



Traffic & Transportation Direction

# Planning Proposal to amend the Orange Environmental Plan 2011

Leeds Parade, Clergate

Traffic Impact Assessment

September 2021

Reference: 213 rep 210903 final

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## Traffic Impact Assessment

Prepared for: Premise Pty Ltd

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## **Appendix A**

*Orange Traffic Model Outputs*

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*Masterplan*

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*Guidelines for Assessing Intersection Performance*

## **Appendix D**

*SIDRA Results*

# 1. Introduction

Amber Organisation has been engaged by Premise Australia Pty Ltd to provide a preliminary traffic impact assessment associated with a proposal to amend the Orange Local Environmental Plan 2011 with respect to land formerly occupied by the Orange Abattoir at the northern end of Leeds Parade, Clergate.

A Planning Proposal has previously been submitted for the site which resulted in an amendment to the Orange Local Environmental Plan 2011 (LEP) rezoning the subject land from RU1 – Primary Production and IN1 – General Industrial to R5 – Large Lot Residential and E4 – Environmental Living. A master plan for the site was developed with a lot yield of approximately 450 lots and a minimum lot size of 4,000 square metres. The master plan also provided a draft internal road layout with access to the site proposed from Leeds Parade. It is understood the master plan was a conceptual model for delivery of the overarching development of the land and was not intended to represent the final development arrangement.

This Planning Proposal involves further amendment to the LEP which would reduce the minimum lot size and increase the yield of the land to approximately 700 lots. In addition, the proposal introduces an upgrade of a private level crossing to a public level crossing to provide access via Clergate Road in the west and introduces a third access via Pearce Lane in the north.

This report has been prepared to provide a preliminary traffic impact assessment of the proposal sufficient to support the planning proposal and provide Council, regulatory agencies and the Department of Planning, Industry and Environment the confidence that the proposal can be delivered with acceptable impacts to the local traffic environment.

## 2. Transport Environment

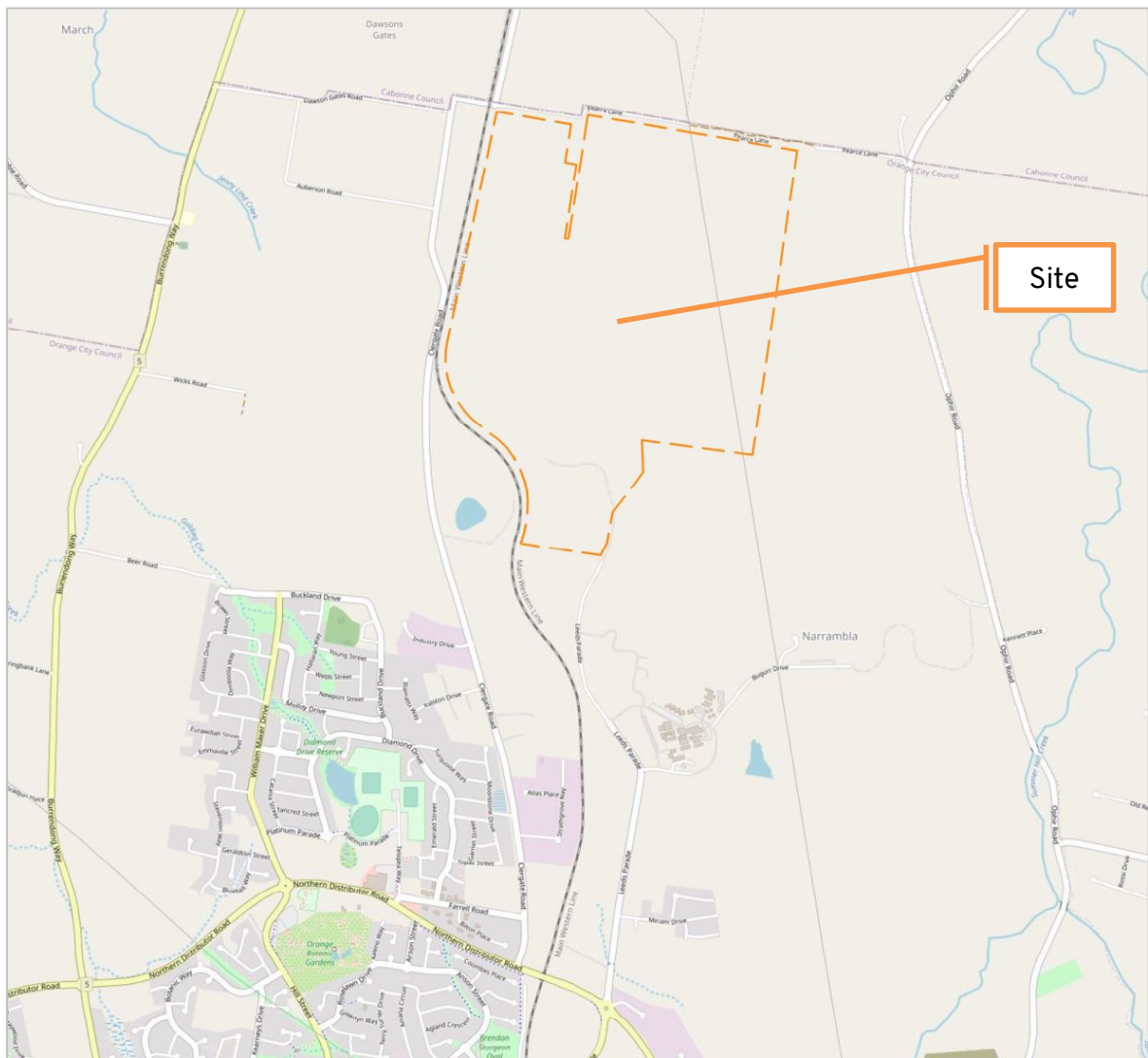
### 2.1 Site Location

The site is located on land formerly occupied by the Orange Abattoir at the northern end of Leeds Parade, Clergate. The subject land consists of the following five lots and has an area of approximately 290 hectares:

- Lot 15 DP6694, 390 Clergate Road, Orange
- Lot 3 DP255983, 440 Clergate Road, Orange
- Lot 2 DP255983, 440 Clergate Road, Orange
- Lot 14 DP6694, 440 Clergate Road, Orange
- Lot 25 DP6694, 440 Clergate Road, Orange

Figure 1 shows the location of the site in relation to the surrounding transport network.

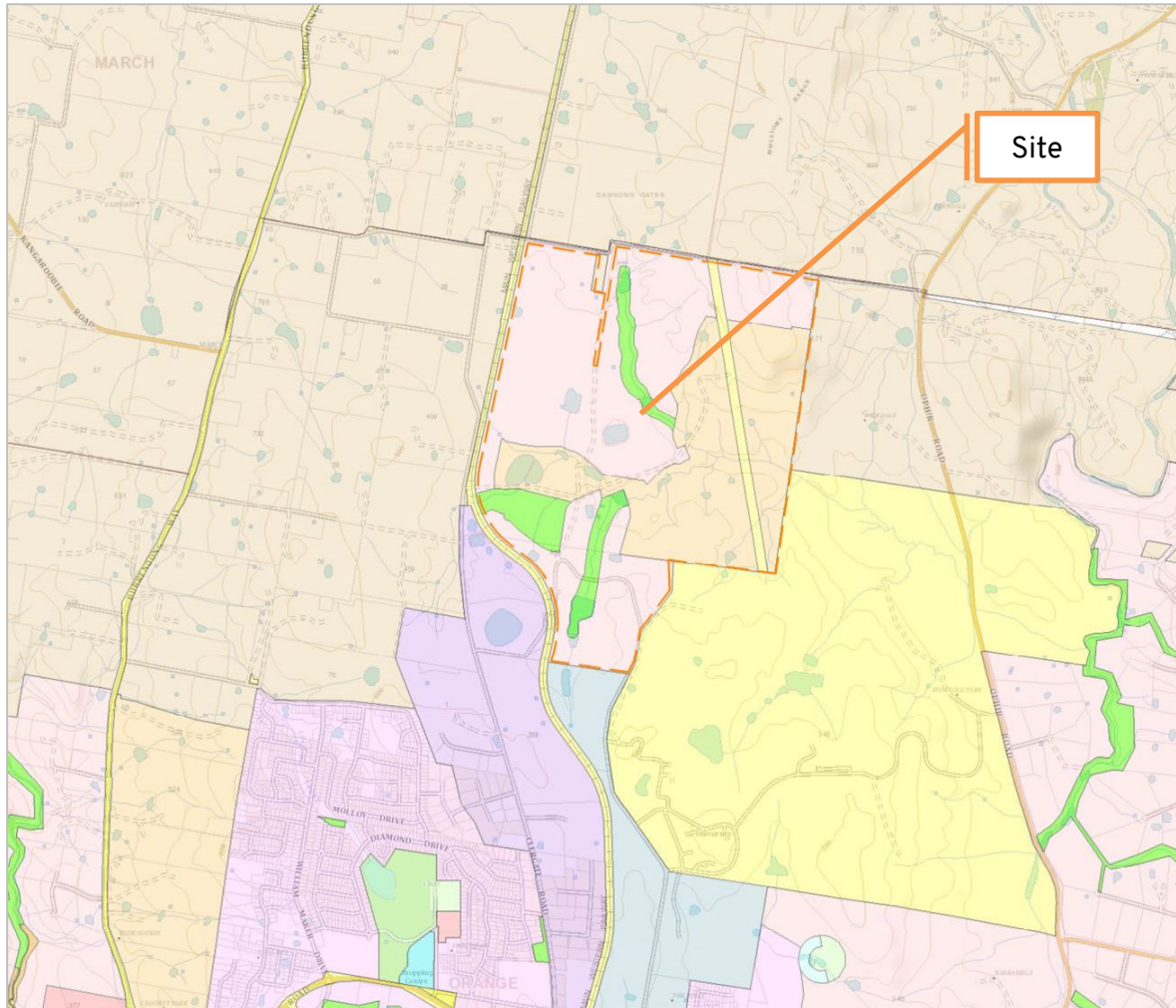
Figure 1: Site Location



Source: OpenStreetMap

The site is currently zoned R5 – Large Lot Residential and E4 – Environmental Living following the adoption of the amendment to the LEP as part of the previous Planning Proposal. The land use zoning for the site and the surrounding area is illustrated within Figure 2.

