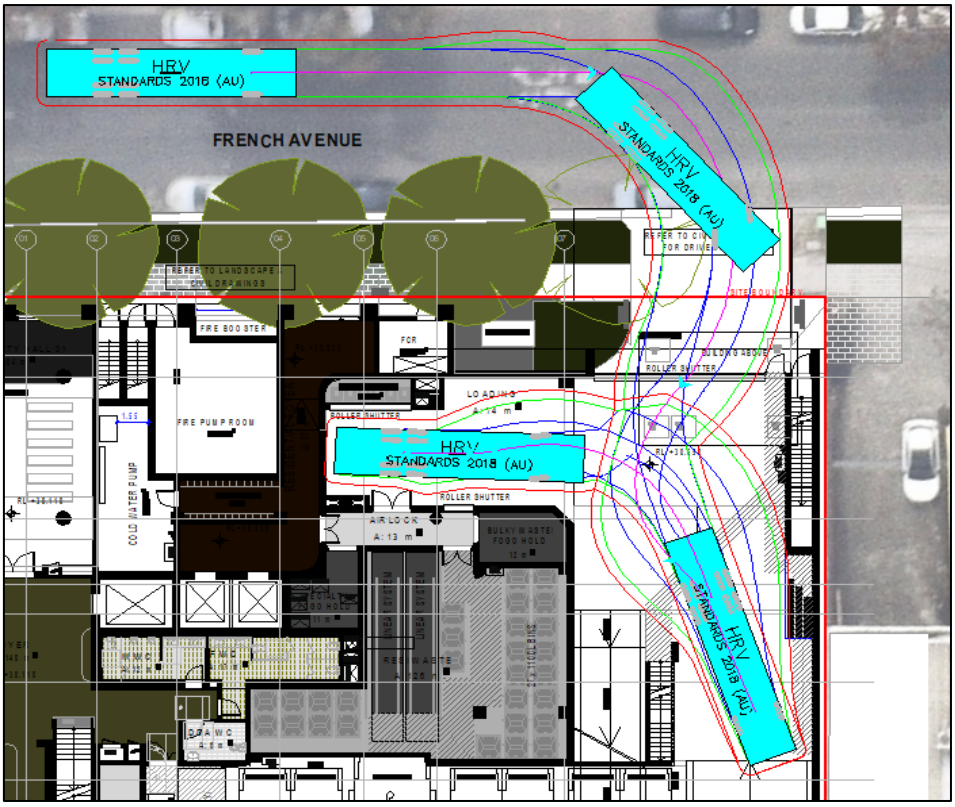
GROUND FLOOR

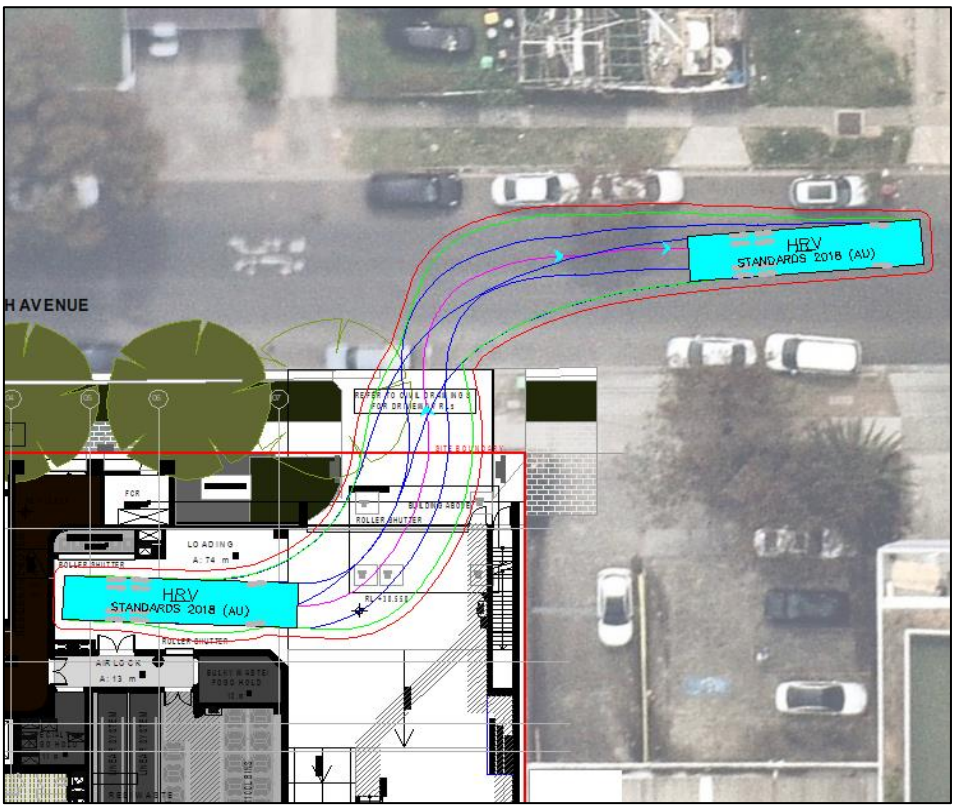


B99 – SITE ACCESS
SUCCESSFUL

