

Attachment A10

Traffic Impact Assessment



Planning Proposal & Stage 1 DA Traffic Impact Assessment


Proposed Mix-Use Development
118-130 Epsom Road and 905 South Dowling Street, Zetland

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1. INTRODUCTION

TRAFFIX has been commissioned by Karimbla Constructions Services (NSW) Pty Ltd to undertake a traffic impact assessment in support of a Planning Proposal and Stage 1 DA relating to a mixed-use development at 118-130 Epsom Road and 905 South Dowling Street, Zetland. The development is located within the City of Sydney Council local government area and has been assessed under that Council's controls.

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

The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Outlines the strategic context
- Section 4: Documents existing traffic conditions
- Section 5: Describes the proposed development
- Section 6: Assesses the parking requirements
- Section 7: Assesses traffic impacts
- Section 8: Discusses access and internal design aspects
- Section 9: Presents the overall study conclusions

2. LOCATION AND SITE

The subject site at 118-130 Epsom Road and 905 South Dowling Street, Zetland is located approximately 4.5 kilometres south of Sydney Central Business District and is legally identified as Lot 2 in DP830870 and Lot 7 in DP24134. More specifically, it is situated on the west side of Link Road, in the area between Defries Avenue, Zetland Avenue and Epsom Road.

The site is irregular in configuration, with a total site area of 4.08 hectares and comprises the following boundaries and approximate lengths:

- 265 metre northern frontage to a private road and commercial developments;
- 227 metre eastern frontage to Link Road;
- 113 metre southern frontage to Epsom Road; and
- 337 metre western boundary shared with neighbouring residential and commercial developments that are currently under construction.

The site accommodates several car dealership developments and currently provides four (4) accesses onto Link Road and a single access onto Epsom Road. A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**.

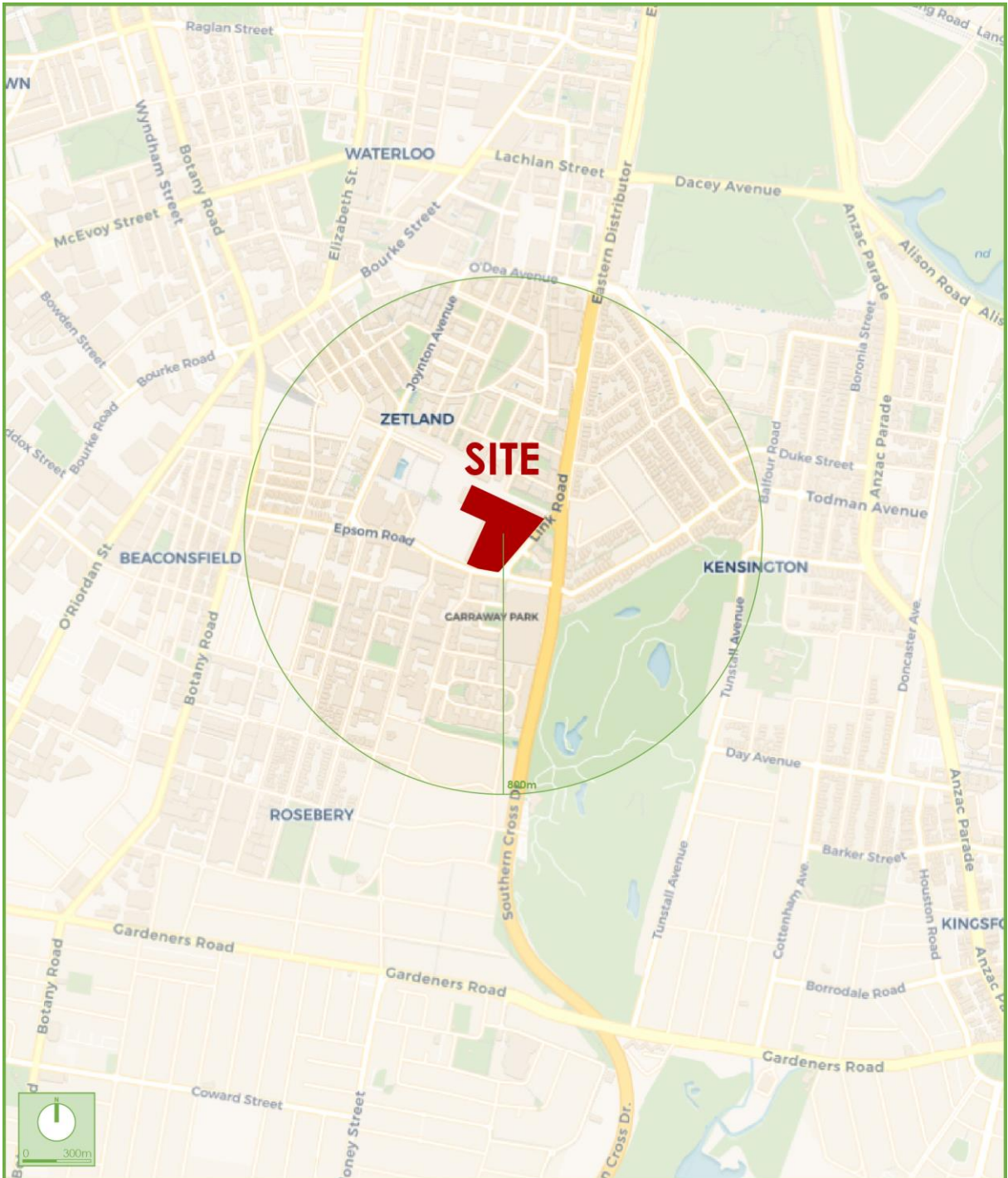


Figure 1: Location Plan



Figure 2: Site Plan

3. STRATEGIC CONTEXT

3.1 Local Transport Plans/Reports

3.1.1 Sydney's Cycling Future 2013

Sydney's Cycling Future presents a focus planning, prioritising, and providing for cycling in Sydney. It aims to make cycling a more feasible transport option through the following:

- Investing in separated cycleways and providing connected bicycle networks to major centres and transport interchanges;
- Promoting better use of our existing network; and
- Engaging with our partners across government, councils, developers and bicycle users.

The strategic document states the intent for state government to prioritise bicycle infrastructure investments and state priority corridors to safely link inner Sydney customers to Sydney's CBD.

3.1.2 Sydney's Walking Future 2013

Sydney's Walking Future recognises the importance of this key mode of transport and aims to improve the experience of walking and encourages more pedestrian activity to connect Sydney's communities. These aims are proposed to be achieved via:

- Promoting walking for transport;
- Connecting people to places through safe walking networks around centres and public transport interchanges; and
- Engaging with partners across government, with councils, non-government organisations and the private sector to maximise our effectiveness.

3.1.3 Sydney's Bus Future 2013

Sydney's Bus Future aims to deliver a modern and customer-based system by approaching the system as a whole to deliver simpler, faster and better bus services. The plan aims to improve and create new routes, simplify timetables and make interchanges more convenient.

The plan aims to attract more customers to use bus services throughout Sydney by ensuring routes are direct and reducing duplicates, ensuring faster bus networks and ensuring the network is efficient, modern and the fleet comfortable.

3.2 State Transport or Infrastructure Plans

3.2.1 The Greater Sydney Regional Plan, A metropolis of three cities

This transport strategy presents a vision and innovative actions for managing Greater Sydney's growth. It is prepared concurrently with *Future Transport 2056* and the State Infrastructure Strategy and aims to re-shape Greater Sydney as three unique and connected cities. These three cities are described as follows:

- The Western Parkland City;
- The Central River City; and
- The Eastern Harbour City.

The transport initiatives within this Plan are sourced from the Future Transport Strategy 2056. The subject site is located within the bounds of the Eastern Harbour City.

Generally, this strategy encourages a city supported by infrastructure with an indicator being access to metropolitan centres/clusters within 30 minutes and a collaborative city that would involve an increased use of public resources such as open spaces and community facilities.

3.2.2 Future Transport Strategy 2056

This transport strategy document presents a vision for the transport system that revolves around growing Sydney as a metropolis driven by major placed-based planning and investment around the new Western Sydney Airport and Badgerys Creek Aerotropolis. Planning for Greater Sydney will focus on the concept of three cities, that being the Western Parkland City, the Central River City and the Eastern Harbour City. The future transport strategy for Greater Sydney aims to enable most customers to travel to their nearest strategic centre within 30 minutes of their residence by public or active transport.

This aim will ultimately be achieved through a focus into an integrated network of corridors which will facilitate these movements. These corridors are summarised below:

- City-shaping corridors – major trunk road and public transport corridors providing higher speed and volume connections between our cities and centres that shape locational decisions of residents and businesses;
- City-serving corridors – higher density corridors within 10km of metropolitan centres providing high frequency access to metropolitan cities/centres with more frequent stopping patterns; and
- Centre-serving corridors – local corridors that support buses, walking and cycling, to connect people with their nearest centre and transport interchange.

3.2.3 State Infrastructure Strategy 2018 – 2038 Building the Momentum

The State Infrastructure Strategy is a 20-year infrastructure plan for the NSW Government which provides recommendations to best grow the State's economy, enhance productivity and improve living standards.

Specifically, in relation to integrating land use and infrastructure planning the strategy identifies those aligning decisions about the provision and use of infrastructure with the Greater Sydney Commission's three cities vision and the 10 Regional Plans is critical to maximising the effectiveness, efficiency, and endurance of both new and existing infrastructure. A summary of the key recommendations is presented below:

- Link integrated strategic land use and infrastructure planning;
- Support efficient development through shared-use corridors;
- Identify and protect corridors; and
- Strengthen government planning processes.

In summary, this document serves to support the three cities vision that is envisaged by the Future Transport Strategy 2056, looking beyond current projects and identifies policies and strategies that are required to provide infrastructure that will meet the demands of a growing population and economy.

3.3 Local Land Use Planning

3.3.1 Local Environmental Plan (LEP)

The LEP that is relevant to the site are as follows:

- Sydney Local Environmental Plan 2012.

3.3.2 Development Control Plan (DCP)

The applicable DCPs for the subject site are as follows:

- City of Sydney Access Development Control Plan 2004;
- City of Sydney Heritage Development Control Plan 2006; and
- Sydney Development Control Plan 2012, including but not limited to:
 - Section 3: General Provisions;
 - Section 5: Specific Areas (5.3 Green Square – Epsom Park); and
 - Schedules.

3.4 Local Programs

3.4.1 Wayfinding and Signs

The City of Sydney have developed a pedestrian wayfinding strategy with an aim to ensure this signage is consistent and legible to aid pedestrians to arrive at their desired destination. This initiative has included the rollout of a network of tactile signs at every signalised pedestrian crossing throughout the City of Sydney LGA increasing safety and accessibility for pedestrians.

3.4.2 Cycling Courses

The City of Sydney offers cycling courses ranging from beginner levels to allow riders to develop skills and confidence in bike riding and courses specific to cycling in the city targeted at children over the age of 12 to adults. Council also offers course on bike care and maintenance encouraging more people to consider this as a daily mode of transport.

4. EXISTING TRAFFIC CONDITIONS

4.1 Road Network

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

- **South Dowling Street:** a TfNSW Main Road (MR 593) that traverses north-south between Oxford Street in the north and Southern Cross Drive in the south. Within the vicinity of the site, it is subject to 80km/h speed zoning and accommodates 3-4 lanes of traffic in each direction. South Dowling Street does not permit on-street parking on either side of the road.
- **Epsom Road:** a local road that traverses east-west between Lenthall Street in the east and Botany Road in the west. It is subject to 50km/h speed zoning and accommodates 1-2 lanes of traffic in each direction. Epsom Road permits sections of on-street parking, subject to various restrictions.
- **Joynton Avenue:** a local road that that traverses north-south between O'Dea Avenue in the north and Epsom Road in the south. Within the vicinity of the site, it is subject to 40km/h speed zoning and accommodates a single lane of traffic in each direction. Joynton Avenue permits sections of on-street parking, subject various restrictions.
- **Rothschild Avenue:** a local road that traverses north-south between Epsom Road in the north and Harcourt Parade. It is subject to 40km/h speed zoning and accommodates a single lane of traffic in each direction. Rothschild Avenue permits on-street parking, subject to various restrictions.
- **Dalmeny Avenue:** a local road that traverses north-south between Epsom Road in the north and Gardeners Road in the south. Within the vicinity of the site, it is subject to 40km/h speed zoning and accommodates a single lane of traffic in each direction. Dalmeny Avenue permits on-street parking, subject to various restrictions.

- **Zetland Avenue:** a future road that traverses east-west between Southern Cross Drive in the east and the newly constructed Paul Street in the west. It is planned to accommodate a single lane of traffic and on-street parking in each direction. Zetland Avenue currently ends, after Joynton Avenue.

It can be seen from **Figure 3** that the site is conveniently located with respect to the main arterial road serving the region, being South Dowling Street. As such, traffic is able to be distributed onto the wider road network, minimising traffic impacts.

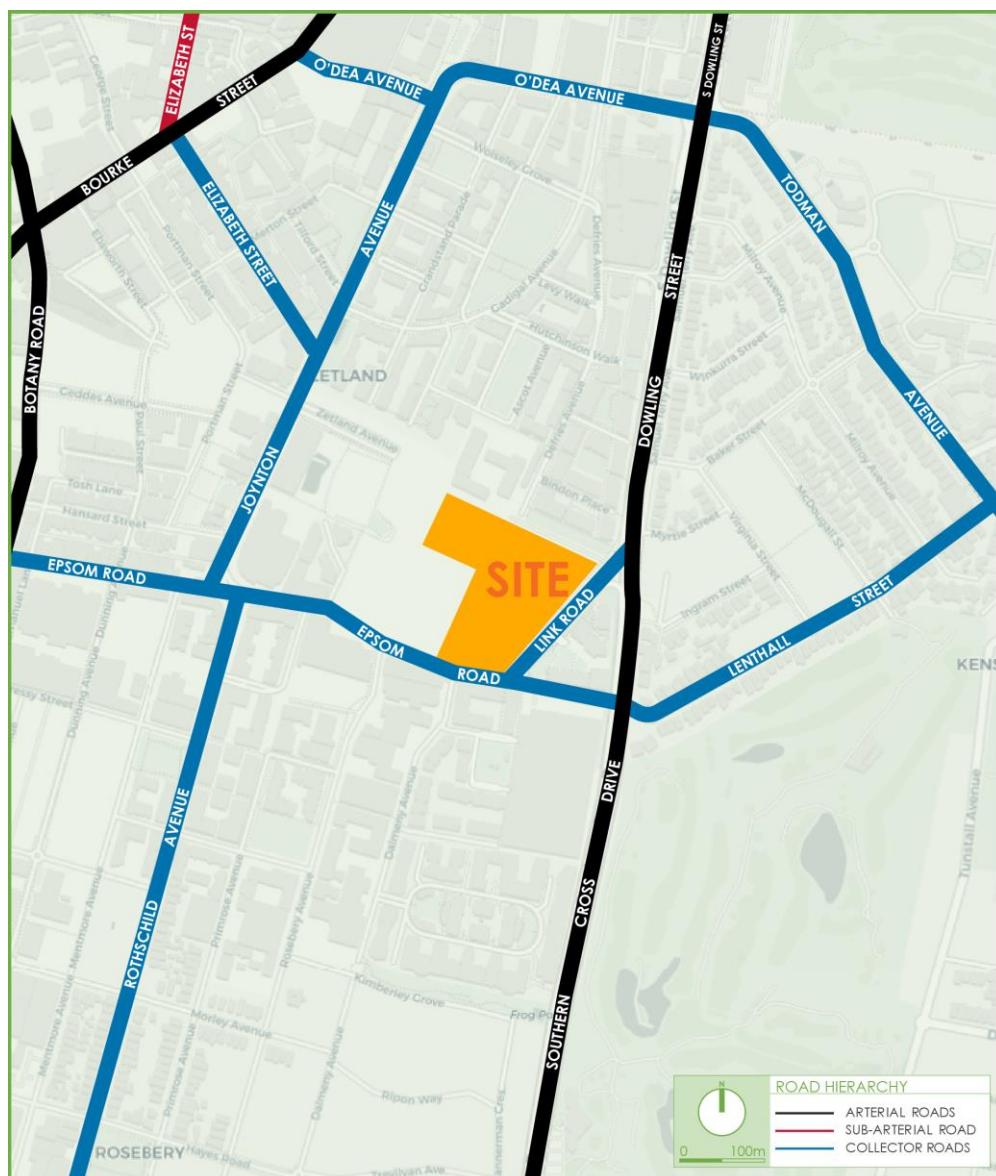


Figure 3: Road Hierarchy

4.2 Key Intersections

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

4.2.1 Joynton Avenue and Zetland Avenue

It can be seen from **Figure 4** that the intersection of Joynton Avenue and Zetland Avenue is a four-legged signalised intersection, with signalised pedestrian crossings available on all legs.

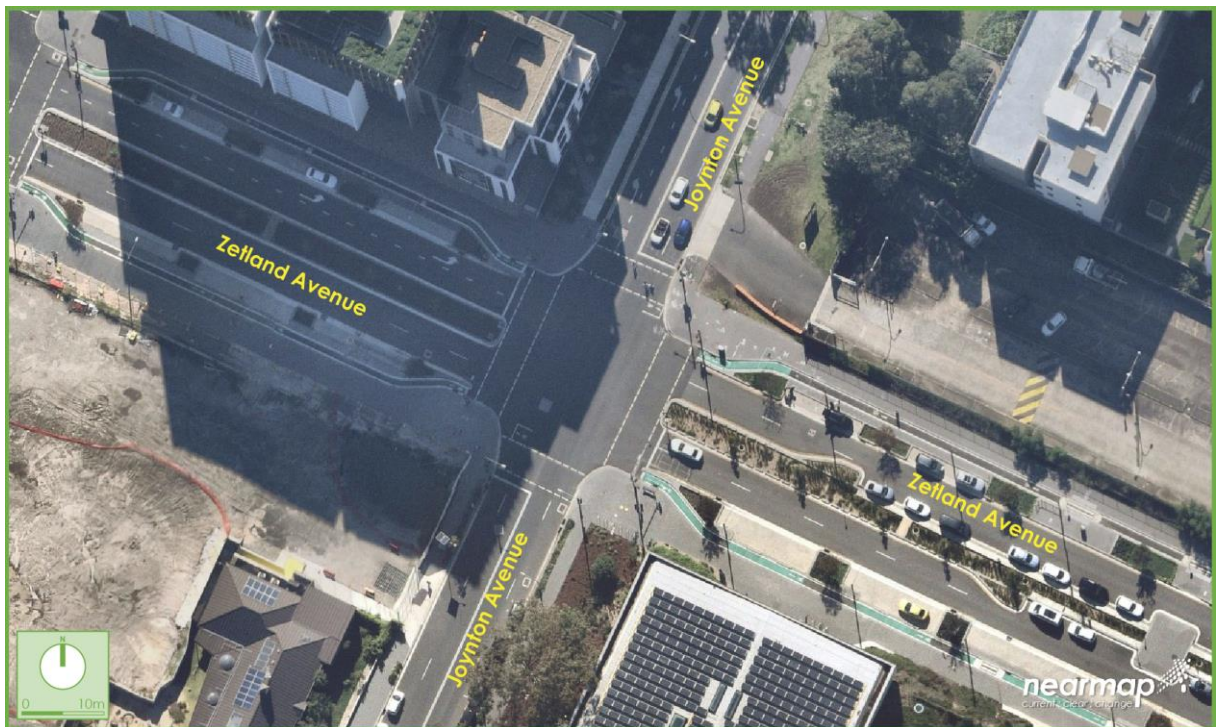


Figure 4: O’Sullivan Road, Pembroke Road and Rudd Road Intersection

The main attributes of each approach are outlined as follows:

- Joynton Avenue (north-south)
 - The northern / southern approaches each provide two (2) lanes, including a single lane from which right-turns can be made and a single lane from which left-turns can be made.
- Zetland Avenue (east-west)
 - The eastern approach provides two (2) lanes, including a single lane from which right-turns can be made and a single lane from which left-turns can be made.
 - The western approach provides two (2) lanes, including a single through lane from which right-turns can be made and a single left-turn only lane.

4.2.2 Joynton Avenue, Rothschild Avenue and Epsom Road

It can be seen from **Figure 5** that the intersection of Joynton Avenue, Rothschild Avenue and Epsom Road is a four-legged signalised intersection, with signalised pedestrian crossings available on all legs and zebra crossings available on all left-turn slip lanes.



Figure 5: Joynton Avenue, Rothschild Avenue and Epsom Road Intersection

The main attributes of each approach are outlined as follows:

- Joynton Avenue and Rothschild Avenue (north-south)
 - The northern approach provides two (2) lanes, including a single lane from which right-turns can be made and a single lane from which left-turns can be made onto a slip lane.
 - The southern approach provides three (3) lanes, including a single right-turn only lane, a single through lane and a single lane from which left-turns can be made.
- Epsom Road (east-west)
 - The eastern approach provides three (3) lanes, including a single right-turn only lane, a single through lane and a single lane from which left-turns can be made onto a slip lane.
 - The western approach provides two (2) lanes, including a single through lane and a single lane from which left-turns can be made onto a slip lane.

4.2.3 Epsom Road and Rosebery Avenue

It can be seen from **Figure 6** that the intersection of Epsom Road and Rosebery Avenue is a three-legged priority intersection, with the major road being Epsom Road.



Figure 6: Epsom Road and Rosebery Avenue Intersection

The main attributes of each approach are outlined as follows:

- Rosebery Avenue (south)
 - The southern approach provides two (2) lanes, including a single right-turn only lane and a single left-turn only lane.
- Epsom Road (east-west)
 - The eastern approach provides a single lane from which left-turns can be made.
 - The western approach provides two (2) lanes, including a single right-turn only lane and a single through lane.

4.2.4 Epsom Road and Dalmeny Avenue

It can be seen from **Figure 7** that the intersection of Epsom Road and Dalmeny Avenue is a three-legged signalised intersection, with the main road being Epsom Road and signalised pedestrian crossings provided on the southern and western legs.

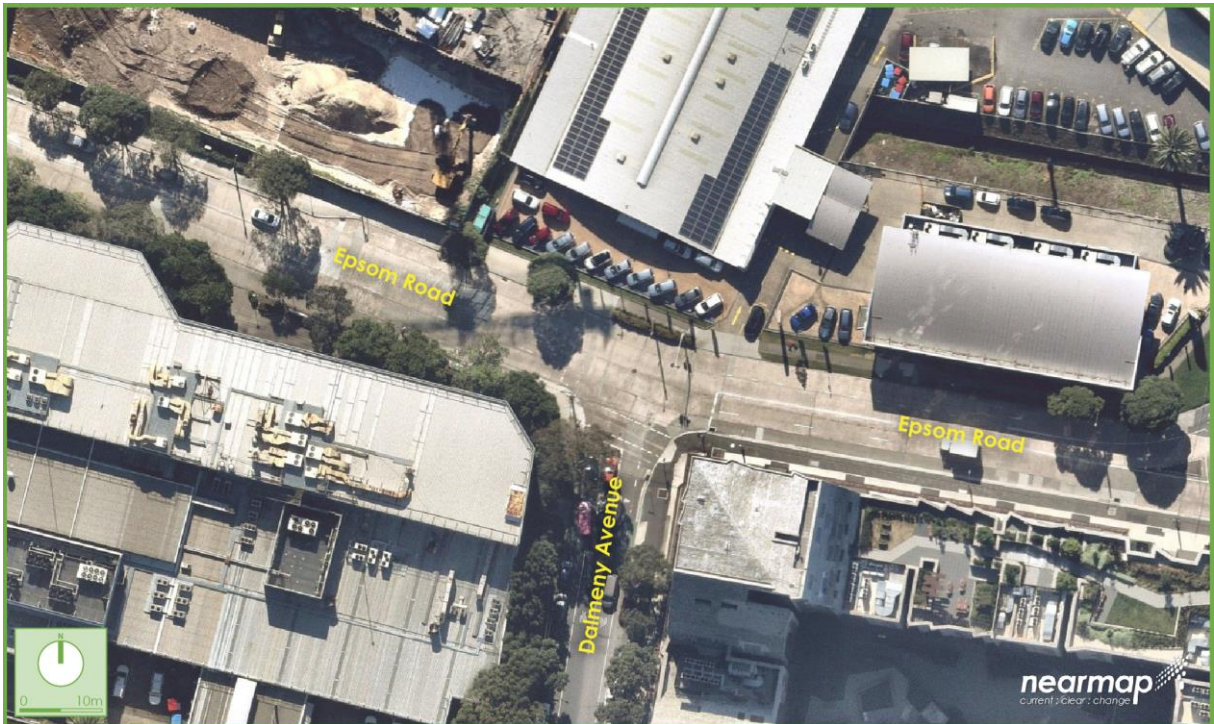


Figure 7: Epsom Road and Dalmeny Avenue Intersection

The main attributes of each approach are outlined as follows:

- Dalmeny Avenue (south)
 - The southern leg provides two (2) lanes, including a single lane from which left-turns can be made and a single lane from which right-turns can be made.
- Epsom Road (east-west)
 - The eastern approach provides two (2) lanes, including a single through lane and a single lane from which left-turns can be made.
 - The western approach provides two (2) lanes, including a single through lane and a single lane from which right-turns can be made.

4.2.5 Epsom Road and Link Road

It can be seen from **Figure 8** that the intersection of Epsom Road and Link Road is a three-legged roundabout intersection, with all legs provided a pedestrian refuge island.



Figure 8: Epsom Road and Link Road Intersection

The main attributes of each approach are outlined as follows:

- Link Road (north)
 - The northern approach provides two (2) lanes, including a single right-turn only lane and a single left-turn only lane.
- Epsom Road (east-west)
 - The eastern approach provides a single lane from which all movements can be made.
 - The western approach provides two (2) lanes, including a single left-turn only lane and a single lane from which right-turns can be made.

4.3 Public Transport

The subject site is situated within optimal walking distance (400 metres) of several bus stops as presented in **Figure 9**, with the closest situated on Epsom Road, opposite Dalmeny Avenue. These bus stops provide services along the following routes and peak weekday frequencies:

- 306 – Redfern to Mascot Station, approximately every 10 minutes; and
- 370 – Coogee to Glebe Point, approximately every 10-20 minutes.

In addition to the above, these bus services provide regular services to Green Square Railway Station. This railway station provides trains services along the T8 Airport and South Line, thereby connecting commuters to the wider public transport network.