**Figure 2: Land Use Zoning**



Source: NSW Government ePlanning Spatial Viewer

The surrounding land use is primarily agricultural with the following key activities provided within the surrounding area:

- The site is located approximately 5 kilometres north of the Orange CBD and 1.8 kilometres from the North Orange Shopping Centre;
- The Charles Sturt University, Orange Campus, is located approximately 1.1 kilometres southeast of the site; and
- Clergate Public School is located 2.9 kilometres north of the site.

The site is bounded to the north by Pearce Lane, to the west by the Main Western Railway Line and to the south and east by private land.

Figure 3 shows an aerial photograph view of the site and the surrounding area. The figure shows that the site is currently occupied by agricultural land and includes the Orange Abattoir.

Figure 3: Aerial Photograph



Source: SixMaps

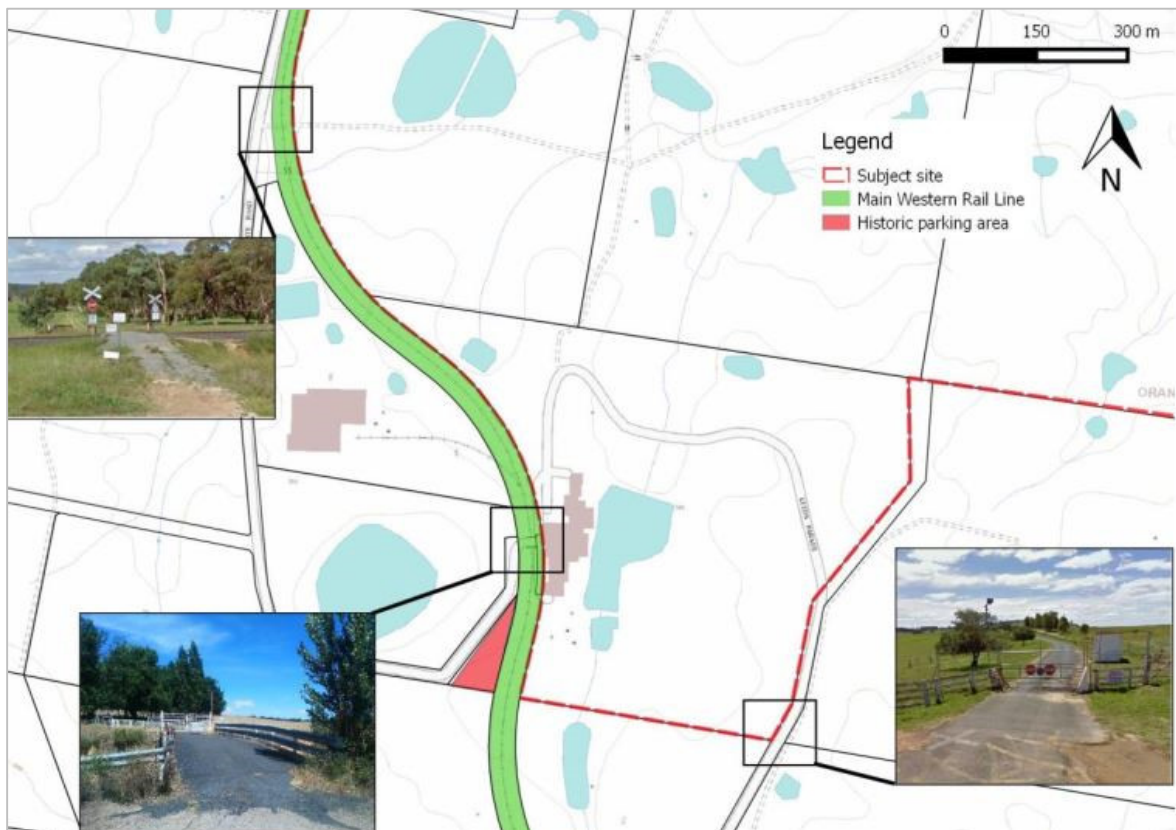
Primary access to the site is from Leeds Parade which connects with Northern Distributor Road to the south. Leeds Parade transitions into a sealed driveway at the site which formerly provided heavy vehicle access to the abattoir buildings.

Historically abattoir staff are understood to have accessed the abattoir via a single lane bridge over the Main Western Railway Line, which staff used to walk over after parking on land on the western side of the railway line. The bridge is accessed from private land owned by the Applicant.

The site also currently benefits from a single lane railway crossing from Clergate Road and a number of gateway accesses to Pearce Lane in the north.

Figure 4 shows the south-western corner of the site and the three current accesses into the property in this area.

Figure 4: Existing Site Accesses in the Southern Portion of the Site



Source: Premise

## 2.2 Road Network

The primary access to the site is proposed via Leeds Parade which connects with Northern Distributor Road allowing excellent links to the Orange CBD via Leeds Parade. Northern Distributor Road also provides access to the North Orange Shopping Centre, and links with the State road network to provide access to nearby towns. Additional connections to the road network are also proposed via Clergate Road and Pearce Lane.

**Leeds Parade** is classified as a municipal collector road under the care and management of Orange City Council. It runs in a north-south alignment between the site boundary and Dalton Street. Between Northern Distributor Road and the Orange University access it has a carriageway width of approximately 7.0 metres which accommodates one lane of traffic in each direction. North of the university access it has a reduced carriageway width of approximately 6.5 metres with no central linemarking. South of Northern Distributor Road it has a carriageway width of approximately 10 metres accommodating one lane of traffic in each direction and sealed shoulders. It has a speed limit of 80km/hr which is reduced to 50km/hr within the vicinity of the university and the built up residential and industrial areas within Orange.

**Northern Distributor Road** is a municipal arterial road under the care and management of Orange City Council. It provides a loop around the northern side of Orange extending between Mitchell Highway and Forbes Road. It acts as a key link between the North Orange Shopping Centre and the eastern and western extents of Orange. Within the vicinity of Leeds Parade it has a carriageway width of approximately 12 metres which accommodates one lane of traffic in each direction. It has a speed limit of 80km/hr east of Leeds Parade and a speed limit of 70km/hr west of Leeds Parade.

The intersection of Leeds Parade and Northern Distributor Road is controlled by a roundabout. Hanrahan Place provides a fifth leg to the intersection to the northeast which has a length of approximately 180 metres and provides access to several commercial/industrial properties.

**Clergate Road** is a municipal local road that extends in a north-south alignment between Burrendong Way and Northern Distributor Road. It runs to the west of the Main Western Railway Line before continuing as Pearce Lane for a short period near the north-western corner of the site, then continues north on the eastern side of the railway line. It has a typical carriageway width of approximately 7 metres and accommodates two-way vehicle movement. It has a speed limit of 50km/hr between Northern Distributor Road and Quartz Street which increases to 80km/hr at Industry Drive and 100km/hr further north.

The intersection of Clergate Road and Northern Distributor Road is priority controlled with vehicles exiting Clergate Road provided with Give Way signage and associate line marking.

**Pearce Lane** is a local road which runs in an east-west alignment between Ophir Road and Clergate Road. It has a typical sealed carriageway width of approximately 6.5 metres between its two connections with Clergate Road, and an unsealed carriageway width of approximately 6 metres east of Clergate Road.

## 2.3 Traffic Volumes

Due to the restrictions imposed by the NSW Government in response to the COVID-19 pandemic at the time of preparing this assessment, traffic surveys have been unable to be undertaken as they would not be reflective of typical operating conditions. In order to determine the existing traffic volumes on the road network data has been extracted from the Orange Strategic Transport Model. The model provides traffic volumes for 2018 based on collected survey data and estimates the traffic volumes in 2028. The model is described within the Orange Strategic Transport Model Update Report prepared by Stantec, dated September 2018.

Data from the model has been extracted for the surrounding intersections for the year 2018 and 2028 and is provided within Appendix A. The data has also been provided visually within Figure 5.

The data suggests that Northern Distributor Road accommodates relatively high traffic volumes, with Clergate Road and Telopea Way also recording relatively high traffic volumes. These volumes reflect the road classifications with Northern Distributor Road acting as an arterial road and Clergate Road and Telopea Way acting as collector roads that provide access to the North Orange Shopping Centre and adjacent residential and industrial uses.

Traffic volumes on Pearce Lane and Dawson Gates Road are low, with moderate traffic volumes recorded on Burrendong Way.

The traffic model volumes suggest that all roads within the vicinity of the site are expected to experience modest traffic growth between 2018 and 2028.

