Traffic Impact Assessment

Proposed Master Plan for a Sub-Division at
60-80 Southern Cross Avenue & 45-65 Hall Circuit
Middleton Grange

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1. Introduction

1.1 Introduction

TRAFFIX has been commissioned by Manta Group Pty Ltd to undertake a Traffic Impact Assessment in support of a proposed subdivision at 60-80 Southern Cross Avenue & 45-65 Hall Circuit, Middleton Grange. The development is located within the Liverpool Council Local Government Area (LGA) and has been assessed under the Council's control. The site is zoned part B2 Local Centre, R1 General Residential, RE1 Public Recreation and SP2 Drainage and comprises an area of approximately 7.9 hectares.

This application relates to the subdivision of the site for a Town Centre comprising of 825 residential units, 20,240m^2 GLA of retail and 2,533m^2 GFA of commercial.

This report documents the findings of our investigations and should be read in the context of APP Corporation *'Planning Proposal – Amendments to Liverpool Local Environmental Plan 2008'* (November 2015) and Colston Budd Hunt & Kafes *'Transport Aspects of Planning Proposal for Middleton Grange Town Centre'* (June 2015) studies which established recommendations in relation to LEP and DCP consideration particularly in regard to road network and transport outcomes. The development is considered a major development as it consists of more than 300 residential dwellings and 4,000m^2 shops and commercial premises. It will therefore require formal referral to the Roads & Maritime Services (RMS) under the provisions of SEPP (Infrastructure) 2007.

The Planning Proposal has been submitted to Liverpool Council and is presently with the Department of Planning and Environment for Gateway Determination. It is noted that the Planning Proposal is subject to approval by the Department of Planning and Environment.

Furthermore, this report assesses the traffic generation of the concept development assumed for the site for the purpose of the Planning Proposal and assesses the potential traffic impacts on the local and surrounding network.

1.2 Study Area

The site is bounded by Southern Cross Avenue to the north, Flynn Avenue to the south, Middleton Grange Public School (and vacant land) to the east and residential developments to the west. It is noted that Kingsford Smith Avenue and Flynn Avenue provide access to the site with respect to the wider road network.

Having regard for the above, the traffic modelling undertaken as part of this study includes the following key intersections:

- Cowpasture Road / Flynn Avenue / Collarenebri Road;
- Cowpasture Road / Fifteenth Avenue / Hoxton Park Road;
- Fifteenth Avenue / Kingsford Smith Avenue / Second Avenue;
- Kingsford Smith Avenue / Flynn Avenue; and
- Flynn Avenue / Onslow Gardens.

A Study Area Plan and its relationship to the site is presented in **Figure 1** below.

Figure 1: Study Area

1.3 Purpose and Scope of the Study

The purpose of this study is to:

- Review background traffic studies in the locality.
- Undertake a holistic review of the cumulative impact of the development of the subject site.
- Assess the traffic generation resulting from the proposed development; and
- Consider local and regional road infrastructure upgrades which are relevant to the proposed development.

1.4 Study Methodology

This assessment documented in this report generally involves the following methodology:

- Based on the adopted development scenario, apply RMS traffic generation rates to determine the predicted traffic generation and assess the trip distributions based on available data;
- Undertake surveys of critical intersections as appropriate to establish a 'base case' scenario for assessment.
- Undertake traffic modelling of critical intersections under existing and future conditions; and
- Based on the above, identify any 'high level' intersection improvements that may be required to support the proposed development scenario, noting that these will be subject to further detailed analysis as part of the ongoing development application and assessment process.

2. Background

2.1 Location and Site

The site is situated approximately 500 metres west of the M7 Motorway Interchange with Cowpasture Road, seven (7) kilometres west of the Liverpool CBD and 40 kilometres south-west of Sydney CBD. The site comprises eight (8) lots including:

- Lots 1, 2, 3, 4, 5, and 6 in DP 1207518;
- Lot 1 in DP 1078564; and
- Lot 12 in DP 1108343

The site is also referred to as 60-80 Southern Cross Avenue and 45-65 Hall Circuit, Middleton Grange. It is irregular in shape and has an approximate area of 79,000m^2 with a 200 metre frontage to Southern Cross Avenue, a 150 metre frontage to Bravo Avenue and a 320 metre frontage to Flynn Avenue.

The majority of the site is vacant, with the exception being five residential dwellings. Three of the five dwellings are located along Southern Cross Avenue on the northern portion of the site and the other two residential dwellings are located along Flynn Avenue within the southern boundary of the site.

A Location Plan is presented in **Figure 2**, with a Site Plan presented in **Figure 3**. Reference should also be made to the Photographic Record presented in **Appendix A**, which provides an appreciation of the general character of roads and other key attributes in proximity to the site.

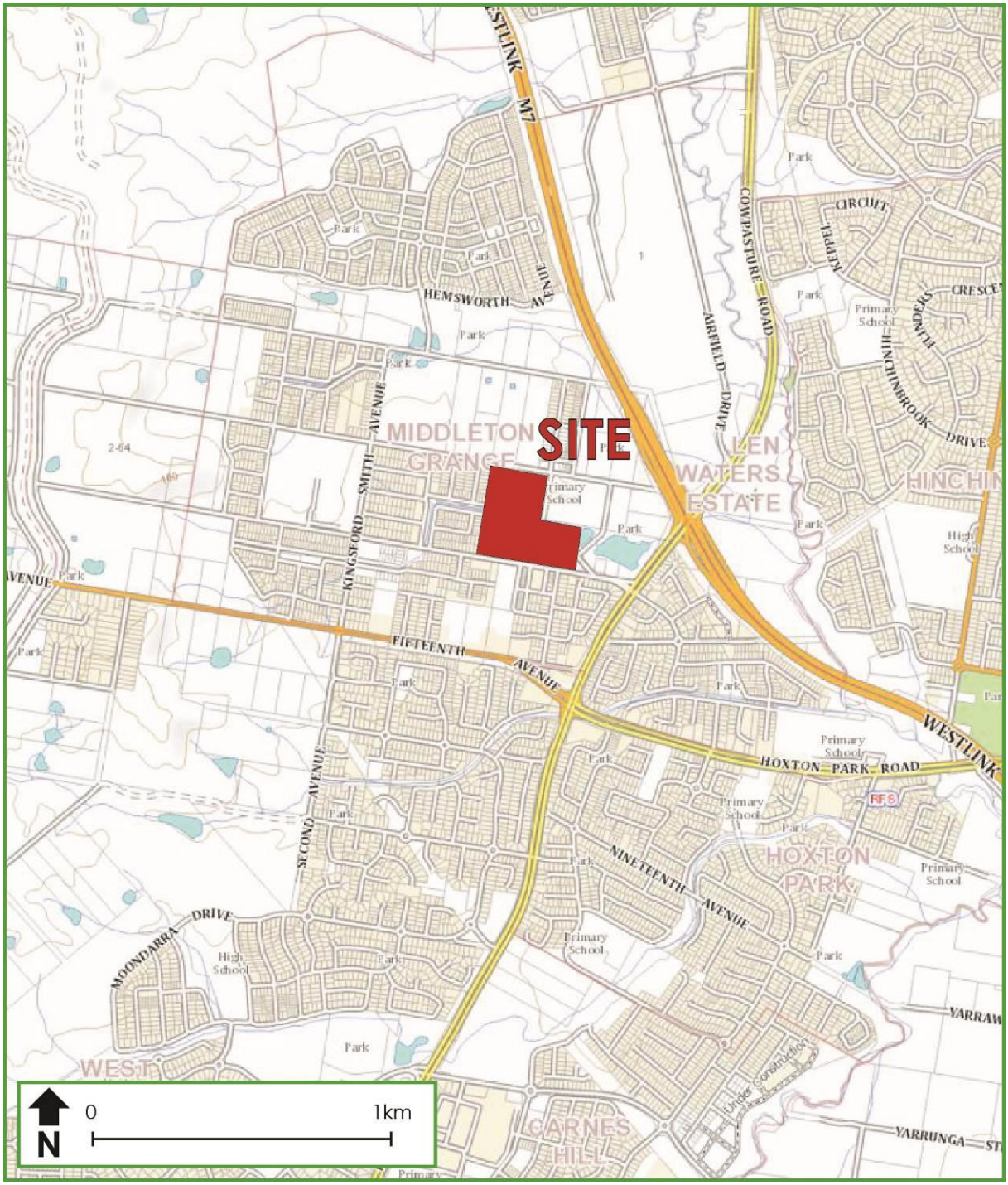


Figure 2: Location Plan

Figure 3: Site Plan

2.2 Overview Findings of the Planning Proposal

The APP Planning Proposal was completed in November 2015 along with a report regarding the transport aspects of planning proposal for Middleton Grange town centre. The findings of reports are discussed below with details of the road network.

Middleton Grange is to be rezoned to accommodate an urban development. The planning proposal relates to retail / commercial premises plus residential apartments and includes the realignment of the local road network and lot layout within the subject site.

Furthermore, two new roads traversing north-south are proposed (Road 3 and Road 4) between Southern Cross Avenue in the north and Flynn Avenue in south. An additional road (Road 9) will connect to Road 3 traversing adjacent to the southern boundary of Middleton Grange Public School. Road 9 will utilise the existing alignment of Hall Circuit and connect with Flynn Avenue. A detailed description of the proposed road network is provided in Section 4.2.

This subdivision is consistent with the Planning Proposal and is intended to deliver the concept plan as adopted in the planning proposal.

3. Existing Traffic Conditions

3.1 Road Network

The existing and future road hierarchy in the vicinity of the site is shown in **Figure 4** and **5,** respectively with the following roads of particular interest:

- M7 Motorway (Westlink): a motorway that generally traverse north-south and provides 40 kilometres of uninterrupted stretch between Baulkham Hills in the north to Dean Park in the West and Prestons in the south. It carries 150,000 vehicles per day (vpd) on average. The road is subject to a 100 km/h speed zoning and connects to Motorway M2 and Motorway M5. M7 Motorway generally carries two lanes of traffic in either direction along a divided carriageway.

- Cowpasture Road: an RMS Main Road (MR 648) that runs in a north-south direction between The Horsley Drive in the north and Camden Valley Way in the south. Cowpasture Road carries approximately 27,000 vehicles per day within the vicinity of the site with 'No Stopping' restrictions applying along its length at all times. It is subject to a 70km/h speed zoning in the vicinity of the site and generally carries two lanes of traffic in either direction within a separated carriageway of width 30 metres.

- Fifteenth Avenue: a collector road that runs in an east-west direction between Cowpasture Road in the east and Ramsay Road in the west. It is subject to a 60km/h speed zoning. Fifteenth Avenue carries a single lane of traffic in each direction.

- Kingsford Smith Avenue: a local road that traverses north-south between Mclver Ave in north and Fifteenth Avenue in the south. It is subject to a 50km/h speed zoning however, is also subject to a 40km/h speed zoning during the hours of 7:30am to 9:30am and 2:30pm to 4:00pm during school days. Kingsford Smith Avenue carries a single lane of traffic and kerb side parking in each direction with a carriageway of width 13 metres.

- Southern Cross Avenue: a local road that runs in an east-west direction between Hall Circuit in the east and De Garis Avenue in the west. It is subject to a 50km/h speed zoning however, is also subject to a 40km/h speed zoning during the hours of 8:00am to 9:30am and 2:30pm to 4:00pm during school days. Southern Cross Avenue carries a single lane of traffic in each direction.

- Flynn Avenue: a local road that runs parallel to Southern Cross Avenue between Cowpasture Road in the east and De Garis Avenue in the west. It is subject to a 50km/h speed zoning however, is also subject to a 40km/h speed zoning during the hours of 7:30am to 9:30am and 2:30pm to 4:00pm during school days (located near Kingsford Smith Avenue). This road is identified in the DCP as a neighbourhood centre street with a 26.7 metre reserve and 12.7 metre carriageway. Flynn Avenue carries a single lane of traffic and kerbside parking in either direction.

It can be seen from Figure 4 that the site is conveniently located with respect to the arterial and local road systems serving the region. It is therefore able to effectively access the arterial road network, minimising traffic impacts on local roads and residents / businesses in the vicinity of the site.

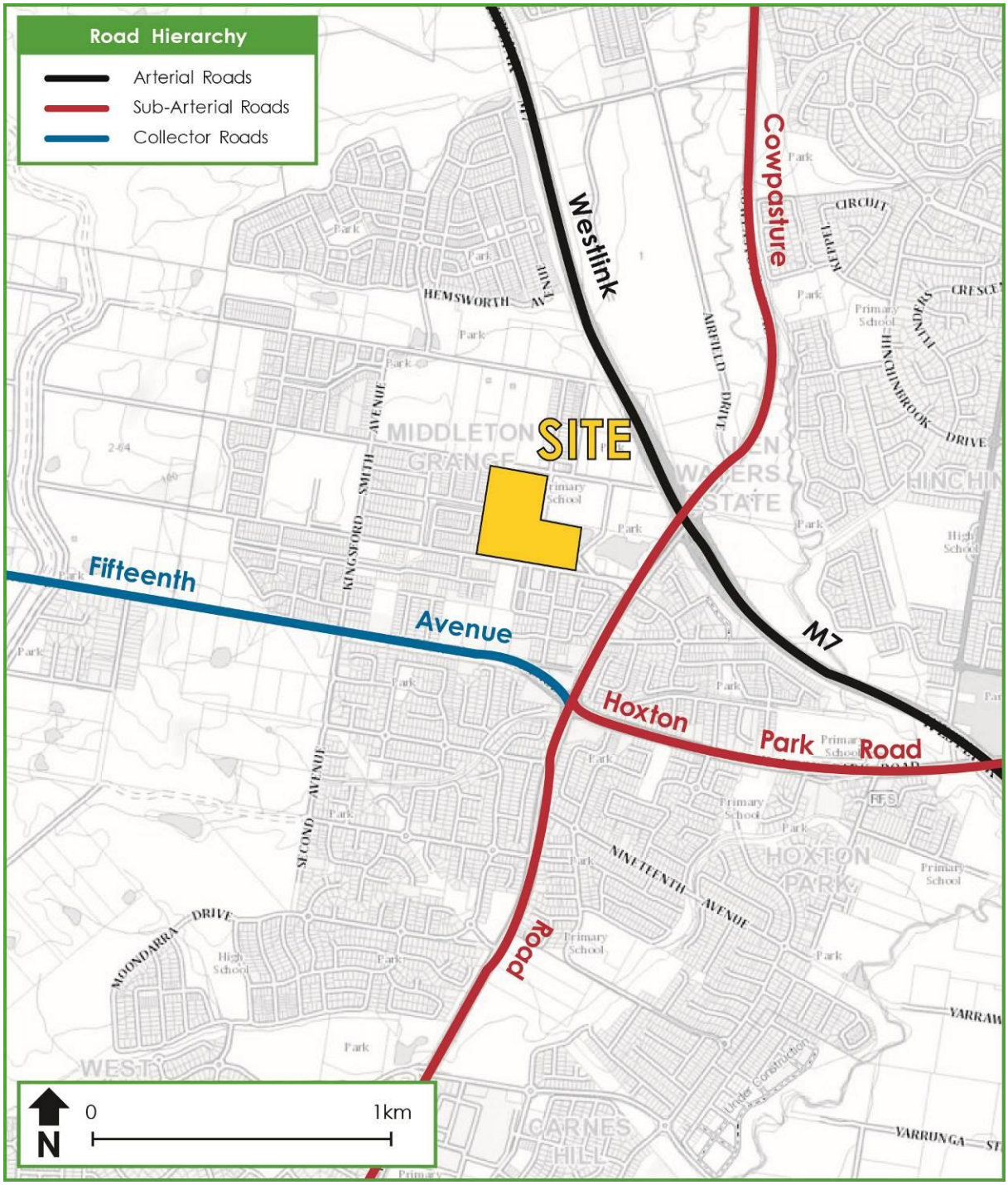


Figure 4: Existing Road Hierarchy

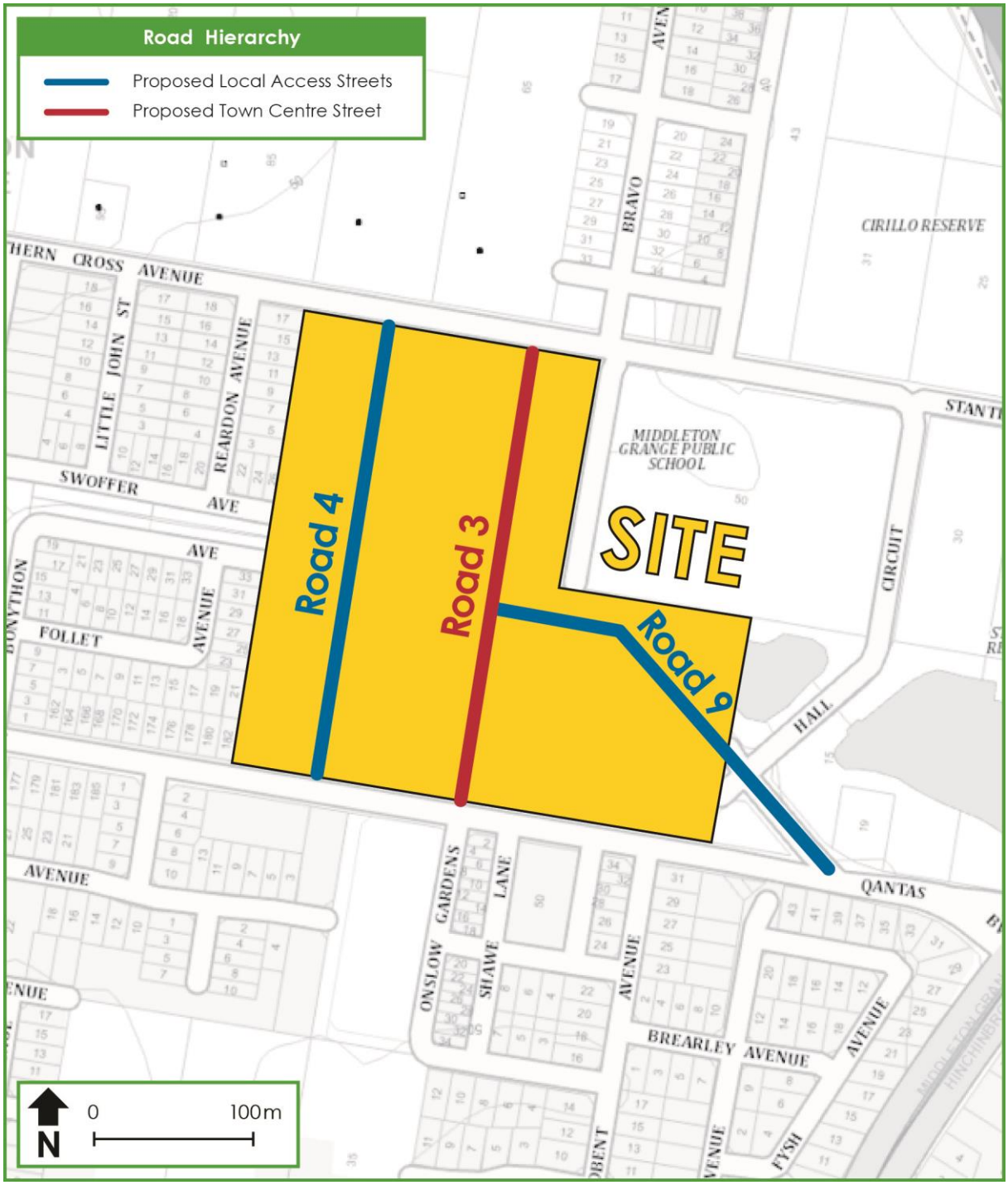


Figure 5: Proposed Road Hierarchy

3.2 Public Transport

The existing bus service that operate in the locality is shown in **Figure 6**. It is evident that the development has limited public transport access with one bus service located within 400 metres of the site. Route 853 provides services between Carnes Hill Shopping Centre, Liverpool Westfield and Railway Station. Liverpool Train Station lies on the T2 Inner West & South Line, T3 Bankstown Line and T5 Cumberland Line. A description of the proposed Public Transport Network is provided in Section 4.2.

3.3 Existing Site Generation

The subject site accommodates five (5) dwelling houses. The RMS *Technical Direction TDT2013/04a* provides traffic generation rates for low density residential dwellings, and recommends an average Sydney based hourly trip generation rate of 0.99 vehicle trips per dwelling during the AM peak period and 0.95 vehicle trips per dwelling during the PM peak period. Application of these rates results in 5 vehicle trips during both the morning and evening peak periods.

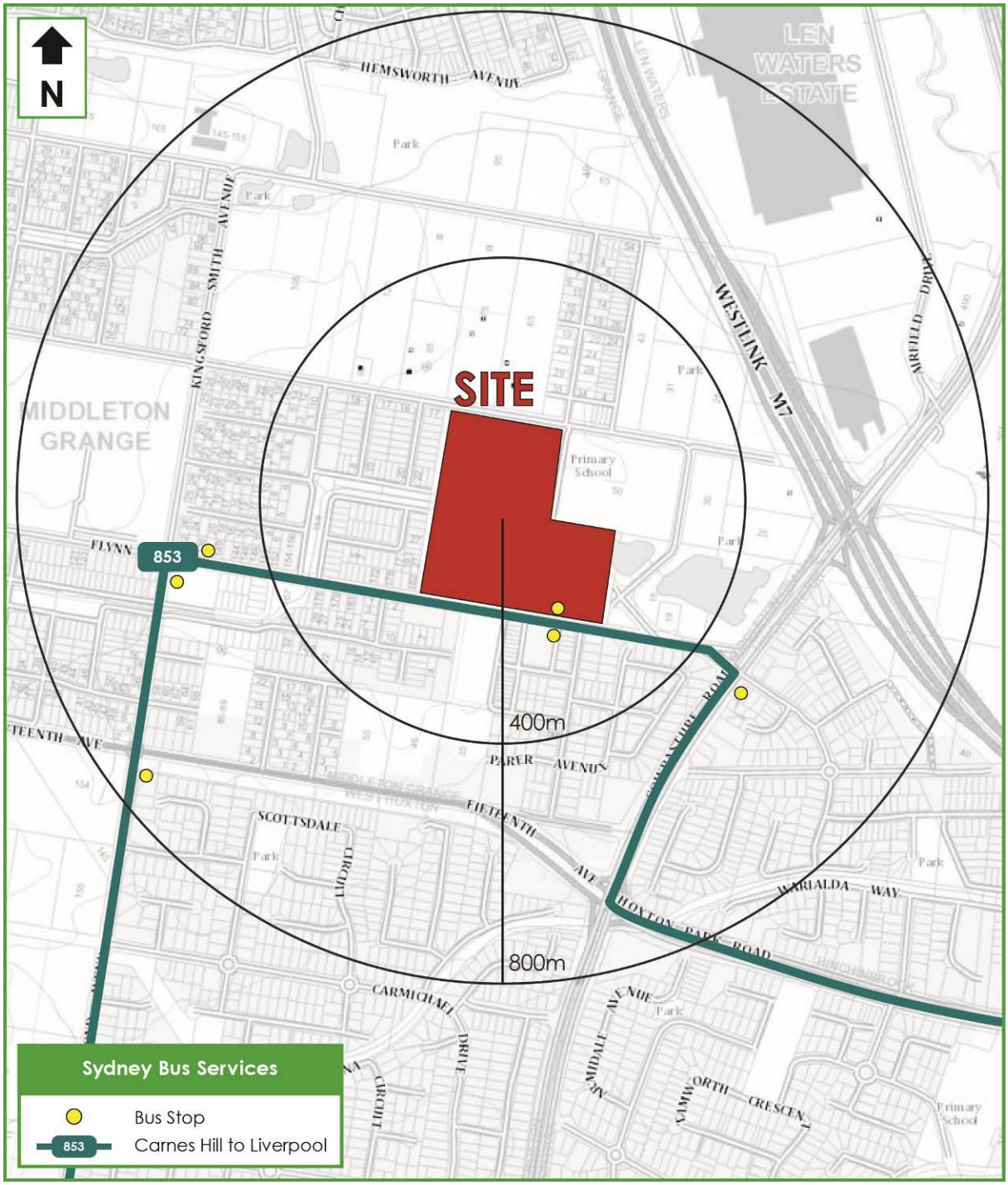


Figure 6: Existing Public Transport Services

4. Description of Proposed Development

4.1 Development Yield

A detailed description of the proposed development is provided in the Statement of Environmental Effects prepared separately. The overall development seeks to provide a wide range of land uses.

For the purposes of this study, the following indicative yield has been adopted:

- Construction of a town centre which includes:
  - 20,240m^2 GLA of retail; and
  - 2,533m^2 GFA of commercial.
- A total of 825 high density residential units.

There is potentially scope for a range other land uses within the Precinct, including a community facility, childcare, public park area, passive open space and recreation facilities. However, for the purposes of this study, it is generally assumed that these uses will be ancillary to the overall development. For example, any public park area within the site would be expected to primarily cater for individuals in the immediate locality including the demands generated by the future residential and employee populations of the subject site.

The parking requirements and traffic impacts of the proposed development are discussed in Section 5 and Section 6 respectively. Reference should be made to the architectural plans submitted separately to Council, which are presented at reduced scale in **Appendix B**.

4.2 Access and Internal Road Arrangements

The proposed locations and alignments of proposed Roads 3, 4 and 9 can be seen in **Figure 5** and an indicative road network diagram is included in **Figure 7** below. The following traffic facilities have been proposed in addition to these three roads in the planning proposal:

- Road 3 leg added to the existing intersection of Flynn Avenue and Onslow Gardens. Vehicles exiting Road 3 will be subject to Give Way control.
- A new intersection of Road 4 and Flynn Avenue with vehicles exiting Road 4 subject to Give Way control.
- A new intersection of Road 3 and Southern Cross Avenue with vehicles exiting Road 3 subject to Give Way control.
- A new intersection of Road 4 and Southern Cross Avenue with vehicles exiting Road 4 subject to Give Way control.
- Road 3 is proposed to be a 21.6 – 22.6 metre wide reserve which includes a single lane of traffic, a lane for kerbside parking and 4.0 to 4.5 metre verges on each side. The proposed road is considered appropriate as a future bus route.
- Road 4 is considered as a local access type 2 street with a 17.4 metre reserve which includes 9.4 metre carriageway with four metre verges.
- Road 9 is proposed as a local access street type 1 with a 15.2 metre reserve which includes 7.2 metre carriageway and four metre verges. It is also proposed that the intersection of Road 9 and Flynn Avenue be controlled by a roundabout.
- Bravo Avenue is located on the western side of the primary school (eastern side of the site) and would connect with Southern Cross Avenue / Hall Circuit and Road 9. It provides a 13 metre reserve carrying a six metre carriageway and 3.5 metre verges.

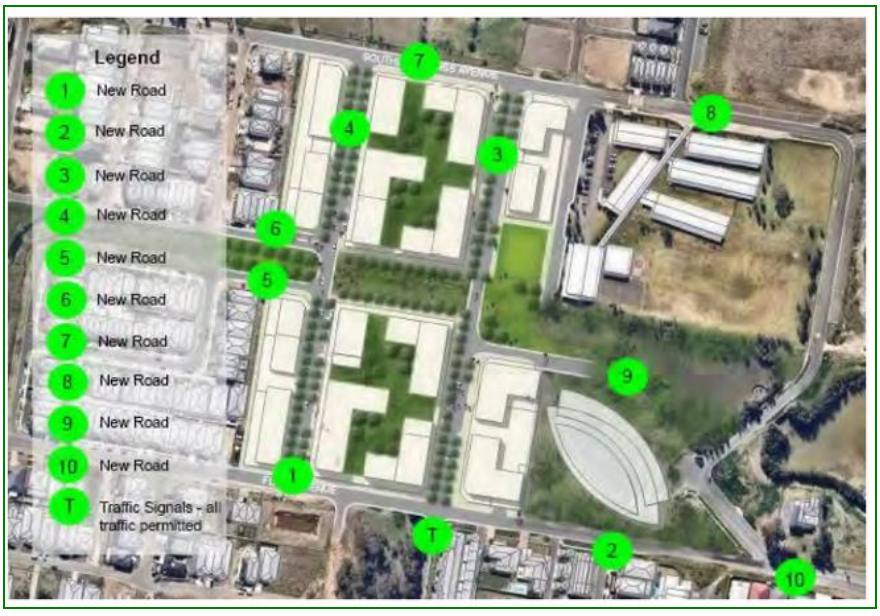


Figure 7: Indicative Road Layout (Planning Proposal 2015)

4.3 Proposed Public Transport Routes

The Liverpool City Council DCP (2008) supplies proposed future bus routes for the land subdivision and development in Middleton Grange. It is noted that the routes were proposed prior to the Indicative Road Layout Plan provided in the Planning Proposal for 60-80 Southern Cross Avenue & 45-65 Hall Circuit, Middleton Grange. The indicative Road Layout Plan has been provided in **Figure 7** and TRAFFIX has interpreted these routes with the proposed road network provided in **Figure 4** to provide a proposed public transport route in **Figure 8.** It is noted that these routes are subject to change.

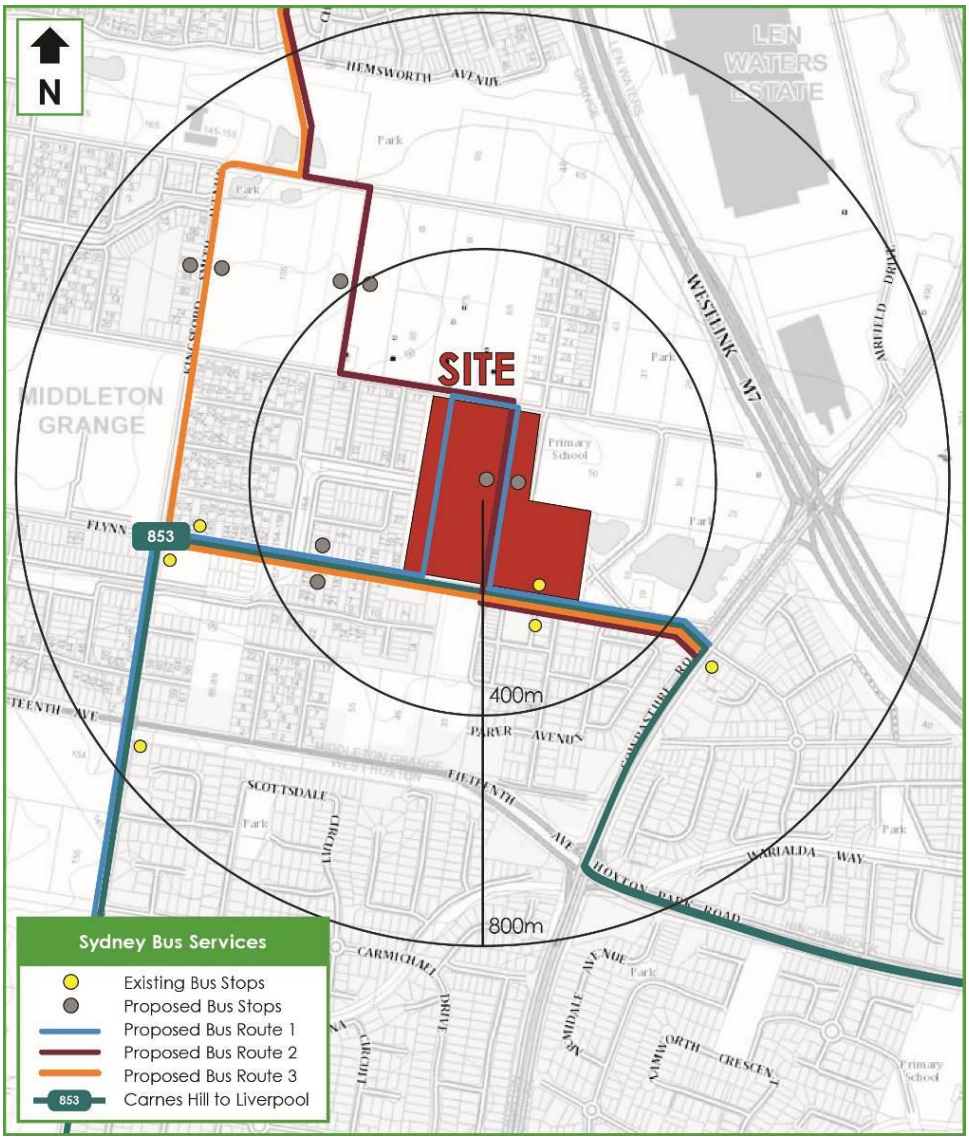


Figure 8: Proposed Public Transport Routes

5. Parking Requirements

5.1 Council Parking Rates

The parking requirements for the wider Liverpool City Council LGA are outlined in the *Liverpool Development Control Plan 2008; Part 1 Car Parking and Access*. Typically, the DCP requires car parking to be provided at the following rates for development other than Liverpool City Centre:

- Residential Development
  - 1 space per one bedroom apartment
  - 1.5 spaces per two bedroom apartment
  - 2 spaces per three bedroom apartment
  - 1 space per 4 units, or part thereof, for visitors
- 1 space per 25m^2 LFA for medical centres;
- 1 space per 35m^2 LFA for offices;
- 1 space per 20m^2 LFA for restaurants in business zones; and
- 1 space per 25m^2 LFA for retail premises between 12,000m^2 and 30,000m^2

5.2 Disabled Parking

The Liverpool City Council DCP 2008 provides specific parking rates for the provision of disabled parking in areas with over 20 car spaces as follows:

No of Spaces	Land Use
1 per 100 car spaces	Retail, Commercial, Industry or Transport
2 per 100 car spaces	Community, Recreation, Accommodation or Education
3 per 100 car spaces	Entertainment or Health

5.3 Motorcycle Parking

According to the Liverpool City Council DCP (2008), provision is to be made for motorcycle parking at the rate of 1 motorcycle space per 20 car spaces for developments within the Liverpool City Centre. However, the DCP does not mention or provide any rates for other than Liverpool City Centre. Therefore, motorcycle parking spaces will be assessed during subsequent development applications at a later stage.

5.4 Bicycle Parking

Liverpool City Council DCP (2008) 1 bicycle space per 200m^2 of leasable floor area should be provided. 15% of this requirement is to be accessible to visitors for developments within the Liverpool City Centre. However, the DCP does not mention or provide any rates for other than Liverpool City Centre. It is noted that bicycle parking spaces will be assessed during subsequent development applications at a later stage.

5.5 Servicing

According to the Liverpool City Council DCP (2008) the following rates apply for service vehicles for the land use categories listed. It is considered that the listed land uses are the most likely in the Middleton Grange area.

Land Use	Zoning	Service and Loading
Multi dwelling housing and residential flat buildings	Residential & business zones	Service access for removalists and garbage servicing
Office premises	Business zones	LFA > 2,000sqm require waste collection vehicle service facilities
Recreational Facilities	Industrial & Recreational zones	Service access for a small rigid vehicle
Restaurant	Residential Zones	Waste collection vehicle service access
Retail premises	Business zones	LFA < 4,400sqm require service access for an articulated vehicle

6. Traffic Impacts

6.1 Existing Intersection Performance

Surveys were conducted to assess the performance of the surrounding road network at the following key intersections (as mentioned in Section 2.1):

- Cowpasture Road / Flynn Avenue / Collarenebri Road;
- Cowpasture Road / Fifteenth Avenue / Hoxton Park Road;
- Fifteenth Avenue / Kingsford Smith Avenue / Second Avenue;
- Kingsford Smith Avenue / Flynn Avenue;
- Flynn Avenue / Onslow Gardens; and
- Southern Cross Avenue / Bravo Avenue.

These surveys were undertaken on a typical weekday in 2016 from 7:00-9:00am during the morning period and 4:00-6:00pm during the afternoon/evening period. This survey data was analysed to determine the peak hour for both morning and afternoon/evening period. The results indicated that the peak hour occurred at 7:30 to 8:30am in the morning and 4:45 to 5:45pm in the afternoon/evening. A summary of these traffic counts are provided in **Appendix C**, for both the morning and afternoon/evening peak hour periods.

The intersections 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:

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals	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.

A summary of the modelled results are provided in **Table 1** below. Reference should also be made to the detailed SIDRA outputs included in **Appendix D-1**.