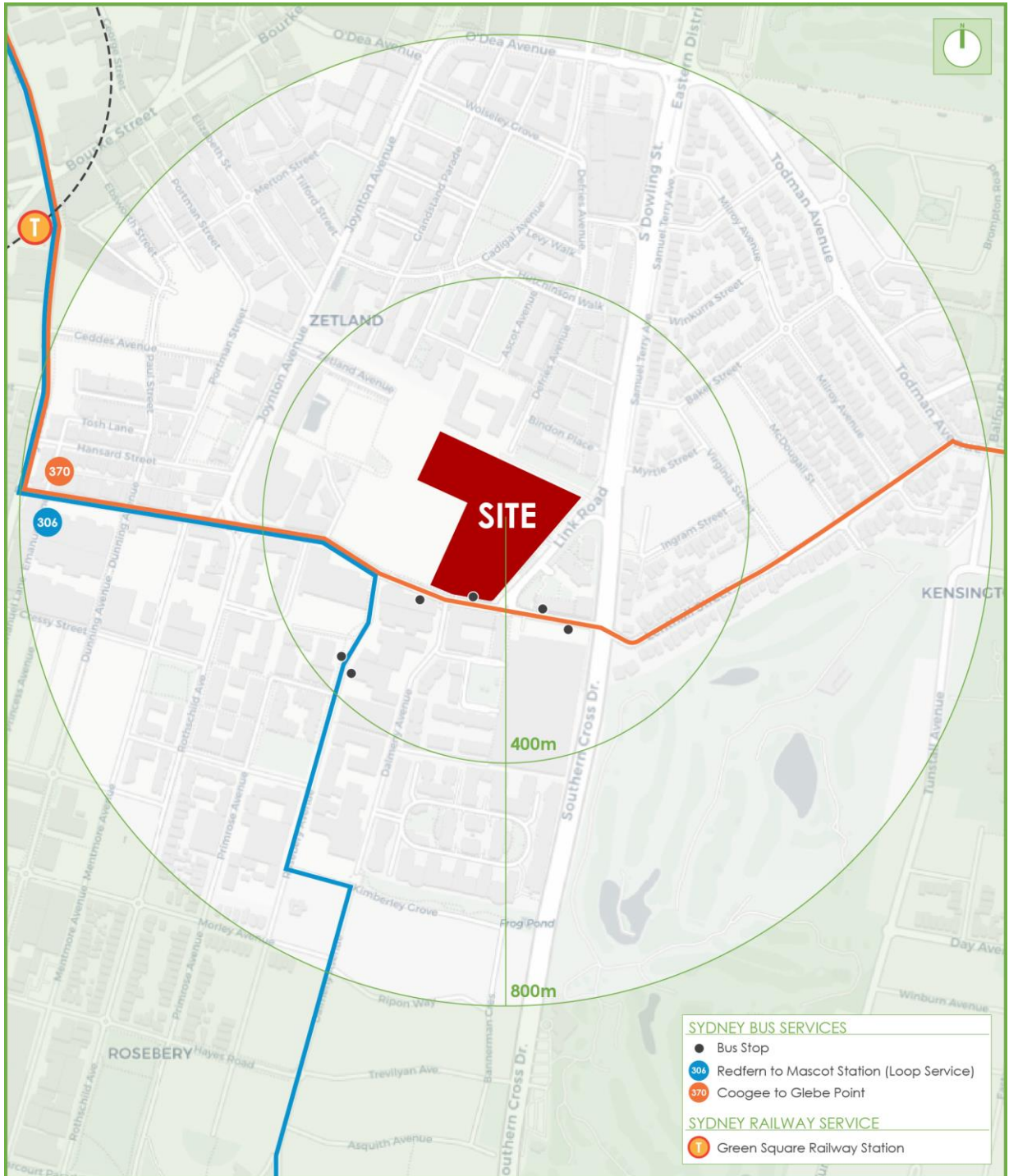


Figure 9: Public Transport

4.4 Car Share

The subject site is situated within 400 metres (optimal walking distance) of several GoGet car share pods as outlined below.

4.4.1 Zetland (north of the site):

- Binder Place, near Defries Avenue;
- Defries Avenue near Naulty Place;
- Ascot Avenue near Kirby Walk;
- Kirby Walk near Victoria Park Parade;
- Gadigal Avenue, opposite Hutchinson Walk;
- Victoria Park Parade near Gadigal Avenue;
- Gadigal Avenue near Grandstand Parade;
- Gadigal Avenue near Joynton Avenue; and
- Hansard Street near Joynton Street.

4.4.2 Rosebery (west and south of the site):

- Rothschild Avenue, Rosebery;
- Confectioners Way near Rosebery Avenue;
- Crewe Place near Primrose Avenue;
- Rothschild Avenue near Sweet Street;
- Queen Street near Mentmore Ave;
- Dalmeny Avenue, Rosebery;
- Rosebery Avenue near Moreley Avenue;
- Primrose Avenue near Morley Avenue; and
- Ripon Way near Dalmeny Avenue.

4.5 Active Travel

There are various existing pedestrian infrastructure surrounding the site, with pedestrian footpaths along both sides of Link Road and Epsom Road, as well as a signalised pedestrian crossing at the Epsom Road and Dalmeny Avenue intersection. In addition, there are several existing on-road and off-road bicycle routes surrounding the site, as presented in **Figure 10**.

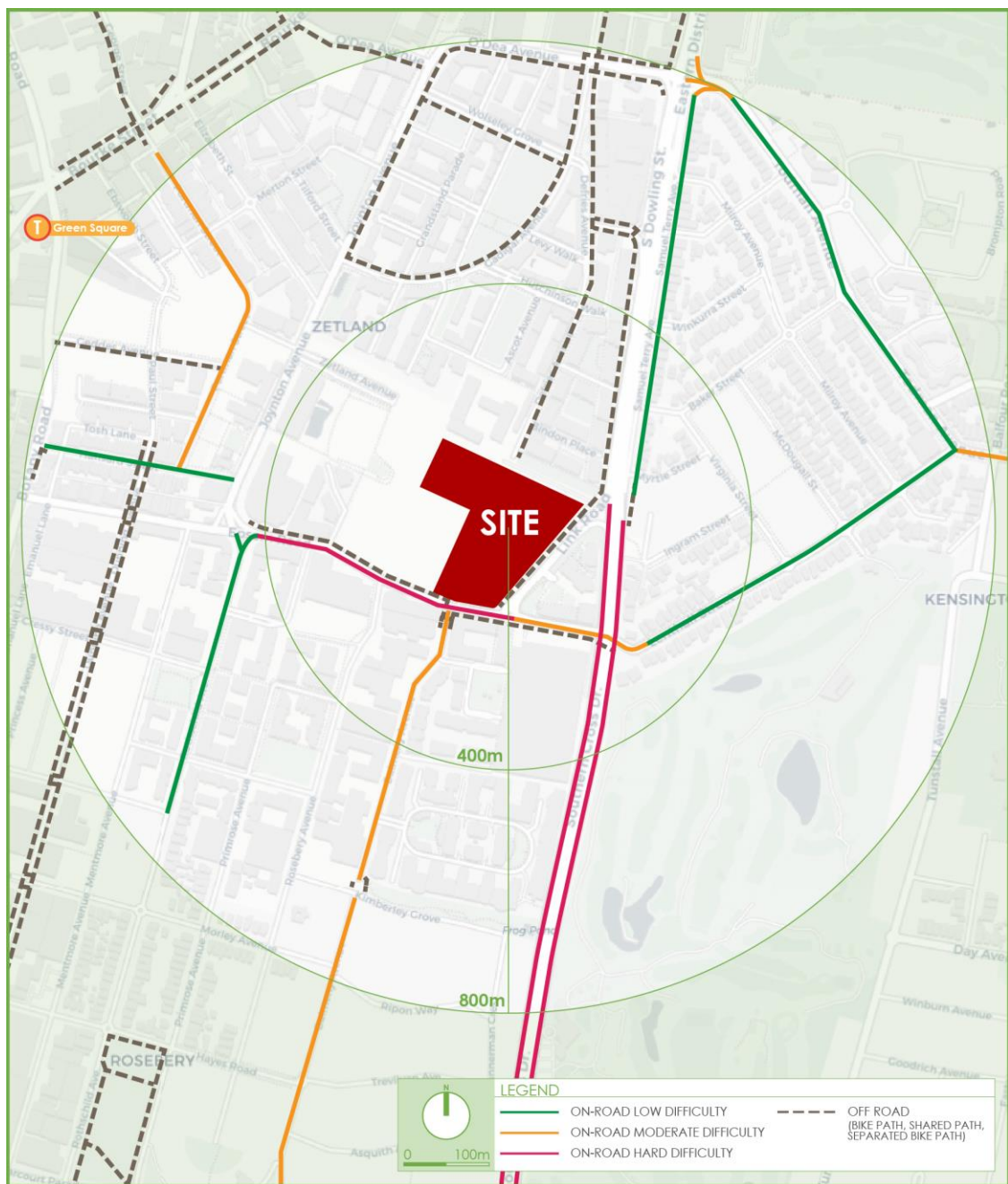


Figure 10: Bicycle Routes

5. DESCRIPTION OF THE PLANNING PROPOSAL

A detailed description of the planning proposal is provided in the planning report, prepared separately. In summary, the planning proposal for which approval now sought comprises the demolition of all existing structures and construction of the following components and associated gross floor areas (GFA):

5.1 Stage 1 – Blocks NW-1 and NW-2

- Construction of residential component with a total of 274 dwellings, including:
 - 30 x one-bedroom dwellings;
 - 178 x two-bedroom dwellings;
 - 51 x three-bedroom dwellings; and
 - 15 x four-bedroom dwellings.
- Construction of retail premises with a total area of 516m² GFA within NW-1;
- Construction of a basement car park accessible from Defries Avenue with a total car parking provision for 300 spaces, including:
 - 272 x residential parking spaces;
 - 18 x residential visitor parking spaces;
 - 10 x retail parking spaces.
- Provision of on-site loading areas that are able to accommodate Council's 9.25 metre long waste collection vehicle.

5.2 Stage 2 – Blocks NE-1, NE-2 and NE-3

- Construction of residential component with a total of 314 dwellings, including:
 - 46 x one-bedroom dwellings;
 - 124 x two-bedroom dwellings;
 - 70 x three-bedroom dwellings; and
 - 74 x four-bedroom dwellings.
- Construction of a 1,117m² GFA childcare centre component with a capacity for 130 children;

- Construction of retail premises (including supermarket) with a total area of 1,142m² GFA within NE-1;
- Construction of a basement car park accessible from Link Road with a total car parking provision for 376 spaces, including:
 - 320 x residential parking spaces;
 - 21 x residential visitor parking spaces;
 - 12 x childcare parking spaces; and
 - 23 x retail parking spaces.
- Provision of on-site loading areas that are able to accommodate Council's 9.25 metre long waste collection vehicle and a 12.5 metre long heavy rigid vehicle (HRV).

5.3 Stage 3 – Blocks S-1, S-2, S-3 and S-4

- Construction of residential component with a total of 226 dwellings, including:
 - 54 x one-bedroom dwellings;
 - 97 x two-bedroom dwellings;
 - 64 x three-bedroom dwellings; and
 - 11 x four-bedroom dwellings.
- Construction of retail premises with a total area of 921m² GFA, including:
 - 308m² GFA within S-1;
 - 526m² GFA within S-2; and
 - 87m² GFA within S-3.
- Construction of a basement car park accessible from Rose Valley Way with a total car parking provision for 248 spaces, including:
 - 214 x residential parking spaces;
 - 15 x residential visitor parking spaces; and
 - 19 x retail parking spaces.
- Provision of an on-road loading area.
- Construction of Mulgu Park, a public recreation area.

5.4 Internal Roads

- Construction of various internal roads, including:
 - Laetitia Street;
 - Defries Avenue;
 - Chimes Street;
 - Zetland Avenue;
 - Peters Street; and
 - Rose Valley Way.
- Construction of associated on-street parking spaces within indented bays; and
- Construction of associated pedestrian infrastructure and amenities.

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

6. PARKING REQUIREMENTS

6.1 Car Parking

The City of Sydney Local Environmental Plan 2012 (LEP) outlines the car parking provisions for the various components of the development. These rates are based on the land category of the development, as defined in the LEP, being:

- Category C Land Use and Transport Integration Map; and
- Category F Public Transport Accessibility Level Map.

Accordingly, the *maximum* car parking provisions of the development are outlined as follows:

6.1.1 Residential Component

The City of Sydney LEP provides the maximum car parking rates for the residential component of the development (Category C), noting that each parking area caters for more than 70 dwellings. These parking rates and permissible parking are summarised in **Table 1** below.

Table 1: LEP Residential Car Parking Rates and Provisions

Type	No. of Dwellings	LEP Maximum Parking Rate	Permissible Parking
Stage 1 (Blocks NW-1 and NW-2)			
One-bedroom	30	0.5 spaces per dwelling	15
Two-bedroom	178	1.0 spaces per dwelling	178
Three or more bedroom	66	1.2 spaces per dwelling	79.2 (79)
Visitor	274	0.067 spaces per dwelling	18.4 (18)
<i>Sub-Total</i>			290
Stage 2 (Blocks NE-1, NE-2 and NE-3)			
One-bedroom	46	0.5 spaces per dwelling	23
Two-bedroom	124	1.0 spaces per dwelling	124
Three or more bedroom	144	1.2 spaces per dwelling	172.8 (173)
Visitor	314	0.067 spaces per dwelling	21
<i>Sub-Total</i>			341
Stage 3 (Blocks S-1, S-2, S-3 and S-4)			
One-bedroom	54	0.5 spaces per dwelling	27
Two-bedroom	97	1.0 spaces per dwelling	97
Three or more bedroom	75	1.2 spaces per dwelling	90
Visitor	226	0.067 spaces per dwelling	15.1 (15)
<i>Sub-Total</i>			229
TOTAL			860

6.1.2 Retail Component

The City of Sydney LEP 2012 provides the *maximum* car parking rate for the retail component of the development (Category F) as summarised in **Table 2** below.

Table 2: LEP Retail Car Parking Rates and Provisions

Type	GFA	LEP Maximum Parking Rate	Permissible Parking
Stage 1 (Blocks NW-1 and NW-2)			
Block NW-1	516m ²	1 space per 50m ² GFA	10.3 (10)
<i>Sub-Total</i>			10
Stage 2 (Blocks NE-1, NE-2 and NE-3)			
Block NE-1	1,142m ²	1 space per 50m ² GFA	22.8 (23)
<i>Sub-Total</i>			23
Stage 3 (Blocks S-1, S-2, S-3 and S-4)			
Block S-1	308m ²	1 space per 50m ² GFA	6.2 (6)
Block S-2	526m ²		10.5 (11)
Block S-3	87m ²		1.7 (2)
<i>Sub-Total</i>			19
TOTAL			52

6.1.3 Childcare Centre Component

The City of Sydney LEP 2012 provides the *maximum* car parking rate for the childcare component of the development at a rate of one (1) space plus (1) space for every 100m² GFA.

Application of this rate to the proposed 1,117m² GFA childcare centre, results in a maximum parking provision for 12 car parking spaces for the childcare component of the development.

6.1.4 Overall Car Parking Provision

In summary, the overall car parking permissible for the development (separated by stages) are outlined in **Table 3** below.

Table 3: Overall Car Parking Allowance

Type	GFA / No. of Dwellings	Car Parking Rates	Permissible Parking
Stage 1 (Blocks NW-1 and NW-2)			
Residential	274	Various Rates	272
Residential Visitor	274	0.067 spaces per dwelling	18
Retail	516	1 space per 50m2 GFA	10
<i>Sub-Total</i>			300
Stage 2 (Blocks NE-1, NE-2 and NE-3)			
Residential	314	Various Rates	320
Residential Visitor	314	0.067 spaces per dwelling	21
Childcare Centre	1,117m ²	1 + 1 space per 100m2 GFA	12
Retail	1,142m ²	1 space per 50m2 GFA	23
<i>Sub-Total</i>			376
Stage 3 (Blocks S-1, S-2, S-3 and S-4)			
Residential	226	Various Rates	214
Residential Visitor	226	0.067 spaces per dwelling	15
Retail	921m ²	1 space per 50m2 GFA	19
<i>Sub-Total</i>			248
TOTAL			924

It can be seen from **Table 3** that overall; the development is permitted to have a maximum car parking provision for 924 spaces. It is thus concluded that the site is sufficiently large enough to accommodate the maximum parking provision for any future development permissible under the Planning Proposal, as permissible by the Sydney LEP 2012.

6.2 Accessible Parking

6.2.1 Residential Component

The City of Sydney Development Control Plan 2012 (DCP) provides the adaptable dwelling mix for residential developments with more than 30 dwellings, being 15% of the total number of dwellings. Application of this rate to the proposed residential component of the development, results in a total requirement for 124 adaptable units, comprising the following:

- 42 adaptable units for Stage 1 (274 total dwellings);
- 48 adaptable units for Stage 2 (314 total dwellings); and
- 34 adaptable units for Stage 3 (226 total dwellings).

The City of Sydney DCP 2012 Schedule 7 provides the accessible parking rate for the residential component of the development at a rate of one (1) accessible parking space per adaptable unit. Application of this rate, results in a requirement for 124 accessible parking spaces for the residential component of the development.

6.2.2 Childcare Centre Component

The City of Sydney DCP 2012 Schedule 7 provides a general visitor accessible parking rate for developments at a rate of one (1) accessible space for every 20 car parking spaces or part thereof. Application of this rate to the proposed 12 childcare spaces, results in the requirement for a single accessible parking space for the childcare component of the development.

6.2.3 Retail Component

The City of Sydney DCP 2012 Schedule 7 provides a general visitor accessible parking rate for developments at a rate of one (1) accessible space for every 20 car parking spaces or part thereof. Application of this rate to the proposed retail component of the development, results in a total requirement for four (4) accessible parking spaces, comprising the following:

- 1 accessible space for Stage 1 (10 total spaces);
- 2 accessible spaces for Stage 2 (23 total spaces); and
- 1 accessible space for Stage 3 (19 total spaces).

6.2.4 Overall Accessible Parking Provision

In summary, the overall accessible parking requirement for the development (separated by stages) are outlined below:

- Stage 1 (Blocks NW-1 and NW-2) with a total of 42 accessible spaces, comprising:
 - 42 x residential accessible parking spaces; and
 - 1 x retail accessible parking space.
- Stage 2 (Blocks NE-1, NE-2 and NE-3) with a total of 53 accessible spaces, comprising:
 - 48 x residential accessible parking spaces;
 - 1 x childcare accessible parking space; and
 - 2 x retail accessible parking spaces.

- Stage 3 (Blocks S-1, S-2, S-3 and S-4) with a total of 35 accessible spaces, comprising:
 - 34 x residential accessible parking spaces; and
 - 1 x retail accessible parking space.

As the car parking provision has not been designated for each component, the accessible parking provision will be assessed at a later DA stage.

6.3 Bicycle Parking

The City of Sydney DCP outlines the bicycle parking provision for the various components of the development. These *minimum* rates and provisions are summarised as follows.

6.3.1 Residential Component

The City of Sydney DCP provides the *minimum* bicycle parking provision for the residential component of the development at the rates summarised in **Table 4** below.

Table 4: DCP Residential Bicycle Parking Rates and Provisions

Type	No. of Dwellings	DCP Minimum Parking Rate	Parking Required
Stage 1 (Blocks NW-1 and NW-2)			
Residential	274	1 space per dwelling	274
Visitor		1 space per 10 dwellings	27.4 (28)
<i>Sub-Total</i>			302
Stage 2 (Blocks NE-1, NE-2 and NE-3)			
Residential	314	1 space per dwelling	314
Visitor		1 space per 10 dwellings	31.4 (32)
<i>Sub-Total</i>			346
Stage 3 (Blocks S-1, S-2, S-3 and S-4)			
Residential	226	1 space per dwelling	226
Visitor		1 space per 10 dwellings	22.6 (23)
<i>Sub-Total</i>			249
TOTAL			897

6.3.2 Retail Component

The City of Sydney DCP 2012 provides the *minimum* bicycle parking rates for the retail (shopping centre) component of the development as summarised in **Table 5** below.

Table 5: DCP Retail Bicycle Parking Rates and Provisions

Type	GFA	DCP Minimum Parking Rate	Parking Required
Stage 1 (Blocks NW-1 and NW-2)			
Block NW-1 - Employee	516m ²	1 space per 200m ² GFA	2.6 (3)
Block NW-1 - Customer		1 space per 300m ² GFA	1.7 (2)
<i>Sub-Total</i>			5
Stage 2 (Blocks NE-1, NE-2 and NE-3)			
Block NE-1 - Employee	1,142m ²	1 space per 200m ² GFA	5.7 (6)
Block NE-1 - Customer		1 space per 300m ² GFA	3.8 (4)
<i>Sub-Total</i>			10
Stage 3 (Blocks S-1, S-2, S-3 and S-4)			
Block S-1 - Employee	308m ²	1 space per 200m ² GFA	1.5 (2)
Block S-1 - Customer		1 space per 300m ² GFA	1
Block S-2 - Employee	526m ²	1 space per 200m ² GFA	2.6 (3)
Block S-2 - Customer		1 space per 300m ² GFA	1.8 (2)
Block S-3 - Employee	87m ²	1 space per 200m ² GFA	0.4 (1)
Block S-3 - Customer		1 space per 300m ² GFA	0.3 (1)
<i>Sub-Total</i>			10
TOTAL			25

6.3.3 Childcare Centre Component

The City of Sydney DCP 2012 provides the following *minimum* bicycle parking rates for the childcare component of the development:

- 1 employee bicycle parking space per 10 employees; and
- 2 visitor bicycle parking spaces per centre.

As the employee numbers have yet to be finalised, the bicycle parking provision for the childcare centre component of the development will be assessed at a later DA stage. Nevertheless, the bicycle parking requirement for the childcare centre component will adhere to the above bicycle parking rates.

6.3.4 Overall Bicycle Parking Provision

In summary, the overall bicycle parking requirement for the development (separated by stages) are outlined in **Table 6** below.

Table 6: Overall Bicycle Parking Requirements

Type	GFA / No. of Dwellings	Car Parking Rates	Permissible Parking
Stage 1 (Blocks NW-1 and NW-2)			
Residential	274	1 space per dwelling	274
Residential Visitor		1 space per 10 dwellings	28
Retail Employee	516m ²	1 space per 200m ² GFA	3
Retail Customer		1 space per 300m ² GFA	2
<i>Sub-Total</i>			307
Stage 2 (Blocks NE-1, NE-2 and NE-3)			
Residential	314	1 space per dwelling	314
Residential Visitor		1 space per 10 dwellings	32
Childcare Employee	TBC	1 space per 10 employees	TBC
Childcare Visitor	-	2 spaces per centre	2
Retail Employee	1,142m ²	1 space per 200m ² GFA	6
Retail Customer		1 space per 300m ² GFA	4
<i>Sub-Total</i>			358 + TBC
Stage 3 (Blocks S-1, S-2, S-3 and S-4)			
Residential	226	1 space per dwelling	226
Residential Visitor		1 space per 10 dwellings	23
Retail Employee	921m ²	1 space per 200m ² GFA	6
Retail Customer		1 space per 300m ² GFA	4
<i>Sub-Total</i>			259
TOTAL			924 + TBC

It can be seen from **Table 6** that overall; the development is required to provide a minimum bicycle parking provision for 924 spaces (plus childcare employee spaces). The final bicycle provisions will be determined at a later DA stage for compliance with the Sydney DCP 2012.

6.4 Motorcycle Parking

The City of Sydney DCP 2012 Schedule 7 provides the motorcycle parking rates for the various components of the development as summarised in **Table 7** below.

Table 7: Overall Motorcycle Parking Requirements

Type	No. of Spaces	Motorcycle Parking Rates	Permissible Parking
Stage 1 (Blocks NW-1 and NW-2)			
Residential	272	1 space per 12 car parking spaces	22.7 (23)
Residential Visitor	18		1.5 (2)
Retail	10	1 space per 12 car parking spaces	0.9 (1)
<i>Sub-Total</i>			26
Stage 2 (Blocks NE-1, NE-2 and NE-3)			
Residential	320	1 space per 12 car parking spaces	26.7 (27)
Residential Visitor	21		1.8 (2)
Childcare Centre	12		1
Retail	23		1.9 (2)
<i>Sub-Total</i>			32
Stage 3 (Blocks S-1, S-2, S-3 and S-4)			
Residential	214	1 space per 12 car parking spaces	17.8 (18)
Residential Visitor	15		1.3 (1)
Retail	19	1 space per 12 car parking spaces	1.5 (2)
<i>Sub-Total</i>			21
TOTAL			79

It can be seen from **Table 7** that the development is required to provide a total of 79 motorcycle parking spaces. As the motorcycle parking provision has not been designated for each component, the motorcycle parking provision will be assessed at a later DA stage, however, is envisaged to adopt the above rates.

6.5 Car Share

The City of Sydney DCP 2012 provides the *minimum* car share parking provision in addition to the maximum car parking provisions for the various components of the development as summarised in **Table 8** below.

Table 8: Overall Car Share Parking Requirements

Type	No. of Spaces	Car Share Parking Rates	Parking Required
Stage 1 (Blocks NW-1 and NW-2)			
Residential	272	1 space per 90 car spaces	3
Residential Visitor	18		0.2 (0)
Retail	10	1 space per 50 car spaces	0.2 (0)
<i>Sub-Total</i>			3
Stage 2 (Blocks NE-1, NE-2 and NE-3)			
Residential	320	1 space per 90 car spaces	3.6 (4)
Residential Visitor	21		0.2 (0)
Childcare Centre	12	1 space per 50 car spaces	0.2 (0)
Retail	23		0.5 (1)
<i>Sub-Total</i>			5
Stage 3 (Blocks S-1, S-2, S-3 and S-4)			
Residential	214	1 space per 90 car spaces	2.4 (2)
Residential Visitor	15		0.2 (0)
Retail	19	1 space per 50 car spaces	0.4 (0)
<i>Sub-Total</i>			2
TOTAL			10

It can be seen from **Table 8** that the development is required to provide a total of 10 car share parking spaces in addition to the maximum car parking provisions. As the car share parking provision has not been designated for each component, the car share parking provision will be assessed at a later DA stage, however, is envisaged to adopt the above rates.

6.6 Passenger Pick-Up and Set-Down

The City of Sydney DCP 2012 Schedule 7 provides the following passenger pick-up and set-down advice for the childcare centre component of the development:

- 1 short-term space per 8 children, with a maximum duration of 30 minutes, noting that this requirement can be reduced having regard to the following:
 - Demand for pick-up and set-down spaces;
 - Walking and public transport accessibility;
 - Availability of convenient and safe on-street parking; and
 - Potential traffic and amenity impacts.
- 1 long-term visitor space, which is additional to all other parking requirements.