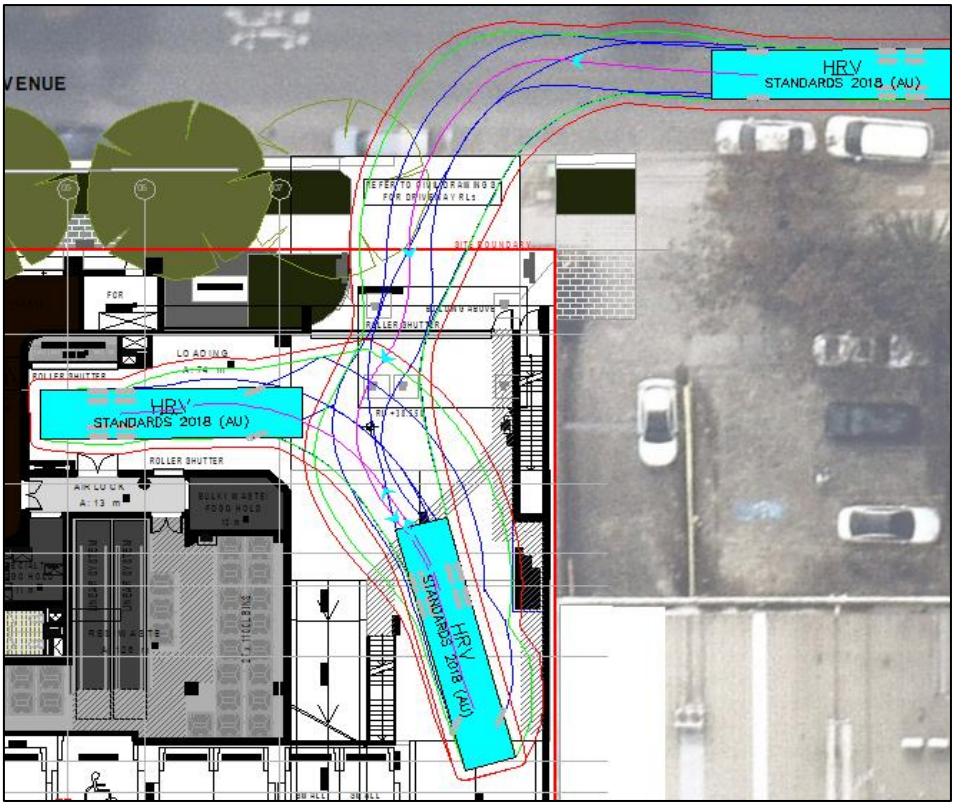


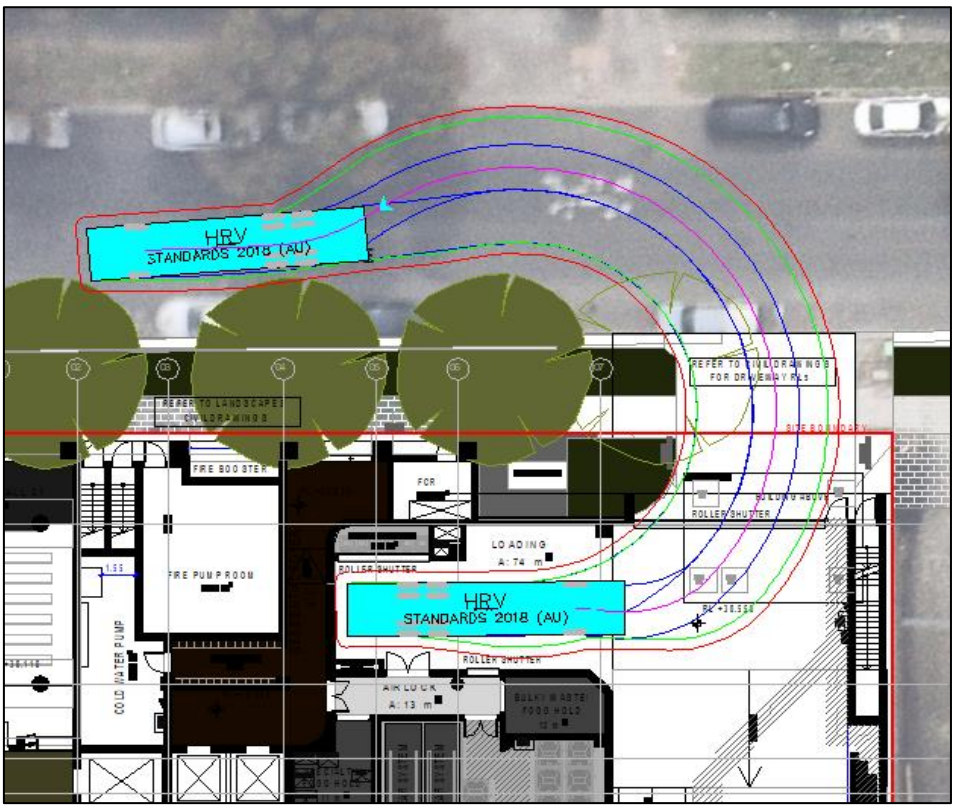
B99 – SITE EGRESS
SUCCESSFUL



