TRAFFIC/TRANSPORT IMPACT ASSESSMENT

Revised Planning Proposal – Uniting Care
Waverley Hospital Campus

Reference: 20.058
Date: April 2020

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1. INTRODUCTION

TRAFFIX has been engaged by Uniting to assess the impacts associated with a Planning Proposal relating to their campus in Waverley. This report incorporates changes arising from responses received from the previous lodged planning proposal. The site comprises an existing hospital, consulting rooms and nursing home (aged care) with a GFA of 15,001m^2 over a combined site area of approximately 31,670m^2. The Planning Proposal would enable the development of the site to increase from an existing FSR of 0.6 and 0.9:1 to 1.2:1.

The indicative development adopted to assess the Planning Proposal is anticipated to yield an additional 5,286m^2 of commercial, medical and retail use (including expansion to the existing hospital), an additional 218 independent living units, an additional 33 aged care beds and a childcare centre catering for 80 children.

In this regard, we have reviewed all relevant documentation provided to us and undertaken detailed site investigations. This report therefore examines the likely traffic and parking impacts of the proposed development. The development is located within the Waverley Council LGA and has been assessed under that council's controls.

The results of our assessment summarised in the following sections:

- 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 and transport impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions.

2. LOCATION AND SITE

The subject site lies within the sector bounded by Birrell Street to the north, Carrington Road to the east, Church Street to the south and Bronte Road to the west. It is located approximately 700 metres south of the Bondi Junction Railway Station, 7.0 kilometres east of the Sydney CBD and 9.7 kilometres northeast of Sydney Airport.

The site has a frontage of approximately 255 metres to Birrell Street, 180 metres to Carrington Road, 170 metres to Church Street and 195 metres to Bronte Road. It currently accommodates the War Memorial Hospital and Edina Nursing Home and has a total site area of approximately 31,670m^2. Vehicular access to the site is provided from Birrell Street and Church Street via Edina Avenue, as well as via secondary driveways off Bronte Road and Carrington Road.

A Location Plan is presented in **Figure 1** and a site plan is 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 site.

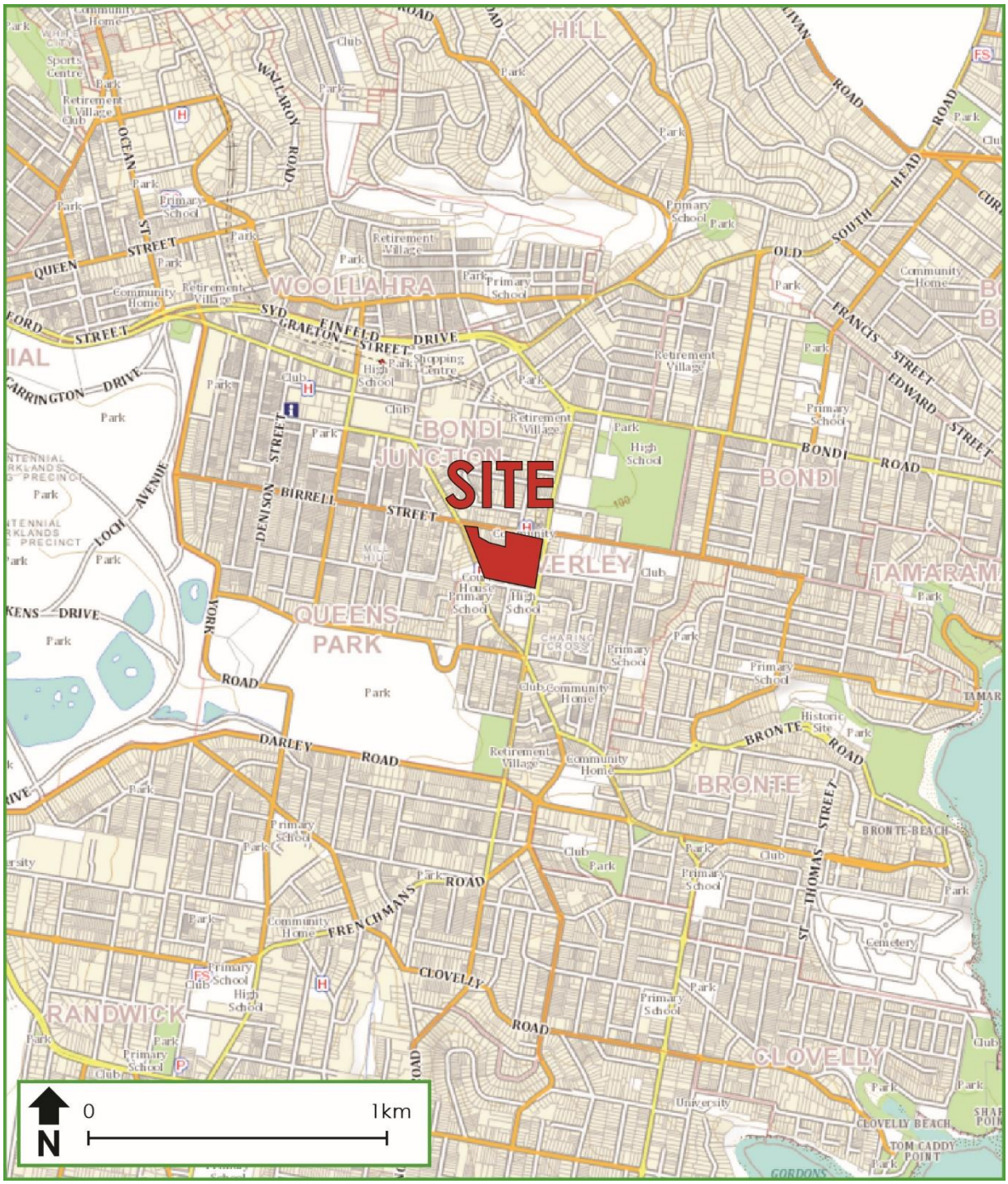


Figure 1: Location Plan

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 in close proximity to the site of particular interest:

- Carrington Road: along with Council Street and Syd Einfeld Drive forms part of the RMS Main Road (MR 660) and generally runs in a north-south direction, connecting from Ocean Street to the north and Frenchmans Road to the south. It carries approximately 24,300 vehicles per day (vpd). In the vicinity of the site, Carrington Road is subject to a 60km/h speed zoning (40km/h during the school start/end times) and provides two lanes of traffic in both directions with no parking and no stopping restrictions applied during the peak periods;

- Bronte Road: operates as the RMS Main Road (MR 340) to the north of Victoria Street and as a local road to the south. It generally runs in a north-south direction, between Ebley Street to the north and Leichhardt Street to the south. In the vicinity of the site, it is subject to a 50 km/h speed zoning (40km/h during the school start/end times) and provides two lanes of traffic in both directions with on-street parking provided on either side;

- Birrell Street: a collector road, Birrell Street runs in an east west direction between York Road to the west and Cross Street to the east. It is subject to a 50km/h speed zoning and provides one lane of traffic in each direction and unrestricted kerbside parking permitted along both approaches;

- Church Street: a local road that traverses in an east-west direction along the southern frontage of the site, between Bronte Road in the west and Carrington Road in the east. Church Street operates as a one-way westbound road providing a single lane of traffic, angled parking along the northern side and parallel parking along the southern side.

It can be seen from Figure 3 that the site is conveniently located with respect to the arterial and local road systems serving the region. It is therefore able to effectively distribute traffic onto the wider road network, minimising traffic impacts.

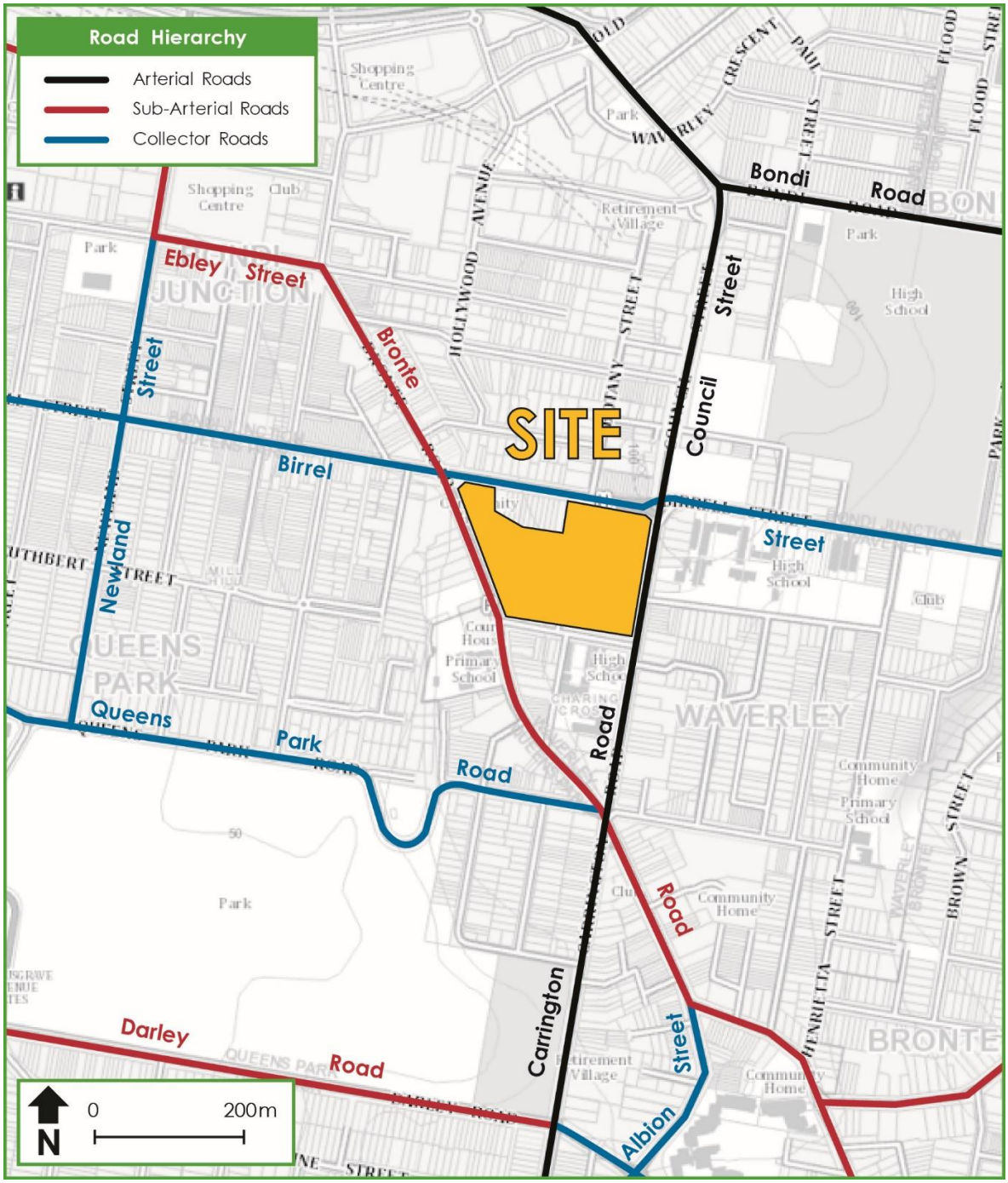


Figure 3: Road Hierarchy

3.2 Key Intersection

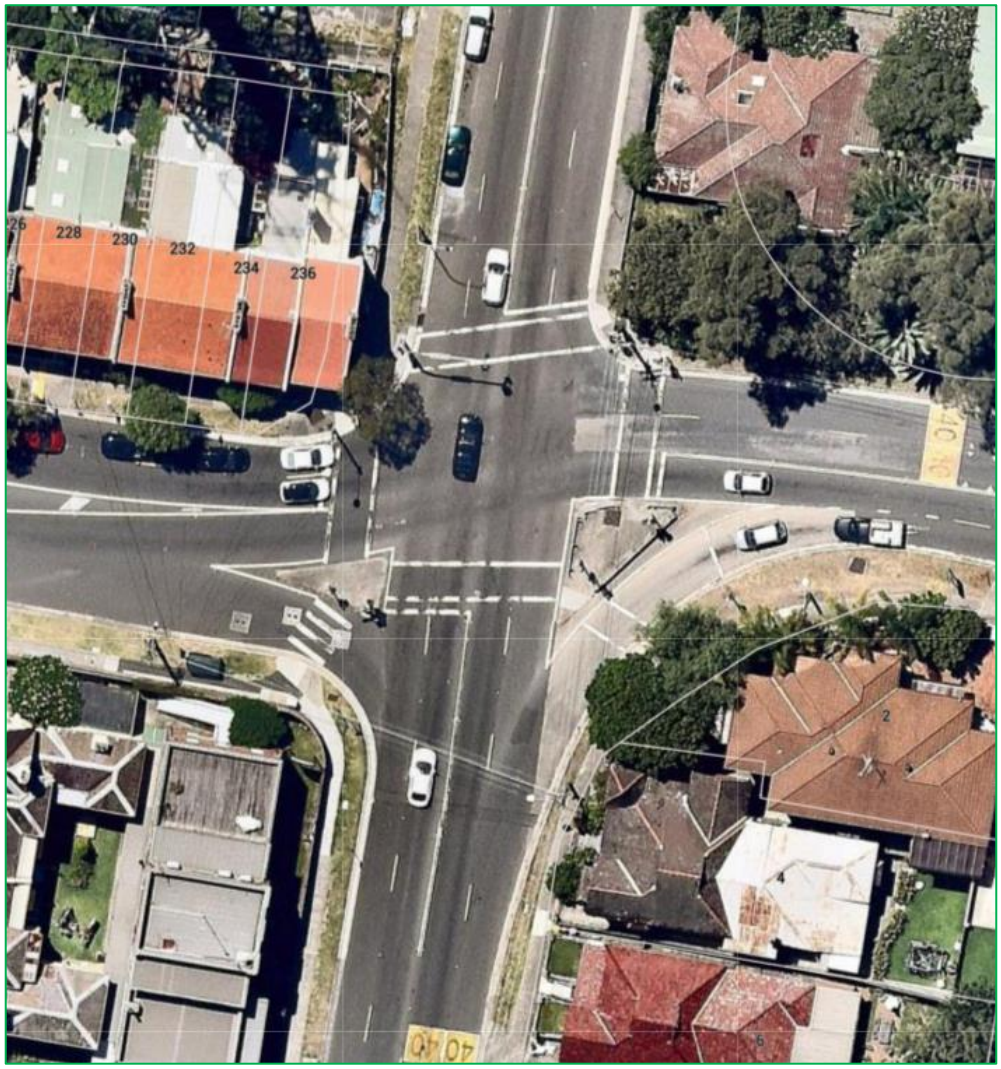
The key intersection in the vicinity of the site is shown below and provides an understanding of the existing road geometry and alignment:

Source: Near Map

Figure 4: Intersection of Carrington Road / Bronte Road / Victoria Street

It can be seen from Figure 4 that this intersection forms a six-way signalised intersection. It is located approximately 215 metres south of the site, along Carrington Road. Dedicated pedestrian crossings are provided at this intersection on all approaches with pedestrian footways provided along all road reserves. Right turn restrictions apply to the Carrington Road

south, Bronte Road southeast, Carrington Road north (PM peak period only) and Victoria Street west approaches.