Table 1: Intersection Performance - Existing Volumes

Intersection	Control Type	Period	Degree of Saturation (DOS)	Average Delay (AVD)	Level of Service (LOS)
Cowpasture Road / Flynn Avenue / Collarenebri Road	Signals	AM	1.396	105.8	F
		PM	0.911	34.8	C
Cowpasture Road / Fifteenth Avenue / Hoxton Park Road	Signals	AM	1.105	95.3	F
		PM	0.875	36.8	C
Fifteenth Avenue / Kingsford Smith Avenue / Second Avenue	Roundabout	AM	0.845	31.8	C
		PM	0.655	12.8	A
Kingsford Smith Avenue / Flynn Avenue	Roundabout	AM	0.500	12.5	A
		PM	0.119	10.3	A
Flynn Avenue / Onslow Gardens	Give Way	AM	0.008	10.1	A
		PM	0.002	6.4	A

The results in Table 1 indicate that the roundabout and Give Way intersections operate well within capacity limits at Level of Service (LOS) C or better, during both peak hours. In addition, the signalised intersections operate at a LOS C during the PM peak period however, the intersections operate with a LOS F during the morning peak period with an average delay of 105.8 seconds at Cowpasture Road / Flynn Avenue / Collarenebri Road and 95.3 seconds at Cowpasture Road / Fifteenth Avenue / Hoxton Park Road.

Nevertheless, it is stressed that the most relevant use of this analysis is to compare the relative change in the performance parameters as a result of the proposed development. This is discussed further in the following sections.

6.2 Modelling Assumptions

6.2.1 Traffic Distribution

The relative distribution of 2011 Journey-to-Work trips by car for areas in the vicinity of the site (for Travel Zones 3721 & 3722) has been used to determine the future distribution of traffic from the development onto the surrounding road network. In this regard, the localised distribution of this traffic onto the surrounding road network is summarised in **Table 2** below.

Table 2: Traffic Distribution

Direction	Vehicles Percentage		Location (To/From)
	Employed residents travelling to	Employed people coming from	
Cowpasture Road (North)	36%	15%	Sydney Inner City, Fairfield, Mount Druitt, Merrylands, Guildford, Parramatta, Carlingford, Ryde, Hunters Hill
Cowpasture Road (South)	12%	30%	Campbelltown, Camden
Fifteenth Avenue	15%	21%	Bringelly, Penrith, St Marys
Hoxton Park Road	37%	34%	Liverpool, Green Valley, Sydney Inner City, Hurstville, Marrickville, Sydenham, Petersham, Bankstown, Heathcote, Canterbury

It can be seen from Table 2 that much of the traffic generated by the development will be directed to the east of the development.

6.2.2 Traffic Generation Rates

The traffic generation rates outlined in the RMS *Guide to Traffic Generating Developments* and updated *Technical Direction 04a* have generally been adopted for the purposes of this study.

Retail and commercial traffic generation rates have been adopted from Colston Budd Hunt & Kafes traffic report. In addition, the RMS *Technical Direction 04a* provides a traffic generation rate for high density residential developments of 0.19 veh/hr and 0.15 veh/hr during the AM and PM peak, respectively. The RMS rates were from surveys conducted at eight separate locations within Sydney. It is noted that these locations surveyed were within close distance of ideal public transportation being

near railway stations and a range of bus services. As previously mentioned, the site has limited access to public transport and is therefore recommended that the RMS *Guide to Traffic Generating Developments* for high density residential flat building in a metropolitan sub-regional centre to be adopted to ensure that all traffic will be accommodate across road network. A summary of the adopted traffic generations for the various land uses is provided in **Table 3** below.

Table 3: Adopted Traffic Generation Rates

Land Use	AM Peak			PM Peak		
	Traffic Generation Rate	IN	OUT	Traffic Generation Rate	IN	OUT
High Density Residential	0.29 / unit	20%	80%	0.29 / unit	80%	20%
Commercial	1.6 / 100m^2	90%	10%	1.2 / 100m^2	20%	80%
Retail	0.5 / 100m^2	90%	10%	4.6 / 100m^2	50%	50%

6.3 Traffic Generation

The future traffic generation associated with the site has also been assessed on the basis of the traffic generation rates outlined in Section 6.2.2 above, with the results summarised in **Table 4** below.

Table 4: Traffic Generation - Proposed Development

Land Use	No. / Area	Generation Rates		AM Peak			PM Peak		
		AM	PM	COMBINED	IN	OUT	COMBINED	IN	OUT
Residential	825	0.29 / unit	0.29 / unit	240	48	192	240	192	48
Commercial (GFA)	2,533	1.6 / 100m^2	1.2 / 100m^2	40	36	4	31	6	25
Retail (GLA)	20,240	0.5 / 100m^2	4.6 / 100m^2	101	91	10	930	465	465
TOTAL				381	175	206	1,201	663	538

Having regard for the above, the proposed development is expected to generate in the order of approximately 381 and 1,201 vehicles per hour during the weekend morning and evening peak periods, respectively.

Reference should be made to the traffic network volume figures provided in **Appendix C** which summaries the distribution of both existing and future traffic volumes at key intersections on the surrounding road network.

6.4 Mid-block Capacity Impacts

The capacity of urban roads is usually defined by the capacity of key intersections as discussed further below. However, the mid-block capacity of road segments on approach to intersections is also of relevance in determining whether suitable capacity available to feed these intersections. In this regard, the RMS Guide provides the following typical mid-block capacities for a variety of lane configurations.

Table 5: Typical Mid-Block Capacity for Urban Roads (RMS Guide)

Type of Road	One-Way Mid-block Lane Capacity	Vehicles (pcu) / hr
Median or inner lane:	Divided Road	1,000
	Undivided Road	900
Outer or kerb lane:	With Adjacent Parking Lane	900
	Clearway Conditions	900
	Occasional Parked Cars	600
4 lane undivided:	Occasional Parked Cars	1,500
	Clearway Conditions	1,800
4 lane divided	Clearway Conditions	1,900

Having regard for the above, the mid-block capacity of the various sections of road under the future scenario have been investigated, with the results summarised in **Table 6** below.

The last column includes additional capacity on the basis that Cowpasture Road is to be increased in width to three lanes in either direction. A six lane carriageway would generally be expected to require

provision of a median and hence Cowpasture Road would therefore continue to provide a divided carriageway with inherent improvements to theoretical capacity.

Table 6: Mid-block Capacity Analysis

Road Segment	Direction	Existing			Future Volumes		Future Volumes with Additional Lanes		
		Existing Capacity	AM	PM	AM	PM	Proposed Capacity	AM	PM
Cowpasture Rd north of Flynn Ave	Northbound	1,900	2756	1507	2825	1527	2,900	2825	1527
	Southbound	1,900	1452	2306	1474	2376	2,900	1474	2376
Cowpasture Rd between Flynn Ave & Hoxton Park Rd	Northbound	1,900	2133	1404	2175	1493	2,900	2175	1493
	Southbound	1,900	1258	1887	1347	1923	2,900	1347	1923
Cowpasture Rd south of Hoxton Park Rd	Northbound	1,900	2083	1349	2099	1373	1,900	2099	1373
	Southbound	1,900	1170	2015	1194	2027	1,900	1194	2027

It can be seen from Table 6 above, existing traffic volumes exceeds the theoretical mid-block capacity on most road segments along Cowpasture Road. Adequate mid-block capacity will be provided for all road segments following widening of Cowpasture Road.

It is noted that traffic volumes on the two lane section of Cowpasture Road south of Hoxton Park Road, will be in order of up to 2,099 veh/hr (northbound) during the AM peak period with the future development. This is less than the 2,200 veh/hr that would be expected to result in a Level of Service D in accordance with Table 4.4 of the RMS Guide. As such, the widening of Cowpasture Road is considered to be warranted between Flynn Avenue / Hoxton Park Road and north of Flynn Ave to provide sufficient capacity for existing demand and future volumes.

6.5 Impacts on Key Intersections

6.5.1 Existing + Development Model (No Improvements)

The performance of key intersections in the vicinity of the site having regard for the additional traffic generated by the proposed development is summarised in **Table 7** below. This modelling exhibits the existing road geometry with no changes. Reference should also be made to the detailed SIDRA outputs included in **Appendix D-2**.

Table 7: Intersection Performance – Existing + Development

Intersection	Control	Period	Degree of Saturation (DOS)	Average Delay (AVD)	Level of Service (LOS)
Cowpasture Road / Flynn Avenue / Collarenebri Road	Signals	AM	1.485	155.0	F
		PM	0.896	38.1	C
Cowpasture Road / Fifteenth Avenue / Hoxton Park Road	Signals	AM	1.125	107.3	F
		PM	0.920	44.5	D
Fifteenth Avenue / Kingsford Smith Avenue / Second Avenue	Roundabout	AM	0.907	43.2	D
		PM	0.777	16.4	B
Kingsford Smith Avenue / Flynn Avenue	Roundabout	AM	0.540	13.2	A
		PM	0.309	11.9	A
Flynn Avenue / Onslow Gardens / Road 3	Give Way	AM	0.014	16.6	B
		PM	0.403	14.6	B
Flynn Avenue / Road 4	Give Way	AM	0.153	13.3	A
		PM	0.291	13.1	A
Southern Cross Avenue / Road 3	Give Way	AM	0.001	4.8	A
		PM	0.041	5.1	A
Southern Cross Avenue / Road 4	Give Way	AM	0.001	4.8	A
		PM	0.042	5.2	A

It can be seen from Table 7 that with the increased traffic volumes associated with the development, all intersections with the exceptions of those along Cowpasture Road operate with a LOS D or better during both peak periods. Furthermore, the signalised intersections operate at a LOS D from a LOS C which is still considered acceptable. However, the AM peak period will remain at a LOS F with an average delay of 155.0 seconds at Cowpasture Road / Flynn Avenue / Collarenebri Road and 107.3 seconds at Cowpasture Road / Fifteenth Avenue / Hoxton Park Road. It is noted that with the existing traffic volumes, let alone the increased volumes associated with the development, both signalised intersections are well over capacity and require improvements. The improvements associated with the signalised intersections are discussed further in the section below.

6.5.2 Existing + Development with Improvements

This modelling scenario assumes that Cowpasture Road is increased in width to carry three lanes of traffic in either direction as identified in Section 6.4 and as shown in **Figure 9**. The performance of key intersections in the vicinity of the site having regard for the additional traffic generated by the proposed development is summarised in **Table 8** below. Reference should also be made to the detailed SIDRA outputs included in **Appendix D-3**.

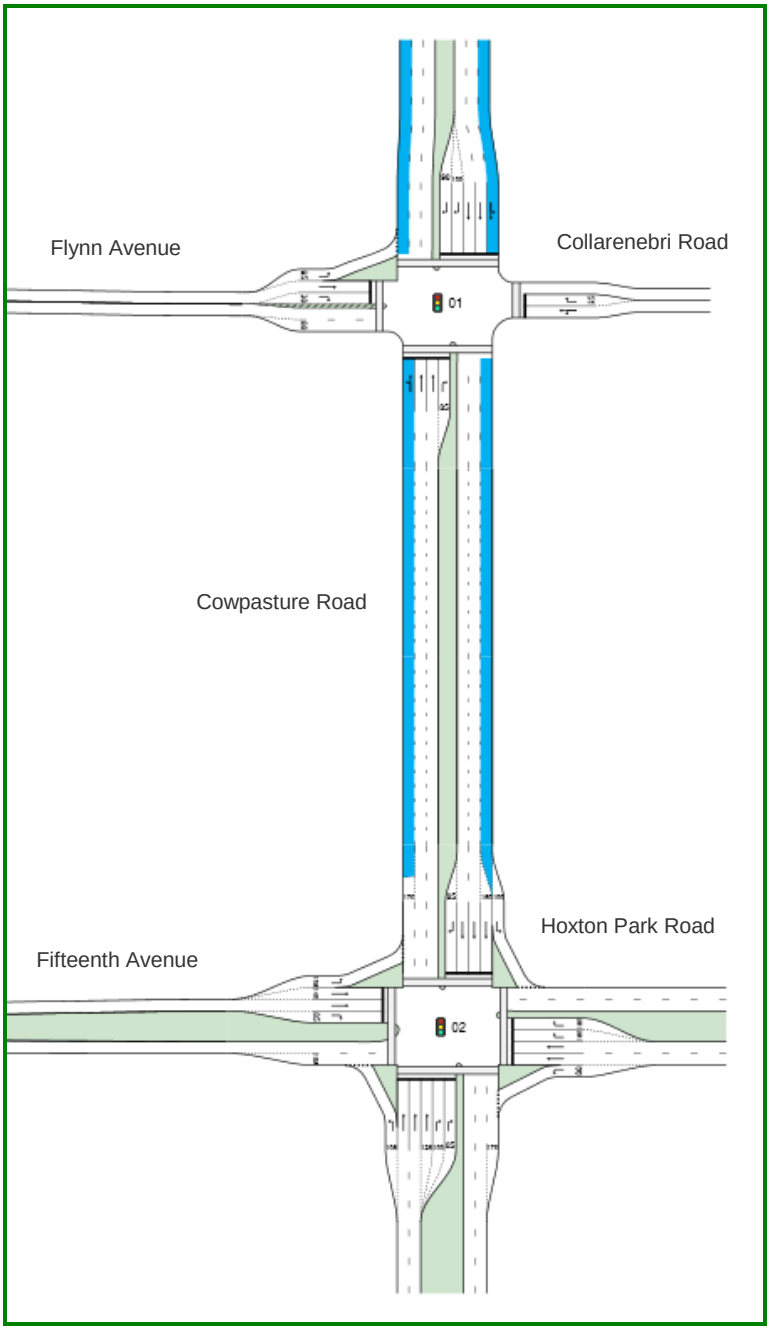


Figure 9: Proposed Additional Lanes on Cowpasture Road

Table 8: Intersection Performance - Existing + Development with Improvements

Intersection	Control Type	Period	Degree of Saturation (DOS)	Average Delay (AVD)	Level of Service (LOS)
Cowpasture Road / Flynn Avenue / Collarenebri Road	Signals	AM	1.029	45.0	D
		PM	0.889	43.1	D
Cowpasture Road / Fifteenth Avenue / Hoxton Park Road	Signals	AM	0.902	48.5	D
		PM	0.920	48.8	D
Fifteenth Avenue / Kingsford Smith Avenue / Second Avenue	Roundabout	AM	0.911	44.2	D
		PM	0.777	16.4	B
Kingsford Smith Avenue / Flynn Avenue	Roundabout	AM	0.574	13.8	A
		PM	0.309	11.9	A
Flynn Avenue / Onslow Gardens / Road 3	Give Way	AM	0.013	17.3	B
		PM	0.409	14.8	B
Flynn Avenue / Road 4	Give Way	AM	0.155	13.7	A
		PM	0.291	13.1	A
Southern Cross Avenue / Road 3	Give Way	AM	0.001	4.8	A
		PM	0.041	5.1	A
Southern Cross Avenue / Road 4	Give Way	AM	0.002	4.8	A
		PM	0.042	5.2	A

The widening of Cowpasture Road will ensure the existing and additional traffic generated by the proposed development will operate satisfactory. It is noted that the Cowpasture Road is an RMS road and will be subject to further detailed investigation.

Nevertheless, it is emphasised that the ultimate road infrastructure improvements are required with just the existing traffic conditions. Furthermore, the traffic impacts associated with the development can readily be accommodated.

7. Access & Internal Design Aspects

7.1 Access

Access to the site is proposed via four new intersections as shown in **Figure 10** and are discussed further below.

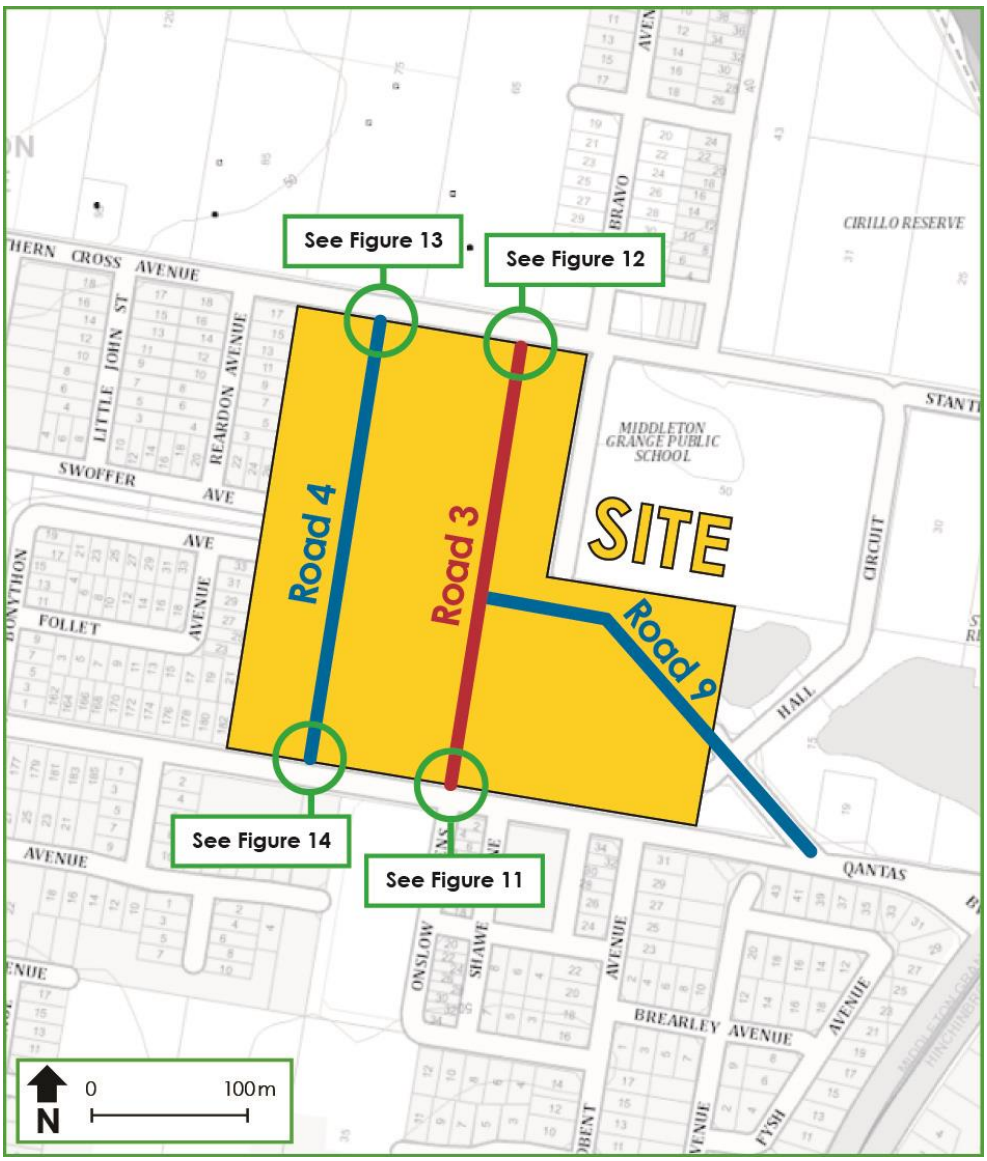


Figure 10: Proposed Additional Lanes on Cowpasture Road

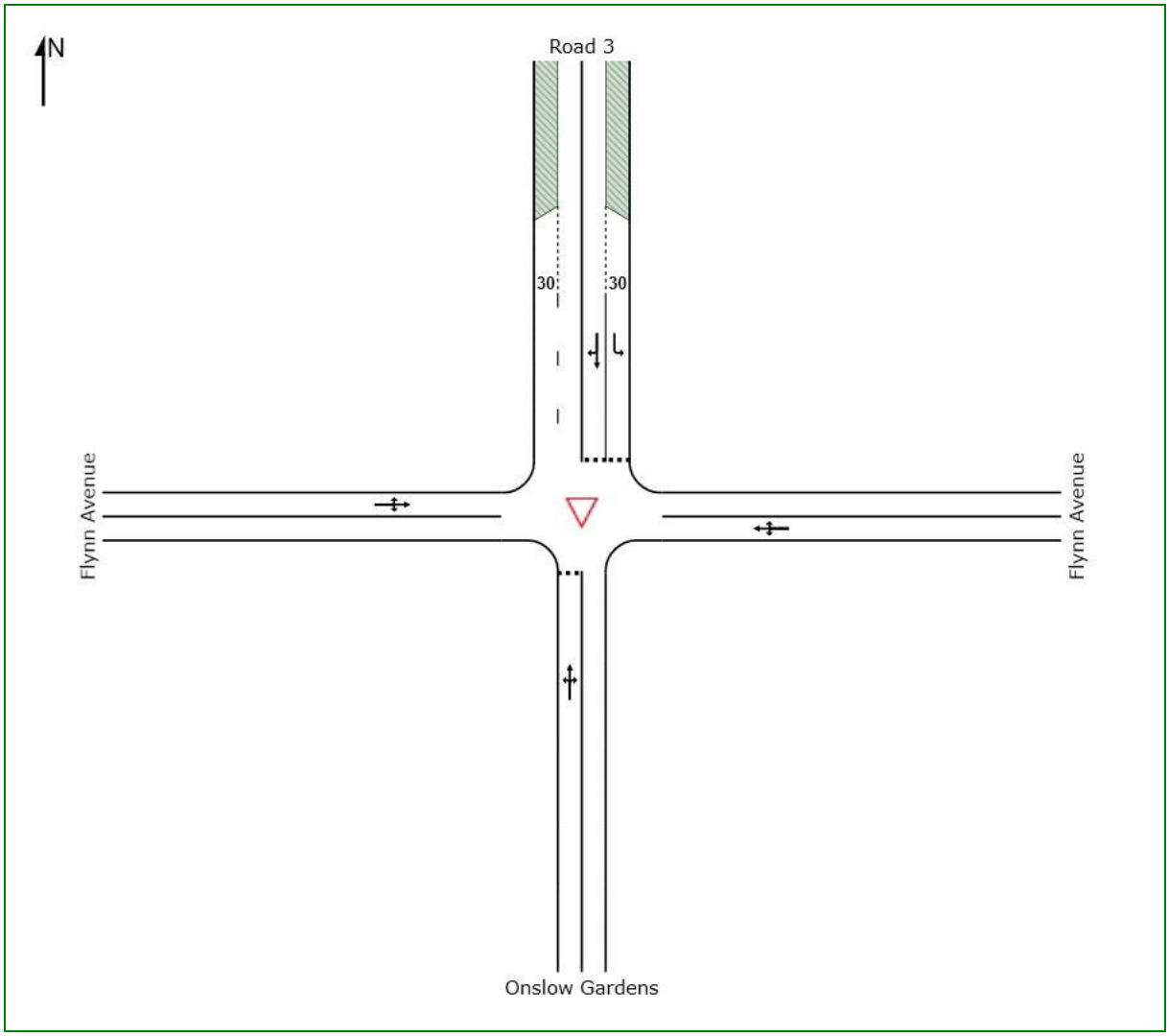


Figure 11: Indicative Intersection Arrangement – Flynn Avenue x Road 3 x Onslow Gardens

It can be seen from **Figure 11** that the intersection of Flynn Avenue, Road 3 and Onslow Gardens will form a four-way intersection with 'Give Way' priority controls at Road 3 and Onslow Gardens. The south, east and west approach provides a single lane of traffic with all turns permitted. The north approach of Road 3 provides a single left-turn lane with parking permitted 30 metres from the intersection and one traffic lane for through and right-turn movements. It is noted that Road 3 provides a single lane of traffic and kerbside parking on each side.

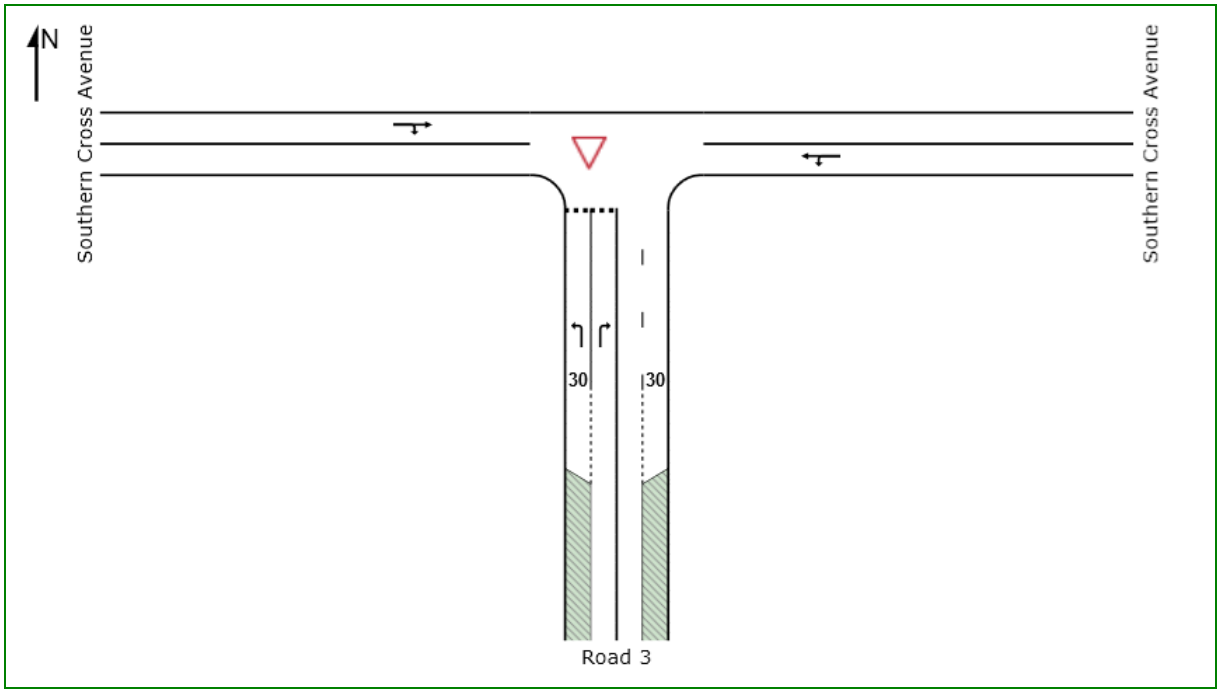


Figure 12: Indicative Intersection Arrangement – Southern Cross Avenue x Road 3

It can be seen from **Figure 12** that the intersection of Southern Cross Avenue with Road 3 will form a T-junction that has a 'Give Way' priority control. Both east and west legs on Southern Cross Avenue accommodate a single lane of traffic in each direction. The south leg of Road 3 generally provides a single lane of traffic and an additional lane for kerb side parking however, it forms two lanes at the intersection with Southern Cross Avenue.

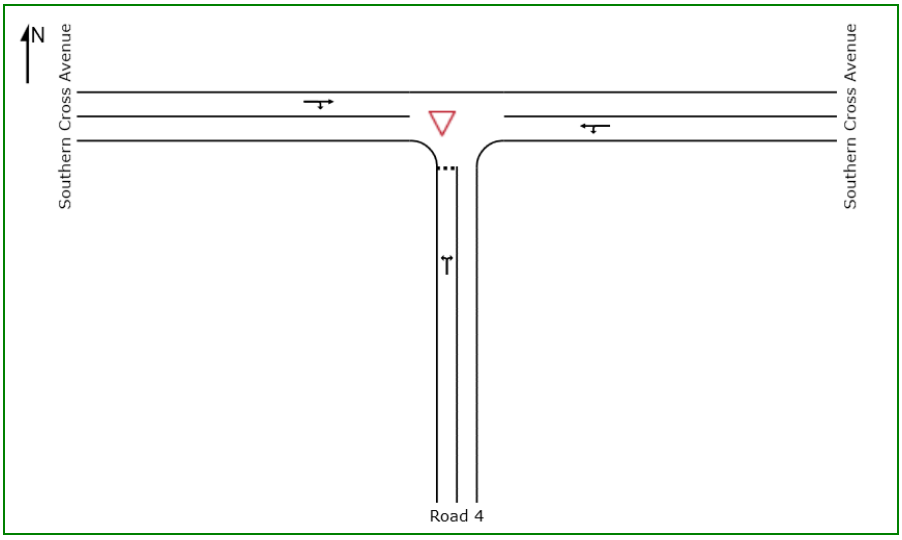


Figure 13: Indicative Intersection Arrangement – Southern Cross Avenue x Road 4

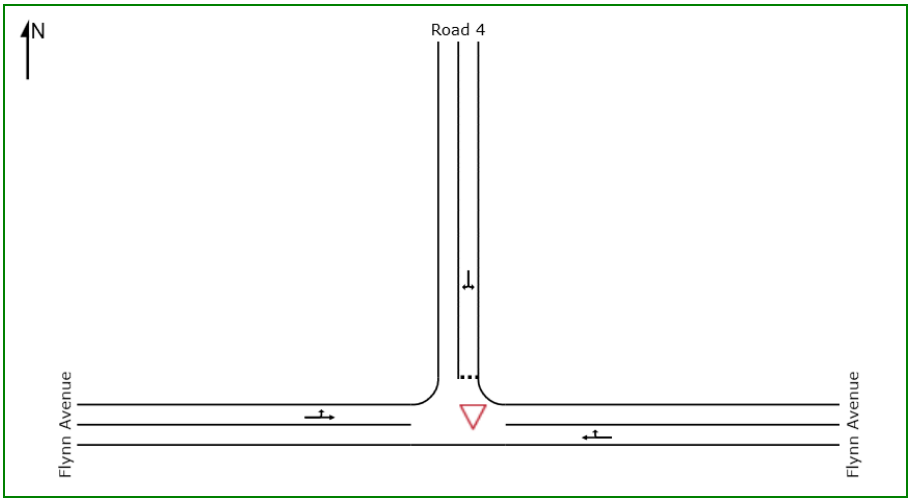


Figure 14: Indicative Intersection Arrangement – Flynn Avenue x Road 4

It can be seen from **Figure 13** and **Figure 14** that the intersections of Southern Cross Avenue with Road 4 and Flynn Ave with Road 4 will both form a T-junction that has a 'Giveway' priority control intersection. Furthermore, all legs on Southern Cross Avenue, Flynn Avenue and Road 4 accommodate a single lane of traffic in each direction.

7.2 Internal Design

The internal road network is shown on the plans provided in Appendix B. The internal road network has varying carriageway widths which are dependent on their function in the road hierarchy. As outlined in **Table 9** below:

Table 9: Proposed Road Geometry

Classification (Road)	Road Reserve Width	Approximate Carriageway Width
Northern Connector Street (Road 3)	21.6 to 22.6	13.6
Local Access Street Type 2 (Road 4)	17.4	9.4
Local Access Street Type 1 (Road 9)	15.2	7.2

The above widths are consistent with those nominally required within the Middleton Grange DCP. These carriageway widths are generous and will operate effectively. In addition, the proposed road geometry satisfies the recommended width outlined within the Australian Model Code for Residential Development (AMCORD) which recommends a minimum width of 5.5 metres (or 7.0 metres) for a local access street within a 13.5 metre road reserve.

In summary, the internal design is considered appropriate and will provide an appropriate amenity for future residents and other road users.

8. Conclusions

The following conclusions are noteworthy:

- TRAFFIX has been commissioned by Manta Group Pty Ltd to undertake a Traffic Impact Assessment in support of a proposed subdivision at 60-80 Southern Cross Avenue & 45-65 Hall Circuit, Middleton Grange.
- This application relates to the subdivision of the site for a Town Centre comprising of 825 residential units, 20,240m^2 GLA of retail and 2,533m^2 GFA of commercial.
- Three new roads are proposed within the site. Two roads traverse north-south (Road 3 and Road 4) between Southern Cross Avenue in the north and Flynn Avenue in south. An additional road (Road 9) will connect to Road 3 traversing adjacent to the southern boundary of Middleton Grange Public School. Road 9 will utilise the existing alignment of Hall Circuit and connect with Flynn Avenue
- Under existing traffic conditions, all roundabout and Give Way intersections operate well within capacity limits at Level of Service (LOS) C or better, during both peak hours. In addition, all signalised intersections operate at a LOS C during the PM peak period. The only existing issues relates to two existing signalised intersections that both operate with a LOS F during the morning peak period. These are the intersections of Cowpasture Road / Flynn Avenue / Collarenebri Road and Cowpasture Road / Fifteenth Avenue / Hoxton Park Road.
- The impacts of the development which the subdivision supports have been assessed based on the RMS trip rates as outlined in Section 6.2.2. The proposed development is expected to generate in the order of 380 and 1,200 vehicles per hour during the weekday morning and evening peak periods, respectively.
- Under future conditions, subject to the improvements discussed in this report, the road network will operate satisfactorily. These improvements include regional improvements that are the responsibility of Government (notably the widening of Cowpasture Road) as well as local improvements that are required to accommodate the development, which relate to the four priority controlled intersections that provide access to the site.
- The internal road cross sections are compliant with the Middleton Grange DCP and provide three different road typologies based on their role in the hierarchy. These will provide a legible hierarchy that is functional and efficient for vehicular traffic, while also providing footpaths on both sides and opportunities for on-street parking.

- Direct access to properties will be available from all internal roads.
- The development provides for future bus routes, all of which traverse Road 3 which is a connector road.
- This subdivision will provide a suitable basis for subsequent development applications, at which time further detailed traffic assessment will be undertaken.

It is therefore concluded that the proposed subdivision is supportable on traffic planning grounds and will operate satisfactorily.

Appendix A

Photographic Record

View looking south on Cowpasture Road at the intersection of Qantas Boulevarde and Collarenebri Road.

View looking north on Cowpasture Road towards intersection with Hoxton Park Road and Fifteenth Avenue.

View looking west on Fifteenth Avenue at the intersection of Second Avenue.

View looking east on Flynn Avenue towards the intersection with Kingsford Smith Avenue.

View looking west on Fifteenth Avenue at the intersection of Second Avenue.

View looking east on Flynn Avenue towards the intersection with Kingsford Smith Avenue.

View looking west on Flynn Avenue with subject site on right hand side of photograph.

View looking west on Flynn Avenue with subject site on left hand side of photograph.

