TRAFFIX
TRAFFIC AND TRANSPORT PLANNERS

Planning Proposal

Proposed Mix-Use Development
80 O'Sullivan Road, Leumeah

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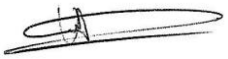
v03	23/06/2023	Neil Caga	Vince Doan	

TRAFFIX

CONTENTS

1. INTRODUCTION

TRAFFIX has been commissioned by Red Cape Hotel Group Pty Ltd to undertake a traffic impact assessment in support of a planning proposal relating to mixed-use development at 80 O'Sullivan Rd, Leumeah. The development is located within the Campbelltown City Council local government area and has been assessed under that Council's controls.

This report documents the findings of our investigations and should be read in the context of the planning report, prepared separately.

The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed development
- Section 5: Assesses the parking requirements
- Section 6: Assesses traffic impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions

2. LOCATION AND SITE

The subject site at 80 O'Sullivan Road, Leumeah is located approximately 2.4 kilometres northeast of Campbelltown town centre and 190 metres south of Leumeah Railway Station. More specifically, it is situated on the northeast corner of the Pembroke Road and O'Sullivan Road intersection and is legally identified as Lot 201 in DP1052199.

The site is irregular in configuration, with a total site area of 8,117m^2 and comprises the following boundaries and approximate lengths:

- 120 metre northern boundary to neighbouring residential properties and at-grade carpark;
- 120 metre eastern boundary to vacant land and an at-grade carpark;
- 110 metre southern frontage to Pembroke Road; and
- 40 metre western frontage to O'Sullivan Road.

The site accommodates the Leumeah Hotel an existing registered hotel, Liquor Stax Leumeah Bottle Shop and associated at-grade carpark. The site currently accommodates three (3) vehicular access from O'Sullivan Road in the north via an internal road, O'Sullivan Road in the west and Pembroke Road in the southeast corner of the site.

A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**. Reference should also be made to the Photographic Record presented in **Appendix A**, which provides an appreciation of the general character of roads and other key attributes in proximity to the site.

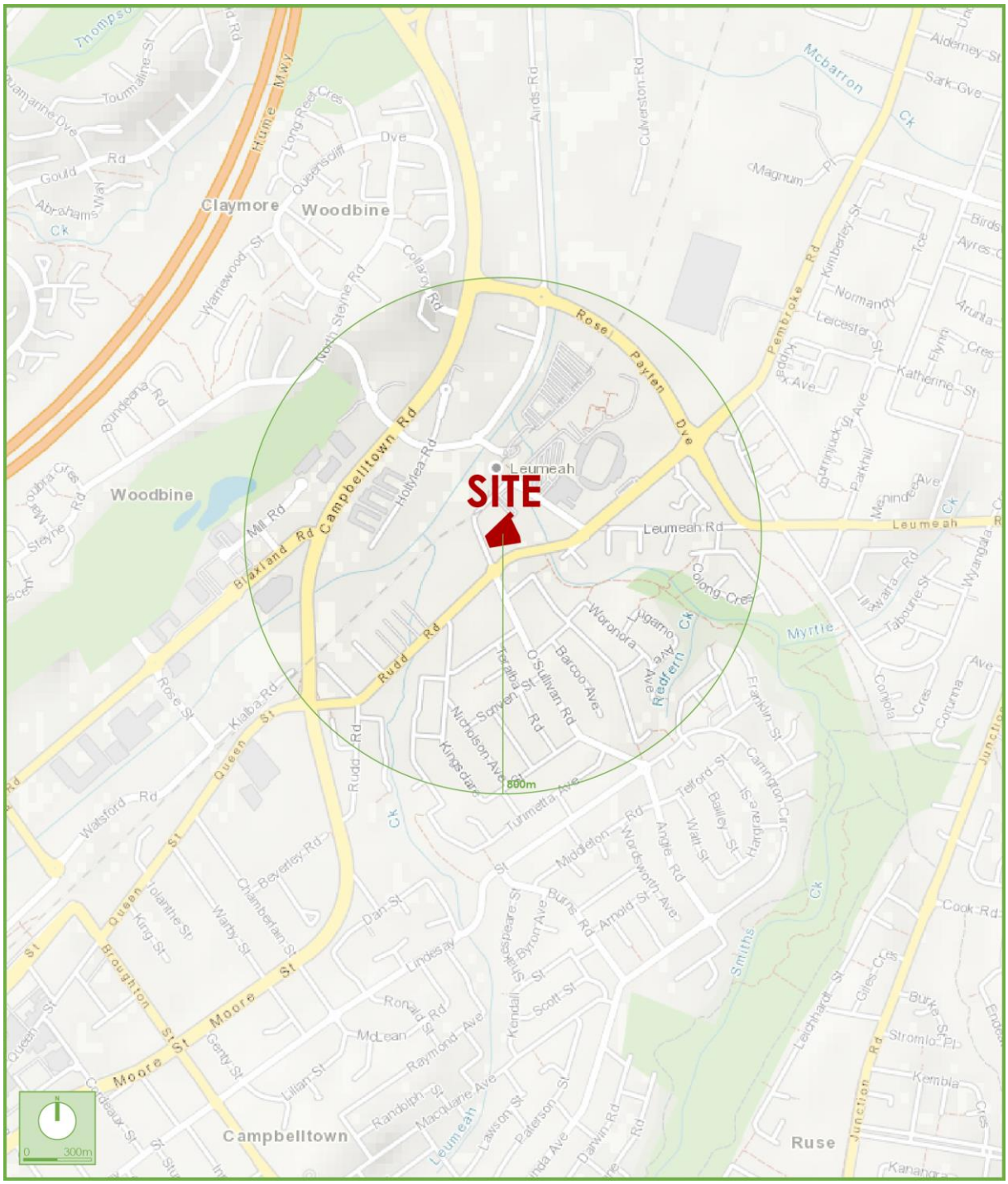


Figure 1: Location Plan

Figure 2: Site Plan

3. EXISTING TRAFFIC CONDITIONS

3.1 Road Network

The road hierarchy in the vicinity of the site is shown in **Figure 3** with the following roads of particular interest:

- Pembroke Road: forms part of a TfNSW Main Road (MR680) that traverses north-south between Minto Road in the north and Rudd Road in the south. Within the vicinity of the site, it is subject to 60km/h speed zoning and accommodates a single lane of traffic in each direction. Pembroke Road does not permit on-street parking along either side of the road.
- Rudd Road: forms part of a TfNSW Main Road (MR680) that traverses east-west between Pembroke Road in the east and Campbelltown Road via Queen Street in the west. It is subject to 60km/h speed zoning and accommodates a single lane of traffic in each direction. Rudd Road permits unrestricted on-street parking along both sides of the road.
- Rose Payten Drive: forms part of an unclassified regional road (RR7190) that traverses east-west between Leumeah Road via Smiths Creek Bypass in the east and Campbelltown Road in the west. It is subject to 60km/h speed zoning and accommodates 1-2 lanes of traffic in each direction. Rose Payten Drive does not permit on-street parking along either side of the road.
- O'Sullivan Road: a local road that traverses north-south between Old Leumeah Road in the north and Lindesay Street in the south. Within the vicinity of the site, it is subject to 50km/h speed zoning and accommodates a single lane of traffic in each direction. O'Sullivan Road permits unrestricted on-street parking along both sides of the road.

- Old Leumeah Road: a local road that traverses north-south between O'Sullivan Road in the north and Pembroke Road in the south. It is subject to 50km/h speed zoning and accommodates a single lane of traffic in each direction. Old Leumeah Road does not permit on-street parking on either side of the road.

It can be seen from **Figure 3** that the site is conveniently located within the main arterial roads serving the region, being Campbelltown Road and Pembroke/Rudd Road. As such, traffic is able to be distributed onto the wider road network, minimising traffic impacts.

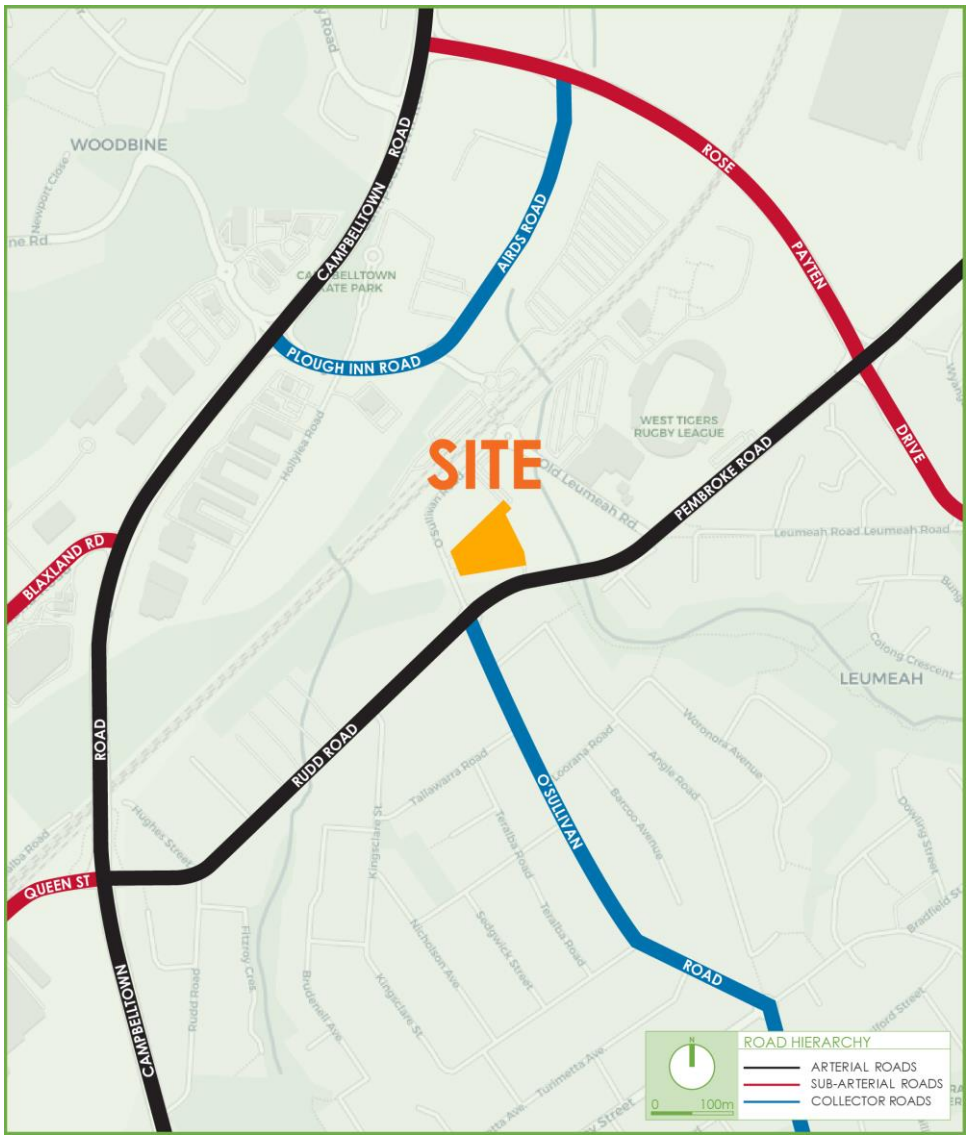


Figure 3: Road Hierarchy

3.2 Key Intersections

The key intersections in the vicinity of the site are shown below and provide an understanding of the existing road geometry and alignment.

3.2.1 O'Sullivan Road, Pembroke Road and Rudd Road

It can be seen from **Figure 4** that the intersection of O'Sullivan Road, Pembroke Road and Rudd Road is a four-legged roundabout, with a pedestrian refuge island provided for each leg.

Figure 4: O'Sullivan Road, Pembroke Road and Rudd Road Intersection

The main attributes of each approach are outlined as follows:

- O'Sullivan Road (north-south)
  - The northern approach provides a single lane from which all movements can be made.
  - The southern approach provides two (2) lanes, with left turns permitted via a slip lane and all other movements permitted from the eastern lane.
- Pembroke Road and Rudd Road (east-west)
  - The eastern approach provides a single lane from which all movements can be made.
  - The western approach provides a single lane from which all movements can be made.

3.2.2 Pembroke Road and Old Leumeah Road

It can be seen from **Figure 5** that the intersection of Pembroke Road and Old Leumeah Road is a three-legged signalised intersection, with Pembroke Road being the major road and signalised pedestrian crossings on the northern and eastern legs.

Figure 5: Pembroke Road and Old Leumeah Road Intersection

The main attributes of each approach are outlined as follows:

- Pembroke Road (east-west)
  - The eastern approach provides two (2) lanes, with a dedicated right-turn only lane and a single through-lane.
  - The western approach provides two (2) through lanes, with left-turns permitted from the northern lane.
- Old Leumeah Road (north)
  - The northern approach provides two (2) lanes, with left-turns permitted from the eastern lane and right-turns permitted from the western lane.

3.2.3 Pembroke Road and Rose Payton Drive

It can be seen from **Figure 6** that the intersection of Pembroke Road and Rose Payton Drive is a four-legged signalised intersection, with all legs provided slip lanes with zebra crossings and signalised pedestrian crossings on the eastern, southern and western legs.