Source: Near Map

Figure 5: Intersection of Carrington Road / Council Street / Birrell Street

It can be seen from Figure 5 that Carrington Road forms a signalised intersection with Birrell Street at the northeast corner of the subject site. Dedicated pedestrian crossings are provided at this intersection on all approaches with pedestrian footways provided along all road reserves. Right turn restrictions apply to the Birrell Street east and Council Street north approaches.

Source: Near Map

Figure 6: Intersection of Bronte Road / Birrell Street

It can be seen from Figure 6 that Bronte Road forms a signalised intersection with Birrell Street at the northwest corner of the subject site. Dedicated pedestrian crossings are provided at this intersection on all approaches with pedestrian footways provided along all road reserves linking to Bondi Junction Station and shopping centre on the north approach.

On road cycle markings are provided on the west arm linking to the Brisbane Street – Bourke Street route, connecting to Bondi Junction and UNSW.

3.3 Public Transport

The existing bus and rail services that operate in the locality are shown in **Figure 7**. It is evident that the site benefits from excellent public transport services with multiple bus stops located along the Bronte Road and Birrell Street frontages. The bus routes provide frequent services connecting the site to Bondi Junction, Eastgardens, Coogee and Clovelly

In addition, the Bondi Junction Interchange located 800 metres to the north and includes the Bondi Junction Railway Station. This station provides services to the T4 Eastern Suburbs and Illawarra Line, connecting to Sydney CBD and the wider rail network across the Sydney metropolitan area.

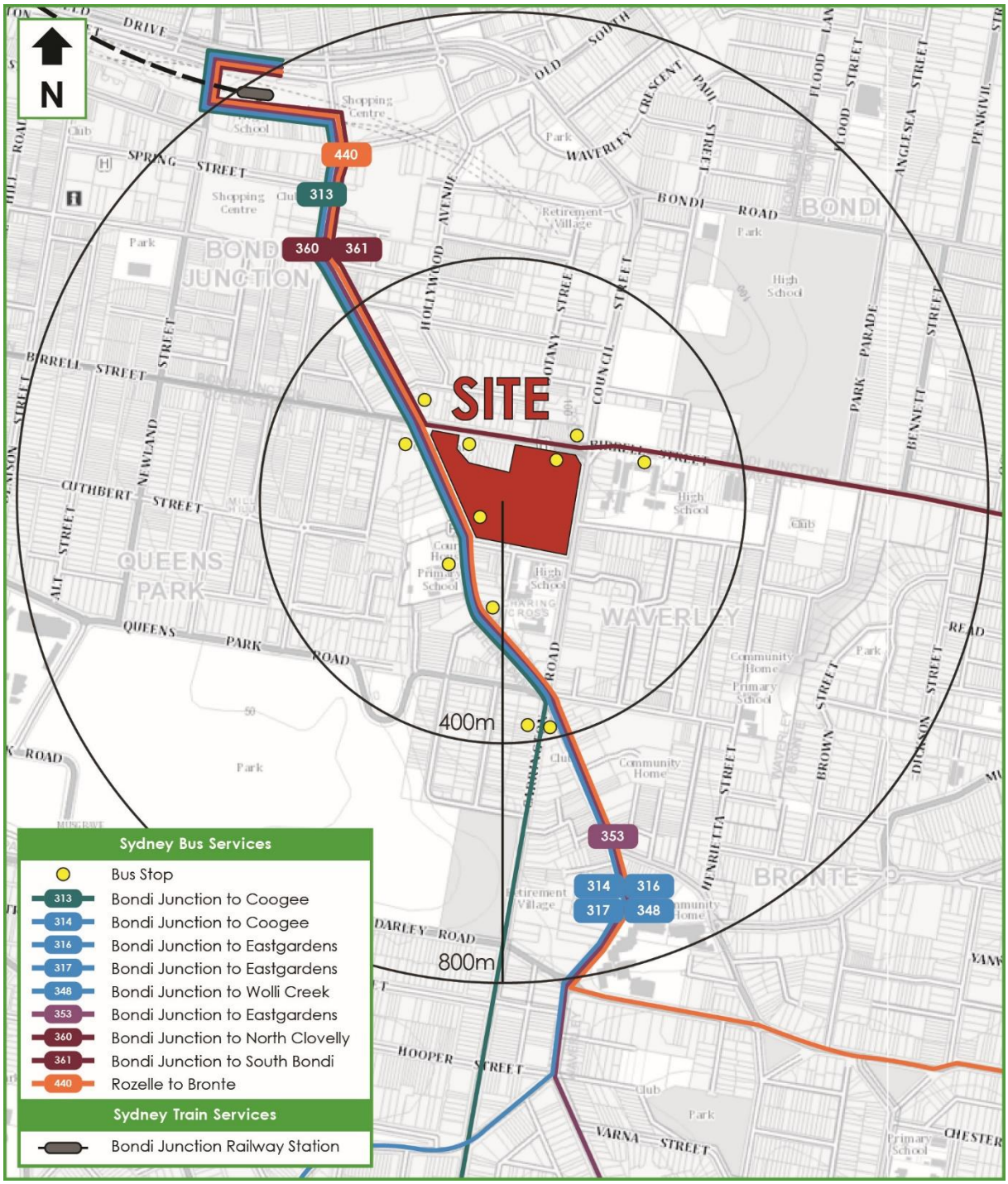


Figure 7: Public Transport

3.4 Existing Site Generation

The existing site traffic generation predominantly relates to the existing hospital, consulting rooms and aged car uses on site. Surveys of the existing site accesses on Birrell Street and Church Street have been undertaken in the weekday AM and PM peak periods to give an understanding of the traffic generation patterns of the existing uses. The surveys show the following traffic generation recorded in the peak hour:

- 42 veh/hr (34 in, 8 out) in the morning peak hour; and
- 38 veh/hr (2 in, 66 out) out in the evening peak hour.

With an existing GFA of approximately 15,000m^2 the current hospital and aged care facilities display the following existing traffic generation rates:

- 0.28 veh per 100m^2 in the morning peak hour; and
- 0.25 veh per 100m^2 in the evening peak hour.

These rates shall be used to give guidance when assessing the expected increased generation from the increased FSR of the planning proposal master plan.

4. DESCRIPTION OF PROPOSED DEVELOPMENT

This Planning Proposal seeks to amend the existing height controls to enable the development of the concept design. A detailed description of the proposal based on the indicative development yields is provided in the Planning Proposal prepared separately. The revised concept proposal incorporates a 37,968m2 GFA with a resulting FSR of 1.2 to 1.

For the purpose of this preliminary assessment, the indicative development relating to the proposed rezoning, for which approval is now sought, is summarised in Table 1 below. It is noted that the yields included in this table are provided for information purposes only to assist in the assessment of the proposal. These yields, may change and will be the subject of future Development Applications to Waverley Council, in the event that the Planning Proposal is approved.

Table 1: Summary of Possible Future Development Potential

Land Use	Approximate Yield
Independent Living Units	218 units
Residential Aged Care	114 Beds (a net increase of 33 beds)
Childcare	80 children
Retail	450m^2
Commercial / Office	4,336m^2 (a net increase of 596m^2)
Medical Centre	500m^2
Hospital Expansion	1,560m^2

The traffic and parking impacts arising from the development are discussed below. The concept plans relating to this Planning Proposal will be formulated as the process unfolds based on the concept plans provided in **Appendix C**.

5. PARKING REQUIREMENTS

5.1 Car Parking Controls

Parking for the indicative development is to be assessed in accordance with the requirements of *Waverley Council's DCP (2015)* and *State Environment Planning Policy (Housing for Seniors or People with a Disability) 2004 (SEPP)*.

5.1.1 Independent Living Units

The parking rates for the independent living units within the proposed masterplan is governed by the SEPP rates reproduced here:

- 1 car space for each 5 dwellings where the development application is made by, or is made by a person jointly with, a social housing provider.

Uniting meets the requirements of a social housing provider being a 'not for profit organisation that is a direct provider of rental housing to tenants'. As such the application of this rate to the proposed 218 ILUs yields a minimum requirement for 44 spaces.

In addition, the parking rate for the living units assessed as apartments has been provided below. As the site is within 800m of Bondi Junction Station the parking requirement for high density apartments is governed by the RMS rates as described by SEPP65 (*Design Quality of Residential Apartment Development*). These rates are as follows:

- 0.4 car spaces for each 1 bedroom unit;
- 0.7 spaces for each 2 bedroom unit;
- 1.2 spaces per 3 bedroom unit; and
- 1 space per 7 units for visitors.

An assessment of the concept design broken down as 65 one-bedroom apartments, 131 two-bedroom apartments, and 22 three-bedroom apartments yields a minimum requirement of 162 spaces under the requirements of SEPP65 and the RMS Guide.

5.1.2 Residential Aged Care

The parking rates for the residential care component is also governed by the SEPP rates and are as follows:

- 1 parking space for each 10 beds in the residential care facility (or 1 parking space for each 15 beds if the facility provides care only for persons with dementia);
- 1 parking space for each 2 persons to be employed in connection with the development and on duty at any one time; and
- 1 parking space suitable for an ambulance

The application of these rates to the proposed addition of 33 beds and estimated 11 additional staff yields a requirement for an additional 6 spaces over the existing supply, one of which is to be designed to accommodate an ambulance.

However, as the existing aged care building is to be demolished an assessment of the full 114 beds is considered appropriate when assessing the car parking requirements of the new building. Assessed against the full complement of 114 beds and 44 staff the Residential Aged Care component is required to provide 33 spaces.

5.1.3 Retail

According to Part B, Section 8.8.1 of the Waverley DCP (2016) Retail uses attract the following parking requirement:

- Retail Premises require a minimum of zero spaces and a maximum of 3.3 spaces/100m^2.

Applying the above rate to the proposed yield of 450m^2 of the retail Gross Floor Area (GFA) it can be seen the retail component is permitted a maximum of 15 vehicle spaces.

5.1.4 Commercial

According to Part B, Section 8.8.1 of the Waverley DCP (2016) Commercial uses attract the following parking requirement:

- Commercial Premises require a minimum of zero spaces and a maximum of 1 spaces/100m^2.

Applying the above rate to the proposed yield of 6,396m^2 of commercial GFA (including the medical centre and hospital expansion) it can be seen the commercial component is permitted a maximum of 64 vehicle spaces for this component on the site.

5.1.5 Childcare Centre

According to Part F, Section 3.3 of the Waverley DCP (2012) Childcare Centres attract the following parking requirement:

- Childcare Centres require a minimum of one spaces for every four staff and one space per eight children in attendance.

Applying the above rate to the proposed attendance of 80 children and estimated 18 staff it can be seen the childcare component requires a minimum of 15 vehicle spaces.

5.1.6 Combined Parking Requirement

The total parking requirement for the subject site has been summarised in Table 2.

Table 2: Parking Requirements

Use	Area/No.	DCP / SEPP Rate	DCP / SEPP Requirement	Parking Provided
Independent Living Units	218	0.2 / unit	44 (or 162 as apartments)	237
Residential Aged Care	114 beds, 44 staff	0.1 / bed + 1 per 2 staff + ambulance	33	111
Retail	450m^2	0 -3 / 100m^2	0-15	
Commercial	6,396m^2	0 -1 / 100m^2	0-64	
Childcare	80 children (18 staff)	1 per 4 staff & 8 children	15	15
		Total	92 min 210 min (as apartments) (333 max as apartments)	363*

*Includes 13 at grade spaces located on existing grounds

It can be seen that the concept proposal requires a minimum of 92 car spaces and a maximum of 333 spaces depending on the assessment criteria to be adopted. The development concept can accommodate 363 spaces including 237 spaces identified within the concept masterplan for the Independent Living Units., such that parking is able to be accommodated at any level, with an additional contingency.

Compliance with relevant car parking controls will nevertheless be confirmed as part of any subsequent development application(s), following approval of this rezoning application. In addition, provision for an ambulance is to be provided within the hospital design.

In summary, the concept design demonstrates the requisite parking can be provided, generally at basement level for the ILUs supported by at grade parking for the commercial/retail uses.