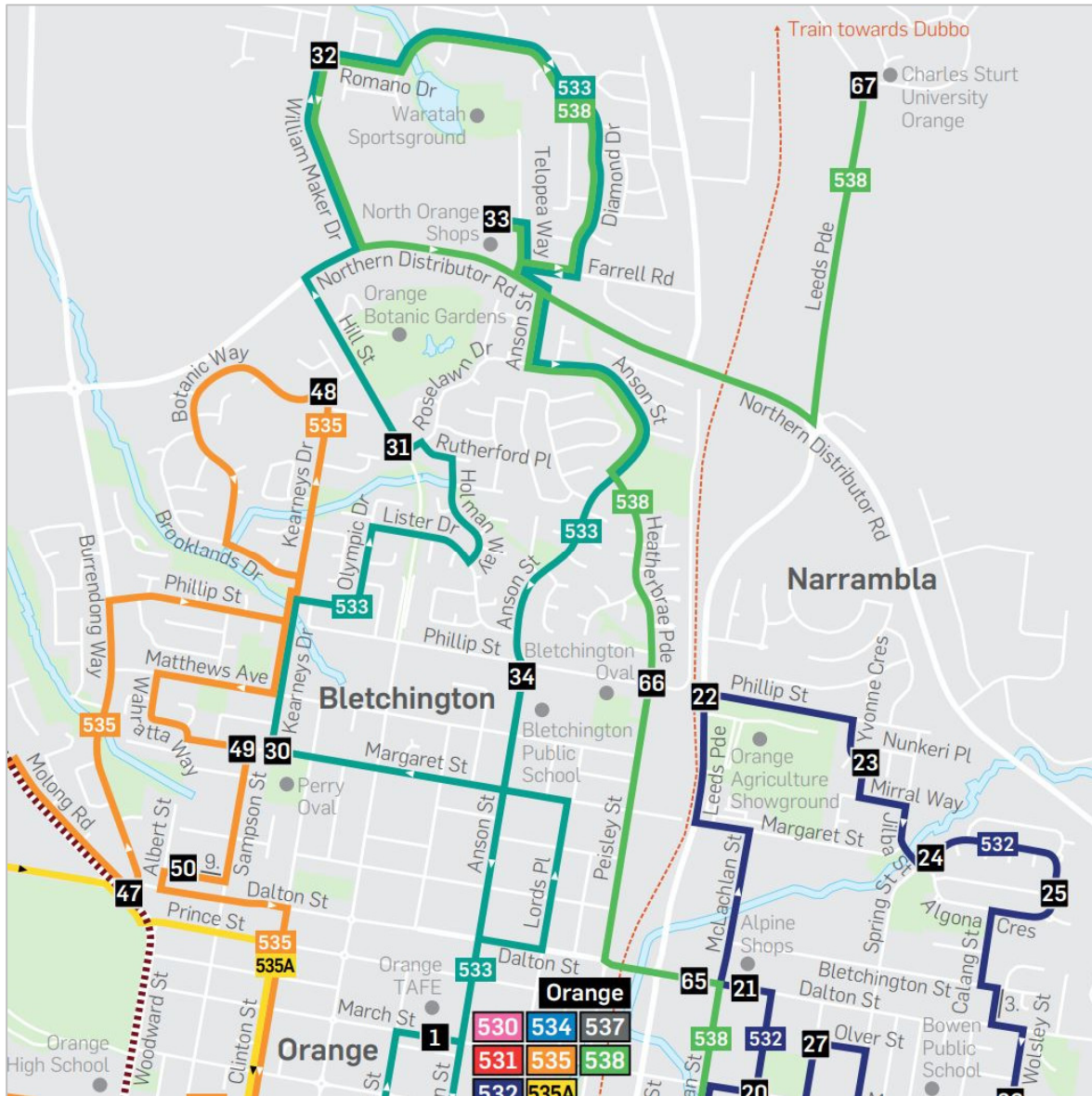
## Orange Traffic Model Volumes - 2028



## 2.4 Public Transport

The public transport services within the vicinity of the site are shown within Figure 6. The map indicates the only existing bus service provided within the vicinity of the site is Route 67 which travels between the Orange University Campus along Leeds Parade to the Orange CBD.

Figure 6: Surrounding Public Transport Services



Source: Orange Buslines

## 2.5 Pedestrians and Cyclists

A shared path is provided along the majority of the western side of Leeds Parade between Dalton Street and the university, and a shared path is provided along the southern side of Northern Distributor Road west of Leeds Parade that links with the wider pedestrian / bicycle pathway network to the west.

## 2.6 Road Safety

Amber has conducted a review of the TfNSW Centre for Road Safety Crash and Casualty Statistics database for all injury crashes within the following search area:

- Northern Distributor Road between Leeds Parade and Clergate Road;
- Leeds Parade between Northern Distributor Road and the site;
- Clergate Road between Northern Distributor Road and Pearce Lane;
- The full length of Pearce Lane; and
- The relevant intersections.

The crash database provides the location and severity of all injury and fatal crashes for the five-year period from 2015 to 2019. The crash search revealed one moderate injury crash midblock on Clergate Road near Industry Drive when a vehicle lost control within the road carriageway.

The crash search indicates that there are no discernible crash trends within the surrounding road network. As such, it is concluded that the road network is currently operating in a relatively safe manner.

## 3. Development Proposal

### 3.1 Existing Site Approval

A Planning Proposal has previously been prepared for the site which resulted in an amendment to the LEP resulting in the rezoning of the subject land from RU1 – Primary Production and IN1 – General Industrial to R5 – Large Lot Residential, E4 – Environmental Living, RE1 – Public Recreation and SP2 – Infrastructure. A master plan for the site was developed which showed approximately 450 lots with a minimum lot size of 4,000 square metres. The master plan provided a draft internal road layout with access to the site proposed from Leeds Parade.

### 3.2 The Proposal

This Planning Proposal involves an amendment to the LEP which would reduce the minimum lot size and increase the yield of the land to approximately 700 lots. Exceedance of this limit would not be possible without further amendments to the LEP. Any further LEP amendment would require consultation with regulatory agencies including TfNSW and their Rail Infrastructure Manager.

The site currently has one legal road access, being south via Leeds Parade. It is expected this would be the primary point of access for vehicles travelling to and from the Orange CBD and industrial areas and for vehicles travelling east and west from Orange via the Northern Distributor Road.

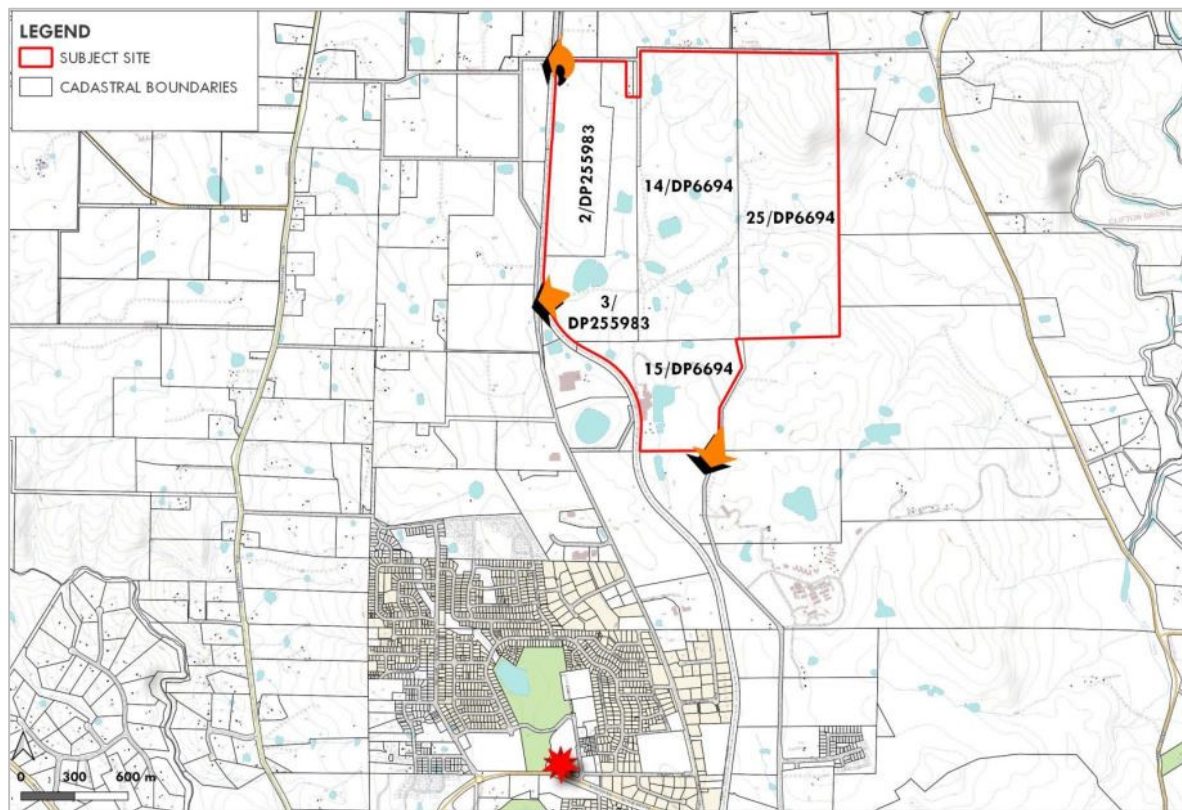
In addition, the proposal introduces an upgrade of a private level crossing to a public level crossing to provide access via Clergate Road and introduces a third access via Pearce Lane which are described below:

- A new western access is proposed across the Main Western Railway line via an existing private level crossing to be upgraded to an active level crossing. The access is expected to be utilised by residents making local trips to the North Orange Shopping Centre, via Farrell Road, or travelling to the North Orange residential/industrial areas;
- A new access is proposed in the north-western corner of the site via Pearce Lane. Vehicles travelling in this direction would be expected to predominantly be travelling north (such as to Clergate School), or to Burrendong Way to travel north towards Mullion Creek, Lake Burrendong or Wellington. A small proportion of these vehicles located in the very northern extent of the subdivision may also travel via Clergate Road to the North Orange Shopping Centre, via Farrell Road, or travelling to the North Orange residential/industrial areas.