Appendix B

Reduced Plans

SOUTHERN CROSS AVENUE

REARDON AVENUE

SWOFFER AVENUE

DRAINAGE RESERVE

DRAINAGE RESERVE

BONYTHON AVE

FOLLET AVE

FLYNN AVENUE

HALL CIRCUIT

MIDDLETON GRANGE PUBLIC SCHOOL

LOT 102 DP1128111 PUBLIC RESERVE

Lot 1 DP1207518

1 D.P.1078564 1029m²

Lot 2 4582m²

Lot 3 3556m²

Lot 4 1.244ha

Lot 5 1.244ha

Lot 6 5316m²

Lot 7 3314m²

Lot 8 2000m²

22.45 11.85 8.48 17.53 35.28 15.65 22.3 36 17.4 88.04 21.4 35.47 12.5 93.09 116.57 30 8.48 76.04 135.95 135.87 23.47 88.47 88.46 35.47 56.4 56.4 35.47 0.5 87.54 0.5 87.54 128.29 116.28 135.8 135.76 50.02 94.25 93.455 50.31 9.25

Note: Dimensions and areas are subject to final survey

No.	AMENDMENT	DATE

vince morgan SURVEYORS

Vince Morgan (Surveyors) Pty Ltd
77 UNION ROAD PENRITH
PO BOX 4156 PENRITH PLAZA 2750
Ph 47215293 Fax 47312821
email mail@vmsurvey.com.au
www.vincemorgansurveyors.com.au

DATUM:	DATE: 12.07.16	
ORIGIN:	SCALE 1:1000 @A2	
DRAWN: IVM	CHECKED:	

MANTA GROUP

MIDDLETON GRANGE TOWN CENTRE

LOT CALCULATION PLAN
MIDDLETON GRANGE TOWN CENTRE

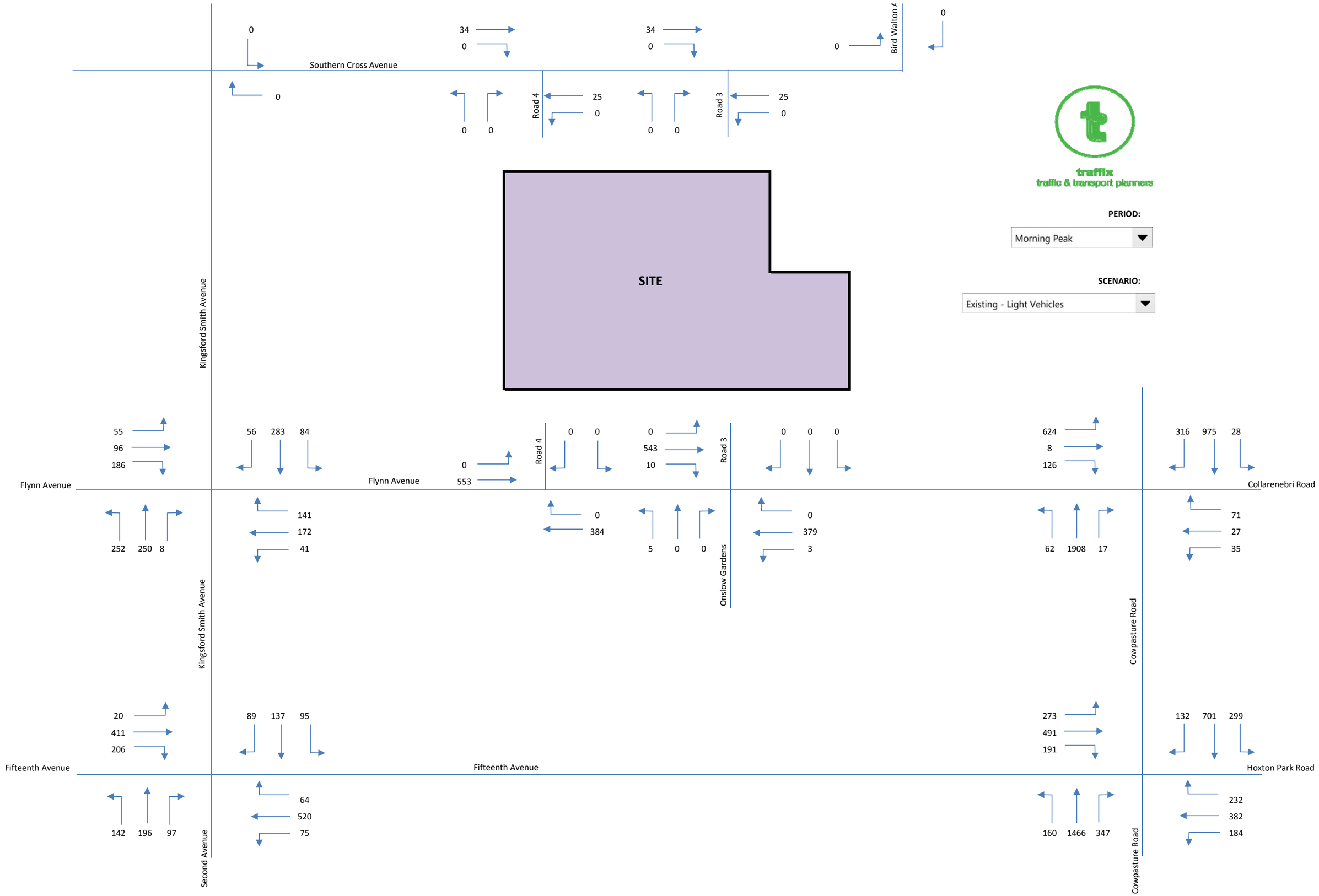
PLAN No. 19133-P19

SHEET 1 OF 1 SHEETS

FILE:

Appendix C

Traffic Volume Diagrams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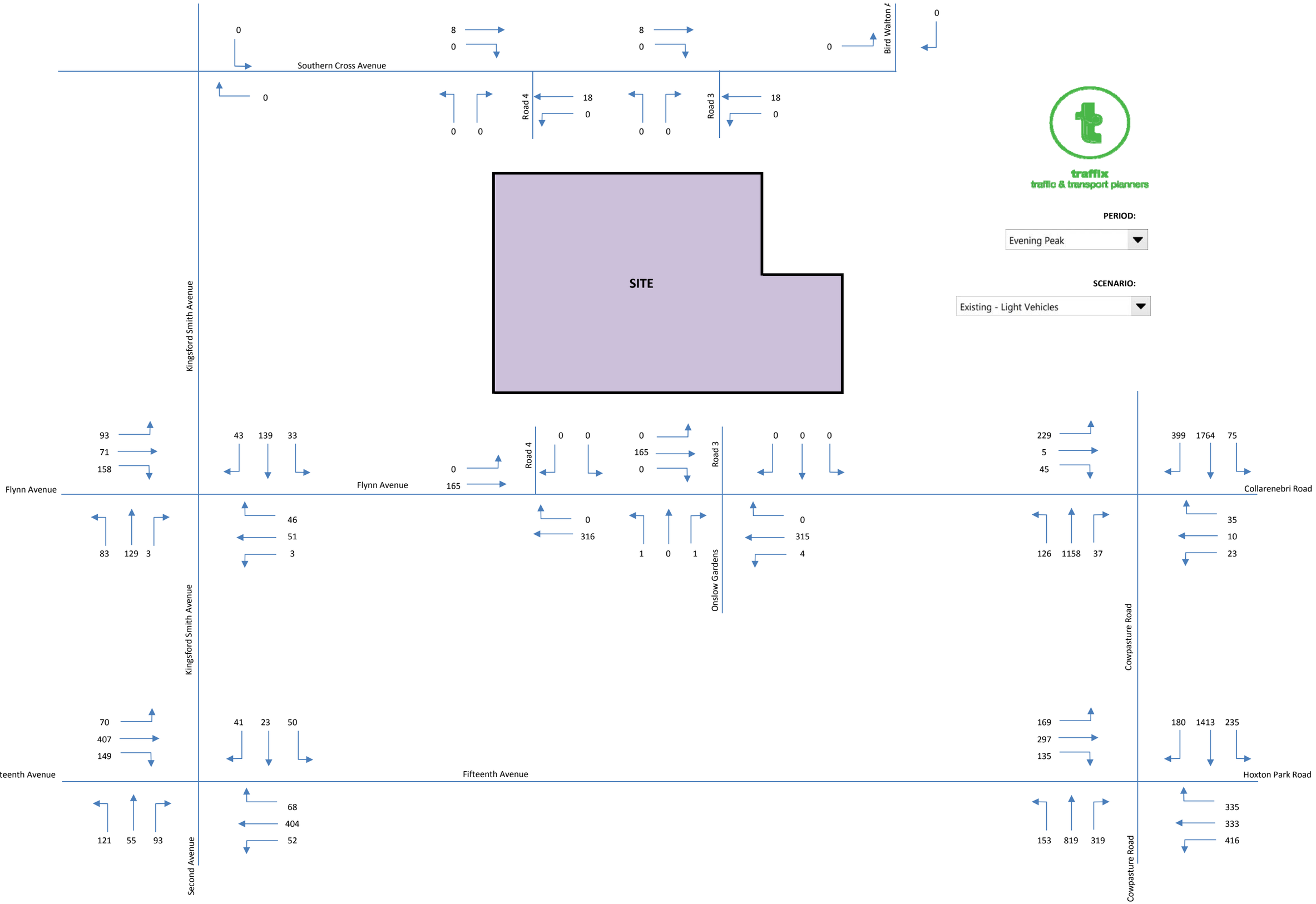
Bird Walton Avenue
Kingsford Smith Avenue
Road 4
Road 3
SITE
traffix
traffic & transport planners
PERIOD:
Morning Peak
SCENARIO:
Existing - Light Vehicles
Flynn Avenue
Collarenebri Road
Onslow Gardens
Cowpasture Road
Fifteenth Avenue
Hoxton Park Road
Second Avenue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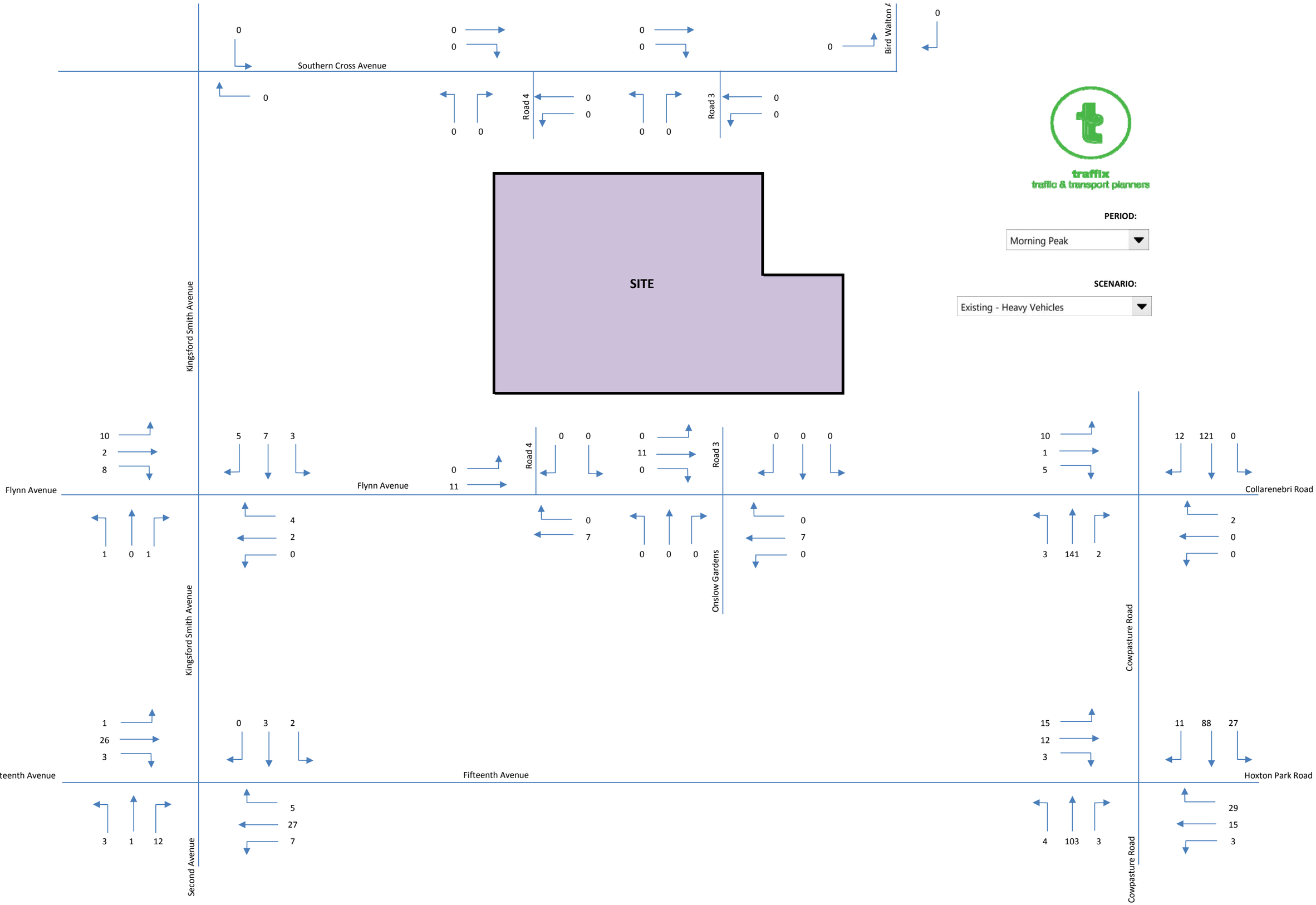
Flynn Avenue
Flynn Avenue
Collarenebri Road
Onslow Gardens
Cowpasture Road
Fifteenth Avenue
Fifteenth Avenue
Hoxton Park Road
Second Avenue
Cowpasture Road
traffix
traffic & transport planners
PERIOD:
Evening Peak
SCENARIO:
Existing - Light Vehicles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Bird Walton Avenue
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Road 3
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Kingsford Smith Avenue
Flynn Avenue
Flynn Avenue
Collarenebri Road
Onslow Gardens
Cowpasture Road
Fifteenth Avenue
Fifteenth Avenue
Hoxton Park Road
Second Avenue
Cowpasture Road
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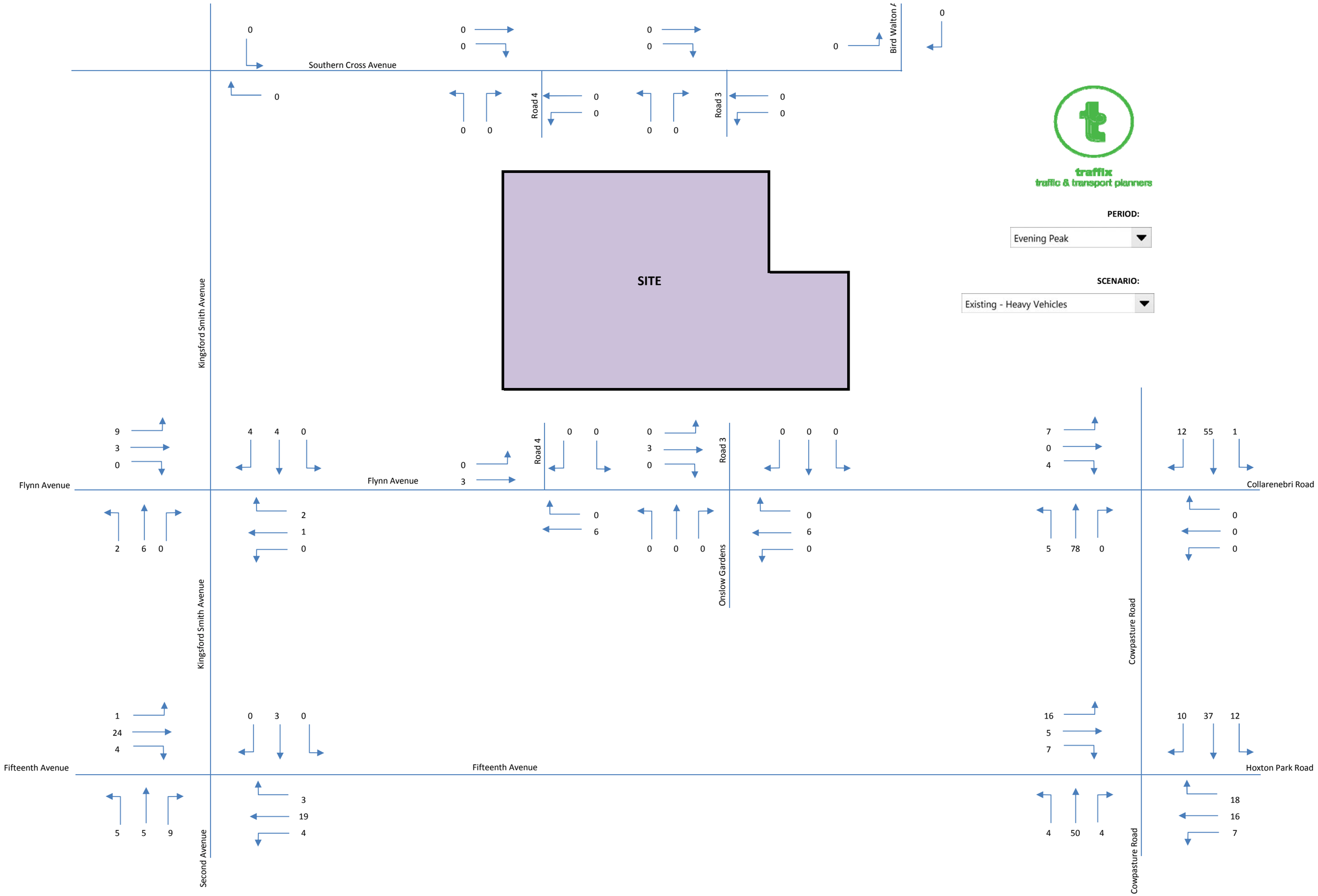
traffic & transport planners
PERIOD:
Morning Peak
SCENARIO:
Existing - Heavy Vehicles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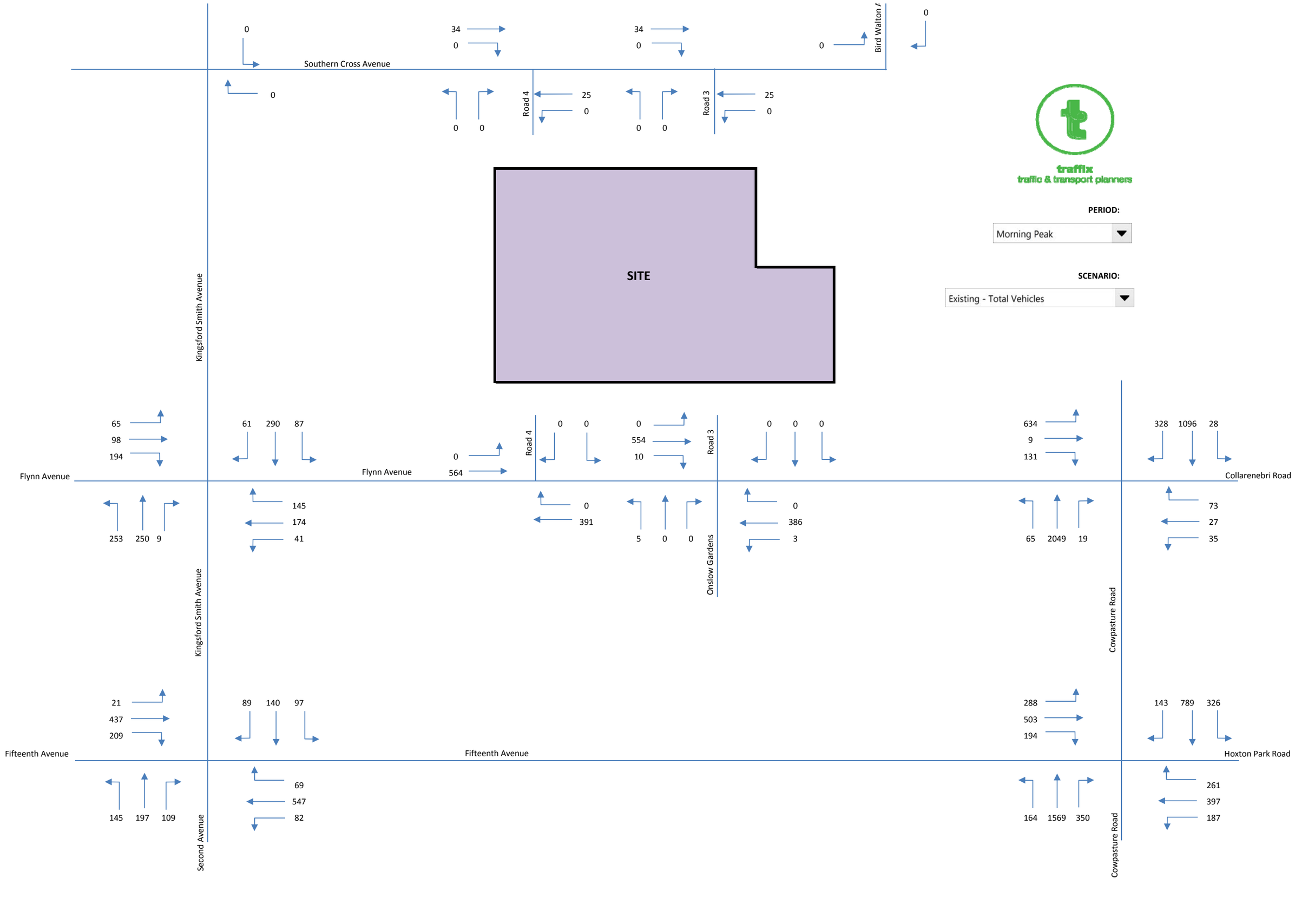
Fifteenth Avenue
Hoxton Park Road
Second Avenue
Cowpasture Road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Kingsford Smith Avenue
Road 4
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traffic & transport planners
PERIOD:
Morning Peak
SCENARIO:
Existing - Total Vehicles
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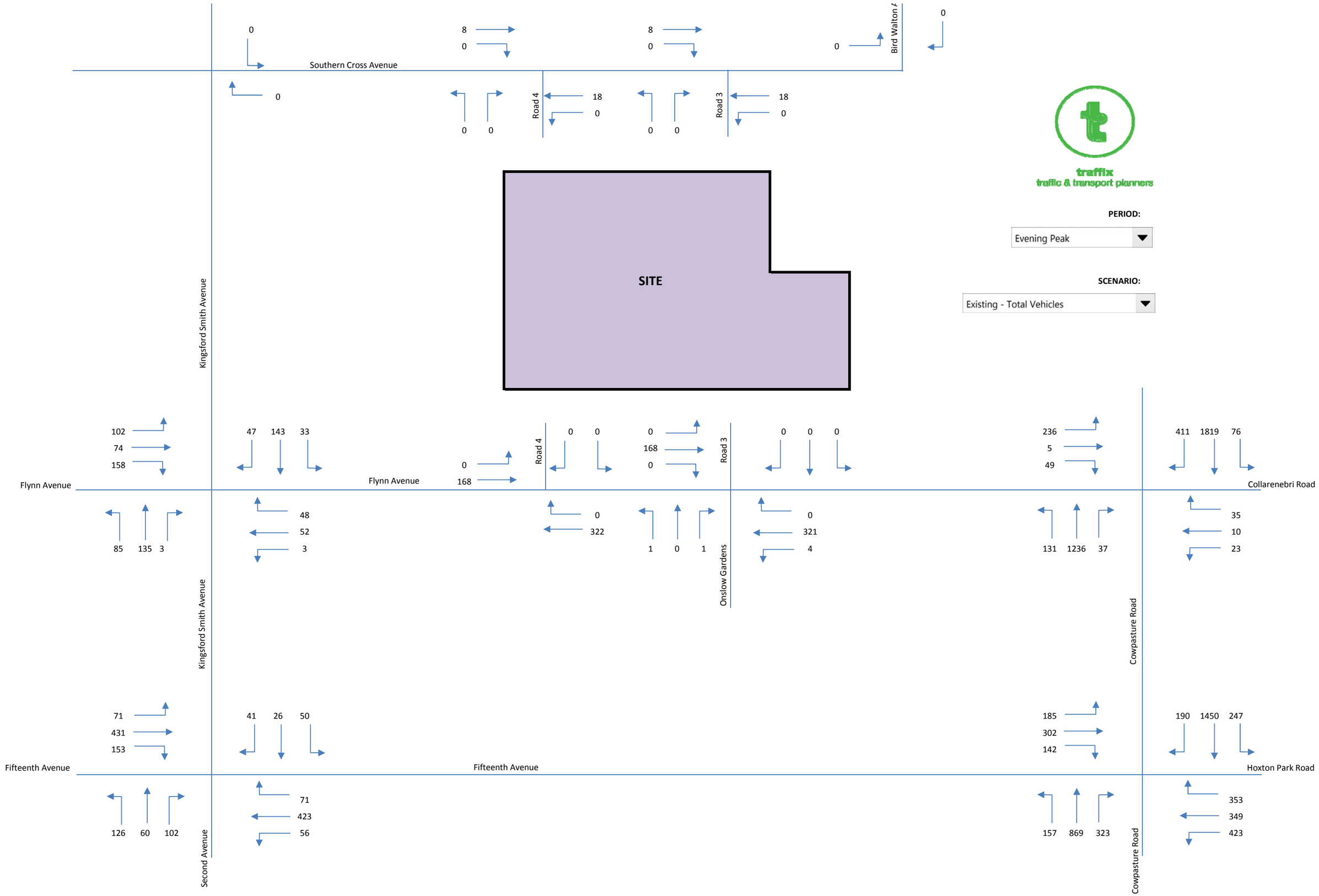
Collarenebri Road
Onslow Gardens
Cowpasture Road
Fifteenth Avenue
Hoxton Park Road
Second Avenue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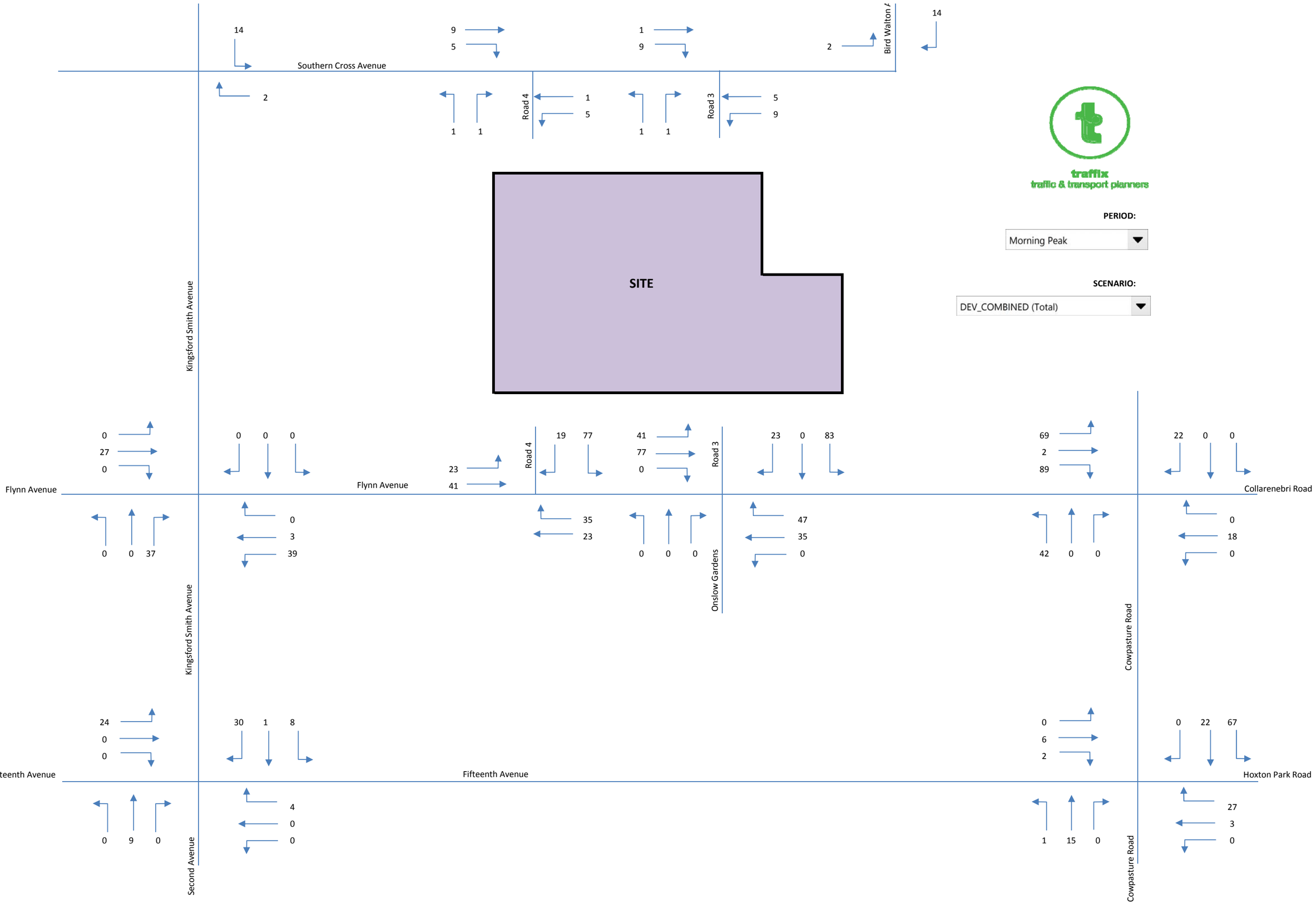
Second Avenue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Kingsford Smith Avenue
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traffic & transport planners
PERIOD:
Morning Peak
SCENARIO:
DEV_COMBINED (Total)
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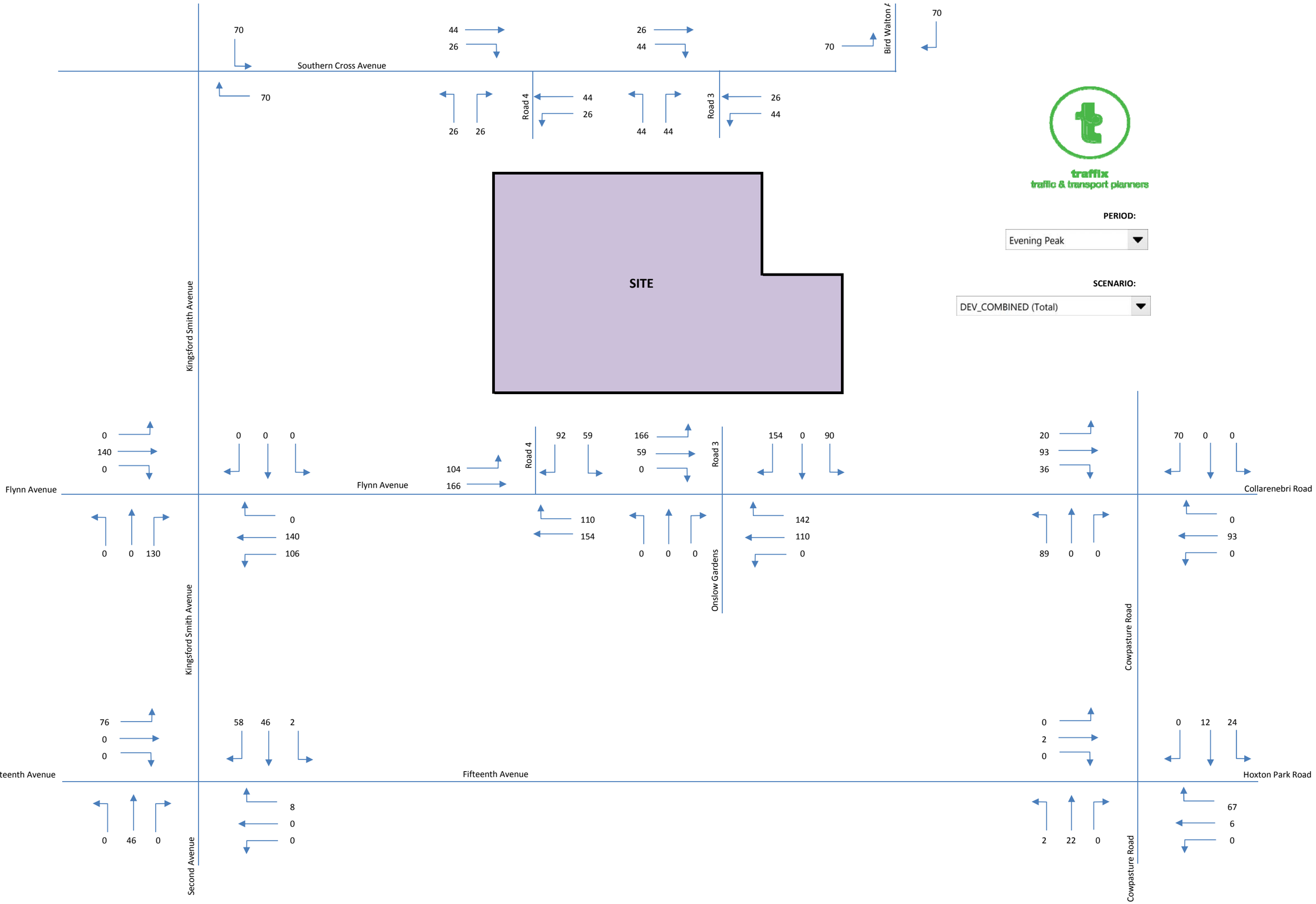
Second Avenue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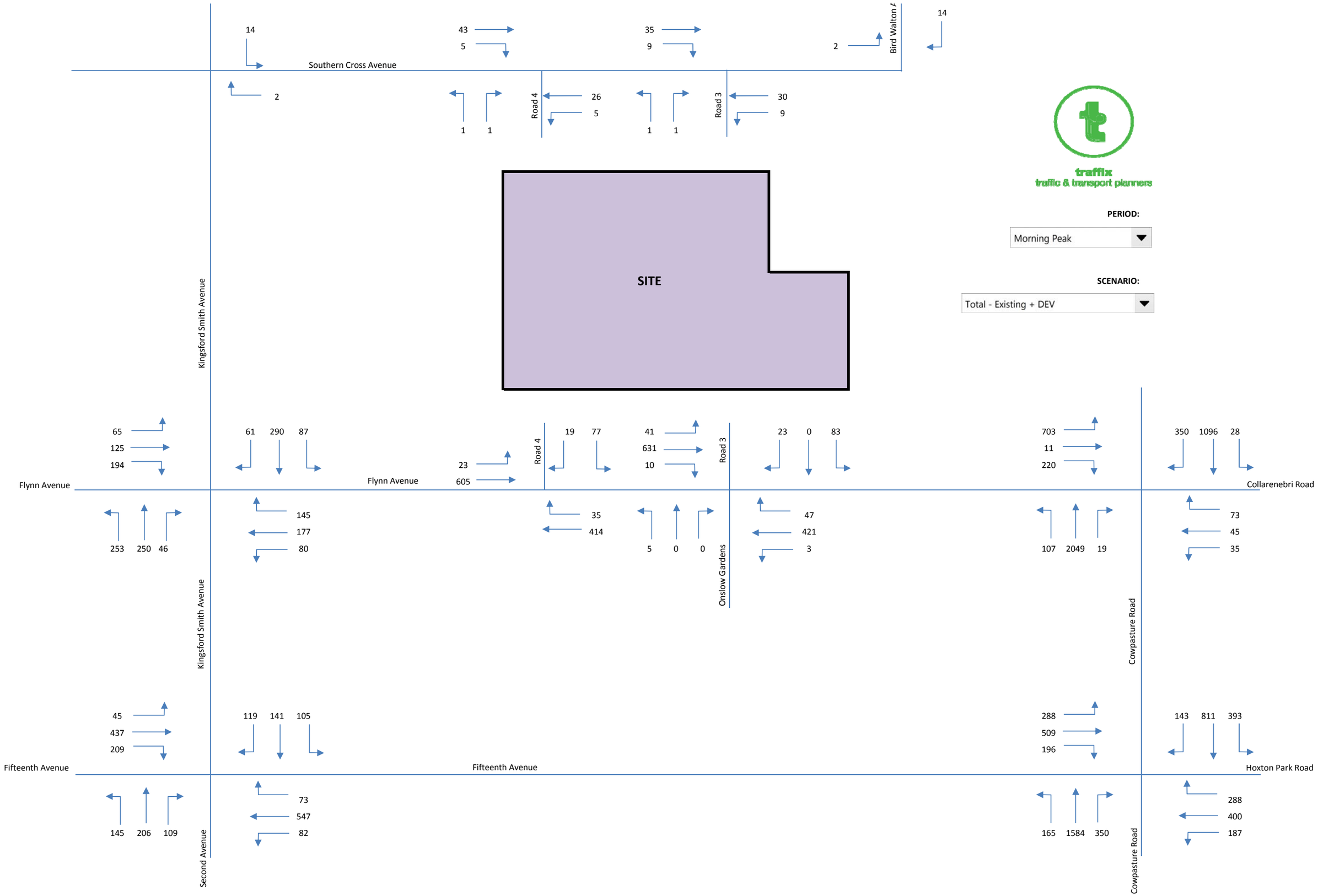
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traffic & transport planners
PERIOD:
Morning Peak
SCENARIO:
Total - Existing + DEV
Flynn Avenue
Collarenebri Road
Onslow Gardens
Cowpasture Road
Fifteenth Avenue
Hoxton Park Road
Second Avenue
14
43
5
35
9
2
14
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1
1
26
5
1
1
30
9
65
125
194
61
290
87
23
605
19
77
41
631
10
23
0
83
703
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1096
28
253
250
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145
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35
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0
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421
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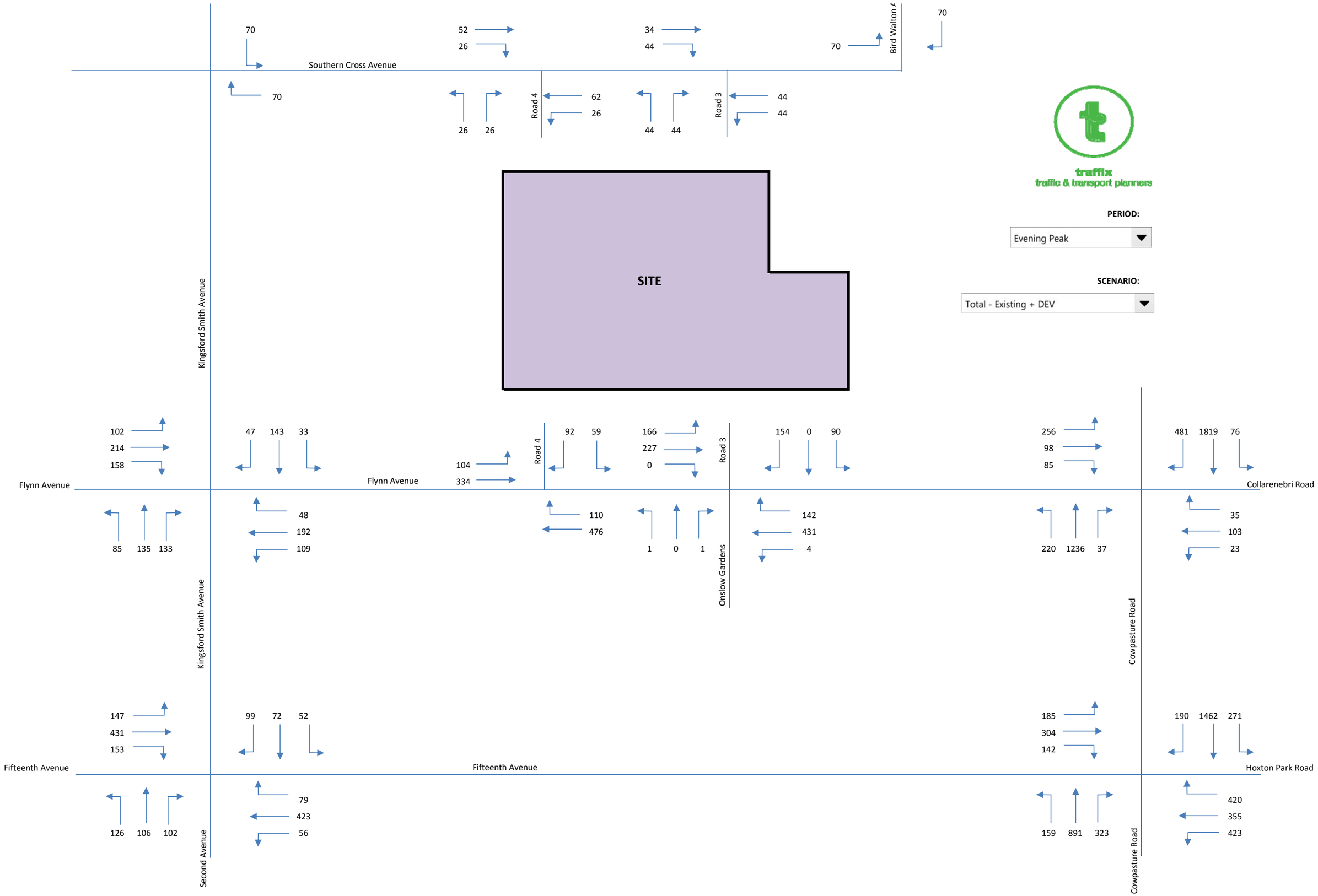
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traffix
traffic & transport planners
PERIOD:
Evening Peak
SCENARIO:
Total - Existing + DEV