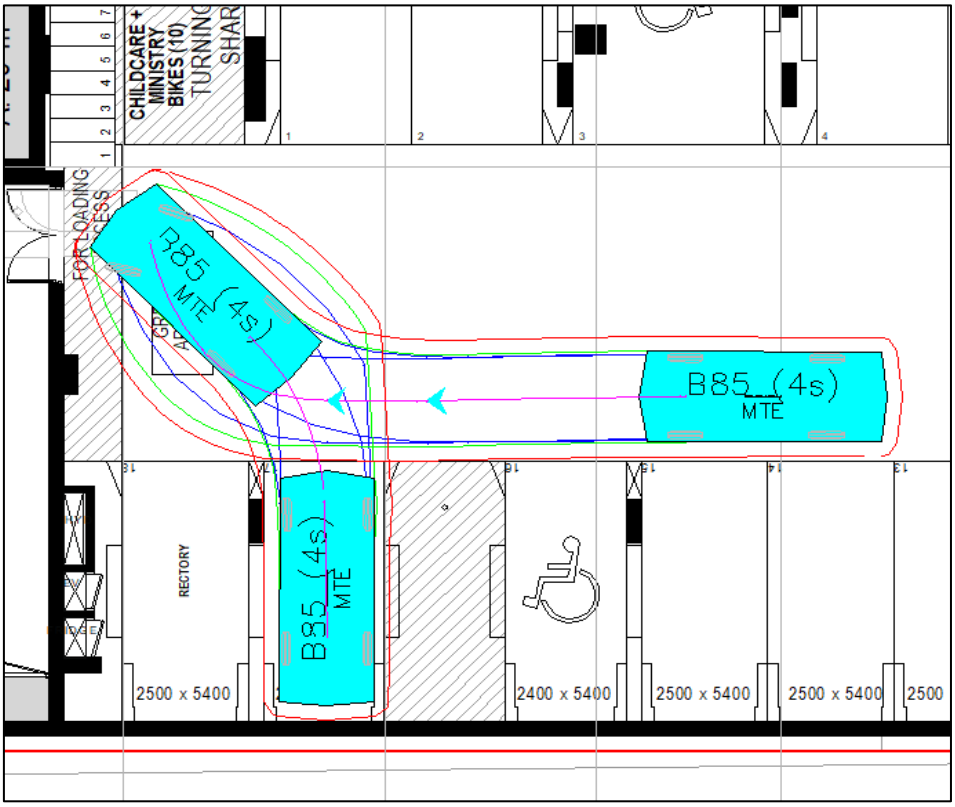


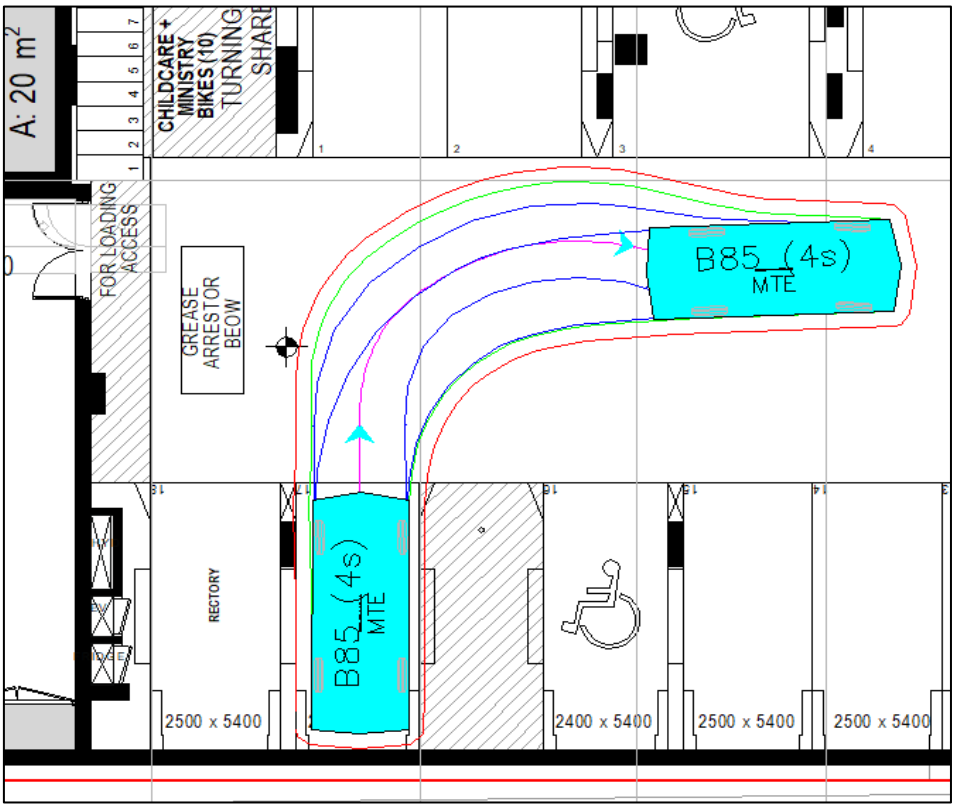
12.5M LENGTH HRV – SITE ACCCES, SITE EGRESS AND LOADING [1]