5.2 Bicycle Parking Controls

Bicycle parking and end of trip facilities (including showers and lockers) are to be provided in accordance with the rates as set out in Waverley Council DCP.

Storage cages are to be provided for the ILUs with a secure storage room provided for retail and commercial employees. In addition secure rails are to be provided on site for visitors.

The appropriate bicycle provision shall be determined at Development Application stage once final yields have been determined.

5.3 Car Share / Electric Charging Facilities

Any subsequent Development Application should consider the inclusion of a dedicated on site car share bay for residents and neighbourhood use. Studies indicate the inclusion of a car share bay reduces the demand on neighbourhood parking by up to ten spaces.

In addition, a proposed DA should include consideration for electric vehicle charging stations for residents, employees or visitors.

5.4 Accessible Parking

This will be assessed in detail at subsequent development application stage. In this regard the provision will need to meets the requirements of the Building Code of Australia, Councils DCP and AS2890.6 is considered readily achievable.

5.5 Motorcycle Parking

This will be assessed in detail at subsequent development application stage. In this regard the provision will need to meets the requirements of Councils DCP and AS28901 and is considered readily achievable.

6. TRAFFIC AND TRANSPORT IMPACTS

6.1 Trip Generation

The impacts of the indicative development on the external road network have been assessed having regard for the indicative yield scenarios as summarised in Table 1 above. This assessment has been undertaken in accordance with the requirements of the RMS Guideline to Traffic Generating Developments (2002) and as such, the traffic generation rates published in the RMS Guide have been used as the basis for each individual land use.

In August 2013, RMS released Technical Direction TDT 2013/04a, which provides revised trip generation advice for a number of land uses based on survey data obtained since 2009 The result of the assessment is summarised below.

6.1.1 Independent Living Units

ILUs are apartment buildings reserved for members of the public aged over 55. They differ from traditional Seniors Housing in that they do not require regular attendance by a team of nurses or staff. In this regard ILUs typically attract a much lower traffic generation than seniors housing that require care staff to arrive for work shifts.

In addition, as many of the residents are typically retirees, the traffic generation in the network commuter peak hour is expected to be significantly lower than the generation rate of a standard residential apartment where residents are journeying to and from work.

Furthermore, the proposed site contains a number of amenities for residents including food and medical facilities in addition to being located less than 800 metres from Bondi Westfield shopping precinct and Railway station.

In order to account for the above conditions and undertake a reasonable assessment of the generation of the ILU component an interrogation of the TDT 2013/04a traffic generation rates relating to 'Housing for Seniors' has been undertaken. Appendix C1 within the technical

direction provides an example of a seniors living complex in North Parramatta predominantly catering for independent living units. This complex attracted a generation rate of 0.05 units in the PM peak with the network AM peak falling outside the survey period.

In order to assess the expected generation of the ILUs, allowing for the above factors whilst including a conservative buffer in the assessment, the following trip generation rates have been adopted:

- 0.07 veh per unit in the morning peak hour; and
- 0.06 veh per unit in the evening peak hour.

The application of these rates to the 218 ILUs proposed, applying an 80:20 split, predicts the following expected traffic generation:

- 16 veh/hr (3 in, 13 out) during the morning peak hour; and
- 14 veh/hr (11 in, 3 out) during the evening peak hour.

6.1.2 Residential Aged Care

Within Appendix C1 of the technical direction TDT 2013/04a two sites are listed in as having high care residential aged care beds. These sites, in Richmond and North Parramatta, recorded an average PM peak traffic generation of 0.2 trips per room. It is noted that the subject site has much better access to public transport than the surveyed site enabling alternative modes of transport for staff and visitors. Nevertheless this trip rate has been adopted in the AM and PM peak for the additional 33 beds proposed within the concept design to ensure a conservative assessment. The application of this rate, applying an 80:20 split, predicts the following expected traffic generation:

- 7 veh/hr (6 in, 1 out) during the morning peak hour; and
- 7 veh/hr (1 in, 6 out) during the evening peak hour.

6.1.3 Childcare Centre

When assessing the traffic generation of a childcare centre the RMS Guide provides an AM peak generation rate of 0.8 trips per child and a PM peak generation rate of 0.7 trips per child as a general rate for 'long-day care' centres. However, it is expected the proposed childcare centre shall attract a lower trip rate than the general rate provided in the Guide for the following reasons:

- The centre is to accommodate children of staff working at the hospital and aged care centre on site with staff being given preferential placement for their children. As such the pick-up and drop-off of these children will be undertaken by staff already travelling to site to work and can be discounted from the assessment.
- The site is located in close proximity to two of primary schools. A number of parents and carers with children attending the primary school would be able to utilise the childcare centre in the same trip if a younger child is to attend childcare.

In order to account for these factors a trip rate of 0.6 during the AM peak and 0.525 during the PM peak has been adopted. These trip rates represent 75% of the average trip rate provided within the Guide for the AM and PM periods.

The application of these rates to the expected 80 children, applying a 50:50 split, predicts the following expected traffic generation:

- 48 veh/hr (24 in, 24 out) during the morning peak hour
- 42 veh/hr (21 in, 21 out) during the evening peak hour

6.1.4 Retail

The master plan proposes an addition of three small retail units within the scheme to cater for the population of elderly residents to be residing on the site. It is envisioned these shall be auxiliary retail to service the needs of residents and employees of the site rather than attracting additional demand from further afield.

In order to derive a traffic generation rate for this component the RMS generation rates for secondary retail has been used as the basis. The Guide to Traffic Generating Developments lists a rate of 4.6 veh/hr per 100m^2 of Gross Leasable Floor Area (GLFA) in the Thursday PM peak for secondary retail use. The AM peak can be assumed as 20% of this rate, typically relating to staff arrivals. The guide recommends GLFA be estimated as 75% of the total GFA. With a GFA of 450m^2 the retail component is predicted to have a GLFA of 338m^2.

In order to account for the synergy between the retail offering and the residents of the site, with a significant proportion of customers being drawn from within the site, the restrained parking provision under councils DCP and the proximity to the significant Bondi Junction shopping precinct a discount to the expected vehicle generation of 20% has been applied.

As such, the retail component is expected to generate the following rates:

- 0.74 veh per 100m^2 in the morning peak hour; and
- 3.68 veh per 100m^2 in the evening peak hour.

With the application of these rates to the proposed additional 338m^2 of retail GLFA, and applying a 50:50 split, the retail component is expected to produce the following generation:

- 3 veh/hr in the AM peak (3 in, 0 out) assuming 20% of the PM peak, associated mainly with staff arrivals; and
- 13 veh/hr (6 in, 7 out) during the Thursday evening peak hour.

6.1.5 Commercial

The commercial tenancies within the proposed master plan relate to expected auxiliary medical services associated with the aged care and hospital facilities, such as a hydrotherapy pool or an imaging centre, rather than typical commercial office uses. A commercial office use would attract a generation rate of 1.6 trips per 100m^2 in the AM Peak and 1.2 trips per 100m^2 in the PM peak, however the RMS guide does not provide a generation rate for specialist medical consulting rooms.

In order to derive a generation rate for this component the rates provided for an 'extended hours medical centre' have been used as the starting point for assessment. The guide provides an estimated generation of 3.1 – 19.4 veh/hr in the PM Peak and 4.4 – 19 veh/hr in the AM peak for such a use. To reflect the nature and accessible location of the commercial tenancies the rate at the lower end of this range has been adopted. Furthermore, to account for the synergy of these tenancies with the aged care residents and hospital facilities on site a discount of 30% has been adopted to the expected traffic generation rate. As such the commercial units within the proposed masterplan are expected to generate the following rates:

- 3.1 veh per 100m^2 in the morning peak hour; and
- 2.2 veh per 100m^2 in the evening peak hour.

These rates represent roughly double the generation rate for a typical office commercial development. The application of these rates to the proposed net increase of 596m^2 of commercial use over the existing commercial provision on site, and adopting a 70:30 split, predicts the following generation for this component:

- 19 veh/hr (13 in, 6 out) during the morning peak hour
- 13 veh/hr (4 in, 9 out) during the evening peak hour

6.1.6 Hospital / Medical Centre Expansion

As with generation for the commercial component, the traffic generation rates for an extended hours medical centre have been used as the basis, with the rates at the lower end of the scale being adopted reflecting the location and surveyed traffic generation of the existing use.

As with the commercial use, a discount of 30% has been applied to reflect the synergy with the residents of the ILUs and aged care facilities proposed for the site. The result of this assessment provides an expected generation rate of

- 3.1 veh per 100m^2 in the morning peak hour; and
- 2.2 veh per 100m^2 in the evening peak hour.

The application of these rates to the proposed 2,060m² of additional medical facilities, adopting a 70:30 split, predicts the following generation for this component:

- 64 veh/hr (45 in, 19 out) during the morning peak hour
- 45 veh/hr (13 in, 32 out) during the evening peak hour

6.1.7 Combined Generation

Table 3 summaries the assessment and displays the expected additional traffic generation of the masterplan proposal:

Table 3: Traffic Generation Summary

Use	Area/No.	Peak Period	Vehicle Generation Rate	Reduction Applied	Estimated Generation
Independent Living Units (ILU)	218 units	Morning	0.07 per unit	-	16 (3 in, 13 out)
		Evening	0.06 per unit	-	14 (11 in, 3 out)
Residential Aged Care	33 beds	Morning	0.2 per bed	-	7 (6 in, 1 out)
		Evening	0.2 per bed	-	7 (1 in, 6 out)
Childcare	80 Children	Morning	0.8 per children	25%	48 (24 in, 24 out)
		Evening	0.7 per children	25%	42 (21 in, 21 out)
Retail	450m² GFA (338m² GLFA)	Morning	0.92 per 100m²	20%	3 (3 in, 0 out)
		Evening	4.6 per 100m²	20%	13 (6 in, 7 out)
Commercial Medical Tenancies	596m² GFA (net increase)	Morning	4.4 per 100m²	30%	19 (13 in, 6 out)
		Evening	3.1 per 100m²	30%	13 (4 in, 9 out)
Medical Centre (including hospital expansion)	2,060m² GFA	Morning	4.4 per 100m²	30%	64 (45 in, 19 out)
		Evening	3.1 per 100m²	30%	45 (13 in, 32 out)
Total		*Morning*			*157 (94 in, 62 out)*
		Evening			*134 (55 in, 77 out)*

As seen in Table 3, based on the above assumptions the overall development would generate a net addition of 157 veh/hr during the AM peak period whilst the PM peak period is expected to generate an additional 134 veh/hr following full development of the concept proposal.

It is noted that the generation assumptions used above for the expanded hospital and medical centre are far higher than the surveyed rates identified in Section 3.4 for the existing hospital and residential aged care on site, giving additional confidence that the above assessment is a conservative estimation of the future site generation, particularly of the commercial and hospital components considered for expansion.

6.2 Peak Period Intersection Performance

For the purposes of the assessment of traffic impacts of this development, surveys were undertaken of the most critical intersections immediately adjacent to the site, as identified in Section 3.2. In addition, the intersections at the site accesses have been surveyed. These were undertaken on a typical weekday between the 7-9AM and 4-6PM peak periods.

The results of these surveys were analysed using the SIDRA computer program to determine their performance characteristics under existing traffic conditions. The SIDRA 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. 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 below:

Table 4: Intersection Performance Indicators

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 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.

Table 5 presents the SIDRA modelling for the existing conditions as recorded via traffic count surveys. Reference should also be made to the SIDRA outputs provided in **Appendix B** which provide detailed results for individual lanes and approaches.

Table 5: Existing Intersection Performance: AM and PM Peak Hour

Intersection Description	Control Type	Period	Degree of Saturation	Intersection Delay	Level of Service
Carrington Road / Bronte Road / Victoria Street	Signals	AM	1.033	61.2	E
		PM	0.948	51.0	D
Carrington Rd / Birrell Street / Council Street	Signal	AM	1.024	50.4	D
		PM	0.878	34.2	C
Bronte Rd / Birrell Street	Signal	AM	0.922	43.0	D
		PM	0.826	32.4	C
Birrell Street / Site Access	Give Way*	AM	0.345	9.5	A
		PM	0.214	6.0	A
Church Street / Site Access	Give Way*	AM	0.092	3.9	A
		PM	0.023	3.9	A
Church Street / Bronte Road	Give Way*	AM	0.240	12.0	A
		PM	0.167	17.3	B
Church Street / Carrington Road	Give Way*	AM	0.659	13.4	A
		PM	0.368	8.7	A

*Priority controlled intersections list result for approach with largest delay

It can be seen from Table 5 that the intersection of Carrington Rd / Bronte Rd / Victoria Street already operates at capacity in the AM peak providing a level of service 'E' under current operational conditions. The intersection of Carrington Road / Council Street / Birrell Street is also operates at capacity recoding a level of service of D in the AM peak whilst Bronte Road /Birrell Street recorded a level of service of D and C in the AM and PM peak respectively.

In addition, it is noted that Church Street currently operates satisfactorily at the intersections at either end of the street and at the current Church Street site access, however it is noted from site observations that due to single lane of traffic exiting to Bronte Road drivers can be delayed waiting for a suitable gap to turn, particularly turning right. The existing pedestrian crossing to the south of this intersection provides relief by providing the gap required to allow waiting vehicles to turn right, preventing significant queuing.

A suggested improvement for this existing condition is the addition of a second pedestrian crossing on Bronte Road to the north of the intersection, providing additional gaps in traffic for southbound traffic. This potential upgrade is discussed further in Section 7.1 relating to pedestrian access for the site.