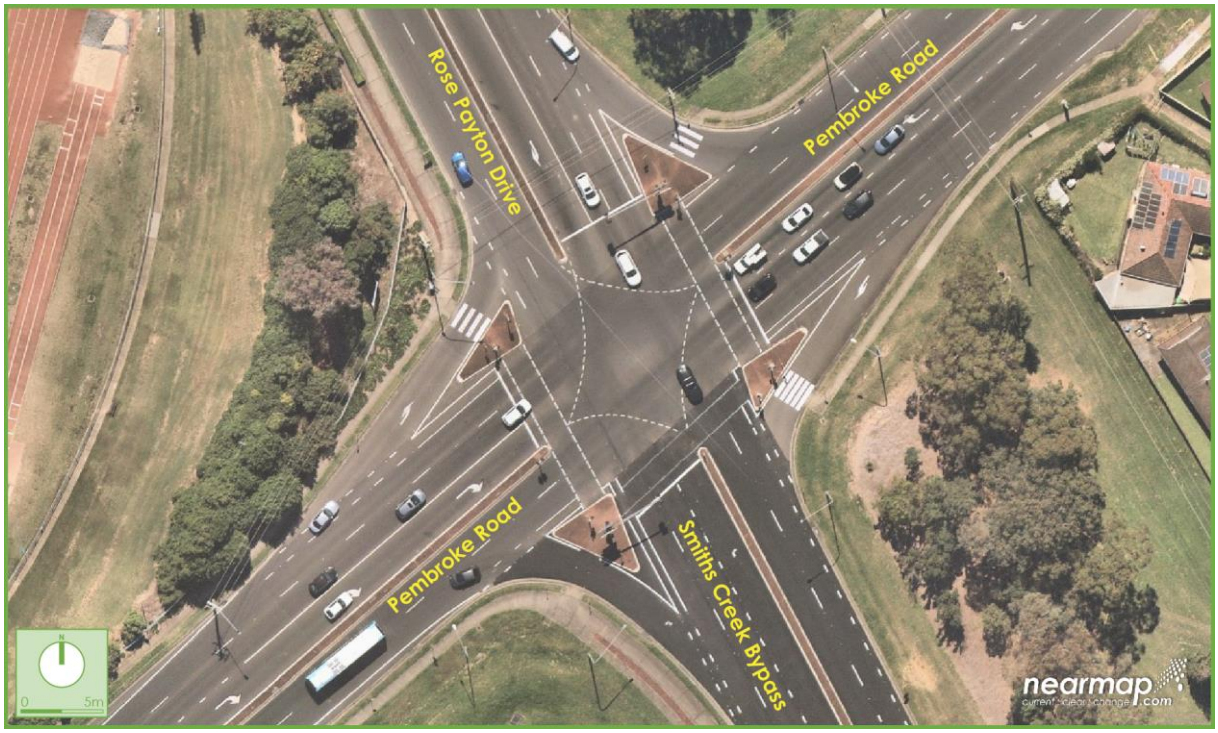


Figure 6: Pembroke Road and Rose Payton Drive Intersection

The main attributes of each approach are outlined as follows:

- Pembroke Road (east-west)
  - The eastern approach provides four (4) lanes including a single dedicated right-turn lane, a single slip lane for left-turn movements and two (2) through lanes.
  - The western approach provides four (4) lanes including a single dedicated right-turn lane, a single slip lane for left-turn movements and two (2) through lanes.
- Rose Payton Drive (north-south)
  - The northern approach provides four (4) lanes including a single dedicated right-turn lane, a single slip lane for left-turn movements and two (2) through lanes.
  - The southern approach provides four (4) lanes including a single dedicated right-turn lane, a single slip lane for left-turn movements and two (2) through lanes.

3.3 Public Transport

The existing public transport services operating in the locality are presented in **Figure 7** and outlined as follows.

3.3.1 Train Services

The site is situated approximately 190 metres south of Leumeah Railway Station, which provides train services along the T8 Airport and South Line between Leppington in the north, Macarthur in the south and Central in the east. Accordingly, this railway station connects commuters to the wider public transport network and provides regular train services 10-15 minutes.

3.3.2 Bus Services

The site is situated within optimal walking distance (400 metres) of several bus services operating in the locality, with the closest situated on O'Sullivan Road, along the western frontage of the site. These bus stops provide a loop service between Campbelltown to Leumeah North (Route 881) in addition to bus routes and associated service frequencies outlined in **Table 1** below.

Table 1: Bus Routes and Service Frequencies

Bus No.	Route	Service Frequency	
		Weekday	Weekend
870	Campbelltown to Liverpool	Every 30 minutes	Every 30-60 minutes
871	Campbelltown to Liverpool via Glenfield	Every 60 minutes	Every 60 minutes
872	Campbelltown to Liverpool via Macquarie Fields	Every 30 minutes	Every 30 minutes
879	Leumeah to Campbelltown vias Blair Athol	Every 30 minutes	Every 60 minutes

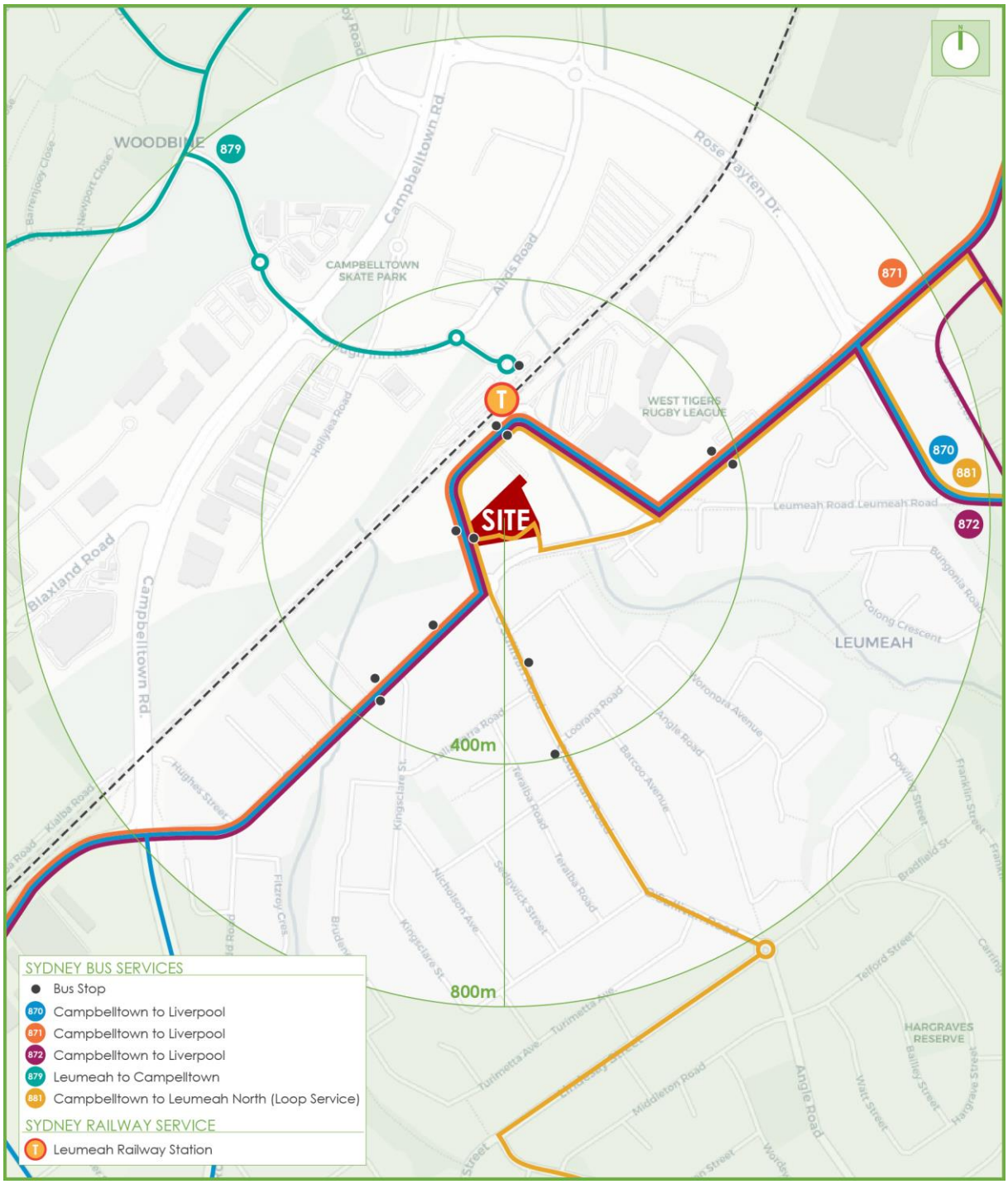


Figure 7: Public Transport

4. DESCRIPTION OF THE PLANNING PROPOSAL

A detailed description of the planning proposal is provided in the planning report, prepared separately. In summary, the planning proposal for which approval is now sought for changes to the LEP comprises the following components:

- Demolition of all existing structures;
- Construction of residential component with a total of 160 dwellings, including:
  - 41 x one-bedroom dwellings;
  - 102 x two-bedroom dwellings; and
  - 17 x three-bedroom dwellings.
- Construction of retail shops with a total of GFA of 790m^2 GFA;
- Construction of a registered hotel with a total GFA of 2,000m^2.
- Provision of approximately 320 car parking spaces within basement level car parking, with vehicular access from O'Sullivan Road; and
- Retention of the existing vehicular access and associated deceleration lane on Pembroke Road for access to on-site refuse collection and servicing areas, inclusive.

The parking and traffic impacts arising from the development are discussed in **Section 5** and **Section 6**. Reference should be made to the plans submitted separately to Council which are presented at reduced scale in **Appendix B**.

5. PARKING REQUIREMENTS

5.1 Car Parking

5.1.1 Residential Component

The proposed development is situated approximately 190 metres south of Leumeah Railway Station and is therefore subject to the car parking requirements set out within the Apartment Design Guide and State Environmental Planning Policy (SEPP65), as outlined in **Table 2** below.

Table 2: SEPP65 Car Parking Rates and Provisions

Type	No. of Dwellings	Car Parking Rate	Parking Required [1]	Parking Provided
SEPP65 – Metropolitan Sub-Regional Centre				
One-bedroom	41	0.6 spaces per dwelling	24.6	190
Two-bedroom	102	0.9 spaces per dwelling	91.8	
Three-bedroom	17	1.4 spaces per dwelling	23.8	
Visitors	160	1 space per 5 dwellings	32	
TOTAL			**172.2 (172)**	**190**

It can be seen from **Table 2** that the development is nominally required to provide a minimum of 172 car parking spaces. In response, the development proposes a total of 320 car parking spaces within the basement levels, including 190 spaces to be designated for the residential component of the development. This car parking provision is therefore considered acceptable to satisfy the minimum requirements of SEPP65 and will ensure all residential car parking demands are contained within the development.

5.1.2 Retail Component

The Campbelltown Development Control Plan 2015 (DCP) provides the car parking rates for retail shops on the ground floor level at a rate of one (1) car parking space per 25m^2 GFA. Application of this rate to the proposed 790m^2 GFA, results in a car parking requirement for 32 spaces for the retail component of the development.

In response, the development proposes a total of 320 car parking spaces within the basement levels, including 32 spaces to be designated for the retail component of the development. This car parking provision is sufficient to satisfy the requirements of the DCP, hence considered acceptable.

5.1.3 Registered Club Component

The car parking requirements of the registered club component of the development have been assessed in accordance with the Transport for NSW (TfNSW) Guide to Traffic Generating Developments 2002 (TfNSW Guide), which provides a more site-specific parking assessment, rather than a reliance on 'generic' DCP parking rates. Accordingly, the TfNSW Guide 2002 provides the following advice regarding the parking provision for 'Hotel – Traditional' developments:

> *'It is recommended that proposed hotel developments be compared to similar existing developments, noting the existing supply of, and demand for parking in the area, and of the peak parking periods of individual facilities within the hotel.'*

The proposed registered club component of the development is most similar to that of a 'Club' development and as such, the TfNSW Guide 2002 provides the following similar advice regarding the parking provision for 'Club' developments:

> *'Off-street car parking must be provided to satisfy the average maximum demand. Research has indicated that the demand for parking varies substantially depending on the type of club and cannot readily be related to building floor areas or to the membership. The determination of the number of parking spaces required is therefore based on the characteristics of the proposed development. Comparisons must be drawn with similar clubs.'*

In light of the above, the car parking requirements for the registered club component can be determined based on comparable surveyed rates of a similar development. With this in mind, the existing registered club (Leumeah Hotel – 2,147m^2 GFA) represents the most similar development to that of the proposed registered club component in terms of land use, GFA and location to public transport and surrounding residential catchments.

In order to determine a site-specific car parking demand rate, parking surveys were conducted during the peak periods (6:00pm-10:00pm) of the existing Leumeah Hotel on Friday 18 June 2021 and Saturday 19 June 2021, noting that these surveys were conducted prior to recent COVID-19 restrictions. These parking surveys identified an off-street parking supply of 114 spaces for the existing club development, with the results presented in **Chart 1** and **Chart 2** below.

Chart 1: Parking Surveys on Friday 18 June 2021

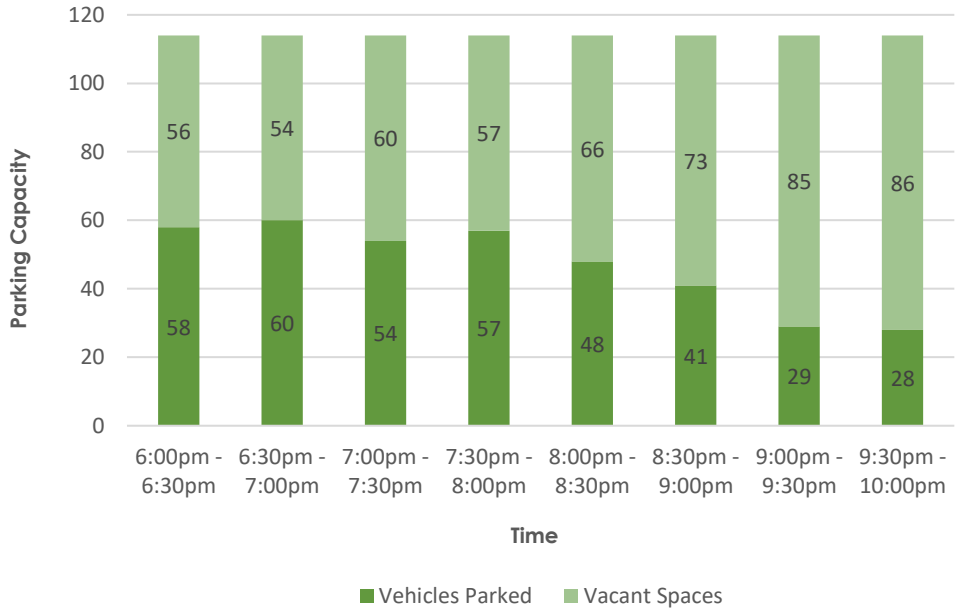
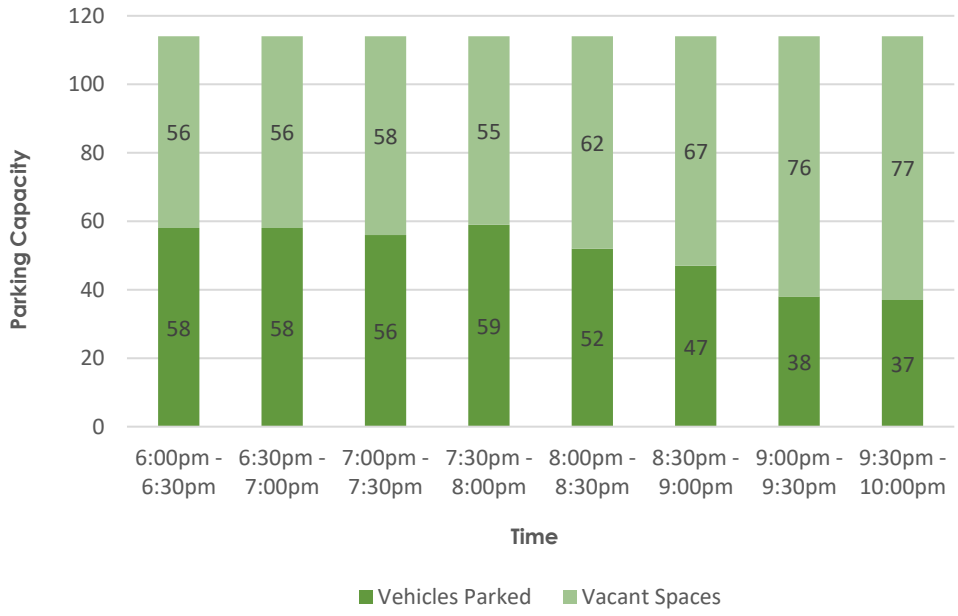


Chart 2: Parking Surveys on Saturday 19 June 2021



It can be seen from **Chart 1** and **Chart 2** that the peak parking demand was identified on Friday between 6:30pm-7:00pm for 60 parking spaces (52.6%), with 54 vacant spaces (47.4%). During both days, the surveys identified an average of 49 parked vehicles (42.9%), with 65 vacant spaces (57.1%).