SUCCESSFUL – 2 Manoeuvres Reverse IN, 1 Manoeuvre Forward OUT





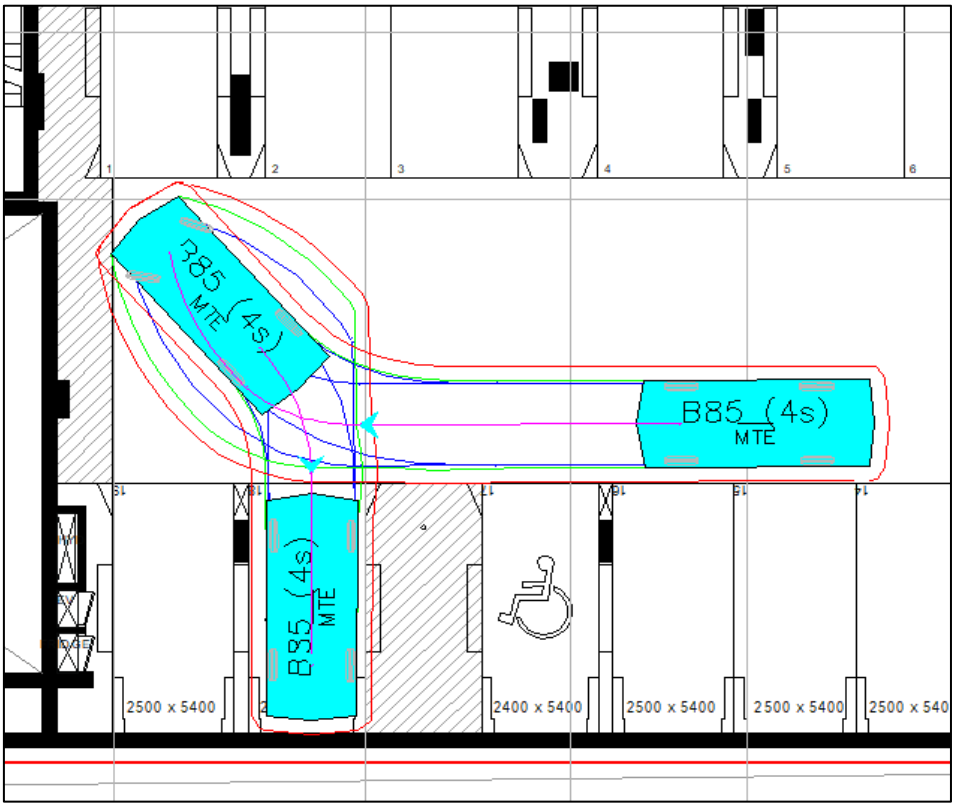
12.5M LENGTH HRV – SITE