In order to undertake a comparison between the existing 'base case' and the 'proposed' traffic scenarios, the traffic generation predicted in Section 6.1 has been distributed onto these key intersections. The distribution is in accordance with the NSW Bureau of Transport Statistics Journey to Work data and the existing distribution patterns identified in the traffic surveys. In addition, it is proposed that right turn movements from Birrell Street into the site be prohibited to prevent lane blocking. A summary of the modelled results are provided in Table 6.

Table 6: Intersection Performance: AM and PM Peak Hour

Intersection Description	Control Type	Model	Period	Degree of Saturation	Intersection Delay	Level of Service
Carrington Road / Bronte Road / Victoria Street	Signals	AM	Existing	1.033	61.2	E
			Future	1.033	76.4	F
		PM	Existing	0.948	51.0	D
			Future	0.989	59.4	E
Carrington Rd / Birrell Street / Council Street	Signal	AM	Existing	1.024	50.4	D
			Future	1.037	54.5	D
		PM	Existing	0.858	34.2	C
			Future	0.919	39.0	C
Bronte Rd / Birrell Street	Signal	AM	Existing	0.922	43.0	D
			Future	0.944	46.7	D
		PM	Existing	0.826	32.4	C
			Future	0.864	33.4	C
Birrell Street / Site Access	Give Way*	AM	Existing	0.345	9.5	A
			Future	0.012	3.8	A
		PM	Existing	0.214	6.0	A
			Future	0.010	3.7	A
Church Street / Site Access	Give Way*	AM	Existing	0.092	3.9	A
			Future	0.135	3.9	A
		PM	Existing	0.023	3.9	A
			Future	0.088	3.9	A
Church Street / Bronte Road	Give Way*	AM	Existing	0.240	12.0	A
			Future	0.333	12.9	A
		PM	Existing	0.167	17.3	B
			Future	0.333	19.5	B
Church Street / Carrington Road	Give Way*	AM	Existing	0.659	13.4	A
			Future	0.667	14.3	A
		PM	Existing	0.368	8.7	A
			Future	0.404	9.1	A

*Priority controlled intersections list result for approach with largest delay

It can be seen from Table 6 that the proposal creates only a small increase in overall average delays for the intersections surrounding the site.

An increase to average intersection delay of 15 seconds is the largest increase, recorded on the largest intersection, being Carrington Road / Bronte Road. The average delay is expected to be in the order of 3-8 seconds per cycle at the remaining signalised intersections.

Furthermore the site access and intersections at each end of Church Street maintain a good level of service as shown by the modelling, the development does not rely on an improvement at the Church Street / Bronte Road intersection, however there is benefit in exploring the addition of a crossing to the north of the intersection as noted in Section 7.1.

The Birrell Street access is improved significantly by the removal of right turn movements into site. This restriction will also reduce the potential impact on the Carrington Street / Birrell Street intersection of vehicles blocking traffic whilst waiting to undertake a right turn manoeuvre into site.

As such the indicative development and hence the Planning Proposal is considered supportable from a traffic planning perspective with no external improvements to the network required.

6.3 Sustainable Transport

6.3.1 General

Council's Development Control Plan (DCP) and State government policies outline the strategic goal of increasing sustainable transport. The encouragement of these alternative modes of transport will assist in reducing private vehicle trips, thus decreasing congestion, time, money and environmental impacts. Due to this, the aim of the proposed development is to encourage and support the existing and future sustainable transport services available within the vicinity of the site. This can be achieved by providing the residents of the proposed developments car share parking, bicycle parking, end of trip facilities and travel plans. This is an objective that will be considered in further detail at development application stage.

6.3.2 Green Travel Plan

In accordance with best practice, a Green Travel Plan (GTP) will be prepared for the site in response to a suitable condition of consent on any future development application. The site is within 800 meters of a railway station with numerous bus stop with a regular service frequency. This GTP will provide a site-specific set of measures and initiatives to promote sustainable transport options such as walking, cycling, car sharing and public transport. It will assist in encouraging the residents of the new proposed development to use these options to replace all or part of their car journeys. The implementation of the GTP is expected to create a number of social, economic, environmental and health benefits for the residents. This GTP will likely comprise of the following:

- Targets – generally includes the reduction of single occupant car trips to and/or from the proposed development for journey to work and increasing public transport modal shae.

- Travel Data – a prior estimate of the amount and types of trips to the proposed development is required, as well as an annual travel survey and review in order to estimate the change in travel behaviour of the residents.

- Measures – an outline of specified tools and methods to achieve goals.

6.3.3 Car Share

The emergence of companies such as Uber and GoGet, can provide residents access to short period car rentals without bearing costs of owning a personal vehicle. Car Sharing is typically enhanced in conjunction with accessible public transport within the proximity of the site. As such, encouragement of a car share scheme would decrease the reliance on private vehicle ownership. *The Parramatta City Council Development Control Plan (DCP) 2011; Part 3.6.1 (C.1)* states that one (1) car share parking space is to be provided for new residential developments that have 50 or more residential units and it within 800 meters of a railway station or 400 meters of a bus station.

7. ACCESS AND INTERNAL DESIGN ASPECTS

7.1 Pedestrian Access

A pedestrian through site link is proposed running from the north to south of site, with an east west link connecting to Bronte Road to the west. These through site links shall increase pedestrian linkages across the precinct and shall improving connections for members of the public to the bus stops and public schools surrounding the site.

It is noted the café and medical facilities are to be open to the public encouraging the use of the site by members of the wider community.

It is recommended that the existing bus stops located along the site boundary are integrated into the site layout, improving access and capacity. Specifically, the existing southbound bus stop on Bronte Road, currently located 20 metres to the north of Church Street, is recommended to be relocated by 50m further to the north to be in the vicinity of the new east west link through site, improving pedestrian connectivity and footpath capacity for waiting pedestrians.

It is further recommended the potential for an additional pedestrian crossing be provided in this location be investigated with Council and the RMS. An additional crossing in this location links the major east west through site link on a pedestrian desire line to the schools and court facilities on the west site of Birrell Street. This facility would also increase gapes in traffic, aiding vehicles attempting to exit Church Street and join Birrell Street as noted in Section 6.2.

7.2 Vehicular Access

Vehicular access, internal roads and car parking of any future development will be designed to comply with the Australian Standard requirements of *AS2890.1 (2004) Part 1: Off-street car parking, AS2890.2 (2002) Part 2: Off-street commercial vehicle facilities* and *AS2890.6 (2009) Part 6: Off-street parking for people with disabilities.*

A number of access arrangements have been considered at this preliminary stage to minimise the impacts on the surrounding network and the Church Street pick up and drop off zone for the adjacent school. The existing vehicle accesses to the site are to be maintained with an additional access is proposed for Birrell Street, restricted to left in left out.

In addition, a potential for two additional accesses have been considered on Church Street to provide a porte-cochere arrangement, allowing pick up and drop off to be undertaken on site away from the Church Street kiss and drop arrangement for the adjacent primary school. Nevertheless, a second option for Church Street involves the adoption of a consolidated pick up and drop off arrangement between the site and the adjacent school, taking advantage of the differing peak periods for use. These access details are to be considered further at a future development application stage. Figure 8 outlines the proposed access arrangements for the site.

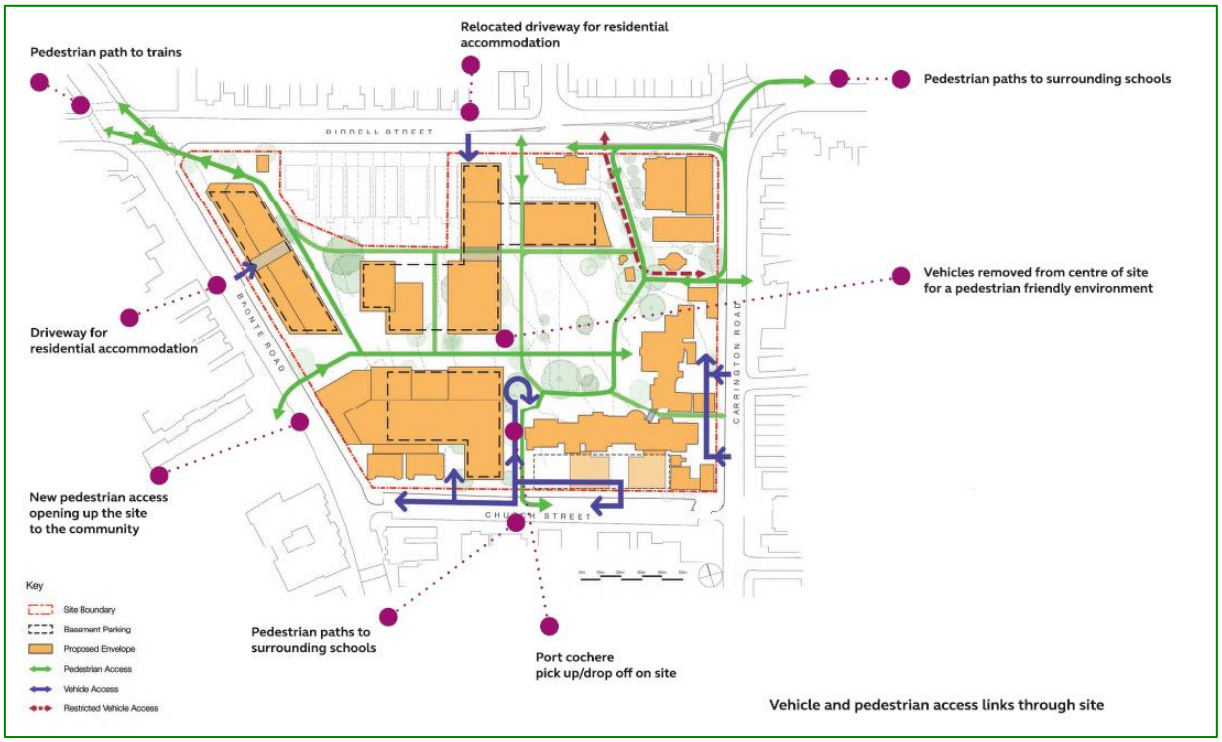


Figure 8: Site Access

It is recommended traffic calming measures for Church Street be investigated with Council with input from the adjacent St Claire's Collage to discourage through traffic and ensure the low speed environment is maintained on Church Street.

Compliance with relevant controls will be confirmed as part of any subsequent development application(s), following approval of this rezoning application. The detailed arrangement of the site accesses shall be subject to further assessment at a future Development Application stage. In addition Council will be invited to impose a standard condition of consent requiring compliance with AS2890.1, AS2890.2 and AS2890.6 on any future development application.

7.3 Internal design Aspects

The internal car park design will be resolved at development application stage based on the requirements of AS 2890.1 (2004) and AS 2890.6 (2009). The following aspects are noteworthy:

7.3.1 Parking Modules

- All car parking spaces will be designed having regard for their respective User Class.
- Parallel car parking spaces will provide a minimum space length of 6.2m, a minimum width of 2.1m and a minimum aisle of 3.6m.
- All spaces located adjacent to obstructions of greater than 150mm in height are provided with an additional width of 300mm.
- Dead-end aisles are provided with the required 1.0m aisle extension in accordance with Figure 2.3 of AS2890.1 (2004).
- All disabled parking spaces will be designed in accordance with AS 2890.6 (2009), being 2.4m wide, 5.4m long and situated immediately adjacent to a dedicated shared area or the circulating aisle.

7.3.2 Ramps

- Internal ramps will have a maximum gradient of 12.5% (1 in 8) for the first 6.0m inside the property boundary, in accordance with Section 3.3 (a) of AS 2890.1 (2004) on a downgrade ramp onto the road.

- Internal ramps will have a maximum gradient of 20% (1 in 5) with sag and summit transitions of 10% (1:10) respectively. These provisions satisfy the requirements of AS 2890.1 (2004).

7.3.3 Clear Head Heights

- A minimum clear head height of 2.2m is to be provided for all areas within the basement car park as required by AS 2890.1 (2004).
- A minimum clear head height of 2.5m is to be provided above all disabled spaces in accordance with AS 2890.6 (2009).

7.3.4 Loading

- Loading requirements will be designed in accordance with AS 2890.2.
- Loading bays will be separated from light traffic to the maximum extent possible.

7.3.5 Other Considerations

- All columns are located outside of the parking space design envelope shown in Figure 5.2 of AS 2890.1 (2004).
- Visual splay has been provided at the access driveway in accordance with Figure 3.3 of AS 2890.1 (2004).

7.3.6 Summary

In summary, all internal aspects will be designed in accordance with AS 2890.1 (2004) and AS 2890.6 (2009) as appropriate. It is however envisaged that a condition of consent would be imposed requiring compliance with these standards on any future development application. At this stage it is able to be determined that there are no impediments to the planning proposal being approved on traffic planning grounds.

8. CONCLUSIONS

In summary:

- Aged car facilities are a low generator of traffic during all peak periods, including the commuter and school peak periods. This is due to the fact that these uses involve a high proportion of 'discretionary' trips, with residents able to avoid peak periods. Staff are also rostered over a 24 hour shift period and shift changeover times generally do not coincide with on street peak periods.

- The situation is assisted by the synergy between the proposed residential components and the medical and ancilliary (supporting) retail uses on the site. That is, a high proportion of trips will be 'internalised' as walking trips.

- The overall development and associated FSR and building heights reflect a response t the planning proposal as lodged and is responsive to submissions received. In traffic planning terms, the impacts are largely unchanged.

- Vehicular access, internal roads and car parking of any future development would be designed taking into consideration the requirements of Australian Standards AS2890.1, AS2890.2 and AS2890.6. Compliance with relevant controls will be confirmed as part of any subsequent development application(s), following approval of this rezoning application

- The subject site is conveniently located with respect to the arterial and sub-arterial road systems serving the region and is well connected to public transport and shopping precincts.