In light of the above, a site-specific car parking rate based on the supply and demand of the existing registered club (Leumeah Hotel – 2,147m² GFA and 114 approved parking spaces) was determined as follows:

- 1 car parking space per 18.8m² GFA (supply); and
- 1 car parking space per 35.8m² GFA (demand).

Application of the above rates to the proposed registered club component with a GFA of 2,000m², results in a car parking requirement for 56 to 106 spaces. In response, the development proposes a total of 320 car parking spaces within the basement levels, including 98 spaces to be designated for the registered club component of the development. This car parking provision is in line with the existing (approved) parking supply and is sufficient to meet the peak parking demands (as per parking survey), hence considered acceptable.

5.1.4 Parking Provision Summary

In summary, the development proposes the car parking provisions as outlined in **Table 3** below.

Table 3: Summary of Car Parking Provisions

Type	GFA/ No. of Dwellings	Applicable Car Parking Rate	Parking Required	Parking Provided
Residential – SEPP65 (Metropolitan Sub-Regional Centre)				
One-bedroom	41	0.6 spaces per dwelling	24.6	190
Two-bedroom	102	0.9 spaces per dwelling	91.8	
Three-bedroom	17	1.4 spaces per dwelling	23.8	
Visitors	160	1 space per 5 dwellings	32	
		Sub-Total	*172.2*	*190*
Retail Premises – DCP (GF Neighbourhood Shops)				
Retail Premises	790 GFA	1 space per 25m² GFA	31.6	32
		Sub-Total	*31.6*	*32*
Registered Club – Site Specific Rates of Existing (Approved) Registered Club				
Registered Club	2,000m² GFA	1 space per 18.8m² GFA (Supply)	106.4	98
		1 space per 35.8m² GFA (Demand)	55.9	
		Sub-Total	*55.9 to 106.4*	*98*
TOTAL			**260 to 310**	**320**

It can be seen from **Table 3** that the proposed development is required to provide between 260 to 310 car parking spaces based on the aforementioned applicable parking rates and associated parking surveys. Accordingly, the development proposes approximately 320 car parking spaces, which is considered acceptable. Nevertheless, further assessment of the car parking provision would be conducted during the detailed development application (DA) stage noting a minimum of 260 car parking spaces being applicable with the likely hood of retail, hotel and residential visitors allowing shared use which is considered supportable.

5.2 Accessible Parking

The accessible parking provision for the proposed development will be determined during the detailed DA stage and is envisaged to incorporate accessible parking rates in accordance with AS4299 for the residential component and the Building Code of Australia (BCA) for the retail and registered club components, as outlined below:

- 1 accessible space per adaptable dwelling (Residential – AS4299)
- 1 accessible space per 50 parking spaces or part thereof (Retail – Class 6)
- 1 accessible space per 50 parking spaces or part thereof (Club – Class 9)

5.3 Bicycle Parking

The bicycle parking provision for the proposed development will be determined during the detailed DA stage and is envisaged to incorporate bicycle parking rates in accordance with the Campbelltown DCP 2015 for the residential component and the Cycling Aspects of Austroads 2017 for the retail and registered club components, as outlined below:

- 1 bicycle storage per 5 dwellings (Residential – DCP)
- Bicycle parking rate for a shop, as per Austroads: (Retail – Austroads)
  - 1 bicycle space per 300m^2 GFA for staff; and
  - 1 bicycle space per 500m^2 GFA for visitors (over 1,000m^2 GFA).
- Bicycle parking rate for a hotel, as per Austroads: (Club – Austroads)
  - 1 bicycle space per 25m^2 GFA bar floor area; and
  - 1 bicycle space per 100m^2 GFA lounge beer garden.

5.4 Motorcycle Parking

The Campbelltown DCP 2015 does not provide motorcycle parking rates for the proposed development and as such, no motorcycle parking spaces are proposed.

5.5 Refuse Collection and Servicing

The provision for refuse collection and loading bays will be determined during the detailed DA stage, with the development proposed to provide on-site refuse collection and loading area on the eastern corner of the site. This loading area is proposed to be accessible from Pembroke Road via the existing vehicular access and associated deceleration lane, with these arrangements considered appropriate to ensure all servicing demands are contained on-site. Reference should be made to **Section 7.1.2** in relation to the design aspects of Pembroke Road Access.

6. TRAFFIC AND TRANSPORT IMPACTS

6.1 Existing Traffic Generation

6.1.1 Registered Club Component

The existing site accommodates the Leumeah Hotel registered club with a GFA of 2,147m^2. The TfNSW Guide to Traffic Generating Developments 2002 (TfNSW Guide) recommends the analysis of traffic generation for a 'Hotel – Traditional' development be based on surveys of similar existing hotels, noting that the existing development is more akin to a 'Club' development. With this in mind, the TfNSW Guide provides the following similar advice for 'Club' developments:

> *"Surveys of licensed clubs conducted by the RTA in 1978 indicate that it is difficult to generalise on their traffic generation because of the diversified nature of clubs. Traffic generation is affected by such factors as the provision of live entertainment, gambling facilities, number of members and club location. Behavioural changes since 1978, such as the introduction of random breath testing, also make such generalisations more difficult."*

Traffic generation rates are therefore not specified in the TfNSW Guide for this component of development and in any event, such a rate would not be as accurate or reliable. As such, the TfNSW Guide prefers a methodology based on a survey assessment of comparable developments. TRAFFIX has had extensive experience with developments of this nature and has identified an average traffic generation rate of 2.38 veh/hr per 100m^2 GFA during the evening peak period based on surveys of comparable developments. It is noted that there is no applicable rate for the morning peak period.

Application of this rate to the existing registered club with a GFA of 2,147m^2, results in the following existing traffic generation for the registered club component:

- 0 veh/hr during the morning peak period (0 in, 0 out); and
- 51 veh/hr during the evening peak period (26 in, 25 out).

6.1.2 Drive-in Liquor Store Component

The existing site also accommodates a drive-in liquor store with an estimated GFA of 420m^2. The TfNSW Guide does not provide traffic generation rates for drive-in liquor stores and as such, the speciality retail store rate has been adopted being 4.60 veh/hr per 100m^2 GFA during the evening peak period, with 25% of this rate applied to the morning peak period to account for staff arrivals.

Application of the above rates to the existing drive-in liquor store, results in the following existing traffic generation for the drive-in liquor store component:

- 5 veh/hr during the morning peak period (5 in, 0 out); and
- 19 veh/hr during the evening peak period (9 in, 10 out).

6.1.3 Combined Existing Traffic Generation

In light of the above, the existing registered club and drive-in liquor store is estimated to have the following combined existing traffic generation:

- 5 veh/hr during the morning peak period (5 in, 0 out); and
- 70 veh/hr during the evening peak period (35 in, 35 out).

6.2 Development Traffic Generation

6.2.1 Registered Club Component

The proposed development includes a proposed registered club to replace the existing Leumeah Hotel with a GFA of 2,000m^2 and as such, the above registered club traffic generation rate is considered applicable for this component. Application of this rate would therefore result in the following anticipated traffic generation for the registered club component:

- 0 veh/hr during the morning peak period (0 in, 0 out); and
- 48 veh/hr during the evening peak period (24 in, 24 out).

6.2.2 Retail Component

The proposed development includes a retail component with a total GFA of 790m^2 and as such, the above traffic generation rates for speciality retail is considered applicable for this

component. Application of this rate would therefore result in the following anticipated traffic generation for the retail component:

- 9 veh/hr during the morning peak period (9 in, 0 out); and
- 36 veh/hr during the evening peak period (18 in, 18 out).

6.2.3 Residential Component

The proposed development includes a residential component with a total of 160 dwellings. The TfNSW Technical Direction TDT 2013/04a (TfNSW TDT) provides updated traffic generation rates for high density residential developments at a rate of 0.19 and 0.15 veh/hr per dwelling during the morning and evening peak periods, respectively. Application of these rates would therefore result in the following anticipated traffic generation for the residential component:

- 30 veh/hr during the evening peak period (6 in, 24 out).
- 24 veh/hr during the evening peak period (19 in, 5 out).

6.2.4 Combined Proposed Traffic Generation

In light of the above, the proposed development is estimated to have the following combined anticipated traffic generation:

- 39 veh/hr during the morning peak period (15 in, 24 out); and
- 108 veh/hr during the evening peak period (61 in, 47 out).

6.3 Net Traffic Generation

The above traffic generation is not however a net increase over existing conditions. When accounting for the existing uses of the site, the proposed development will generate:

- +34 vehicle trips per hour in the morning peak period (+10 in, +24 out); and
- +38 vehicle trips per hour in the evening peak period (+26 in, +12 out).

6.4 Traffic Distribution

Journey to Work (JTW) data from the 2016 Census for the Leumeah – Minto Heights SA2 area has been used to determine the future distribution of traffic to and from the proposed development. In this regard the localised distribution of the proposed development's traffic onto the surrounding road network is summarised in **Table 4** below, noting that a large proportion of traffic would be residential and as such, the residential JTW data has been used to establish the distributions.

Table 4: Traffic Distributions

Direction	Inbound Movements	Outbound Movements	Locations (To/From)
West via Rudd Street	36%	36%	Campbelltown, Woodbine
East via O'Sullivan Street	6%	6%	Leumeah
South-East via Smiths Creek Bypass	6%	6%	Minto Heights,
North-East via Rose Payten Drive	34%	34%	Sydney, Liverpool
South via Pembroke Road	18%	18%	Minto, Ingleburn

Based on the above, **Figure 8**, **Figure 9** and **Figure 10** below shows the distributions of the traffic generated by the proposed development at the three (3) key intersections within the vicinity of the site during the weekday morning and evening peak hour and during the Saturday peak hour. It is noted that as a worst case scenario, the weekday evening traffic generation and distribution has been adopted for SIDRA Intersection 9 modelling as presented in **Section 6.5** of the report.

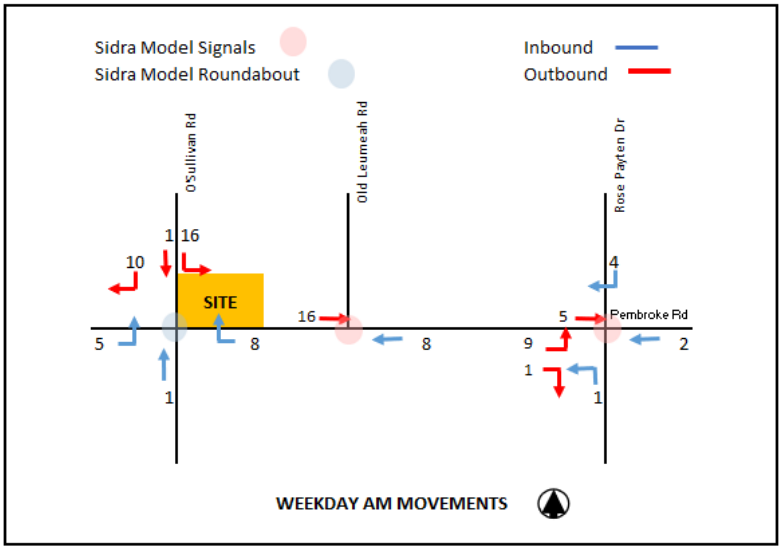


Figure 8: Weekday Morning Peak Period Distribution

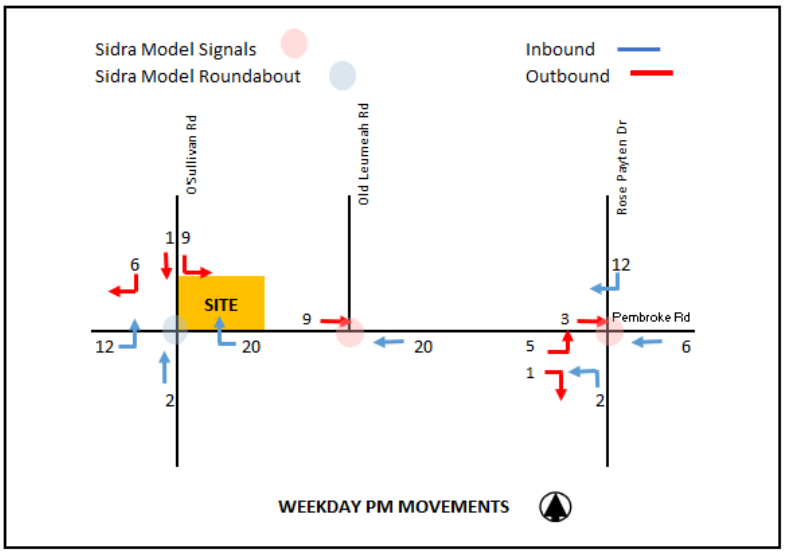


Figure 9: Weekday Evening Peak Period Distribution

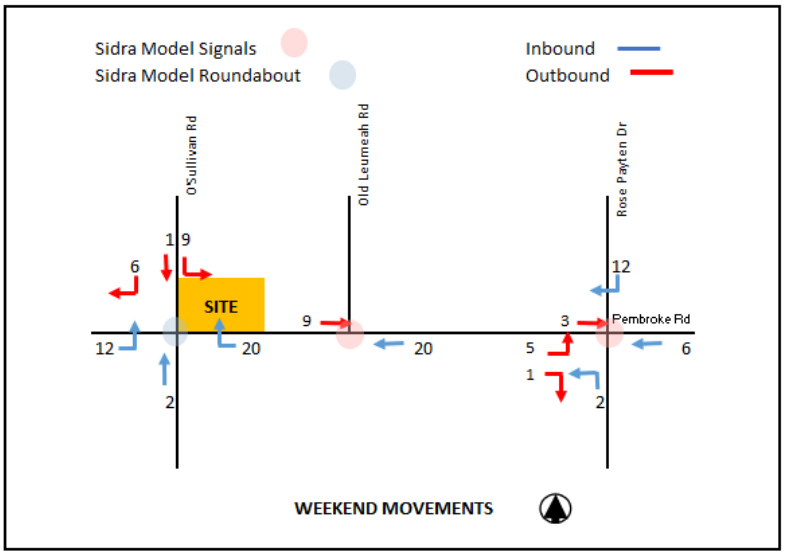


Figure 10: Weekend Peak Period Distribution

6.5 Peak Period Intersection Performance

6.5.1 Traffic Survey Counts

Traffic surveys were undertaken of the key intersections described in **Section 3.2**, which are considered to be most critical in relation to the site. These counts were undertaken on Thursday 17 June 2021 during the network peak periods, being between 7:00am and 9:00am (morning peak period) and 4:00pm and 6:00pm (evening peak period) and on Saturday 19 June 2021 between 11:00am and 5:00pm.