ACCCES, SITE EGRESS AND LOADING [2]
SUCCESSFUL – 2 Manoeuvres Reverse IN, 1 Manoeuvre Forward OUT

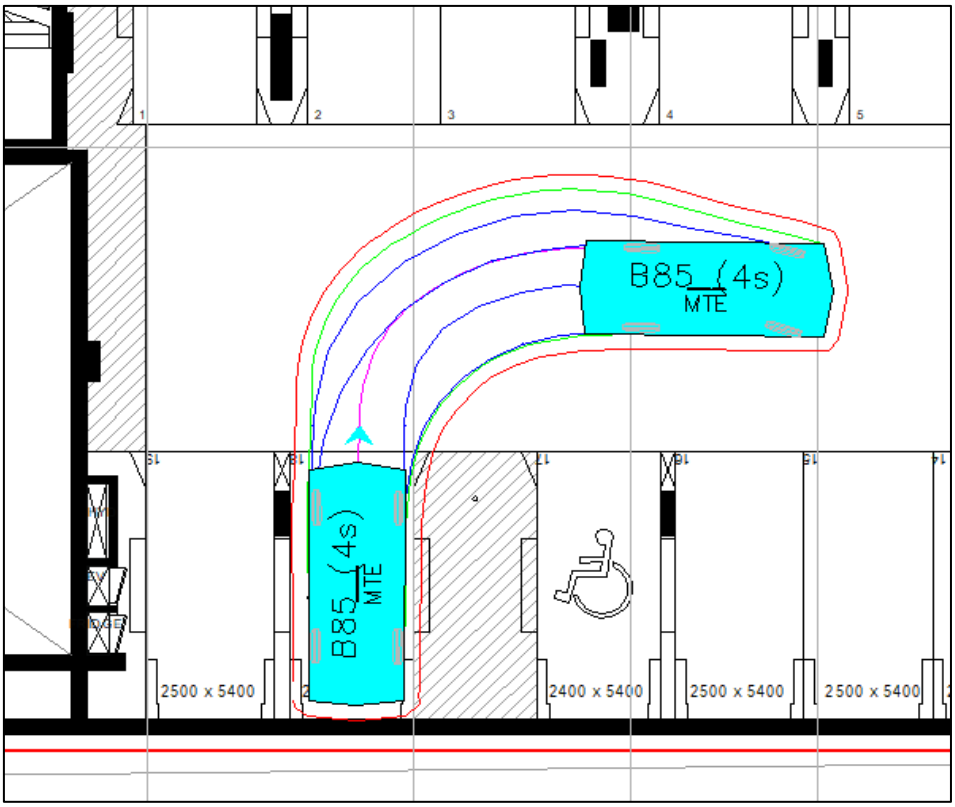