- The traffic impacts are moderated by the above factors and the expected impacts, based on RMS trip rates, will have a manageable impact on the external road network. Traffic demands relating to the subject proposal are moderate with the largest increase in average intersection delay being assessed as only 15 seconds. This assessment is also based on a worst case scenario. This also needs to be considered in the context of the vital public service that the development provides within its local catchment/ community.

- The subject site presents no obvious constraints and full compliance with the Council and SEPP parking requirements (as appropriate) is expected to be achieved. The additional

parking is to be provided generally within basement levels, supplemented by at grade parking where this is justified.

Based on these findings, it is concluded that the subject planning proposal is supportable on traffic and transport planning grounds.

APPENDIX A

Photographic Record

Church Street Site Access

Bronte Road looking south from Church Street

Intersection of Bronte Road and Birrell Street

Birrell Street looking east (site frontage on right)

Birrell Street access driveway looking east towards intersection of Birrell Street / Carrington Road

Carrington Road looking south (site frontage on right)

APPENDIX B1

SIDRA Analysis (Existing Scenario)

MOVEMENT SUMMARY

Site: 01 [01 Carrington-Bronte-Victoria AM EX]

Carrington Road - Bronte Road - Victoria Street
Period: AM Peak
Scenario: Existing
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington Rd											
1	L2	39	5.0	0.899	61.8	LOS E	34.2	249.3	1.00	1.03	15.6
1a	L1	208	5.0	0.899	60.7	LOS E	34.2	249.3	1.00	1.03	18.4
2	T1	793	5.0	0.899	56.1	LOS D	34.5	252.1	1.00	1.05	17.7
Approach		1040	5.0	0.899	57.2	LOS E	34.5	252.1	1.00	1.04	17.8
SouthEast: Bronte Rd											
21b	L3	5	5.0	0.139	41.9	LOS C	3.2	23.2	0.76	0.70	22.5
21a	L1	44	2.0	0.139	39.8	LOS C	3.2	23.2	0.76	0.70	22.5
22	T1	435	5.0	0.695	39.2	LOS C	20.9	152.4	0.93	0.81	24.6
Approach		484	4.7	0.695	39.2	LOS C	20.9	152.4	0.91	0.80	24.4
East: Victoria St											
4b	L3	80	2.0	0.665	50.9	LOS D	14.7	104.4	0.96	0.84	21.8
4	L2	193	2.0	0.665	50.1	LOS D	14.7	104.4	0.96	0.84	20.1
5	T1	168	2.0	1.033	121.8	LOS F	30.3	215.5	1.00	1.42	10.8
6a	R1	62	2.0	1.033	124.7	LOS F	30.3	215.5	1.00	1.42	12.5
6	R2	89	2.0	1.033	126.4	LOS F	30.3	215.5	1.00	1.42	11.4
Approach		593	2.0	1.033	89.9	LOS F	30.3	215.5	0.98	1.15	14.2
North: Carrington Rd											
7	L2	12	2.0	0.330	39.9	LOS C	8.5	61.9	0.82	0.75	25.2
7a	L1	129	5.0	0.330	38.7	LOS C	8.5	61.9	0.82	0.75	24.5
8	T1	476	5.0	0.843	46.1	LOS D	25.1	183.2	0.95	0.93	20.3
9	R2	1	5.0	0.843	53.0	LOS D	25.1	183.2	0.96	0.95	19.3
Approach		618	4.9	0.843	44.4	LOS D	25.1	183.2	0.92	0.89	21.3
NorthWest: Bronte Rd											
27b	L3	43	5.0	0.202	38.2	LOS C	4.7	34.1	0.78	0.70	25.1
27a	L1	18	2.0	0.202	36.3	LOS C	4.7	34.1	0.78	0.70	26.6
28	T1	244	5.0	1.010	95.0	LOS F	23.5	171.7	0.96	1.23	14.2
29a	R1	66	5.0	1.010	113.4	LOS F	23.5	171.7	1.00	1.36	11.5
29b	R3	3	2.0	1.010	115.5	LOS F	23.5	171.7	1.00	1.36	11.3
Approach		375	4.8	1.010	89.1	LOS F	23.5	171.7	0.94	1.17	14.7
West: Victoria St											
10b	L3	7	2.0	0.339	46.4	LOS D	6.2	44.0	0.87	0.77	20.7
10	L2	120	2.0	0.339	45.6	LOS D	6.2	44.0	0.87	0.77	19.2
11	T1	24	2.0	0.054	38.1	LOS C	1.1	7.8	0.81	0.59	23.7
Approach		152	2.0	0.339	44.4	LOS D	6.2	44.0	0.86	0.74	20.0
All Vehicles		3261	4.2	1.033	61.1	LOS E	34.5	252.1	0.95	1.00	17.8

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

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	36.1	LOS D	0.1	0.1	0.78	0.78
P5	SouthEast Full Crossing	53	43.4	LOS E	0.2	0.2	0.85	0.85
P2	East Full Crossing	53	33.8	LOS D	0.1	0.1	0.75	0.75
P3	North Full Crossing	53	36.1	LOS D	0.1	0.1	0.78	0.78
P7	NorthWest Full Crossing	53	44.3	LOS E	0.2	0.2	0.86	0.86
All Pedestrians		263	38.8	LOS D			0.80	0.80

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

MOVEMENT SUMMARY

Site: 01 [01 Carrington-Bronte-Victoria PM EX]

Carrington Road - Bronte Road - Victoria Street
Period: PM Peak
Scenario: Existing
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington Rd											
1	L2	15	5.0	0.305	37.4	LOS C	8.1	59.1	0.79	0.76	21.2
1a	L1	173	5.0	0.305	36.2	LOS C	8.1	59.1	0.79	0.76	24.4
2	T1	597	5.0	0.948	67.8	LOS E	44.3	323.4	1.00	1.16	15.6
Approach		784	5.0	0.948	60.3	LOS E	44.3	323.4	0.95	1.06	17.2
SouthEast: Bronte Rd											
21b	L3	20	5.0	0.108	27.3	LOS B	1.9	13.5	0.70	0.67	28.4
21a	L1	22	2.0	0.108	25.2	LOS B	1.9	13.5	0.70	0.67	28.4
22	T1	306	5.0	0.539	28.1	LOS B	11.8	86.5	0.77	0.66	28.7
Approach		348	4.8	0.539	27.8	LOS B	11.8	86.5	0.76	0.66	28.6
East: Victoria St											
4b	L3	77	2.0	0.903	75.4	LOS F	14.3	101.8	1.00	1.01	17.1
4	L2	133	2.0	0.903	74.6	LOS F	14.3	101.8	1.00	1.01	15.6
5	T1	36	2.0	0.611	57.2	LOS E	6.2	44.0	1.00	0.81	18.1
6a	R1	33	2.0	0.611	60.1	LOS E	6.2	44.0	1.00	0.81	20.5
6	R2	37	2.0	0.611	61.8	LOS E	6.2	44.0	1.00	0.81	19.0
Approach		315	2.0	0.903	69.8	LOS E	14.3	101.8	1.00	0.95	17.1
North: Carrington Rd											
7	L2	5	2.0	0.645	42.1	LOS C	19.9	145.2	0.91	0.82	24.7
7a	L1	231	5.0	0.645	41.0	LOS C	19.9	145.2	0.91	0.82	24.0
8	T1	571	5.0	0.645	36.5	LOS C	20.1	147.1	0.91	0.80	23.4
Approach		806	5.0	0.645	37.8	LOS C	20.1	147.1	0.91	0.81	23.6
NorthWest: Bronte Rd											
27b	L3	16	5.0	0.187	31.6	LOS C	5.1	37.0	0.70	0.61	28.5
27a	L1	13	2.0	0.187	29.6	LOS C	5.1	37.0	0.70	0.61	29.8
28	T1	398	5.0	0.935	57.5	LOS E	32.7	238.6	0.92	1.01	19.7
29a	R1	143	5.0	0.935	71.8	LOS F	32.7	238.6	1.00	1.15	16.1
29b	R3	3	2.0	0.935	73.9	LOS F	32.7	238.6	1.00	1.15	15.8
Approach		573	4.9	0.935	59.9	LOS E	32.7	238.6	0.93	1.03	19.1
West: Victoria St											
10b	L3	20	2.0	0.458	57.8	LOS E	4.7	33.7	0.95	0.77	18.1
10	L2	66	2.0	0.458	56.9	LOS E	4.7	33.7	0.95	0.77	16.7
11	T1	38	2.0	0.193	50.2	LOS D	2.0	14.2	0.92	0.68	20.3
Approach		124	2.0	0.458	55.0	LOS D	4.7	33.7	0.94	0.74	18.0
All Vehicles		2951	4.5	0.948	51.0	LOS D	44.3	323.4	0.92	0.91	20.1

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

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	28.8	LOS C	0.1	0.1	0.69	0.69
P5	SouthEast Full Crossing	53	53.3	LOS E	0.2	0.2	0.94	0.94
P2	East Full Crossing	53	30.9	LOS D	0.1	0.1	0.72	0.72
P3	North Full Crossing	53	28.8	LOS C	0.1	0.1	0.69	0.69
P7	NorthWest Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		263	39.2	LOS D			0.80	0.80

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

MOVEMENT SUMMARY

Site: 02 [02 Carrington-Birrell-Council AM EX]

Network: 1 [AM EX]

Carrington Road - Birrell Street - Council Street
Period: AM Peak
Scenario: Existing
Signals - Fixed Time Coordinated Cycle Time = 240 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington Rd													
1	L2	106	5.0	106	5.0	0.174	16.9	LOS B	4.9	35.5	0.48	0.56	27.6
2	T1	491	5.0	491	5.0	0.869	27.8	LOS B	33.0	240.5	0.89	0.83	24.2
3	R2	218	5.0	218	5.0	0.869	36.8	LOS C	33.0	240.5	0.97	0.89	21.0
Approach		815	5.0	815	5.0	0.869	28.8	LOS C	33.0	240.5	0.85	0.81	23.5
East: Birrell St													
4	L2	307	5.0	307	5.0	0.319	19.9	LOS B	10.0	72.7	0.60	0.68	24.9
5	T1	628	5.0	628	5.0	1.024	108.8	LOS F	59.6	435.1	1.00	1.14	4.5
Approach		936	5.0	936	5.0	1.024	79.6	LOS F	59.6	435.1	0.87	0.99	7.8
North: Council St													
7	L2	73	5.0	73	5.0	0.193	37.5	LOS C	4.7	34.5	0.77	0.74	18.2
8	T1	387	5.0	387	5.0	0.591	34.8	LOS C	16.0	116.6	0.83	0.78	20.0
Approach		460	5.0	460	5.0	0.591	35.3	LOS C	16.0	116.6	0.82	0.77	19.7
West: Birrell St													
10	L2	66	5.0	66	5.0	0.597	40.8	LOS C	10.5	76.7	0.88	0.79	13.6
11	T1	257	5.0	257	5.0	0.597	39.8	LOS C	10.5	76.7	0.89	0.79	12.5
12	R2	26	5.0	26	5.0	0.597	73.4	LOS F	2.6	19.1	1.00	0.75	9.4
Approach		349	5.0	349	5.0	0.597	42.5	LOS D	10.5	76.7	0.90	0.78	12.3
All Vehicles		2560	5.0	2560	5.0	1.024	50.4	LOS D	59.6	435.1	0.86	0.87	13.6

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.0 %
Number of Iterations: 3 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	34.6	LOS D	0.1	0.1	0.76	0.76
P2	East Full Crossing	53	29.5	LOS C	0.1	0.1	0.70	0.70
P2S	East Slip/Bypass Lane Crossing	53	26.1	LOS C	0.1	0.1	0.66	0.66
P3	North Full Crossing	53	34.6	LOS D	0.1	0.1	0.76	0.76
P4	West Full Crossing	53	15.5	LOS B	0.1	0.1	0.51	0.51
All Pedestrians		263	28.0	LOS C			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 02 [02 Carrington-Birrell-Council PM EX]

Network: 1 [PM EX]

Carrington Road - Birrell Street - Council Street
Period: PM Peak
Scenario: Existing
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington Rd													
1	L2	26	5.0	26	5.0	0.176	13.2	LOS A	4.6	33.9	0.39	0.38	35.5
2	T1	387	5.0	387	5.0	0.878	23.9	LOS B	25.8	188.7	0.60	0.65	26.4
3	R2	244	5.0	244	5.0	0.878	46.0	LOS D	25.8	188.7	0.80	0.93	17.8
Approach		658	5.0	658	5.0	0.878	31.7	LOS C	25.8	188.7	0.67	0.74	22.4
East: Birrell St													
4	L2	227	5.0	227	5.0	0.638	50.0	LOS D	12.3	89.9	0.96	0.82	15.4
5	T1	241	5.0	241	5.0	0.547	43.9	LOS D	12.5	91.3	0.93	0.78	9.5
Approach		468	5.0	468	5.0	0.638	46.8	LOS D	12.5	91.3	0.95	0.80	12.8
North: Council St													
7	L2	118	5.0	118	5.0	0.303	14.8	LOS B	9.1	66.2	0.46	0.64	31.0
8	T1	635	5.0	635	5.0	0.303	11.4	LOS A	9.1	66.7	0.45	0.61	32.4
Approach		753	5.0	753	5.0	0.303	12.0	LOS A	9.1	66.7	0.45	0.61	32.2
West: Birrell St													
10	L2	51	5.0	51	5.0	0.863	59.8	LOS E	10.5	76.7	0.96	1.01	10.1
11	T1	391	5.0	391	5.0	0.863	59.3	LOS E	10.5	76.7	0.97	1.02	9.3
12	R2	42	5.0	42	5.0	0.863	65.2	LOS E	10.5	76.7	0.99	1.02	10.5
Approach		483	5.0	483	5.0	0.863	59.8	LOS E	10.5	76.7	0.97	1.02	9.5
All Vehicles		2362	5.0	2362	5.0	0.878	34.2	LOS C	25.8	188.7	0.72	0.77	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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.9 %
Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	43.4	LOS E	0.2	0.2	0.85	0.85
P2	East Full Crossing	53	9.2	LOS A	0.1	0.1	0.39	0.39
P2S	East Slip/Bypass Lane Crossing	53	7.4	LOS A	0.1	0.1	0.35	0.35
P3	North Full Crossing	53	43.4	LOS E	0.2	0.2	0.85	0.85
P4	West Full Crossing	53	10.4	LOS B	0.1	0.1	0.42	0.42
All Pedestrians		263	22.8	LOS C			0.57	0.57