This survey data was collected prior to the COVID-19 restrictions that commenced on Saturday 26 June 2021 and is comparable to historical survey data (from a nearby development) that was conducted in June 2018 at the following intersections:

- Old Leumeah Road and Pembroke Road
  - 2018 traffic count data:
    - 1,945 total vehicles during the morning peak period; and
    - 2,163 total vehicles during the evening peak period.
  - 2021 traffic count data:
    - 2,086 total vehicles during the morning peak period; and
    - 2,266 total vehicles during the evening peak period.
- Pembroke Road and Rose Payten Drive
  - 2018 traffic count data:
    - 2,981 total vehicles during the morning peak period; and
    - 3,007 total vehicles during the evening peak period.
  - 2021 traffic count data:
    - 3,402 total vehicles during the morning peak period; and
    - 3,257 total vehicles during the evening peak period.

It can be seen from the above that the 2018 traffic count data is comparable to that of traffic volumes in 2021 and as such, the 2021 survey data is considered appropriate and applicable for the development.

6.5.2 Future Scenario

10 year design modelling is not considered necessary with TfNSW counters along Campbelltown Road (Station ID: 83011) identifying the following comparable annual traffic volumes between 2015-2019 (pre-COVID):

- 2015 – 44,584 vehicles;
- 2016 – 45,183 vehicles;
- 2017 – 45,510 vehicles;
- 2018 – 44,708 vehicles; and
- 2019 – 43,469 vehicles.

It can be seen from the above that traffic volumes for the five (5) comparable years are somewhat consistent and there has been no growth in traffic volumes. Accordingly, 10 year design modelling is not considered necessary for the proposed development.

6.5.3 SIDRA Intersection Modelling

This data forms the base case volumes for software modelling undertaken to assess intersection performance characteristics under existing traffic conditions. The SIDRA Intersection 9 model produces a range of outputs, the most useful of which are the Degree of Saturation (DoS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LoS) criteria. These performance measures can be interpreted using the following explanations:

DoS the DoS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DoS approaches 1, it is usual to attempt to keep DoS to less than 0.9. When DoS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way / stop control, satisfactory intersection operation is generally indicated by a DoS of 0.8 or less.

AVD the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak

commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

LoS this is a comparative measure which provides an indication of the operating performance of an intersection as shown in **Table 5** below.

Table 5: Intersection Performance Indicators (TfNSW)

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

In reference to the Response to TfNSW Statement (*Reference 21.219r01v01, dated 30 June 2021*), the traffic impacts arising from the proposed development have been updated to demonstrate a 95th percentile queue of over 700 metres for the O'Sullivan Road and Pembroke Road intersection (eastern leg).

The results of the SIDRA modelling is summarised in **Table 6** below, with detailed outputs provided in **Appendix C** for individual lanes and approaches.

Table 6: Existing and Development Intersection Performance

Intersection	Period	Scenario	Degree of Saturation	Average Delay	Level of Service
O'Sullivan Road, Rudd Road and Pembroke Road (Roundabout)	AM	Existing	1.245	238.5	F
		Existing + Development	1.239	233.2	F
	PM	Existing	1.136	143.6	F
		Existing + Development	1.134	142.0	F
	Weekend	Existing	1.112	123.5	F
		Existing + Development	1.116	126.7	F
Pembroke Road and Old Leumeah Road (Signalised)	AM	Existing	1.199	107.1	F
		Existing + Development	1.236	113.2	F
	PM	Existing	1.251	125.8	F
		Existing + Development	1.238	121.7	F
	Weekend	Existing	0.802	12.4	A
		Existing + Development	0.839	13.3	A
Pembroke Road and Rose Payten Drive (Signalised)	AM	Existing	0.747	36.1	C
		Existing + Development	0.777	33.3	C
	PM	Existing	1.090	62.9	E
		Existing + Development	1.124	66.9	E
	Weekend	Existing	0.630	28.2	B
		Existing + Development	0.636	30.2	C

It can be seen from **Table 6** that the anticipated traffic generation of the development results in the following traffic impacts to the surrounding key intersections:

6.5.4 O'Sullivan Road, Rudd Road and Pembroke Road

This roundabout intersection experiences minor changes in average intersection delay and no reduction of level of service during all peak periods, with the largest net increase in average intersection delay of 3.2 seconds identified during the weekend peak period.

6.5.5 Pembroke Road and Old Leumeah Road

This signalised intersection experiences minor changes in average intersection delay and no reduction of level of service during all peak periods, with the largest net increase in average intersection delay of 6.1 seconds identified during the morning peak period.

6.5.6 Pembroke Road and Rose Payten Drive

This signalised intersection experiences minor changes in average intersection delay, with a reduction of level of service (LoS B to LoS C) due to a minor net increase in average intersection delay of 2.0 seconds on the weekend, inclusive.

6.5.7 Summary

It is understood that there is a plan for TfNSW to upgrade the O'Sullivan Road, Rudd Road and Pembroke Road intersection into a signalised intersection. Accordingly, Council/TfNSW would be required to provide additional information (including layout, lanes, phasing, etc.) in order to assess any potential future upgrade to the Pembroke Road, Rudd Road and O'Sullivan Road intersection.

Nevertheless, the current SIDRA intersection modelling of the existing roundabout intersection resulted in all intersections generally experiencing minor changes in average intersection delay and no reduction to the LoS for all scenarios, other than during the weekend peak period for the Pembroke Road and Rose Payten Drive intersection as a result of the proposed development.

7. ACCESS AND INTERNAL DESIGN ASPECTS

7.1 Vehicular Access

All vehicular accesses will be designed in accordance with the Australian Standards during the detailed DA stage, however, envisaged to have the following aspects:

7.1.1 O'Sullivan Road Access

This vehicular access is proposed to accommodate 320 car parking spaces (User Class 1A, 2 and 3) with access to O'Sullivan Road, a local road. It will therefore require a Category 4 driveway under AS2890.1 (2004), being a separated entry and exit access with the following aspects and associated minimum widths:

- 6.0-8.0 metre wide entry driveway;
- 6.0-8.0 metre wide egress driveway; and
- 1.0-3.0 metre separation of driveways.

7.1.2 Pembroke Road Access

This vehicular access and associated deceleration lane from Pembroke Road, a TfNSW main road, currently provides light and heavy vehicle access for the existing development. Accordingly, this vehicular access and deceleration lane are proposed to be retained to accommodate the refuse collection and servicing activities of the development. This is considered acceptable, given the following:

- The proposed development would be able to provide separated access for light and heavy vehicles, which is considered appropriate, given the various components of the proposal (residential, retail and registered club). As such, the provision of separated vehicular accesses would eliminate potential conflicts between light and heavy vehicles at the vehicular accesses;
- The existing vehicular access is able to accommodate light/heavy vehicles, noting a central median along Pembroke Road. As such, all future service vehicles will be physically restricted to left-in and left-out movements;
- Service vehicle movements are anticipated to occur infrequently and outside the peak periods of the surrounding road network;

- The vehicular access serves various existing developments that are anticipated to have a greater traffic generation than that of the servicing demands generated by the proposal. As such, the utilisation of this access is anticipated to have a reduced traffic volume than that of existing developments, as well as assist in minimising any potential queuing (if any) on Pembroke Road.

In light of the above, the proposed retention of the existing Pembroke Road access for service vehicle access of the proposed development is considered appropriate.

7.2 Internal Design

The internal car park will be designed in accordance with AS2890.1 (2004), AS2890.2 (2018) and AS2890.6 (2009) during the detailed DA stage, however, envisaged to have the following characteristics:

7.2.1 Parking Modules

- All residential, residential visitors and staff car parking spaces are to be designed in accordance with AS2890.1 (2004) User Class 1A, being a minimum width of 2.4 metres and length of 5.4 metres.
- All club parking spaces are to be designed in accordance with AS2890.1 (2004) User Class 2, being a minimum width of 2.5 metres and length 5.4 metres.
- All retail parking spaces are to be designed in accordance with AS2890.1 (2004) User Class 3, being a minimum width of 2.6 metres and length of 5.4 metres.
- Any shared parking spaces with residential visitors, club and/or retail to be designed in accordance with AS2890.1 (2004) User Class 3, being a minimum width of 2.6 metres and length of 5.4 metres.
- All accessible parking spaces are to be designed in accordance with AS2890.6 (2009), being a minimum width of 2.4 metres, length of 5.4 metres and adjacent shared zone with the same dimensions.
- All spaces located adjacent to obstructions of greater than 150mm in height are to be provided with an additional width of 300mm.
- All dead-end aisles are to be provided with the required 1.0 metre aisle extension, as required under AS2890.1 (2004) Figure 2.3.

7.2.2 Ramps

- The vehicular access is to be provided a maximum gradient of 1 in 20 (5%) for the initial 6.0 metres from the property boundary.
- All internal ramps are to be provided a maximum gradient of 1 in 5 (20%) and provide gradient transitions at the sag/summit with a maximum gradient of 1 in 8 (12.5%) for a minimum length of 2.0 metres. Note: residential only ramps can provide a maximum gradient of 1 in 4 (25%).

7.2.3 Clear Head Heights

- A minimum head height clearance of 2.2 metres is to be provided for all trafficable areas, as required under AS2890.1 (2004).
- A minimum head height clearance of 2.5 metres is to be provided for all accessible spaces and adjacent shared zones, as required under AS2890.6 (2009).
- A minimum head height clearance of 4.5 metres is to be provided for all trafficable areas of the service vehicle, as required under AS2890.2 (2018).

7.2.4 Other Considerations

- All loading and servicing areas are to be designed in accordance with AS2890.2 (2018).
- All columns are to be located outside of the parking space design envelope, as required under AS2890.1 (2004) Figure 5.2.
- Visual splays are to be provided for egressing drivers at all vehicular accesses, as required under AS2890.1 (2004) Figure 3.3.

7.3 Summary

In summary, the internal configuration of the car park and servicing area will be designed in accordance with AS2890.1 (2004), AS2890.2 (2018) and AS2890.6 (2009) during the detailed DA stage.

8. CONCLUSIONS

In summary:

- The proposal seeks approval for a mixed-use development at 80 O'Sullivan Road, Leumeah comprising 160 residential dwellings, 790m^2 GFA ground floor retail, 2,000m^2 GFA registered club and associated car parking within basement levels.
- The proposed development was identified to require between 260 to 310 car parking spaces based on applicable parking rates and site-specific parking surveys of the existing registered club. Accordingly, the development proposes a total of 320 car parking spaces, which is considered acceptable. Nevertheless, further assessment of the car parking provision would be conducted during the detailed development application (DA) stage noting a minimum of 260 car parking spaces being applicable with the likely hood of retail, hotel and residential visitors allowing shared use which is considered supportable.
- The traffic generation arising from the development has been assessed as a net change over existing conditions and equates to the following:
  - +34 vehicle trips per hour in the morning peak period on weekdays;
  - +38 vehicle trips per hour in the evening peak period on weekdays; and
  - +38 vehicle trips per hour during the peak period on weekends.

  Accordingly, the above traffic generation was modelled in SIDRA Intersection 9, which identified that all intersections generally experience minor changes in average intersection delay and no reduction to the LoS for all scenarios (except for Pembroke Road and Rose Payten Drive on the weekend) as a result of the proposed development.
- The vehicular accesses and internal configuration of the car park and servicing area will be designed in accordance with AS2890.1 (2004), AS2890.2 (2018) and AS2890.6 (2009) during the detailed DA stage.

This traffic impact assessment therefore demonstrates that the subject application is supportable on traffic planning grounds. TRAFFIX anticipates an ongoing involvement during the development approval process.