Given the connectivity afforded by the Northern Distributor Road and Leeds Parade, it is expected that the majority of vehicles would utilise the Leeds Parade access.

Figure 7 shows the locations of the proposed accesses in relation to the surrounding road network and North Orange Shopping Centre, with a masterplan for the site provided within Appendix B.

Figure 7: Site Master Plan



Source: Premise

## 4. Traffic Assessment

### 4.1 Traffic Generation

The *Roads & Maritime Services Technical Direction 04a: Guide to Traffic Engineering Developments - Updated Traffic Surveys*, dated August 2013, has been used to estimate the traffic generation of the site. The traffic generation rates for low density residential land use within regional areas are as follows:

- Daily vehicle trips: 7.4 movements per dwelling;
- Weekday average morning peak hour vehicle trips: 0.78 movements per dwelling; and
- Weekday average evening peak hour vehicle trips: 0.71 movements per dwelling.

Application of the above rates to the 700 residential lots results in a future traffic generation of 5,180 vehicle movements per day, and 546 and 497 vehicle movements (two-way total) in the morning and evening peak hours respectively.

### 4.2 Trip Distribution

It is typical for residential activities to yield a trip distribution involving about 80% of traffic in the morning peak hour being departing trips, and 20% arriving trips. Similarly, it is typical that 30% of trips will be departing and 70% will be arriving trips in the evening peak hour. As such, the site is expected to generate the following traffic volumes during the morning and afternoon peak periods.

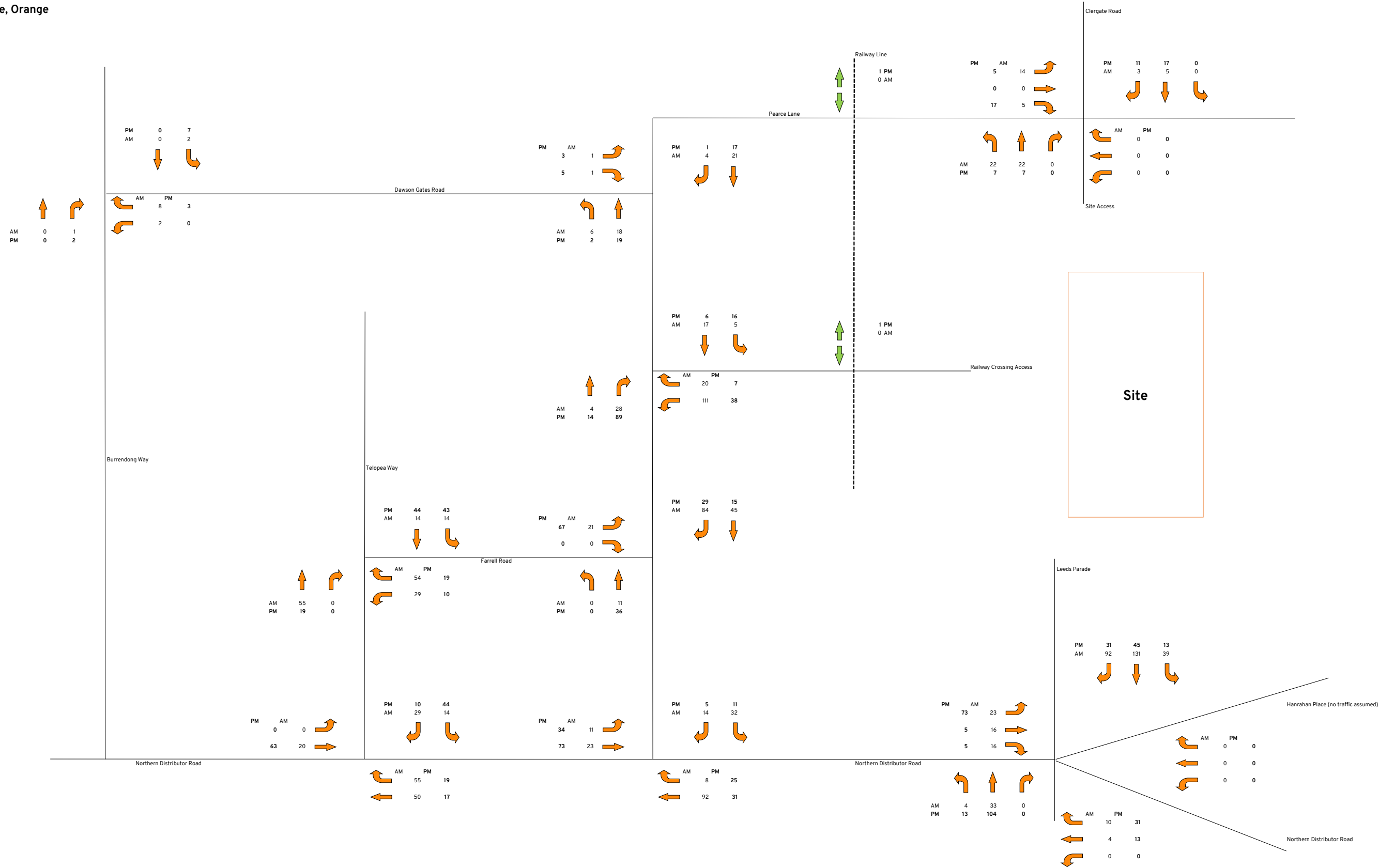
Table 1: Site Peak Hour Traffic Generation

|                 | AM Peak<br>(vph) | PM Peak<br>(vph) |
|-----------------|------------------|------------------|
| Arriving Trips  | 109              | 348              |
| Departing Trips | 437              | 149              |
| <b>Total</b>    | <b>546</b>       | <b>497</b>       |

The site is provided with three connections to the road network which includes Leeds Parade, Clergate Road and Pearce Lane. The following provides a breakdown of the distribution of site traffic at the accesses:

- It has been assumed that 60% of traffic will utilise Leeds Parade which provides good access to the Orange CBD and Northern Distributor Road for the majority of the site;
- It has been assumed that 30% of traffic will utilise the Clergate Road access which will primarily be used by residents making local trips to the North Orange Shopping Centre via Farrell Road; and
- It has been assumed that 10% of traffic will utilise the northern access to Pearce Lane which will be utilised by some residents travelling north such as to Clergate School or to Burrendong Way. A small proportion of residents located in the very northern extent of the subdivision may also utilise the access to travel south via Clergate Road.

The distribution of site traffic on the road network is shown within Figure 8.



## 4.3 Traffic Assessment

In order to determine the traffic impact generated by the subdivision an analysis of the operation of the surrounding intersections was carried out using the SIDRA computer modelling program. The concepts of intersection capacity and level of service, as defined in the guidelines published by the RTA (2002), are discussed in Appendix C together with criteria for their assessment. The assessment of the level of service for sign-controlled intersections is based on the average delay (seconds/vehicle) of the critical movement and the assessment for signalised intersections is the average delay over all movements at the intersection.

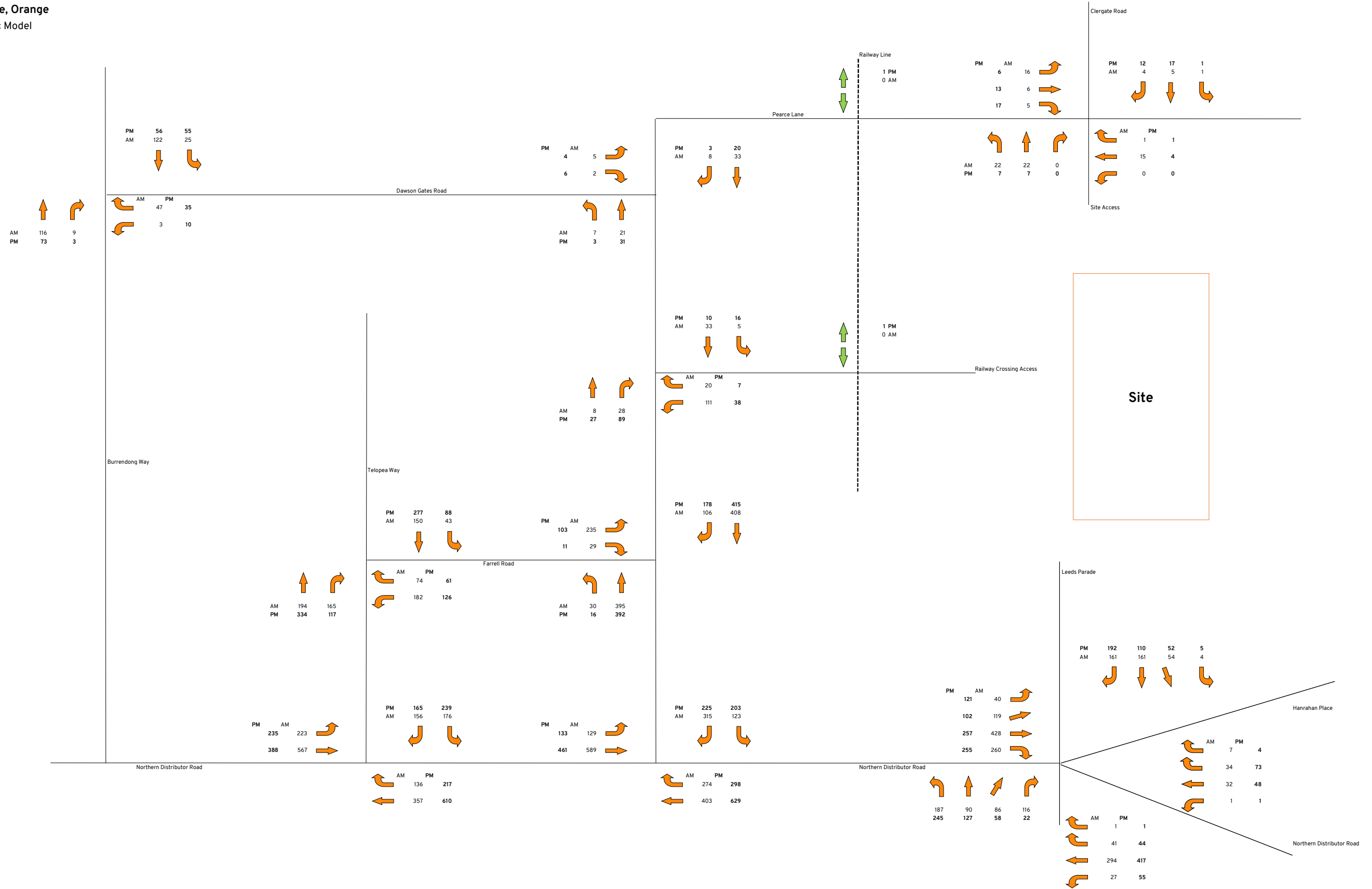
The intersections that have been assessed have been identified where a significant increase in traffic is expected based on the traffic distribution outlined within Figure 8. These intersections include:

- Leeds Parade / Northern Distributor Road
- Clergate Road / Northern Distributor Road
- Clergate Road / Farrell Road
- Farrell Road / Telopea Way
- Telopea Way / Northern Distributor Road
- Clergate Road / Site Access (middle access)
- Pearce Lane / Clergate Road / Site Access (northern access)

The traffic volumes used for the assessment have been based on the traffic volumes presented within Section 2.3 which are taken from the Orange Strategic Model for the year 2028. It is considered appropriate to utilise these volumes given survey data is unable to be collected at this time. Further, the model provides an estimate of the future traffic volumes on the road network which is when the site is likely to be constructed and the associated traffic volumes will be accommodated on the road network.

A future scenario has also been assessed which adds the development traffic to the strategic model 2028 traffic volumes. The future scenario traffic volumes are shown in Figure 9.

The results of the analysis are provided within Appendix D and are summarised below.



### 4.3.1 Leeds Parade / Northern Distributor Road

The roundabout intersection has been modelled based on the existing lane configuration. The results of the SIDRA analysis for the morning peak hour for the intersection of Leeds Parade, Hanrahan Place and Northern Distributor Road are summarised in Table 2.

**Table 2: SIDRA Analysis Results Summary – AM Peak 2028**

| Movement                       |             | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|--------------------------------|-------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                                |             | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Leeds Parade South             | Left        | 5.6                          | 9.1           | A                | 6.2                            | 9.6           | A                |
|                                | Through     | 4.9                          |               | A                | 5.2                            |               | A                |
|                                | Right       | 9.4                          |               | A                | 9.7                            |               | A                |
|                                | Right-Right | 11.8                         |               | B                | 12.1                           |               | B                |
| Northern Distributor Road East | Left-Left   | 4.7                          | 8.6           | A                | 5.3                            | 10.8          | A                |
|                                | Left        | 4.6                          |               | A                | 5.7                            |               | A                |
|                                | Right       | 9.5                          |               | A                | 10.4                           |               | B                |
|                                | Right-Right | 10.7                         |               | B                | 11.6                           |               | B                |
| Hanrahan Place                 | Left-Left   | 9.4                          | 5.1           | A                | 11.9                           | 6.3           | B                |
|                                | Left        | 8.5                          |               | A                | 11.2                           |               | B                |
|                                | Right       | 12.9                         |               | B                | 15.3                           |               | B                |
|                                | Right-Right | 15.3                         |               | B                | 17.7                           |               | B                |
| Leeds Parade North             | Left-Left   | 7.5                          | 3.8           | A                | 8.0                            | 14.9          | A                |
|                                | Left        | 8.1                          |               | A                | 8.8                            |               | A                |
|                                | Through     | 6.9                          |               | A                | 7.4                            |               | A                |
|                                | Right Turn  | 11.9                         |               | B                | 12.7                           |               | B                |
| Northern Distributor Road West | Left-Left   | 5.9                          | 30.9          | A                | 6.2                            | 39.4          | A                |
|                                | Left        | 5.4                          |               | A                | 5.8                            |               | A                |
|                                | Right       | 9.9                          |               | A                | 10.8                           |               | B                |
|                                | Right-Right | 11.1                         |               | B                | 12.0                           |               | B                |

The SIDRA analysis for the AM peak indicates the following:

- The intersection is expected to continue to operate with minimal queue lengths on all legs of the intersection. The longest queue is recorded on the western leg of Northern Distributor Road which increases from 30.9 metres to 39.4 metres;
- The overall average delay at the intersection increases by 1.2 seconds which represents a minimal change. All legs of the intersection experience a minor delay that is well within the acceptable operating conditions; and
- The intersection is expected to continue to operate with a good level of service.

The results of the SIDRA analysis for the evening peak hour for the intersection of Leeds Parade, Hanrahan Place and Northern Distributor Road are summarised in Table 3.

**Table 3: SIDRA Analysis Results Summary – PM Peak 2028**

| Movement                       |             | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|--------------------------------|-------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                                |             | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Leeds Parade South             | Left        | 6.3                          | 8.2           | A                | 6.7                            | 8.9           | A                |
|                                | Through     | 6.1                          |               | A                | 6.2                            |               | A                |
|                                | Right       | 10.6                         |               | B                | 10.7                           |               | B                |
|                                | Right-Right | 13.0                         |               | B                | 13.0                           |               | B                |
| Northern Distributor Road East | Left-Left   | 4.9                          | 13.8          | A                | 5.1                            | 15.9          | A                |
|                                | Left        | 5.9                          |               | A                | 6.5                            |               | A                |
|                                | Right       | 10.1                         |               | B                | 10.5                           |               | B                |
|                                | Right-Right | 11.3                         |               | B                | 11.7                           |               | B                |
| Hanrahan Place                 | Left-Left   | 7.7                          | 6.2           | A                | 8.3                            | 7.0           | A                |
|                                | Left        | 7.5                          |               | A                | 8.2                            |               | A                |
|                                | Right       | 11.8                         |               | B                | 12.4                           |               | B                |
|                                | Right-Right | 14.2                         |               | B                | 14.8                           |               | B                |
| Leeds Parade North             | Left-Left   | 6.7                          | 6.9           | A                | 6.8                            | 10.4          | A                |
|                                | Left        | 6.7                          |               | A                | 6.8                            |               | A                |
|                                | Through     | 6.3                          |               | A                | 6.4                            |               | A                |
|                                | Right Turn  | 11.3                         |               | B                | 11.5                           |               | B                |
| Northern Distributor Road West | Left-Left   | 4.5                          | 16.9          | A                | 5.2                            | 20.5          | A                |
|                                | Left        | 4.0                          |               | A                | 4.7                            |               | A                |
|                                | Right       | 8.6                          |               | A                | 9.3                            |               | A                |
|                                | Right-Right | 9.8                          |               | A                | 10.5                           |               | B                |

The SIDRA analysis for the PM peak indicates the following:

- The intersection is expected to continue to operate with minimal queue lengths on all legs of the intersection. The longest queue is recorded on the western leg of Northern Distributor Road which increases from 16.9 metres to 20.5 metres;
- The overall average delay at the intersection increases by 0.4 seconds which represents a minimal change. All legs of the intersection experience a minor delay that is well within the acceptable operating conditions; and
- The intersection is expected to continue to operate with a good level of service.

Overall, the intersection with the 2028 Orange Strategic Model volumes is shown to be operating with ample spare capacity to accommodate an increase in traffic resulting in the intersection operating with a good level of service. As a result, the moderate increase in traffic generated by the site traffic only results in minor increases to queue lengths and delays. The AM and PM peak

hour degree of saturation for the intersection with the development traffic is 0.615 and 0.431, respectively, which indicates there would still be ample spare capacity even with the development traffic.

#### 4.3.2 Clergate Road / Northern Distributor Road

The intersection has been modelled based on the existing lane configuration which provides a right turn lane from Northern Distributor Road and separate right and left turn lanes from Clergate Road. Vehicles exiting Clergate Road are provided with Give Way restrictions.

The results of the SIDRA analysis for the morning peak hour for the intersection of Clergate Road and Northern Distributor Road are summarised in Table 4.

**Table 4: SIDRA Analysis Results Summary – AM Peak 2028**

| Movement                       |            | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|--------------------------------|------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                                |            | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Northern Distributor Road East | Through    | 0.0                          | 13.9          | A                | 0.1                            | 15.5          | A                |
|                                | Right Turn | 10.9                         |               | B                | 11.6                           |               | B                |
| Clergate Road                  | Left Turn  | 8.4                          | 664.5         | A                | 8.7                            | 921.8         | A                |
|                                | Right Turn | 710.9                        |               | F                | 1266.5                         |               | F                |
| Northern Distributor Road West | Left Turn  | 5.7                          | 0.0           | A                | 5.7                            | 0.0           | A                |
|                                | Through    | 0.1                          |               | A                | 0.1                            |               | A                |

The SIDRA analysis for the AM peak indicates the intersection generally operates with acceptable queue lengths and delays except for the right turn movement from Clergate Road which has reached capacity even without the development traffic. Once the movement reaches capacity the reported queue lengths and delays increase exponentially and are not reported accurately by the model.