Application of the above rates to the proposed childcare centre with a capacity for 130 children, results in the requirement for 16 short-term and a single long-term pick-up and drop-off spaces. The proposed pick-up and drop-off spaces for the childcare centre component of the development have yet to be finalised and as such, will be assessed at a later DA stage having regard to the above rates.

6.7 Refuse Collection and Servicing

The City of Sydney DCP 2012 Schedule 7, states the following regarding the parking provision for service vehicles within a mixed-use development:

'The total number of service vehicle spaces for mixed-use developments are to be calculated on a pro-rata basis of spaces required for the relative proportions of different uses within the building.'

In light of the above, the provision for refuse collection and loading bays will be determined during the detailed DA stage, with the development envisaged to provide at least seven (7) shared refuse collection/loading areas.

7. TRAFFIC AND TRANSPORT IMPACTS

7.1 Existing Traffic Generation

The existing site accommodates the Suttons Car Dealership Complex which consists of multiple sales yards for car manufactures including Holden, Nissan, Hyundai, Subaru, and Suzuki. A number of car service centres operate within the complex.

In order to gain an understanding of the traffic generated by the existing development, vehicle counts were undertaken at the driveway on Epsom Road and two (2) access driveways on Link Road. It is noted that two (2) accesses to Link Road were not surveyed as part of this study, suggesting the results detailed below are conservative. The AM and PM peak hour vehicle movements were as follows:

- 88 vehicles per hour during the AM peak period (72 in, 16 out); and
- 125 vehicles per hour during the PM peak period (19 in, 106 out).

7.2 Development Traffic Generation

7.2.1 Retail Component (excluding Supermarket)

The TfNSW Guide to Traffic Generating Developments (GTGD) provides traffic generation rates for secondary retail developments, which it defines as retail stores tending not to be the primary attractor to the development and are applicable to the retail component of the development. It recommends a peak hour trip generation rate as 4.6 vehicle trips per 100m² of GLFA, occurring during the evening peak period on Thursdays. Whilst no rates are provided for the morning peak hour traffic generation, a rate of 1 vehicle trip per 100m² of GLFA has been adopted, representing staff arrivals. It is noted that the GTGD states that the GLFA is approximately 75% of the GFA. Hence, application of these rates to the 1,145m² GLFA (i.e. 1,526m² GFA) of the retail development results in the following traffic generation:

- 11 vehicles per hour during the AM peak period (11 in, 0 out); and
- 53 vehicles per hour during the PM peak period (26 in, 27 out).

7.2.2 Supermarket Component

The TfNSW Guide to Traffic Generating Developments (GTGD) provides traffic generation rates for supermarket developments. It recommends a peak hour trip generation rate as 15.5 vehicle trips per 100m² of GLFA, occurring during the evening peak period on Thursdays. Whilst no rates are provided for the morning peak hour traffic generation, a rate of 1 vehicle trip per 100m² of GLFA has been adopted, representing staff arrivals. It is noted that the GTGD states that the GLFA is approximately 75% of the GFA. It is also noted that the supermarket will generally attract local trips from within the subject development area, and as such, a 50% reduction of vehicle trips has been adopted in the PM period. Application of these rates to the 790m² GLFA (i.e. 1,053m² GFA) of the retail development results in the following traffic generation:

- 8 vehicles per hour during the AM peak period (8 in, 0 out); and
- 61 vehicles per hour during the PM peak period (31 in, 30 out).

7.2.3 Residential Component (including Town Houses)

The proposed development includes a total of 814 dwellings, including town houses. The TfNSW Technical Direction TDT 2013/04a provides updated traffic generation rates for high density residential developments at a rate of 0.19 and 0.15 vehicle trips per dwelling per hour during the morning and evening peak periods, respectively. Application of these rates would therefore result in the following anticipated traffic generation for the residential house components:

- 155 vehicles per hour during the AM peak period (31 in, 124 out); and
- 122 vehicles per hour during the PM peak period (98 in, 24 out).

7.2.4 Childcare Component

The proposed development includes a 130-place childcare development. It is noted that the childcare would generally attract visitors from the immediate area and this assumption was utilised for the approved mixed-use development at 25-55 Rothschild Avenue and 5-13 Rosebery Avenue, Rosebury (D/2014/1962), which adopted a trip rate of 0.2 vehicle trips per child.

Application of this rate to the 130-place childcare centre would therefore result in the following anticipated traffic generation for the childcare component:

- 26 vehicles per hour during the AM peak period (13 in, 13 out); and
- 26 vehicles per hour during the PM peak period (13 in, 13 out).

7.2.5 Combined Proposed Traffic Generation

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

- 200 vehicles per hour during the AM peak period (63 in, 137 out); and
- 262 vehicles per hour during the PM peak period (168 in, 94out).

7.3 Net Traffic Generation

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

- +112 vehicles per hour during the AM peak period (-9 in, +121 out); and
- +137 vehicles per hour during the PM peak period (+149 in, -12 out).

7.4 Traffic Assessed in Modelling

For the purpose of assessing the proposed development and providing a highly conservative assessment, the traffic generation detailed in Section 7.2 above has been utilised.

7.5 Traffic Distribution

7.5.1 Journey to Work Data

Journey to Work (JTW) data from the 2016 Census for the Waterloo-Beaconsfield SA2 area has been used to determine the future distribution of traffic to and from the proposed development. Specifically, the "Place of Work" and "Usual Residence" data was scrutinised for to determine resident and employee travel routes.

7.5.2 Future Road Network

It should be noted that the Zetland / Green Square area is currently undergoing a significant level of development in accordance with the site-specific Green Square – Epsom Park DCP

outlined in Section 5 of the City of Sydney Development Control Plan. Council have defined a number of future road links, vehicle entry points, pedestrian and cyclist links, shared zones, and signalised intersections within the plan. It is noted that a number of road links are currently under construction and that the subject development will be required to utilise temporary vehicular access arrangements until future links are constructed and come online.

TRAFFIX has liaised with Council in regard to the proposed signalised intersections along Epsom Road and the following points are noteworthy:

- Council is currently undertaking a strategic transport study along Epsom Road;
- The signalised intersection of Epsom Road / Rosebery Avenue / George Julius Avenue is still being planned/designed by Council and that no traffic signal plan(s) are available at this stage;
- The signalised intersection of Epsom Road / Dalmeny Avenue / Defries Avenue is still being planned/designed by Council and that no traffic signal plan(s) are available at this stage. Council did note that TfNSW may restrict movements at the intersection or may require the intersection to be removed completely; and
- The signalised intersection of Epsom Road / Link Road is planned to be upgraded to a signalised four-legged intersection, and this has been reflected in the SIDRA Intersection 9 model (future scenario).

Taking note of the above, a number of assumptions have been made in this assessment, noting that key intersection information is not yet available. These assumptions include future intersection locations, number of traffic lanes, turn movement restrictions and traffic signal phasing. The localised distribution of traffic by the subject development is summarised in **Figure 11** and **Figure 12** below.

It should also be noted that the subject site is currently zoned B4 Mixed Use under the Sydney Local Environmental Plan 2012, and that no increases in FSR are proposed under this planning proposal/Stage 1 DA. That is, it is expected that Council has already assessed a level of traffic commensurate with the land zoning and FSR controls, and that the strategic transport planning for the Zetland / Green Square area has already been assessed by Council in this regard. As such, the results outlined below simply seek to inform Council's strategic assessment on key intersections in the Zetland area.

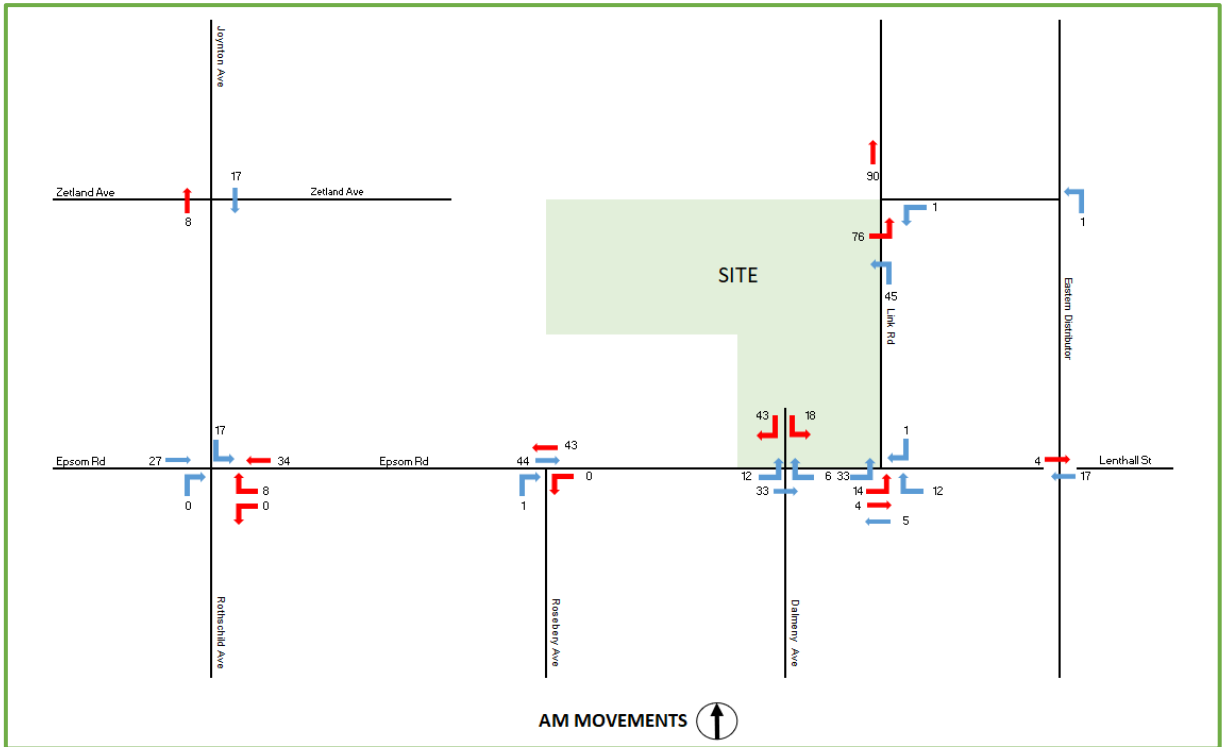


Figure 11: Weekday AM Peak Period Distribution

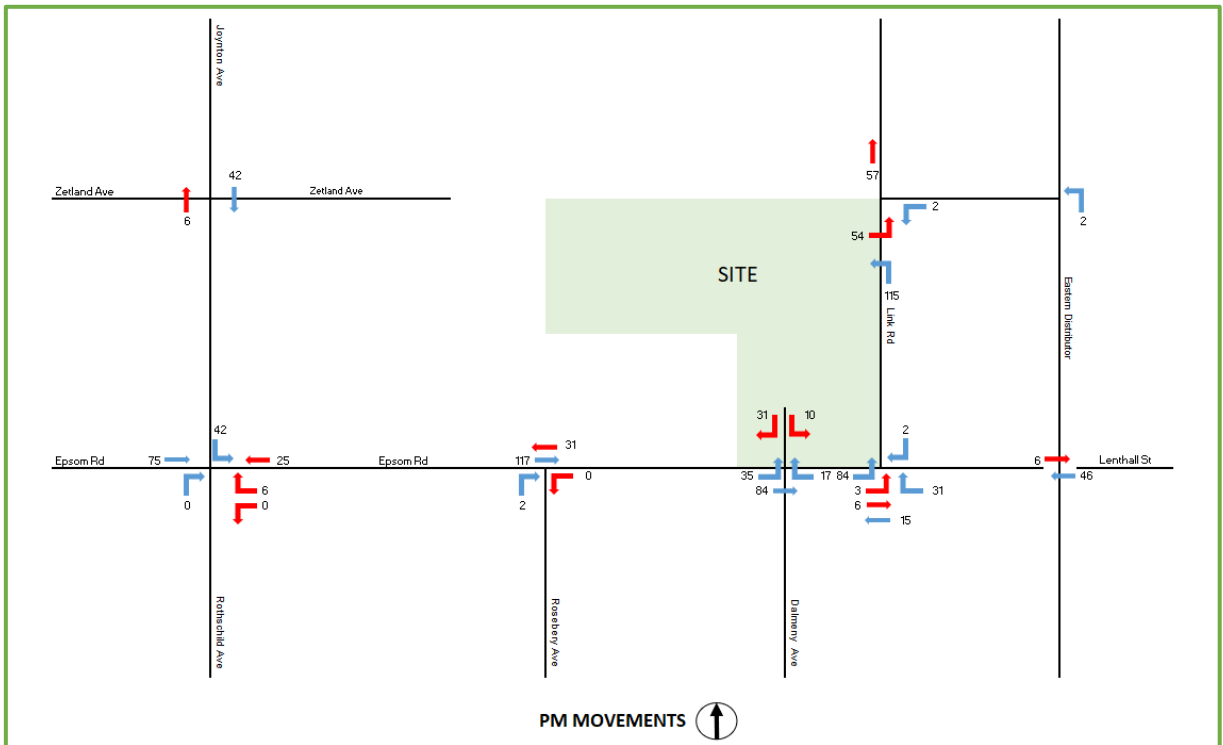


Figure 12: Weekday PM Peak Period Distribution

7.6 Peak Period Intersection Performance

Traffic surveys were undertaken of the key intersections described in **Section 4.2**, which are considered to be most critical in relation to the site. These counts were undertaken on Wednesday 18 May 2022 during the network peak periods, being between 7:00am and 9:00am (morning peak period) and 4:00pm and 6:00pm (evening peak period).

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

- DoS** the DoS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DoS approaches 1, it is usual to attempt to keep DoS to less than 0.9. When DoS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way / stop control, satisfactory intersection operation is generally indicated by a DoS of 0.8 or less.
- AVD** the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).
- LoS** this is a comparative measure which provides an indication of the operating performance of an intersection as shown in **Table 9** below.

Table 9: Intersection Performance Indicators (TfNSW)

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

The traffic impacts arising from the proposed development during the critical peak periods have been assessed by loading the distributed traffic volumes into the SIDRA Intersection model. The results of this software modelling are summarised in **Table 10** below, with detailed outputs provided in **Appendix B** for individual lanes and approaches.

Table 10: Existing and Development Intersection Performance

Intersection	Period	Control	Scenario	Degree of Saturation	Average Delay	Level of Service
Joynton Avenue and Zetland Avenue	AM	Signalised	Existing	0.367	14.7	B
			Existing + Dev	0.378	14.3	A
	PM		Existing	0.410	16.6	B
			Existing + Dev	0.465	16.8	B
Epsom Road, Joynton Avenue and Rothschild Avenue	AM	Signalised	Existing	0.647	28.5	B
			Existing + Dev	0.652	28.1	B
	PM		Existing	0.819	31.1	C
			Existing + Dev	0.919	31.3	C
Epsom Road, Rosebery Avenue and George Julius Avenue	AM	Stop	Existing	1.482	502.9	F
		Signalised	Existing + Dev	0.707	10.3	A
	PM	Stop	Existing	2.020	991.5	F
		Signalised	Existing + Dev	1.421	293.2	F
Epsom Road, Dalmeny Avenue and Defries Avenue	AM	Signalised	Existing	0.669	25.1	B
			Existing + Dev	0.534	17.5	B
	PM		Existing	0.522	16.9	B
			Existing + Dev	1.053	26.1	B
Epsom Road, Link Road and Bunmarra Street	AM	Roundabout	Existing	0.759	13.3	A
		Signalised	Existing + Dev	0.584	21.9	B
	PM	Roundabout	Existing	0.735	17.0	B
		Signalised	Existing + Dev	0.579	24.6	B

It can be seen from **Table 10** that the proposed development will have negligible impacts to the Joynton Avenue/Zetland Avenue signalised intersection, with minor increases in average delay during the PM peak only.

Similarly, the Epsom Road, Joynton Avenue and Rothschild Avenue signalised intersection will experience minor increases in average delay and will continue to operate at LoS 'B' and 'C' during the AM and PM peaks respectively.

The Epsom Road and Rosebery Avenue intersection currently operates at a LoS 'F' during the AM and PM peak periods. This performance is due to the large volume of through movements along Epsom Road and the right-turn movement from Rosebery Avenue onto Epsom Road

which is required to yield to three (3) opposing vehicle movements. Post upgrade, the intersection could operate at a LoS 'A' during the AM peak and a LoS 'F' during the PM peak. It is noted that whilst still operating at a LoS 'F' during the PM peak, motorist will experience significantly less average delay. It is noted that the performance of this intersection could be improved by restricting certain movements, and this is a matter for Council to determine as part of their strategic responsibilities.

The Epsom Road, Dalmeny Avenue and Defries Avenue (future link) intersection will continue to operate at a LoS 'B' during both peak periods. It should be noted that Council could not confirm whether this intersection would require removal, thus, it has been assumed that this intersection and connection into the subject site will remain unless advised otherwise.

The Epsom Road, Link Road and Bunmarra Street will see moderate increases in average delay post development and post upgrade. Nevertheless, the intersection will operate at a LoS 'B' with spare capacity.

In summary, the above assessment is considered highly conservative as it does not take into consideration the existing traffic generation of the large car dealership nor the future connections to the north and west which would further distribute traffic. It is also highly noteworthy that the subject planning proposal does not seek to increase the site's permissible FSR, and as such, the proposed development is considered commensurate with the land zoning and FSR controls currently permitted. Noting that Council was unable to provide specific details for two (2) future intersections identified on the site specific DCP, the assessment provides Council an indication of what could be achieved with the assumptions made and could be used to assist Council in their strategic study currently being undertaken.

8. ACCESS AND INTERNAL DESIGN ASPECTS

8.1 Internal Road

The development proposes the various internal roads that generally align with Council's site specific DCP. A summary of each road is outlined below and an extract from Council's DCP is presented in **Figure 13**.

- **Laetitia Street:** a 9m wide laneway corridor that traverses north-south between Zetland Avenue in the north and Rose Valley Way in the south. Laetitia Street will accommodate a single lane of traffic in the northbound direction in the ultimate arrangement.
- **Defries Avenue:** a 23m wide transport corridor that traverses north-south between Zetland Avenue in the north and Epsom Road in the south. Defries Avenue will accommodate a single lane of traffic in each direction within a divided carriageway.
- **Chimes Street:** a 9m wide laneway corridor that traverses north-south between Zetland Avenue in the north and Rose Valley Way in the south. Chimes Street will accommodate a single lane of traffic in the northbound direction in the ultimate arrangement.
- **Zetland Avenue:** a 9m wide laneway corridor that traverses east-west between Link Road in the east and connect onto the future Zetland Avenue in the west. Zetland Avenue will accommodate a single lane of traffic in the westbound direction in the ultimate arrangement.
- **Peters Street:** a 9m wide laneway corridor that traverses east-west between a dead-end before Link Road in the east and the future George Julius Avenue in the west. West of Defries Avenue, Peters Street is a 20m wide main road corridor. Within the subject site, Peters Street will accommodate a single lane of traffic in the ultimate arrangement.
- **Rose Valley Way:** a 9m wide laneway corridor that traverses east-west between Chimes Street in the east and Joynton Avenue in the west. West of Defries Avenue, Rose Valley Way is a 9m wide laneway corridor

and will accommodate a single lane of traffic in the eastbound direction in the ultimate arrangement.



Figure 13: Future Road Hierarchy (Source City of Sydney DCP)

8.2 Vehicular Access

All vehicular accesses will connect to the aforementioned internal roads and existing road network. These vehicular accesses will be designed in accordance with the Australian Standards during the detailed DA stage, however, envisaged to have the following aspects:

8.2.1 Defries Avenue Access

This vehicular access is proposed to accommodate 363 car parking spaces (predominantly User Class 1A spaces) with access onto Defries Avenue, a local road. It will therefore require a Category 3 driveway under AS2890.1 (2004), being a separated entry and exit access with the following aspects and associated minimum widths:

- 6.0 metre wide entry driveway;
- 4.0-6.0 metre wide egress driveway; and
- 1.0-3.0 metre separation of driveways.

This vehicular access will be designed to accommodate light vehicles and Council's 9.25 metre long waste collection vehicle.

8.2.2 Link Road Access

This vehicular access is proposed to accommodate 433 car parking spaces (predominantly User Class 1A spaces) with access onto Zetland Avenue, a local road. It will therefore require a Category 3 driveway under AS2890.1 (2004), being a separated entry and exit access with the following aspects and associated minimum widths:

- 6.0 metre wide entry driveway;
- 4.0-6.0 metre wide egress driveway; and
- 1.0-3.0 metre separation of driveways.

This vehicular access will be designed to accommodate light vehicles, with 12.5 metre long HRV entry access proposed via Link Road.

8.2.3 Rose Valley Way Access

This vehicular access is proposed to accommodate 128 car parking spaces (predominantly User Class 1A spaces) with access onto Rose Valley Way, a local road. It will therefore require a Category 2 driveway under AS2890.1 (2004), being a combined entry and exit access with a width of 6.0-9.0 metres. This vehicular access will be designed to accommodate light vehicles only.

8.3 Internal Design

The internal car park will be designed in accordance with AS2890.1 (2004), AS2890.2 (2018), AS2890.5 (2020) and AS2890.6 (2009) during the detailed DA stage, however, are envisaged to have the following characteristics:

8.3.1 Parking Modules

- All residential, residential visitors, boarding house and staff car parking spaces are to be designed in accordance with AS2890.1 (2004) User Class 1A, being a minimum width of 2.4 metres, length of 5.4 metres and provide an aisle width of 5.8 metres.
- All childcare visitor parking spaces are to be designed in accordance with AS2890.1 (2004) User Class 3, being a minimum width of 2.6 metres, length 5.4 metres and provide an aisle width of 5.8 metres.
- All retail customer parking spaces are to be designed in accordance with AS2890.1 (2004) User Class 3A, having the following minimum dimensions:
 - Width of 2.6 metres, length of 5.4 metres and provide an aisle width of 6.6 metres; or
 - Width of 2.7 metres, length of 5.4 metres and provide an aisle width of 6.2 metres.
- All on-street kerbside parking spaces (50km/h road speed limit) are to be designed in accordance with AS2890.5 (2020), having the following minimum dimensions:
 - Unobstructed end spaces with a width of 2.0-2.3 metres and length of 5.4 metres;
 - Intermediate spaces with a width of 2.0-2.3 metres and length of 6.0-6.7 metres; or
 - Obstructed end spaces with a width of 2.0-2.3 metres and length of 6.3 metres.
- All accessible parking spaces are to be designed in accordance with AS2890.6 (2009), being a minimum width of 2.4 metres, length of 5.4 metres and provide an adjacent shared zone with the same dimensions.

- All spaces located adjacent to obstructions of greater than 150mm in height are to be provided with an additional width of 300mm.
- All dead-end aisles are to be provided with the required 1.0 metre aisle extension, as required under AS2890.1 (2004) Figure 2.3.

8.3.2 Light Vehicle Ramps

- All vehicular accesses are to be provided with a maximum gradient of 1 in 20 (5%) for the initial 6.0 metres from the property boundary.
- All internal residential ramps are to be provided with a maximum gradient of 1 in 4 (25%).
- All internal public ramps are to be provided with a maximum gradient of 1 in 5 (20%).
- All internal ramps are to be provided gradient transitions at the sag/summit with a maximum gradient of 1 in 8 (12.5%) for a minimum length of 2.0 metres.

8.3.3 Heavy Vehicle Ramps

- All heavy vehicle ramps are to be provided with a maximum gradient of 1 in 6.5 (15.4%) as required under AS2890.2 (2018).
- All heavy vehicle ramps are to be provided with a maximum rate of change of 1 in 16 (6.25%) as required under AS2890.2 (2018).

8.3.4 Clear Head Heights

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

8.3.5 Other Considerations

- All loading and servicing areas are to be designed in accordance with AS2890.2 (2018).
- All columns are to be located outside of the parking space design envelope, as required under AS2890.1 (2004) Figure 5.2.

- Visual splays are to be provided for egressing drivers at all vehicular accesses, as required under AS2890.1 (2004) Figure 3.3.

8.4 Summary

In summary, the internal configuration of the development and servicing areas will be designed in accordance with AS2890.1 (2004), AS2890.2 (2018), AS2890.5 (2020) and AS2890.6 (2009) during the detailed DA stage.

9. CONCLUSIONS

The following is noteworthy:

- This traffic impact assessment has been prepared in support for a Planning Proposal and Stage 1 DA relating to a mixed-use development at 118-130 Epsom Road and 905 South Dowling Street, Zetland.
- Specifically, the concept development comprises 814 residential dwellings, 2,579m² of retail space (including supermarket), a 130 place childcare centre and associated car parking within basement levels.
- The subject site is well connected to the public transport network with reliable access to regular bus and rail services which provides a good opportunity to encourage future tenants, employees and visitors to use public transport modes.
- The proposed development was identified to require a maximum of 924 car parking spaces based on the City of Sydney LEP 2012. Nevertheless, further assessment of the car parking provision would be conducted during the detailed development application (DA) stage noting that the site is sufficiently large enough to accommodate car parking in the order of 924 spaces.
- The traffic generation arising from the development has been assessed as a net increase over existing conditions and equates to an additional 126 vehicle trips per hour during the morning peak period and 176 vehicle trips during the evening peak period.
- The City of Sydney is currently undertaking a strategic traffic study along Epsom Road and are still developing signal designs for the intersections of Epsom Road/Rosebery Avenue and Epsom Road/Dalmeny Avenue. As such, a number of assumptions were made when creating the SIDRA models.
- In order to provide a conservative assessment, the existing traffic volumes were not discounted. SIDRA modelling at key intersections demonstrates acceptable levels of service during the morning and evening peak periods. The Epsom Road/Rosebery Avenue intersection will continue to operate at a level of service 'F', however will be significantly improved with traffic signals.