APPENDIX A

Photographic Record

View looking north towards the subject site

View looking north towards the existing access from Pembroke Road

View looking east along Pembroke Road from the existing access

View looking west along Pembroke Road from the existing access

View looking east towards the existing access from O'Sullivan Road

View looking north along O'Sullivan Road from the existing access

View looking south along O'Sullivan Road from the existing access

View looking south towards the Pembroke Road and O'Sullivan Road intersection

View looking northeast towards the Pembroke Road and Old Leumeah Road intersection

View looking southwest towards the Pembroke Road and Rose Payten Drive intersection

APPENDIX B

Reduced Plans

APPENDIX C

SIDRA Outputs

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 21.219m01v04 TRAFFIX 80 O'Sullivan Rd, Leumeah — **Template: Site Layouts**

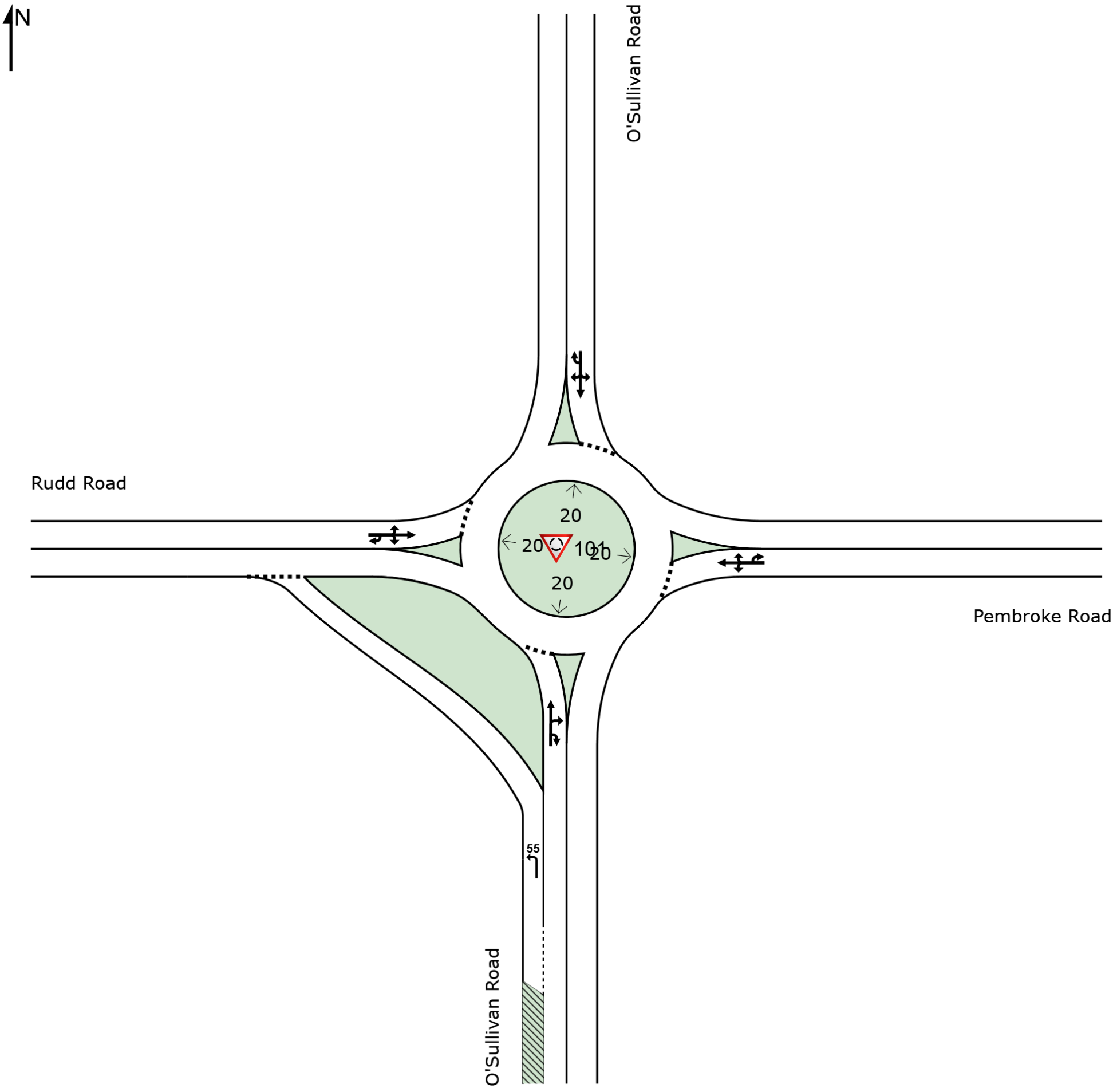
Site: 101 [101_EXAM_O'Sullivan Rd x Pembroke Rd (Site Folder: General)] — **Network: 1 [EXAM (Network Folder: General)]**

O'Sullivan Road x Pembroke Road x Rudd Road
Weekday AM Peak : 8:00am - 9:00am

Site Category: (None)
Roundabout

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 21.219m01v04 TRAFFIX 80 O'Sullivan Rd, Leumeah **Template: Movement Summaries**

Site: 101 [101_EXAM_O'Sullivan Rd x Pembroke Rd (Site Folder: General)] **Network: 1 [EXAM (Network Folder: General)]**

O'Sullivan Road x Pembroke Road x Rudd Road
Weekday AM Peak : 8:00am - 9:00am

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: O'Sullivan Road														
1	L2	64	1.6	64	1.6	0.069	6.4	LOS A	0.5	3.6	0.73	0.63	0.73	53.4
2	T1	71	0.0	71	0.0	0.572	9.3	LOS A	6.2	43.7	0.95	0.90	1.06	48.2
3	R2	455	1.2	455	1.2	0.572	14.0	LOS A	6.2	43.7	0.95	0.90	1.06	42.6
3u	U	2	50.0	2	50.0	0.572	18.3	LOS B	6.2	43.7	0.95	0.90	1.06	49.1
Approach		592	1.2	592	1.2	0.572	12.6	LOS A	6.2	43.7	0.92	0.87	1.03	45.1
East: Pembroke Road														
4	L2	199	3.7	180	3.8	1.245	230.9	LOS F	99.1	708.3	1.00	3.68	6.03	10.4
5	T1	699	1.5	633	1.5	1.245	231.0	LOS F	99.1	708.3	1.00	3.68	6.03	10.5
6	R2	8	37.5	8	37.9	1.245	237.2	LOS F	99.1	708.3	1.00	3.68	6.03	8.2
6u	U	5	20.0	5	20.3	1.245	238.5	LOS F	99.1	708.3	1.00	3.68	6.03	4.5
Approach		912	2.4	826[N1]	2.5	1.245	231.1	LOS F	99.1	708.3	1.00	3.68	6.03	10.4
North: O'Sullivan Road														
7	L2	4	0.0	4	0.0	0.212	12.6	LOS A	1.5	11.2	0.92	0.91	0.92	35.1
8	T1	59	8.9	59	8.9	0.212	13.3	LOS A	1.5	11.2	0.92	0.91	0.92	46.8
9	R2	29	21.4	29	21.4	0.212	18.8	LOS B	1.5	11.2	0.92	0.91	0.92	46.2
9u	U	1	0.0	1	0.0	0.212	19.5	LOS B	1.5	11.2	0.92	0.91	0.92	45.3
Approach		94	12.4	94	12.4	0.212	15.1	LOS B	1.5	11.2	0.92	0.91	0.92	46.3
West: Rudd Road														
10	L2	56	9.4	56	9.4	0.799	15.8	LOS B	12.1	85.6	1.00	1.15	1.50	44.8
11	T1	556	0.8	556	0.8	0.799	15.6	LOS B	12.1	85.6	1.00	1.15	1.50	40.1
12	R2	32	3.3	32	3.3	0.799	20.4	LOS B	12.1	85.6	1.00	1.15	1.50	48.1
12u	U	1	0.0	1	0.0	0.799	22.3	LOS B	12.1	85.6	1.00	1.15	1.50	49.0
Approach		644	1.6	644	1.6	0.799	15.9	LOS B	12.1	85.6	1.00	1.15	1.50	41.3
All Vehicles		2241	2.3	2155[N1]	2.4	1.245	97.4	LOS F	99.1	708.3	0.98	2.03	3.08	18.0

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 21.219m01v04 TRAFFIX 80 O'Sullivan Rd, Leumeah **Template: Movement Summaries**

Site: 104 [104_PRAM_O'Sullivan Rd x Pembroke Rd (Site Folder: General)] **Network: 4 [PRAM (Network Folder: General)]**

O'Sullivan Road x Pembroke Road x Rudd Road
Weekday AM Peak : 8:00am - 9:00am

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: O'Sullivan Road														
1	L2	64	1.6	64	1.6	0.068	6.3	LOS A	0.5	3.5	0.72	0.63	0.72	53.4
2	T1	72	0.0	72	0.0	0.573	9.4	LOS A	6.2	43.8	0.95	0.90	1.06	48.1
3	R2	455	1.2	455	1.2	0.573	14.1	LOS A	6.2	43.8	0.95	0.90	1.06	42.6
3u	U	2	50.0	2	50.0	0.573	18.4	LOS B	6.2	43.8	0.95	0.90	1.06	49.0
Approach		593	1.2	593	1.2	0.573	12.7	LOS A	6.2	43.8	0.92	0.87	1.03	45.0
East: Pembroke Road														
4	L2	199	3.7	175	3.8	1.239	225.6	LOS F	99.1	708.3	1.00	3.82	6.24	10.6
5	T1	699	1.5	613	1.5	1.239	225.7	LOS F	99.1	708.3	1.00	3.82	6.24	10.7
6	R2	17	18.8	15	19.1	1.239	231.1	LOS F	99.1	708.3	1.00	3.82	6.24	8.4
6u	U	5	20.0	5	20.4	1.239	233.2	LOS F	99.1	708.3	1.00	3.82	6.24	4.6
Approach		920	2.4	807[N1]	2.5	1.239	225.9	LOS F	99.1	708.3	1.00	3.82	6.24	10.6
North: O'Sullivan Road														
7	L2	21	0.0	21	0.0	0.270	12.8	LOS A	1.9	14.4	0.93	0.94	0.93	34.9
8	T1	60	8.8	60	8.8	0.270	13.6	LOS A	1.9	14.4	0.93	0.94	0.93	46.7
9	R2	40	15.8	40	15.8	0.270	18.6	LOS B	1.9	14.4	0.93	0.94	0.93	46.3
9u	U	1	0.0	1	0.0	0.270	19.8	LOS B	1.9	14.4	0.93	0.94	0.93	45.1
Approach		122	9.5	122	9.5	0.270	15.2	LOS B	1.9	14.4	0.93	0.94	0.93	45.3
West: Rudd Road														
10	L2	61	8.6	61	8.6	0.811	16.5	LOS B	12.6	89.7	1.00	1.17	1.54	44.4
11	T1	556	0.8	556	0.8	0.811	16.4	LOS B	12.6	89.7	1.00	1.17	1.54	39.5
12	R2	32	3.3	32	3.3	0.811	21.1	LOS B	12.6	89.7	1.00	1.17	1.54	47.6
12u	U	1	0.0	1	0.0	0.811	23.1	LOS B	12.6	89.7	1.00	1.17	1.54	48.5
Approach		649	1.6	649	1.6	0.811	16.6	LOS B	12.6	89.7	1.00	1.17	1.54	40.7
All Vehicles		2284	2.3	2172[N1]	2.4	1.239	93.3	LOS F	99.1	708.3	0.97	2.06	3.11	18.5

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 21.219m01v04 TRAFFIX 80 O'Sullivan Rd, Leumeah **Template: Movement Summaries**

Site: 102 [102_EXPM_O'Sullivan Rd x Pembroke Rd (Site Folder: General)] **Network: 2 [EXPM (Network Folder: General)]**

O'Sullivan Road x Pembroke Road x Rudd Road
Weekday PM Peak : 4:45pm - 5:45pm

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: O'Sullivan Road														
1	L2	62	6.8	62	6.8	0.077	7.3	LOS A	0.6	4.2	0.79	0.68	0.79	52.8
2	T1	82	1.3	82	1.3	0.513	10.0	LOS A	5.1	36.1	0.97	0.92	1.07	47.9
3	R2	324	2.3	324	2.3	0.513	14.7	LOS B	5.1	36.1	0.97	0.92	1.07	42.3
3u	U	5	0.0	5	0.0	0.513	16.7	LOS B	5.1	36.1	0.97	0.92	1.07	50.5
Approach		474	2.7	474	2.7	0.513	12.9	LOS A	5.1	36.1	0.95	0.89	1.03	45.4
East: Pembroke Road														
4	L2	388	2.4	380	2.4	1.136	136.8	LOS F	100.0	708.3	1.00	3.50	6.09	15.6
5	T1	648	0.6	634	0.7	1.136	136.9	LOS F	100.0	708.3	1.00	3.50	6.09	15.8
6	R2	23	4.5	23	4.6	1.136	141.7	LOS F	100.0	708.3	1.00	3.50	6.09	12.8
6u	U	4	0.0	4	0.0	1.136	143.6	LOS F	100.0	708.3	1.00	3.50	6.09	7.2
Approach		1064	1.4	1040[N1]	1.4	1.136	137.0	LOS F	100.0	708.3	1.00	3.50	6.09	15.6
North: O'Sullivan Road														
7	L2	14	0.0	14	0.0	0.468	16.3	LOS B	4.0	28.9	1.00	1.07	1.18	31.7
8	T1	98	0.0	98	0.0	0.468	16.5	LOS B	4.0	28.9	1.00	1.07	1.18	44.3
9	R2	94	9.0	94	9.0	0.468	21.7	LOS B	4.0	28.9	1.00	1.07	1.18	44.0
9u	U	1	100.0	1	100.0	0.468	30.9	LOS C	4.0	28.9	1.00	1.07	1.18	30.7
Approach		206	4.6	206	4.6	0.468	18.9	LOS B	4.0	28.9	1.00	1.07	1.18	43.6
West: Rudd Road														
10	L2	74	10.0	74	10.0	0.857	16.5	LOS B	16.1	114.5	1.00	1.15	1.57	44.3
11	T1	643	1.3	643	1.3	0.857	16.3	LOS B	16.1	114.5	1.00	1.15	1.57	39.4
12	R2	65	0.0	65	0.0	0.857	20.9	LOS B	16.1	114.5	1.00	1.15	1.57	47.7
12u	U	1	100.0	1	100.0	0.857	28.5	LOS C	16.1	114.5	1.00	1.15	1.57	45.4
Approach		783	2.2	783	2.2	0.857	16.7	LOS B	16.1	114.5	1.00	1.15	1.57	41.0
All Vehicles		2527	2.1	2503[N1]	2.1	1.136	66.2	LOS E	100.0	708.3	0.99	2.07	3.31	23.6

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 21.219m01v04 TRAFFIX 80 O'Sullivan Rd, Leumeah **Template: Movement Summaries**

Site: 105 [105_PRPM_O'Sullivan Rd x Pembroke Rd (Site Folder: General)] **Network: 5 [PRPM (Network Folder: General)]**