The results of the SIDRA analysis for the evening peak hour for the intersection of Clergate Road and Northern Distributor Road are summarised in Table 5.

**Table 5: SIDRA Analysis Results Summary – PM Peak 2028**

| Movement                       |            | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|--------------------------------|------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                                |            | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Northern Distributor Road East | Through    | 0.1                          | 9.6           | A                | 0.1                            | 13.9          | A                |
|                                | Right Turn | 8.2                          |               | A                | 9.7                            |               | A                |
| Clergate Road                  | Left Turn  | 7.3                          | 411.5         | A                | 7.9                            | 613.4         | A                |
|                                | Right Turn | 529.7                        |               | F                | 1044.7                         |               | F                |
| Northern Distributor Road West | Left Turn  | 5.6                          | 0.0           | A                | 5.7                            | 0.0           | A                |
|                                | Through    | 0.1                          |               | A                | 0.1                            |               | A                |

The SIDRA analysis for the PM peak is similar to the AM peak and indicates the intersection generally operates with acceptable queue lengths and delays except for the right turn movement from Clergate Road which has reached capacity.

The traffic volumes are based on the Orange Strategic Traffic Model which estimates traffic volumes based on vehicles moving between an origin and a destination. The level of complexity of the model does not account for changes in behaviour generated by certain routes taking a significantly longer time due to delays at intersections such as what is being reported above for Clergate Road and Northern Distributor Road. In reality vehicles are likely to choose an alternative route in order to travel westbound on Northern Distributor Road once delays become unacceptable or an alternative route is available with a shorter travel time.

### 4.3.3 Clergate Road / Farrell Road

The intersection has been modelled based on the existing lane configuration which provides one lane of traffic in all directions with no dedicated turn facilities. Vehicles exiting Farrell Road are provided with Stop restrictions.

The results of the SIDRA analysis for the morning peak hour for the intersection of Clergate Road and Farrell Road are summarised in Table 6.

**Table 6: SIDRA Analysis Results Summary – AM Peak 2028**

| Movement            |            | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|---------------------|------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                     |            | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Clergate Road South | Left Turn  | 5.6                          | 0.0           | A                | 5.6                            | 0.0           | A                |
|                     | Through    | 0.1                          |               | A                | 0.1                            |               | A                |
| Clergate Road North | Through    | 0.2                          | 1.9           | A                | 1.0                            | 10.0          | A                |
|                     | Right Turn | 7.7                          |               | A                | 8.1                            |               | A                |
| Farrell Road        | Left Turn  | 10.9                         | 10.8          | B                | 11.4                           | 13.5          | B                |
|                     | Right Turn | 15.9                         |               | C                | 19.7                           |               | C                |

The SIDRA analysis for the AM peak indicates the following:

- The intersection is expected to continue to operate with minimal queue lengths on all legs of the intersection;
- The overall average delay at the intersection increases by 0.8 seconds; and
- The intersection is expected to continue to operate with a good level of service on the Clergate Road legs of the intersection and an acceptable level of service on the Farrell Road leg of the intersection.

The results of the SIDRA analysis for the evening peak hour for the intersection of Clergate Road and Farrell Road are summarised in Table 7.

**Table 7: SIDRA Analysis Results Summary – PM Peak 2028**

| Movement            |            | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|---------------------|------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                     |            | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Clergate Road South | Left Turn  | 5.6                          | 0.0           | A                | 5.6                            | 0.0           | A                |
|                     | Through    | 0.1                          |               | A                | 0.1                            |               | A                |
| Clergate Road North | Through    | 1.1                          | 13.0          | A                | 1.6                            | 18.0          | A                |
|                     | Right Turn | 7.8                          |               | A                | 8.3                            |               | A                |
| Farrell Road        | Left Turn  | 9.9                          | 1.9           | A                | 10.4                           | 4.3           | B                |
|                     | Right Turn | 16.6                         |               | C                | 19.4                           |               | C                |

The SIDRA analysis for the PM peak indicates the following:

- The intersection is expected to continue to operate with minimal queue lengths on all legs of the intersection;
- The overall average delay at the intersection increases by 0.9 seconds; and
- The intersection is expected to continue to operate with a good level of service on the Clergate Road legs of the intersection and an acceptable level of service on the Farrell Road leg of the intersection.

Overall, the intersection is expected to operate with acceptable queue lengths and delays. The delay for vehicles turning from Farrell Road is moderate with all other legs of the intersection operating with minimal delays. The degree of saturation for the intersection with the development traffic is 0.369 and 0.396 during the morning and evening peak hour, respectively, which suggests there is capacity at the intersection to accommodate an increase in traffic.

#### 4.3.4 Farrell Road / Telopea Way

The intersection has been modelled as a network with the intersection of Telopea Way and Northern Distributor Road given both intersections are signalised and the phasing for the intersections has been linked. The model is based on the existing lane configuration.

SCATS data has been provided by Transport for NSW for the intersection. The phasing provided has been adopted for the intersection however, the phase times have been optimised to account for the increase in traffic.

The results of the SIDRA analysis for the morning peak hour for the intersection of Farrell Road and Telopea Way are summarised in Table 8.

**Table 8: SIDRA Analysis Results Summary – AM Peak 2028**

| Movement          |            | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|-------------------|------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                   |            | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Telopea Way South | Through    | 3.6                          | 5.8           | A                | 3.7                            | 8.4           | A                |
|                   | Right Turn | 14.7                         | 12.4          | B                | 7.0                            | 5.4           | A                |
| Farrell Road      | Left Turn  | 14.2                         | 10.6          | B                | 15.4                           | 13.9          | B                |
|                   | Right Turn | 28.0                         | 2.1           | C                | 29.2                           | 8.3           | C                |
| Telopea Way North | Left Turn  | 28.3                         | 3.1           | C                | 28.6                           | 4.7           | C                |
|                   | Through    | 16.5                         | 13.1          | B                | 16.2                           | 14.5          | B                |

The SIDRA analysis for the AM peak indicates the following:

- The intersection is expected to continue to operate with moderate queue lengths on all legs of the intersection. The existing turn facilities are able to accommodate the expected queue lengths;
- The overall average delay at the intersection decreases by 0.6 seconds as a result of the traffic distribution and associated changes to the phase time. The only notable change to the delay at the intersection is the increase in delay to right turning vehicles from the southern leg of Telopea Way which increases by 7.7 seconds from 7.0 seconds to 14.7 seconds;
- The intersection is expected to continue to operate with a good or acceptable level of service on all legs of the intersection; and
- The degree of saturation at the intersection is expected to increase from 0.398 to 0.438.

The results of the SIDRA analysis for the evening peak hour for the intersection of Farrell Road and Telopea Way are summarised in Table 9.

**Table 9: SIDRA Analysis Results Summary – PM Peak 2028**

| Movement          |            | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|-------------------|------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                   |            | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Telopea Way South | Through    | 4.3                          | 11.7          | A                | 3.3                            | 11.6          | A                |
|                   | Right Turn | 20.9                         | 10.2          | C                | 27.3                           | 13.6          | C                |
| Farrell Road      | Left Turn  | 12.9                         | 6.4           | B                | 18.7                           | 10.8          | B                |
|                   | Right Turn | 22.7                         | 3.6           | C                | 28.9                           | 6.8           | C                |
| Telopea Way North | Left Turn  | 22.8                         | 3.8           | C                | 29.5                           | 10.0          | C                |
|                   | Through    | 15.5                         | 20.2          | B                | 13.5                           | 26.1          | B                |

The SIDRA analysis for the PM peak indicates the following:

- The intersection is expected to continue to operate with moderate queue lengths on all legs of the intersection. The existing turn facilities are able to accommodate the expected queue lengths;
- The overall average delay at the intersection is expected to increase by 2.1 seconds, with minor increases in delay experienced on all legs of the intersection;
- The intersection is expected to continue to operate with a good or acceptable level of service on all legs of the intersection; and
- The degree of saturation at the intersection is expected to increase from 0.592 to 0.597.

Overall, the intersection is expected to continue to operate in an acceptable manner with only minor increases in queue lengths and delays generated by site traffic.

### 4.3.5 Telopea Way / Northern Distributor Road

The intersection has been modelled as a network with the intersection of Telopea Way and Farrell Road given both intersections are signalised and the phasing for the intersections has been linked. The model is based on the existing lane configuration.

SCATS data has been provided by Transport for NSW for the intersection. The phasing provided has been adopted for the intersection however, the phase times have been optimised to account for the increase in traffic.

The results of the SIDRA analysis for the morning peak hour for the intersection of Telopea Way and Northern Distributor Road are summarised in Table 10.