Appendix D

SIDRA Modelling Outputs

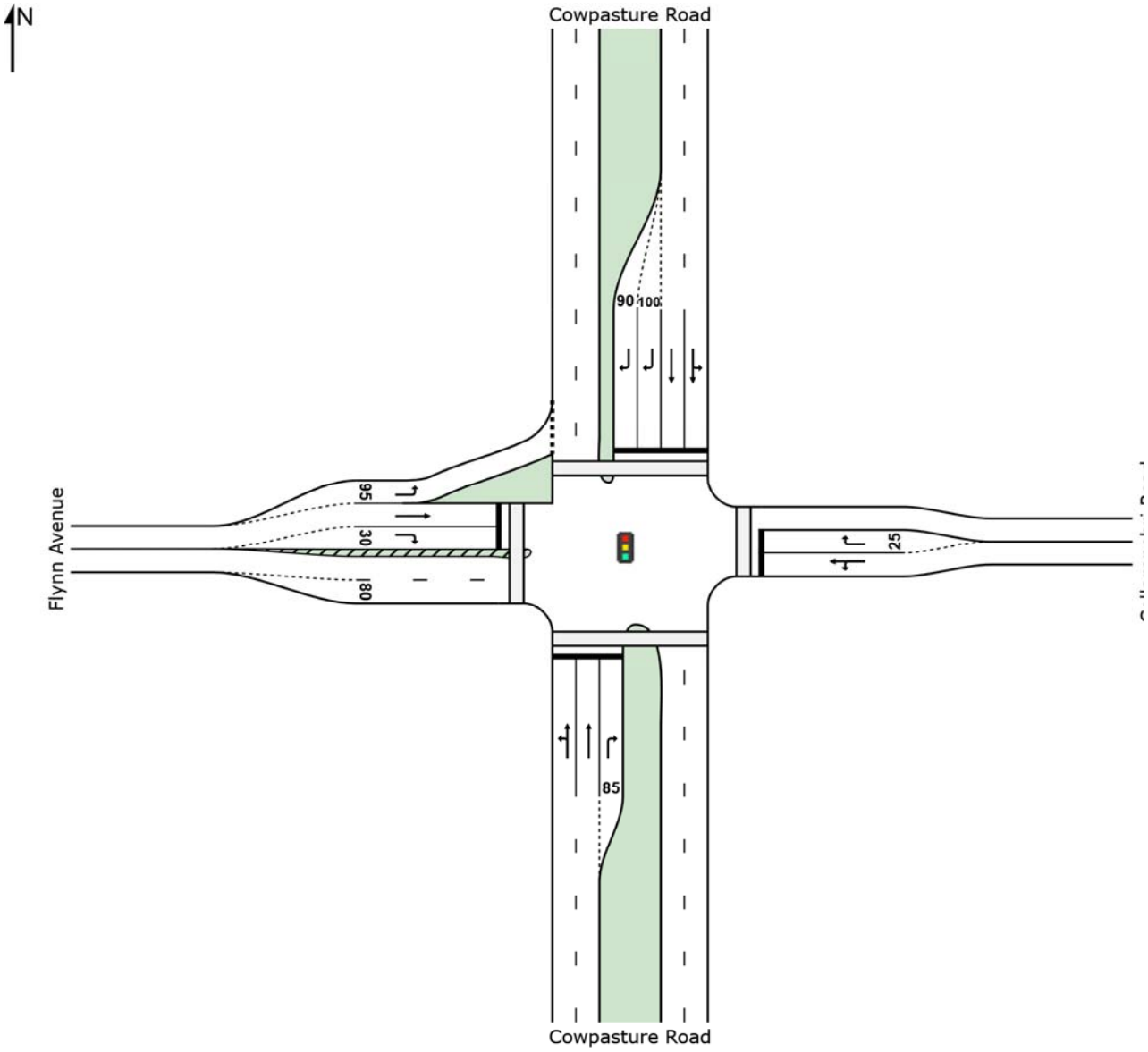
Appendix D-1

Existing Model

SITE LAYOUT

Site: 01 [J01 - Cowpasture Road x Flynn Ave - Existing_AM Peak]

Intersection: Compasture Road x Flynn Avenue x Collarenebri Road
Scenario: Existing
Period: AM Peak
Signals - Fixed Time Coordinated



MOVEMENT SUMMARY

Site: 01 [J01 - Cowpasture Road x Flynn Ave - Existing_AM Peak]

Network: 1 [Network - Existing_AM Peak]

Intersection: Compasture Road x Flynn Avenue x Collarenebri Road
Scenario: Existing
Period: AM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Cowpasture Road													
1	L2	68	4.6	67	4.6	1.010	73.8	LOS F	88.2	652.8	1.00	1.21	16.9
2	T1	2157	6.9	2120	6.9	1.010	67.7	LOS E	88.2	652.8	1.00	1.22	23.6
3	R2	22	9.5	22	9.5	0.099	70.3	LOS E	1.4	10.8	1.00	0.72	20.7
Approach		2247	6.8	2209 N1	6.8	1.010	67.9	LOS E	88.2	652.8	1.00	1.21	23.3
East: Collarenebri Road													
4	L2	37	0.0	37	0.0	0.549	73.9	LOS F	4.4	30.8	1.00	0.76	9.0
5	T1	28	0.0	28	0.0	0.549	69.4	LOS E	4.4	30.8	1.00	0.76	9.0
6	R2	77	2.7	77	2.7	0.379	61.8	LOS E	4.7	33.8	0.97	0.76	18.2
Approach		142	1.5	142	1.5	0.549	66.5	LOS E	4.7	33.8	0.98	0.76	14.1
North: Cowpasture Road													
7	L2	29	0.0	29	0.0	0.555	24.5	LOS B	23.5	179.4	0.66	0.61	35.6
8	T1	1154	11.0	1154	11.0	0.555	18.2	LOS B	23.5	179.4	0.66	0.61	30.1
9	R2	345	3.7	345	3.7	1.032	109.2	LOS F	22.5	162.8	0.98	0.99	7.9
Approach		1528	9.2	1528	9.2	1.032	38.9	LOS C	23.5	180.0	0.74	0.69	18.6
West: Flynn Avenue													
10	L2	667	1.6	667	1.6	1.396	400.9	LOS F	86.3	612.0	1.00	1.97	5.3
11	T1	9	11.1	9	11.1	0.117	70.4	LOS E	0.6	4.8	0.99	0.66	19.0
12	R2	138	3.8	138	3.8	0.776	67.7	LOS E	9.1	65.7	1.00	0.89	14.7
Approach		815	2.1	815	2.1	1.396	340.6	LOS F	86.3	612.0	1.00	1.77	5.7
All Vehicles		4733	6.6	4694 N1	6.7	1.396	105.8	LOS F	88.2	652.8	0.91	1.13	13.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

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	11	61.7	LOS F	0.0	0.0	0.96	0.96
P2	East Full Crossing	11	12.9	LOS B	0.0	0.0	0.44	0.44
P3	North Full Crossing	11	61.7	LOS F	0.0	0.0	0.96	0.96
P4	West Full Crossing	11	14.7	LOS B	0.0	0.0	0.47	0.47
All Pedestrians		42	37.7	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: 01 [J01 - Cowpasture Road x Flynn Ave - Existing_PM Peak]

Network: 1 [Network - Existing_PM Peak]

Intersection: Compasture Road x Flynn Avenue x Collarenebri Road
Scenario: Existing
Period: PM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Cowpasture Road													
1	L2	138	3.8	138	3.8	0.770	31.3	LOS C	34.3	252.4	0.78	0.74	31.6
2	T1	1301	6.3	1301	6.3	0.770	26.3	LOS B	34.4	253.5	0.80	0.74	39.3
3	R2	44	0.0	44	0.0	0.292	71.4	LOS F	2.8	19.9	0.98	0.74	20.5
Approach		1483	5.9	1483	5.9	0.770	28.1	LOS B	34.4	253.5	0.80	0.74	37.8
East: Collarenebri Road													
4	L2	24	0.0	24	0.0	0.244	69.5	LOS E	2.2	15.6	0.97	0.73	9.4
5	T1	11	0.0	11	0.0	0.244	64.9	LOS E	2.2	15.6	0.97	0.73	9.4
6	R2	37	0.0	37	0.0	0.147	56.3	LOS D	2.1	14.7	0.92	0.72	19.4
Approach		72	0.0	72	0.0	0.244	62.0	LOS E	2.2	15.6	0.94	0.72	14.6
North: Cowpasture Road													
7	L2	80	1.3	80	1.3	0.900	38.0	LOS C	64.9	465.7	0.94	0.93	27.6
8	T1	1915	3.0	1915	3.0	0.900	31.6	LOS C	64.9	465.7	0.90	0.89	21.3
9	R2	433	2.9	433	2.9	0.911	74.8	LOS F	22.5	161.3	0.98	0.91	10.9
Approach		2427	2.9	2427	2.9	0.911	39.5	LOS C	64.9	465.7	0.91	0.90	18.5
West: Flynn Avenue													
10	L2	248	3.0	248	3.0	0.298	15.5	LOS B	7.2	51.4	0.52	0.68	39.3
11	T1	5	0.0	5	0.0	0.061	69.4	LOS E	0.3	2.4	0.98	0.63	19.1
12	R2	52	8.2	52	8.2	0.237	57.4	LOS E	3.0	22.4	0.95	0.74	16.5
Approach		305	3.8	305	3.8	0.298	23.5	LOS B	7.2	51.4	0.60	0.69	33.6
All Vehicles		4287	4.0	4287	4.0	0.911	34.8	LOS C	64.9	465.7	0.85	0.83	26.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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

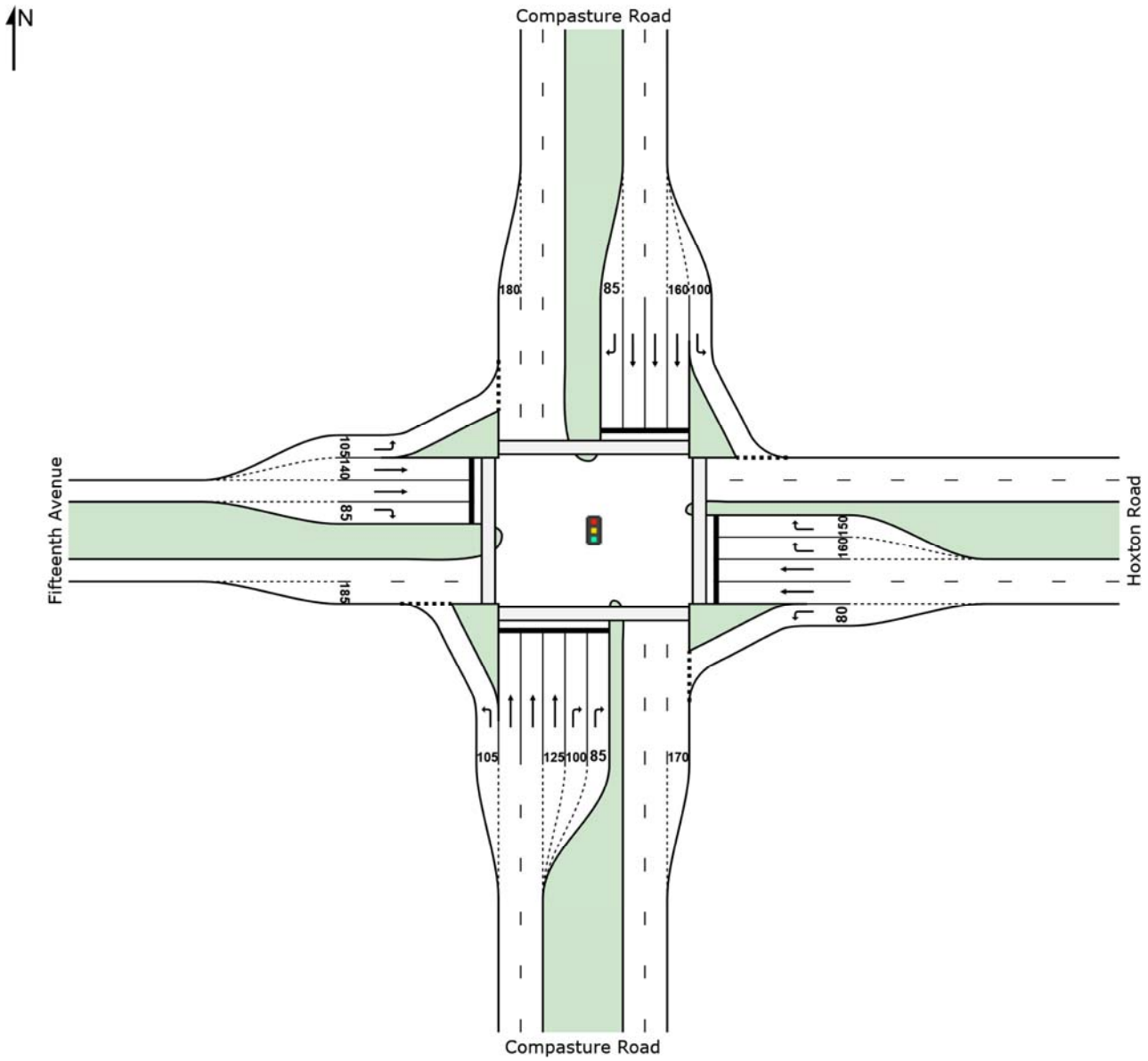
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	11	61.7	LOS F	0.0	0.0	0.96	0.96
P2	East Full Crossing	11	11.6	LOS B	0.0	0.0	0.41	0.41
P3	North Full Crossing	11	61.7	LOS F	0.0	0.0	0.96	0.96
P4	West Full Crossing	11	19.7	LOS B	0.0	0.0	0.54	0.54
All Pedestrians		42	38.7	LOS D			0.72	0.72

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.

SITE LAYOUT

Site: 02 [J02 - Cowpasture Road x Fifteenth Avenue - Existing_AM Peak]

Intersection: Compasture Road x Fifteenth Avenue x Hoxton Park Road
Scenario: Existing
Period: AM Peak
Signals - Fixed Time Isolated



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MOVEMENT SUMMARY

Site: 02 [J02 - Cowpasture Road x Fifteenth Avenue - Existing_AM Peak]

Network: 1 [Network - Existing_AM Peak]

Intersection: Compasture Road x Fifteenth Avenue x Hoxton Park Road
Scenario: Existing
Period: AM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Compasture Road													
1	L2	173	2.4	173	2.4	0.131	11.2	LOS A	3.0	21.6	0.32	0.66	49.4
2	T1	1652	6.6	1652	6.6	1.105	180.2	LOS F	98.2	726.4	1.00	1.60	9.1
3	R2	368	0.9	368	0.9	0.898	84.2	LOS F	13.8	97.4	1.00	0.97	26.0
Approach		2193	5.3	2193	5.3	1.105	150.7	LOS F	98.2	726.4	0.95	1.42	11.9
East: Hoxton Road													
4	L2	197	1.6	197	1.6	0.198	13.0	LOS A	4.2	29.9	0.40	0.69	53.7
5	T1	418	3.8	418	3.8	0.741	63.4	LOS E	13.8	99.4	1.00	0.87	20.0
6	R2	275	11.1	275	11.1	1.078	178.9	LOS F	16.2	124.2	1.00	1.28	8.6
Approach		889	5.6	889	5.6	1.078	87.9	LOS F	16.2	124.2	0.87	0.96	18.1
North: Compasture Road													
7	L2	343	8.3	343	8.3	0.288	14.0	LOS A	7.2	54.0	0.37	0.68	50.1
8	T1	831	11.2	831	11.2	0.376	34.1	LOS C	14.8	113.4	0.87	0.75	40.8
9	R2	151	7.7	151	7.7	0.888	82.1	LOS F	11.0	82.4	1.00	0.93	14.7
Approach		1324	10.0	1324	10.0	0.888	34.4	LOS C	14.8	113.4	0.75	0.75	38.8
West: Fifteenth Avenue													
10	L2	303	5.2	303	5.2	0.476	42.6	LOS D	14.2	104.1	0.82	0.92	32.2
11	T1	529	2.4	529	2.4	0.886	71.9	LOS F	19.4	138.6	1.00	1.01	32.3
12	R2	204	1.5	204	1.5	0.715	66.2	LOS E	13.2	94.0	1.00	0.85	33.3
Approach		1037	3.0	1037	3.0	0.886	62.2	LOS E	19.4	138.6	0.95	0.95	32.5
All Vehicles		5443	6.1	5443	6.1	1.105	95.3	LOS F	98.2	726.4	0.89	1.09	20.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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	21	61.7	LOS F	0.1	0.1	0.96	0.96
P2	East Full Crossing	21	33.5	LOS D	0.1	0.1	0.70	0.70
P3	North Full Crossing	21	61.7	LOS F	0.1	0.1	0.96	0.96
P4	West Full Crossing	21	32.1	LOS D	0.1	0.1	0.69	0.69
All Pedestrians		84	47.2	LOS E			0.83	0.83

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 [J02 - Cowpasture Road x Fifteenth Avenue - Existing_PM Peak]

Network: 1 [Network - Existing_PM Peak]

Intersection: Compasture Road x Fifteenth Avenue x Hoxton Park Road
Scenario: Existing
Period: PM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Compasture Road													
1	L2	165	2.5	165	2.5	0.130	11.7	LOS A	3.1	21.8	0.34	0.67	48.7
2	T1	915	5.8	915	5.8	0.384	28.5	LOS C	13.7	100.3	0.74	0.64	34.1
3	R2	340	1.2	340	1.2	0.567	63.6	LOS E	10.5	74.3	0.97	0.81	30.6
Approach		1420	4.3	1420	4.3	0.567	35.0	LOS C	13.7	100.3	0.75	0.68	33.6
East: Hoxton Road													
4	L2	445	1.7	445	1.7	0.484	18.5	LOS B	16.8	119.3	0.66	0.80	49.5
5	T1	367	4.6	367	4.6	0.770	67.1	LOS E	12.4	90.5	1.00	0.88	19.2
6	R2	372	5.1	372	5.1	0.875	80.9	LOS F	13.6	99.5	1.00	0.95	16.5
Approach		1184	3.6	1184	3.6	0.875	53.1	LOS D	16.8	119.3	0.87	0.87	27.4
North: Compasture Road													
7	L2	260	4.9	260	4.9	0.202	8.2	LOS A	1.5	11.2	0.11	0.62	56.1
8	T1	1526	2.6	1526	2.6	0.632	19.6	LOS B	20.1	143.5	0.63	0.56	49.6
9	R2	202	5.2	202	5.2	0.693	75.5	LOS F	13.6	99.1	1.00	0.84	15.7
Approach		1988	3.1	1988	3.1	0.693	23.8	LOS B	20.1	143.5	0.60	0.60	45.4
West: Fifteenth Avenue													
10	L2	195	8.6	195	8.6	0.187	11.3	LOS A	3.8	28.9	0.37	0.66	48.8
11	T1	318	1.7	318	1.7	0.695	64.2	LOS E	10.5	74.4	1.00	0.84	34.1
12	R2	149	4.9	149	4.9	0.750	72.7	LOS F	10.2	74.1	1.00	0.87	31.7
Approach		662	4.5	662	4.5	0.750	50.6	LOS D	10.5	74.4	0.81	0.79	35.7
All Vehicles		5255	3.7	5255	3.7	0.875	36.8	LOS C	20.1	143.5	0.73	0.71	36.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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

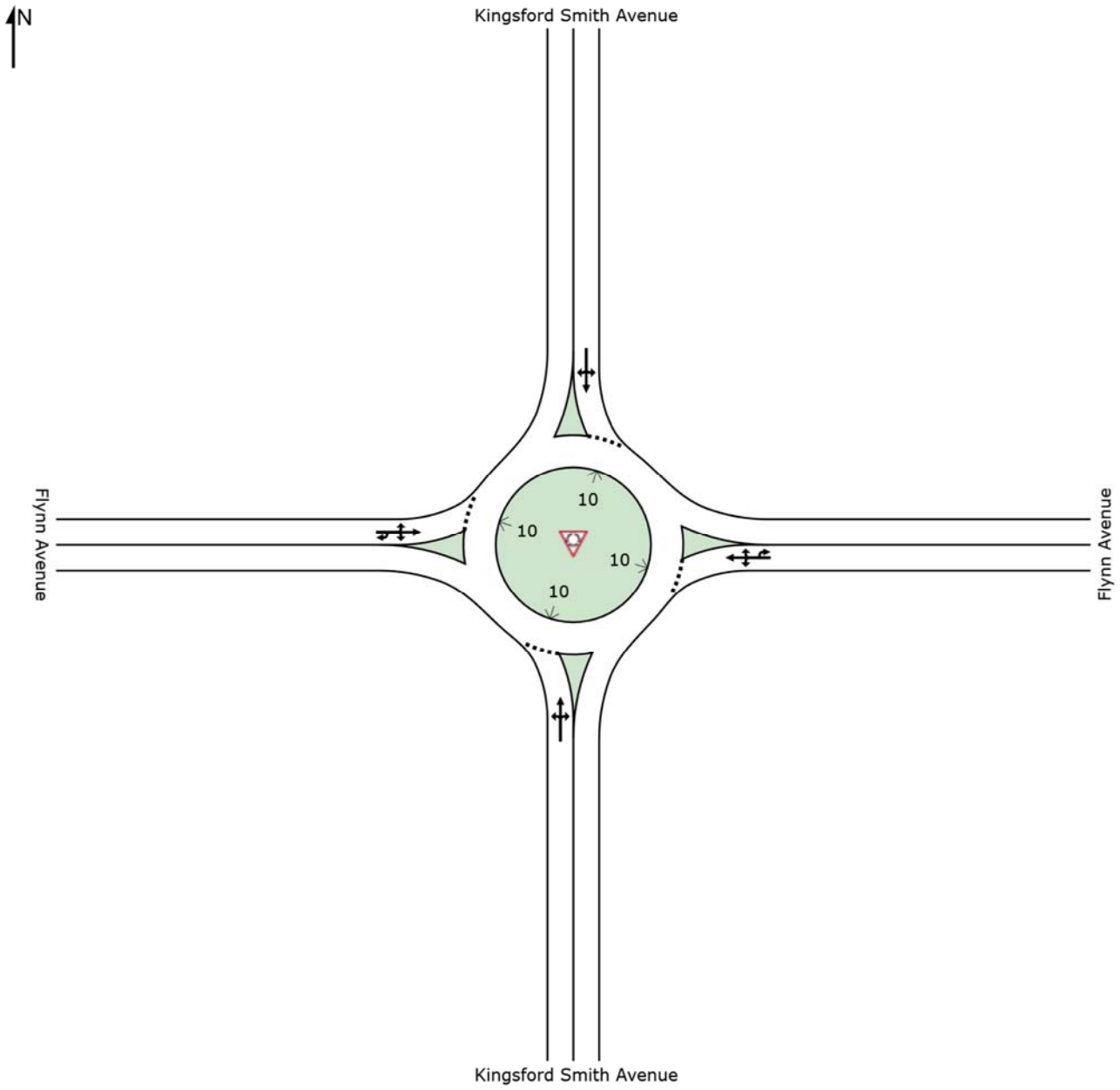
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	21	61.7	LOS F	0.1	0.1	0.96	0.96
P2	East Full Crossing	21	32.1	LOS D	0.1	0.1	0.69	0.69
P3	North Full Crossing	21	61.7	LOS F	0.1	0.1	0.96	0.96
P4	West Full Crossing	21	32.1	LOS D	0.1	0.1	0.69	0.69
All Pedestrians		84	46.9	LOS E			0.82	0.82

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.

SITE LAYOUT

Site: 03 [J03 - Fifteenth Ave x Kingsford Smith Ave - Existing_AM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue x Second Avenue
Scenario: Existing
Period: AM Peak
Roundabout



MOVEMENT SUMMARY

Site: 03 [J03 - Fifteenth Ave x Kingsford Smith Ave - Existing_AM Peak]

Network: 1 [Network - Existing_AM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue x Second Avenue
Scenario: Existing
Period: AM Peak
Roundabout

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: Kingsford Smith Avenue													
1	L2	153	2.1	153	2.1	0.845	27.8	LOS B	13.4	97.0	1.00	1.43	37.5
2	T1	207	0.5	207	0.5	0.845	27.8	LOS B	13.4	97.0	1.00	1.43	28.3
3	R2	115	11.0	115	11.0	0.845	31.8	LOS C	13.4	97.0	1.00	1.43	28.3
Approach		475	3.5	475	3.5	0.845	28.8	LOS C	13.4	97.0	1.00	1.43	32.1
East: Flynn Avenue													
4	L2	86	8.5	86	8.5	0.878	20.3	LOS B	15.9	116.4	0.95	1.23	44.5
5	T1	576	4.9	576	4.9	0.878	20.3	LOS B	15.9	116.4	0.95	1.23	47.4
6	R2	73	7.2	73	7.2	0.878	23.8	LOS B	15.9	116.4	0.95	1.23	42.3
6u	U	1	0.0	1	0.0	0.878	25.1	LOS B	15.9	116.4	0.95	1.23	42.3
Approach		736	5.6	736	5.6	0.878	20.6	LOS B	15.9	116.4	0.95	1.23	46.6
North: Kingsford Smith Avenue													
7	L2	102	2.1	102	2.1	0.660	17.4	LOS B	6.9	49.0	1.00	1.18	27.9
8	T1	147	2.1	147	2.1	0.660	17.5	LOS B	6.9	49.0	1.00	1.18	38.5
9	R2	94	0.0	94	0.0	0.660	20.7	LOS B	6.9	49.0	1.00	1.18	40.9
Approach		343	1.5	343	1.5	0.660	18.3	LOS B	6.9	49.0	1.00	1.18	37.2
West: Flynn Avenue													
10	L2	22	4.8	22	4.8	0.811	14.8	LOS B	13.0	94.2	1.00	1.08	39.8
11	T1	460	5.9	460	5.9	0.811	15.1	LOS B	13.0	94.2	1.00	1.08	39.8
12	R2	220	1.4	220	1.4	0.811	18.2	LOS B	13.0	94.2	1.00	1.08	44.3
12u	U	5	0.0	5	0.0	0.811	19.8	LOS B	13.0	94.2	1.00	1.08	47.5
Approach		707	4.5	707	4.5	0.811	16.0	LOS B	13.0	94.2	1.00	1.08	41.9
All Vehicles		2261	4.2	2261	4.2	0.878	20.6	LOS B	15.9	116.4	0.98	1.22	41.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 04 [J03 - Fifteenth Ave x Kingsford Smith Ave - Existing_PM Peak]

Network: 1 [Network - Existing_PM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue x Second Avenue
Scenario: Existing
Period: PM Peak
Roundabout

Movement Performance - Vehicles

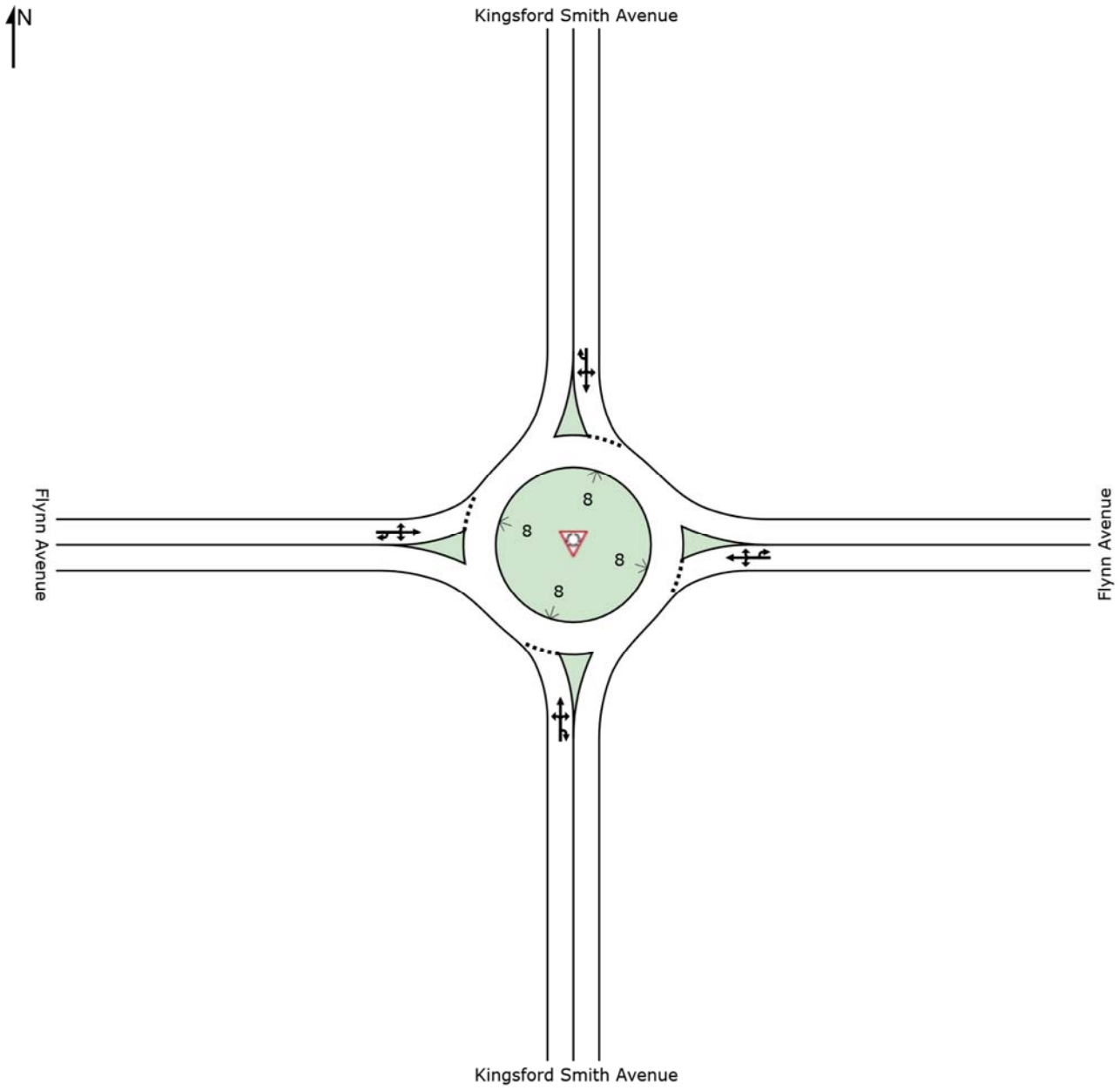
Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Kingsford Smith Avenue													
1	L2	133	4.0	133	4.0	0.407	8.1	LOS A	2.9	21.5	0.79	0.82	46.7
2	T1	63	8.3	63	8.3	0.407	8.3	LOS A	2.9	21.5	0.79	0.82	40.1
3	R2	107	8.8	107	8.8	0.407	11.6	LOS A	2.9	21.5	0.79	0.82	40.1
Approach		303	6.6	303	6.6	0.407	9.4	LOS A	2.9	21.5	0.79	0.82	43.8
East: Flynn Avenue													
4	L2	59	7.1	59	7.1	0.545	6.7	LOS A	4.0	29.3	0.57	0.64	50.5
5	T1	445	4.5	445	4.5	0.545	6.8	LOS A	4.0	29.3	0.57	0.64	54.2
6	R2	75	4.2	75	4.2	0.545	10.1	LOS A	4.0	29.3	0.57	0.64	51.7
6u	U	1	0.0	1	0.0	0.545	11.7	LOS A	4.0	29.3	0.57	0.64	51.7
Approach		580	4.7	580	4.7	0.545	7.2	LOS A	4.0	29.3	0.57	0.64	53.6
North: Kingsford Smith Avenue													
7	L2	53	0.0	53	0.0	0.201	8.7	LOS A	1.3	9.2	0.80	0.82	34.9
8	T1	27	11.5	27	11.5	0.201	9.2	LOS A	1.3	9.2	0.80	0.82	43.1
9	R2	43	0.0	43	0.0	0.201	12.0	LOS A	1.3	9.2	0.80	0.82	46.2
Approach		123	2.6	123	2.6	0.201	9.9	LOS A	1.3	9.2	0.80	0.82	42.2
West: Flynn Avenue													
10	L2	75	1.4	75	1.4	0.655	7.6	LOS A	6.8	49.7	0.75	0.72	46.5
11	T1	454	5.6	454	5.6	0.655	8.0	LOS A	6.8	49.7	0.75	0.72	46.5
12	R2	161	2.6	161	2.6	0.655	11.2	LOS A	6.8	49.7	0.75	0.72	48.3
12u	U	5	0.0	5	0.0	0.655	12.8	LOS A	6.8	49.7	0.75	0.72	52.1
Approach		695	4.4	695	4.4	0.655	8.7	LOS A	6.8	49.7	0.75	0.72	47.2
All Vehicles		1701	4.8	1701	4.8	0.655	8.4	LOS A	6.8	49.7	0.70	0.72	49.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 04 [J04 - Flynn Ave x Kingsford Smith Ave - Existing_AM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue
Scenario: Existing
Period: AM Peak
Roundabout



MOVEMENT SUMMARY

Site: 04 [J04 - Flynn Ave x Kingsford Smith Ave - Existing_AM Peak]

Network: 1 [Network - Existing_AM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue
Scenario: Existing
Period: AM Peak
Roundabout

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: Kingsford Smith Avenue													
1	L2	266	0.4	266	0.4	0.620	7.9	LOS A	6.2	43.3	0.83	0.87	36.1
2	T1	263	0.0	263	0.0	0.620	7.5	LOS A	6.2	43.3	0.83	0.87	36.8
3	R2	9	11.1	9	11.1	0.620	10.9	LOS A	6.2	43.3	0.83	0.87	31.4
3u	U	7	0.0	7	0.0	0.620	11.8	LOS A	6.2	43.3	0.83	0.87	31.4
Approach		546	0.4	546	0.4	0.620	7.8	LOS A	6.2	43.3	0.83	0.87	36.4
East: Flynn Avenue													
4	L2	43	0.0	42	0.0	0.500	8.6	LOS A	4.0	28.1	0.82	0.91	33.7
5	T1	183	1.1	179	1.1	0.500	8.3	LOS A	4.0	28.1	0.82	0.91	36.8
6	R2	153	2.8	150	2.8	0.500	11.4	LOS A	4.0	28.1	0.82	0.91	36.8
6u	U	2	0.0	2	0.0	0.500	12.5	LOS A	4.0	28.1	0.82	0.91	33.7
Approach		381	1.7	373 N1	1.7	0.500	9.6	LOS A	4.0	28.1	0.82	0.91	36.6
North: Kingsford Smith Avenue													
7	L2	92	3.4	92	3.4	0.500	5.5	LOS A	3.8	27.4	0.71	0.69	35.4
8	T1	305	2.4	305	2.4	0.500	5.1	LOS A	3.8	27.4	0.71	0.69	35.4
9	R2	64	8.2	64	8.2	0.500	8.3	LOS A	3.8	27.4	0.71	0.69	37.9
9u	U	2	0.0	2	0.0	0.500	9.3	LOS A	3.8	27.4	0.71	0.69	38.4
Approach		463	3.4	463	3.4	0.500	5.6	LOS A	3.8	27.4	0.71	0.69	36.0
West: Flynn Avenue													
10	L2	68	15.4	68	15.4	0.453	6.6	LOS A	3.2	23.2	0.73	0.78	36.8
11	T1	103	2.0	103	2.0	0.453	5.8	LOS A	3.2	23.2	0.73	0.78	34.4
12	R2	204	4.1	204	4.1	0.453	8.9	LOS A	3.2	23.2	0.73	0.78	34.4
12u	U	1	0.0	1	0.0	0.453	10.1	LOS A	3.2	23.2	0.73	0.78	37.8
Approach		377	5.6	377	5.6	0.453	7.7	LOS A	3.2	23.2	0.73	0.78	35.1
All Vehicles		1767	2.6	1760 N1	2.6	0.620	7.6	LOS A	6.2	43.3	0.77	0.81	36.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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