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

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

APPENDIX A

Reduced Plans

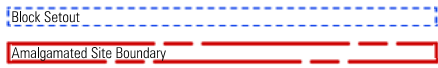
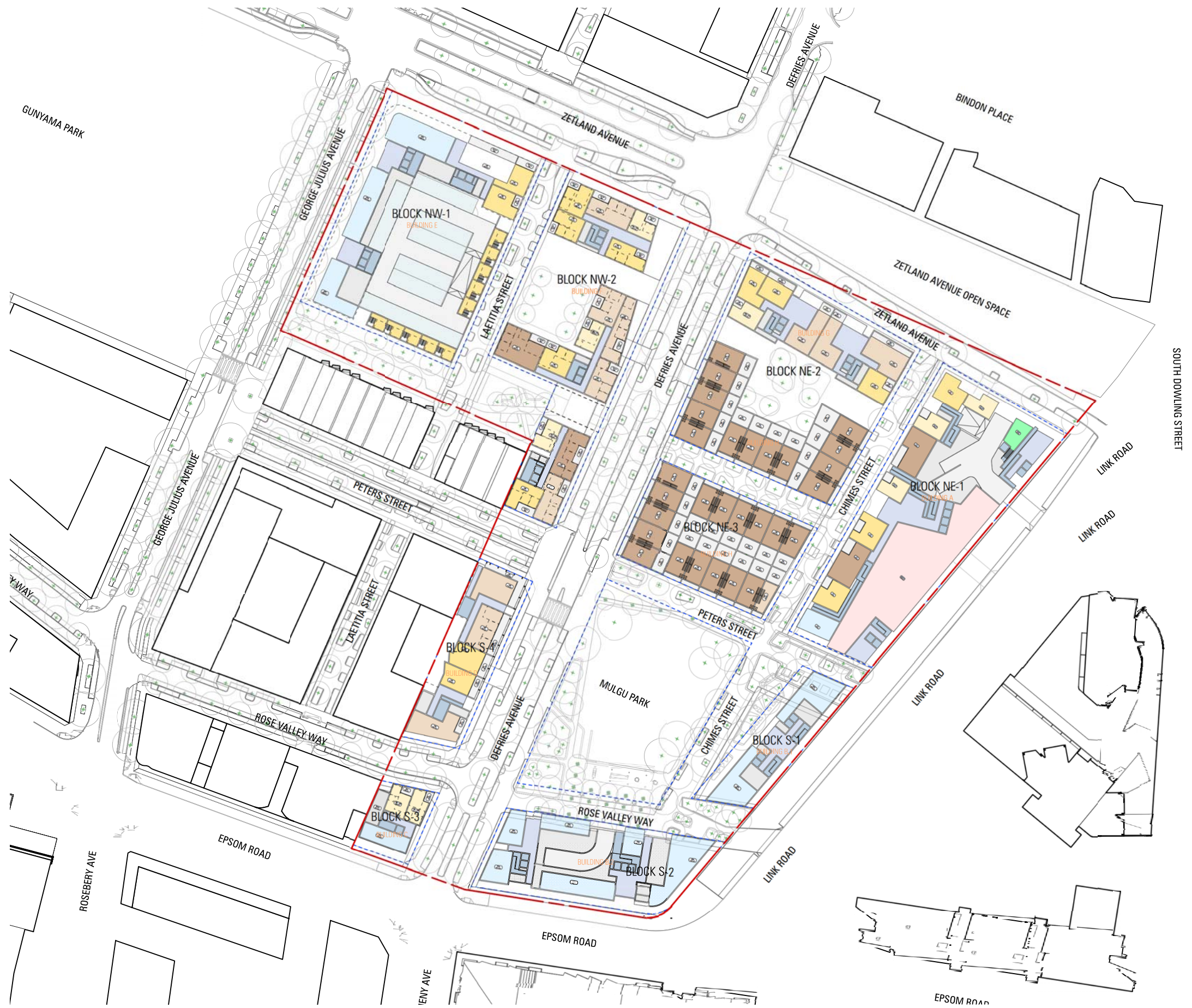


LEGEND



0 10 20 50m

REVISED MIX 9/6/2022 - 6/6/2022



LEGEND



0 10 20 50m

MAKO ARCHITECTURE
 SUITE 108
 59 MARLBOROUGH ST
 SURRY HILLS NSW 2010
 ARCH. REG. NO. 8886[NSW] 19020[VIC]
 WWW.MAKOARCHITECTURE.COM.AU

STUDIO 5 LEVEL 1 BAILEYS ARCADE
 131-157 LONDON CIRCUIT
 CANBERRA CITY 2601
 2569[ACT]

PROJECT DETAILS
 SUTTON SITE
 ZETLAND
 MERITON

NOTES
 all dimensions in millimetres unless otherwise noted
 check all dimensions on site prior to construction
 work to figured dimensions. do not scale off drawings
 to be read in conjunction with the complete documentation package including, but not limited to, all consultant drawings, specifications, reports and consent conditions
 report all discrepancies to the project manager

LEGEND

REVISIONS
 A 16/6/2022 UPDATED MIX

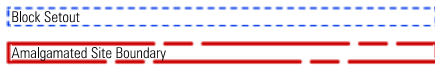
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LEVEL 01_GROUND
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REFERENCE DESIGN
 STATUS
 DATE
 20/6/2022

2129_REFERENCE SCHEME - COMPILED.vwx

REVISED MIX 9/6/2022 - 6/6/2022



LEGEND

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 SURRY HILLS NSW 2010
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LEGEND

REVISIONS
 A 16/6/2022 UPDATED MIX

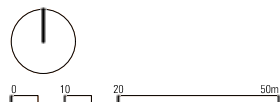
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 20/6/2022
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TYPICAL LEVELS 02-04
 2129A 11003 A

REVISED MIX 9/6/2022 - 6/6/2022



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 CANBERRA CITY 2601
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PROJECT DETAILS
 SUTTON SITE
 ZETLAND
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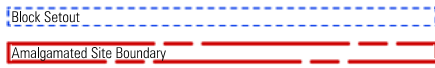
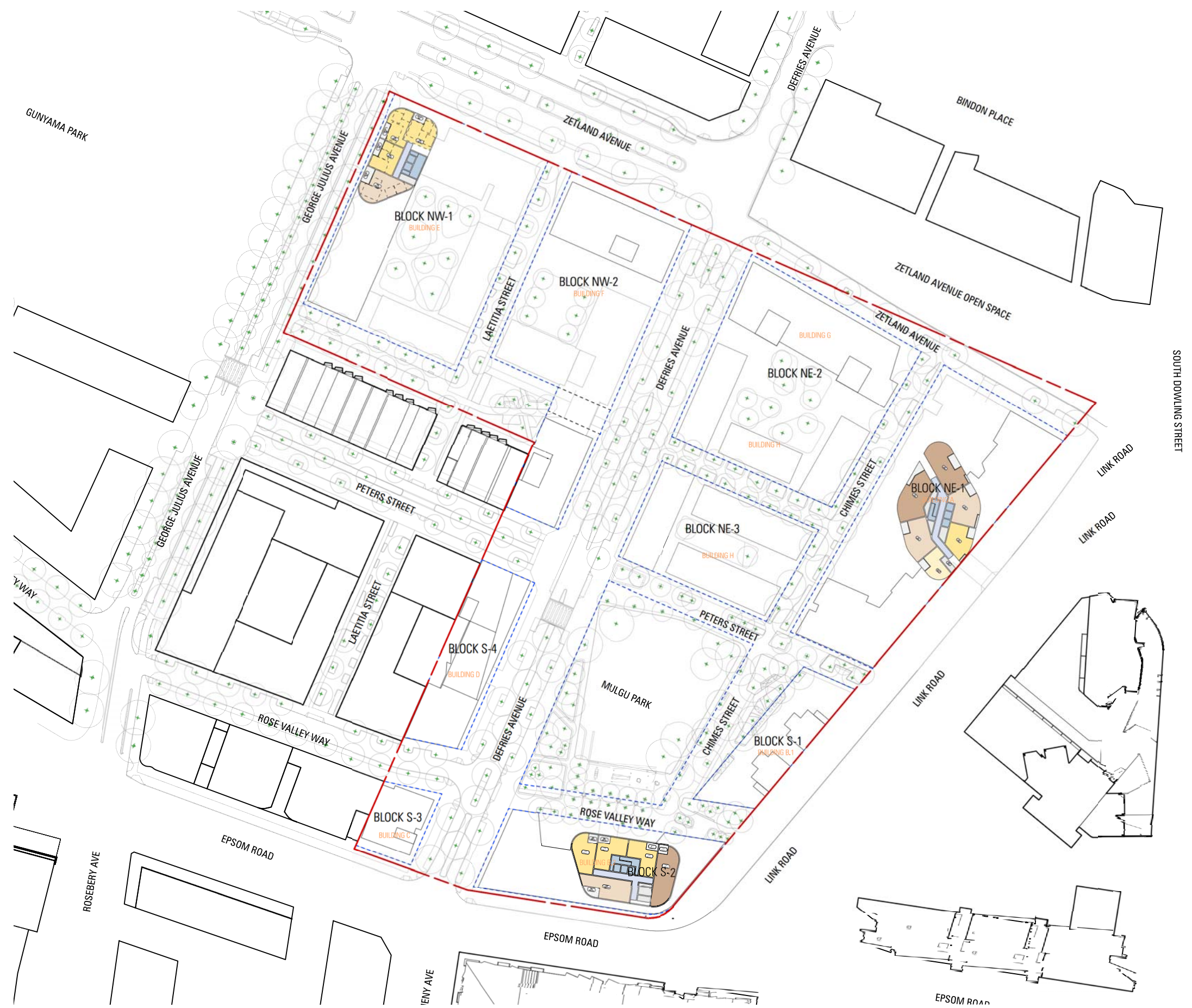
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REVISIONS
 A 16/6/2022 UPDATED MIX

TYPICAL LEVELS 05-09
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STATUS
REFERENCE DESIGN
 DATE
 20/6/2022
 2129_REFERENCE SCHEME - COMPILED.vwx

REVISED MIX 9/6/2022 - 6/6/2022



LEGEND



0 10 20 50m

MAKO ARCHITECTURE
 SUITE 108
 59 MARLBOROUGH ST
 SURRY HILLS NSW 2010
 ARCH. REG. NO. 8886[NSW] 19020[VIC]
 WWW.MAKOARCHITECTURE.COM.AU

STUDIO 5 LEVEL 1 BAILEYS ARCADE
 131-157 LONDON CIRCUIT
 CANBERRA CITY 2601
 2569[ACT]

PROJECT DETAILS
 SUTTON SITE
 ZETLAND

NOTES
 all dimensions in millimetres unless otherwise noted
 check all dimensions on site prior to construction
 work to figured dimensions. do not scale off drawings

to be read in conjunction with the complete documentation package including, but not limited to, all consultant drawings, specifications, reports and consent conditions
 report all discrepancies to the project manager

LEGEND

TYPICAL LEVELS - TOWERS
 2129A 11005 A

REVISIONS	STATUS
A 16/6/2022 UPDATED MIX	REFERENCE DESIGN

DATE
 20/6/2022
 2129_REFERENCE SCHEME - COMPILED.vwx

REVISED MIX 9/6/2022 - 6/6/2022

BLOCK S-1 table with columns: 1 Bed, 1 Bed + Study, 2 Bed, 3 Bed, 4 Bed, TOTAL, GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, DISTRIBUTION.

BLOCK S-1 summary table with columns: GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, BASEMENT - LEVEL 00, DISTRIBUTION.

BLOCK NW-2 table with columns: 1 Bed, 1 Bed + Study, 2 Bed, 3 Bed, 4 Bed, TOTAL, GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, DISTRIBUTION.

BLOCK NW-2 summary table with columns: GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, BASEMENT - LEVEL 00, DISTRIBUTION.

BLOCK S-2 - PODIUM + TOWER table with columns: 1 Bed, 1 Bed + Study, 2 Bed, 3 Bed, 4 Bed, TOTAL, GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, DISTRIBUTION.

BLOCK S-2 - PODIUM + TOWER summary table with columns: GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, BASEMENT - LEVEL 00, DISTRIBUTION.

BLOCK NE-1 - PODIUM + TOWER table with columns: 1 Bed, 1 Bed + Study, 2 Bed, 3 Bed, 4 Bed, TOTAL, GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, DISTRIBUTION.

BLOCK NE-1 - PODIUM + TOWER summary table with columns: GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, BASEMENT - LEVEL 00, DISTRIBUTION.

BLOCK S-3 table with columns: 1 Bed + MPH, TOTAL, GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, DISTRIBUTION.

BLOCK S-3 summary table with columns: GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, BASEMENT - LEVEL 00, DISTRIBUTION.

BLOCK S-4 table with columns: 1 Bed, 1 Bed + Study, 2 Bed, 3 Bed, 4 Bed, TOTAL, GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, DISTRIBUTION.

BLOCK S-4 summary table with columns: GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, BASEMENT - LEVEL 00, DISTRIBUTION.

BLOCK NW-1 - PODIUM + TOWER table with columns: 1 Bed, 1 Bed + Study, 2 Bed, 3 Bed, 4 Bed, TOTAL, GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, DISTRIBUTION.

BLOCK NW-1 - PODIUM + TOWER summary table with columns: GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, BASEMENT - LEVEL 00, DISTRIBUTION.

BLOCK NE-2 table with columns: 1 Bed, 1 Bed + Study, 2 Bed, 3 Bed, 4 Bed, TOTAL, GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, DISTRIBUTION.

BLOCK NE-2 summary table with columns: GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, BASEMENT - LEVEL 00, DISTRIBUTION.

BLOCK NE-3 - TOWN HOMES table with columns: 1 Bed, 1 Bed + Study, 2 Bed, 3 Bed, 4 Bed, TOTAL / FLR, GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, DISTRIBUTION.

BLOCK NE-3 - TOWN HOMES summary table with columns: GFA, NSA, Natural Vent, Solar Access 2hr, PARKING, BASEMENT - LEVEL 00, DISTRIBUTION.

RESI - APARTMENTS table with columns: BH Rooms, 1 Bed, 1 Bed + Study, 2 Bed, 3 Bed, 4 Bed, TOTAL, GFA, RETAIL, ELC.

RESI - TOWNHOUSE table with columns: BH Rooms, 1 Bed, 1 Bed + Study, 2 Bed, 3 Bed, 4 Bed, TOTAL, GFA, RETAIL, ELC.

FSR: 2.20 -1

SUMMARY



APPENDIX B

SIDRA Outputs

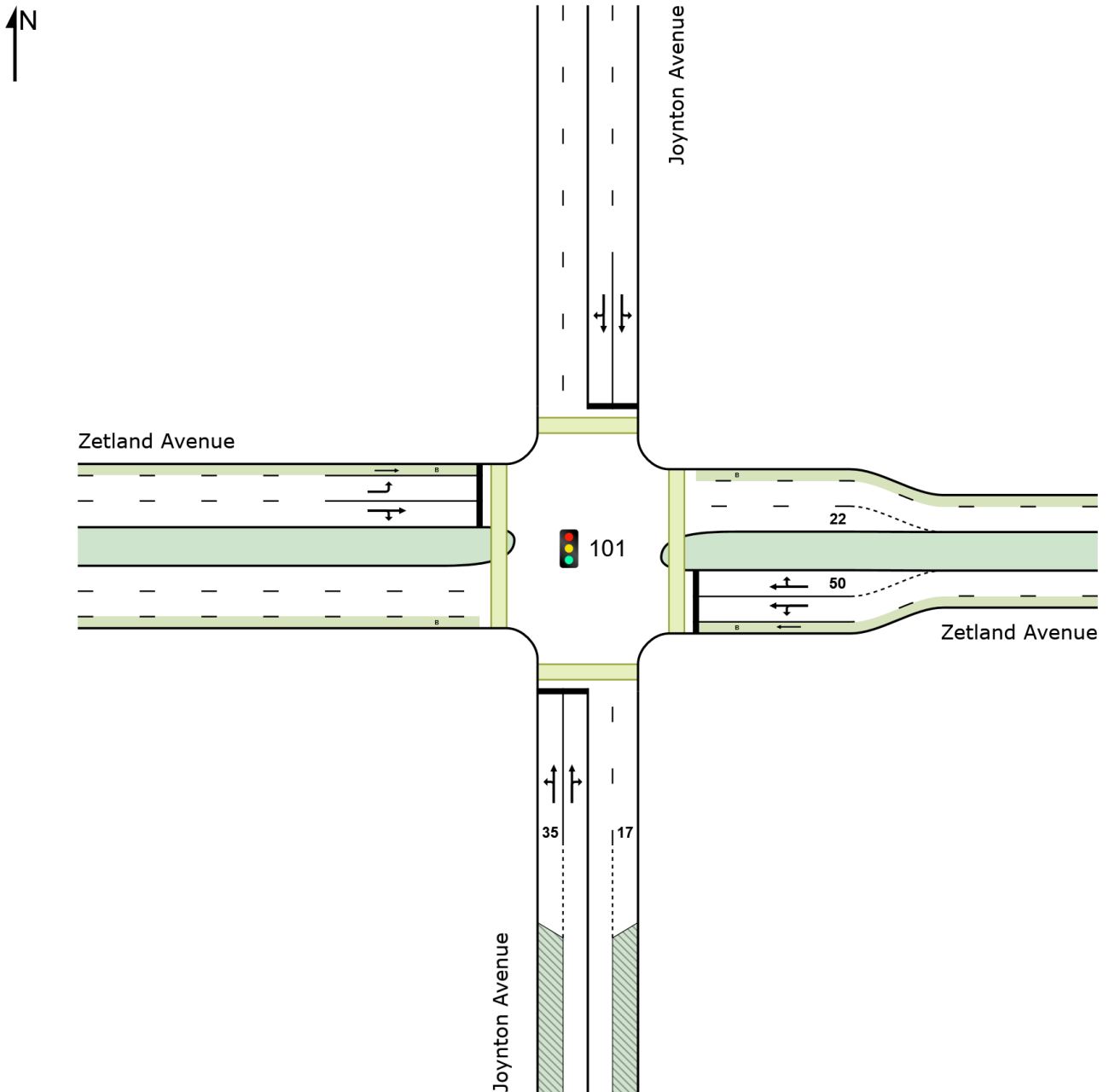
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Joynton Avenue x Zetland Avenue
Existing
AM Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Site Layout

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



Site: 101 [Existing - Joynton Ave x Zetland Ave - AM (Site Folder: Existing Layouts)]

Joynton Avenue x Zetland Avenue

Existing

AM Peak

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: TCS

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D

Output Phase Sequence: A, B, C, D

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
		[Total veh/h	HV veh/h	[Total veh/h	HV %				[Veh. veh	Dist] m				
South: Joynton Avenue														
1	L2	12	0	13	0.0	0.367	21.0	LOS B	9.8	71.9	0.61	0.54	0.61	19.9
2	T1	528	34	556	6.4	0.367	17.7	LOS B	9.8	71.9	0.62	0.54	0.62	18.5
3	R2	12	1	13	8.3	*0.367	21.2	LOS B	9.5	70.5	0.62	0.54	0.62	23.1
Approach		552	35	581	6.3	0.367	17.9	LOS B	9.8	71.9	0.62	0.54	0.62	18.7
East: Zetland Avenue														
4	L2	18	1	19	5.6	*0.212	66.7	LOS E	1.1	8.3	0.99	0.70	0.99	10.5
5	T1	7	0	7	0.0	*0.183	60.9	LOS E	1.0	7.0	0.98	0.67	0.98	10.6
6	R2	10	0	11	0.0	0.183	65.0	LOS E	1.0	7.0	0.98	0.69	0.98	9.9
Approach		35	1	37	2.9	0.212	65.0	LOS E	1.1	8.3	0.99	0.69	0.99	10.4
North: Joynton Avenue														
7	L2	10	0	11	0.0	0.071	7.5	LOS A	1.5	11.0	0.28	0.26	0.28	33.4
8	T1	482	33	507	6.8	0.323	5.3	LOS A	8.2	60.4	0.36	0.31	0.36	29.7
9	R2	8	0	8	0.0	*0.323	8.7	LOS A	8.2	60.4	0.38	0.32	0.38	29.7
Approach		500	33	526	6.6	0.323	5.4	LOS A	8.2	60.4	0.36	0.31	0.36	29.8
West: Zetland Avenue														
10	L2	28	1	29	3.6	0.057	36.8	LOS C	1.2	9.0	0.76	0.67	0.76	11.1
11	T1	3	0	3	0.0	0.112	60.5	LOS E	0.6	4.3	0.98	0.63	0.98	10.7
12	R2	7	1	7	14.3	0.112	66.1	LOS E	0.6	4.3	0.98	0.67	0.98	8.3
Approach		38	2	40	5.3	0.112	44.0	LOS D	1.2	9.0	0.82	0.67	0.82	10.3
All Vehicles		1125	71	1184	6.3	0.367	14.7	LOS B	9.8	71.9	0.52	0.45	0.52	20.8

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

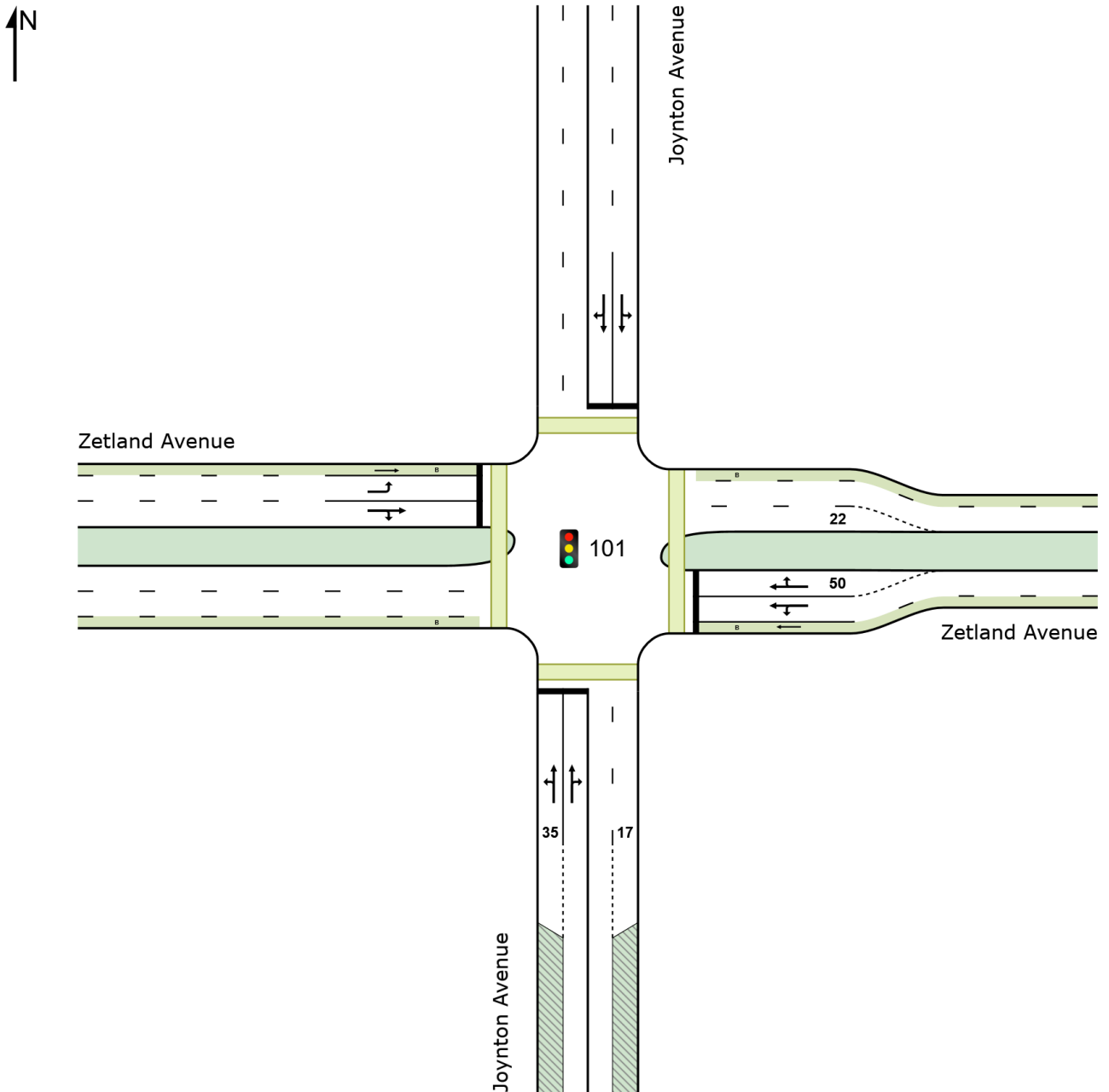
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Joynton Avenue x Zetland Avenue
Existing
AM Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Site Layout

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



Site: 101 [Existing - Joynton Ave x Zetland Ave - PM (Site Folder: Existing Layouts)]

Joynton Avenue x Zetland Avenue

Existing

AM Peak

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: TCS

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D

Output Phase Sequence: A, B, C, D

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
		[Total veh/h	HV veh/h	[Total veh/h	HV %				[Veh. veh	Dist m				
South: Joynton Avenue														
1	L2	11	0	12	0.0	0.410	24.0	LOS B	10.8	78.2	0.65	0.56	0.65	18.3
2	T1	525	23	553	4.4	0.410	20.7	LOS B	10.8	78.2	0.65	0.57	0.65	17.0
3	R2	14	0	15	0.0	* 0.410	24.2	LOS B	10.4	75.6	0.65	0.57	0.65	21.6
Approach		550	23	579	4.2	0.410	20.8	LOS B	10.8	78.2	0.65	0.57	0.65	17.2
East: Zetland Avenue														
4	L2	26	1	27	3.8	* 0.315	70.2	LOS E	1.7	12.5	1.00	0.72	1.00	10.1
5	T1	4	0	4	0.0	* 0.249	65.5	LOS E	1.1	8.0	0.99	0.66	0.99	10.1
6	R2	14	0	15	0.0	0.249	70.9	LOS F	1.1	8.0	1.00	0.69	1.00	9.2
Approach		44	1	46	2.3	0.315	70.0	LOS E	1.7	12.5	1.00	0.70	1.00	9.8
North: Joynton Avenue														
7	L2	11	0	12	0.0	0.090	7.4	LOS A	2.0	14.3	0.27	0.26	0.27	33.6
8	T1	585	32	616	5.5	0.408	5.5	LOS A	10.8	78.7	0.39	0.35	0.39	29.3
9	R2	27	0	28	0.0	* 0.408	8.9	LOS A	10.8	78.7	0.42	0.37	0.42	29.1
Approach		623	32	656	5.1	0.408	5.7	LOS A	10.8	78.7	0.39	0.34	0.39	29.4
West: Zetland Avenue														
10	L2	42	2	44	4.8	0.077	34.9	LOS C	1.9	13.5	0.73	0.68	0.73	11.5
11	T1	9	0	9	0.0	0.305	65.6	LOS E	1.6	11.2	0.99	0.69	0.99	10.0
12	R2	16	0	17	0.0	0.305	70.3	LOS E	1.6	11.2	1.00	0.71	1.00	7.9
Approach		67	2	71	3.0	0.305	47.5	LOS D	1.9	13.5	0.83	0.69	0.83	10.1
All Vehicles		1284	58	1352	4.5	0.410	16.6	LOS B	10.8	78.7	0.55	0.47	0.55	19.6