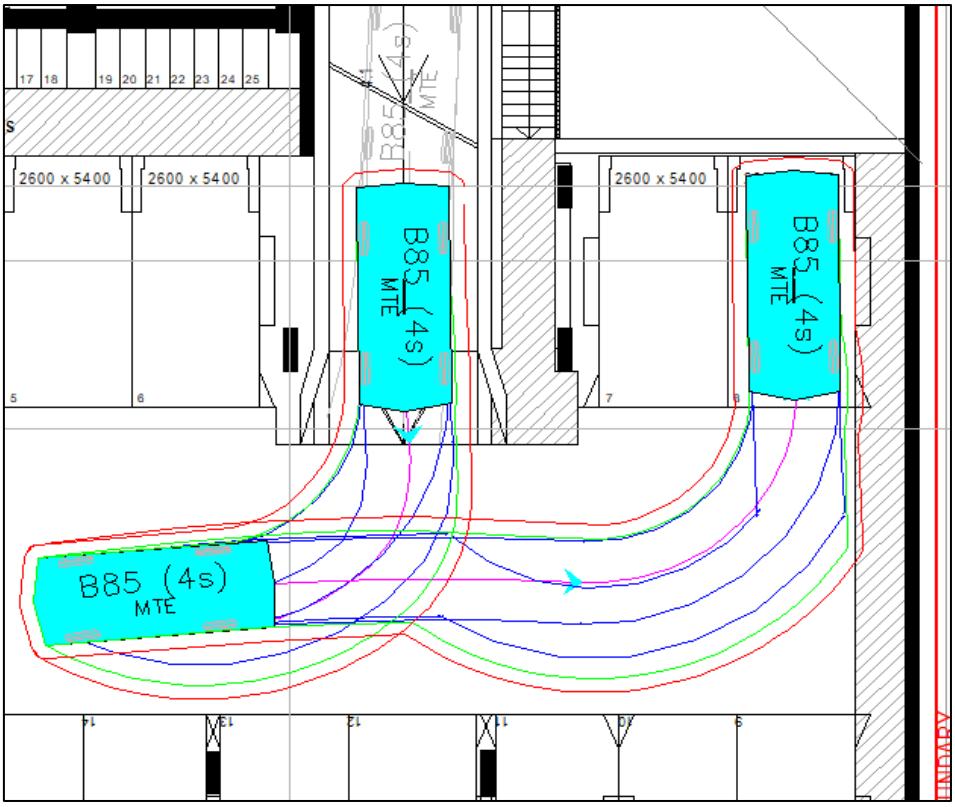
ACCESSIBLE PARKING SPACE – B85 PARKING SUCCESSFUL

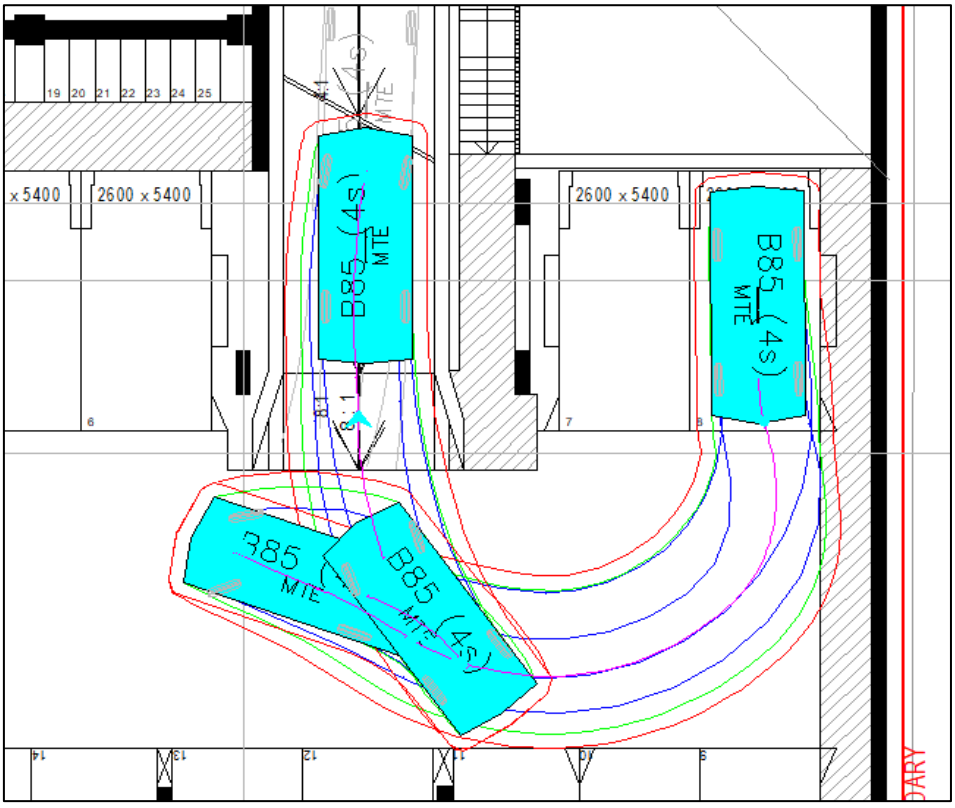