O'Sullivan Road x Pembroke Road x Rudd Road
Weekday PM Peak : 4:45pm - 5:45pm

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: O'Sullivan Road														
1	L2	62	6.8	62	6.8	0.076	7.3	LOS A	0.6	4.1	0.79	0.68	0.79	52.9
2	T1	84	1.3	84	1.3	0.519	10.2	LOS A	5.2	37.0	0.97	0.93	1.08	47.7
3	R2	324	2.3	324	2.3	0.519	14.9	LOS B	5.2	37.0	0.97	0.93	1.08	42.1
3u	U	5	0.0	5	0.0	0.519	16.9	LOS B	5.2	37.0	0.97	0.93	1.08	50.4
Approach		476	2.7	476	2.7	0.519	13.1	LOS A	5.2	37.0	0.95	0.90	1.04	45.3
East: Pembroke Road														
4	L2	388	2.4	368	2.5	1.134	135.2	LOS F	98.6	698.5	1.00	3.49	6.10	15.7
5	T1	648	0.6	615	0.7	1.134	135.4	LOS F	98.6	698.5	1.00	3.49	6.10	15.9
6	R2	44	2.4	42	2.4	1.134	140.1	LOS F	98.6	698.5	1.00	3.49	6.10	12.9
6u	U	4	0.0	4	0.0	1.134	142.0	LOS F	98.6	698.5	1.00	3.49	6.10	7.3
Approach		1085	1.4	1029[N1]	1.4	1.134	135.5	LOS F	98.6	698.5	1.00	3.49	6.10	15.7
North: O'Sullivan Road														
7	L2	23	0.0	23	0.0	0.505	17.6	LOS B	4.5	32.5	1.00	1.09	1.24	30.7
8	T1	99	0.0	99	0.0	0.505	17.8	LOS B	4.5	32.5	1.00	1.09	1.24	43.6
9	R2	100	8.4	100	8.4	0.505	22.9	LOS B	4.5	32.5	1.00	1.09	1.24	43.3
9u	U	1	100.0	1	100.0	0.505	32.2	LOS C	4.5	32.5	1.00	1.09	1.24	30.2
Approach		223	4.2	223	4.2	0.505	20.1	LOS B	4.5	32.5	1.00	1.09	1.24	42.5
West: Rudd Road														
10	L2	86	8.5	86	8.5	0.886	19.4	LOS B	18.6	132.4	1.00	1.24	1.74	42.5
11	T1	643	1.3	643	1.3	0.886	19.3	LOS B	18.6	132.4	1.00	1.24	1.74	37.2
12	R2	65	0.0	65	0.0	0.886	23.8	LOS B	18.6	132.4	1.00	1.24	1.74	46.0
12u	U	1	100.0	1	100.0	0.886	31.7	LOS C	18.6	132.4	1.00	1.24	1.74	43.8
Approach		796	2.1	796	2.1	0.886	19.7	LOS B	18.6	132.4	1.00	1.24	1.74	39.0
All Vehicles		2580	2.1	2524[N1]	2.1	1.134	65.7	LOS E	98.6	698.5	0.99	2.08	3.34	23.7

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 21.219m01v04 TRAFFIX 80 O'Sullivan Rd, Leumeah **Template: Movement Summaries**

Site: 103 [103_EXSAT_O'Sullivan Rd x Pembroke Rd (Site Folder: General)] **Network: 3 [EXSAT (Network Folder: General)]**

O'Sullivan Road x Pembroke Road x Rudd Road
Weekend Sat Peak :11:00am - 12:00am

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: O'Sullivan Road														
1	L2	83	0.0	83	0.0	0.101	7.2	LOS A	0.8	5.4	0.81	0.70	0.81	53.0
2	T1	78	0.0	78	0.0	0.450	8.8	LOS A	4.0	28.4	0.95	0.87	0.96	48.8
3	R2	284	0.7	284	0.7	0.450	13.4	LOS A	4.0	28.4	0.95	0.87	0.96	43.3
3u	U	1	0.0	1	0.0	0.450	15.5	LOS B	4.0	28.4	0.95	0.87	0.96	51.3
Approach		446	0.5	446	0.5	0.450	11.5	LOS A	4.0	28.4	0.92	0.84	0.93	46.8
East: Pembroke Road														
4	L2	191	0.6	182	0.6	1.112	116.5	LOS F	74.6	525.4	1.00	2.96	4.90	17.6
5	T1	684	0.8	654	0.8	1.112	116.8	LOS F	74.6	525.4	1.00	2.96	4.90	17.7
6	R2	12	0.0	11	0.0	1.112	121.4	LOS F	74.6	525.4	1.00	2.96	4.90	14.6
6u	U	5	0.0	5	0.0	1.112	123.5	LOS F	74.6	525.4	1.00	2.96	4.90	8.3
Approach		892	0.7	852[N1]	0.7	1.112	116.8	LOS F	74.6	525.4	1.00	2.96	4.90	17.6
North: O'Sullivan Road														
7	L2	4	0.0	4	0.0	0.270	11.0	LOS A	1.9	13.9	0.91	0.91	0.91	36.4
8	T1	63	0.0	63	0.0	0.270	11.2	LOS A	1.9	13.9	0.91	0.91	0.91	47.9
9	R2	73	7.2	73	7.2	0.270	16.2	LOS B	1.9	13.9	0.91	0.91	0.91	47.6
9u	U	1	0.0	1	0.0	0.270	17.9	LOS B	1.9	13.9	0.91	0.91	0.91	46.3
Approach		141	3.7	141	3.7	0.270	13.8	LOS A	1.9	13.9	0.91	0.91	0.91	47.5
West: Rudd Road														
10	L2	78	5.4	78	5.4	0.745	10.3	LOS A	10.1	71.4	0.93	0.93	1.15	48.6
11	T1	580	0.5	580	0.5	0.745	10.3	LOS A	10.1	71.4	0.93	0.93	1.15	44.9
12	R2	75	0.0	75	0.0	0.745	14.9	LOS B	10.1	71.4	0.93	0.93	1.15	51.6
12u	U	1	0.0	1	0.0	0.745	17.0	LOS B	10.1	71.4	0.93	0.93	1.15	52.5
Approach		734	1.0	734	1.0	0.745	10.8	LOS A	10.1	71.4	0.93	0.93	1.15	46.4
All Vehicles		2213	1.0	2173[N1]	1.0	1.112	52.7	LOS D	74.6	525.4	0.96	1.71	2.56	27.1

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 21.219m01v04 TRAFFIX 80 O'Sullivan Rd, Leumeah **Template: Movement Summaries**

Site: 106 [106_PRSAT_O'Sullivan Rd x Pembroke Rd (Site Folder: General)] **Network: 6 [PRSAT (Network Folder: General)]**

O'Sullivan Road x Pembroke Road x Rudd Road
Weekend Sat Peak :11:00am - 12:00am

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: O'Sullivan Road														
1	L2	83	0.0	83	0.0	0.101	7.3	LOS A	0.8	5.4	0.82	0.70	0.82	53.0
2	T1	80	0.0	80	0.0	0.466	9.4	LOS A	4.3	30.5	0.96	0.89	1.01	48.4
3	R2	284	0.7	284	0.7	0.466	14.0	LOS A	4.3	30.5	0.96	0.89	1.01	42.9
3u	U	1	0.0	1	0.0	0.466	16.1	LOS B	4.3	30.5	0.96	0.89	1.01	51.0
Approach		448	0.5	448	0.5	0.466	11.9	LOS A	4.3	30.5	0.94	0.86	0.97	46.5
East: Pembroke Road														
4	L2	191	0.6	183	0.6	1.116	119.8	LOS F	78.0	549.4	1.00	3.05	5.08	17.2
5	T1	684	0.8	656	0.8	1.116	120.1	LOS F	78.0	549.4	1.00	3.05	5.08	17.4
6	R2	33	0.0	31	0.0	1.116	124.6	LOS F	78.0	549.4	1.00	3.05	5.08	14.3
6u	U	5	0.0	5	0.0	1.116	126.7	LOS F	78.0	549.4	1.00	3.05	5.08	8.1
Approach		913	0.7	875[N1]	0.7	1.116	120.2	LOS F	78.0	549.4	1.00	3.05	5.08	17.2
North: O'Sullivan Road														
7	L2	14	0.0	14	0.0	0.304	11.1	LOS A	2.2	15.9	0.92	0.92	0.92	36.3
8	T1	64	0.0	64	0.0	0.304	11.3	LOS A	2.2	15.9	0.92	0.92	0.92	47.9
9	R2	79	6.7	79	6.7	0.304	16.3	LOS B	2.2	15.9	0.92	0.92	0.92	47.6
9u	U	1	0.0	1	0.0	0.304	18.0	LOS B	2.2	15.9	0.92	0.92	0.92	46.3
Approach		158	3.3	158	3.3	0.304	13.8	LOS A	2.2	15.9	0.92	0.92	0.92	47.1
West: Rudd Road														
10	L2	91	4.7	91	4.7	0.773	11.4	LOS A	11.2	79.2	0.97	0.98	1.25	47.8
11	T1	580	0.5	580	0.5	0.773	11.4	LOS A	11.2	79.2	0.97	0.98	1.25	43.7
12	R2	75	0.0	75	0.0	0.773	16.0	LOS B	11.2	79.2	0.97	0.98	1.25	50.8
12u	U	1	0.0	1	0.0	0.773	18.1	LOS B	11.2	79.2	0.97	0.98	1.25	51.7
Approach		746	1.0	746	1.0	0.773	11.9	LOS A	11.2	79.2	0.97	0.98	1.25	45.4
All Vehicles		2265	0.9	2228[N1]	0.9	1.116	54.6	LOS D	78.0	549.4	0.97	1.77	2.68	26.5

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 201 [201_EXAM_Pembroke Rd x Old Leumeah Rd (Site Folder: General)]

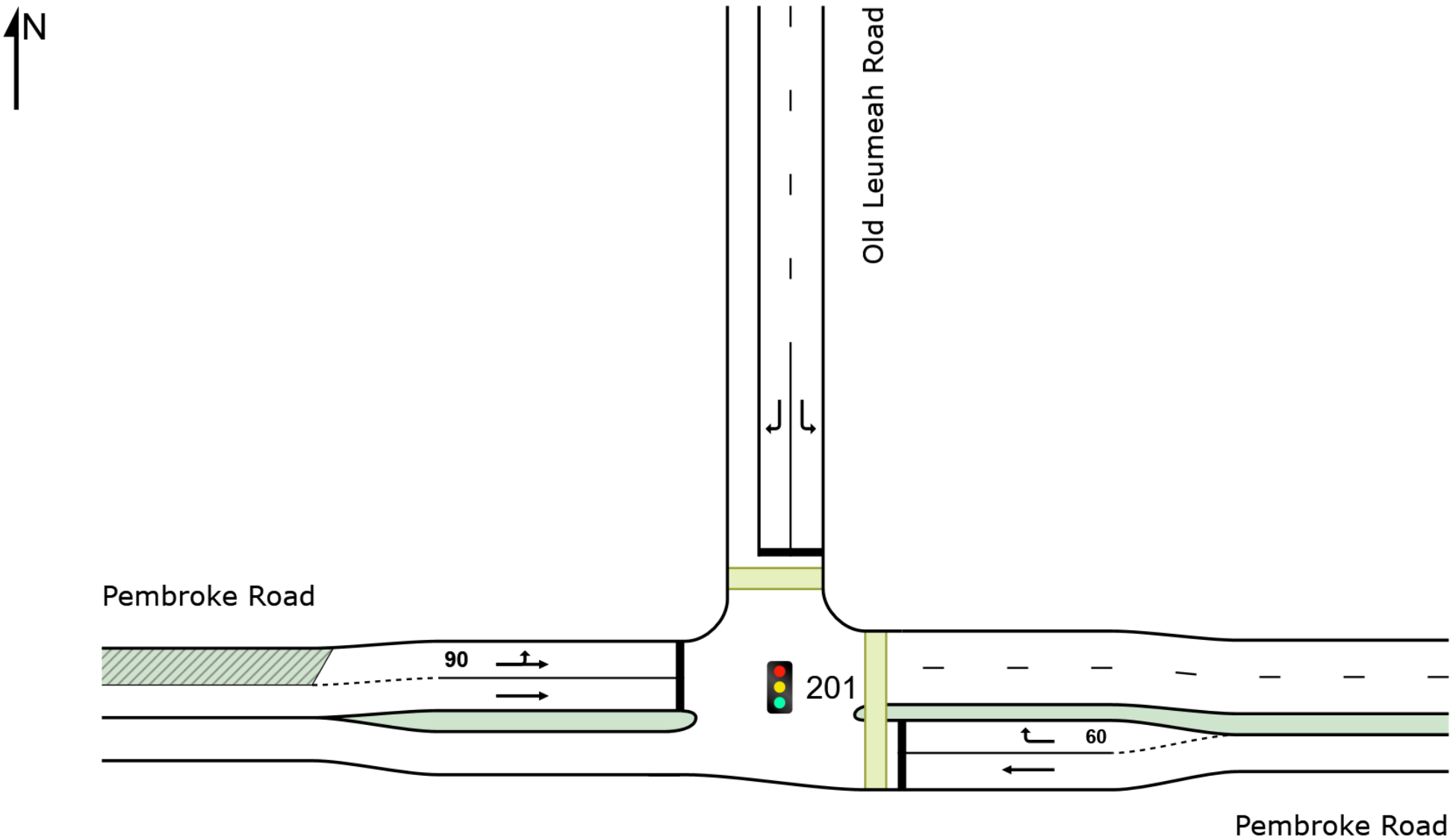
Network: 1 [EXAM (Network Folder: General)]

Pembroke Road x Old Leumeah Road
Weekday AM Peak : 8:00am - 9:00am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C, D*
Output Phase Sequence: A, B*, C
(* Variable Phase)

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Site: 201 [201_EXAM_Pembroke Rd x Old Leumeah Rd (Site Folder: General)]

Network: 1 [EXAM (Network Folder: General)]

Pembroke Road x Old Leumeah Road
Weekday AM Peak : 8:00am - 9:00am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C, D*
Output Phase Sequence: A, B*, C
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Pembroke Road														
5	T1	913	2.0	913	2.0	* 1.199	233.6	LOS F	91.7	652.8	1.00	1.94	2.24	5.7
6	R2	168	9.4	168	9.4	0.314	22.5	LOS B	7.6	57.6	0.73	0.80	0.73	36.4
Approach		1081	3.1	1081	3.1	1.199	200.7	LOS F	91.7	652.8	0.96	1.76	2.00	7.0
North: Old Leumeah Road														
7	L2	128	6.6	128	6.6	0.209	39.5	LOS C	6.1	44.9	0.74	0.76	0.74	16.8
9	R2	22	0.0	22	0.0	* 0.225	70.8	LOS F	1.5	10.3	0.95	0.73	0.95	10.6
Approach		151	5.6	151	5.6	0.225	44.1	LOS D	6.1	44.9	0.77	0.75	0.77	15.5
West: Pembroke Road														
10	L2	28	3.7	28	3.6	0.478	24.7	LOS B	20.9	147.9	0.64	0.59	0.64	35.9
11	T1	1017	1.0	1015	1.0	0.478	19.1	LOS B	20.9	147.9	0.64	0.58	0.64	28.8
Approach		1045	1.1	1044 N1	1.1	0.478	19.3	LOS B	20.9	147.9	0.64	0.58	0.64	29.1
All Vehicles		2277	2.4	2275 N1	2.4	1.199	107.1	LOS F	91.7	652.8	0.80	1.15	1.30	10.2

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 204 [204_PRAM_Pembroke Rd x Old Leumeah Rd (Site Folder: General)]

Network: 4 [PRAM (Network Folder: General)]