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

USER REPORT FOR SITE

All Movement Classes

Project: 22.156m01v01

Template: Layouts

Site: 101 [Existing - Epsom Rd x Rothschild Ave x Joynton Ave - AM (Site Folder: Existing Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

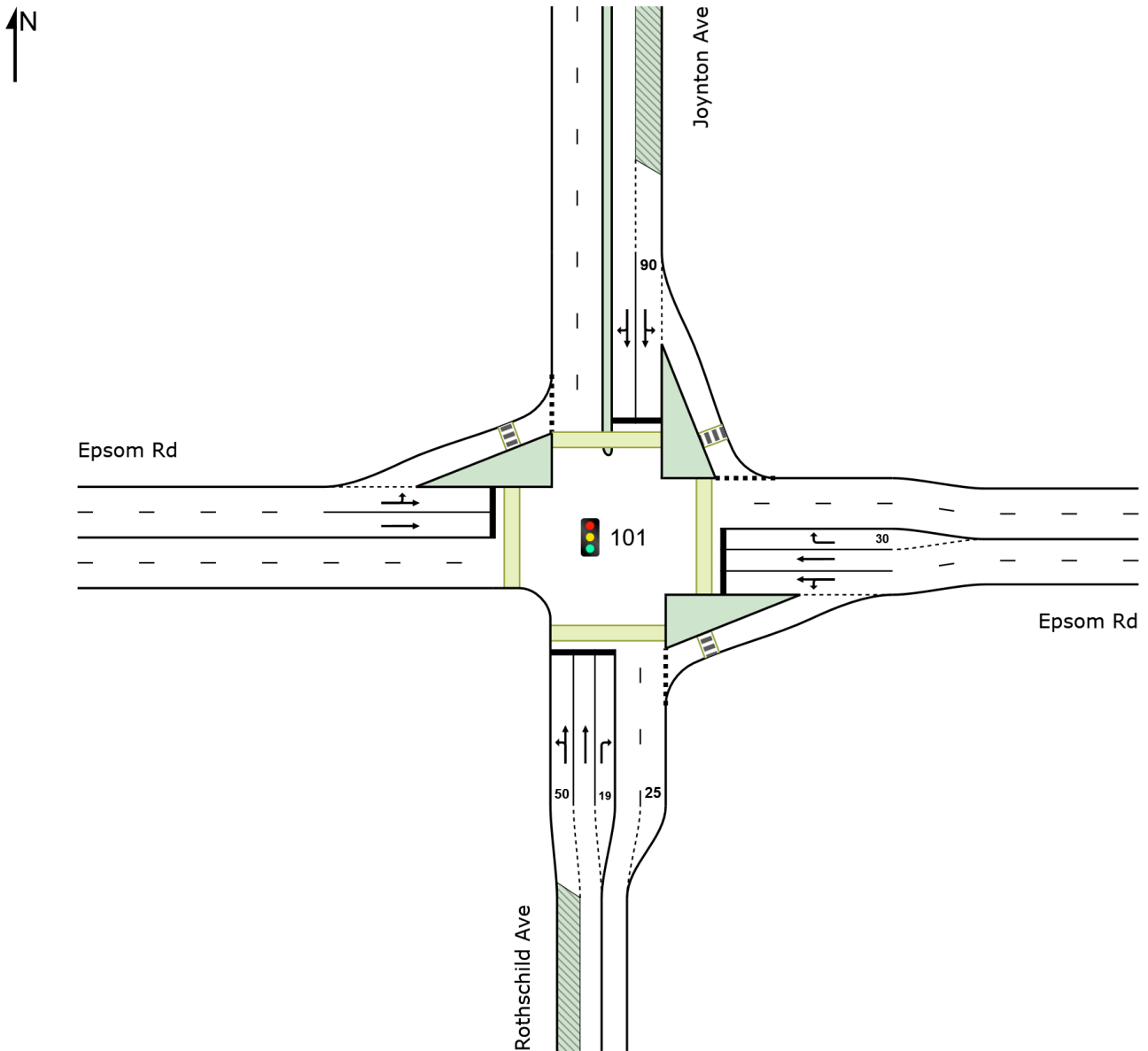
Reference Phase: Phase A

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Site Layout

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



USER REPORT FOR SITE

All Movement Classes

Project: 22.156m01v01

Template: Movement Summaries

Site: 101 [Existing - Epsom Rd x Rothschild Ave x Joynton Ave - AM (Site Folder: Existing Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	[HV] veh/h	[Total veh/h	[HV] %				[Veh. veh	[Dist] m				
South: Rothschild Ave														
1	L2	17	2	18	11.8	0.303	40.2	LOS C	7.3	53.7	0.82	0.69	0.82	32.8
2	T1	257	14	271	5.4	0.303	35.1	LOS C	7.3	53.7	0.81	0.67	0.81	31.5
3	R2	97	7	102	7.2	0.528	53.9	LOS D	5.5	41.1	0.94	0.79	0.94	26.8
Approach		371	23	391	6.2	0.528	40.3	LOS C	7.3	53.7	0.85	0.70	0.85	30.2
East: Epsom Rd														
4	L2	136	1	143	0.7	0.204	9.4	LOS A	3.1	22.6	0.41	0.53	0.41	39.4
5	T1	301	20	317	6.6	0.204	9.1	LOS A	5.8	42.8	0.46	0.44	0.46	40.4
6	R2	181	14	191	7.7	* 0.428	35.6	LOS C	9.0	67.1	0.86	0.80	0.86	23.1
Approach		618	35	651	5.7	0.428	16.9	LOS B	9.0	67.1	0.57	0.57	0.57	34.6
North: Joynton Ave														
7	L2	243	19	256	7.8	0.281	10.8	LOS A	4.7	34.9	0.48	0.67	0.48	37.6
8	T1	238	11	251	4.6	* 0.647	43.0	LOS D	15.4	113.1	0.94	0.82	0.94	26.2
9	R2	42	6	44	14.3	0.647	46.4	LOS D	15.4	113.1	0.94	0.82	0.94	23.3
Approach		523	36	551	6.9	0.647	28.3	LOS B	15.4	113.1	0.72	0.75	0.72	28.8
West: Epsom Rd														
10	L2	104	7	109	6.7	0.616	36.1	LOS C	13.4	100.4	0.93	0.81	0.93	27.0
11	T1	595	57	626	9.6	* 0.616	31.8	LOS C	20.4	154.6	0.88	0.78	0.88	28.1
Approach		699	64	736	9.2	0.616	32.5	LOS C	20.4	154.6	0.89	0.78	0.89	28.0
All Vehicles		2211	158	2327	7.1	0.647	28.5	LOS B	20.4	154.6	0.75	0.70	0.75	30.2

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

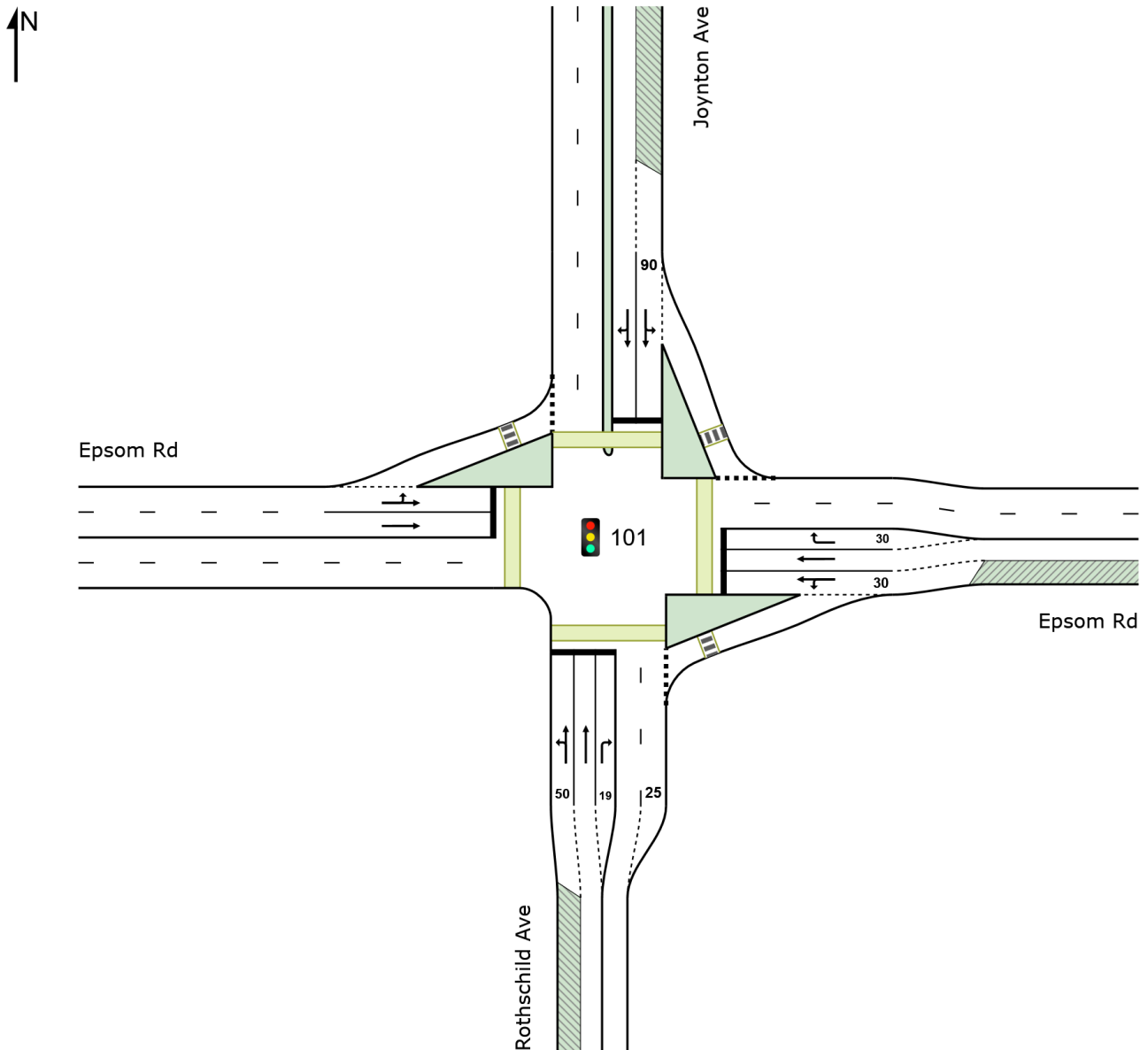
Site: 101 [Existing - Epsom Rd x Rothschild Ave x Joynton Ave - PM (Site Folder: Existing Layouts)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Site Layout

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



Site: 101 [Existing - Epsom Rd x Rothschild Ave x Joynton Ave - PM (Site Folder: Existing Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rothschild Ave														
1	L2	19	0	20	0.0	0.265	40.4	LOS C	6.2	45.1	0.82	0.68	0.82	32.7
2	T1	220	10	232	4.5	0.265	35.5	LOS C	6.2	45.1	0.81	0.66	0.81	31.4
3	R2	118	1	124	0.8	0.819	66.7	LOS E	7.8	55.2	1.00	0.96	1.31	24.2
Approach		357	11	376	3.1	0.819	46.1	LOS D	7.8	55.2	0.87	0.76	0.98	28.6
East: Epsom Rd														
4	L2	125	1	132	0.8	0.227	10.0	LOS A	4.2	30.3	0.43	0.52	0.43	39.3
5	T1	347	25	365	7.2	0.227	9.0	LOS A	6.5	48.2	0.46	0.44	0.46	40.5
6	R2	215	11	226	5.1	* 0.506	41.2	LOS C	11.0	80.5	0.90	0.90	0.90	21.4
Approach		687	37	723	5.4	0.506	19.3	LOS B	11.0	80.5	0.59	0.60	0.59	33.3
North: Joynton Ave														
7	L2	288	13	303	4.5	0.343	12.4	LOS A	6.3	46.2	0.55	0.70	0.55	36.2
8	T1	283	14	298	4.9	* 0.718	44.6	LOS D	18.2	132.6	0.96	0.85	0.98	25.9
9	R2	38	1	40	2.6	0.718	47.8	LOS D	18.2	132.6	0.96	0.85	0.98	22.9
Approach		609	28	641	4.6	0.718	29.6	LOS C	18.2	132.6	0.77	0.78	0.78	28.4
West: Epsom Rd														
10	L2	104	4	109	3.8	0.714	41.6	LOS C	18.1	130.1	0.96	0.86	0.96	25.2
11	T1	746	22	785	2.9	* 0.714	34.8	LOS C	25.9	186.1	0.93	0.83	0.93	27.1
Approach		850	26	895	3.1	0.714	35.6	LOS C	25.9	186.1	0.93	0.83	0.93	26.9
All Vehicles		2503	102	2635	4.1	0.819	31.1	LOS C	25.9	186.1	0.79	0.75	0.81	29.0

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

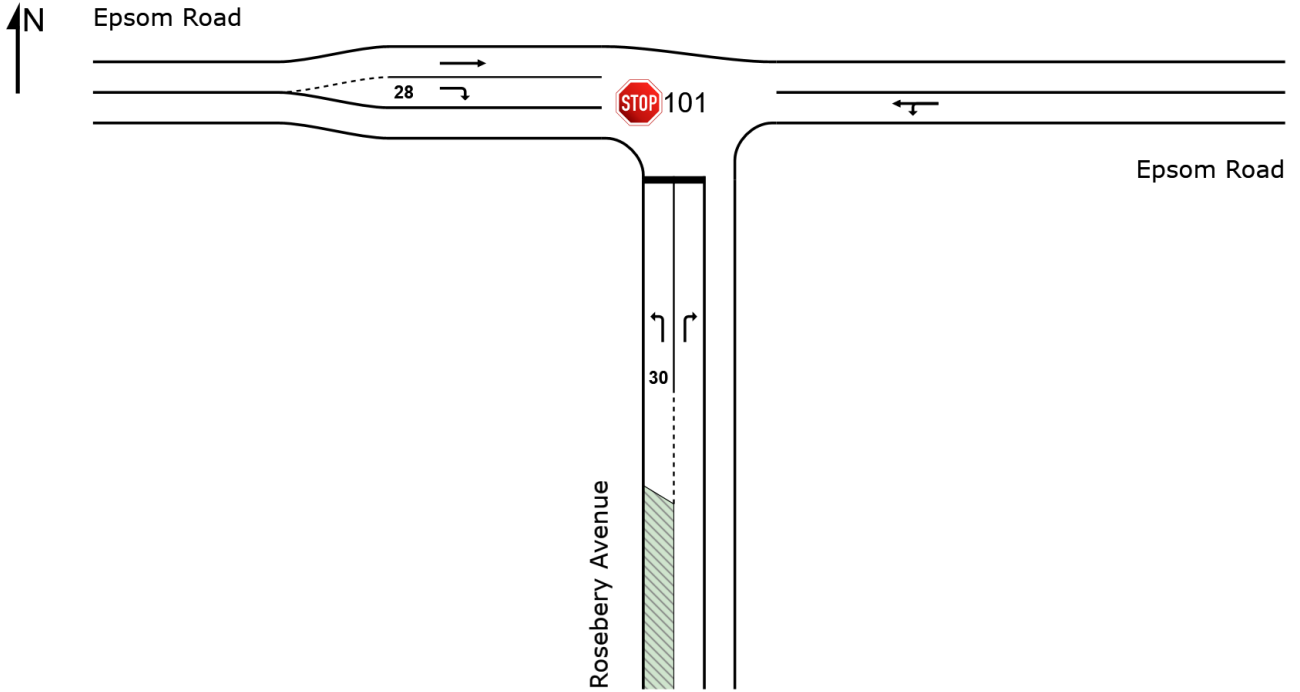
* Critical Movement (Signal Timing)

STOP Site: 101 [Existing - Epsom Rd x Rosebery Ave - AM (Site Folder: Existing Layouts)]

New Site
Site Category: (None)
Stop (Two-Way)

Site Layout

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



Site: 101 [Existing - Epsom Rd x Rosebery Ave - AM (Site Folder: Existing Layouts)]

New Site
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rosebery Avenue														
1	L2	39	6	41	15.4	0.058	10.7	LOS A	0.2	1.7	0.55	0.95	0.55	37.2
3	R2	135	7	142	5.2	1.482	502.9	LOS F	34.3	250.4	1.00	3.64	9.17	4.6
Approach		174	13	183	7.5	1.482	392.6	LOS F	34.3	250.4	0.90	3.04	7.24	5.9
East: Epsom Road														
4	L2	250	4	263	1.6	0.457	4.6	LOS A	0.0	0.0	0.00	0.17	0.00	47.8
5	T1	561	31	591	5.5	0.457	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	47.0
Approach		811	35	854	4.3	0.457	1.4	NA	0.0	0.0	0.00	0.17	0.00	47.4
West: Epsom Road														
11	T1	882	71	928	8.0	0.505	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.6
12	R2	45	10	47	22.2	0.076	9.8	LOS A	0.3	2.4	0.67	0.85	0.67	37.4
Approach		927	81	976	8.7	0.505	0.6	NA	0.3	2.4	0.03	0.04	0.03	47.8
All Vehicles		1912	129	2013	6.7	1.482	36.6	NA	34.3	250.4	0.10	0.37	0.67	22.6

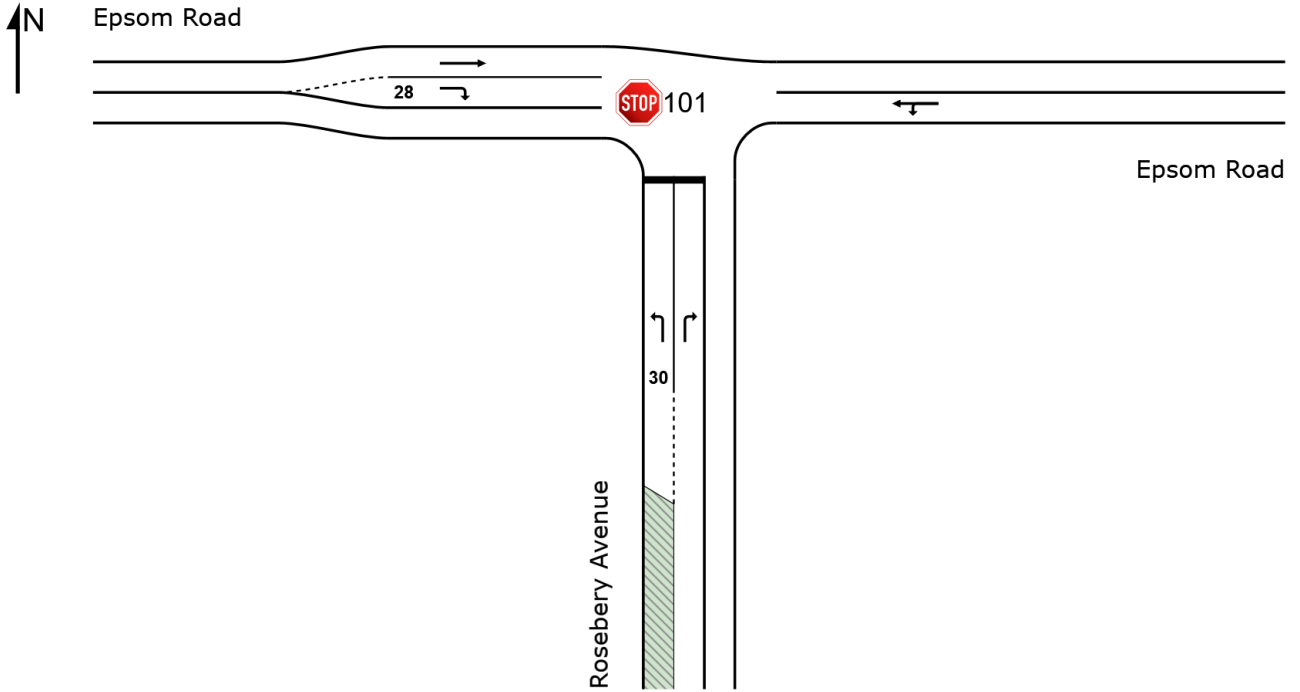
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection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

STOP Site: 101 [Existing - Epsom Rd x Rosebery Ave - PM (Site Folder: Existing Layouts)]

New Site
Site Category: (None)
Stop (Two-Way)

Site Layout

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



Site: 101 [Existing - Epsom Rd x Rosebery Ave - PM (Site Folder: Existing Layouts)]

New Site
 Site Category: (None)
 Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rosebery Avenue														
1	L2	66	7	69	10.6	0.102	10.9	LOS A	0.4	2.8	0.58	0.99	0.58	37.1
3	R2	116	2	122	1.7	2.020	991.5	LOS F	44.5	316.1	1.00	3.58	9.38	2.5
Approach		182	9	192	4.9	2.020	635.9	LOS F	44.5	316.1	0.85	2.64	6.19	3.9
East: Epsom Road														
4	L2	250	7	263	2.8	0.488	4.6	LOS A	0.0	0.0	0.00	0.16	0.00	47.8
5	T1	619	28	652	4.5	0.488	0.1	LOS A	0.0	0.0	0.00	0.16	0.00	47.2
Approach		869	35	915	4.0	0.488	1.4	NA	0.0	0.0	0.00	0.16	0.00	47.5
West: Epsom Road														
11	T1	1071	35	1127	3.3	0.594	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
12	R2	95	4	100	4.2	0.146	9.3	LOS A	0.5	4.0	0.69	0.86	0.69	37.6
Approach		1166	39	1227	3.3	0.594	0.9	NA	0.5	4.0	0.06	0.07	0.06	46.8
All Vehicles		2217	83	2334	3.7	2.020	53.2	NA	44.5	316.1	0.10	0.31	0.54	18.2

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

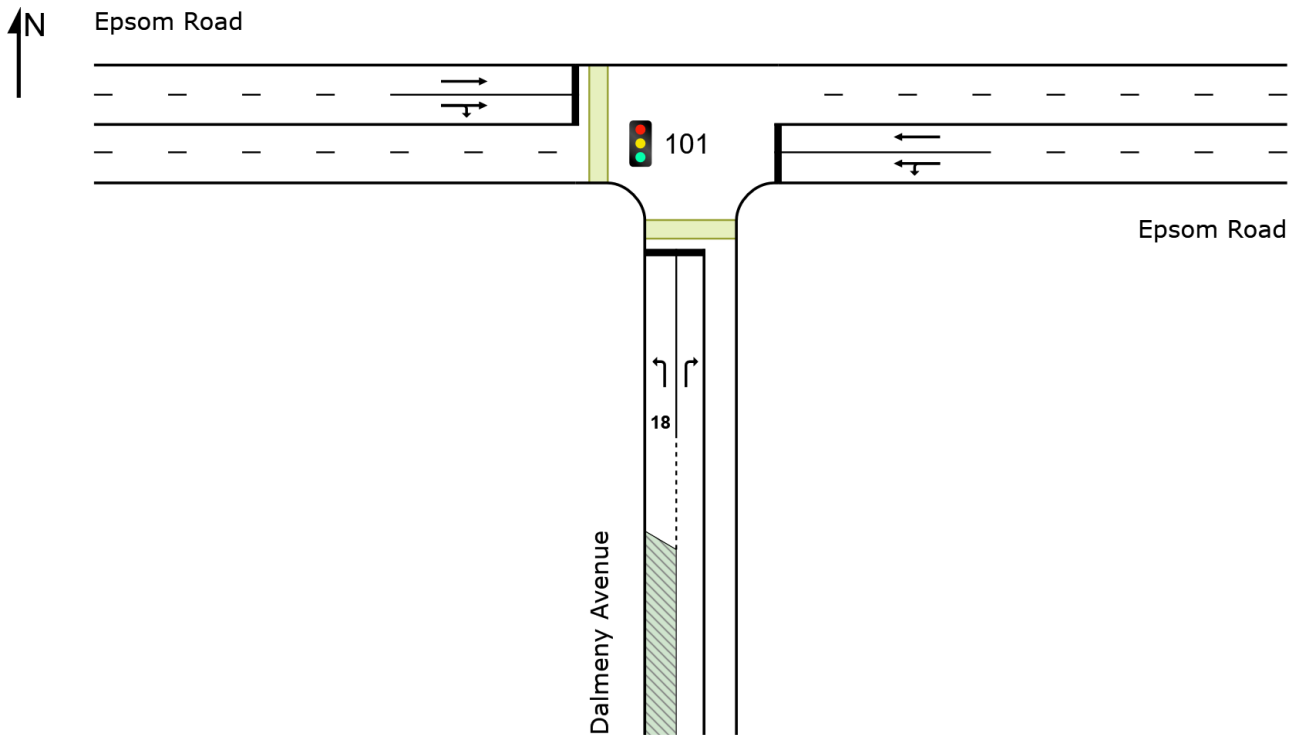
Site: 101 [Existing - Epsom Rd x Dalmeny Ave - AM (Site Folder: Existing Layouts)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D*
Output Phase Sequence: A, B, C
(* Variable Phase)

Site Layout

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



Site: 101 [Existing - Epsom Rd x Dalmeny Ave - AM (Site Folder: Existing Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D*

Output Phase Sequence: A, B, C

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Dalmeny Avenue														
1	L2	148	1	156	0.7	0.142	16.1	LOS B	4.0	28.0	0.47	0.67	0.47	39.2
3	R2	155	2	163	1.3	*0.669	51.5	LOS D	8.7	61.2	0.93	0.81	0.97	21.9
Approach		303	3	319	1.0	0.669	34.2	LOS C	8.7	61.2	0.71	0.74	0.73	29.5
East: Epsom Road														
4	L2	62	0	65	0.0	0.667	43.1	LOS D	19.5	141.7	0.92	0.81	0.92	25.3
5	T1	667	36	702	5.4	*0.667	38.8	LOS C	19.5	141.7	0.93	0.81	0.93	22.3
Approach		729	36	767	4.9	0.667	39.1	LOS C	19.5	142.5	0.93	0.81	0.93	22.6
West: Epsom Road														
11	T1	924	77	973	8.3	0.469	11.4	LOS A	16.3	121.5	0.55	0.50	0.55	36.4
12	R2	85	3	89	3.5	*0.469	20.7	LOS B	16.3	121.5	0.65	0.60	0.65	38.6
Approach		1009	80	1062	7.9	0.469	12.1	LOS A	16.3	121.5	0.56	0.51	0.56	36.8
All Vehicles		2041	119	2148	5.8	0.669	25.1	LOS B	19.5	142.5	0.71	0.65	0.71	29.3