**Table 10: SIDRA Analysis Results Summary – AM Peak 2028**

| Movement                       |            | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|--------------------------------|------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                                |            | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Northern Distributor Road East | Through    | 4.2                          | 15.1          | A                | 4.4                            | 18.2          | A                |
|                                | Right Turn | 29.4                         | 9.2           | C                | 31.0                           | 16.5          | C                |
| Telopea Way                    | Left Turn  | 17.4                         | 16.0          | B                | 17.6                           | 17.4          | B                |
|                                | Right Turn | 27.6                         | 15.5          | C                | 30.6                           | 19.6          | C                |
| Northern Distributor Road West | Left Turn  | 9.6                          | 10.5          | A                | 9.6                            | 10.5          | A                |
|                                | Through    | 16.3                         | 59.1          | B                | 17.5                           | 63.9          | B                |

The SIDRA analysis for the AM peak indicates the following:

- The intersection is expected to continue to operate with moderate queue lengths on all legs of the intersection. The existing turn facilities are able to accommodate the expected queue lengths;
- The overall average delay at the intersection is expected to increase by 1.3 seconds, with minor increases in delay experienced on all legs of the intersection;
- The intersection is expected to continue to operate with a good or acceptable level of service on all legs of the intersection; and

- The degree of saturation at the intersection is expected to increase from 0.753 to 0.780.

The results of the SIDRA analysis for the evening peak hour for the intersection of Telopea Way and Northern Distributor Road are summarised in Table 11.

**Table 11: SIDRA Analysis Results Summary – PM Peak 2028**

| Movement                       |            | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|--------------------------------|------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                                |            | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Northern Distributor Road East | Through    | 6.6                          | 36.7          | A                | 5.9                            | 39.9          | A                |
|                                | Right Turn | 27.0                         | 20.3          | C                | 29.4                           | 26.4          | C                |
| Telopea Way                    | Left Turn  | 11.4                         | 13.4          | B                | 12.0                           | 17.2          | B                |
|                                | Right Turn | 19.8                         | 13.8          | B                | 20.0                           | 17.0          | C                |
| Northern Distributor Road West | Left Turn  | 10.7                         | 11.3          | B                | 11.7                           | 13.7          | B                |
|                                | Through    | 17.1                         | 30.3          | B                | 18.7                           | 42.6          | B                |

The SIDRA analysis for the PM peak indicates the following:

- The intersection is expected to continue to operate with moderate queue lengths on all legs of the intersection. The existing turn facilities are able to accommodate the expected queue lengths. It is noted that the through movement travelling eastbound on Northern Distributor Road experiences an increase in queue length of 12.3 metres which is equivalent to approximately two cars;
- The overall average delay at the intersection is expected to increase by 0.8 seconds, with minimal increases in delay experienced on all legs of the intersection;
- The intersection is expected to continue to operate with a good or acceptable level of service on all legs of the intersection; and
- The degree of saturation at the intersection is expected to decrease from 0.764 to 0.736 due to the distribution of traffic at the intersection with the site traffic and associated changes to the phase times.

Overall, the intersection is expected to continue to operate in an acceptable manner with only minor increases in queue lengths and delays generated by site traffic.

#### 4.3.6 Clergate Road / Site Access (Middle Access)

The central access location proposed for the site is currently a private access that experiences a minimal level of traffic. As such, an assessment of the intersection has not been undertaken for the existing operation of the intersection.

The results of the SIDRA analysis for the morning and evening peak hours for the intersection of Clergate Road and the central site access are summarised in Table 12. Both roads are provided with one lane of traffic in each direction with no turn lanes provided on either road. Give Way restrictions are applied to vehicles exiting the site.

**Table 12: SIDRA Analysis Results Summary – AM and PM Peak 2028**

| Movement            |            | AM Future Traffic Conditions |               |                  | PM Future Traffic Conditions |               |                  |
|---------------------|------------|------------------------------|---------------|------------------|------------------------------|---------------|------------------|
|                     |            | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)          | 95% Queue (m) | Level of Service |
| Clergate Road South | Through    | 0.1                          | 0.7           | A                | 0.1                          | 2.4           | A                |
|                     | Right Turn | 5.6                          |               | A                | 5.6                          |               | A                |
| Site Access         | Left Turn  | 5.7                          | 2.7           | A                | 5.6                          | 0.9           | A                |
|                     | Right Turn | 5.8                          |               | A                | 6.0                          |               | A                |
| Clergate Road North | Left Turn  | 5.6                          | 0.0           | A                | 5.6                          | 0.0           | A                |
|                     | Through    | 0.0                          |               | A                | 0.0                          |               | A                |

The results of the SIDRA analysis indicate the following:

- The intersection is expected to operate with minimal queue lengths on all legs of the intersection;
- The average delay at the intersection is 4.5 seconds during both the AM and PM peak; and
- The intersection is expected to operate with a good level of service.

Overall, the intersection is expected to operate in a suitable manner with minimal delays and queue lengths, and has ample spare capacity to accommodate an increase in traffic.

#### 4.3.7 Pearce Lane / Clergate Road / Site Access (Northern Access)

The intersection has been modelled as a cross-type intersection however, the ultimate intersection is likely to be established as a staggered T-intersection which provides a safer road alignment. Each leg of the intersection was modelled with one lane of traffic in each direction and no turn facilities. Give Way restrictions were applied to the eastern Pearce Lane leg of the intersection and the site access as the primary traffic movement is likely to be vehicles travelling north-south between the western leg of Pearce Lane and Clergate Road.

Based on discussions with Orange City Council no vehicles associated with the site have been assumed to be travelling along Pearce Lane to/from Ophir Road.

The results of the SIDRA analysis for the morning peak hour for the intersection of Pearce Lane, Clergate Road and the site access are summarised in Table 13.

**Table 13: SIDRA Analysis Results Summary – AM Peak 2028**

| Movement         |            | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|------------------|------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                  |            | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Site Access      | Left Turn  | 5.6                          | 0.1           | A                | 5.7                            | 0.9           | A                |
|                  | Through    | 4.3                          |               | A                | 4.4                            |               | A                |
|                  | Right Turn | 5.6                          |               | A                | 5.7                            |               | A                |
| Pearce Lane East | Left Turn  | 5.6                          | 0.4           | A                | 5.6                            | 0.4           | A                |
|                  | Through    | 4.2                          |               | A                | 4.2                            |               | A                |
|                  | Right Turn | 5.6                          |               | A                | 5.8                            |               | A                |
| Clergate Road    | Left Turn  | 5.6                          | 0.0           | A                | 5.6                            | 0.0           | A                |
|                  | Through    | 0.0                          |               | A                | 0.0                            |               | A                |
|                  | Right Turn | 5.5                          |               | A                | 5.5                            |               | A                |
| Pearce Lane West | Left Turn  | 5.6                          | 0.3           | A                | 5.6                            | 0.5           | A                |
|                  | Through    | 0.0                          |               | A                | 0.1                            |               | A                |
|                  | Right Turn | 5.5                          |               | A                | 5.5                            |               | A                |

The SIDRA analysis for the AM peak indicates the following:

- The intersection is expected to continue to operate with minimal queue lengths on all legs of the intersection;
- The overall average delay at the intersection increases by 0.8 seconds; and
- The intersection is expected to continue to operate with a good level of service.

The results of the SIDRA analysis for the evening peak hour for the intersection of Pearce Lane, Clergate Road and the site access are summarised in Table 14.

**Table 14: SIDRA Analysis Results Summary – PM Peak 2028**

| Movement         |            | Strategic Model Traffic 2028 |               |                  | Future Traffic Conditions 2028 |               |                  |
|------------------|------------|------------------------------|---------------|------------------|--------------------------------|---------------|------------------|
|                  |            | Average Delay (sec)          | 95% Queue (m) | Level of Service | Average Delay (sec)            | 95% Queue (m) | Level of Service |
| Site Access      | Left Turn  | 5.6                          | 0.1           | A                | 5.6                            | 0.3           | A                |
|                  | Through    | 4.3                          |               | A                | 4.4                            |               | A                |
|                  | Right Turn | 5.6                          |               | A                | 5.8                            |               | A                |
| Pearce Lane East | Left Turn  | 5.6                          | 0.1           | A                | 5.7                            | 0.1           | A                |
|                  | Through    | 4.2                          |               | A                | 4.4                            |               | A                |
|                  | Right Turn | 5.6                          |               | A                | 5.8                            |               | A                |
| Clergate Road    | Left Turn  | 5.6                          | 0.0           | A                | 5.6                            | 0.0           | A                |
|                  | Through    | 0.0                          |               | A                | 0.0                            |               | A                |
|                  | Right Turn | 5.5                          |               | A                | 5.5                            |               | A                |

|                  |            |     |     |   |     |     |   |
|------------------|------------|-----|-----|---|-----|-----|---|
| Pearce Lane West | Left Turn  | 5.6 | 0.4 | A | 5.7 | 0.9 | A |
|                  | Through    | 0.0 |     | A | 0.2 |     | A |
|                  | Right Turn | 5.5 |     | A | 5.6 |     | A |

The results of the SIDRA analysis for the PM peak are similar to the AM peak and indicate the following:

- The intersection is expected to continue to operate with minimal queue lengths on all legs of the intersection;
- The overall average delay at the intersection increases by 1.4 seconds; and
- The intersection is expected to continue to operate with a good level of service.

Overall, the increase in traffic generated by the subdivision is expected to have a negligible impact to the operation of the intersection of Pearce Lane, Clergate Road which is expected to continue to operate with a good level of service.

## 4.4 Railway Level Crossings

Amber has contacted John Holland's Operational Team who operate the railway line that runs along the western boundary of the site. Their response is provided below:

*'...there are no pathed trains through the location in the morning. The up direction XPT ex Dubbo is normally through Orange between 1700 and 1800. Freight services generally get through Orange after 1800. This might average one per day. So a total of two per day in the evening.'*

There are two level crossings that would be traversed by development traffic which includes the level crossing at the Clergate Road site access and the level crossing on Pearce Lane near the northern access.