Pembroke Road x Old Leumeah Road
Weekday AM Peak : 8:00am - 9:00am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C, D*
Output Phase Sequence: A, C, D*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Pembroke Road														
5	T1	921	1.9	921	1.9	* 1.236	253.0	LOS F	91.7	652.8	0.87	2.11	2.48	5.3
6	R2	168	9.4	168	9.4	0.328	13.4	LOS A	2.9	21.9	0.51	0.72	0.51	42.3
Approach		1089	3.1	1089	3.1	1.236	216.0	LOS F	91.7	652.8	0.81	1.89	2.18	6.6
North: Old Leumeah Road														
7	L2	128	6.6	128	6.6	0.204	34.1	LOS C	5.2	38.2	0.73	0.75	0.73	18.7
9	R2	22	0.0	22	0.0	* 0.207	60.5	LOS E	1.2	8.7	0.94	0.73	0.94	12.1
Approach		151	5.6	151	5.6	0.207	37.9	LOS C	5.2	38.2	0.76	0.75	0.76	17.3
West: Pembroke Road														
10	L2	28	3.7	28	3.6	0.506	23.4	LOS B	19.2	135.9	0.67	0.61	0.67	36.8
11	T1	1034	1.0	1032	1.0	0.506	18.1	LOS B	19.2	135.9	0.68	0.61	0.68	29.7
Approach		1062	1.1	1061 N1	1.1	0.506	18.3	LOS B	19.2	135.9	0.68	0.61	0.68	29.9
All Vehicles		2302	2.3	2301 N1	2.3	1.236	113.2	LOS F	91.7	652.8	0.75	1.23	1.39	9.8

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 202 [202_EXPM_Pembroke Rd x Old Leumeah Rd (Site Folder: General)]

Network: 2 [EXPM (Network Folder: General)]

Pembroke Road x Old Leumeah Road
Weekday PM Peak : 4:45pm - 5:45pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 150 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C, D*
Output Phase Sequence: A, C
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Pembroke Road														
5	T1	996	1.2	996	1.2	* 1.251	277.2	LOS F	92.3	652.8	1.00	2.03	2.34	4.9
6	R2	224	3.8	224	3.8	0.620	22.8	LOS B	11.9	86.1	0.77	0.83	0.77	36.7
Approach		1220	1.6	1220	1.6	1.251	230.4	LOS F	92.3	652.8	0.96	1.81	2.05	6.3
North: Old Leumeah Road														
7	L2	128	5.7	128	5.7	0.682	78.1	LOS F	9.4	69.3	1.00	0.82	1.05	9.9
9	R2	61	1.7	61	1.7	0.633	80.6	LOS F	4.6	33.0	1.00	0.82	1.09	9.5
Approach		189	4.4	189	4.4	0.682	78.9	LOS F	9.4	69.3	1.00	0.82	1.07	9.7
West: Pembroke Road														
10	L2	46	0.0	46	0.0	* 0.312	9.2	LOS A	8.5	60.4	0.27	0.29	0.27	50.8
11	T1	929	1.9	929	1.9	0.312	3.6	LOS A	8.6	61.0	0.27	0.26	0.27	49.3
Approach		976	1.8	975 N1	1.8	0.312	3.9	LOS A	8.6	61.0	0.27	0.27	0.27	49.4
All Vehicles		2385	1.9	2385	1.9	1.251	125.8	LOS F	92.3	652.8	0.68	1.10	1.25	9.1

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 205 [205_PRPM_Pembroke Rd x Old Leumeah Rd (Site Folder: General)]

Network: 5 [PRPM (Network Folder: General)]

Pembroke Road x Old Leumeah Road
Weekday PM Peak : 4:45pm - 5:45pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 150 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C, D*
Output Phase Sequence: A, C
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Pembroke Road														
5	T1	1017	1.1	1017	1.1	* 1.238	265.2	LOS F	92.4	652.8	1.00	1.99	2.29	5.1
6	R2	224	3.8	224	3.8	0.628	23.9	LOS B	12.3	89.1	0.80	0.84	0.80	36.1
Approach		1241	1.6	1241	1.6	1.238	221.6	LOS F	92.4	652.8	0.96	1.79	2.02	6.5
North: Old Leumeah Road														
7	L2	128	5.7	128	5.7	0.682	78.1	LOS F	9.4	69.3	1.00	0.82	1.05	9.9
9	R2	61	1.7	61	1.7	0.614	80.0	LOS F	4.6	32.7	1.00	0.81	1.07	9.6
Approach		189	4.4	189	4.4	0.682	78.7	LOS F	9.4	69.3	1.00	0.82	1.06	9.8
West: Pembroke Road														
10	L2	46	0.0	46	0.0	* 0.315	9.2	LOS A	8.6	61.2	0.27	0.29	0.27	50.8
11	T1	939	1.9	938	1.9	0.315	3.7	LOS A	8.7	61.7	0.27	0.26	0.27	49.2
Approach		985	1.8	985	1.8	0.315	3.9	LOS A	8.7	61.7	0.27	0.27	0.27	49.4
All Vehicles		2416	1.9	2415 N1	1.9	1.238	121.7	LOS F	92.4	652.8	0.68	1.09	1.23	9.4

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 203 [203_EXSAT_Pembroke Rd x Old Leumeah Rd (Site Folder: General)]

Network: 3 [EXSAT (Network Folder: General)]

Pembroke Road x Old Leumeah Road
Weekend Sat Peak :11:00am - 12:00am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C, D*
Output Phase Sequence: A, C, D*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Pembroke Road														
5	T1	889	0.6	889	0.6	* 0.802	1.9	LOS A	9.8	68.9	0.21	0.20	0.21	55.7
6	R2	168	3.1	168	3.1	0.277	11.5	LOS A	2.1	15.4	0.42	0.69	0.42	44.5
Approach		1058	1.0	1058	1.0	0.802	3.4	LOS A	9.8	68.9	0.24	0.27	0.24	52.7
North: Old Leumeah Road														
7	L2	120	3.5	120	3.5	0.178	32.3	LOS C	4.7	33.6	0.71	0.74	0.71	19.3
9	R2	29	0.0	29	0.0	* 0.192	59.2	LOS E	1.6	11.4	0.94	0.73	0.94	12.3
Approach		149	2.8	149	2.8	0.192	37.6	LOS C	4.7	33.6	0.75	0.74	0.75	17.4
West: Pembroke Road														
10	L2	41	0.0	41	0.0	0.446	23.7	LOS B	16.2	114.0	0.66	0.60	0.66	36.8
11	T1	868	0.7	868	0.7	0.446	18.5	LOS B	16.2	114.0	0.66	0.60	0.66	29.3
Approach		909	0.7	909	0.7	0.446	18.7	LOS B	16.2	114.0	0.66	0.60	0.66	29.8
All Vehicles		2117	1.0	2116 N1	1.0	0.802	12.4	LOS A	16.2	114.0	0.46	0.45	0.46	38.5

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 206 [206_PRSAT_Pembroke Rd x Old Leumeah Rd (Site Folder: General)]

Network: 6 [PRSAT (Network Folder: General)]

Pembroke Road x Old Leumeah Road
Weekend Sat Peak :11:00am - 12:00am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C, D*
Output Phase Sequence: A, C, D*
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Pembroke Road														
5	T1	911	0.6	911	0.6	* 0.839	2.6	LOS A	12.7	89.6	0.24	0.23	0.24	54.3
6	R2	168	3.1	168	3.1	0.273	11.8	LOS A	2.3	16.8	0.42	0.69	0.42	44.3
Approach		1079	1.0	1079	1.0	0.839	4.0	LOS A	12.7	89.6	0.26	0.30	0.27	51.6
North: Old Leumeah Road														
7	L2	120	3.5	120	3.5	0.178	34.3	LOS C	5.0	36.2	0.71	0.74	0.71	18.6
9	R2	29	0.0	29	0.0	* 0.200	63.8	LOS E	1.8	12.3	0.94	0.73	0.94	11.6
Approach		149	2.8	149	2.8	0.200	40.1	LOS C	5.0	36.2	0.75	0.74	0.75	16.6
West: Pembroke Road														
10	L2	41	0.0	41	0.0	0.446	24.8	LOS B	17.5	123.4	0.65	0.60	0.65	36.0
11	T1	878	0.7	877	0.7	0.446	19.5	LOS B	17.5	123.4	0.66	0.59	0.66	28.5
Approach		919	0.7	918 N1	0.7	0.446	19.8	LOS B	17.5	123.4	0.66	0.59	0.66	28.9
All Vehicles		2147	1.0	2147	1.0	0.839	13.3	LOS A	17.5	123.4	0.47	0.46	0.47	37.6

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 301 [301_EXAM_Pembroke x Rose Payten Dr (Site Folder: General)]

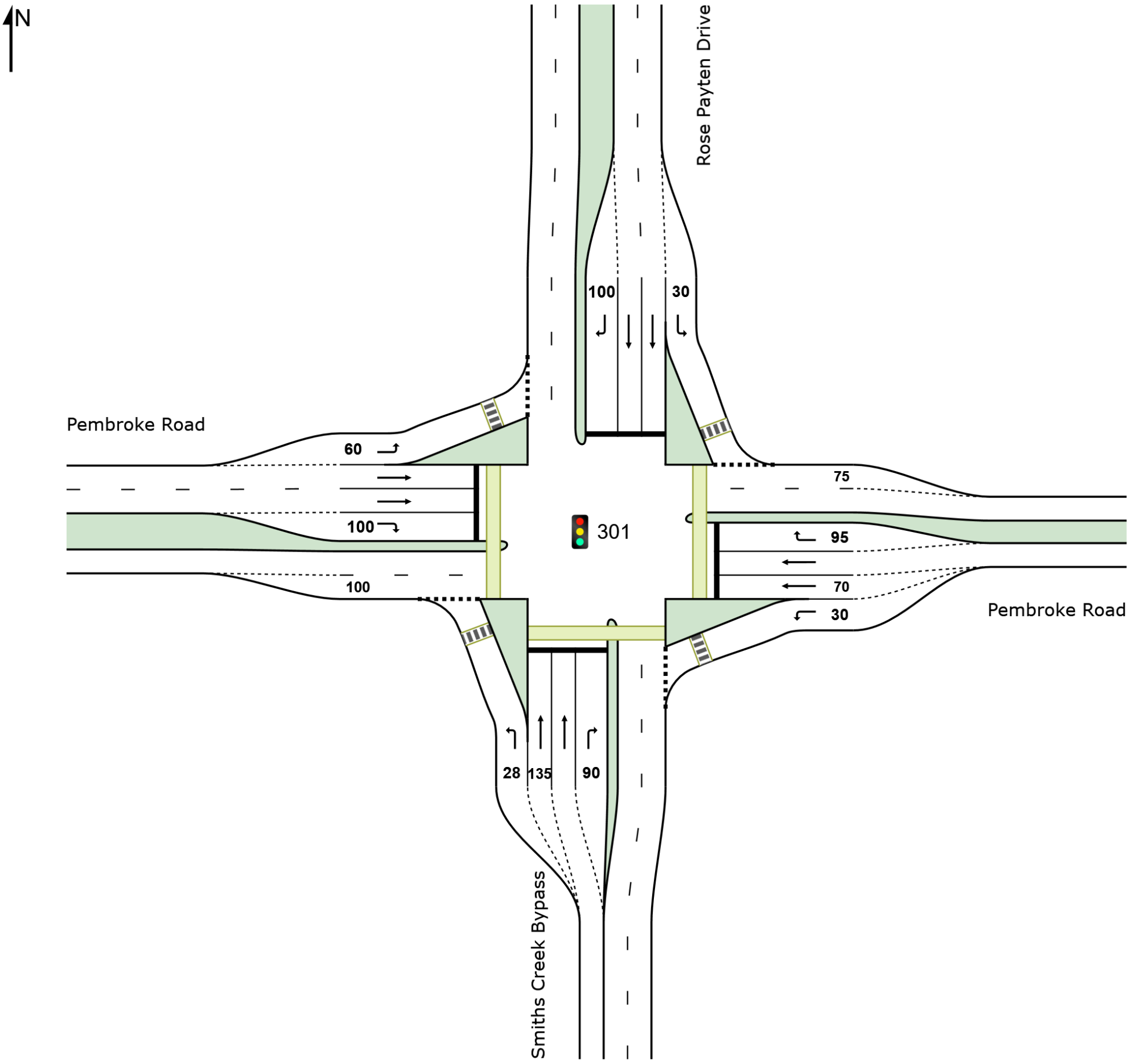
Network: 1 [EXAM (Network Folder: General)]

Pembroke Road x Rose Payten Drive x Smiths Creek Bypass
Weekday AM Peak : 8:00am - 9:00am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, D1*, D2*, E, F1*, F2*
Output Phase Sequence: A, B*, D, D1*, E
(* Variable Phase)

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Site: 301 [301_EXAM_Pembroke x Rose Payten Dr (Site Folder: General)]

Network: 1 [EXAM (Network Folder: General)]

Pembroke Road x Rose Payten Drive x Smiths Creek Bypass
Weekday AM Peak : 8:00am - 9:00am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, D1*, D2*, E, F1*, F2*
Output Phase Sequence: A, B*, D, D1*, E
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smiths Creek Bypass														
1	L2	237	5.8	237	5.8	0.547	25.7	LOS B	9.4	68.7	0.73	0.78	0.73	30.1
2	T1	394	2.7	394	2.7	* 0.741	60.8	LOS E	16.5	117.9	0.98	0.86	1.06	28.4
3	R2	25	8.3	25	8.3	0.137	65.1	LOS E	1.5	11.6	0.91	0.72	0.91	27.5
Approach		656	4.0	656	4.0	0.741	48.3	LOS D	16.5	117.9	0.89	0.82	0.93	28.7
East: Pembroke Road														
4	L2	9	0.0	9	0.0	0.007	7.2	LOS A	0.1	0.5	0.21	0.58	0.21	52.4
5	T1	689	1.8	689	1.8	0.747	34.4	LOS C	18.5	131.7	0.81	0.73	0.83	29.2
6	R2	254	15.4	254	15.4	* 0.712	34.7	LOS C	10.2	80.9	0.97	0.85	0.99	37.8
Approach		953	5.4	953	5.4	0.747	34.2	LOS C	18.5	131.7	0.85	0.76	0.87	32.5
North: Rose Payten Drive														
7	L2	538	6.5	538	6.5	0.544	19.0	LOS B	15.2	112.5	0.58	0.80	0.58	46.3
8	T1	196	2.7	196	2.7	0.129	28.7	LOS C	4.2	30.0	0.67	0.54	0.67	39.4
9	R2	151	7.7	151	7.7	* 0.720	69.5	LOS E	9.9	73.6	0.98	1.01	1.08	18.7
Approach		884	5.8	884	5.8	0.720	29.8	LOS C	15.2	112.5	0.67	0.78	0.68	39.1
West: Pembroke Road														
10	L2	286	3.7	286	3.6	0.250	10.9	LOS A	3.6	26.3	0.32	0.65	0.32	49.5
11	T1	683	0.9	682	0.9	* 0.735	45.7	LOS D	27.6	194.7	0.96	0.83	0.96	33.3
12	R2	119	6.2	119	6.1	0.522	35.6	LOS C	4.8	35.3	0.97	0.79	0.97	34.3
Approach		1088	2.2	1087 N1	2.2	0.735	35.4	LOS C	27.6	194.7	0.79	0.78	0.79	36.6
All Vehicles		3581	4.3	3580 N1	4.3	0.747	36.1	LOS C	27.6	194.7	0.79	0.78	0.81	34.7