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

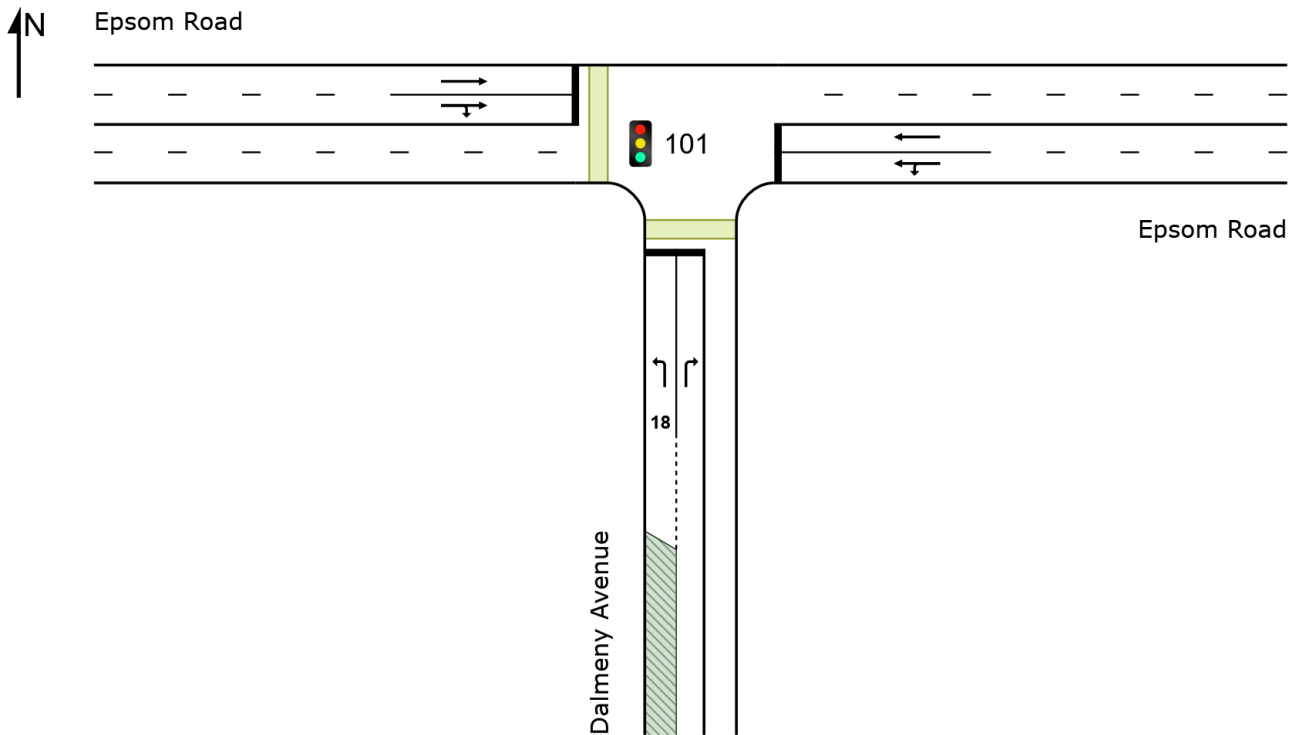
Site: 101 [Existing - Epsom Rd x Dalmeny Ave - PM (Site Folder: Existing Layouts)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D*
Output Phase Sequence: A, B, C
(* Variable Phase)

Site Layout

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



Site: 101 [Existing - Epsom Rd x Dalmeny Ave - PM (Site Folder: Existing Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D*

Output Phase Sequence: A, B, C

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV] veh/h	[Total veh/h]	[HV] %				[Veh. veh]	[Dist] m				
South: Dalmeny Avenue														
1	L2	155	5	163	3.2	0.270	29.1	LOS C	6.1	44.1	0.69	0.73	0.69	33.5
3	R2	79	0	83	0.0	* 0.522	61.5	LOS E	4.8	33.4	0.99	0.77	0.99	19.8
Approach		234	5	246	2.1	0.522	40.1	LOS C	6.1	44.1	0.79	0.75	0.79	28.5
East: Epsom Road														
4	L2	157	2	165	1.3	0.495	26.0	LOS B	17.5	125.7	0.71	0.69	0.71	31.6
5	T1	708	30	745	4.2	* 0.495	21.7	LOS B	17.6	127.9	0.72	0.66	0.72	29.3
Approach		865	32	911	3.7	0.495	22.5	LOS B	17.6	127.9	0.72	0.66	0.72	29.8
West: Epsom Road														
11	T1	1012	35	1065	3.5	0.521	6.7	LOS A	16.8	119.5	0.45	0.43	0.45	40.7
12	R2	178	0	187	0.0	* 0.521	18.0	LOS B	16.8	119.5	0.69	0.67	0.69	39.5
Approach		1190	35	1253	2.9	0.521	8.4	LOS A	16.8	119.5	0.49	0.47	0.49	40.4
All Vehicles		2289	72	2409	3.1	0.522	16.9	LOS B	17.6	127.9	0.61	0.57	0.61	34.1

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

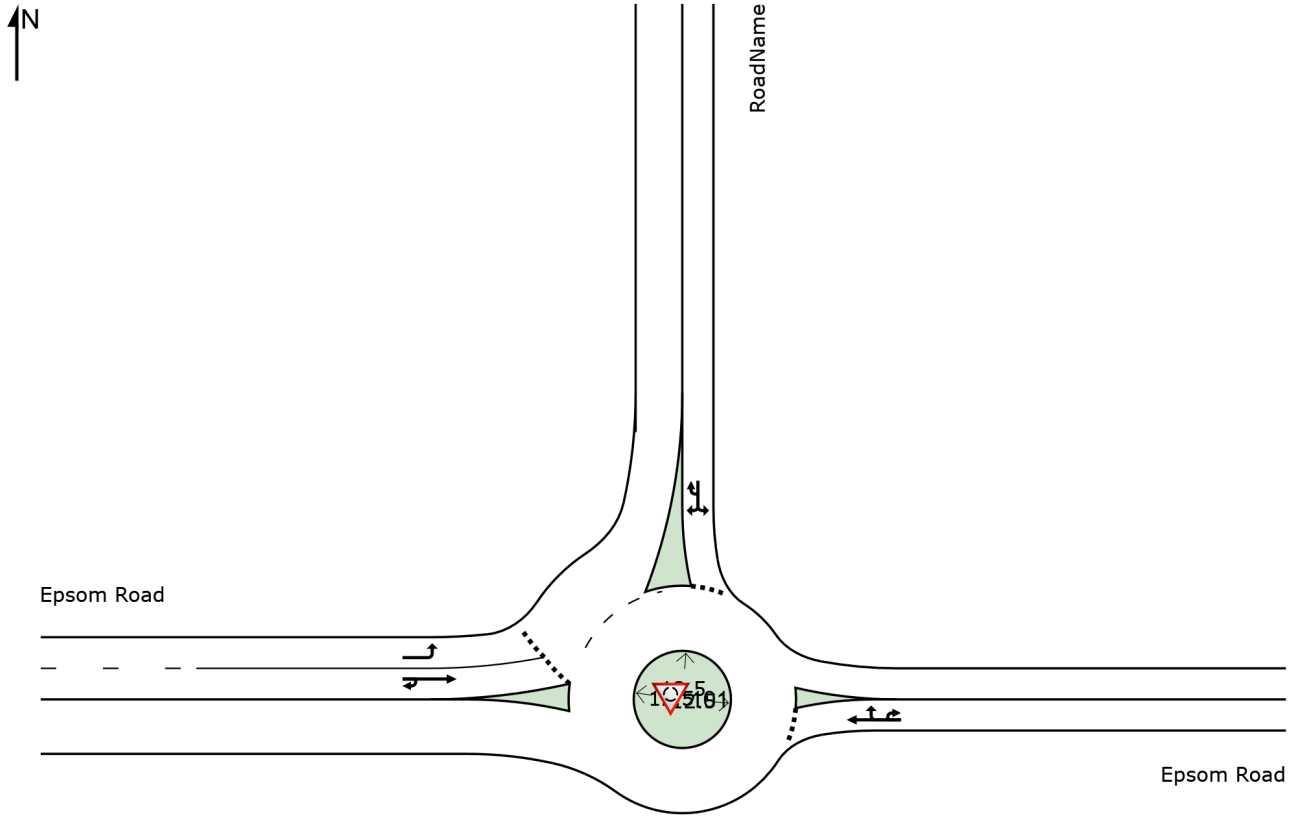
* Critical Movement (Signal Timing)

Site: 101 [Existing - Epsom Rd x Link Rd - AM (Site Folder: Existing Layouts)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Site: 101 [Existing - Epsom Rd x Link Rd - AM (Site Folder: Existing Layouts)]

New Site
 Site Category: (None)
 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Epsom Road														
5	T1	605	20	637	3.3	0.759	5.3	LOS A	9.5	68.3	0.75	0.61	0.75	43.0
6	R2	276	4	291	1.4	0.759	8.9	LOS A	9.5	68.3	0.75	0.61	0.75	45.5
6u	U	18	0	19	0.0	0.759	10.5	LOS A	9.5	68.3	0.75	0.61	0.75	46.1
Approach		899	24	946	2.7	0.759	6.5	LOS A	9.5	68.3	0.75	0.61	0.75	44.1
North: RoadName														
7	L2	196	4	206	2.0	0.366	6.1	LOS A	2.5	17.7	0.67	0.73	0.67	45.0
9	R2	105	3	111	2.9	0.366	9.8	LOS A	2.5	17.7	0.67	0.73	0.67	27.2
9u	U	15	0	16	0.0	0.366	11.3	LOS A	2.5	17.7	0.67	0.73	0.67	46.4
Approach		316	7	333	2.2	0.366	7.5	LOS A	2.5	17.7	0.67	0.73	0.67	39.2
West: Epsom Road														
10	L2	745	51	784	6.8	0.674	7.4	LOS A	7.7	57.4	0.81	0.77	0.90	42.0
11	T1	324	16	341	4.9	0.419	6.0	LOS A	2.9	22.0	0.67	0.67	0.67	43.9
12u	U	21	13	22	61.9	0.419	13.3	LOS A	2.9	22.0	0.67	0.67	0.67	15.2
Approach		1090	80	1147	7.3	0.674	7.1	LOS A	7.7	57.4	0.76	0.74	0.82	42.0
All Vehicles		2305	111	2426	4.8	0.759	6.9	LOS A	9.5	68.3	0.75	0.69	0.77	42.3

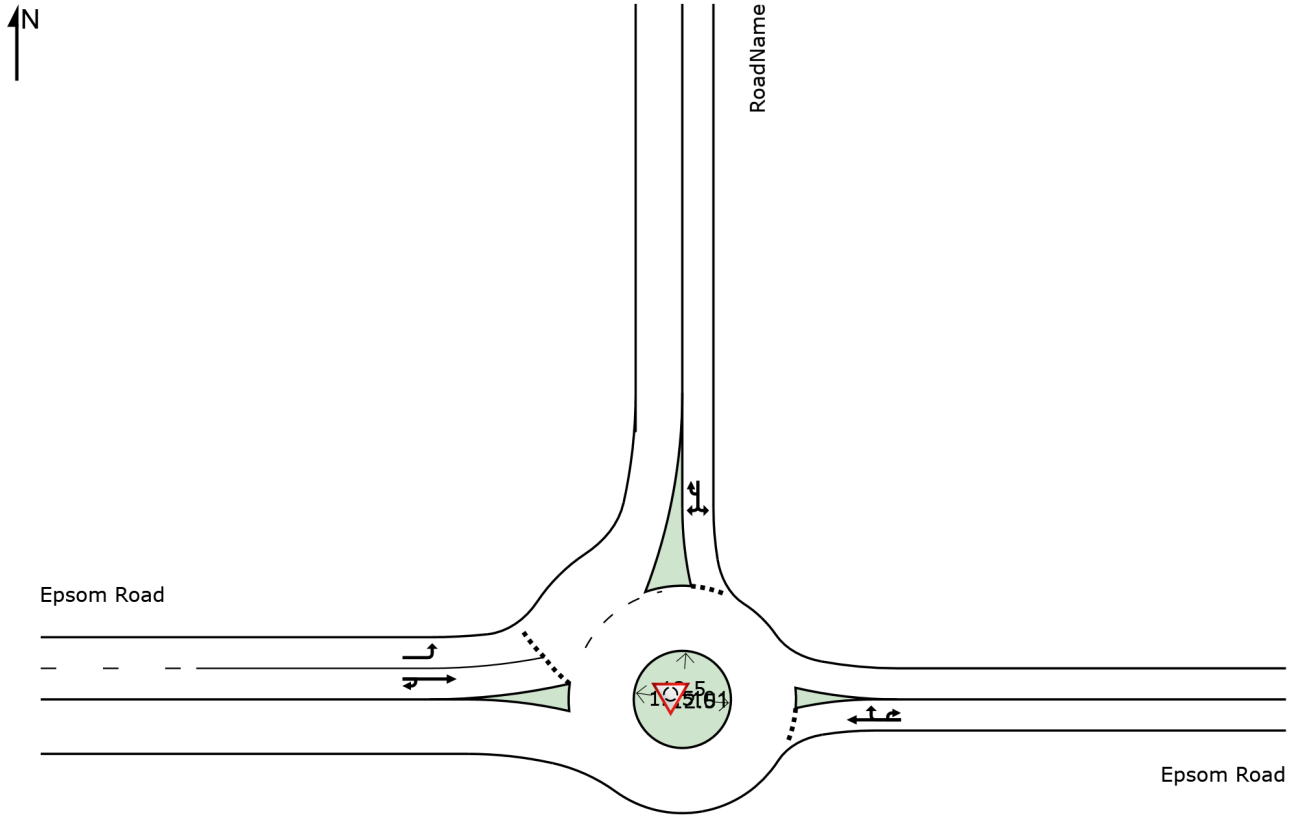
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
 Intersection and Approach LOS values are based on average delay for all vehicle movements.
 Roundabout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

Site: 101 [Existing - Epsom Rd x Link Rd - PM (Site Folder: Existing Layouts)]

New Site
Site Category: (None)
Roundabout

Site Layout

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



Site: 101 [Existing - Epsom Rd x Link Rd - PM (Site Folder: Existing Layouts)]

New Site
 Site Category: (None)
 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
		[Total veh/h]	[HV] veh/h	[Total veh/h]	[HV] %				[Veh. veh]	[Dist] m				
East: Epsom Road														
5	T1	569	11	599	1.9	0.730	9.5	LOS A	9.6	67.8	0.91	0.91	1.11	41.5
6	R2	89	0	94	0.0	0.730	13.0	LOS A	9.6	67.8	0.91	0.91	1.11	44.5
6u	U	8	0	8	0.0	0.730	14.7	LOS B	9.6	67.8	0.91	0.91	1.11	45.0
Approach		666	11	701	1.7	0.730	10.0	LOS A	9.6	67.8	0.91	0.91	1.11	42.1
North: RoadName														
7	L2	320	1	337	0.3	0.735	11.7	LOS A	9.4	67.1	0.91	1.05	1.24	41.9
9	R2	290	11	305	3.8	0.735	15.6	LOS B	9.4	67.1	0.91	1.05	1.24	25.4
9u	U	12	0	13	0.0	0.735	17.0	LOS B	9.4	67.1	0.91	1.05	1.24	43.1
Approach		622	12	655	1.9	0.735	13.6	LOS A	9.4	67.1	0.91	1.05	1.24	34.2
West: Epsom Road														
10	L2	686	16	722	2.3	0.491	4.5	LOS A	4.5	32.2	0.44	0.51	0.44	43.6
11	T1	399	11	420	2.8	0.371	4.2	LOS A	2.8	20.6	0.41	0.47	0.41	45.1
12u	U	23	10	24	43.5	0.371	10.2	LOS A	2.8	20.6	0.41	0.47	0.41	15.8
Approach		1108	37	1166	3.3	0.491	4.5	LOS A	4.5	32.2	0.43	0.49	0.43	43.6
All Vehicles		2396	60	2522	2.5	0.735	8.4	LOS A	9.6	67.8	0.69	0.75	0.83	39.8

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

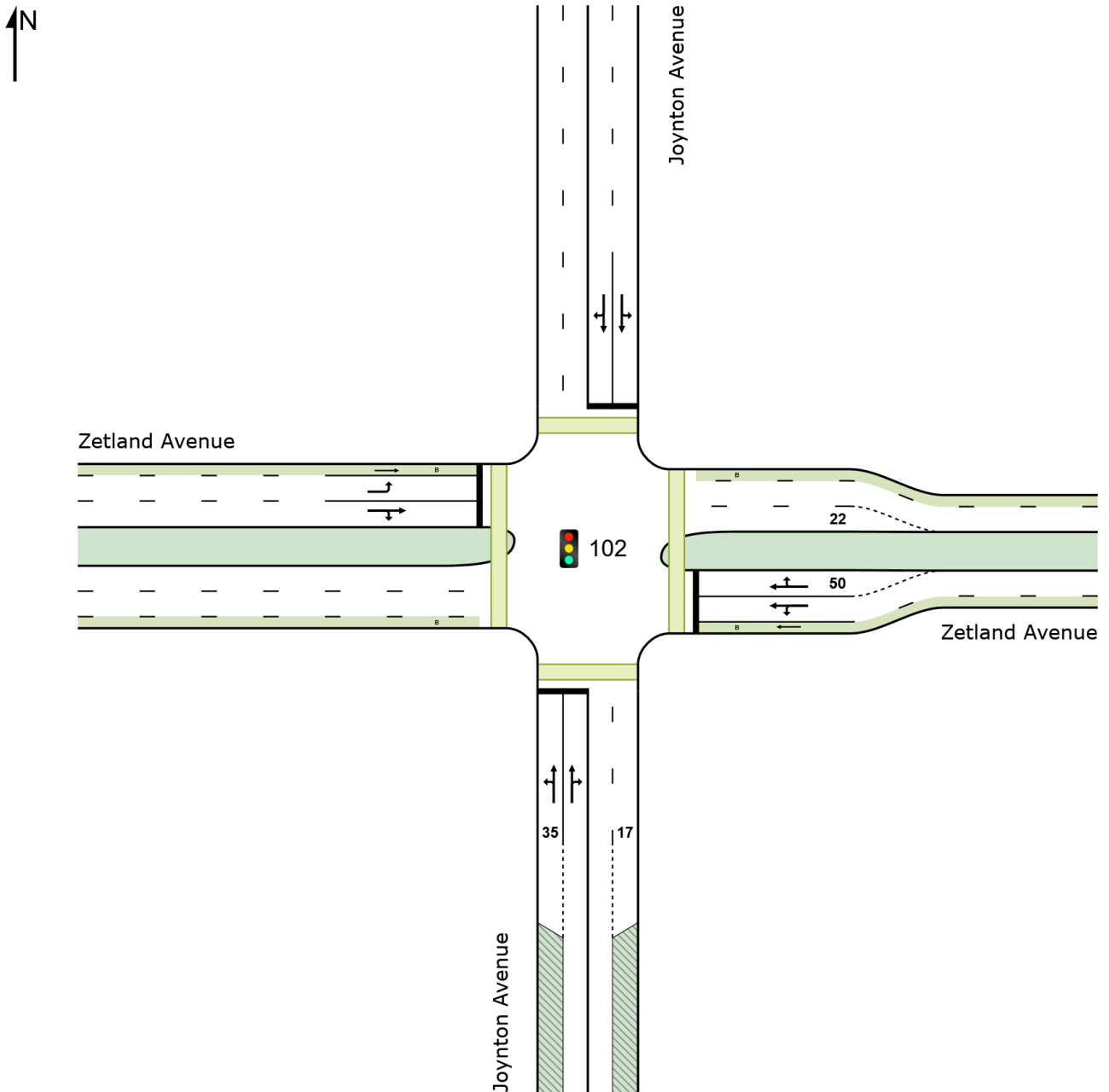
Site: 102 [Future - Joynton Ave x Zetland Ave - AM (Site Folder: Future Layouts)]

Joynton Avenue x Zetland Avenue
Existing
AM Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Site Layout

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



Site: 102 [Future - Joynton Ave x Zetland Ave - AM (Site Folder: Future Layouts)]

Joynton Avenue x Zetland Avenue

Existing

AM Peak

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: TCS

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D

Output Phase Sequence: A, B, C, D

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Joynton Avenue														
1	L2	12	0	13	0.0	0.378	21.1	LOS B	10.0	73.4	0.62	0.54	0.62	19.9
2	T1	536	34	564	6.3	0.378	17.8	LOS B	10.0	73.4	0.62	0.54	0.62	18.6
3	R2	12	1	13	8.3	* 0.378	21.3	LOS B	9.7	71.4	0.62	0.54	0.62	23.1
Approach		560	35	589	6.3	0.378	17.9	LOS B	10.0	73.4	0.62	0.54	0.62	18.7
East: Zetland Avenue														
4	L2	18	1	19	5.6	* 0.182	65.0	LOS E	1.1	8.2	0.98	0.70	0.98	10.7
5	T1	7	0	7	0.0	* 0.174	59.8	LOS E	1.0	6.9	0.97	0.67	0.97	10.8
6	R2	10	0	11	0.0	0.174	63.8	LOS E	1.0	6.9	0.97	0.69	0.97	10.1
Approach		35	1	37	2.9	0.182	63.6	LOS E	1.1	8.2	0.98	0.69	0.98	10.5
North: Joynton Avenue														
7	L2	10	0	11	0.0	0.073	7.3	LOS A	1.5	11.0	0.27	0.26	0.27	33.9
8	T1	499	33	525	6.6	0.329	5.0	LOS A	8.2	60.7	0.36	0.30	0.36	30.5
9	R2	8	0	8	0.0	* 0.329	8.4	LOS A	8.2	60.7	0.37	0.31	0.37	30.4
Approach		517	33	544	6.4	0.329	5.1	LOS A	8.2	60.7	0.36	0.30	0.36	30.6
West: Zetland Avenue														
10	L2	28	1	29	3.6	0.054	35.2	LOS C	1.2	8.7	0.74	0.67	0.74	11.5
11	T1	3	0	3	0.0	0.109	59.3	LOS E	0.6	4.3	0.97	0.63	0.97	10.8
12	R2	7	1	7	14.3	0.109	65.0	LOS E	0.6	4.3	0.97	0.67	0.97	8.4
Approach		38	2	40	5.3	0.109	42.6	LOS D	1.2	8.7	0.80	0.67	0.80	10.6
All Vehicles		1150	71	1211	6.2	0.378	14.3	LOS A	10.0	73.4	0.52	0.44	0.52	21.1

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

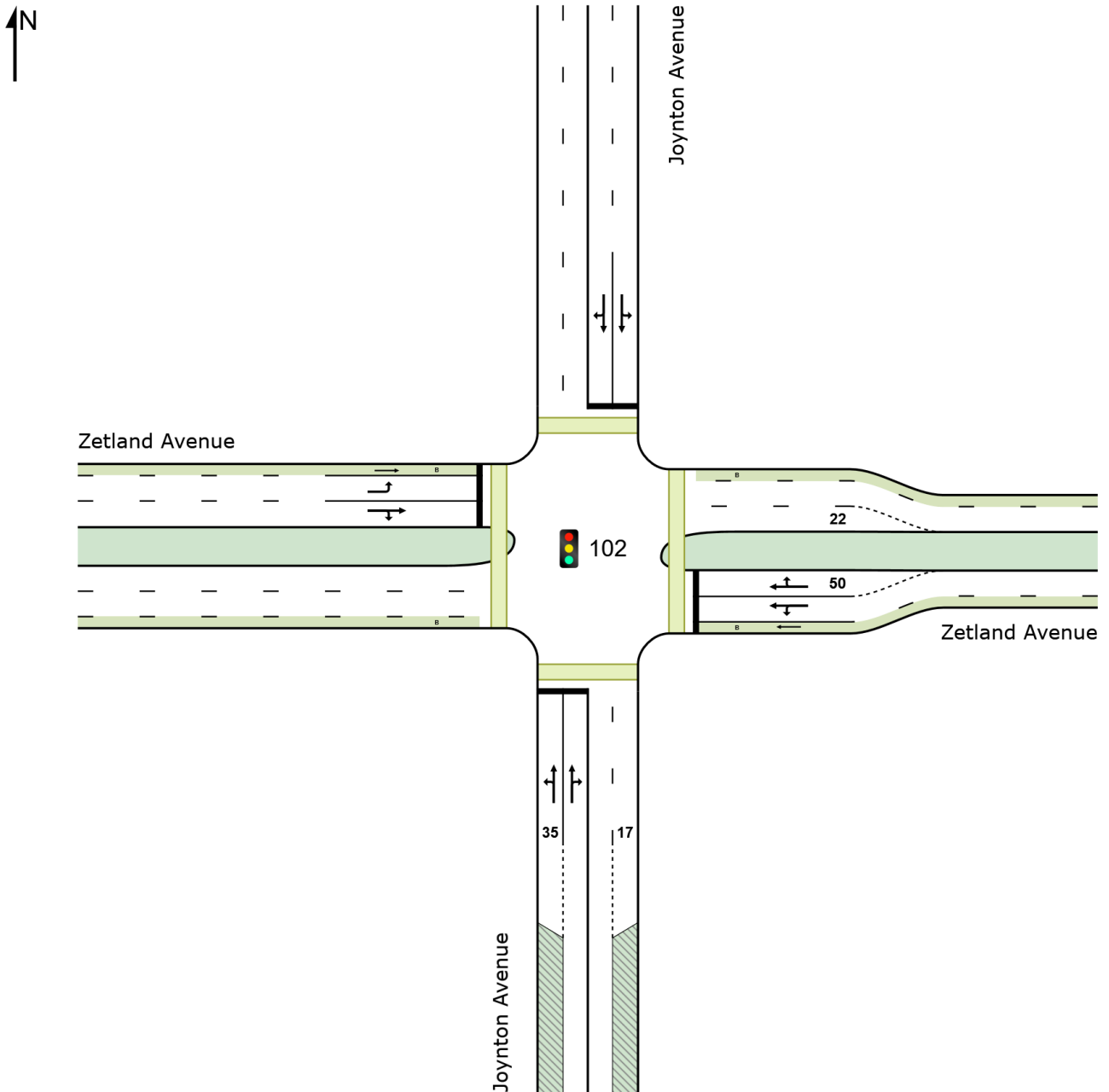
Site: 102 [Future - Joynton Ave x Zetland Ave - PM (Site Folder: Future Layouts)]

Joynton Avenue x Zetland Avenue
Existing
AM Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Site Layout

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



Site: 102 [Future - Joynton Ave x Zetland Ave - PM (Site Folder: Future Layouts)]