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 03 [03 Bronte-Birrell AM EX]

Network: 1 [AM EX]

Bronte Road - Birrell Street
Period: AM Peak
Scenario: Existing
Signals - Fixed Time Isolated Cycle Time = 240 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Bronte Rd													
21a	L1	266	5.0	266	5.0	0.439	20.3	LOS B	8.8	64.3	0.61	0.68	31.8
22	T1	423	5.0	423	5.0	0.922	52.1	LOS D	31.0	226.6	0.87	0.87	19.3
23b	R3	64	5.0	64	5.0	0.922	56.2	LOS D	31.0	226.6	0.87	0.87	10.7
Approach		754	5.0	754	5.0	0.922	41.2	LOS C	31.0	226.6	0.78	0.81	22.4
East: Birrell St													
4b	L3	16	5.0	15	5.0	0.921	60.5	LOS E	35.3	257.7	0.99	0.96	17.5
5	T1	525	5.0	515	5.0	0.921	55.0	LOS D	35.3	257.7	0.99	0.96	22.4
6a	R1	75	5.0	73	5.0	0.181	38.1	LOS C	3.3	23.8	0.79	0.72	24.3
Approach		616	5.0	604 N1	5.0	0.921	53.1	LOS D	35.3	257.7	0.97	0.93	22.5
NorthWest: Bronte Rd													
27a	L1	47	5.0	47	5.0	0.070	26.2	LOS B	1.8	13.5	0.63	0.66	22.1
28	T1	175	5.0	175	5.0	0.323	30.6	LOS C	8.3	60.6	0.76	0.71	25.1
29b	R3	26	5.0	26	5.0	0.323	35.0	LOS C	8.3	60.6	0.77	0.71	30.3
Approach		248	5.0	248	5.0	0.323	30.2	LOS C	8.3	60.6	0.74	0.70	25.4
West: Birrell St													
10b	L3	63	5.0	63	5.0	0.659	41.6	LOS C	17.3	126.3	0.89	0.78	28.5
11	T1	288	5.0	288	5.0	0.659	36.2	LOS C	17.3	126.3	0.89	0.78	22.2
12a	R1	76	5.0	76	5.0	0.261	48.2	LOS D	3.9	28.1	0.89	0.75	23.3
Approach		427	5.0	427	5.0	0.659	39.1	LOS C	17.3	126.3	0.89	0.78	23.6
All Vehicles		2045	5.0	2033 N1	5.0	0.922	43.0	LOS D	35.3	257.7	0.85	0.82	22.9

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.0 %
Number of Iterations: 3 (maximum specified: 10)

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	33.5	LOS D	0.1	0.1	0.75	0.75
P2	East Full Crossing	53	23.8	LOS C	0.1	0.1	0.63	0.63
P7	NorthWest Full Crossing	53	33.5	LOS D	0.1	0.1	0.75	0.75
P4	West Full Crossing	53	23.8	LOS C	0.1	0.1	0.63	0.63
All Pedestrians		211	28.6	LOS C			0.69	0.69

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

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

MOVEMENT SUMMARY

Site: 03 [03 Bronte-Birrell PM EX]

Network: 1 [PM EX]

Bronte Road - Birrell Street
Period: PM Peak
Scenario: Existing
Signals - Fixed Time Isolated Cycle Time = 240 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Bronte Rd													
21a	L1	136	5.0	136	5.0	0.134	13.6	LOS A	3.6	26.6	0.46	0.59	35.3
22	T1	348	5.0	348	5.0	0.669	26.0	LOS B	17.2	125.5	0.78	0.71	27.0
23b	R3	62	5.0	62	5.0	0.669	30.7	LOS C	17.2	125.5	0.79	0.71	16.5
Approach		546	5.0	546	5.0	0.669	23.5	LOS B	17.2	125.5	0.70	0.68	28.2
East: Birrell St													
4b	L3	12	5.0	12	5.0	0.430	48.0	LOS D	9.0	65.9	0.90	0.75	20.4
5	T1	167	5.0	167	5.0	0.430	42.5	LOS D	9.0	65.9	0.90	0.75	25.6
6a	R1	44	5.0	44	5.0	0.177	50.2	LOS D	2.3	16.7	0.89	0.73	20.9
Approach		223	5.0	223	5.0	0.430	44.3	LOS D	9.0	65.9	0.90	0.74	24.4
NorthWest: Bronte Rd													
27a	L1	99	5.0	99	5.0	0.134	20.1	LOS B	3.8	27.7	0.56	0.65	25.6
28	T1	417	5.0	417	5.0	0.618	25.8	LOS B	18.5	135.1	0.77	0.74	27.0
29b	R3	48	5.0	48	5.0	0.618	30.6	LOS C	18.5	135.1	0.78	0.75	32.0
Approach		564	5.0	564	5.0	0.618	25.2	LOS B	18.5	135.1	0.73	0.73	27.4
West: Birrell St													
10b	L3	48	5.0	48	5.0	0.826	50.7	LOS D	21.2	154.9	0.95	0.84	25.9
11	T1	300	5.0	300	5.0	0.826	45.3	LOS D	21.2	154.9	0.95	0.84	19.6
12a	R1	161	5.0	161	5.0	0.376	41.5	LOS C	7.7	56.2	0.86	0.77	25.1
Approach		509	5.0	509	5.0	0.826	44.6	LOS D	21.2	154.9	0.92	0.82	22.2
All Vehicles		1843	5.0	1843	5.0	0.826	32.4	LOS C	21.2	154.9	0.79	0.74	25.5

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.9 %
Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	44.3	LOS E	0.2	0.2	0.86	0.86
P2	East Full Crossing	53	17.1	LOS B	0.1	0.1	0.53	0.53
P7	NorthWest Full Crossing	53	44.3	LOS E	0.2	0.2	0.86	0.86
P4	West Full Crossing	53	17.1	LOS B	0.1	0.1	0.53	0.53
All Pedestrians		211	30.7	LOS D			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 04 [04 Birrell-Edina AM EX]

Network: 1 [AM EX]

Birrell Street - Edina Avenue
Period: AM Peak
Scenario: Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Birrell St													
4	L2	6	0.0	6	0.0	0.003	3.8	LOS A	0.0	0.0	0.00	0.52	29.6
5	T1	716	5.0	702	5.0	0.371	0.0	LOS A	0.0	0.0	0.00	0.00	49.9
Approach		722	5.0	708 N1	5.0	0.371	0.0	NA	0.0	0.0	0.00	0.00	49.3
West: Birrell St													
11	T1	354	5.0	354	5.0	0.345	0.5	LOS A	6.9	50.3	0.07	0.03	47.8
12	R2	14	0.0	14	0.0	0.345	9.5	LOS A	6.9	50.3	0.11	0.05	43.0
Approach		367	4.8	367	4.8	0.345	0.9	NA	6.9	50.3	0.07	0.03	47.5
All Vehicles		1089	4.9	1075 N1	5.0	0.371	0.3	NA	6.9	50.3	0.02	0.01	48.1

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.0 %
Number of Iterations: 3 (maximum specified: 10)

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

MOVEMENT SUMMARY

Site: 04 [04 Birrell-Edina PM EX]

Network: 1 [PM EX]

Birrell Street - Edina Avenue
Period: PM Peak
Scenario: Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Birrell St													
4	L2	1	0.0	1	0.0	0.001	3.8	LOS A	0.0	0.0	0.00	0.52	29.6
5	T1	272	5.0	272	5.0	0.144	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		273	5.0	273	5.0	0.144	0.0	NA	0.0	0.0	0.00	0.00	49.7
West: Birrell St													
11	T1	484	5.0	484	5.0	0.366	0.0	LOS A	10.0	73.0	0.00	0.00	50.0
12	R2	1	0.0	1	0.0	0.366	6.0	LOS A	10.0	73.0	0.00	0.00	45.3
Approach		485	5.0	485	5.0	0.366	0.0	NA	10.0	73.0	0.00	0.00	49.9
All Vehicles		758	5.0	758	5.0	0.366	0.0	NA	10.0	73.0	0.00	0.00	49.9

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.9 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [05 Church-Carrington AM EX]

Church-Carrington
AM Peak
Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington											
1	L2	112	1.0	0.277	5.6	LOS A	0.0	0.0	0.00	0.13	56.1
2	T1	934	5.0	0.277	0.0	LOS A	0.0	0.0	0.00	0.06	57.9
Approach		1045	4.6	0.277	0.6	NA	0.0	0.0	0.00	0.06	57.4
North: Carrington											
8	T1	618	5.0	0.659	2.9	LOS A	2.3	16.6	0.23	0.08	48.5
9	R2	66	0.0	0.659	13.4	LOS A	2.3	16.6	0.45	0.15	46.8
Approach		684	4.5	0.659	3.9	NA	2.3	16.6	0.25	0.08	48.2
All Vehicles		1729	4.6	0.659	1.9	NA	2.3	16.6	0.10	0.07	53.6

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

MOVEMENT SUMMARY

Site: 05 [05 Church-Edina PM EX]

Church Street - Edina Avenue
Period: PM Peak
Scenario: Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Church St											
5	T1	43	0.0	0.023	0.0	LOS A	0.0	0.0	0.00	0.01	39.8
6	R2	1	0.0	0.023	3.9	LOS A	0.0	0.0	0.00	0.01	37.9
Approach		44	0.0	0.023	0.1	NA	0.0	0.0	0.00	0.01	39.7
North: Edina Av											
9	R2	38	0.0	0.027	1.1	LOS A	0.1	0.6	0.10	0.23	24.2
Approach		38	0.0	0.027	1.1	LOS A	0.1	0.6	0.10	0.23	24.2
All Vehicles		82	0.0	0.027	0.5	NA	0.1	0.6	0.04	0.11	31.8

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

MOVEMENT SUMMARY

Site: 101 [06 Church-Carrington PM EX]

Church-Carrington
AM Peak
Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington											
1	L2	21	1.0	0.190	5.6	LOS A	0.0	0.0	0.00	0.04	57.2
2	T1	695	5.0	0.190	0.0	LOS A	0.0	0.0	0.00	0.02	59.3
Approach		716	4.9	0.190	0.2	NA	0.0	0.0	0.00	0.02	59.1
North: Carrington											
8	T1	806	5.0	0.368	0.3	LOS A	0.5	3.8	0.06	0.02	57.9
9	R2	22	0.0	0.368	8.7	LOS A	0.5	3.8	0.08	0.02	55.1
Approach		828	4.9	0.368	0.6	NA	0.5	3.8	0.06	0.02	57.7
All Vehicles		1544	4.9	0.368	0.4	NA	0.5	3.8	0.03	0.02	58.4

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

MOVEMENT SUMMARY

Site: 05 [06 Church-Edina AM EX]

Church Street - Edina Avenue
Period: AM Peak
Scenario: Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Church St											
5	T1	162	0.0	0.092	0.0	LOS A	0.0	0.0	0.00	0.05	39.1
6	R2	16	0.0	0.092	3.9	LOS A	0.0	0.0	0.00	0.05	37.2
Approach		178	0.0	0.092	0.3	NA	0.0	0.0	0.00	0.05	39.0
North: Edina Av											
9	R2	8	0.0	0.007	1.4	LOS A	0.0	0.1	0.22	0.27	23.7
Approach		8	0.0	0.007	1.4	LOS A	0.0	0.1	0.22	0.27	23.7
All Vehicles		186	0.0	0.092	0.4	NA	0.0	0.1	0.01	0.06	38.1

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

MOVEMENT SUMMARY

Site: 101 [07 Church - Bronte AM EX]

Church - Bronte
AM Peak
Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Bronte											
2	T1	476	5.0	0.210	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		476	5.0	0.210	0.0	NA	0.0	0.0	0.00	0.00	60.0
East: Church											
4	L2	86	0.0	0.240	5.8	LOS A	1.0	7.3	0.22	0.61	33.0
6	R2	84	0.0	0.240	12.1	LOS A	1.0	7.3	0.22	0.61	40.4
Approach		171	0.0	0.240	8.9	LOS A	1.0	7.3	0.22	0.61	37.2
North: Bronte											
8	T1	248	5.0	0.098	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		248	5.0	0.098	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		895	4.0	0.240	1.7	NA	1.0	7.3	0.04	0.12	52.9

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

MOVEMENT SUMMARY

Site: 101 [07 Church - Bronte PM EX]