MEZZANINE CAR PARK



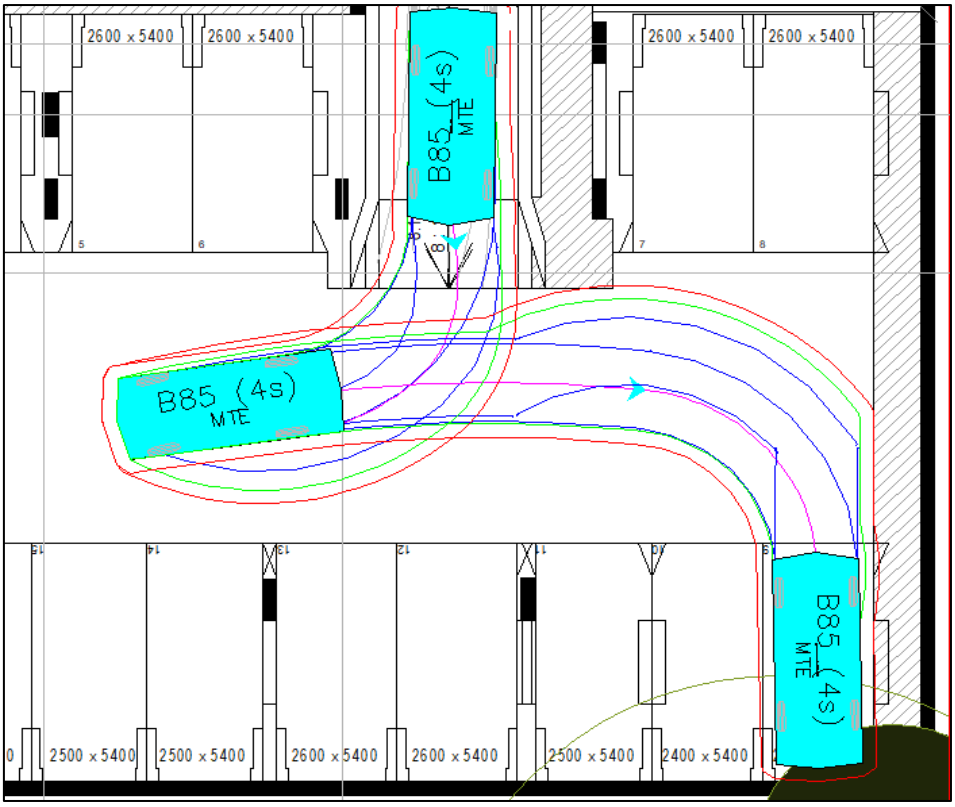


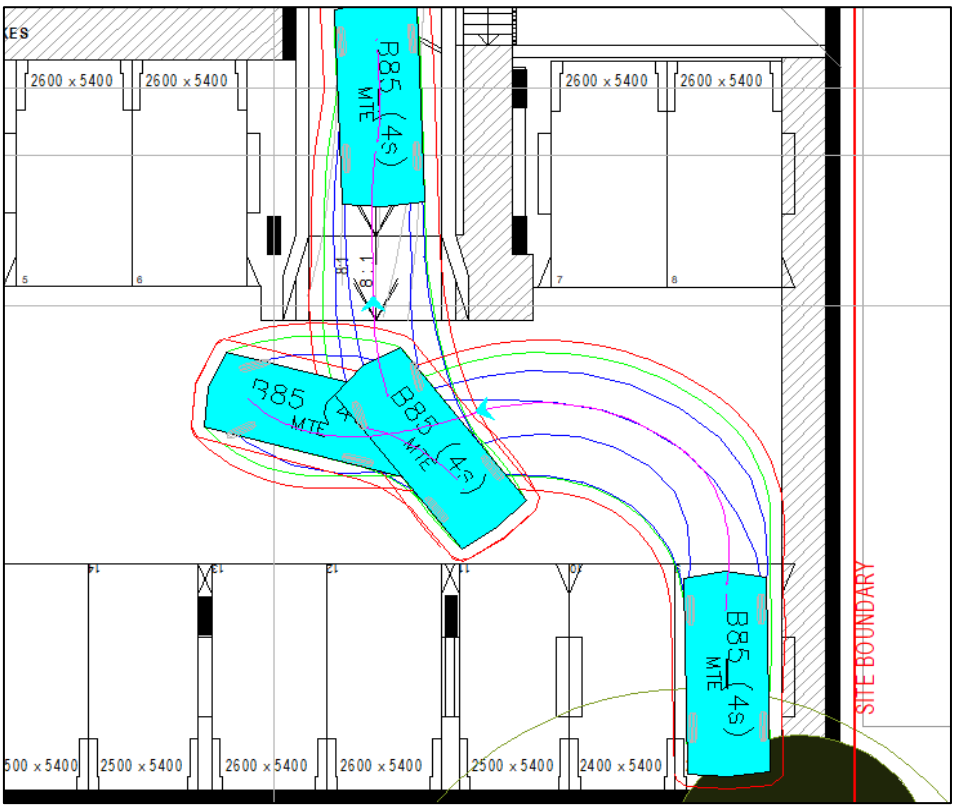
ACCESSIBLE SPACE [1] – B85 PARKING SUCCESSFUL





PARKING SPACE [2] – B85 PARKING SUCCESSFUL





PARKING SPACE [3] – B85 PARKING SUCCESSFUL