Joynton Avenue x Zetland Avenue

Existing

AM Peak

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: TCS

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D

Output Phase Sequence: A, B, C, D

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Joynton Avenue														
1	L2	11	0	12	0.0	0.465	26.3	LOS B	11.3	82.0	0.70	0.60	0.70	17.3
2	T1	531	23	559	4.3	0.465	23.1	LOS B	11.3	82.0	0.70	0.61	0.70	16.0
3	R2	14	0	15	0.0	* 0.465	26.6	LOS B	10.9	79.2	0.70	0.61	0.70	20.5
Approach		556	23	585	4.1	0.465	23.2	LOS B	11.3	82.0	0.70	0.61	0.70	16.2
East: Zetland Avenue														
4	L2	26	1	27	3.8	* 0.260	65.7	LOS E	1.6	11.7	0.99	0.71	0.99	10.6
5	T1	4	0	4	0.0	* 0.219	60.7	LOS E	1.1	7.5	0.98	0.66	0.98	10.6
6	R2	14	0	15	0.0	0.219	65.7	LOS E	1.1	7.5	0.98	0.70	0.98	9.8
Approach		44	1	46	2.3	0.260	65.2	LOS E	1.6	11.7	0.99	0.71	0.99	10.4
North: Joynton Avenue														
7	L2	11	0	12	0.0	0.096	7.4	LOS A	2.0	14.7	0.28	0.26	0.28	34.1
8	T1	627	32	660	5.1	0.433	5.5	LOS A	11.5	83.7	0.40	0.35	0.40	30.1
9	R2	27	0	28	0.0	* 0.433	8.9	LOS A	11.5	83.7	0.43	0.37	0.43	29.5
Approach		665	32	700	4.8	0.433	5.7	LOS A	11.5	83.7	0.40	0.35	0.40	30.2
West: Zetland Avenue														
10	L2	42	2	44	4.8	0.067	29.6	LOS C	1.7	12.0	0.68	0.67	0.68	12.9
11	T1	9	0	9	0.0	0.278	61.6	LOS E	1.5	10.6	0.99	0.69	0.99	10.5
12	R2	16	0	17	0.0	0.278	66.3	LOS E	1.5	10.6	0.99	0.71	0.99	8.3
Approach		67	2	71	3.0	0.278	42.6	LOS D	1.7	12.0	0.79	0.68	0.79	10.9
All Vehicles		1332	58	1402	4.4	0.465	16.8	LOS B	11.5	83.7	0.56	0.49	0.56	19.6

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

USER REPORT FOR SITE

All Movement Classes

Project: 22.156m01v02

Template: Layouts

Site: 101 [Future - Epsom Rd x Rothschild Ave x Joynton Ave - AM (Site Folder: Future Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

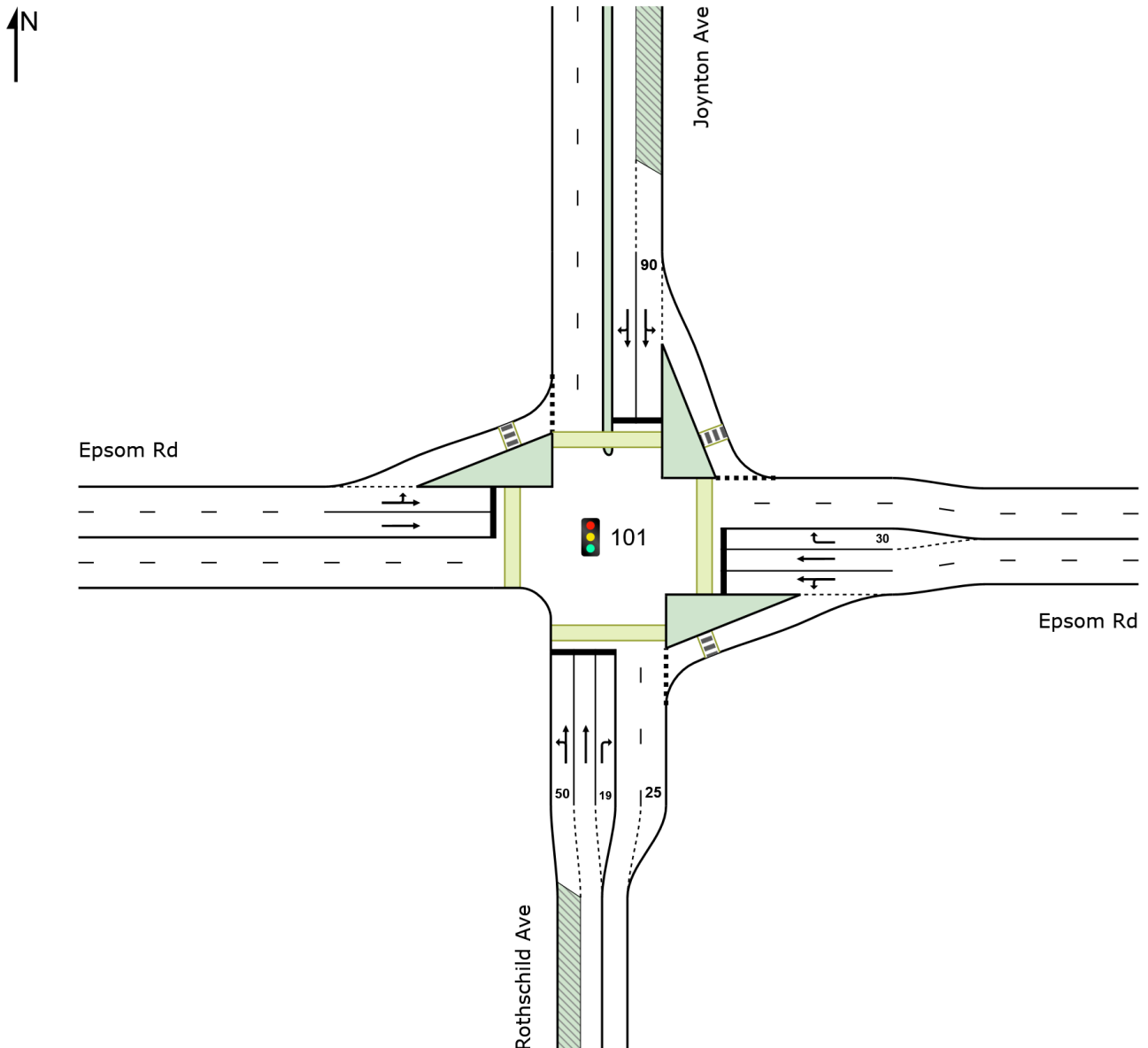
Reference Phase: Phase A

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Site Layout

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



USER REPORT FOR SITE

All Movement Classes

Project: 22.156m01v02

Template: Movement Summaries

Site: 101 [Future - Epsom Rd x Rothschild Ave x Joynton Ave - AM (Site Folder: Future Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV veh/h]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Rothschild Ave														
1	L2	17	2	18	11.8	0.304	40.2	LOS C	7.3	53.9	0.82	0.69	0.82	32.8
2	T1	257	14	271	5.4	0.304	35.1	LOS C	7.3	53.9	0.81	0.67	0.81	31.5
3	R2	97	7	102	7.2	0.548	54.2	LOS D	5.6	41.4	0.94	0.79	0.94	26.8
Approach		371	23	391	6.2	0.548	40.4	LOS C	7.3	53.9	0.85	0.70	0.85	30.1
East: Epsom Rd														
4	L2	136	1	143	0.7	0.218	8.9	LOS A	3.4	24.2	0.40	0.52	0.40	39.7
5	T1	335	20	353	6.0	0.218	8.4	LOS A	6.2	45.7	0.44	0.43	0.44	41.6
6	R2	189	14	199	7.4	*0.440	37.7	LOS C	9.7	72.2	0.88	0.83	0.88	22.5
Approach		660	35	695	5.3	0.440	16.9	LOS B	9.7	72.2	0.56	0.56	0.56	34.9
North: Joynton Ave														
7	L2	260	19	274	7.3	0.313	11.6	LOS A	5.5	40.7	0.50	0.68	0.50	37.2
8	T1	238	11	251	4.6	*0.652	43.1	LOS D	15.4	113.4	0.94	0.82	0.94	26.2
9	R2	42	6	44	14.3	0.652	46.5	LOS D	15.4	113.4	0.94	0.82	0.94	23.2
Approach		540	36	568	6.7	0.652	28.2	LOS B	15.4	113.4	0.73	0.75	0.73	28.9
West: Epsom Rd														
10	L2	104	7	109	6.7	0.629	36.6	LOS C	13.4	100.8	0.93	0.81	0.93	26.9
11	T1	622	57	655	9.2	*0.629	31.2	LOS C	21.6	163.3	0.88	0.78	0.88	28.5
Approach		726	64	764	8.8	0.629	32.0	LOS C	21.6	163.3	0.89	0.78	0.89	28.3
All Vehicles		2297	158	2418	6.9	0.652	28.1	LOS B	21.6	163.3	0.75	0.70	0.75	30.4

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

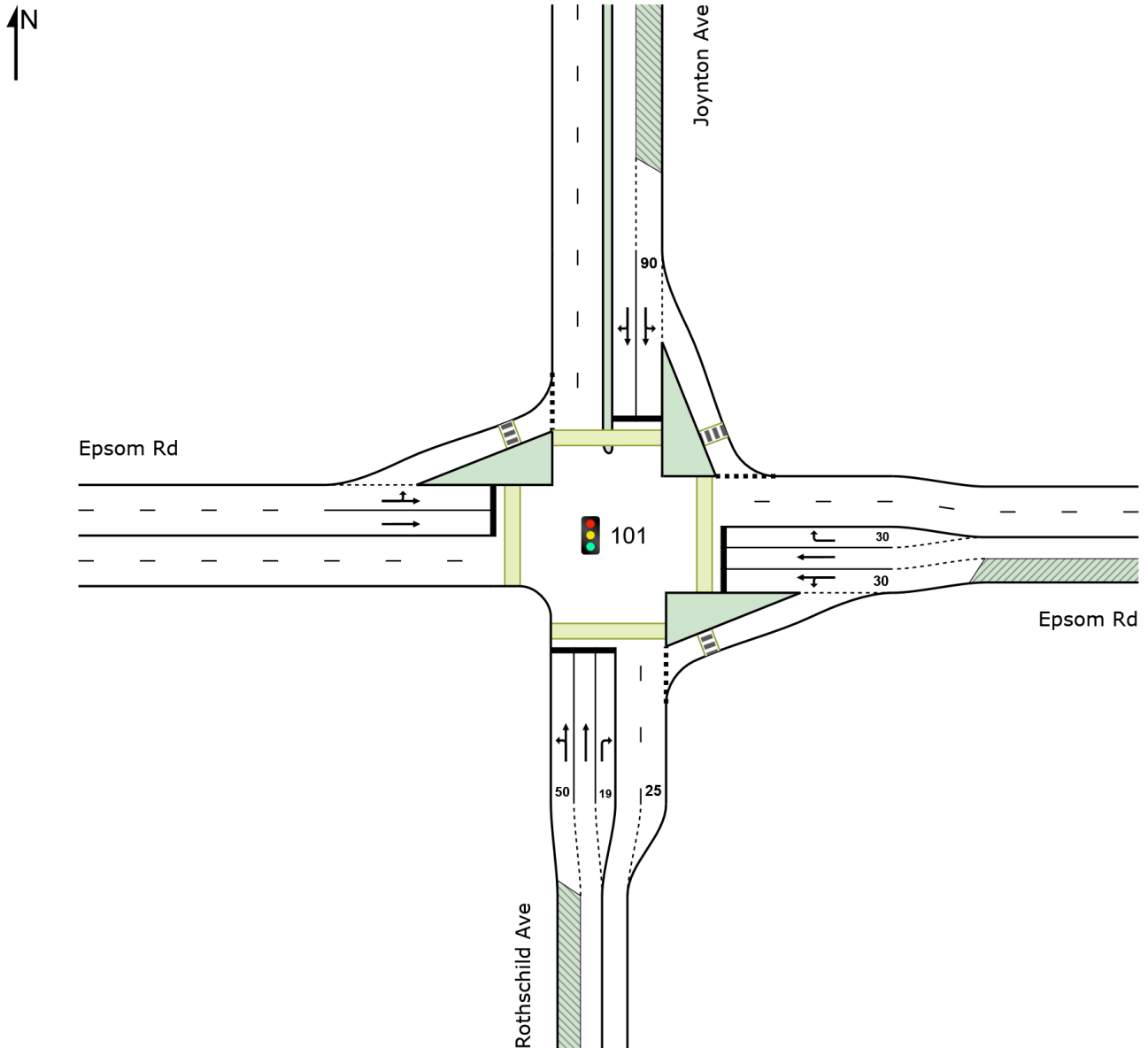
Site: 101 [Future - Epsom Rd x Rothschild Ave x Joynton Ave - PM (Site Folder: Future Layouts)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Site Layout

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



Site: 101 [Future - Epsom Rd x Rothschild Ave x Joynton Ave - PM (Site Folder: Future Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rothschild Ave														
1	L2	19	0	20	0.0	0.276	41.3	LOS C	6.4	46.1	0.83	0.69	0.83	32.4
2	T1	220	10	232	4.5	0.276	36.4	LOS C	6.4	46.1	0.82	0.67	0.82	31.1
3	R2	118	1	124	0.8	0.919	81.6	LOS F	8.9	62.5	1.00	1.09	1.58	21.7
Approach		357	11	376	3.1	0.919	51.6	LOS D	8.9	62.5	0.88	0.81	1.07	27.2
East: Epsom Rd														
4	L2	125	1	132	0.8	0.233	9.8	LOS A	4.3	30.8	0.41	0.51	0.41	39.5
5	T1	372	25	392	6.7	0.233	8.1	LOS A	6.6	48.7	0.44	0.43	0.44	41.7
6	R2	221	11	233	5.0	* 0.524	42.6	LOS D	11.5	83.9	0.91	0.93	0.91	21.0
Approach		718	37	756	5.2	0.524	19.0	LOS B	11.5	83.9	0.58	0.60	0.58	33.7
North: Joynton Ave														
7	L2	330	13	347	3.9	0.421	13.9	LOS A	8.2	59.4	0.61	0.73	0.61	35.6
8	T1	283	14	298	4.9	* 0.746	46.6	LOS D	18.8	136.5	0.98	0.88	1.02	25.4
9	R2	38	1	40	2.6	0.746	49.9	LOS D	18.8	136.5	0.98	0.88	1.02	22.4
Approach		651	28	685	4.3	0.746	30.2	LOS C	18.8	136.5	0.79	0.80	0.81	28.1
West: Epsom Rd														
10	L2	104	4	109	3.8	0.721	40.9	LOS C	19.5	139.8	0.95	0.86	0.96	25.6
11	T1	821	22	864	2.7	* 0.721	32.9	LOS C	27.9	199.9	0.92	0.82	0.92	28.1
Approach		925	26	974	2.8	0.721	33.8	LOS C	27.9	199.9	0.92	0.83	0.92	27.8
All Vehicles		2651	102	2791	3.8	0.919	31.3	LOS C	27.9	199.9	0.79	0.76	0.82	29.0

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

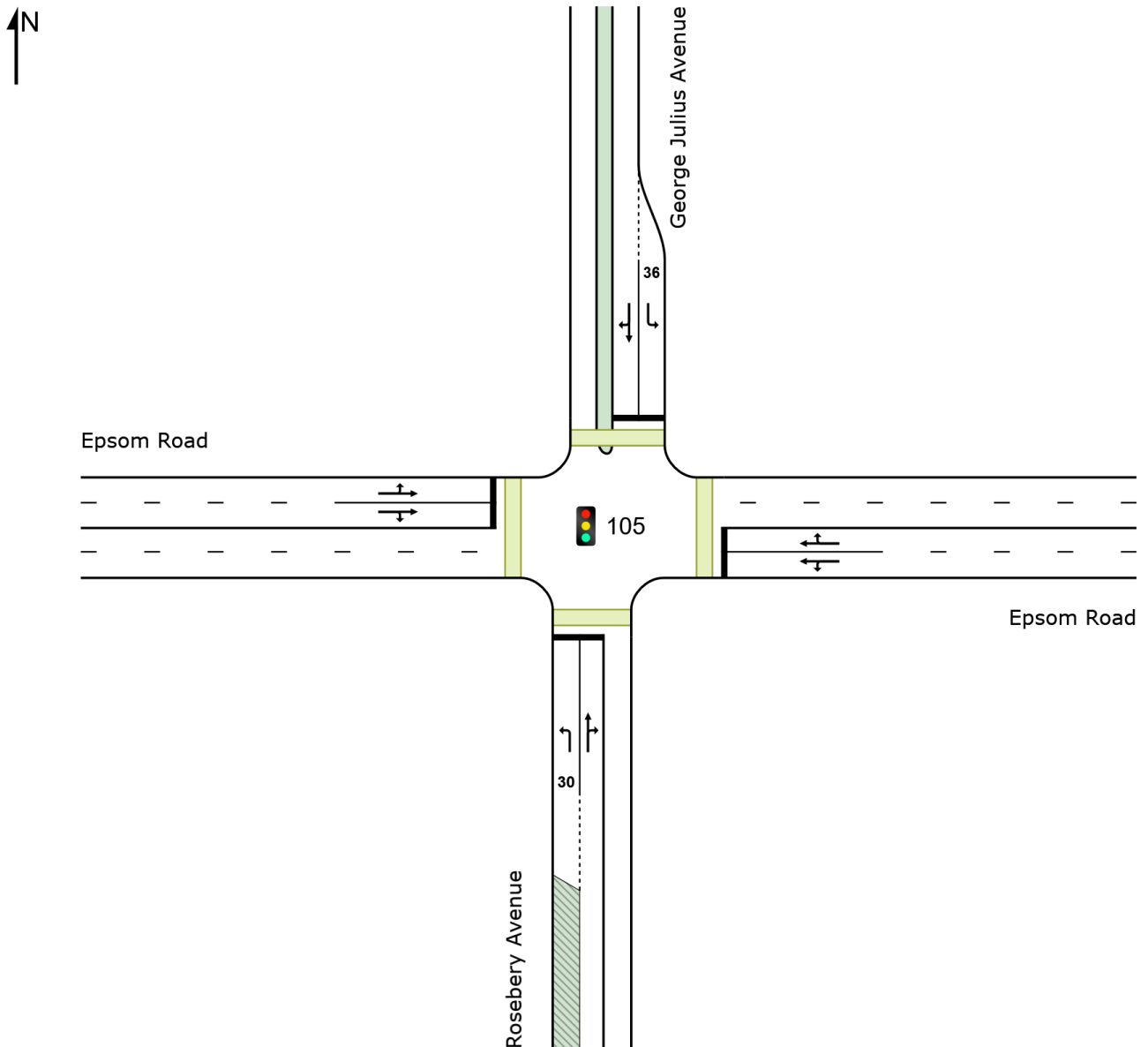
Site: 105 [Future - Epsom Rd x Rosebery Ave x George Julius Ave - AM (Site Folder: Future Layouts)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Site Layout

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



Site: 105 [Future - Epsom Rd x Rosebery Ave x George Julius Ave - AM (Site Folder: Future Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 30 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B

Output Phase Sequence: A, B

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV]	[Total veh/h	HV]				[Veh. veh	Dist]				
South: Rosebery Avenue														
1	L2	39	6	41	15.4	0.122	16.2	LOS B	0.5	4.2	0.85	0.70	0.85	39.3
2	T1	18	0	19	0.0	* 0.502	12.0	LOS A	2.3	16.7	0.91	0.78	0.93	40.0
3	R2	136	7	143	5.1	0.502	16.6	LOS B	2.3	16.7	0.91	0.78	0.93	37.8
Approach		193	13	203	6.7	0.502	16.1	LOS B	2.3	16.7	0.90	0.77	0.91	38.4
East: Epsom Road														
4	L2	250	4	263	1.6	0.605	12.2	LOS A	5.7	40.6	0.82	0.77	0.84	41.6
5	T1	604	31	636	5.1	0.605	7.6	LOS A	5.7	40.6	0.82	0.74	0.84	37.5
6	R2	18	0	19	0.0	0.605	12.2	LOS A	5.4	39.6	0.82	0.72	0.84	37.5
Approach		872	35	918	4.0	0.605	9.0	LOS A	5.7	40.6	0.82	0.75	0.84	39.3
North: George Julius Avenue														
7	L2	38	0	40	0.0	0.108	15.9	LOS B	0.5	3.6	0.85	0.70	0.85	30.3
8	T1	38	0	40	0.0	0.232	11.0	LOS A	1.0	7.3	0.85	0.70	0.85	41.4
9	R2	38	0	40	0.0	0.232	15.5	LOS B	1.0	7.3	0.85	0.70	0.85	35.4
Approach		114	0	120	0.0	0.232	14.1	LOS A	1.0	7.3	0.85	0.70	0.85	36.9
West: Epsom Road														
10	L2	18	0	19	0.0	* 0.707	13.8	LOS A	7.8	57.8	0.87	0.84	1.00	38.9
11	T1	926	71	975	7.7	0.707	9.6	LOS A	7.8	57.8	0.88	0.85	1.02	36.0
12	R2	45	10	47	22.2	0.707	14.9	LOS B	6.8	51.3	0.89	0.86	1.05	42.2
Approach		989	81	1041	8.2	0.707	9.9	LOS A	7.8	57.8	0.88	0.85	1.02	36.6
All Vehicles		2168	129	2282	6.0	0.707	10.3	LOS A	7.8	57.8	0.85	0.79	0.93	37.9

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

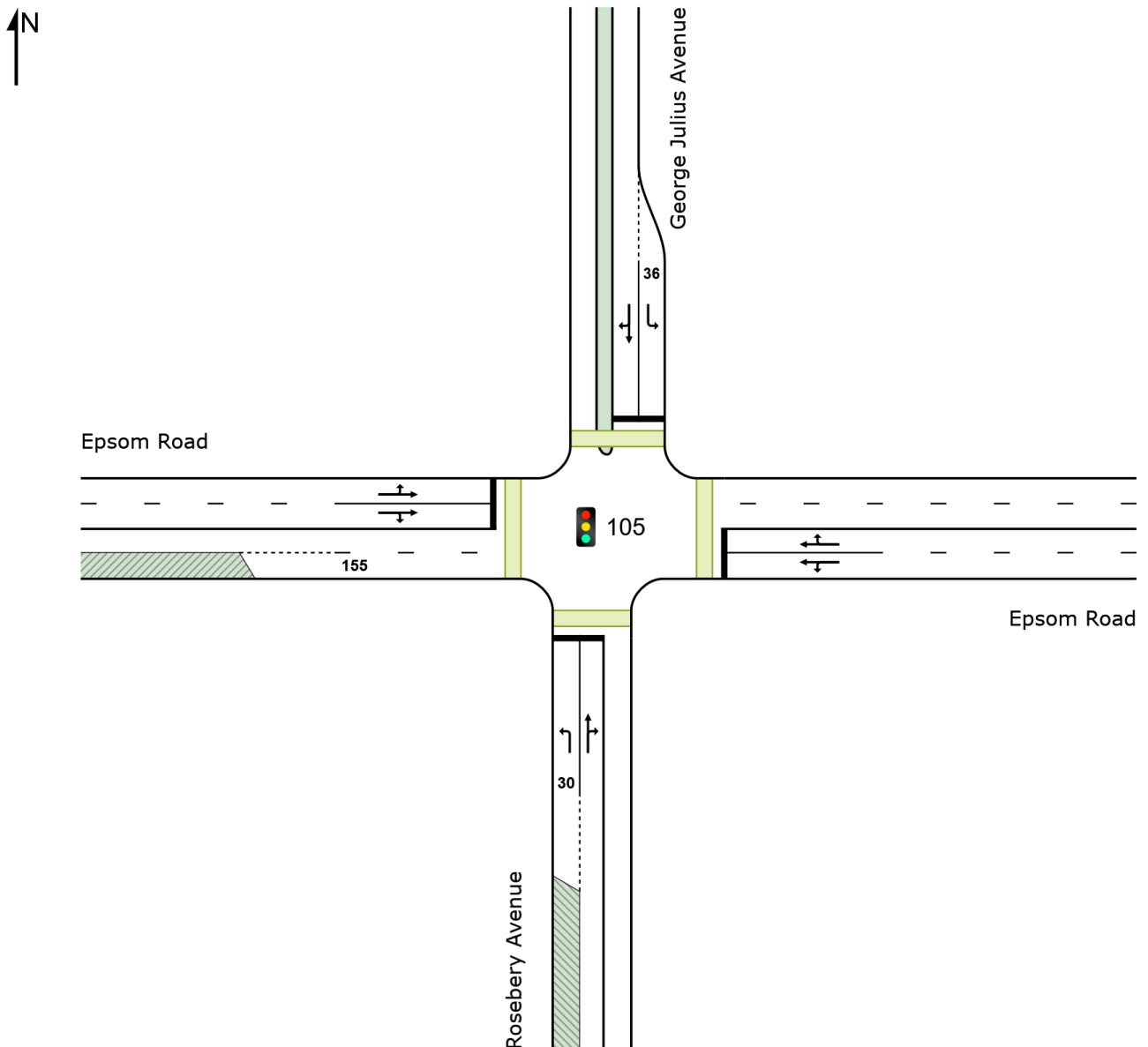
Site: 105 [Future - Epsom Rd x Rosebery Ave x George Julius Ave - PM (Site Folder: Future Layouts)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D*, E*
Output Phase Sequence: A, B, C
(* Variable Phase)

Site Layout

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



Site: 105 [Future - Epsom Rd x Rosebery Ave x George Julius Ave - PM (Site Folder: Future Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D*, E*

Output Phase Sequence: A, B, C

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Rosebery Avenue														
1	L2	66	7	69	10.6	0.088	29.4	LOS C	2.8	21.6	0.60	0.69	0.60	33.9
2	T1	38	0	40	0.0	* 1.241	295.1	LOS F	26.9	190.1	1.00	1.62	2.51	8.4
3	R2	118	2	124	1.7	1.241	299.7	LOS F	26.9	190.1	1.00	1.62	2.51	7.3
Approach		222	9	234	4.1	1.241	218.6	LOS F	26.9	190.1	0.88	1.34	1.94	10.1
East: Epsom Road														
4	L2	250	7	263	2.8	1.007	102.7	LOS F	88.8	642.1	1.00	1.20	1.39	17.4
5	T1	650	28	684	4.3	1.222	120.9	LOS F	88.8	642.1	1.00	1.23	1.54	8.2
6	R2	38	0	40	0.0	1.222	268.1	LOS F	19.3	138.9	1.00	1.43	2.46	3.9
Approach		938	35	987	3.7	1.222	122.0	LOS F	88.8	642.1	1.00	1.23	1.54	10.2
North: George Julius Avenue														
7	L2	18	0	19	0.0	0.023	28.2	LOS B	0.7	5.2	0.57	0.65	0.57	23.5
8	T1	18	0	19	0.0	0.315	72.9	LOS F	2.7	19.1	0.98	0.73	0.98	22.9
9	R2	18	0	19	0.0	0.315	77.5	LOS F	2.7	19.1	0.98	0.73	0.98	15.7
Approach		54	0	57	0.0	0.315	59.5	LOS E	2.7	19.1	0.84	0.70	0.84	20.4
West: Epsom Road														
10	L2	38	0	40	0.0	1.421	442.9	LOS F	258.4	1853.2	1.00	2.43	2.90	3.6
11	T1	1188	35	1251	2.9	* 1.421	437.6	LOS F	258.4	1853.2	1.00	2.40	2.91	2.6
12	R2	95	4	100	4.2	* 1.421	425.4	LOS F	28.4	205.2	1.00	1.57	3.04	5.8
Approach		1321	39	1391	3.0	1.421	436.9	LOS F	258.4	1853.2	1.00	2.34	2.92	2.9
All Vehicles		2535	83	2668	3.3	1.421	293.2	LOS F	258.4	1853.2	0.99	1.81	2.28	4.8