Church - Bronte
AM Peak
Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Bronte											
2	T1	506	5.0	0.223	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		506	5.0	0.223	0.0	NA	0.0	0.0	0.00	0.00	60.0
East: Church											
4	L2	41	0.0	0.167	6.1	LOS A	0.6	4.4	0.41	0.66	29.8
6	R2	40	0.0	0.167	17.3	LOS B	0.6	4.4	0.41	0.66	37.4
Approach		81	0.0	0.167	11.7	LOS A	0.6	4.4	0.41	0.66	34.1
North: Bronte											
8	T1	589	5.0	0.233	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		589	5.0	0.233	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		1177	4.7	0.233	0.8	NA	0.6	4.4	0.03	0.05	56.5

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

APPENDIX B2

SIDRA Analysis (Future Scenario)

MOVEMENT SUMMARY

Site: 01 [01 Carrington-Bronte-Victoria AM FU]

Carrington Road - Bronte Road - Victoria Street
Period: AM Peak
Scenario: Future
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington Rd											
1	L2	39	5.0	1.001	101.5	LOS F	45.8	334.4	1.00	1.26	15.0
1a	L1	208	5.0	1.001	100.4	LOS F	45.8	334.4	1.00	1.26	16.7
2	T1	818	4.8	1.001	95.8	LOS F	46.4	338.1	1.00	1.31	16.2
Approach		1065	4.9	1.001	96.9	LOS F	46.4	338.1	1.00	1.29	16.3
SouthEast: Bronte Rd											
21b	L3	5	5.0	0.129	39.9	LOS C	3.1	22.2	0.73	0.68	28.0
21a	L1	44	2.0	0.129	37.9	LOS C	3.1	22.2	0.73	0.68	23.1
22	T1	435	5.0	0.643	36.3	LOS C	20.1	146.5	0.90	0.78	25.5
Approach		484	4.7	0.643	36.5	LOS C	20.1	146.5	0.88	0.77	25.3
East: Victoria St											
4b	L3	80	2.0	0.665	50.9	LOS D	14.7	104.4	0.96	0.84	21.8
4	L2	193	2.0	0.665	50.1	LOS D	14.7	104.4	0.96	0.84	25.1
5	T1	168	2.0	1.033	121.8	LOS F	30.3	215.5	1.00	1.42	10.8
6a	R1	62	2.0	1.033	124.7	LOS F	30.3	215.5	1.00	1.42	12.5
6	R2	89	2.0	1.033	126.4	LOS F	30.3	215.5	1.00	1.42	11.4
Approach		593	2.0	1.033	89.9	LOS F	30.3	215.5	0.98	1.15	15.6
North: Carrington Rd											
7	L2	12	2.0	0.362	42.5	LOS D	8.9	65.0	0.85	0.76	24.3
7a	L1	129	5.0	0.362	41.4	LOS C	8.9	65.0	0.85	0.76	23.6
8	T1	476	5.0	0.925	61.4	LOS E	29.5	215.2	0.98	1.08	22.0
9	R2	1	5.0	0.925	69.8	LOS E	29.5	215.2	1.00	1.11	15.7
Approach		618	4.9	0.925	56.9	LOS E	29.5	215.2	0.95	1.01	22.3
NorthWest: Bronte Rd											
27b	L3	53	4.1	0.203	36.0	LOS C	4.9	35.3	0.75	0.70	25.8
27a	L1	24	1.5	0.203	34.0	LOS C	4.9	35.3	0.75	0.70	27.2
28	T1	266	4.6	1.013	100.6	LOS F	27.4	199.1	0.96	1.28	13.6
29a	R1	75	4.4	1.013	116.4	LOS F	27.4	199.1	1.00	1.39	15.0
29b	R3	3	2.0	1.013	118.6	LOS F	27.4	199.1	1.00	1.39	11.1
Approach		421	4.3	1.013	91.6	LOS F	27.4	199.1	0.93	1.20	15.1
West: Victoria St											
10b	L3	7	2.0	0.339	46.4	LOS D	6.2	44.0	0.87	0.77	20.7
10	L2	120	2.0	0.339	45.6	LOS D	6.2	44.0	0.87	0.77	19.2
11	T1	24	2.0	0.054	38.1	LOS C	1.1	7.8	0.81	0.59	23.7
Approach		152	2.0	0.339	44.4	LOS D	6.2	44.0	0.86	0.74	20.0
All Vehicles		3333	4.2	1.033	76.4	LOS F	46.4	338.1	0.96	1.10	17.8

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

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	33.8	LOS D	0.1	0.1	0.75	0.75
P5	SouthEast Full Crossing	53	43.4	LOS E	0.2	0.2	0.85	0.85
P2	East Full Crossing	53	36.1	LOS D	0.1	0.1	0.78	0.78
P3	North Full Crossing	53	33.8	LOS D	0.1	0.1	0.75	0.75
P7	NorthWest Full Crossing	53	44.3	LOS E	0.2	0.2	0.86	0.86
All Pedestrians		263	38.3	LOS D			0.80	0.80

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

MOVEMENT SUMMARY

Site: 01 [01 Carrington-Bronte-Victoria PM FU]

Carrington Road - Bronte Road - Victoria Street
Period: PM Peak
Scenario: Future
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington Rd											
1	L2	15	5.0	0.313	38.2	LOS C	8.2	59.9	0.80	0.77	20.9
1a	L1	173	5.0	0.313	37.0	LOS C	8.2	59.9	0.80	0.77	24.1
2	T1	607	4.9	0.989	86.8	LOS F	50.9	371.4	1.00	1.28	12.9
Approach		795	4.9	0.989	75.1	LOS F	50.9	371.4	0.95	1.16	14.6
SouthEast: Bronte Rd											
21b	L3	20	5.0	0.107	26.7	LOS B	1.9	14.0	0.67	0.65	28.7
21a	L1	22	2.0	0.107	24.6	LOS B	1.9	14.0	0.67	0.65	28.8
22	T1	312	4.9	0.533	26.5	LOS B	11.6	84.6	0.75	0.64	29.3
Approach		354	4.7	0.533	26.4	LOS B	11.6	84.6	0.74	0.64	29.3
East: Victoria St											
4b	L3	77	2.0	0.963	90.6	LOS F	15.9	113.3	1.00	1.11	15.1
4	L2	133	2.0	0.963	89.7	LOS F	15.9	113.3	1.00	1.11	13.6
5	T1	36	2.0	0.657	59.1	LOS E	6.3	44.9	1.00	0.84	17.8
6a	R1	33	2.0	0.657	62.0	LOS E	6.3	44.9	1.00	0.84	20.1
6	R2	37	2.0	0.657	63.7	LOS E	6.3	44.9	1.00	0.84	18.6
Approach		315	2.0	0.963	80.5	LOS F	15.9	113.3	1.00	1.02	15.5
North: Carrington Rd											
7	L2	5	2.0	0.661	43.0	LOS D	20.2	147.1	0.92	0.83	24.4
7a	L1	231	5.0	0.661	41.9	LOS C	20.2	147.1	0.92	0.83	23.7
8	T1	571	5.0	0.661	37.5	LOS C	20.4	149.1	0.92	0.81	23.0
Approach		806	5.0	0.661	38.8	LOS C	20.4	149.1	0.92	0.81	23.2
NorthWest: Bronte Rd											
27b	L3	27	2.9	0.196	30.3	LOS C	5.4	39.1	0.69	0.62	28.9
27a	L1	21	1.2	0.196	28.4	LOS B	5.4	39.1	0.69	0.62	30.1
28	T1	425	4.7	0.982	73.4	LOS F	41.5	301.9	0.93	1.13	16.9
29a	R1	157	4.6	0.982	90.5	LOS F	41.5	301.9	1.00	1.27	13.6
29b	R3	3	2.0	0.982	92.7	LOS F	41.5	301.9	1.00	1.27	13.4
Approach		634	4.4	0.982	74.4	LOS F	41.5	301.9	0.93	1.13	16.6
West: Victoria St											
10b	L3	20	2.0	0.489	59.0	LOS E	4.8	34.1	0.96	0.77	17.9
10	L2	66	2.0	0.489	58.1	LOS E	4.8	34.1	0.96	0.77	16.4
11	T1	38	2.0	0.210	51.3	LOS D	2.0	14.3	0.93	0.68	20.0
Approach		124	2.0	0.489	56.2	LOS D	4.8	34.1	0.95	0.74	17.7
All Vehicles		3027	4.4	0.989	59.4	LOS E	50.9	371.4	0.92	0.97	18.2

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

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	28.1	LOS C	0.1	0.1	0.68	0.68
P5	SouthEast Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	32.3	LOS D	0.1	0.1	0.73	0.73
P3	North Full Crossing	53	28.1	LOS C	0.1	0.1	0.68	0.68
P7	NorthWest Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		263	39.4	LOS D			0.80	0.80

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

MOVEMENT SUMMARY

Site: 02 [02 Carrington-Birrell-Council AM FU]

Network: 1 [AM FU]

Carrington Road - Birrell Street - Council Street
Period: AM Peak
Scenario: Future
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington Rd													
1	L2	106	5.0	106	5.0	0.234	16.5	LOS B	4.4	32.2	0.63	0.63	28.2
2	T1	491	5.0	491	5.0	1.171	165.5	LOS F	66.1	482.3	0.93	1.44	6.5
3	R2	218	5.0	218	5.0	1.171	207.0	LOS F	66.1	482.3	1.00	1.62	5.3
Approach		815	5.0	815	5.0	1.171	157.1	LOS F	66.1	482.3	0.91	1.38	6.5
East: Birrell St													
4	L2	307	5.0	307	5.0	0.301	11.1	LOS A	5.0	36.4	0.57	0.66	30.3
5	T1	645	4.9	645	4.9	0.910	36.8	LOS C	31.5	229.4	1.00	1.05	10.8
Approach		953	4.9	953	4.9	0.910	28.5	LOS C	31.5	229.4	0.86	0.92	16.2
North: Council St													
7	L2	73	5.0	73	5.0	0.302	33.5	LOS C	3.6	26.5	0.90	0.76	19.4
8	T1	404	4.8	404	4.8	0.927	55.1	LOS D	20.3	147.9	0.99	1.08	15.0
Approach		477	4.8	477	4.8	0.927	51.8	LOS D	20.3	147.9	0.98	1.03	15.5
West: Birrell St													
10	L2	78	4.3	75	4.2	0.527	21.1	LOS B	9.8	71.0	0.81	0.75	21.6
11	T1	268	4.8	257	4.8	0.527	18.8	LOS B	9.8	71.0	0.82	0.75	19.7
12	R2	64	2.0	63	2.0	0.527	39.1	LOS C	2.9	20.7	1.00	0.76	14.8
Approach		411	4.3	394 N1	4.2	0.527	22.4	LOS B	9.8	71.0	0.84	0.75	18.8
All Vehicles		2655	4.8	2639 N1	4.9	1.171	71.5	LOS F	66.1	482.3	0.90	1.06	10.4

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.5 %
Number of Iterations: 10 (maximum specified: 10)

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	19.9	LOS B	0.1	0.1	0.79	0.79
P2	East Full Crossing	53	27.7	LOS C	0.1	0.1	0.90	0.90
P2S	East Slip/Bypass Lane Crossing	53	23.4	LOS C	0.1	0.1	0.82	0.82
P3	North Full Crossing	53	19.9	LOS B	0.1	0.1	0.79	0.79
P4	West Full Crossing	53	15.7	LOS B	0.1	0.1	0.72	0.72
All Pedestrians		263	21.3	LOS C			0.80	0.80

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

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

MOVEMENT SUMMARY

Site: 02 [02 Carrington-Birrell-Council PM FU]

Network: 1 [PM FU]

Carrington Road - Birrell Street - Council Street
Period: PM Peak
Scenario: Future
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington Rd													
1	L2	26	5.0	26	5.0	0.180	13.6	LOS A	4.8	35.3	0.40	0.38	34.8
2	T1	387	5.0	387	5.0	0.901	27.6	LOS B	27.9	203.5	0.61	0.68	24.4
3	R2	244	5.0	244	5.0	0.901	53.5	LOS D	27.9	203.5	0.83	0.98	16.0
Approach		658	5.0	658	5.0	0.901	36.7	LOS C	27.9	203.5	0.68	0.78	20.5
East: Birrell St													
4	L2	227	5.0	227	5.0	0.648	50.8	LOS D	12.4	90.5	0.97	0.83	15.2
5	T1	252	4.8	252	4.8	0.550	43.1	LOS D	13.0	94.5	0.93	0.78	9.6
Approach		479	4.9	479	4.9	0.648	46.8	LOS D	13.0	94.5	0.95	0.80	12.8
North: Council St													
7	L2	118	5.0	118	5.0	0.311	15.3	LOS B	9.5	69.0	0.47	0.64	30.5
8	T1	645	4.9	645	4.9	0.311	11.9	LOS A	9.5	69.6	0.47	0.61	32.0
Approach		763	4.9	763	4.9	0.311	12.4	LOS A	9.5	69.6	0.47	0.62	31.8
West: Birrell St													
10	L2	53	4.8	51	4.8	0.904	66.3	LOS E	10.5	76.7	0.96	1.09	9.3
11	T1	393	5.0	378	5.0	0.904	65.9	LOS E	10.6	76.7	0.98	1.09	8.6
12	R2	64	3.3	63	3.2	0.904	73.0	LOS F	10.6	76.7	1.00	1.10	9.6
Approach		509	4.7	491 N1	4.7	0.904	66.8	LOS E	10.6	76.7	0.98	1.09	8.8
All Vehicles		2409	4.9	2391 N1	4.9	0.904	37.1	LOS C	27.9	203.5	0.73	0.80	17.6

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.9 %
Number of Iterations: 10 (maximum specified: 10)