MOVEMENT SUMMARY

Site: 03 [J04 - Flynn Ave x Kingsford Smith Ave - Existing_PM Peak]

Network: 1 [Network - Existing_PM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue
Scenario: Existing
Period: PM Peak
Roundabout

Movement Performance - Vehicles

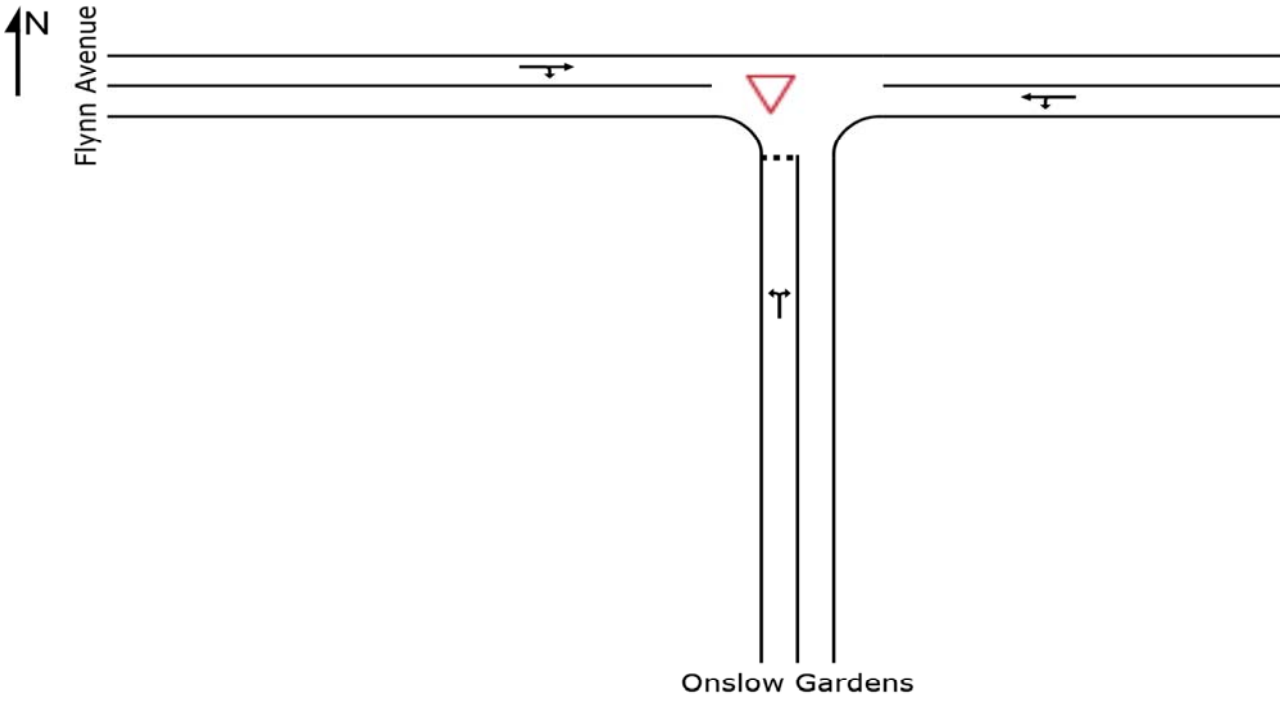
Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kingsford Smith Avenue													
1	L2	89	2.4	89	2.4	0.213	4.8	LOS A	1.2	8.8	0.38	0.51	45.0
2	T1	142	4.4	142	4.4	0.213	4.7	LOS A	1.2	8.8	0.38	0.51	45.8
3	R2	3	0.0	3	0.0	0.213	7.7	LOS A	1.2	8.8	0.38	0.51	40.3
3u	U	1	0.0	1	0.0	0.213	9.2	LOS A	1.2	8.8	0.38	0.51	40.3
Approach		236	3.6	236	3.6	0.213	4.8	LOS A	1.2	8.8	0.38	0.51	45.5
East: Flynn Avenue													
4	L2	3	0.0	3	0.0	0.119	5.9	LOS A	0.6	4.5	0.52	0.64	42.3
5	T1	55	1.9	55	1.9	0.119	5.8	LOS A	0.6	4.5	0.52	0.64	45.7
6	R2	51	4.2	51	4.2	0.119	9.0	LOS A	0.6	4.5	0.52	0.64	45.5
6u	U	1	0.0	1	0.0	0.119	10.3	LOS A	0.6	4.5	0.52	0.64	42.3
Approach		109	2.9	109	2.9	0.119	7.3	LOS A	0.6	4.5	0.52	0.64	45.5
North: Kingsford Smith Avenue													
7	L2	35	0.0	35	0.0	0.237	5.4	LOS A	1.4	10.1	0.49	0.60	42.6
8	T1	151	2.8	151	2.8	0.237	5.3	LOS A	1.4	10.1	0.49	0.60	42.6
9	R2	49	8.5	49	8.5	0.237	8.5	LOS A	1.4	10.1	0.49	0.60	45.7
9u	U	3	0.0	3	0.0	0.237	9.8	LOS A	1.4	10.1	0.49	0.60	46.3
Approach		238	3.5	238	3.5	0.237	6.0	LOS A	1.4	10.1	0.49	0.60	43.7
West: Flynn Avenue													
10	L2	107	8.8	107	8.8	0.326	5.4	LOS A	2.0	14.7	0.46	0.62	45.0
11	T1	78	4.1	78	4.1	0.326	5.1	LOS A	2.0	14.7	0.46	0.62	42.2
12	R2	166	0.0	166	0.0	0.326	8.1	LOS A	2.0	14.7	0.46	0.62	42.2
12u	U	1	0.0	1	0.0	0.326	9.6	LOS A	2.0	14.7	0.46	0.62	46.1
Approach		353	3.6	353	3.6	0.326	6.6	LOS A	2.0	14.7	0.46	0.62	43.4
All Vehicles		936	3.5	936	3.5	0.326	6.1	LOS A	2.0	14.7	0.46	0.59	44.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 05 [J05 - Flynn Ave x Onslow Gardens - Existing_AM Peak]

Intersection: Flynn Avenue x Onslow Gardens
Scenario: Existing
Period: AM Peak
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 05 [J05 - Flynn Ave x Onslow Gardens - Existing_AM Peak]

Network: 1 [Network - Existing_AM Peak]

Intersection: Flynn Avenue x Onslow Gardens
Scenario: Existing
Period: AM Peak
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
South: Onslow Gardens													
1	L2	5	0.0	5	0.0	0.008	5.9	LOS A	0.0	0.2	0.43	0.55	32.1
3	R2	1	0.0	1	0.0	0.008	10.1	LOS A	0.0	0.2	0.43	0.55	32.1
Approach		6	0.0	6	0.0	0.008	6.6	LOS A	0.0	0.2	0.43	0.55	32.1
East: Flynn Avenue													
4	L2	3	0.0	3	0.0	0.208	4.6	LOS A	0.0	0.0	0.00	0.00	49.0
5	T1	406	1.8	398	1.8	0.208	0.0	LOS A	0.0	0.0	0.00	0.00	49.9
Approach		409	1.8	401 N1	1.8	0.208	0.1	NA	0.0	0.0	0.00	0.00	49.9
West: Flynn Avenue													
11	T1	583	2.0	583	2.0	0.617	0.2	LOS A	0.3	2.0	0.03	0.01	49.6
12	R2	11	0.0	11	0.0	0.617	6.9	LOS A	0.3	2.0	0.03	0.01	48.3
Approach		594	2.0	594	2.0	0.617	0.3	NA	0.3	2.0	0.03	0.01	49.6
All Vehicles		1009	1.9	1001 N1	1.9	0.617	0.2	NA	0.3	2.0	0.02	0.01	49.6

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.
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.

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

MOVEMENT SUMMARY

Site: 05 [J05 - Flynn Ave x Onslow Gardens - Existing_PM Peak]

Network: 1 [Network - Existing_PM Peak]

Intersection: Flynn Avenue x Onslow Gardens
Scenario: Existing
Period: PM Peak
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
South: Onslow Gardens													
1	L2	1	0.0	1	0.0	0.002	5.6	LOS A	0.0	0.1	0.39	0.53	32.9
3	R2	1	0.0	1	0.0	0.002	6.4	LOS A	0.0	0.1	0.39	0.53	32.9
Approach		2	0.0	2	0.0	0.002	6.0	LOS A	0.0	0.1	0.39	0.53	32.9
East: Flynn Avenue													
4	L2	4	0.0	4	0.0	0.178	4.6	LOS A	0.0	0.0	0.00	0.01	49.0
5	T1	338	1.9	338	1.9	0.178	0.0	LOS A	0.0	0.0	0.00	0.01	49.9
Approach		342	1.8	342	1.8	0.178	0.1	NA	0.0	0.0	0.00	0.01	49.9
West: Flynn Avenue													
11	T1	177	1.8	177	1.8	0.093	0.0	LOS A	0.0	0.1	0.01	0.00	49.9
12	R2	1	0.0	1	0.0	0.093	5.9	LOS A	0.0	0.1	0.01	0.00	48.6
Approach		178	1.8	178	1.8	0.093	0.0	NA	0.0	0.1	0.01	0.00	49.9
All Vehicles		522	1.8	522	1.8	0.178	0.1	NA	0.0	0.1	0.00	0.01	49.8

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

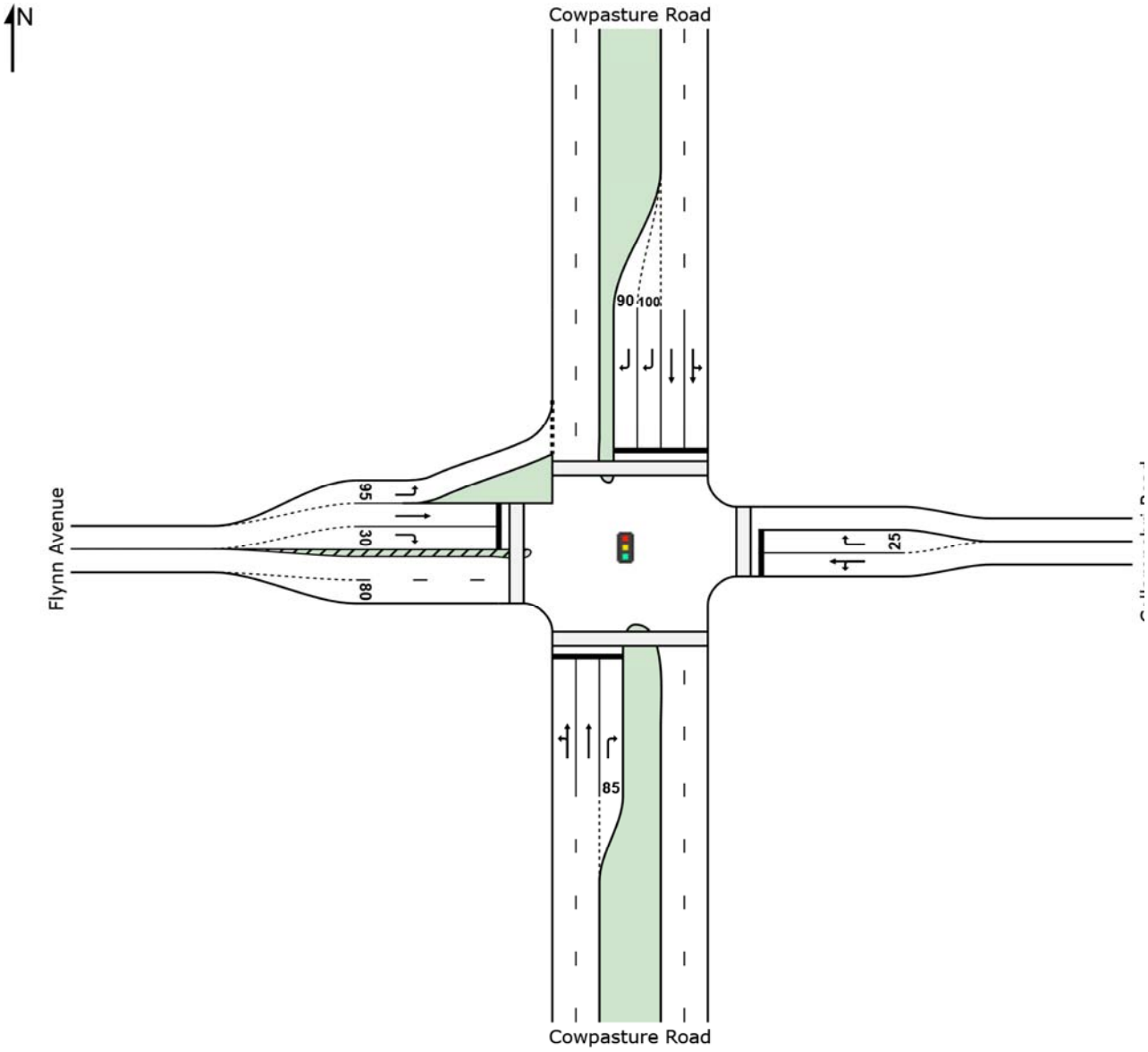
Appendix D-2

Existing + Development

SITE LAYOUT

Site: 01 [J01 - Cowpasture Road x Flynn Ave - EX + DEV_AM Peak]

Intersection: Compasture Road x Flynn Avenue x Collarenebri Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Signals - Fixed Time Coordinated



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Project: T:\Synergy\Projects\16\16.068\Modelling\16.068m08 TRAFFIX 45-65 Hall Circuit, Middleton Grange_with DEV (J05 GW).sip7

MOVEMENT SUMMARY

Site: 01 [J01 - Cowpasture Road x Flynn Ave - EX + DEV_AM Peak]

Network: 1 [Network - EX + DEV_AM Peak]

Intersection: Compasture Road x Flynn Avenue x Collarenebri Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Cowpasture Road													
1	L2	113	2.8	108	2.8	1.090	139.4	LOS F	88.4	652.8	1.00	1.50	9.7
2	T1	2157	6.9	2076	6.9	1.090	133.3	LOS F	88.4	652.8	1.00	1.51	14.3
3	R2	20	10.5	19	10.5	0.088	70.2	LOS E	1.3	9.6	1.00	0.72	20.7
Approach		2289	6.7	2203[N1]	6.7	1.090	133.0	LOS F	88.4	652.8	1.00	1.51	14.2
East: Collarenebri Road													
4	L2	37	0.0	37	0.0	0.798	79.8	LOS F	6.0	42.2	1.00	0.90	8.5
5	T1	47	0.0	47	0.0	0.798	75.3	LOS F	6.0	42.2	1.00	0.90	8.5
6	R2	77	2.7	77	2.7	0.272	54.6	LOS D	4.3	31.1	0.92	0.75	19.7
Approach		161	1.3	161	1.3	0.798	66.5	LOS E	6.0	42.2	0.96	0.83	13.6
North: Cowpasture Road													
7	L2	29	0.0	29	0.0	0.637	29.4	LOS C	28.5	217.4	0.76	0.69	32.3
8	T1	1154	11.0	1154	11.0	0.637	22.4	LOS B	28.5	217.4	0.74	0.67	26.7
9	R2	368	3.4	368	3.4	1.099	144.2	LOS F	28.8	207.8	0.99	1.07	6.1
Approach		1552	9.0	1552	9.0	1.099	51.4	LOS D	28.8	217.4	0.80	0.76	15.0
West: Flynn Avenue													
10	L2	740	1.4	740	1.4	1.485	484.3	LOS F	86.4	612.0	1.00	2.16	4.4
11	T1	12	9.1	12	9.1	0.141	70.6	LOS F	0.8	5.8	0.99	0.67	19.0
12	R2	232	2.3	232	2.3	0.901	72.9	LOS F	16.4	116.7	1.00	1.00	14.0
Approach		983	1.7	983	1.7	1.485	382.5	LOS F	86.4	612.0	1.00	1.87	5.0
All Vehicles		4985	6.3	4899[N1]	6.4	1.485	155.0	LOS F	88.4	652.8	0.93	1.32	10.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

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	11	61.7	LOS F	0.0	0.0	0.96	0.96
P2	East Full Crossing	11	15.7	LOS B	0.0	0.0	0.48	0.48
P3	North Full Crossing	11	61.7	LOS F	0.0	0.0	0.96	0.96
P4	West Full Crossing	11	17.6	LOS B	0.0	0.0	0.51	0.51
All Pedestrians		42	39.2	LOS D			0.73	0.73

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 [J01 - Cowpasture Road x Flynn Ave - EX + DEV_PM Peak]

Network: 1 [Network - EX + DEV_PM Peak]

Intersection: Compasture Road x Flynn Avenue x Collarenebri Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Cowpasture Road													
1	L2	232	2.3	232	2.3	0.880	40.6	LOS C	46.1	337.2	0.91	0.89	26.1
2	T1	1301	6.3	1301	6.3	0.880	33.5	LOS C	46.1	337.2	0.88	0.86	35.1
3	R2	39	0.0	39	0.0	0.283	76.4	LOS F	2.6	18.4	1.00	0.74	19.6
Approach		1572	5.6	1572	5.6	0.880	35.6	LOS C	46.1	337.2	0.89	0.86	33.3
East: Collarenebri Road													
4	L2	24	0.0	24	0.0	0.879	81.5	LOS F	9.7	68.2	1.00	1.00	8.5
5	T1	108	0.0	108	0.0	0.879	76.9	LOS F	9.7	68.2	1.00	1.00	8.5
6	R2	37	0.0	37	0.0	0.223	58.4	LOS E	2.2	15.1	0.96	0.72	19.0
Approach		169	0.0	169	0.0	0.879	73.5	LOS F	9.7	68.2	0.99	0.94	10.7
North: Cowpasture Road													
7	L2	80	1.3	80	1.3	0.896	36.2	LOS C	63.9	458.6	0.94	0.92	28.5
8	T1	1915	3.0	1915	3.0	0.896	29.8	LOS C	63.9	458.6	0.88	0.87	22.1
9	R2	506	2.5	506	2.5	0.880	66.1	LOS E	24.2	172.7	0.96	0.88	12.1
Approach		2501	2.9	2501	2.9	0.896	37.3	LOS C	63.9	458.6	0.90	0.88	19.2
West: Flynn Avenue													
10	L2	269	2.7	269	2.7	0.317	18.2	LOS B	8.7	62.4	0.57	0.70	37.7
11	T1	103	0.0	103	0.0	0.649	68.0	LOS E	6.9	48.5	1.00	0.81	19.4
12	R2	89	4.7	89	4.7	0.593	61.3	LOS E	5.5	40.1	1.00	0.78	15.8
Approach		462	2.5	462	2.5	0.649	37.6	LOS C	8.7	62.4	0.75	0.74	27.0
All Vehicles		4704	3.6	4704	3.6	0.896	38.1	LOS C	63.9	458.6	0.88	0.86	25.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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

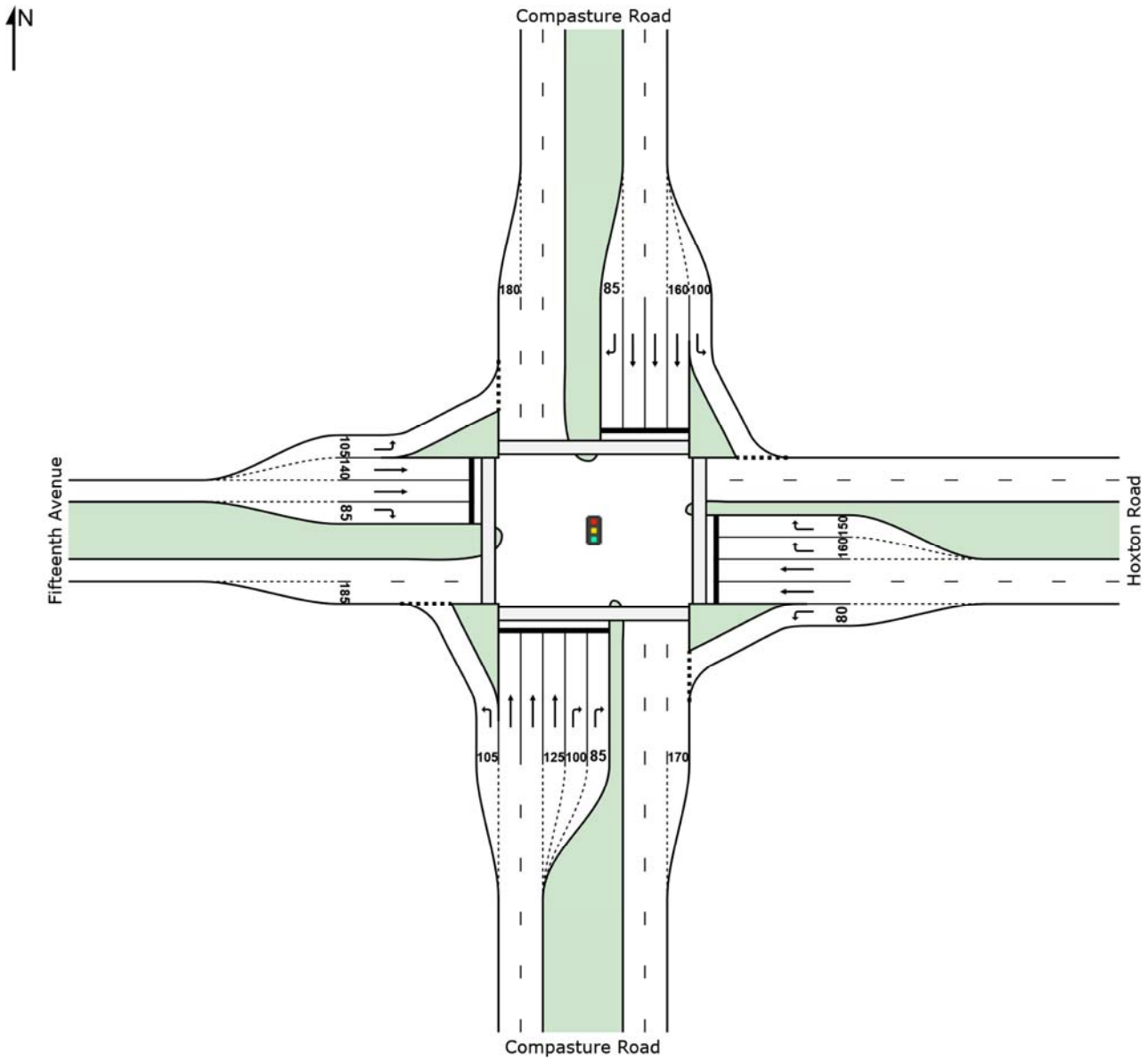
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	11	61.7	LOS F	0.0	0.0	0.96	0.96
P2	East Full Crossing	11	11.2	LOS B	0.0	0.0	0.41	0.41
P3	North Full Crossing	11	61.7	LOS F	0.0	0.0	0.96	0.96
P4	West Full Crossing	11	22.5	LOS C	0.0	0.0	0.58	0.58
All Pedestrians		42	39.3	LOS D			0.72	0.72

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.

SITE LAYOUT

Site: 02 [J02 - Cowpasture Road x Fifteenth Avenue - EX + DEV_AM Peak]

Intersection: Compasture Road x Fifteenth Avenue x Hoxton Park Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Signals - Fixed Time Isolated



Organisation: TRAFFIX | Created: Wednesday, 28 September 2016 4:27:01 PM
Project: T:\Synergy\Projects\16\16.068\Modelling\16.068m08 TRAFFIX 45-65 Hall Circuit, Middleton Grange_with DEV (J05 GW).sip7

MOVEMENT SUMMARY

Site: 02 [J02 - Cowpasture Road x Fifteenth Avenue - EX + DEV_AM Peak]

Network: 1 [Network - EX + DEV_AM Peak]

Intersection: Compasture Road x Fifteenth Avenue x Hoxton Park Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Compasture Road													
1	L2	174	2.4	174	2.4	0.132	11.2	LOS A	3.0	21.7	0.32	0.66	49.4
2	T1	1667	6.5	1667	6.5	1.115	188.4	LOS F	101.4	749.6	1.00	1.63	8.8
3	R2	368	0.9	368	0.9	1.123	204.4	LOS F	22.6	159.5	1.00	1.32	13.8
Approach		2209	5.2	2209	5.2	1.123	177.1	LOS F	101.4	749.6	0.95	1.50	10.4
East: Hoxton Road													
4	L2	197	1.6	197	1.6	0.203	13.4	LOS A	4.3	30.8	0.41	0.70	53.4
5	T1	421	3.8	421	3.8	0.711	61.5	LOS E	13.6	98.3	1.00	0.85	20.4
6	R2	303	10.1	303	10.1	1.125	215.5	LOS F	19.8	150.7	1.00	1.37	7.3
Approach		921	5.4	921	5.4	1.125	101.9	LOS F	19.8	150.7	0.87	0.99	16.1
North: Compasture Road													
7	L2	414	6.9	414	6.9	0.338	14.3	LOS A	8.8	64.9	0.38	0.70	50.2
8	T1	854	10.9	854	10.9	0.373	32.8	LOS C	14.9	114.4	0.86	0.74	41.5
9	R2	151	7.7	151	7.7	0.962	100.3	LOS F	12.5	92.9	1.00	1.05	12.5
Approach		1418	9.4	1418	9.4	0.962	34.6	LOS C	14.9	114.4	0.73	0.76	38.8
West: Fifteenth Avenue													
10	L2	303	5.2	303	5.2	0.486	43.5	LOS D	14.4	105.2	0.83	0.92	31.9
11	T1	536	2.4	535	2.4	0.896	73.4	LOS F	19.9	142.0	1.00	1.03	32.0
12	R2	206	1.5	206	1.5	0.721	66.5	LOS E	13.4	95.2	1.00	0.86	33.3
Approach		1045	3.0	1045	3.0	0.896	63.3	LOS E	19.9	142.0	0.95	0.96	32.3
All Vehicles		5594	5.9	5593 N1	5.9	1.125	107.3	LOS F	101.4	749.6	0.88	1.13	18.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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.

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	21	61.7	LOS F	0.1	0.1	0.96	0.96
P2	East Full Crossing	21	32.1	LOS D	0.1	0.1	0.69	0.69
P3	North Full Crossing	21	61.7	LOS F	0.1	0.1	0.96	0.96
P4	West Full Crossing	21	32.1	LOS D	0.1	0.1	0.69	0.69
All Pedestrians		84	46.9	LOS E			0.82	0.82

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 [J02 - Cowpasture Road x Fifteenth Avenue - EX + DEV_PM Peak]

Network: 1 [Network - EX + DEV_PM Peak]

Intersection: Compasture Road x Fifteenth Avenue x Hoxton Park Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Compasture Road													
1	L2	167	2.5	167	2.5	0.130	11.7	LOS A	3.1	22.1	0.34	0.67	48.7
2	T1	938	5.6	938	5.6	0.387	27.9	LOS B	13.9	101.8	0.73	0.63	34.5
3	R2	340	1.2	340	1.2	0.623	65.9	LOS E	10.7	75.9	0.99	0.81	30.0
Approach		1445	4.2	1445	4.2	0.623	35.0	LOS C	13.9	101.8	0.75	0.68	33.6
East: Hoxton Road													
4	L2	445	1.7	445	1.7	0.534	29.0	LOS C	19.3	136.8	0.77	0.86	43.3
5	T1	374	4.5	374	4.5	0.740	65.1	LOS E	12.4	90.3	1.00	0.87	19.6
6	R2	442	4.3	442	4.3	0.920	86.7	LOS F	17.1	124.2	1.00	0.99	15.6
Approach		1261	3.4	1261	3.4	0.920	59.9	LOS E	19.3	136.8	0.92	0.91	25.2
North: Compasture Road													
7	L2	285	4.4	285	4.4	0.219	11.9	LOS A	6.6	47.9	0.43	0.70	52.7
8	T1	1539	2.5	1539	2.5	0.706	40.3	LOS C	34.8	248.8	0.97	0.86	37.9
9	R2	200	5.3	200	5.3	0.754	69.1	LOS E	13.1	95.9	1.00	0.86	16.8
Approach		2024	3.1	2024	3.1	0.754	39.1	LOS C	34.8	248.8	0.90	0.84	37.2
West: Fifteenth Avenue													
10	L2	195	8.6	195	8.6	0.195	12.4	LOS A	4.2	31.5	0.40	0.67	48.0
11	T1	320	1.6	320	1.6	0.746	66.5	LOS E	10.8	76.7	1.00	0.87	33.6
12	R2	149	4.9	149	4.9	0.750	72.7	LOS F	10.2	74.1	1.00	0.87	31.7
Approach		664	4.4	664	4.4	0.750	52.1	LOS D	10.8	76.7	0.82	0.81	35.2
All Vehicles		5395	3.6	5395	3.6	0.920	44.5	LOS D	34.8	248.8	0.85	0.81	33.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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

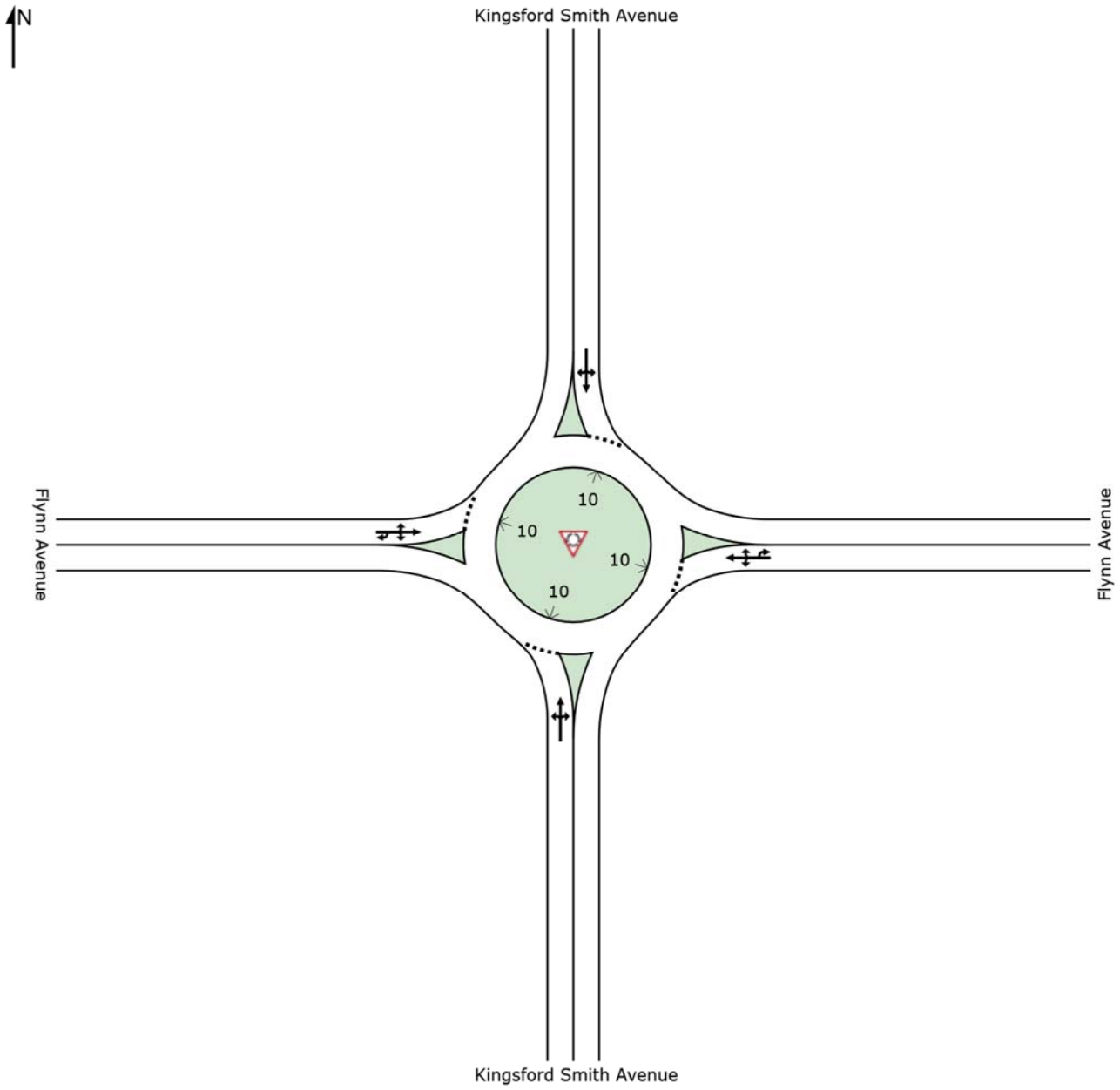
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	21	61.7	LOS F	0.1	0.1	0.96	0.96
P2	East Full Crossing	21	31.4	LOS D	0.1	0.1	0.68	0.68
P3	North Full Crossing	21	61.7	LOS F	0.1	0.1	0.96	0.96
P4	West Full Crossing	21	31.4	LOS D	0.1	0.1	0.68	0.68
All Pedestrians		84	46.5	LOS E			0.82	0.82

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.