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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Project: T:\Synergy\Projects\22\22.156\Modelling\22.156m01v02.sip9

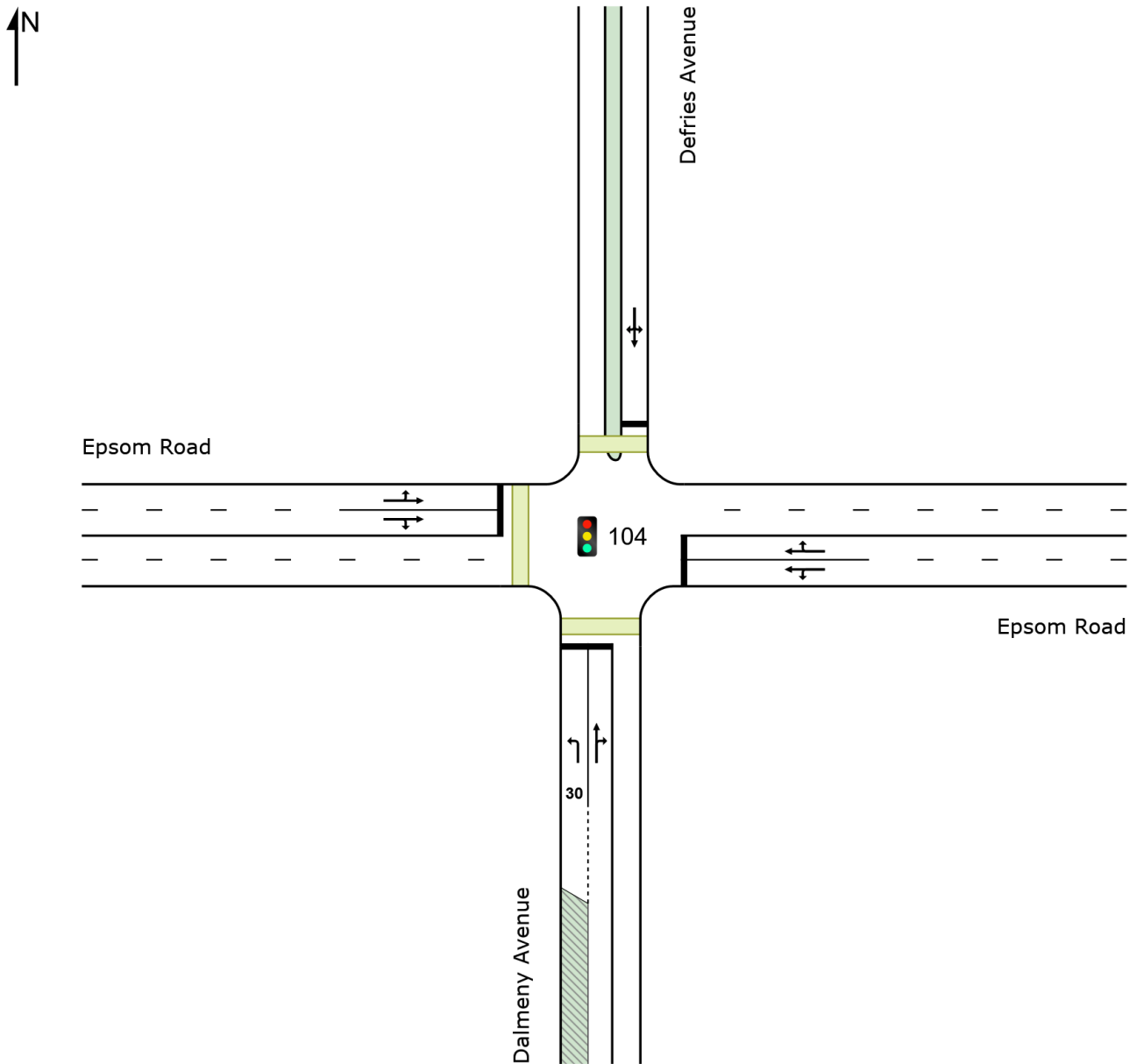
Site: 104 [Future - Epsom Rd x Dalmeny Ave x Defries Ave - AM (Site Folder: Future Layouts)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Site Layout

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



Site: 104 [Future - Epsom Rd x Dalmeny Ave x Defries Ave - AM (Site Folder: Future Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B

Output Phase Sequence: A, B

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Dalmeny Avenue														
1	L2	148	1	156	0.7	0.413	48.2	LOS D	7.9	55.4	0.90	0.79	0.90	23.4
2	T1	10	0	11	0.0	0.525	42.5	LOS C	8.8	62.4	0.90	0.80	0.90	26.5
3	R2	155	2	163	1.3	*0.525	47.0	LOS D	8.8	62.4	0.90	0.80	0.90	22.7
Approach		313	3	329	1.0	0.525	47.4	LOS D	8.8	62.4	0.90	0.79	0.90	23.1
East: Epsom Road														
4	L2	62	0	65	0.0	0.321	13.1	LOS A	9.6	69.9	0.45	0.44	0.45	40.1
5	T1	667	36	702	5.4	0.321	9.0	LOS A	9.6	69.9	0.46	0.43	0.46	29.2
6	R2	7	0	7	0.0	0.321	14.1	LOS A	9.2	67.4	0.47	0.42	0.47	36.2
Approach		736	36	775	4.9	0.321	9.4	LOS A	9.6	69.9	0.46	0.43	0.46	31.2
North: Defries Avenue														
7	L2	18	0	19	0.0	0.295	55.0	LOS D	3.5	24.3	0.92	0.77	0.92	11.0
8	T1	1	0	1	0.0	0.295	49.4	LOS D	3.5	24.3	0.92	0.77	0.92	26.7
9	R2	43	0	45	0.0	0.295	54.9	LOS D	3.5	24.3	0.92	0.77	0.92	11.8
Approach		62	0	65	0.0	0.295	54.8	LOS D	3.5	24.3	0.92	0.77	0.92	11.8
West: Epsom Road														
10	L2	13	0	14	0.0	*0.534	15.9	LOS B	19.4	145.0	0.55	0.51	0.55	36.5
11	T1	957	77	1007	8.0	0.534	11.6	LOS A	19.4	145.0	0.57	0.54	0.57	26.3
12	R2	85	3	89	3.5	0.534	18.1	LOS B	14.6	108.4	0.61	0.59	0.61	36.8
Approach		1055	80	1111	7.6	0.534	12.1	LOS A	19.4	145.0	0.57	0.54	0.57	28.3
All Vehicles		2166	119	2280	5.5	0.534	17.5	LOS B	19.4	145.0	0.59	0.55	0.59	25.8

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

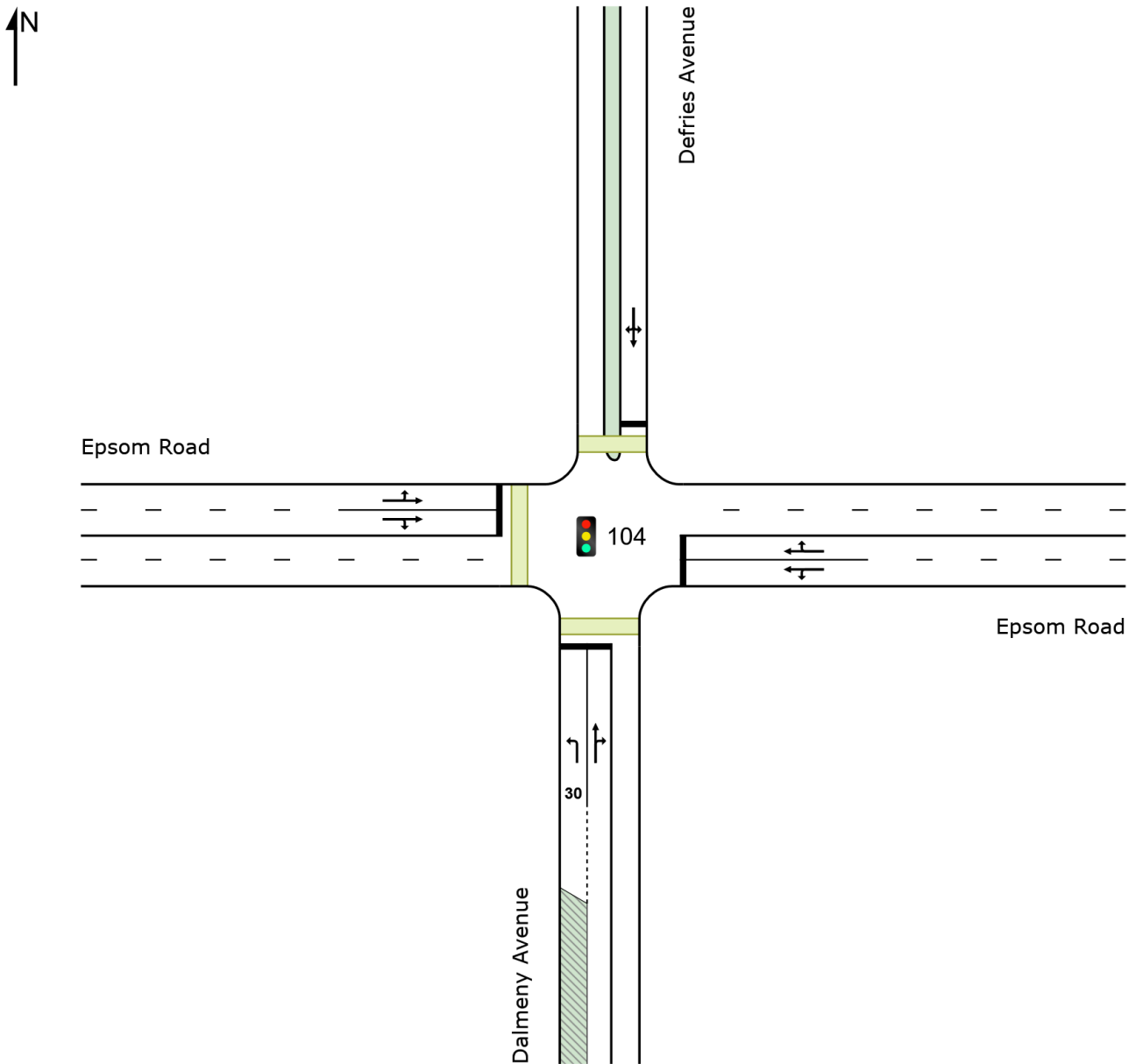
Site: 104 [Future - Epsom Rd x Dalmeny Ave x Defries Ave - PM (Site Folder: Future Layouts)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Site Layout

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



Site: 104 [Future - Epsom Rd x Dalmeny Ave x Defries Ave - PM (Site Folder: Future Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B

Output Phase Sequence: A, B

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Dalmeny Avenue														
1	L2	155	5	163	3.2	* 0.711	59.9	LOS E	9.5	68.2	0.99	0.85	1.08	20.7
2	T1	10	0	11	0.0	0.338	48.5	LOS D	4.9	34.6	0.93	0.77	0.93	25.1
3	R2	79	0	83	0.0	0.338	53.1	LOS D	4.9	34.6	0.93	0.77	0.93	21.3
Approach		244	5	257	2.0	0.711	57.2	LOS E	9.5	68.2	0.97	0.82	1.02	21.1
East: Epsom Road														
4	L2	1	0	1	0.0	0.524	11.1	LOS A	17.6	127.8	0.45	0.41	0.45	42.4
5	T1	708	30	745	4.2	0.524	6.5	LOS A	17.6	127.8	0.45	0.41	0.45	33.5
6	R2	174	2	183	1.1	* 1.053	162.6	LOS F	22.3	157.8	1.00	1.39	2.13	6.2
Approach		883	32	929	3.6	1.053	37.3	LOS C	22.3	157.8	0.56	0.60	0.78	14.4
North: Defries Avenue														
7	L2	10	0	11	0.0	0.439	67.6	LOS E	2.7	18.7	1.00	0.75	1.00	9.9
8	T1	1	0	1	0.0	0.439	62.1	LOS E	2.7	18.7	1.00	0.75	1.00	23.7
9	R2	31	0	33	0.0	0.439	67.6	LOS E	2.7	18.7	1.00	0.75	1.00	10.6
Approach		42	0	44	0.0	0.439	67.5	LOS E	2.7	18.7	1.00	0.75	1.00	10.7
West: Epsom Road														
10	L2	35	0	37	0.0	0.693	13.8	LOS A	29.4	211.5	0.57	0.54	0.57	39.1
11	T1	1096	35	1154	3.2	0.693	9.7	LOS A	29.4	211.5	0.60	0.57	0.60	28.4
12	R2	178	0	187	0.0	0.693	21.3	LOS B	15.5	110.0	0.72	0.73	0.72	34.3
Approach		1309	35	1378	2.7	0.693	11.4	LOS A	29.4	211.5	0.61	0.59	0.61	30.4
All Vehicles		2478	72	2608	2.9	1.053	26.1	LOS B	29.4	211.5	0.63	0.62	0.72	21.0

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Site: 103 [Future - Epsom Rd x Link Rd x Bunmarra St - AM (Site Folder: Future Layouts)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: TCS Layout

Reference Phase: Phase A

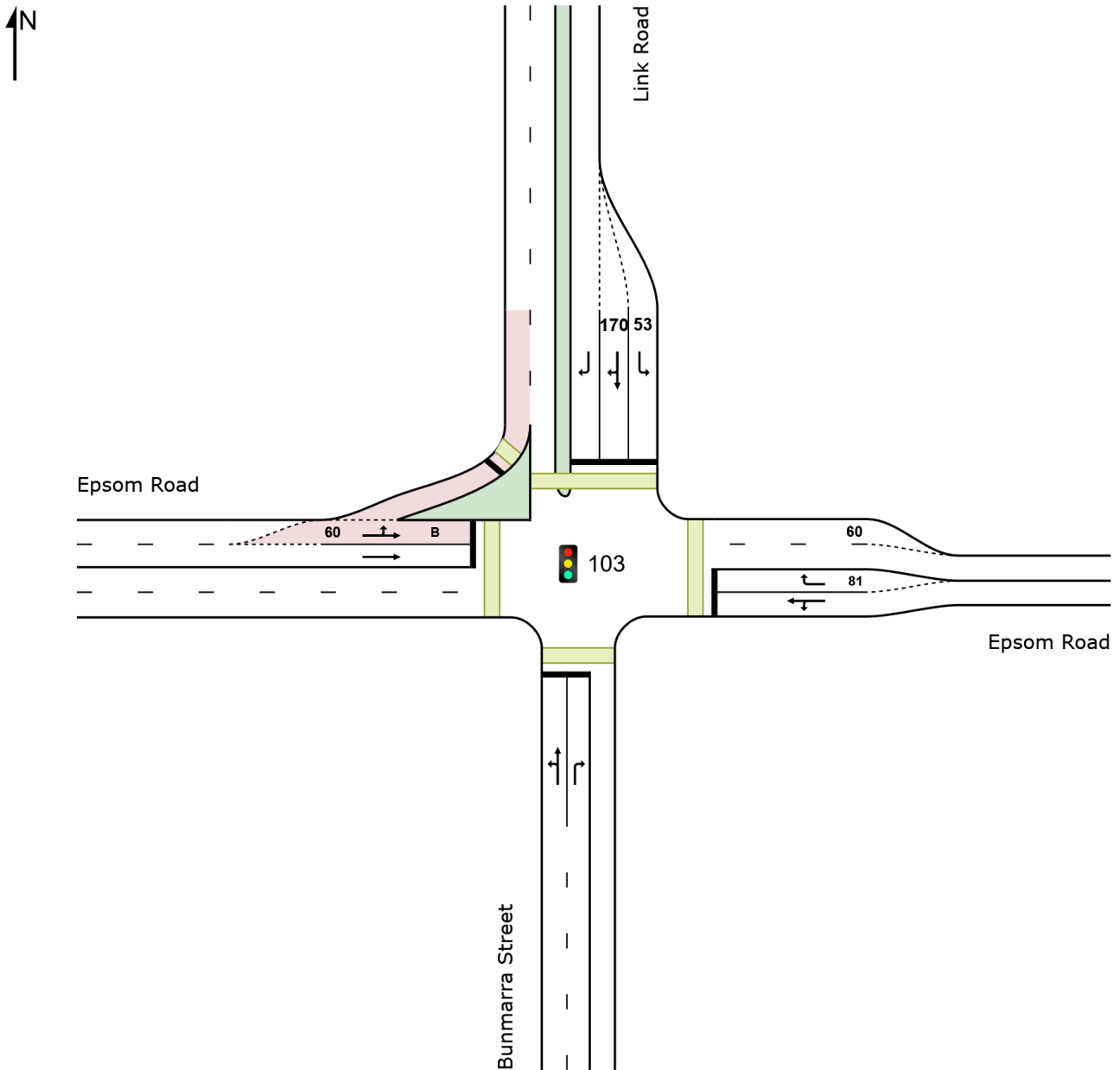
Input Phase Sequence: A, B, C, D, E*

Output Phase Sequence: A, B, C, D

(* Variable Phase)

Site Layout

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



Site: 103 [Future - Epsom Rd x Link Rd x Bunmarra St - AM (Site Folder: Future Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: TCS Layout

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D, E*

Output Phase Sequence: A, B, C, D

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Bunmarra Street														
1	L2	46	0	48	0.0	0.470	59.3	LOS E	5.5	38.6	0.98	0.77	0.98	4.6
2	T1	46	0	48	0.0	* 0.470	56.0	LOS D	5.5	38.6	0.98	0.77	0.98	20.6
3	R2	46	0	48	0.0	0.244	57.8	LOS E	2.7	18.7	0.95	0.74	0.95	20.1
Approach		138	0	145	0.0	0.470	57.7	LOS E	5.5	38.6	0.97	0.76	0.97	14.9
East: Epsom Road														
4	L2	21	0	22	0.0	0.532	15.8	LOS B	19.8	142.4	0.56	0.52	0.56	37.8
5	T1	610	20	642	3.3	0.532	11.2	LOS A	19.8	142.4	0.56	0.52	0.56	39.5
6	R2	288	4	303	1.4	* 0.418	27.4	LOS B	12.5	88.5	0.77	0.79	0.77	36.5
Approach		919	24	967	2.6	0.532	16.4	LOS B	19.8	142.4	0.63	0.60	0.63	38.1
North: Link Road														
7	L2	196	4	206	2.0	0.249	27.7	LOS B	7.5	53.2	0.67	0.74	0.67	36.3
8	T1	20	0	21	0.0	* 0.324	56.1	LOS D	3.7	26.6	0.96	0.75	0.96	20.3
9	R2	106	3	112	2.8	0.324	59.5	LOS E	3.7	26.6	0.96	0.76	0.96	20.5
Approach		322	7	339	2.2	0.324	39.9	LOS C	7.5	53.2	0.78	0.74	0.78	30.0
West: Epsom Road														
10	L2	792	51	834	6.4	0.584	8.9	LOS A	17.3	128.1	0.40	0.65	0.40	42.6
11	T1	328	16	345	4.9	* 0.571	36.1	LOS C	16.7	122.1	0.88	0.76	0.88	27.1
Approach		1120	67	1179	6.0	0.584	16.8	LOS B	17.3	128.1	0.54	0.68	0.54	36.6
All Vehicles		2499	98	2631	3.9	0.584	21.9	LOS B	19.8	142.4	0.63	0.67	0.63	34.2

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Site: 103 [Future - Epsom Rd x Link Rd x Bunmarra St - PM (Site Folder: Future Layouts)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: TCS Layout

Reference Phase: Phase A

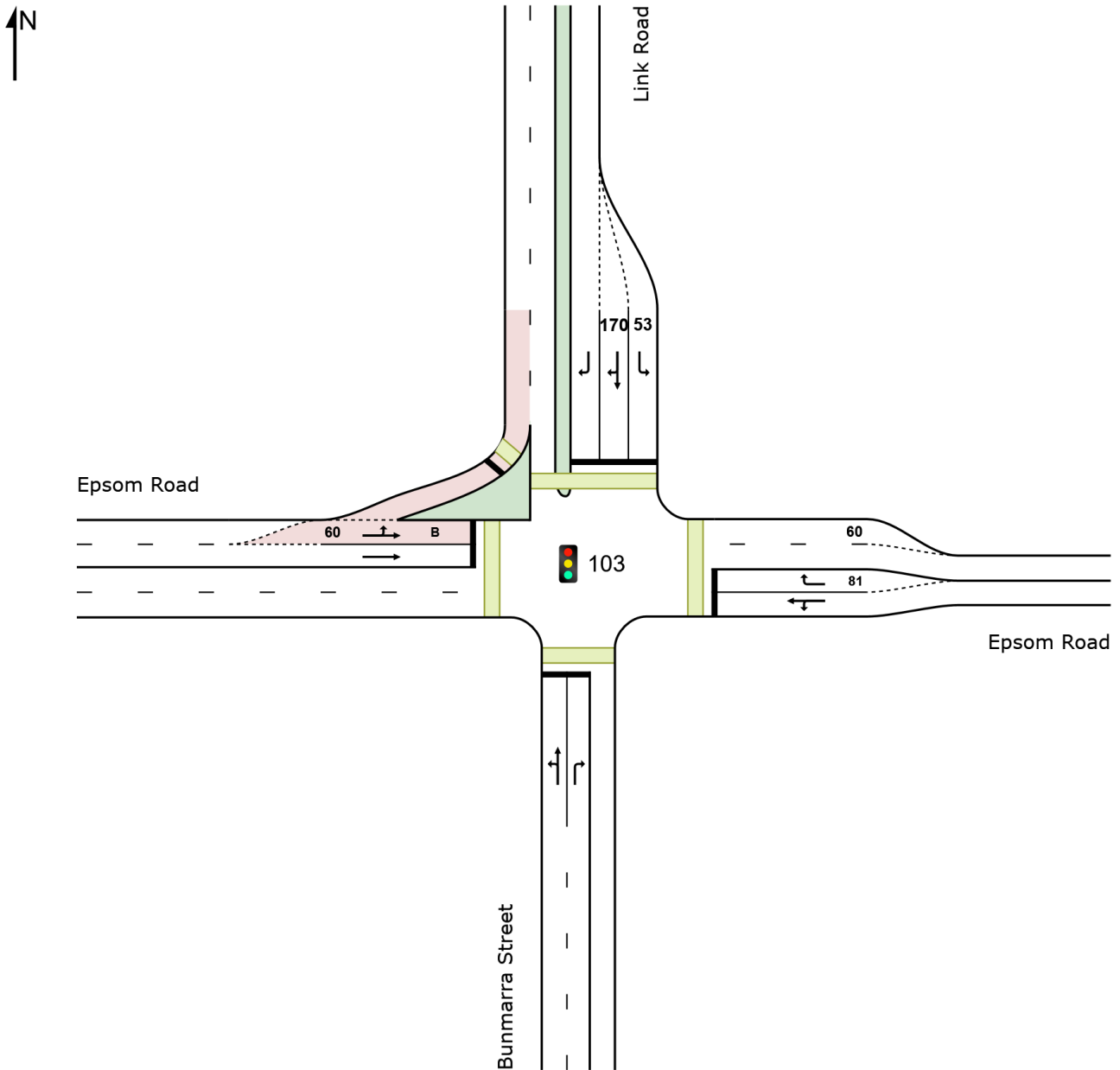
Input Phase Sequence: A, B, C, D, E*

Output Phase Sequence: A, B, C, D

(* Variable Phase)

Site Layout

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



Site: 103 [Future - Epsom Rd x Link Rd x Bunmarra St - PM (Site Folder: Future Layouts)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: TCS Layout

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D, E*

Output Phase Sequence: A, B, C, D

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Bunmarra Street														
1	L2	14	0	15	0.0	0.143	56.7	LOS E	1.6	11.2	0.94	0.70	0.94	4.7
2	T1	14	0	15	0.0	* 0.143	53.3	LOS D	1.6	11.2	0.94	0.70	0.94	21.1
3	R2	14	0	15	0.0	0.074	56.2	LOS D	0.8	5.5	0.93	0.68	0.93	20.4
Approach		42	0	44	0.0	0.143	55.4	LOS D	1.6	11.2	0.94	0.69	0.94	15.3
East: Epsom Road														
4	L2	47	0	49	0.0	0.579	20.0	LOS B	23.2	165.2	0.66	0.61	0.66	35.0
5	T1	584	11	615	1.9	* 0.579	15.4	LOS B	23.2	165.2	0.66	0.61	0.66	36.6
6	R2	120	0	126	0.0	0.245	29.5	LOS C	5.0	34.8	0.73	0.75	0.73	36.7
Approach		751	11	791	1.5	0.579	18.0	LOS B	23.2	165.2	0.67	0.63	0.67	36.5
North: Link Road														
7	L2	320	1	337	0.3	0.575	36.7	LOS C	15.3	107.4	0.83	0.81	0.83	33.1
8	T1	47	0	49	0.0	* 0.571	51.8	LOS D	9.9	71.0	0.97	0.81	0.97	21.2
9	R2	292	11	307	3.8	0.571	55.2	LOS D	9.9	71.0	0.97	0.81	0.97	21.3
Approach		659	12	694	1.8	0.575	46.0	LOS D	15.3	107.4	0.90	0.81	0.90	27.4
West: Epsom Road														
10	L2	773	16	814	2.1	0.553	8.7	LOS A	16.1	115.0	0.38	0.65	0.38	43.2
11	T1	405	11	426	2.7	0.553	29.0	LOS C	18.9	135.6	0.82	0.72	0.82	29.8
Approach		1178	27	1240	2.3	0.553	15.7	LOS B	18.9	135.6	0.53	0.67	0.53	37.5
All Vehicles		2630	50	2768	1.9	0.579	24.6	LOS B	23.2	165.2	0.67	0.69	0.67	33.1

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

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)