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	42.6	LOS E	0.2	0.2	0.84	0.84
P2	East Full Crossing	53	9.6	LOS A	0.1	0.1	0.40	0.40
P2S	East Slip/Bypass Lane Crossing	53	7.7	LOS A	0.1	0.1	0.36	0.36
P3	North Full Crossing	53	42.6	LOS E	0.2	0.2	0.84	0.84
P4	West Full Crossing	53	10.9	LOS B	0.1	0.1	0.43	0.43
All Pedestrians		263	22.7	LOS C			0.57	0.57

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

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

MOVEMENT SUMMARY

Site: 03 [03 Bronte-Birrell AM FU]

Network: 1 [AM FU]

Bronte Road - Birrell Street
Period: AM Peak
Scenario: Future
Signals - Fixed Time Isolated Cycle Time = 240 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Bronte Rd													
21a	L1	278	4.8	278	4.8	0.561	21.7	LOS B	9.7	71.0	0.63	0.69	31.2
22	T1	441	4.8	441	4.8	1.376	433.9	LOS F	95.2	693.7	1.00	1.76	3.7
23b	R3	67	4.8	67	4.8	1.376	438.1	LOS F	95.2	693.7	1.00	1.76	1.7
Approach		786	4.8	786	4.8	1.376	288.6	LOS F	95.2	693.7	0.87	1.38	5.6
East: Birrell St													
4b	L3	16	5.0	16	5.0	0.899	52.3	LOS D	33.1	241.3	0.97	0.92	19.4
5	T1	525	5.0	525	5.0	0.899	46.8	LOS D	33.1	241.3	0.97	0.92	24.4
6a	R1	75	5.0	75	5.0	0.186	37.8	LOS C	3.3	24.3	0.79	0.72	24.4
Approach		616	5.0	616	5.0	0.899	45.8	LOS D	33.1	241.3	0.95	0.89	24.3
NorthWest: Bronte Rd													
27a	L1	53	4.5	53	4.5	0.108	27.6	LOS B	3.0	21.5	0.66	0.66	21.7
28	T1	175	5.0	175	5.0	0.499	44.2	LOS D	9.1	66.8	0.89	0.77	21.0
29b	R3	26	5.0	26	5.0	0.499	52.0	LOS D	9.1	66.8	0.94	0.79	25.0
Approach		254	4.9	254	4.9	0.499	41.6	LOS C	9.1	66.8	0.85	0.75	21.6
West: Birrell St													
10b	L3	63	5.0	63	5.0	0.668	40.3	LOS C	18.2	132.5	0.88	0.78	29.0
11	T1	312	4.6	312	4.6	0.668	34.9	LOS C	18.2	132.5	0.88	0.78	22.7
12a	R1	76	5.0	76	5.0	0.257	47.3	LOS D	3.8	27.8	0.88	0.75	23.5
Approach		451	4.7	451	4.7	0.668	37.7	LOS C	18.2	132.5	0.88	0.77	23.9
All Vehicles		2106	4.9	2106	4.9	1.376	134.2	LOS F	95.2	693.7	0.89	1.03	10.9

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.5 %
Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	32.0	LOS D	0.1	0.1	0.73	0.73
P2	East Full Crossing	53	24.8	LOS C	0.1	0.1	0.64	0.64
P7	NorthWest Full Crossing	53	32.0	LOS D	0.1	0.1	0.73	0.73
P4	West Full Crossing	53	24.8	LOS C	0.1	0.1	0.64	0.64
All Pedestrians		211	28.4	LOS C			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 03 [03 Bronte-Birrell PM FU]

Network: 1 [PM FU]

Bronte Road - Birrell Street
Period: PM Peak
Scenario: Future
Signals - Fixed Time Isolated Cycle Time = 240 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Bronte Rd													
21a	L1	149	4.5	149	4.5	0.286	18.4	LOS B	9.0	65.2	0.58	0.59	33.3
22	T1	371	4.7	371	4.7	1.430	300.5	LOS F	57.4	418.3	0.84	1.34	5.2
23b	R3	65	4.8	65	4.8	1.430	472.6	LOS F	57.4	418.3	1.00	1.78	1.6
Approach		585	4.7	585	4.7	1.430	247.6	LOS F	57.4	418.3	0.79	1.20	6.1
East: Birrell St													
4b	L3	12	5.0	12	5.0	0.427	48.4	LOS D	9.1	66.2	0.90	0.75	20.3
5	T1	167	5.0	167	5.0	0.427	42.9	LOS D	9.1	66.2	0.90	0.75	25.5
6a	R1	44	5.0	44	5.0	0.180	50.7	LOS D	2.3	16.7	0.90	0.73	20.8
Approach		223	5.0	223	5.0	0.427	44.7	LOS D	9.1	66.2	0.90	0.74	24.3
NorthWest: Bronte Rd													
27a	L1	102	4.8	102	4.8	0.248	20.2	LOS B	7.6	55.1	0.58	0.64	26.2
28	T1	417	5.0	417	5.0	1.144	153.2	LOS F	41.9	305.6	0.86	1.11	9.1
29b	R3	48	5.0	48	5.0	1.144	224.7	LOS F	41.9	305.6	1.00	1.34	9.1
Approach		567	5.0	567	5.0	1.144	135.3	LOS F	41.9	305.6	0.82	1.04	9.8
West: Birrell St													
10b	L3	48	5.0	48	5.0	0.851	53.7	LOS D	23.0	167.7	0.95	0.87	25.1
11	T1	314	4.8	314	4.8	0.851	48.3	LOS D	23.0	167.7	0.95	0.87	18.9
12a	R1	161	5.0	161	5.0	0.372	41.1	LOS C	7.7	56.0	0.85	0.77	25.2
Approach		523	4.9	523	4.9	0.851	46.6	LOS D	23.0	167.7	0.92	0.84	21.6
All Vehicles		1899	4.9	1899	4.9	1.430	134.8	LOS F	57.4	418.3	0.85	1.00	10.4

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.9 %
Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	44.3	LOS E	0.2	0.2	0.86	0.86
P2	East Full Crossing	53	17.1	LOS B	0.1	0.1	0.53	0.53
P7	NorthWest Full Crossing	53	44.3	LOS E	0.2	0.2	0.86	0.86
P4	West Full Crossing	53	17.1	LOS B	0.1	0.1	0.53	0.53
All Pedestrians		211	30.7	LOS D			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 04 [04 Birrell-Edina AM FU]

Network: 1 [AM FU]

Birrell Street - Edina Avenue
Period: AM Peak
Scenario: Future
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Birrell St													
4	L2	23	0.0	23	0.0	0.012	3.8	LOS A	0.0	0.0	0.00	0.54	30.9
5	T1	716	5.0	716	5.0	0.379	0.0	LOS A	0.0	0.0	0.00	0.00	49.9
Approach		739	4.8	739	4.8	0.379	0.1	NA	0.0	0.0	0.00	0.02	48.2
West: Birrell St													
11	T1	412	4.3	395	4.3	0.270	0.0	LOS A	0.0	0.0	0.00	0.00	51.4
Approach		412	4.3	395[N1]	4.3	0.270	0.0	NA	0.0	0.0	0.00	0.00	51.4
All Vehicles		1151	4.6	1134[N1]	4.7	0.379	0.1	NA	0.0	0.0	0.00	0.01	50.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.5 %
Number of Iterations: 10 (maximum specified: 10)

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

MOVEMENT SUMMARY

Site: 04 [04 Birrell-Edina PM FU]

Network: 1 [PM FU]

Birrell Street - Edina Avenue
Period: PM Peak
Scenario: Future
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Birrell St													
4	L2	12	90.9	12	90.9	0.010	3.7	LOS A	0.0	0.0	0.00	0.51	28.1
5	T1	272	5.0	272	5.0	0.144	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		283	8.5	283	8.5	0.144	0.2	NA	0.0	0.0	0.00	0.02	47.1
West: Birrell St													
11	T1	554	16.9	535	17.3	0.436	0.1	LOS A	13.5	108.5	0.00	0.02	50.8
Approach		554	16.9	535[N1]	17.3	0.436	0.1	NA	13.5	108.5	0.00	0.02	50.8
All Vehicles		837	14.1	818[N1]	14.4	0.436	0.1	NA	13.5	108.5	0.00	0.02	50.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.9 %
Number of Iterations: 10 (maximum specified: 10)

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

MOVEMENT SUMMARY

Site: 101 [05 Church-Carrington AM FU]

Church-Carrington
AM Peak
Future
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington											
1	L2	146	0.8	0.287	5.6	LOS A	0.0	0.0	0.00	0.16	55.7
2	T1	934	5.0	0.287	0.0	LOS A	0.0	0.0	0.00	0.07	57.5
Approach		1080	4.4	0.287	0.8	NA	0.0	0.0	0.00	0.08	56.9
North: Carrington											
8	T1	618	5.0	0.677	3.1	LOS A	2.4	17.5	0.23	0.08	47.8
9	R2	66	0.0	0.677	14.3	LOS A	2.4	17.5	0.47	0.16	46.0
Approach		684	4.5	0.677	4.2	NA	2.4	17.5	0.26	0.09	47.5
All Vehicles		1764	4.5	0.677	2.1	NA	2.4	17.5	0.10	0.08	53.1

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

MOVEMENT SUMMARY

Site: 101 [05 Church-Carrington PM FU]

Church-Carrington
AM Peak
Future
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Carrington											
1	L2	37	0.6	0.194	5.6	LOS A	0.0	0.0	0.00	0.06	56.9
2	T1	695	5.0	0.194	0.0	LOS A	0.0	0.0	0.00	0.03	58.9
Approach		732	4.8	0.194	0.3	NA	0.0	0.0	0.00	0.03	58.6
North: Carrington											
8	T1	806	5.0	0.404	0.9	LOS A	1.3	9.7	0.15	0.04	55.0
9	R2	55	0.0	0.404	9.1	LOS A	1.3	9.7	0.19	0.05	53.5
Approach		861	4.7	0.404	1.4	NA	1.3	9.7	0.15	0.04	54.8
All Vehicles		1593	4.7	0.404	0.9	NA	1.3	9.7	0.08	0.04	56.5

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

MOVEMENT SUMMARY

Site: 05 [06 Church-Edina AM FU]

Church Street - Edina Avenue
Period: AM Peak
Scenario: Future
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Church St											
5	T1	162	0.0	0.135	0.0	LOS A	0.0	0.0	0.00	0.21	36.5
6	R2	97	0.0	0.135	3.9	LOS A	0.0	0.0	0.00	0.21	34.7
Approach		259	0.0	0.135	1.5	NA	0.0	0.0	0.00	0.21	35.8
North: Edina Av											
9	R2	74	0.0	0.063	1.7	LOS A	0.2	1.4	0.29	0.34	23.4
Approach		74	0.0	0.063	1.7	LOS A	0.2	1.4	0.29	0.34	23.4
All Vehicles		333	0.0	0.135	1.5	NA	0.2	1.4	0.06	0.24	32.8

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

MOVEMENT SUMMARY

Site: 05 [06 Church-Edina PM FU]

Church Street - Edina Avenue
Period: PM Peak
Scenario: Future
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Church St											
5	T1	43	0.0	0.048	0.0	LOS A	0.0	0.0	0.00	0.29	35.3
6	R2	48	0.0	0.048	3.9	LOS A	0.0	0.0	0.00	0.29	33.4
Approach		92	0.0	0.048	2.1	NA	0.0	0.0	0.00	0.29	34.3
North: Edina Av											
9	R2	118	0.0	0.088	1.2	LOS A	0.3	2.0	0.16	0.26	24.0
Approach		118	0.0	0.088	1.2	LOS A	0.3	2.0	0.16	0.26	24.0
All Vehicles		209	0.0	0.088	1.6	NA	0.3	2.0	0.09	0.27	28.2

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

MOVEMENT SUMMARY

Site: 101 [07 Church - Bronte AM FU]

Church - Bronte
AM Peak
Future
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Bronte											
2	T1	476	5.0	0.210	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		476	5.0	0.210	0.0	NA	0.0	0.0	0.00	0.00	60.0
East: Church											
4	L2	119	0.0	0.333	6.0	LOS A	1.6	11.5	0.23	0.62	32.4
6	R2	117	0.0	0.333	12.9	LOS A	1.6	11.5	0.23	0.62	39.8
Approach		236	0.0	0.333	9.4	LOS A	1.6	11.5	0.23	0.62	36.6
North: Bronte											
8	T1	248	5.0	0.098	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		248	5.0	0.098	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		960	3.8	0.333	2.3	NA	1.6	11.5	0.06	0.15	50.9

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

MOVEMENT SUMMARY

Site: 101 [07 Church - Bronte PM FU]

Church - Bronte
AM Peak
Future
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Bronte											
2	T1	506	5.0	0.223	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		506	5.0	0.223	0.0	NA	0.0	0.0	0.00	0.00	60.0
East: Church											
4	L2	81	0.0	0.333	7.2	LOS A	1.6	11.1	0.44	0.70	28.1
6	R2	80	0.0	0.333	19.5	LOS B	1.6	11.1	0.44	0.70	35.8
Approach		161	0.0	0.333	13.3	LOS A	1.6	11.1	0.44	0.70	32.4
North: Bronte											
8	T1	589	5.0	0.233	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		589	5.0	0.233	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		1257	4.4	0.333	1.7	NA	1.6	11.1	0.06	0.09	53.2

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

APPENDIX C

Concept Plans

Building Footprints
Lodged Masterplan

The currently lodged illustrative masterplan was a product of a collaborative process between Uniting and all relevant consultants.

The revised illustrative masterplan has followed the same urban design principles to ensure we are able to deliver an urban design outcome that is similar to the currently lodged masterplan.

1:2000

0 10 20 40

Building Footprints
Revised Masterplan

1:2000

0 10 20 40