SITE LAYOUT

Site: 03 [J03 - Fifteenth Ave x Kingsford Smith Ave - EX + DEV_AM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue x Second Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Roundabout



MOVEMENT SUMMARY

Site: 03 [J03 - Fifteenth Ave x Kingsford Smith Ave - EX + DEV_AM Peak]

Network: 1 [Network - EX + DEV_AM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue x Second Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Roundabout

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: Kingsford Smith Avenue													
1	L2	153	2.1	153	2.1	0.907	39.3	LOS C	17.6	127.0	1.00	1.64	33.6
2	T1	217	0.5	217	0.5	0.907	39.2	LOS C	17.6	127.0	1.00	1.64	24.2
3	R2	115	11.0	115	11.0	0.907	43.2	LOS D	17.6	127.0	1.00	1.64	24.2
Approach		484	3.5	484	3.5	0.907	40.2	LOS C	17.6	127.0	1.00	1.64	27.9
East: Flynn Avenue													
4	L2	86	8.5	86	8.5	0.917	25.9	LOS B	19.7	144.4	0.99	1.41	42.3
5	T1	576	4.9	576	4.9	0.917	26.0	LOS B	19.7	144.4	0.99	1.41	44.8
6	R2	77	6.8	77	6.8	0.917	29.4	LOS C	19.7	144.4	0.99	1.41	39.2
6u	U	1	0.0	1	0.0	0.917	30.7	LOS C	19.7	144.4	0.99	1.41	39.2
Approach		740	5.5	740	5.5	0.917	26.3	LOS B	19.7	144.4	0.99	1.41	44.1
North: Kingsford Smith Avenue													
7	L2	111	1.9	110	1.9	0.734	20.9	LOS B	8.7	61.7	1.00	1.25	25.7
8	T1	148	2.1	148	2.1	0.734	21.0	LOS B	8.7	61.7	1.00	1.25	36.7
9	R2	125	0.0	124	0.0	0.734	24.1	LOS B	8.7	61.7	1.00	1.25	38.9
Approach		384	1.4	382[N1]	1.4	0.734	22.0	LOS B	8.7	61.7	1.00	1.25	35.4
West: Flynn Avenue													
10	L2	47	2.2	47	2.2	0.851	17.2	LOS B	15.5	112.2	1.00	1.16	37.8
11	T1	460	5.9	460	5.9	0.851	17.6	LOS B	15.5	112.2	1.00	1.16	37.8
12	R2	220	1.4	220	1.4	0.851	20.7	LOS B	15.5	112.2	1.00	1.16	43.0
12u	U	5	0.0	5	0.0	0.851	22.4	LOS B	15.5	112.2	1.00	1.16	46.0
Approach		733	4.3	733	4.3	0.851	18.6	LOS B	15.5	112.2	1.00	1.16	40.1
All Vehicles		2341	4.0	2338[N1]	4.1	0.917	26.0	LOS B	19.7	144.4	1.00	1.35	38.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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

MOVEMENT SUMMARY

Site: 03 [J03 - Fifteenth Ave x Kingsford Smith Ave - EX + DEV_PM Peak]

Network: 1 [Network - EX + DEV_PM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue x Second Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Roundabout

Movement Performance - Vehicles

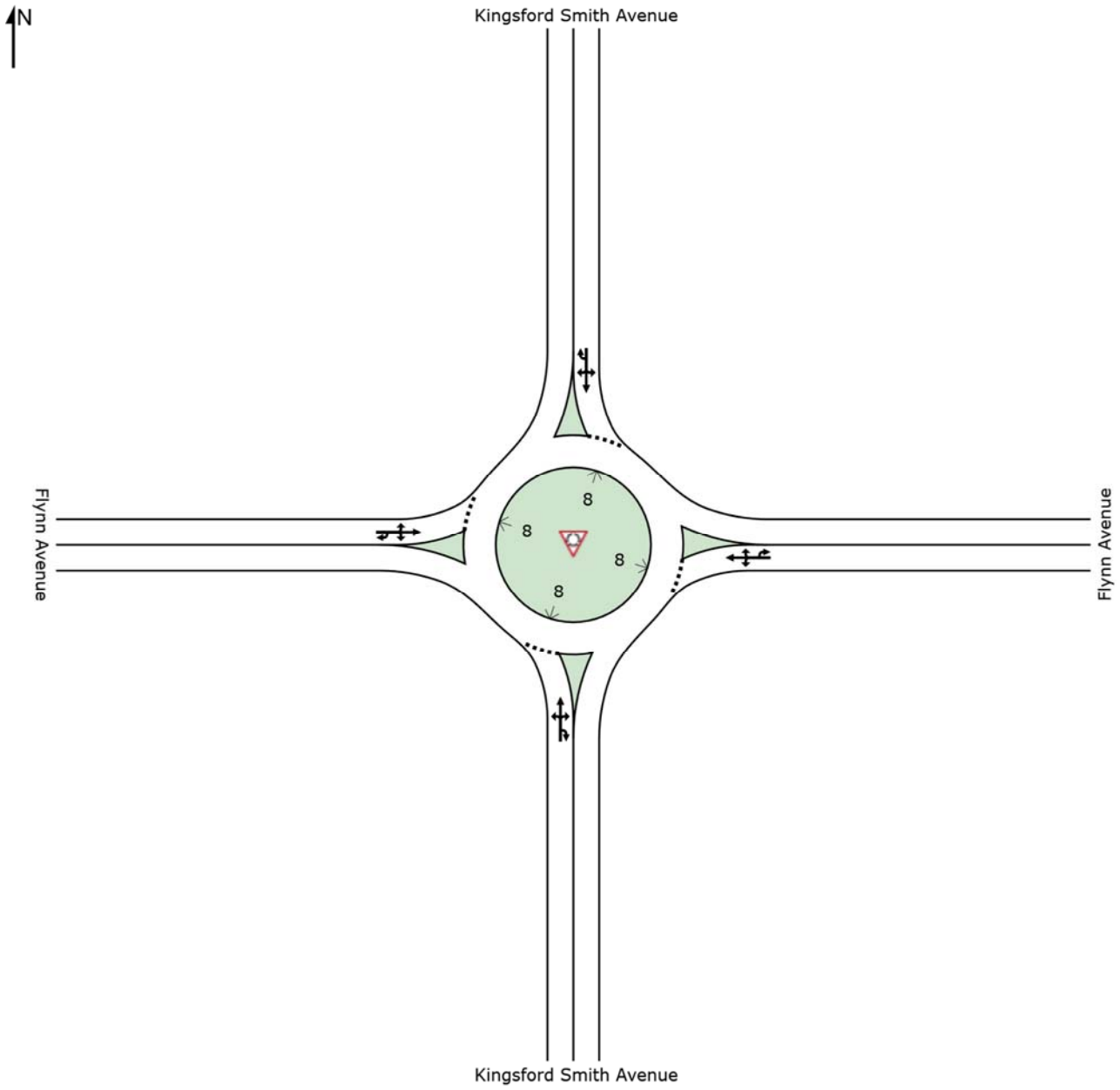
Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Kingsford Smith Avenue													
1	L2	133	4.0	133	4.0	0.511	10.5	LOS A	4.4	32.1	0.88	0.95	45.4
2	T1	112	4.7	112	4.7	0.511	10.6	LOS A	4.4	32.1	0.88	0.95	38.3
3	R2	107	8.8	107	8.8	0.511	14.1	LOS A	4.4	32.1	0.88	0.95	38.3
Approach		352	5.7	352	5.7	0.511	11.6	LOS A	4.4	32.1	0.88	0.95	41.8
East: Flynn Avenue													
4	L2	59	7.1	59	7.1	0.620	8.9	LOS A	5.4	39.6	0.69	0.78	49.7
5	T1	445	4.5	445	4.5	0.620	9.0	LOS A	5.4	39.6	0.69	0.78	53.3
6	R2	83	3.8	83	3.8	0.620	12.3	LOS A	5.4	39.6	0.69	0.78	50.4
6u	U	1	0.0	1	0.0	0.620	13.9	LOS A	5.4	39.6	0.69	0.78	50.4
Approach		588	4.7	588	4.7	0.620	9.5	LOS A	5.4	39.6	0.69	0.78	52.6
North: Kingsford Smith Avenue													
7	L2	55	0.0	55	0.0	0.398	9.5	LOS A	2.9	20.5	0.89	0.92	33.9
8	T1	76	4.2	76	4.2	0.398	9.7	LOS A	2.9	20.5	0.89	0.92	42.5
9	R2	104	0.0	104	0.0	0.398	12.8	LOS A	2.9	20.5	0.89	0.92	45.4
Approach		235	1.3	235	1.3	0.398	11.1	LOS A	2.9	20.5	0.89	0.92	42.8
West: Flynn Avenue													
10	L2	155	0.7	155	0.7	0.777	11.1	LOS A	11.5	83.4	0.93	0.91	43.3
11	T1	454	5.6	454	5.6	0.777	11.6	LOS A	11.5	83.4	0.93	0.91	43.3
12	R2	161	2.6	161	2.6	0.777	14.8	LOS B	11.5	83.4	0.93	0.91	46.4
12u	U	5	0.0	5	0.0	0.777	16.4	LOS B	11.5	83.4	0.93	0.91	50.0
Approach		775	3.9	775	3.9	0.777	12.2	LOS A	11.5	83.4	0.93	0.91	44.4
All Vehicles		1949	4.2	1949	4.2	0.777	11.1	LOS A	11.5	83.4	0.84	0.88	47.1

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

SITE LAYOUT

Site: 04 [J04 - Flynn Ave x Kingsford Smith Ave - EX + DEV_AM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Roundabout



MOVEMENT SUMMARY

Site: 04 [J04 - Flynn Ave x Kingsford Smith Ave - EX + DEV_AM Peak]

Network: 1 [Network - EX + DEV_AM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Roundabout

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: Kingsford Smith Avenue													
1	L2	266	0.4	266	0.4	0.655	8.2	LOS A	7.0	49.2	0.85	0.90	35.9
2	T1	263	0.0	263	0.0	0.655	7.8	LOS A	7.0	49.2	0.85	0.90	36.5
3	R2	48	2.2	48	2.2	0.655	11.0	LOS A	7.0	49.2	0.85	0.90	30.9
3u	U	7	0.0	7	0.0	0.655	12.2	LOS A	7.0	49.2	0.85	0.90	30.9
Approach		585	0.4	585	0.4	0.655	8.3	LOS A	7.0	49.2	0.85	0.90	36.0
East: Flynn Avenue													
4	L2	84	0.0	81	0.0	0.540	9.2	LOS A	4.6	32.5	0.84	0.96	32.5
5	T1	186	1.1	175	1.1	0.540	8.9	LOS A	4.6	32.5	0.84	0.96	36.4
6	R2	153	2.8	143	2.7	0.540	12.0	LOS A	4.6	32.5	0.84	0.96	36.3
6u	U	2	0.0	2	0.0	0.540	13.2	LOS A	4.6	32.5	0.84	0.96	32.5
Approach		425	1.5	400 N1	1.5	0.540	10.1	LOS A	4.6	32.5	0.84	0.96	35.9
North: Kingsford Smith Avenue													
7	L2	92	3.4	92	3.4	0.538	6.8	LOS A	4.5	32.4	0.77	0.79	34.9
8	T1	305	2.4	305	2.4	0.538	6.4	LOS A	4.5	32.4	0.77	0.79	34.9
9	R2	64	8.2	64	8.2	0.538	9.6	LOS A	4.5	32.4	0.77	0.79	37.6
9u	U	2	0.0	2	0.0	0.538	10.6	LOS A	4.5	32.4	0.77	0.79	38.1
Approach		463	3.4	463	3.4	0.538	6.9	LOS A	4.5	32.4	0.77	0.79	35.5
West: Flynn Avenue													
10	L2	68	15.4	68	15.4	0.504	7.7	LOS A	4.0	28.9	0.78	0.84	36.5
11	T1	132	1.6	132	1.6	0.504	6.8	LOS A	4.0	28.9	0.78	0.84	33.9
12	R2	204	4.1	204	4.1	0.504	9.9	LOS A	4.0	28.9	0.78	0.84	33.9
12u	U	1	0.0	1	0.0	0.504	11.0	LOS A	4.0	28.9	0.78	0.84	37.5
Approach		405	5.2	405	5.2	0.504	8.5	LOS A	4.0	28.9	0.78	0.84	34.6
All Vehicles		1879	2.4	1854 N1	2.4	0.655	8.4	LOS A	7.0	49.2	0.81	0.87	35.6

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

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

MOVEMENT SUMMARY

Site: 04 [J04 - Flynn Ave x Kingsford Smith Ave - EX + DEV_PM Peak]

Network: 1 [Network - EX + DEV_PM Peak]

Intersection: Flynn Avenue x Kingsford Smith Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Roundabout

Movement Performance - Vehicles

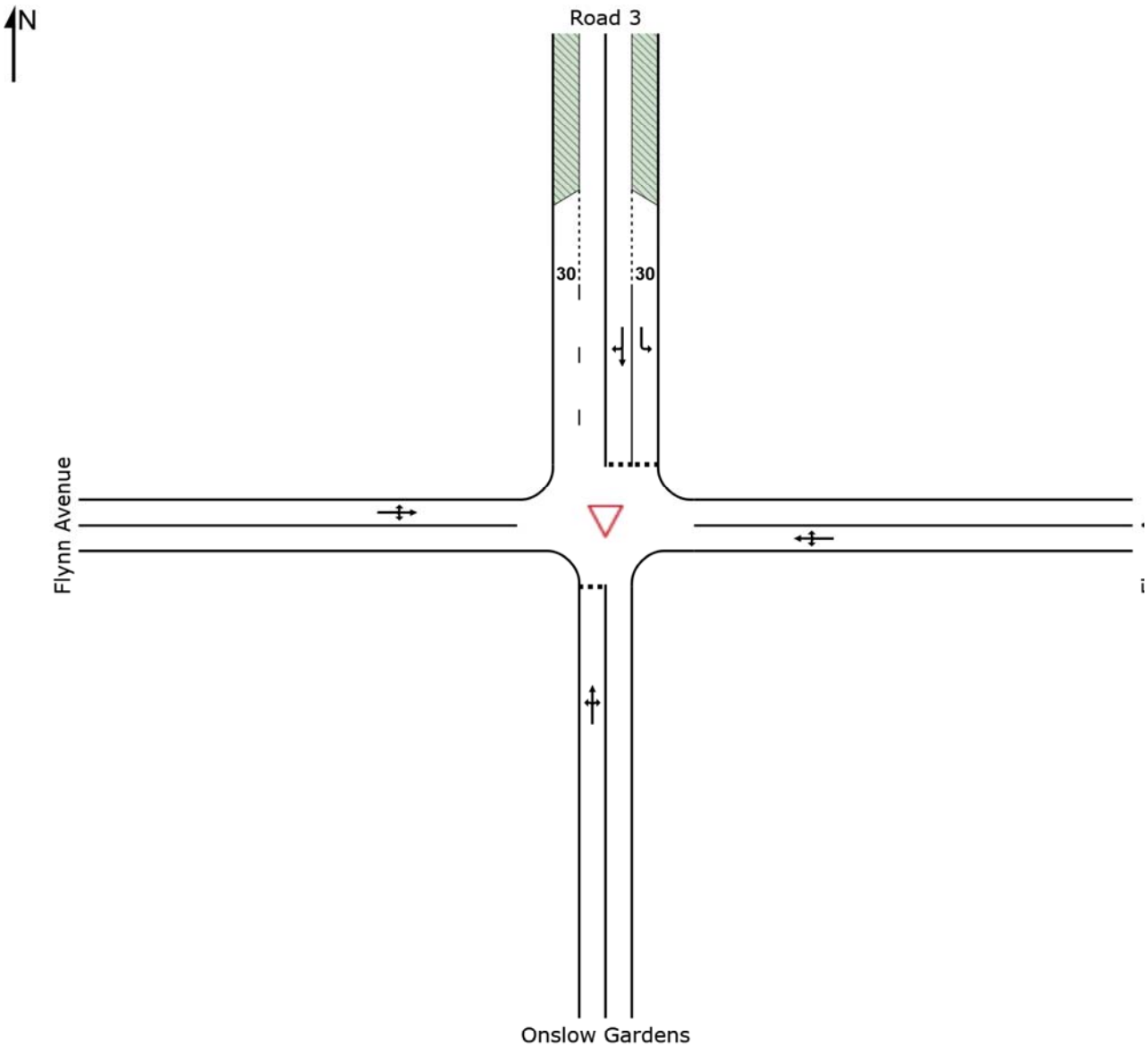
Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Kingsford Smith Avenue													
1	L2	89	2.4	89	2.4	0.390	6.1	LOS A	2.6	18.8	0.61	0.69	43.7
2	T1	142	4.4	142	4.4	0.390	6.0	LOS A	2.6	18.8	0.61	0.69	44.5
3	R2	140	0.0	140	0.0	0.390	9.0	LOS A	2.6	18.8	0.61	0.69	37.8
3u	U	1	0.0	1	0.0	0.390	10.5	LOS A	2.6	18.8	0.61	0.69	37.8
Approach		373	2.3	373	2.3	0.390	7.2	LOS A	2.6	18.8	0.61	0.69	42.8
East: Flynn Avenue													
4	L2	115	0.0	115	0.0	0.401	6.5	LOS A	2.6	18.7	0.65	0.70	41.4
5	T1	202	0.5	202	0.5	0.401	6.4	LOS A	2.6	18.7	0.65	0.70	45.5
6	R2	51	4.2	51	4.2	0.401	9.6	LOS A	2.6	18.7	0.65	0.70	45.3
6u	U	1	0.0	1	0.0	0.401	11.0	LOS A	2.6	18.7	0.65	0.70	41.4
Approach		368	0.9	368	0.9	0.401	6.9	LOS A	2.6	18.7	0.65	0.70	44.7
North: Kingsford Smith Avenue													
7	L2	35	0.0	35	0.0	0.309	7.5	LOS A	2.0	14.1	0.71	0.77	41.1
8	T1	151	2.8	151	2.8	0.309	7.4	LOS A	2.0	14.1	0.71	0.77	41.1
9	R2	49	8.5	49	8.5	0.309	10.8	LOS A	2.0	14.1	0.71	0.77	44.8
9u	U	3	0.0	3	0.0	0.309	11.9	LOS A	2.0	14.1	0.71	0.77	45.4
Approach		238	3.5	238	3.5	0.309	8.2	LOS A	2.0	14.1	0.71	0.77	42.4
West: Flynn Avenue													
10	L2	107	8.8	107	8.8	0.532	7.2	LOS A	4.2	30.4	0.71	0.75	44.4
11	T1	225	1.4	225	1.4	0.532	6.8	LOS A	4.2	30.4	0.71	0.75	41.1
12	R2	166	0.0	166	0.0	0.532	9.9	LOS A	4.2	30.4	0.71	0.75	41.1
12u	U	1	0.0	1	0.0	0.532	11.3	LOS A	4.2	30.4	0.71	0.75	45.4
Approach		500	2.5	500	2.5	0.532	7.9	LOS A	4.2	30.4	0.71	0.75	42.2
All Vehicles		1479	2.2	1479	2.2	0.532	7.5	LOS A	4.2	30.4	0.67	0.73	43.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 05v [J05 - Flynn Ave x Onslow Gardens x Road 3 - EX + DEV_AM Peak]

Intersection: Flynn Avenue x Onslow Gardens x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 05v [J05 - Flynn Ave x Onslow Gardens x Road 3 - EX + DEV_AM Peak]

Network: 1 [Network - EX + DEV_AM Peak]

Intersection: Flynn Avenue x Onslow Gardens x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
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
South: Onslow Gardens													
1	L2	5	0.0	5	0.0	0.014	6.0	LOS A	0.0	0.3	0.50	0.60	29.2
2	T1	1	0.0	1	0.0	0.014	12.4	LOS A	0.0	0.3	0.50	0.60	29.2
3	R2	1	0.0	1	0.0	0.014	16.6	LOS B	0.0	0.3	0.50	0.60	29.2
Approach		7	0.0	7	0.0	0.014	8.4	LOS A	0.0	0.3	0.50	0.60	29.2
East: Flynn Avenue													
4	L2	3	0.0	3	0.0	0.274	9.2	LOS A	0.7	5.2	0.21	0.07	46.9
5	T1	443	1.7	414	1.7	0.274	1.0	LOS A	0.7	5.2	0.21	0.07	46.9
6	R2	49	0.0	46	0.0	0.274	9.3	LOS A	0.7	5.2	0.21	0.07	46.9
Approach		496	1.5	462 N1	1.5	0.274	1.9	NA	0.7	5.2	0.21	0.07	46.9
North: Road 3													
7	L2	87	0.0	87	0.0	0.219	7.8	LOS A	0.4	2.8	0.56	0.79	35.6
8	T1	1	0.0	1	0.0	0.092	12.4	LOS A	0.3	2.0	0.78	0.90	32.0
9	R2	24	0.0	24	0.0	0.092	16.3	LOS B	0.3	2.0	0.78	0.90	27.0
Approach		113	0.0	113	0.0	0.219	9.6	LOS A	0.4	2.8	0.61	0.82	33.3
West: Flynn Avenue													
10	L2	43	0.0	43	0.0	0.724	5.4	LOS A	0.5	3.8	0.04	0.04	45.5
11	T1	664	1.7	664	1.7	0.724	0.3	LOS A	0.5	3.8	0.04	0.04	45.5
12	R2	11	0.0	11	0.0	0.724	7.3	LOS A	0.5	3.8	0.04	0.04	44.7
Approach		718	1.6	718	1.6	0.724	0.7	NA	0.5	3.8	0.04	0.04	45.5
All Vehicles		1334	1.4	1300 N1	1.5	0.724	1.9	NA	0.7	5.2	0.15	0.12	44.5

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.
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.

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

MOVEMENT SUMMARY

Site: 05v [J05 - Flynn Ave x Onslow Gardens x Road 3 - EX + DEV_PM Peak - Conversion]

Network: 1 [Network - EX + DEV_PM Peak]

Intersection: Flynn Avenue x Onslow Gardens x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

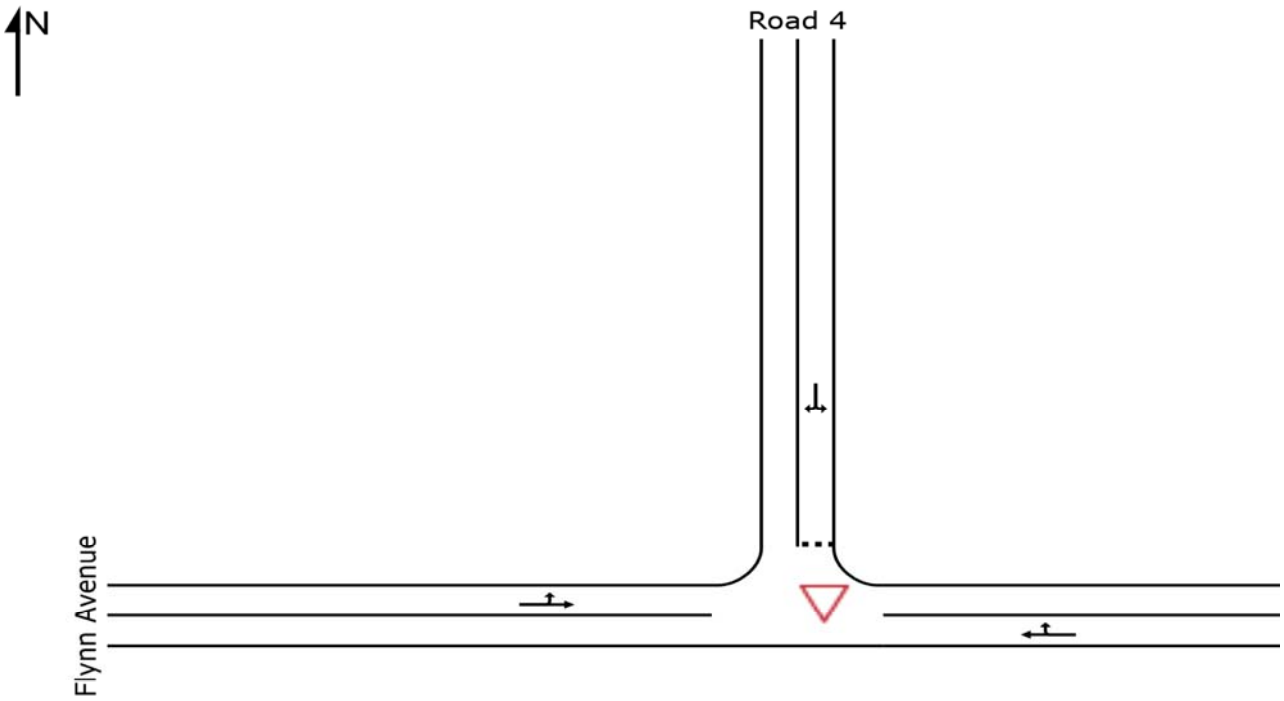
Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Onslow Gardens													
1	L2	1	0.0	1	0.0	0.006	6.1	LOS A	0.0	0.1	0.55	0.63	28.4
2	T1	1	0.0	1	0.0	0.006	9.3	LOS A	0.0	0.1	0.55	0.63	28.4
3	R2	1	0.0	1	0.0	0.006	11.1	LOS A	0.0	0.1	0.55	0.63	28.4
Approach		3	0.0	3	0.0	0.006	8.8	LOS A	0.0	0.1	0.55	0.63	28.4
East: Flynn Avenue													
4	L2	4	0.0	4	0.0	0.364	6.9	LOS A	1.6	11.3	0.28	0.16	46.1
5	T1	454	1.4	454	1.4	0.364	1.0	LOS A	1.6	11.3	0.28	0.16	45.9
6	R2	149	0.0	149	0.0	0.364	6.9	LOS A	1.6	11.3	0.28	0.16	45.9
Approach		607	1.0	607	1.0	0.364	2.5	NA	1.6	11.3	0.28	0.16	45.9
North: Road 3													
7	L2	95	0.0	95	0.0	0.072	5.3	LOS A	0.3	2.0	0.32	0.55	38.2
8	T1	1	0.0	1	0.0	0.403	11.6	LOS A	1.8	12.5	0.75	0.97	33.1
9	R2	162	0.0	162	0.0	0.403	14.6	LOS B	1.8	12.5	0.75	0.97	28.2
Approach		258	0.0	258	0.0	0.403	11.2	LOS A	1.8	12.5	0.59	0.82	31.3
West: Flynn Avenue													
10	L2	175	0.0	175	0.0	0.219	4.6	LOS A	0.0	0.1	0.01	0.23	39.3
11	T1	239	1.3	239	1.3	0.219	0.0	LOS A	0.0	0.1	0.01	0.23	39.3
12	R2	1	0.0	1	0.0	0.219	6.8	LOS A	0.0	0.1	0.01	0.23	42.0
Approach		415	0.8	415	0.8	0.219	2.0	NA	0.0	0.1	0.01	0.23	39.4
All Vehicles		1283	0.7	1283	0.7	0.403	4.1	NA	1.8	12.5	0.25	0.32	41.2

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

SITE LAYOUT

Site: 06 [J06 - Flynn Ave x Road 4 - EX + DEV_AM Peak]

Intersection: Flynn Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Giveway / Yield (Two-Way)



Organisation: TRAFFIX | Created: Wednesday, 28 September 2016 4:27:08 PM
Project: T:\Synergy\Projects\16\16.068\Modelling\16.068m08 TRAFFIX 45-65 Hall Circuit, Middleton Grange_with DEV (J05 GW).sip7

MOVEMENT SUMMARY

Site: 06 [J06 - Flynn Ave x Road 4 - EX + DEV_AM Peak]

Network: 1 [Network - EX + DEV_AM Peak]

Intersection: Flynn Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
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: Flynn Avenue													
5	T1	436	1.7	409	1.7	0.253	0.7	LOS A	0.6	4.1	0.15	0.05	42.0
6	R2	37	0.0	35	0.0	0.253	8.7	LOS A	0.6	4.1	0.15	0.05	42.0
Approach		473	1.6	444 N1	1.5	0.253	1.3	NA	0.6	4.1	0.15	0.05	42.0
North: Road 4													
7	L2	81	0.0	81	0.0	0.153	7.6	LOS A	0.5	3.8	0.59	0.79	34.3
9	R2	20	0.0	20	0.0	0.153	13.3	LOS A	0.5	3.8	0.59	0.79	34.3
Approach		101	0.0	101	0.0	0.153	8.7	LOS A	0.5	3.8	0.59	0.79	34.3
West: Flynn Avenue													
10	L2	24	0.0	24	0.0	0.343	4.6	LOS A	0.0	0.0	0.00	0.02	49.7
11	T1	637	1.8	637	1.8	0.343	0.0	LOS A	0.0	0.0	0.00	0.02	49.7
Approach		661	1.8	661	1.8	0.343	0.2	NA	0.0	0.0	0.00	0.02	49.7
All Vehicles		1235	1.5	1206 N1	1.6	0.343	1.3	NA	0.6	4.1	0.11	0.10	47.2

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

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

MOVEMENT SUMMARY

Site: 06 [J06 - Flynn Ave x Road 4 - EX + DEV_PM Peak]

Network: 1 [Network - EX + DEV_PM Peak]

Intersection: Flynn Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

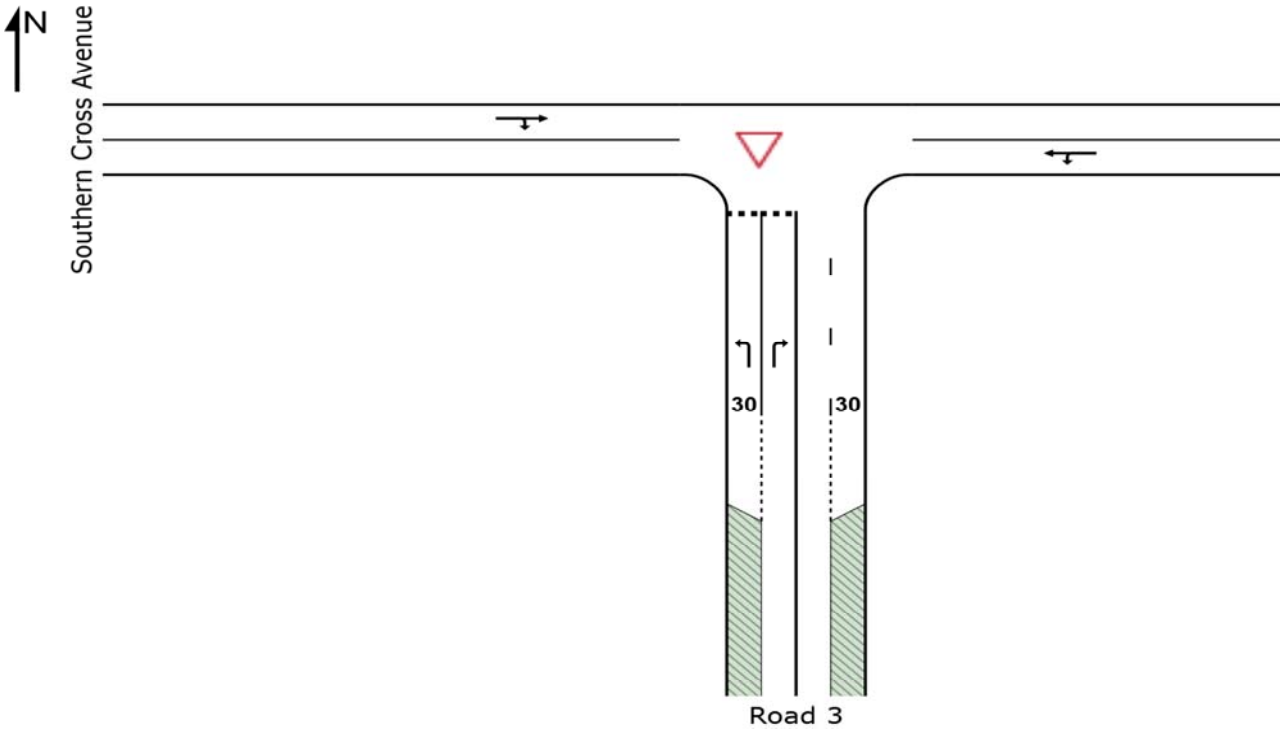
Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Flynn Avenue													
5	T1	501	1.3	501	1.3	0.363	1.0	LOS A	1.6	11.3	0.29	0.13	37.9
6	R2	116	0.0	116	0.0	0.363	7.4	LOS A	1.6	11.3	0.29	0.13	37.9
Approach		617	1.0	617	1.0	0.363	2.2	NA	1.6	11.3	0.29	0.13	37.9
North: Road 4													
7	L2	62	0.0	62	0.0	0.291	6.4	LOS A	1.1	7.8	0.59	0.80	32.1
9	R2	97	0.0	97	0.0	0.291	13.1	LOS A	1.1	7.8	0.59	0.80	32.1
Approach		159	0.0	159	0.0	0.291	10.5	LOS A	1.1	7.8	0.59	0.80	32.1
West: Flynn Avenue													
10	L2	109	0.0	109	0.0	0.240	4.6	LOS A	0.0	0.0	0.00	0.13	48.4
11	T1	352	0.9	352	0.9	0.240	0.0	LOS A	0.0	0.0	0.00	0.13	48.4
Approach		461	0.7	461	0.7	0.240	1.1	NA	0.0	0.0	0.00	0.13	48.4
All Vehicles		1237	0.8	1237	0.8	0.363	2.9	NA	1.6	11.3	0.22	0.22	43.3

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.

SITE LAYOUT

Site: 07 [J07 - Southern Cross Ave x Road 3 - EX + DEV_AM Peak]

Intersection: Southern Cross Avenue x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Giveway / Yield (Two-Way)



Organisation: TRAFFIX | Created: Wednesday, 28 September 2016 4:27:13 PM
Project: T:\Synergy\Projects\16\16.068\Modelling\16.068m08 TRAFFIX 45-65 Hall Circuit, Middleton Grange_with DEV (J05 GW).sip7

MOVEMENT SUMMARY

Site: 07 [J07 - Southern Cross Ave x Road 3 - EX + DEV_AM Peak] Network: 1 [Network - EX + DEV_AM Peak]

Intersection: Southern Cross Avenue x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
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
South: Road 3													
1	L2	1	0.0	1	0.0	0.001	4.6	LOS A	0.0	0.0	0.09	0.49	39.7
3	R2	1	0.0	1	0.0	0.001	4.8	LOS A	0.0	0.0	0.15	0.50	42.7
Approach		2	0.0	2	0.0	0.001	4.7	LOS A	0.0	0.0	0.12	0.50	41.6
East: Southern Cross Avenue													
4	L2	9	0.0	9	0.0	0.021	4.6	LOS A	0.0	0.0	0.00	0.13	47.2
5	T1	32	0.0	32	0.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.13	47.2
Approach		41	0.0	41	0.0	0.021	1.1	NA	0.0	0.0	0.00	0.13	47.2
West: Southern Cross Avenue													
11	T1	37	0.0	37	0.0	0.024	0.0	LOS A	0.1	0.4	0.05	0.11	47.7
12	R2	9	0.0	9	0.0	0.024	4.7	LOS A	0.1	0.4	0.05	0.11	43.1
Approach		46	0.0	46	0.0	0.024	1.0	NA	0.1	0.4	0.05	0.11	47.3
All Vehicles		89	0.0	89	0.0	0.024	1.1	NA	0.1	0.4	0.03	0.13	47.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
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: 07 [J07 - Southern Cross Ave x Road 3 - EX + DEV_PM Peak] Network: 1 [Network - EX + DEV_PM Peak]

Intersection: Southern Cross Avenue x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

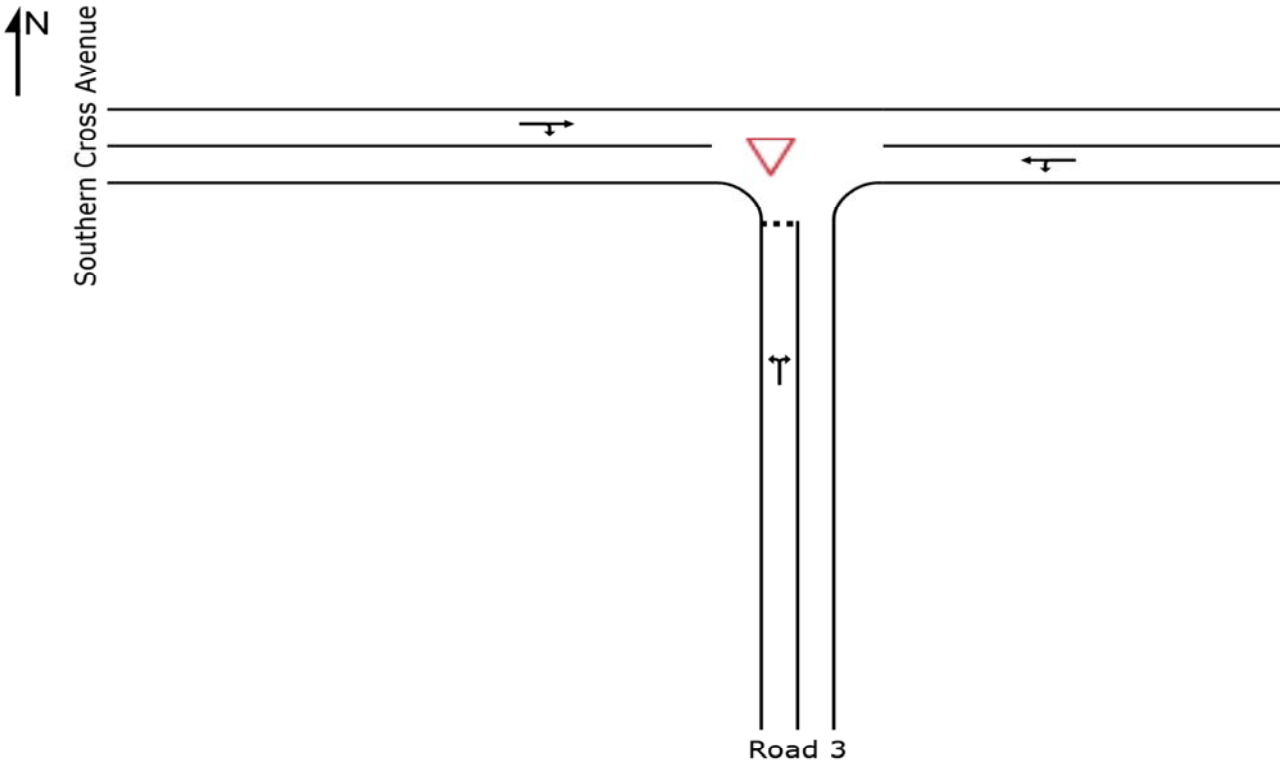
Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Road 3													
1	L2	46	0.0	46	0.0	0.029	4.7	LOS A	0.1	0.8	0.12	0.50	39.6
3	R2	46	0.0	46	0.0	0.041	5.1	LOS A	0.1	0.9	0.22	0.53	42.4
Approach		93	0.0	93	0.0	0.041	4.9	LOS A	0.1	0.9	0.17	0.51	41.4
East: Southern Cross Avenue													
4	L2	46	0.0	46	0.0	0.047	4.6	LOS A	0.0	0.0	0.00	0.27	44.3
5	T1	46	0.0	46	0.0	0.047	0.0	LOS A	0.0	0.0	0.00	0.27	44.3
Approach		93	0.0	93	0.0	0.047	2.3	NA	0.0	0.0	0.00	0.27	44.3
West: Southern Cross Avenue													
11	T1	36	0.0	36	0.0	0.046	0.2	LOS A	0.2	1.5	0.18	0.29	43.9
12	R2	46	0.0	46	0.0	0.046	4.8	LOS A	0.2	1.5	0.18	0.29	34.2
Approach		82	0.0	82	0.0	0.046	2.8	NA	0.2	1.5	0.18	0.29	40.7
All Vehicles		267	0.0	267	0.0	0.047	3.3	NA	0.2	1.5	0.11	0.36	42.1

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.