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 304 [304_PRAM_Pembroke x Rose Payten Dr (Site Folder: General)]

Network: 4 [PRAM (Network Folder: General)]

Pembroke Road x Rose Payten Drive x Smiths Creek Bypass
Weekday AM Peak : 8:00am - 9:00am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, D1*, D2*, E, F1*, F2*
Output Phase Sequence: A, B*, D, D1*, E
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smiths Creek Bypass														
1	L2	238	5.8	238	5.8	0.394	23.3	LOS B	7.3	53.9	0.68	0.75	0.68	32.2
2	T1	394	2.7	394	2.7	* 0.739	54.2	LOS D	13.3	95.0	0.99	0.87	1.08	30.1
3	R2	25	8.3	25	8.3	0.145	58.5	LOS E	1.4	10.1	0.92	0.72	0.92	29.1
Approach		657	4.0	657	4.0	0.739	43.2	LOS D	13.3	95.0	0.87	0.82	0.93	30.5
East: Pembroke Road														
4	L2	9	0.0	9	0.0	0.007	7.2	LOS A	0.1	0.4	0.22	0.58	0.22	52.5
5	T1	692	1.8	692	1.8	0.777	33.1	LOS C	17.6	124.9	0.84	0.77	0.89	29.8
6	R2	254	15.4	254	15.4	* 0.695	31.5	LOS C	8.8	70.0	0.97	0.85	1.00	39.1
Approach		955	5.4	955	5.4	0.777	32.4	LOS C	17.6	124.9	0.87	0.79	0.91	33.2
North: Rose Payten Drive														
7	L2	538	6.5	538	6.5	0.543	18.4	LOS B	12.7	93.6	0.58	0.81	0.58	46.7
8	T1	196	2.7	196	2.7	0.132	25.5	LOS B	3.7	26.2	0.68	0.55	0.68	40.9
9	R2	155	7.5	155	7.5	* 0.746	62.9	LOS E	8.9	66.4	0.99	1.03	1.14	20.0
Approach		888	5.8	888	5.8	0.746	27.7	LOS B	12.7	93.6	0.68	0.79	0.70	40.1
West: Pembroke Road														
10	L2	292	3.6	291	3.6	0.248	8.5	LOS A	2.0	14.6	0.20	0.61	0.20	51.4
11	T1	693	0.9	692	0.9	* 0.768	42.8	LOS D	25.9	182.4	0.97	0.85	0.99	34.3
12	R2	120	6.1	120	6.1	0.527	32.1	LOS C	4.1	30.5	0.98	0.79	0.98	35.7
Approach		1104	2.2	1103 N1	2.2	0.768	32.6	LOS C	25.9	182.4	0.77	0.78	0.78	37.8
All Vehicles		3604	4.3	3603 N1	4.3	0.777	33.3	LOS C	25.9	182.4	0.79	0.79	0.82	35.9

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 302 [302_EXPM_Pembroke x Rose Payten Dr (Site Folder: General)]

Network: 2 [EXPM (Network Folder: General)]

Pembroke Road x Rose Payten Drive x Smiths Creek Bypass
Weekday PM Peak : 4:45pm - 5:45pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 150 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, D1*, D2*, E, F1*, F2*
Output Phase Sequence: A, B*, D, E
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smiths Creek Bypass														
1	L2	172	3.7	172	3.7	0.518	44.3	LOS D	9.1	65.8	0.87	0.79	0.87	21.9
2	T1	279	1.1	279	1.1	*0.645	67.9	LOS E	11.4	80.2	0.99	0.80	1.01	26.8
3	R2	9	0.0	9	0.0	0.111	81.6	LOS F	0.7	4.8	0.97	0.68	0.97	24.0
Approach		460	2.1	460	2.1	0.645	59.4	LOS E	11.4	80.2	0.94	0.80	0.95	25.5
East: Pembroke Road														
4	L2	22	0.0	22	0.0	0.017	9.7	LOS A	0.3	2.4	0.29	0.61	0.29	50.4
5	T1	635	1.0	635	1.0	*1.090	110.4	LOS F	38.0	268.2	0.96	1.11	1.39	13.3
6	R2	234	10.4	234	10.4	*0.732	42.7	LOS D	11.7	88.8	0.98	0.85	1.03	35.0
Approach		891	3.4	891	3.4	1.090	90.1	LOS F	38.0	268.2	0.95	1.03	1.26	18.3
North: Rose Payten Drive														
7	L2	249	5.1	249	5.1	0.225	11.9	LOS A	5.4	39.5	0.34	0.65	0.34	50.1
8	T1	423	3.2	423	3.2	0.252	24.0	LOS B	9.9	71.0	0.62	0.53	0.62	41.7
9	R2	346	2.4	346	2.4	*0.979	117.4	LOS F	33.5	239.2	1.00	1.26	1.49	12.7
Approach		1019	3.4	1019	3.4	0.979	52.8	LOS D	33.5	239.2	0.68	0.81	0.85	28.7
West: Pembroke Road														
10	L2	229	2.3	229	2.3	0.174	8.0	LOS A	1.6	11.3	0.15	0.59	0.15	51.9
11	T1	578	1.6	578	1.6	0.765	62.0	LOS E	26.5	188.3	0.99	0.86	1.00	28.5
12	R2	252	3.8	251	3.8	0.900	66.3	LOS E	16.4	118.5	1.00	0.96	1.23	25.2
Approach		1059	2.3	1058[N1]	2.3	0.900	51.3	LOS D	26.5	188.3	0.81	0.82	0.87	30.7
All Vehicles		3428	2.9	3428	2.9	1.090	62.9	LOS E	38.0	268.2	0.83	0.87	0.98	25.7

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 305 [305_PRPM_Pembroke x Rose Payten Dr (Site Folder: General)]

Network: 5 [PRPM (Network Folder: General)]

Pembroke Road x Rose Payten Drive x Smiths Creek Bypass
Weekday PM Peak : 4:45pm - 5:45pm
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 150 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, D1*, D2*, E, F1*, F2*
Output Phase Sequence: A, B*, D, E
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smiths Creek Bypass														
1	L2	174	3.6	174	3.6	0.395	44.5	LOS D	8.8	63.7	0.84	0.77	0.84	22.2
2	T1	279	1.1	279	1.1	*0.627	67.6	LOS E	11.0	77.7	0.99	0.80	1.00	26.8
3	R2	9	0.0	9	0.0	0.109	81.4	LOS F	0.7	4.8	0.97	0.68	0.97	24.1
Approach		462	2.1	462	2.1	0.627	59.2	LOS E	11.0	77.7	0.93	0.79	0.94	25.6
East: Pembroke Road														
4	L2	22	0.0	22	0.0	0.031	16.9	LOS B	0.5	3.6	0.53	0.64	0.53	45.4
5	T1	641	1.0	641	1.0	*1.124	122.1	LOS F	40.7	287.6	0.97	1.14	1.45	12.2
6	R2	234	10.4	234	10.4	*0.775	46.2	LOS D	12.3	93.6	1.00	0.88	1.09	33.9
Approach		897	3.4	897	3.4	1.124	99.7	LOS F	40.7	287.6	0.97	1.06	1.33	17.0
North: Rose Payten Drive														
7	L2	249	5.1	249	5.1	0.225	12.2	LOS A	5.5	40.0	0.35	0.65	0.35	49.9
8	T1	423	3.2	423	3.2	0.242	22.7	LOS B	9.5	68.0	0.61	0.51	0.61	42.4
9	R2	359	2.3	359	2.3	*0.990	122.7	LOS F	35.9	256.7	1.00	1.28	1.53	12.2
Approach		1032	3.4	1032	3.4	0.990	55.0	LOS D	35.9	256.7	0.68	0.81	0.86	28.0
West: Pembroke Road														
10	L2	233	2.3	232	2.3	0.177	8.0	LOS A	1.7	11.8	0.16	0.60	0.16	51.8
11	T1	583	1.6	583	1.6	0.798	63.5	LOS E	27.1	192.2	0.99	0.86	1.01	28.1
12	R2	253	3.8	252	3.8	0.947	75.3	LOS F	17.8	128.5	1.00	1.01	1.34	23.4
Approach		1068	2.3	1068	2.3	0.947	54.2	LOS D	27.1	192.2	0.81	0.84	0.90	29.9
All Vehicles		3459	2.9	3458[N1]	2.9	1.124	66.9	LOS E	40.7	287.6	0.83	0.88	1.01	24.7

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 303 [303_EXSAT_Pembroke x Rose Payten Dr (Site Folder: General)]

Network: 3 [EXSAT (Network Folder: General)]

Pembroke Road x Rose Payten Drive x Smiths Creek Bypass
Weekend Sat Peak :11:00am - 12:00am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, D1*, D2*, E, F1*, F2*
Output Phase Sequence: A, D, E
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smiths Creek Bypass														
1	L2	184	1.1	184	1.1	0.228	13.5	LOS A	3.0	21.2	0.51	0.70	0.51	40.1
2	T1	304	1.0	304	1.0	0.252	33.3	LOS C	6.6	46.9	0.79	0.65	0.79	37.3
3	R2	13	0.0	13	0.0	0.039	41.4	LOS C	0.5	3.8	0.77	0.68	0.77	34.1
Approach		501	1.1	501	1.1	0.252	26.2	LOS B	6.6	46.9	0.69	0.67	0.69	37.7
East: Pembroke Road														
4	L2	15	0.0	15	0.0	0.011	7.3	LOS A	0.1	0.7	0.23	0.59	0.23	52.3
5	T1	668	1.3	668	1.3	*0.624	32.5	LOS C	19.0	134.1	0.83	0.72	0.83	30.0
6	R2	213	4.0	213	4.0	*0.418	22.5	LOS B	5.8	42.2	0.80	0.78	0.80	43.5
Approach		896	1.9	896	1.9	0.624	29.7	LOS C	19.0	134.1	0.81	0.73	0.81	34.3
North: Rose Payten Drive														
7	L2	214	3.4	214	3.4	0.207	10.9	LOS A	3.7	26.5	0.36	0.66	0.36	50.8
8	T1	244	1.3	244	1.3	0.203	32.7	LOS C	5.2	37.0	0.78	0.63	0.78	37.5
9	R2	180	0.6	180	0.6	*0.630	49.3	LOS D	9.6	67.7	0.94	0.83	0.94	23.4
Approach		638	1.8	638	1.8	0.630	30.1	LOS C	9.6	67.7	0.68	0.69	0.68	37.5
West: Pembroke Road														
10	L2	237	1.3	237	1.3	0.198	7.3	LOS A	1.2	8.4	0.16	0.60	0.16	52.4
11	T1	597	1.2	596	1.2	0.561	35.3	LOS C	20.6	146.1	0.92	0.79	0.92	36.9
12	R2	134	1.6	134	1.6	0.260	21.8	LOS B	3.8	27.1	0.80	0.76	0.80	41.0
Approach		967	1.3	967	1.3	0.561	26.6	LOS B	20.6	146.1	0.71	0.74	0.71	40.3
All Vehicles		3002	1.5	3001[N1]	1.5	0.630	28.2	LOS B	20.6	146.1	0.73	0.71	0.73	37.7

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 306 [306_PRSAT_Pembroke x Rose Payten Dr (Site Folder: General)]

Network: 6 [PRSAT (Network Folder: General)]

Pembroke Road x Rose Payten Drive x Smiths Creek Bypass
Weekend Sat Peak :11:00am - 12:00am
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: SCATS
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, D1*, D2*, E, F1*, F2*
Output Phase Sequence: A, D, E
(* Variable Phase)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smiths Creek Bypass														
1	L2	186	1.1	186	1.1	0.225	14.6	LOS B	3.1	22.2	0.50	0.70	0.50	39.9
2	T1	304	1.0	304	1.0	0.250	35.2	LOS C	7.2	50.8	0.78	0.64	0.78	36.5
3	R2	13	0.0	13	0.0	0.038	43.1	LOS D	0.6	4.1	0.76	0.68	0.76	33.5
Approach		503	1.0	503	1.0	0.250	27.8	LOS B	7.2	50.8	0.68	0.67	0.68	37.0
East: Pembroke Road														
4	L2	15	0.0	15	0.0	0.012	7.3	LOS A	0.1	0.8	0.22	0.59	0.22	52.3
5	T1	675	1.2	675	1.2	*0.630	34.5	LOS C	20.3	143.9	0.82	0.71	0.82	29.0
6	R2	213	4.0	213	4.0	*0.419	23.8	LOS B	6.3	45.5	0.80	0.78	0.80	42.8
Approach		902	1.9	902	1.9	0.630	31.5	LOS C	20.3	143.9	0.81	0.73	0.81	33.4
North: Rose Payten Drive														
7	L2	214	3.4	214	3.4	0.207	11.3	LOS A	4.0	28.6	0.36	0.66	0.36	50.5
8	T1	244	1.3	244	1.3	0.198	34.6	LOS C	5.6	39.6	0.77	0.62	0.77	36.8
9	R2	193	0.5	193	0.5	*0.636	52.4	LOS D	11.1	77.8	0.94	0.83	0.94	22.5
Approach		651	1.8	651	1.8	0.636	32.2	LOS C	11.1	77.8	0.69	0.70	0.69	36.5
West: Pembroke Road														
10	L2	240	1.3	240	1.3	0.200	7.3	LOS A	1.2	8.8	0.15	0.59	0.15	52.5
11	T1	602	1.2	602	1.2	0.562	38.5	LOS C	22.6	160.2	0.92	0.80	0.92	35.6
12	R2	135	1.6	135	1.6	0.260	24.2	LOS B	4.4	31.5	0.85	0.78	0.85	39.6
Approach		977	1.3	976[N1]	1.3	0.562	28.9	LOS C	22.6	160.2	0.72	0.74	0.72	39.2
All Vehicles		3033	1.5	3032[N1]	1.5	0.636	30.2	LOS C	22.6	160.2	0.73	0.72	0.73	36.7

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.