SITE LAYOUT

Site: 08 [J08 - Southern Cross Ave x Road 4 - EX + DEV_AM Peak]

Intersection: Southern Cross Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Giveway / Yield (Two-Way)



Organisation: TRAFFIX | Created: Wednesday, 28 September 2016 4:27:29 PM
Project: T:\Synergy\Projects\16\16.068\Modelling\16.068m08 TRAFFIX 45-65 Hall Circuit, Middleton Grange_with DEV (J05 GW).sip7

MOVEMENT SUMMARY

Site: 08 [J08 - Southern Cross Ave x Road 4 - EX + DEV_AM Peak] Network: 1 [Network - EX + DEV_AM Peak]

Intersection: Southern Cross Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
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
South: Road 3													
1	L2	1	0.0	1	0.0	0.001	4.6	LOS A	0.0	0.0	0.09	0.51	45.1
3	R2	1	0.0	1	0.0	0.001	4.8	LOS A	0.0	0.0	0.09	0.51	39.7
Approach		2	0.0	2	0.0	0.001	4.7	LOS A	0.0	0.0	0.09	0.51	43.5
East: Southern Cross Avenue													
4	L2	5	0.0	5	0.0	0.016	4.6	LOS A	0.0	0.0	0.00	0.09	45.2
5	T1	27	0.0	27	0.0	0.016	0.0	LOS A	0.0	0.0	0.00	0.09	49.1
Approach		33	0.0	33	0.0	0.016	0.7	NA	0.0	0.0	0.00	0.09	48.9
West: Southern Cross Avenue													
11	T1	45	0.0	45	0.0	0.026	0.0	LOS A	0.0	0.2	0.02	0.06	49.1
12	R2	5	0.0	5	0.0	0.026	4.7	LOS A	0.0	0.2	0.02	0.06	49.1
Approach		51	0.0	51	0.0	0.026	0.5	NA	0.0	0.2	0.02	0.06	49.1
All Vehicles		85	0.0	85	0.0	0.026	0.7	NA	0.0	0.2	0.02	0.08	48.9

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.

MOVEMENT SUMMARY

Site: 08 [J08 - Southern Cross Ave x Road 4 - EX + DEV_PM Peak] Network: 1 [Network - EX + DEV_PM Peak]

Intersection: Southern Cross Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
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
South: Road 3													
1	L2	27	0.0	27	0.0	0.042	4.7	LOS A	0.2	1.1	0.16	0.52	44.8
3	R2	27	0.0	27	0.0	0.042	5.2	LOS A	0.2	1.1	0.16	0.52	39.3
Approach		55	0.0	55	0.0	0.042	4.9	LOS A	0.2	1.1	0.16	0.52	43.2
East: Southern Cross Avenue													
4	L2	27	0.0	27	0.0	0.047	4.6	LOS A	0.0	0.0	0.00	0.16	41.9
5	T1	65	0.0	65	0.0	0.047	0.0	LOS A	0.0	0.0	0.00	0.16	48.3
Approach		93	0.0	93	0.0	0.047	1.3	NA	0.0	0.0	0.00	0.16	47.8
West: Southern Cross Avenue													
11	T1	65	0.0	65	0.0	0.049	0.1	LOS A	0.2	1.1	0.12	0.16	47.4
12	R2	27	0.0	27	0.0	0.049	4.8	LOS A	0.2	1.1	0.12	0.16	47.4
Approach		93	0.0	93	0.0	0.049	1.5	NA	0.2	1.1	0.12	0.16	47.4
All Vehicles		240	0.0	240	0.0	0.049	2.2	NA	0.2	1.1	0.08	0.24	46.4

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.
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.

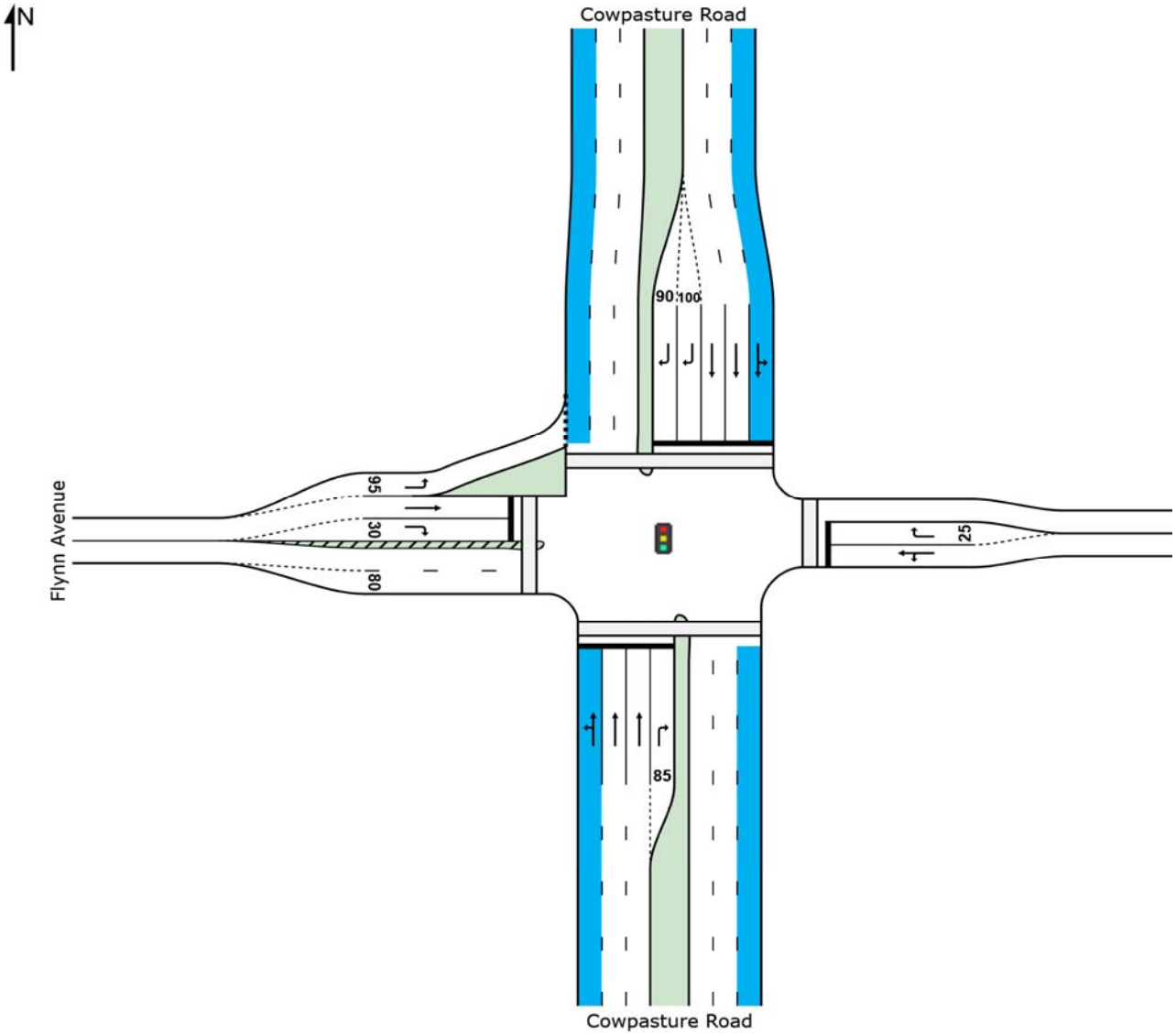
Appendix D-3

Existing + Development with Improvements

SITE LAYOUT

Site: 01 [J01 - Cowpasture Road x Flynn Ave - EX + DEV_AM Peak (Improvements)]

Intersection: Compasture Road x Flynn Avenue x Collarenebri Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Signals - Fixed Time Coordinated



Organisation: TRAFFIX | Created: Monday, 26 September 2016 3:19:42 PM
Project: \\192.168.3.1\tdata\Synergy\Projects\16\16.068\Modelling\16.068m07 TRAFFIX 45-65 Hall Circuit, Middleton Grange_with DEV and Improvements (J05 GW).sip7

MOVEMENT SUMMARY

Site: 01 [J01 - Cowpasture Road x Flynn Ave - EX + DEV_AM Peak (Improvements)]

Network: 1 [Network - EX + DEV_AM Peak (Improvements)]

Intersection: Compasture Road x Flynn Avenue x Collarenebri Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Cowpasture Road													
1	L2	113	2.8	113	2.8	0.861	36.3	LOS C	42.0	309.6	0.87	0.84	28.8
2	T1	2157	6.9	2157	6.9	0.861	30.4	LOS C	42.5	315.1	0.87	0.83	37.0
3	R2	20	10.5	20	10.5	0.071	67.0	LOS E	1.3	9.9	1.00	0.72	21.5
Approach		2289	6.7	2289	6.7	0.861	31.0	LOS C	42.5	315.1	0.87	0.83	36.5
East: Collarenebri Road													
4	L2	37	0.0	37	0.0	0.798	79.8	LOS F	6.0	42.2	1.00	0.90	8.6
5	T1	47	0.0	47	0.0	0.798	75.3	LOS F	6.0	42.2	1.00	0.90	8.6
6	R2	77	2.7	77	2.7	0.228	50.4	LOS D	4.1	29.6	0.89	0.75	20.9
Approach		161	1.3	161	1.3	0.798	64.5	LOS E	6.0	42.2	0.95	0.83	14.1
North: Cowpasture Road													
7	L2	29	0.0	29	0.0	0.457	31.6	LOS C	17.2	130.9	0.72	0.65	30.9
8	T1	1154	11.0	1154	11.0	0.457	25.3	LOS B	17.2	130.9	0.72	0.64	24.7
9	R2	368	3.4	368	3.4	0.843	68.7	LOS E	17.0	122.7	0.97	0.86	11.8
Approach		1552	9.0	1552	9.0	0.843	35.7	LOS C	17.2	131.6	0.78	0.69	19.8
West: Flynn Avenue													
10	L2	740	1.4	740	1.4	1.029	98.9	LOS F	66.9	473.7	1.00	1.23	16.4
11	T1	12	9.1	12	9.1	0.141	70.6	LOS F	0.8	5.8	0.99	0.67	19.1
12	R2	232	2.3	232	2.3	0.751	57.5	LOS E	14.2	101.3	1.00	0.87	16.6
Approach		983	1.7	983	1.7	1.029	88.8	LOS F	66.9	473.7	1.00	1.14	16.4
All Vehicles		4985	6.3	4985	6.3	1.029	45.0	LOS D	66.9	473.7	0.87	0.85	25.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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	11	61.7	LOS F	0.0	0.0	0.96	0.96
P2	East Full Crossing	11	20.3	LOS C	0.0	0.0	0.55	0.55
P3	North Full Crossing	11	61.7	LOS F	0.0	0.0	0.96	0.96
P4	West Full Crossing	11	22.5	LOS C	0.0	0.0	0.58	0.58
All Pedestrians		42	41.5	LOS E			0.76	0.76

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 [J01 - Cowpasture Road x Flynn Ave - EX + DEV_PM Peak (Improvements)]

Network: 1 [Network - EX + DEV_PM Peak (Improvements)]

Intersection: Compasture Road x Flynn Avenue x Collarenebri Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Cowpasture Road													
1	L2	232	2.3	232	2.3	0.677	38.1	LOS C	24.5	178.3	0.79	0.76	26.8
2	T1	1301	6.3	1301	6.3	0.677	31.0	LOS C	24.5	178.3	0.78	0.70	36.5
3	R2	39	0.0	39	0.0	0.081	38.0	LOS C	1.5	10.7	0.63	0.70	30.0
Approach		1572	5.6	1572	5.6	0.677	32.2	LOS C	24.5	179.7	0.77	0.71	35.1
East: Collarenebri Road													
4	L2	24	0.0	24	0.0	0.752	72.1	LOS F	9.0	62.9	1.00	0.88	9.7
5	T1	108	0.0	108	0.0	0.752	67.5	LOS E	9.0	62.9	1.00	0.88	9.7
6	R2	37	0.0	37	0.0	0.193	56.0	LOS D	2.1	14.9	0.94	0.71	19.6
Approach		169	0.0	169	0.0	0.752	65.7	LOS E	9.0	62.9	0.99	0.85	11.9
North: Cowpasture Road													
7	L2	80	1.3	80	1.3	0.889	55.9	LOS D	47.3	338.9	1.00	0.99	21.3
8	T1	1915	3.0	1915	3.0	0.889	49.3	LOS D	47.4	340.7	0.98	0.98	15.3
9	R2	506	2.5	506	2.5	0.723	54.2	LOS D	20.0	142.7	0.89	0.83	14.3
Approach		2501	2.9	2501	2.9	0.889	50.5	LOS D	47.4	340.7	0.96	0.95	15.3
West: Flynn Avenue													
10	L2	269	2.7	269	2.7	0.281	11.4	LOS A	6.3	45.2	0.43	0.65	42.3
11	T1	103	0.0	103	0.0	0.476	62.2	LOS E	6.5	45.8	0.98	0.77	20.6
12	R2	89	4.7	89	4.7	0.526	57.8	LOS E	5.3	38.6	1.00	0.77	16.5
Approach		462	2.5	462	2.5	0.526	31.7	LOS C	6.5	45.8	0.66	0.70	29.3
All Vehicles		4704	3.6	4704	3.6	0.889	43.1	LOS D	47.4	340.7	0.87	0.84	23.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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

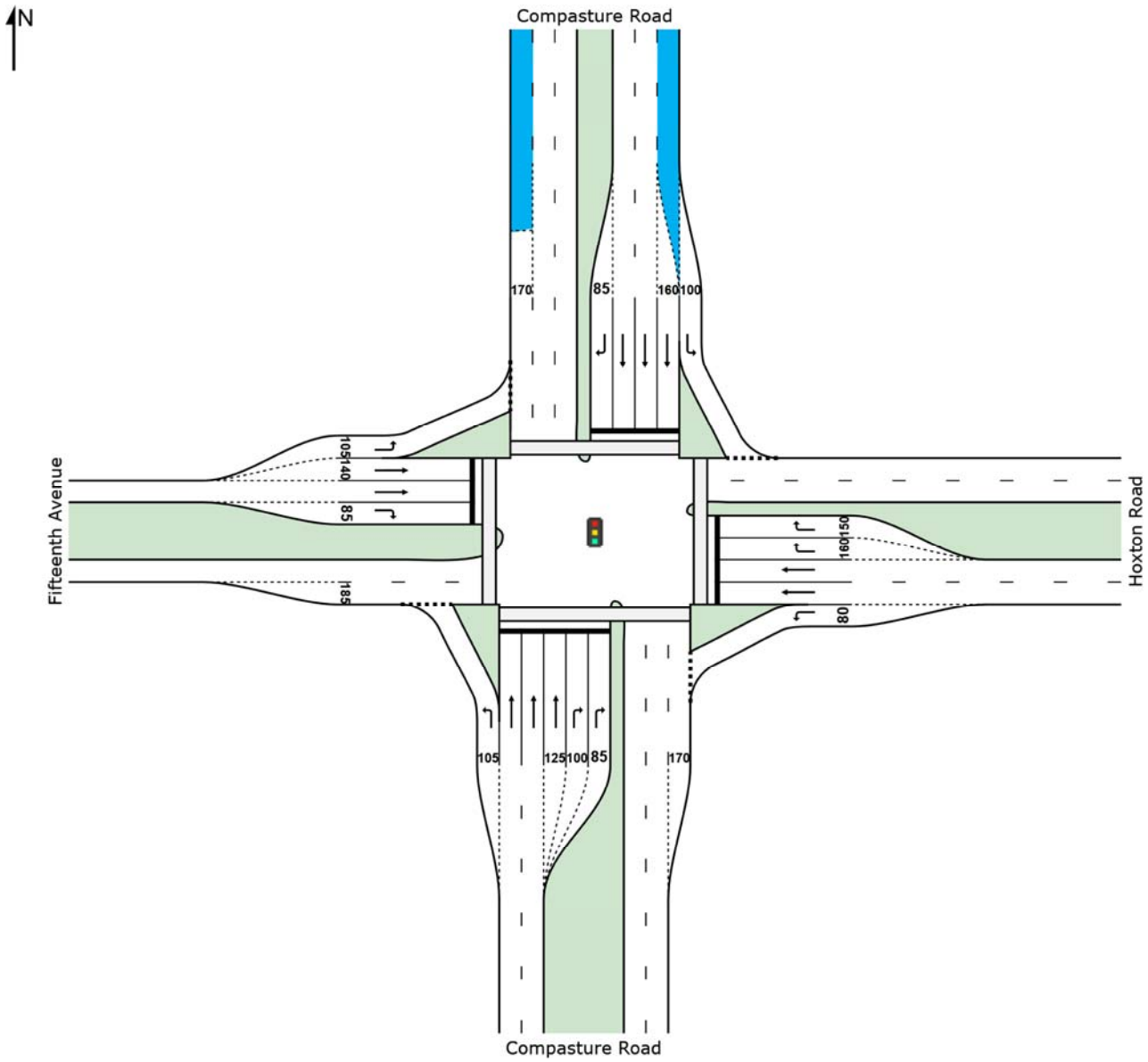
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	11	61.7	LOS F	0.0	0.0	0.96	0.96
P2	East Full Crossing	11	25.5	LOS C	0.0	0.0	0.62	0.62
P3	North Full Crossing	11	61.7	LOS F	0.0	0.0	0.96	0.96
P4	West Full Crossing	11	28.0	LOS C	0.0	0.0	0.64	0.64
All Pedestrians		42	44.2	LOS E			0.79	0.79

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.

SITE LAYOUT

Site: 02 [J02 - Cowpasture Road x Fifteenth Avenue - EX + DEV_AM Peak (Improvements)]

Intersection: Compasture Road x Fifteenth Avenue x Hoxton Park Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Signals - Fixed Time Isolated



Organisation: TRAFFIX | Created: Monday, 26 September 2016 3:20:00 PM
Project: \\192.168.3.1\tdata\Synergy\Projects\16\16.068\Modelling\16.068m07 TRAFFIX 45-65 Hall Circuit, Middleton Grange_with DEV and Improvements (J05 GW).sip7

MOVEMENT SUMMARY

Site: 02 [J02 - Cowpasture Road x Fifteenth Avenue - EX + DEV_AM Peak (Improvements)]

Network: 1 [Network - EX + DEV_AM Peak (Improvements)]

Intersection: Compasture Road x Fifteenth Avenue x Hoxton Park Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Compasture Road													
1	L2	174	2.4	174	2.4	0.134	10.9	LOS A	2.9	20.9	0.32	0.66	49.8
2	T1	1667	6.5	1667	6.5	0.902	55.1	LOS D	38.8	286.8	0.95	0.99	23.1
3	R2	368	0.9	368	0.9	0.898	84.2	LOS F	13.8	97.4	1.00	0.97	26.0
Approach		2209	5.2	2209	5.2	0.902	56.4	LOS D	38.8	286.8	0.91	0.97	24.7
East: Hoxton Road													
4	L2	197	1.6	197	1.6	0.195	13.8	LOS A	4.4	31.6	0.41	0.70	53.1
5	T1	421	3.8	421	3.8	0.597	56.1	LOS D	12.8	92.8	0.97	0.81	21.8
6	R2	303	10.1	303	10.1	0.590	65.8	LOS E	9.5	72.5	0.98	0.81	19.3
Approach		921	5.4	921	5.4	0.597	50.2	LOS D	12.8	92.8	0.86	0.79	26.4
North: Compasture Road													
7	L2	414	6.9	414	6.9	0.353	13.6	LOS A	8.4	62.6	0.36	0.69	50.7
8	T1	854	10.9	854	10.9	0.416	37.9	LOS C	16.3	125.0	0.91	0.78	39.0
9	R2	151	7.7	151	7.7	0.769	69.0	LOS E	10.0	74.6	1.00	0.84	16.8
Approach		1418	9.4	1418	9.4	0.769	34.1	LOS C	16.3	125.0	0.76	0.76	39.0
West: Fifteenth Avenue													
10	L2	303	5.2	303	5.2	0.339	20.9	LOS B	10.5	77.1	0.61	0.74	42.1
11	T1	536	2.4	536	2.4	0.753	58.5	LOS E	17.3	123.8	1.00	0.88	35.6
12	R2	206	1.5	206	1.5	0.758	68.7	LOS E	13.7	97.4	1.00	0.87	32.8
Approach		1045	3.0	1045	3.0	0.758	49.6	LOS D	17.3	123.8	0.89	0.84	36.1
All Vehicles		5594	5.9	5594	5.9	0.902	48.5	LOS D	38.8	286.8	0.86	0.86	30.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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	21	61.7	LOS F	0.1	0.1	0.96	0.96
P2	East Full Crossing	21	36.3	LOS D	0.1	0.1	0.73	0.73
P3	North Full Crossing	21	60.7	LOS F	0.1	0.1	0.95	0.95
P4	West Full Crossing	21	36.3	LOS D	0.1	0.1	0.73	0.73
All Pedestrians		84	48.8	LOS E			0.84	0.84

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 [J02 - Cowpasture Road x Fifteenth Avenue - EX + DEV_PM Peak (Improvements)]

Network: 1 [Network - EX + DEV_PM Peak (Improvements)]

Intersection: Compasture Road x Fifteenth Avenue x Hoxton Park Road
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Signals - Fixed Time Coordinated Cycle Time = 135 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: Compasture Road													
1	L2	167	2.5	167	2.5	0.130	11.4	LOS A	3.0	21.4	0.33	0.66	49.1
2	T1	938	5.6	938	5.6	0.401	29.4	LOS C	14.3	104.6	0.75	0.65	33.5
3	R2	340	1.2	340	1.2	0.594	64.8	LOS E	10.6	75.1	0.98	0.81	30.3
Approach		1445	4.2	1445	4.2	0.594	35.7	LOS C	14.3	104.6	0.76	0.69	33.2
East: Hoxton Road													
4	L2	445	1.7	445	1.7	0.526	28.9	LOS C	19.0	135.2	0.76	0.86	43.3
5	T1	374	4.5	374	4.5	0.740	65.1	LOS E	12.4	90.3	1.00	0.87	19.6
6	R2	442	4.3	442	4.3	0.920	86.7	LOS F	17.1	124.2	1.00	0.99	15.6
Approach		1261	3.4	1261	3.4	0.920	59.9	LOS E	19.0	135.2	0.92	0.91	25.2
North: Compasture Road													
7	L2	285	4.4	285	4.4	0.221	14.0	LOS A	9.0	65.5	0.59	0.74	50.8
8	T1	1539	2.5	1539	2.5	0.721	56.2	LOS D	37.2	265.8	1.00	0.89	32.1
9	R2	200	5.3	200	5.3	0.718	59.5	LOS E	12.4	90.4	0.96	0.83	18.8
Approach		2024	3.1	2024	3.1	0.721	50.6	LOS D	37.2	265.8	0.94	0.86	32.7
West: Fifteenth Avenue													
10	L2	195	8.6	195	8.6	0.194	12.7	LOS A	4.3	32.2	0.41	0.67	47.7
11	T1	320	1.6	320	1.6	0.700	64.3	LOS E	10.6	75.0	1.00	0.84	34.1
12	R2	149	4.9	149	4.9	0.703	70.4	LOS E	9.9	72.4	1.00	0.84	32.2
Approach		664	4.4	664	4.4	0.703	50.5	LOS D	10.6	75.0	0.83	0.79	35.7
All Vehicles		5395	3.6	5395	3.6	0.920	48.8	LOS D	37.2	265.8	0.87	0.82	31.5

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.

Movement Performance - Pedestrians

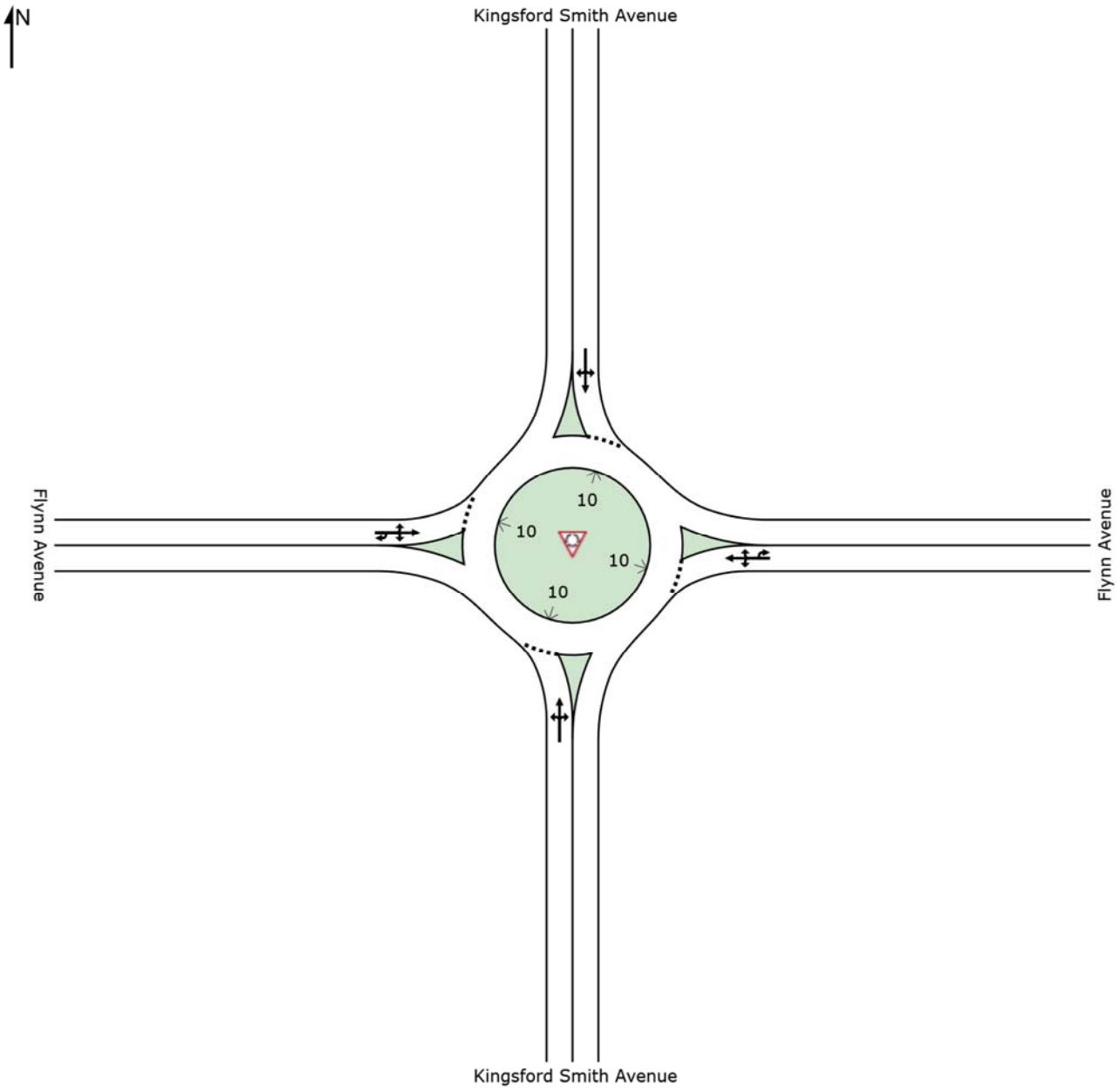
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	21	61.7	LOS F	0.1	0.1	0.96	0.96
P2	East Full Crossing	21	32.8	LOS D	0.1	0.1	0.70	0.70
P3	North Full Crossing	21	61.7	LOS F	0.1	0.1	0.96	0.96
P4	West Full Crossing	21	32.8	LOS D	0.1	0.1	0.70	0.70
All Pedestrians		84	47.2	LOS E			0.83	0.83

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.

SITE LAYOUT

Site: 03 [J03 - Fifteenth Ave x Kingsford Smith Ave - EX + DEV_AM Peak (Improvements)]

Intersection: Flynn Avenue x Kingsford Smith Avenue x Second Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Roundabout



Organisation: TRAFFIX | Created: Monday, 26 September 2016 3:19:55 PM
Project: \\192.168.3.1\tdata\Synergy\Projects\16\16.068\Modelling\16.068m07 TRAFFIX 45-65 Hall Circuit, Middleton Grange_with DEV and Improvements (J05 GW).sip7

MOVEMENT SUMMARY

Site: 03 [J03 - Fifteenth Ave x Kingsford Smith Ave - EX + DEV_AM Peak (Improvements)]

Network: 1 [Network - EX + DEV_AM Peak (Improvements)]

Intersection: Flynn Avenue x Kingsford Smith Avenue x Second Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kingsford Smith Avenue													
1	L2	153	2.1	153	2.1	0.911	40.2	LOS C	18.0	129.4	1.00	1.66	33.3
2	T1	217	0.5	217	0.5	0.911	40.2	LOS C	18.0	129.4	1.00	1.66	23.9
3	R2	115	11.0	115	11.0	0.911	44.2	LOS D	18.0	129.4	1.00	1.66	23.9
Approach		484	3.5	484	3.5	0.911	41.2	LOS C	18.0	129.4	1.00	1.66	27.6
East: Flynn Avenue													
4	L2	86	8.5	86	8.5	0.919	26.5	LOS B	20.1	147.0	1.00	1.42	42.1
5	T1	576	4.9	576	4.9	0.919	26.5	LOS B	20.1	147.0	1.00	1.42	44.6
6	R2	77	6.8	77	6.8	0.919	29.9	LOS C	20.1	147.0	1.00	1.42	38.9
6u	U	1	0.0	1	0.0	0.919	31.2	LOS C	20.1	147.0	1.00	1.42	38.9
Approach		740	5.5	740	5.5	0.919	26.8	LOS B	20.1	147.0	1.00	1.42	43.8
North: Kingsford Smith Avenue													
7	L2	111	1.9	111	1.9	0.739	21.2	LOS B	8.9	62.7	1.00	1.25	25.5
8	T1	148	2.1	148	2.1	0.739	21.2	LOS B	8.9	62.7	1.00	1.25	36.6
9	R2	125	0.0	125	0.0	0.739	24.4	LOS B	8.9	62.7	1.00	1.25	38.8
Approach		384	1.4	384	1.4	0.739	22.3	LOS B	8.9	62.7	1.00	1.25	35.3
West: Flynn Avenue													
10	L2	47	2.2	47	2.2	0.851	17.2	LOS B	15.5	112.2	1.00	1.16	37.8
11	T1	460	5.9	460	5.9	0.851	17.6	LOS B	15.5	112.2	1.00	1.16	37.8
12	R2	220	1.4	220	1.4	0.851	20.7	LOS B	15.5	112.2	1.00	1.16	43.0
12u	U	5	0.0	5	0.0	0.851	22.4	LOS B	15.5	112.2	1.00	1.16	46.0
Approach		733	4.3	733	4.3	0.851	18.6	LOS B	15.5	112.2	1.00	1.16	40.1
All Vehicles		2341	4.0	2341	4.0	0.919	26.5	LOS B	20.1	147.0	1.00	1.36	38.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 03 [J03 - Fifteenth Ave x Kingsford Smith Ave - EX + DEV_PM Peak (Improvements)]

Network: 1 [Network - EX + DEV_PM Peak (Improvements)]

Intersection: Flynn Avenue x Kingsford Smith Avenue x Second Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Roundabout

Movement Performance - Vehicles

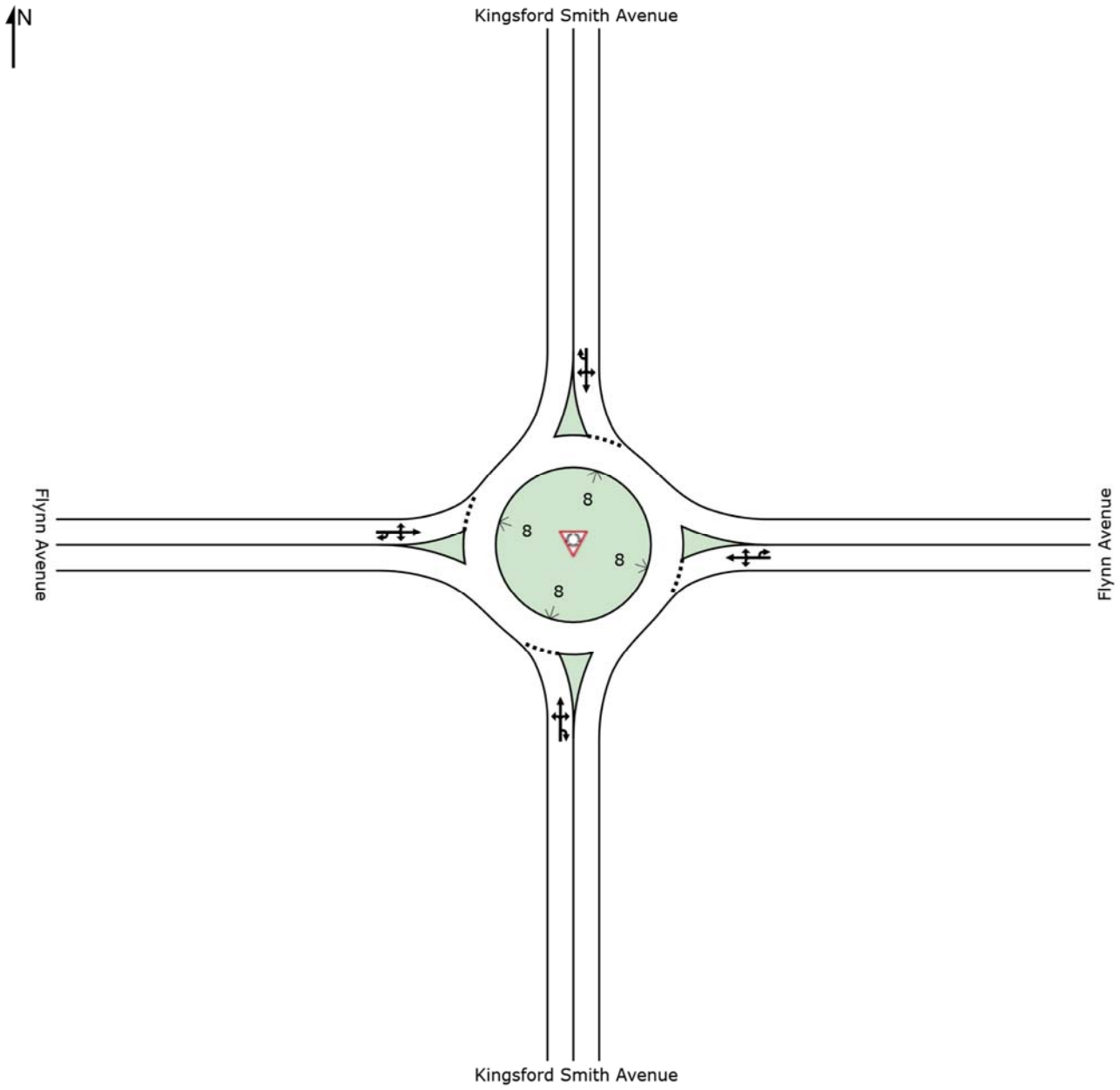
Mov ID	OD Mov	Demand Flows Total	HV	Arrival Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Kingsford Smith Avenue													
1	L2	133	4.0	133	4.0	0.512	10.5	LOS A	4.4	32.1	0.88	0.95	45.4
2	T1	112	4.7	112	4.7	0.512	10.6	LOS A	4.4	32.1	0.88	0.95	38.2
3	R2	107	8.8	107	8.8	0.512	14.1	LOS A	4.4	32.1	0.88	0.95	38.2
Approach		352	5.7	352	5.7	0.512	11.6	LOS A	4.4	32.1	0.88	0.95	41.8
East: Flynn Avenue													
4	L2	59	7.1	59	7.1	0.620	8.9	LOS A	5.5	39.7	0.69	0.78	49.7
5	T1	445	4.5	445	4.5	0.620	9.0	LOS A	5.5	39.7	0.69	0.78	53.3
6	R2	83	3.8	83	3.8	0.620	12.3	LOS A	5.5	39.7	0.69	0.78	50.4
6u	U	1	0.0	1	0.0	0.620	13.9	LOS A	5.5	39.7	0.69	0.78	50.4
Approach		588	4.7	588	4.7	0.620	9.5	LOS A	5.5	39.7	0.69	0.78	52.6
North: Kingsford Smith Avenue													
7	L2	55	0.0	55	0.0	0.398	9.5	LOS A	2.9	20.5	0.89	0.92	33.9
8	T1	76	4.2	76	4.2	0.398	9.7	LOS A	2.9	20.5	0.89	0.92	42.5
9	R2	104	0.0	104	0.0	0.398	12.8	LOS A	2.9	20.5	0.89	0.92	45.4
Approach		235	1.3	235	1.3	0.398	11.1	LOS A	2.9	20.5	0.89	0.92	42.8
West: Flynn Avenue													
10	L2	155	0.7	155	0.7	0.777	11.1	LOS A	11.5	83.3	0.93	0.91	43.3
11	T1	454	5.6	454	5.6	0.777	11.6	LOS A	11.5	83.3	0.93	0.91	43.3
12	R2	161	2.6	161	2.6	0.777	14.8	LOS B	11.5	83.3	0.93	0.91	46.4
12u	U	5	0.0	5	0.0	0.777	16.4	LOS B	11.5	83.3	0.93	0.91	50.0
Approach		775	3.9	775	3.9	0.777	12.2	LOS A	11.5	83.3	0.93	0.91	44.4
All Vehicles		1949	4.2	1949	4.2	0.777	11.1	LOS A	11.5	83.3	0.84	0.88	47.1

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

SITE LAYOUT

Site: 04 [J04 - Flynn Ave x Kingsford Smith Ave - EX + DEV_AM Peak (Improvements)]

Intersection: Flynn Avenue x Kingsford Smith Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Roundabout



Organisation: TRAFFIX | Created: Monday, 26 September 2016 3:19:50 PM
Project: \\192.168.3.1\tdata\Synergy\Projects\16\16.068\Modelling\16.068m07 TRAFFIX 45-65 Hall Circuit, Middleton Grange_with DEV and Improvements (J05 GW).sip7

MOVEMENT SUMMARY

Site: 04 [J04 - Flynn Ave x Kingsford Smith Ave - EX + DEV_AM Peak (Improvements)]

Network: 1 [Network - EX + DEV_AM Peak (Improvements)]

Intersection: Flynn Avenue x Kingsford Smith Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Roundabout

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
South: Kingsford Smith Avenue													
1	L2	266	0.4	266	0.4	0.673	8.9	LOS A	7.5	52.6	0.88	0.94	35.6
2	T1	263	0.0	263	0.0	0.673	8.5	LOS A	7.5	52.6	0.88	0.94	36.2
3	R2	48	2.2	48	2.2	0.673	11.7	LOS A	7.5	52.6	0.88	0.94	30.4
3u	U	7	0.0	7	0.0	0.673	12.9	LOS A	7.5	52.6	0.88	0.94	30.4
Approach		585	0.4	585	0.4	0.673	9.0	LOS A	7.5	52.6	0.88	0.94	35.6
East: Flynn Avenue													
4	L2	84	0.0	84	0.0	0.574	9.8	LOS A	5.2	36.7	0.86	0.99	32.1
5	T1	186	1.1	186	1.1	0.574	9.5	LOS A	5.2	36.7	0.86	0.99	36.1
6	R2	153	2.8	153	2.8	0.574	12.6	LOS A	5.2	36.7	0.86	0.99	36.1
6u	U	2	0.0	2	0.0	0.574	13.8	LOS A	5.2	36.7	0.86	0.99	32.1
Approach		425	1.5	425	1.5	0.574	10.7	LOS A	5.2	36.7	0.86	0.99	35.6
North: Kingsford Smith Avenue													
7	L2	92	3.4	92	3.4	0.538	6.8	LOS A	4.5	32.5	0.77	0.79	34.9
8	T1	305	2.4	305	2.4	0.538	6.4	LOS A	4.5	32.5	0.77	0.79	34.9
9	R2	64	8.2	64	8.2	0.538	9.6	LOS A	4.5	32.5	0.77	0.79	37.6
9u	U	2	0.0	2	0.0	0.538	10.6	LOS A	4.5	32.5	0.77	0.79	38.1
Approach		463	3.4	463	3.4	0.538	6.9	LOS A	4.5	32.5	0.77	0.79	35.5
West: Flynn Avenue													
10	L2	68	15.4	68	15.4	0.509	7.9	LOS A	4.0	29.6	0.79	0.86	36.5
11	T1	132	1.6	132	1.6	0.509	7.0	LOS A	4.0	29.6	0.79	0.86	33.8
12	R2	204	4.1	204	4.1	0.509	10.1	LOS A	4.0	29.6	0.79	0.86	33.8
12u	U	1	0.0	1	0.0	0.509	11.2	LOS A	4.0	29.6	0.79	0.86	37.4
Approach		405	5.2	405	5.2	0.509	8.7	LOS A	4.0	29.6	0.79	0.86	34.5
All Vehicles		1879	2.4	1879	2.4	0.673	8.8	LOS A	7.5	52.6	0.83	0.90	35.4

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

MOVEMENT SUMMARY

Site: 04 [J04 - Flynn Ave x Kingsford Smith Ave - EX + DEV_PM Peak (Improvements)]

Network: 1 [Network - EX + DEV_PM Peak (Improvements)]

Intersection: Flynn Avenue x Kingsford Smith Avenue
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Roundabout

Movement Performance - Vehicles

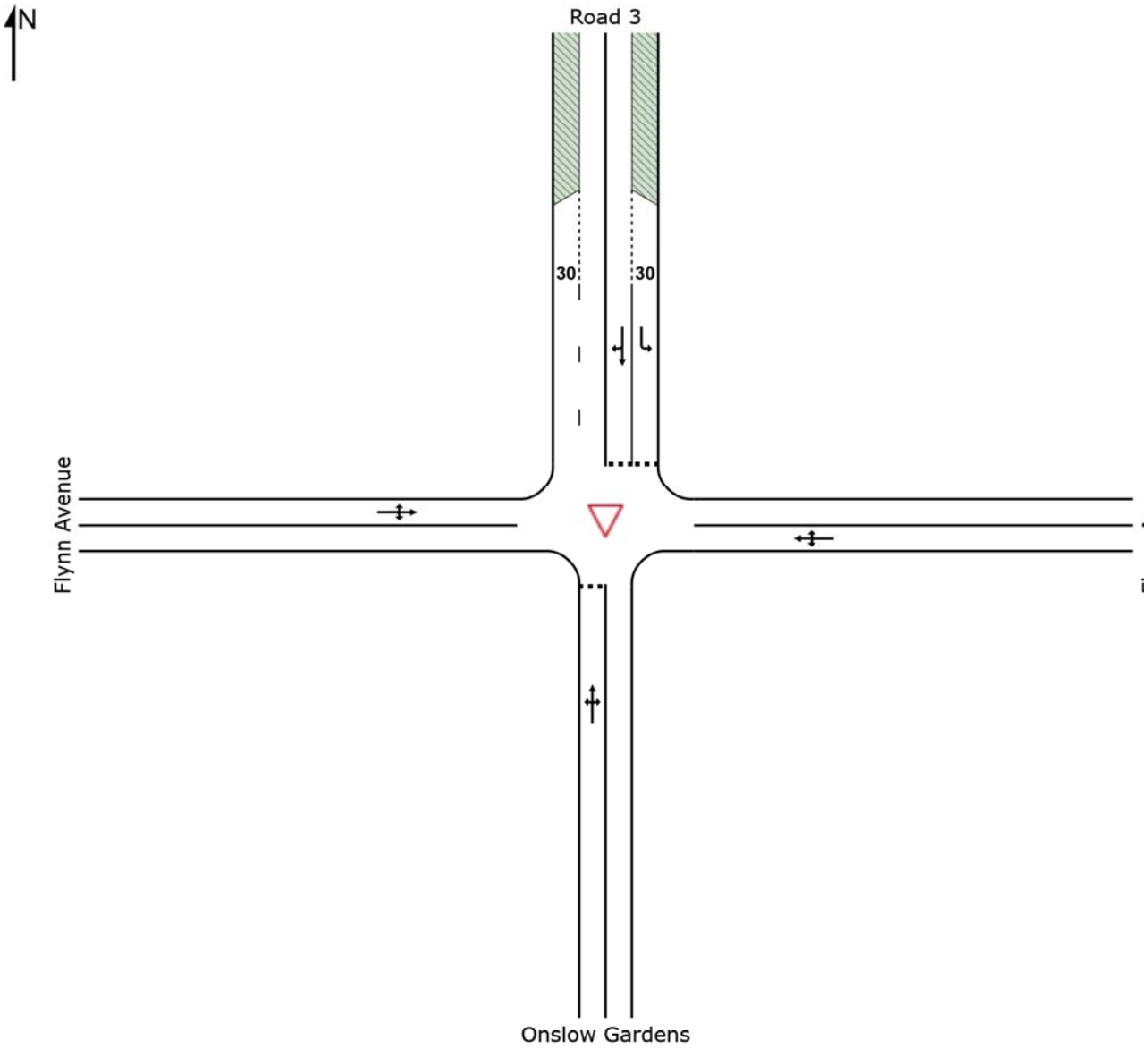
Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kingsford Smith Avenue													
1	L2	89	2.4	89	2.4	0.390	6.1	LOS A	2.6	18.8	0.61	0.69	43.7
2	T1	142	4.4	142	4.4	0.390	6.0	LOS A	2.6	18.8	0.61	0.69	44.5
3	R2	140	0.0	140	0.0	0.390	9.0	LOS A	2.6	18.8	0.61	0.69	37.8
3u	U	1	0.0	1	0.0	0.390	10.5	LOS A	2.6	18.8	0.61	0.69	37.8
Approach		373	2.3	373	2.3	0.390	7.2	LOS A	2.6	18.8	0.61	0.69	42.8
East: Flynn Avenue													
4	L2	115	0.0	115	0.0	0.401	6.5	LOS A	2.6	18.7	0.65	0.70	41.4
5	T1	202	0.5	202	0.5	0.401	6.4	LOS A	2.6	18.7	0.65	0.70	45.5
6	R2	51	4.2	51	4.2	0.401	9.6	LOS A	2.6	18.7	0.65	0.70	45.3
6u	U	1	0.0	1	0.0	0.401	11.0	LOS A	2.6	18.7	0.65	0.70	41.4
Approach		368	0.9	368	0.9	0.401	6.9	LOS A	2.6	18.7	0.65	0.70	44.7
North: Kingsford Smith Avenue													
7	L2	35	0.0	35	0.0	0.309	7.5	LOS A	2.0	14.1	0.71	0.77	41.1
8	T1	151	2.8	151	2.8	0.309	7.4	LOS A	2.0	14.1	0.71	0.77	41.1
9	R2	49	8.5	49	8.5	0.309	10.8	LOS A	2.0	14.1	0.71	0.77	44.8
9u	U	3	0.0	3	0.0	0.309	11.9	LOS A	2.0	14.1	0.71	0.77	45.4
Approach		238	3.5	238	3.5	0.309	8.2	LOS A	2.0	14.1	0.71	0.77	42.4
West: Flynn Avenue													
10	L2	107	8.8	107	8.8	0.532	7.2	LOS A	4.2	30.4	0.71	0.75	44.4
11	T1	225	1.4	225	1.4	0.532	6.8	LOS A	4.2	30.4	0.71	0.75	41.1
12	R2	166	0.0	166	0.0	0.532	9.9	LOS A	4.2	30.4	0.71	0.75	41.1
12u	U	1	0.0	1	0.0	0.532	11.3	LOS A	4.2	30.4	0.71	0.75	45.4
Approach		500	2.5	500	2.5	0.532	7.9	LOS A	4.2	30.4	0.71	0.75	42.2
All Vehicles		1479	2.2	1479	2.2	0.532	7.5	LOS A	4.2	30.4	0.67	0.73	43.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 05v [J05 - Flynn Ave x Onslow Gardens x Road 3 - EX + DEV_AM Peak (Improvements) - Conversion]

Intersection: Flynn Avenue x Onslow Gardens x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 05v [J05 - Flynn Ave x Onslow Gardens x Road 3 - EX + DEV_AM Peak (Improvements) - Conversion]

Network: 1 [Network - EX + DEV_AM Peak (Improvements)]

Intersection: Flynn Avenue x Onslow Gardens x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
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
South: Onslow Gardens													
1	L2	5	0.0	5	0.0	0.013	6.1	LOS A	0.0	0.3	0.52	0.61	28.8
2	T1	1	0.0	1	0.0	0.013	13.0	LOS A	0.0	0.3	0.52	0.61	28.8
3	R2	1	0.0	1	0.0	0.013	17.3	LOS B	0.0	0.3	0.52	0.61	28.8
Approach		7	0.0	7	0.0	0.013	8.7	LOS A	0.0	0.3	0.52	0.61	28.8
East: Flynn Avenue													
4	L2	3	0.0	3	0.0	0.294	9.3	LOS A	0.8	5.9	0.22	0.07	46.8
5	T1	443	1.7	443	1.7	0.294	1.0	LOS A	0.8	5.9	0.22	0.07	46.8
6	R2	49	0.0	49	0.0	0.294	9.4	LOS A	0.8	5.9	0.22	0.07	46.8
Approach		496	1.5	496	1.5	0.294	1.9	NA	0.8	5.9	0.22	0.07	46.8
North: Road 3													
7	L2	87	0.0	87	0.0	0.149	7.8	LOS A	0.4	2.8	0.56	0.78	35.6
8	T1	1	0.0	1	0.0	0.097	13.0	LOS A	0.3	2.1	0.79	0.90	31.5
9	R2	24	0.0	24	0.0	0.097	17.0	LOS B	0.3	2.1	0.79	0.90	26.5
Approach		113	0.0	113	0.0	0.149	9.8	LOS A	0.4	2.8	0.61	0.81	33.1
West: Flynn Avenue													
10	L2	43	0.0	43	0.0	0.501	5.3	LOS A	0.3	2.4	0.04	0.04	46.5
11	T1	664	1.7	664	1.7	0.501	0.1	LOS A	0.3	2.4	0.04	0.04	46.5
12	R2	11	0.0	11	0.0	0.501	7.4	LOS A	0.3	2.4	0.04	0.04	45.0
Approach		718	1.6	718	1.6	0.501	0.5	NA	0.3	2.4	0.04	0.04	46.4
All Vehicles		1334	1.4	1334	1.4	0.501	1.9	NA	0.8	5.9	0.15	0.12	44.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
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: 05v [J05 - Flynn Ave x Onslow Gardens x Road 3 - EX + DEV_PM Peak (Improvements) - Conversion]

Network: 1 [Network - EX + DEV_PM Peak (Improvements)]

Intersection: Flynn Avenue x Onslow Gardens x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

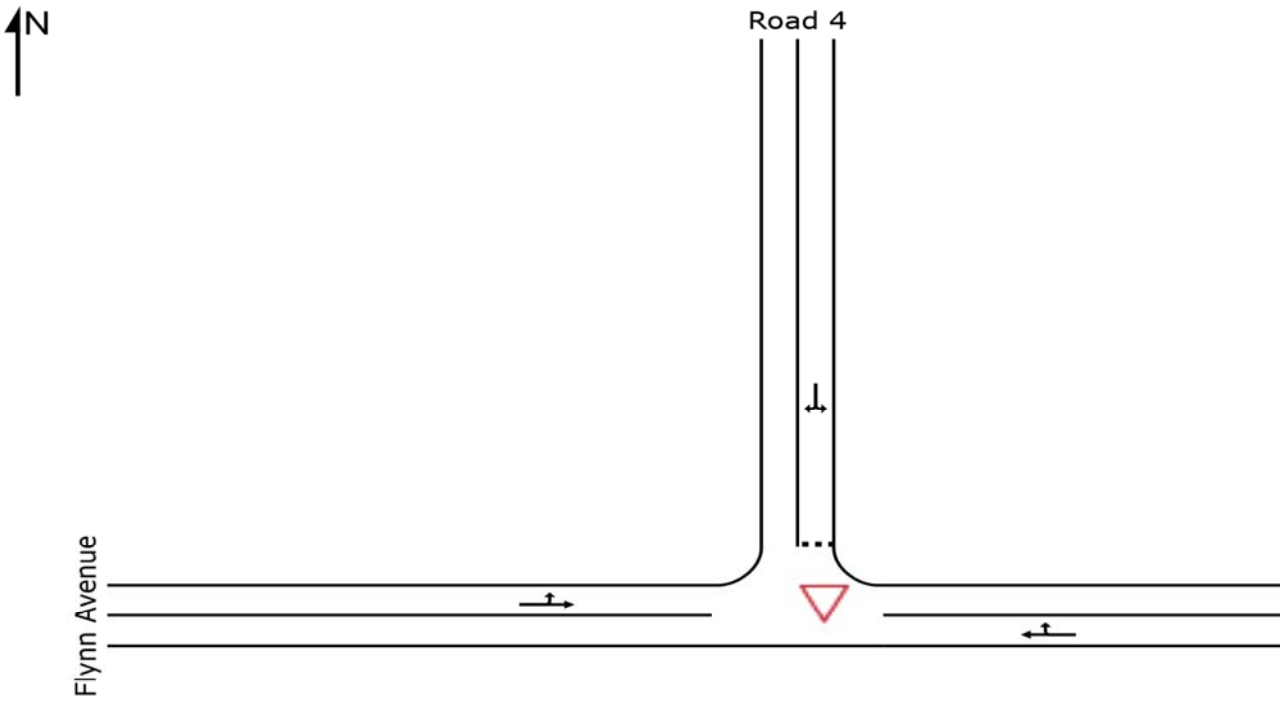
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Onslow Gardens													
1	L2	1	0.0	1	0.0	0.006	6.1	LOS A	0.0	0.1	0.55	0.63	28.3
2	T1	1	0.0	1	0.0	0.006	9.4	LOS A	0.0	0.1	0.55	0.63	28.3
3	R2	1	0.0	1	0.0	0.006	11.2	LOS A	0.0	0.1	0.55	0.63	28.3
Approach		3	0.0	3	0.0	0.006	8.9	LOS A	0.0	0.1	0.55	0.63	28.3
East: Flynn Avenue													
4	L2	4	0.0	4	0.0	0.364	6.9	LOS A	1.6	11.4	0.28	0.16	46.1
5	T1	454	1.4	454	1.4	0.364	1.0	LOS A	1.6	11.4	0.28	0.16	45.9
6	R2	149	0.0	149	0.0	0.364	6.9	LOS A	1.6	11.4	0.28	0.16	45.9
Approach		607	1.0	607	1.0	0.364	2.5	NA	1.6	11.4	0.28	0.16	45.9
North: Road 3													
7	L2	95	0.0	95	0.0	0.072	5.3	LOS A	0.3	2.0	0.32	0.55	38.2
8	T1	1	0.0	1	0.0	0.409	11.8	LOS A	1.8	12.6	0.76	0.98	32.9
9	R2	162	0.0	162	0.0	0.409	14.8	LOS B	1.8	12.6	0.76	0.98	28.1
Approach		258	0.0	258	0.0	0.409	11.3	LOS A	1.8	12.6	0.60	0.82	31.1
West: Flynn Avenue													
10	L2	175	0.0	175	0.0	0.219	4.6	LOS A	0.0	0.1	0.01	0.23	39.3
11	T1	239	1.3	239	1.3	0.219	0.0	LOS A	0.0	0.1	0.01	0.23	39.3
12	R2	1	0.0	1	0.0	0.219	6.8	LOS A	0.0	0.1	0.01	0.23	42.0
Approach		415	0.8	415	0.8	0.219	2.0	NA	0.0	0.1	0.01	0.23	39.4
All Vehicles		1283	0.7	1283	0.7	0.409	4.1	NA	1.8	12.6	0.25	0.32	41.2

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

SITE LAYOUT

Site: 06 [J06 - Flynn Ave x Road 4 - EX + DEV_AM Peak (Improvements)]

Intersection: Flynn Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Giveway / Yield (Two-Way)



Organisation: TRAFFIX | Created: Monday, 26 September 2016 3:20:08 PM
Project: \\192.168.3.1\tdata\Synergy\Projects\16\16.068\Modelling\16.068m07 TRAFFIX 45-65 Hall Circult, Middleton Grange_with DEV and Improvements (J05 GW).sip7

MOVEMENT SUMMARY

Site: 06 [J06 - Flynn Ave x Road 4 - EX + DEV_AM Peak (Improvements)]

Network: 1 [Network - EX + DEV_AM Peak (Improvements)]

Intersection: Flynn Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Flynn Avenue													
5	T1	436	1.7	436	1.7	0.269	0.7	LOS A	0.6	4.4	0.15	0.05	42.0
6	R2	37	0.0	37	0.0	0.269	8.8	LOS A	0.6	4.4	0.15	0.05	42.0
Approach		473	1.6	473	1.6	0.269	1.3	NA	0.6	4.4	0.15	0.05	42.0
North: Road 4													
7	L2	81	0.0	81	0.0	0.155	7.6	LOS A	0.5	3.8	0.59	0.79	34.2
9	R2	20	0.0	20	0.0	0.155	13.7	LOS A	0.5	3.8	0.59	0.79	34.2
Approach		101	0.0	101	0.0	0.155	8.8	LOS A	0.5	3.8	0.59	0.79	34.2
West: Flynn Avenue													
10	L2	24	0.0	24	0.0	0.343	4.6	LOS A	0.0	0.0	0.00	0.02	49.7
11	T1	637	1.8	637	1.8	0.343	0.0	LOS A	0.0	0.0	0.00	0.02	49.7
Approach		661	1.8	661	1.8	0.343	0.2	NA	0.0	0.0	0.00	0.02	49.7
All Vehicles		1235	1.5	1235	1.5	0.343	1.3	NA	0.6	4.4	0.11	0.09	47.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
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: 06 [J06 - Flynn Ave x Road 4 - EX + DEV_PM Peak (Improvements)]

Network: 1 [Network - EX + DEV_PM Peak (Improvements)]

Intersection: Flynn Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: PM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

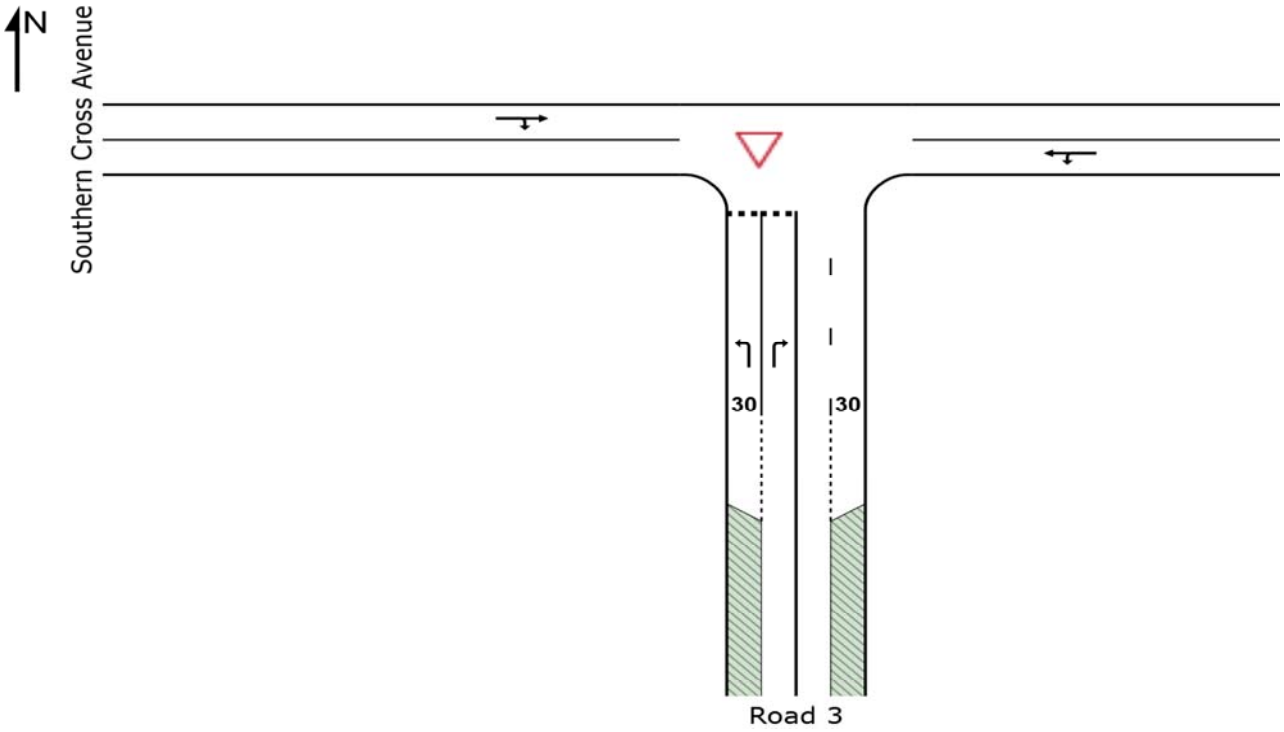
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Flynn Avenue													
5	T1	501	1.3	501	1.3	0.363	1.0	LOS A	1.6	11.3	0.29	0.13	37.9
6	R2	116	0.0	116	0.0	0.363	7.4	LOS A	1.6	11.3	0.29	0.13	37.9
Approach		617	1.0	617	1.0	0.363	2.2	NA	1.6	11.3	0.29	0.13	37.9
North: Road 4													
7	L2	62	0.0	62	0.0	0.291	6.4	LOS A	1.1	7.8	0.59	0.80	32.1
9	R2	97	0.0	97	0.0	0.291	13.1	LOS A	1.1	7.8	0.59	0.80	32.1
Approach		159	0.0	159	0.0	0.291	10.5	LOS A	1.1	7.8	0.59	0.80	32.1
West: Flynn Avenue													
10	L2	109	0.0	109	0.0	0.240	4.6	LOS A	0.0	0.0	0.00	0.13	48.4
11	T1	352	0.9	352	0.9	0.240	0.0	LOS A	0.0	0.0	0.00	0.13	48.4
Approach		461	0.7	461	0.7	0.240	1.1	NA	0.0	0.0	0.00	0.13	48.4
All Vehicles		1237	0.8	1237	0.8	0.363	2.9	NA	1.6	11.3	0.22	0.22	43.3

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.

SITE LAYOUT

Site: 07 [J07 - Southern Cross Ave x Road 3 - EX + DEV_AM Peak (Improvements)]

Intersection: Southern Cross Avenue x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Giveway / Yield (Two-Way)



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Project: \\192.168.3.1\tdata\Synergy\Projects\16\16.068\Modelling\16.068m07 TRAFFIX 45-65 Hall Circult, Middleton Grange_with DEV and Improvements (J05 GW).sip7

MOVEMENT SUMMARY

Site: 07 [J07 - Southern Cross Ave x Road 3 - EX + DEV_AM Peak (Improvements)]

Network: 1 [Network - EX + DEV_AM Peak (Improvements)]

Intersection: Southern Cross Avenue x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
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
South: Road 3													
1	L2	1	0.0	1	0.0	0.001	4.6	LOS A	0.0	0.0	0.09	0.49	39.7
3	R2	1	0.0	1	0.0	0.001	4.8	LOS A	0.0	0.0	0.15	0.50	42.7
Approach		2	0.0	2	0.0	0.001	4.7	LOS A	0.0	0.0	0.12	0.50	41.6
East: Southern Cross Avenue													
4	L2	9	0.0	9	0.0	0.021	4.6	LOS A	0.0	0.0	0.00	0.13	47.2
5	T1	32	0.0	32	0.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.13	47.2
Approach		41	0.0	41	0.0	0.021	1.1	NA	0.0	0.0	0.00	0.13	47.2
West: Southern Cross Avenue													
11	T1	37	0.0	37	0.0	0.024	0.0	LOS A	0.1	0.4	0.05	0.11	47.7
12	R2	9	0.0	9	0.0	0.024	4.7	LOS A	0.1	0.4	0.05	0.11	43.1
Approach		46	0.0	46	0.0	0.024	1.0	NA	0.1	0.4	0.05	0.11	47.3
All Vehicles		89	0.0	89	0.0	0.024	1.1	NA	0.1	0.4	0.03	0.13	47.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
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: 07 [J07 - Southern Cross Ave x Road 3 - EX + DEV_PM Peak (Improvements)]

Network: 1 [Network - EX + DEV_PM Peak (Improvements)]

Intersection: Southern Cross Avenue x Road 3
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

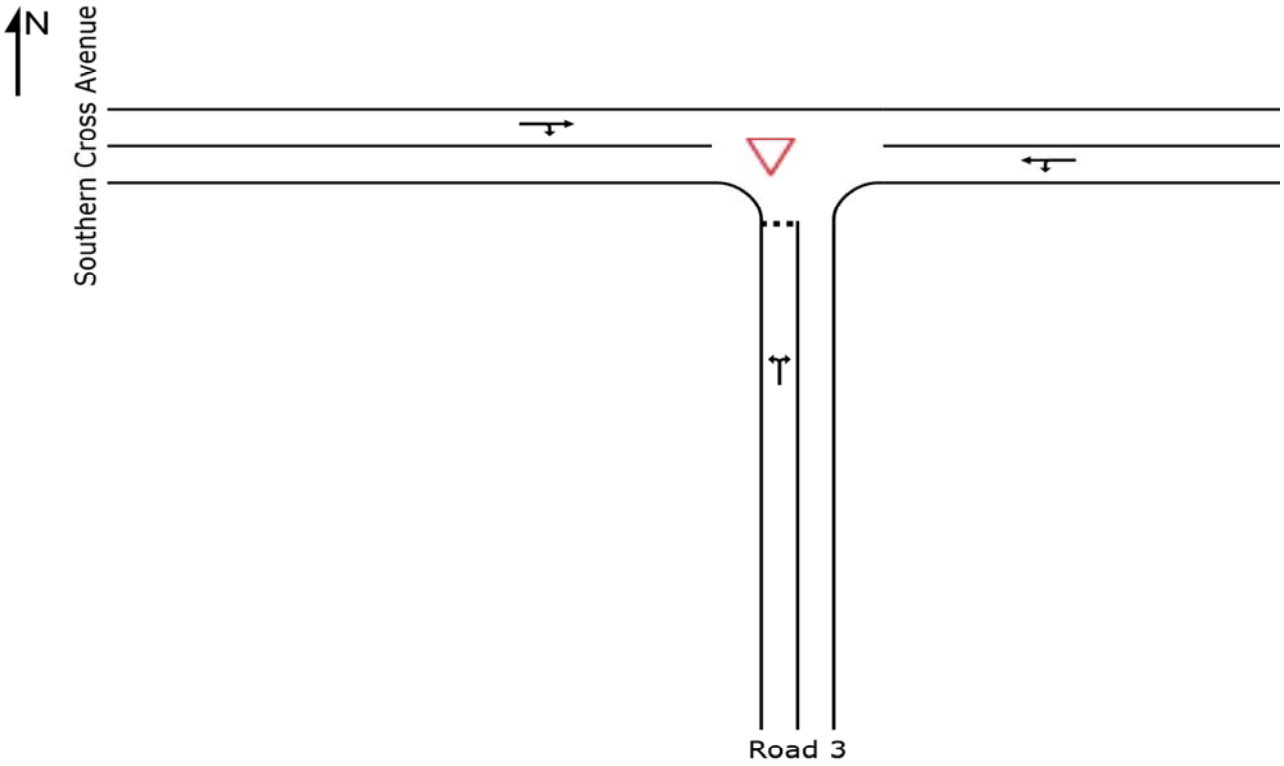
Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 3													
1	L2	46	0.0	46	0.0	0.029	4.7	LOS A	0.1	0.8	0.12	0.50	39.6
3	R2	46	0.0	46	0.0	0.041	5.1	LOS A	0.1	0.9	0.22	0.53	42.4
Approach		93	0.0	93	0.0	0.041	4.9	LOS A	0.1	0.9	0.17	0.51	41.4
East: Southern Cross Avenue													
4	L2	46	0.0	46	0.0	0.047	4.6	LOS A	0.0	0.0	0.00	0.27	44.3
5	T1	46	0.0	46	0.0	0.047	0.0	LOS A	0.0	0.0	0.00	0.27	44.3
Approach		93	0.0	93	0.0	0.047	2.3	NA	0.0	0.0	0.00	0.27	44.3
West: Southern Cross Avenue													
11	T1	36	0.0	36	0.0	0.046	0.2	LOS A	0.2	1.5	0.18	0.29	43.9
12	R2	46	0.0	46	0.0	0.046	4.8	LOS A	0.2	1.5	0.18	0.29	34.2
Approach		82	0.0	82	0.0	0.046	2.8	NA	0.2	1.5	0.18	0.29	40.7
All Vehicles		267	0.0	267	0.0	0.047	3.3	NA	0.2	1.5	0.11	0.36	42.1

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.

SITE LAYOUT

Site: 08 [J08 - Southern Cross Ave x Road 4 - EX + DEV_AM Peak (Improvements)]

Intersection: Southern Cross Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
Giveway / Yield (Two-Way)



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Project: \\192.168.3.1\tdata\Synergy\Projects\16\16.068\Modelling\16.068m07 TRAFFIX 45-65 Hall Circuit, Middleton Grange_with DEV and Improvements (J05 GW).sip7

MOVEMENT SUMMARY

Site: 08 [J08 - Southern Cross Ave x Road 4 - EX + DEV_AM Peak (Improvements)]

Network: 1 [Network - EX + DEV_AM Peak (Improvements)]

Intersection: Southern Cross Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
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
South: Road 3													
1	L2	1	0.0	1	0.0	0.002	4.6	LOS A	0.0	0.0	0.09	0.51	45.1
3	R2	1	0.0	1	0.0	0.002	4.8	LOS A	0.0	0.0	0.09	0.51	39.7
Approach		2	0.0	2	0.0	0.002	4.7	LOS A	0.0	0.0	0.09	0.51	43.5
East: Southern Cross Avenue													
4	L2	5	0.0	5	0.0	0.016	4.6	LOS A	0.0	0.0	0.00	0.09	45.2
5	T1	27	0.0	27	0.0	0.016	0.0	LOS A	0.0	0.0	0.00	0.09	49.1
Approach		33	0.0	33	0.0	0.016	0.7	NA	0.0	0.0	0.00	0.09	48.9
West: Southern Cross Avenue													
11	T1	45	0.0	45	0.0	0.026	0.0	LOS A	0.0	0.2	0.02	0.06	49.1
12	R2	5	0.0	5	0.0	0.026	4.7	LOS A	0.0	0.2	0.02	0.06	49.1
Approach		51	0.0	51	0.0	0.026	0.5	NA	0.0	0.2	0.02	0.06	49.1
All Vehicles		85	0.0	85	0.0	0.026	0.7	NA	0.0	0.2	0.02	0.08	48.9

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.

MOVEMENT SUMMARY

Site: 08 [J08 - Southern Cross Ave x Road 4 - EX + DEV_PM Peak (Improvements)]

Network: 1 [Network - EX + DEV_PM Peak (Improvements)]

Intersection: Southern Cross Avenue x Road 4
Scenario: Existing + Development (825 High Density Residential Units | 22,140m2 of Retail & Commercial)
Period: AM Peak
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
South: Road 3													
1	L2	27	0.0	27	0.0	0.042	4.7	LOS A	0.2	1.1	0.16	0.52	44.8
3	R2	27	0.0	27	0.0	0.042	5.2	LOS A	0.2	1.1	0.16	0.52	39.3
Approach		55	0.0	55	0.0	0.042	4.9	LOS A	0.2	1.1	0.16	0.52	43.2
East: Southern Cross Avenue													
4	L2	27	0.0	27	0.0	0.047	4.6	LOS A	0.0	0.0	0.00	0.16	41.9
5	T1	65	0.0	65	0.0	0.047	0.0	LOS A	0.0	0.0	0.00	0.16	48.3
Approach		93	0.0	93	0.0	0.047	1.3	NA	0.0	0.0	0.00	0.16	47.8
West: Southern Cross Avenue													
11	T1	65	0.0	65	0.0	0.049	0.1	LOS A	0.2	1.1	0.12	0.16	47.4
12	R2	27	0.0	27	0.0	0.049	4.8	LOS A	0.2	1.1	0.12	0.16	47.4
Approach		93	0.0	93	0.0	0.049	1.5	NA	0.2	1.1	0.12	0.16	47.4
All Vehicles		240	0.0	240	0.0	0.049	2.2	NA	0.2	1.1	0.08	0.24	46.4

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.
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.