Given the infrequent number of services along the railway line and the low traffic volumes at each of the level crossings, the interaction of site traffic with the level crossings is not expected to create any congestion or safety impacts.

## 4.5 Summary

The SIDRA analysis provided a review of the impacts of the site traffic on the surrounding road network for the year 2028 based on the traffic volumes provided within the Orange Strategic Traffic Model and assumed the site had been fully constructed. The analysis is summarised in Table 15.

Table 15: SIDRA Analysis Results Summary

| Intersection                              | AM Peak             |               |                  | PM Peak             |               |                  |
|-------------------------------------------|---------------------|---------------|------------------|---------------------|---------------|------------------|
|                                           | Average Delay (sec) | 95% Queue (m) | Level of Service | Average Delay (sec) | 95% Queue (m) | Level of Service |
| Leeds Parade / Northern Distributor Road  | 9.1                 | 39.4          | A                | 8.1                 | 20.5          | A                |
| Clergate Road / Northern Distributor Road | 220.4               | 921.8         | -                | 123.4               | 613.4         | -                |

|                                                             |      |      |   |      |      |   |
|-------------------------------------------------------------|------|------|---|------|------|---|
| Clergate Road / Farrell Road                                | 3.9  | 13.5 | - | 3.2  | 18.0 | - |
| Farrell Road / Telopea Way                                  | 13.0 | 14.5 | B | 14.7 | 26.1 | B |
| Telopea Way / Northern Distributor Road                     | 15.9 | 63.9 | B | 14.1 | 42.6 | B |
| Clergate Road / Site Access (middle access)                 | 4.5  | 2.7  | - | 4.5  | 2.4  | - |
| Pearce Lane / Clergate Road / Site Access (northern access) | 4.5  | 0.9  | - | 3.6  | 0.9  | - |

The analysis demonstrates that the surrounding road network is expected to continue to operate with good to satisfactory levels of service and acceptable queue lengths and delays with the exception of right turn movement from Clergate Road to Northern Distributor Road. However, it is noted that the right turn movement is already operating above capacity with the 2028 Orange Strategic Model traffic volumes. It is considered that this is due to the strategic model not accounting for the long delays and the associated redistribution of traffic on the road network as drivers choose a more suitable travel route.

Site traffic is able to avoid this right turn manoeuvre by either travelling eastbound on Northern Distributor Road via Leeds Parade and utilising the internal road network, or by utilising Farrell Road and Telopea Way. Each of these intersections has capacity to accommodate an increase in traffic generated by the redistribution of traffic.

Overall, it is concluded that site traffic will have a minor impact on the surrounding road network and the traffic volumes can be accommodated on the road network in a safe and efficient manner.

## 5. Access and Internal Road Layout

A master plan for the site has been prepared by Premise which has previously been shown within Figure 7 and identifies the locations of the proposed accesses. The proposed road layout is considered to provide suitable vehicle circulation within the site. It is recommended that the internal road layout and cross-sections be established in accordance with the Orange Development Control Plan and relevant design standards.

The internal and external intersections are recommended to be designed to meet the Safe Intersection Sight Distance specified within *Austroads Guide to Road Design - Part 4A: Unsignalised Intersections* to ensure the sight distance at each intersection allows the safe movement of vehicles on the road network.

The traffic assessment indicates that the new accesses via Clergate Road and Pearce Lane are expected to operate with minimal delays and queue lengths. Notwithstanding this, it is recommended that any future design for the accesses consider the provision of turn facilities in accordance with the relevant Austroads Guidelines.

It is recommended that the Clergate Road access design give careful consideration to the operation of the Western Railway Line and associated level crossing upgrade given the proximity of the railway line to the intersection with Clergate Road.

## 6. Car Parking

The applicant has advised that all car parking is to be provided in accordance with the Development Control Plan and relevant Council design documents. In addition, the carriageway width of the internal road network is expected to allow for two-way traffic and on-street parallel parking once fully constructed. The on-street spaces will be available to service the needs of visitors of future residents within the subdivision. Accordingly, the subdivision is not expected to generate any parking impacts and the parking demand can be readily accommodated internally within the site.

## 7. Alternative Transport Modes

It is recommended that as part of any future development of the site that TfNSW be contacted to determine whether there will be any future bus services provided within the site. The internal road widths and intersections will need to be designed to accommodate the relevant vehicle and provisions will need to be made to allowed for bus stop facilities.

It is also recommended that consideration be given to provide a shared path that connects with the existing path along Leeds Parade to provide a pedestrian / cyclist connection between the site and the Orange CBD.

## 8. Conclusions

Amber has reviewed the traffic and parking matters of the proposed amendment to the LEP which would reduce the minimum lot size on-site and increase the yield of the land from 450 lots to approximately 700 lots. The proposal also introduces an upgrade of a private level crossing to a public level crossing to provide access via Clergate Road and introduces a third access via Pearce Lane.

Based on the above assessment, it is concluded that:

- The development is expected to generate approximately 5,180 vehicle movements per day, and 546 and 497 vehicle movements (two-way total) in the morning and evening peak hours respectively;
- Site traffic will have a minor impact on the surrounding road network, with modest increases to queue lengths and delays, and the traffic volumes can be accommodated on the road network in a safe and efficient manner;
- The access locations allow traffic to be distributed on the road network and they are not expected to create any operational or safety issues at the nearby railway level crossings;
- Car parking for the individual lots is to be provided in accordance with the DCP, with on-street parking provided for visitors; and
- It is recommended that future consideration be given to providing sustainable transport facilities within the site that link with existing bus routes and shared paths.

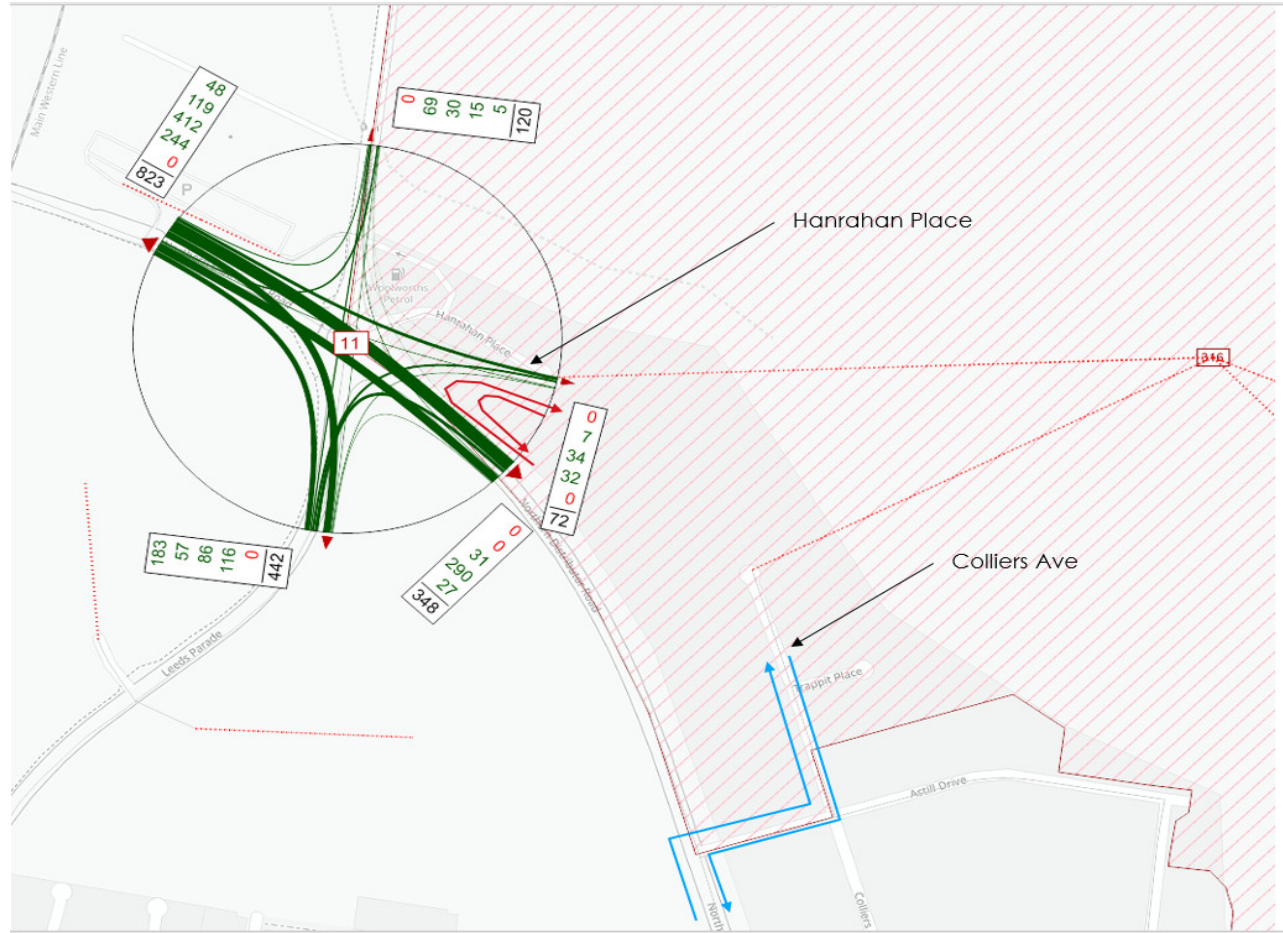
Therefore, it is concluded that the traffic and parking aspects of the proposed development are satisfactory, and the development will have a minimal impact on the surrounding environment.

## Appendix A

### Orange Traffic Model Outputs



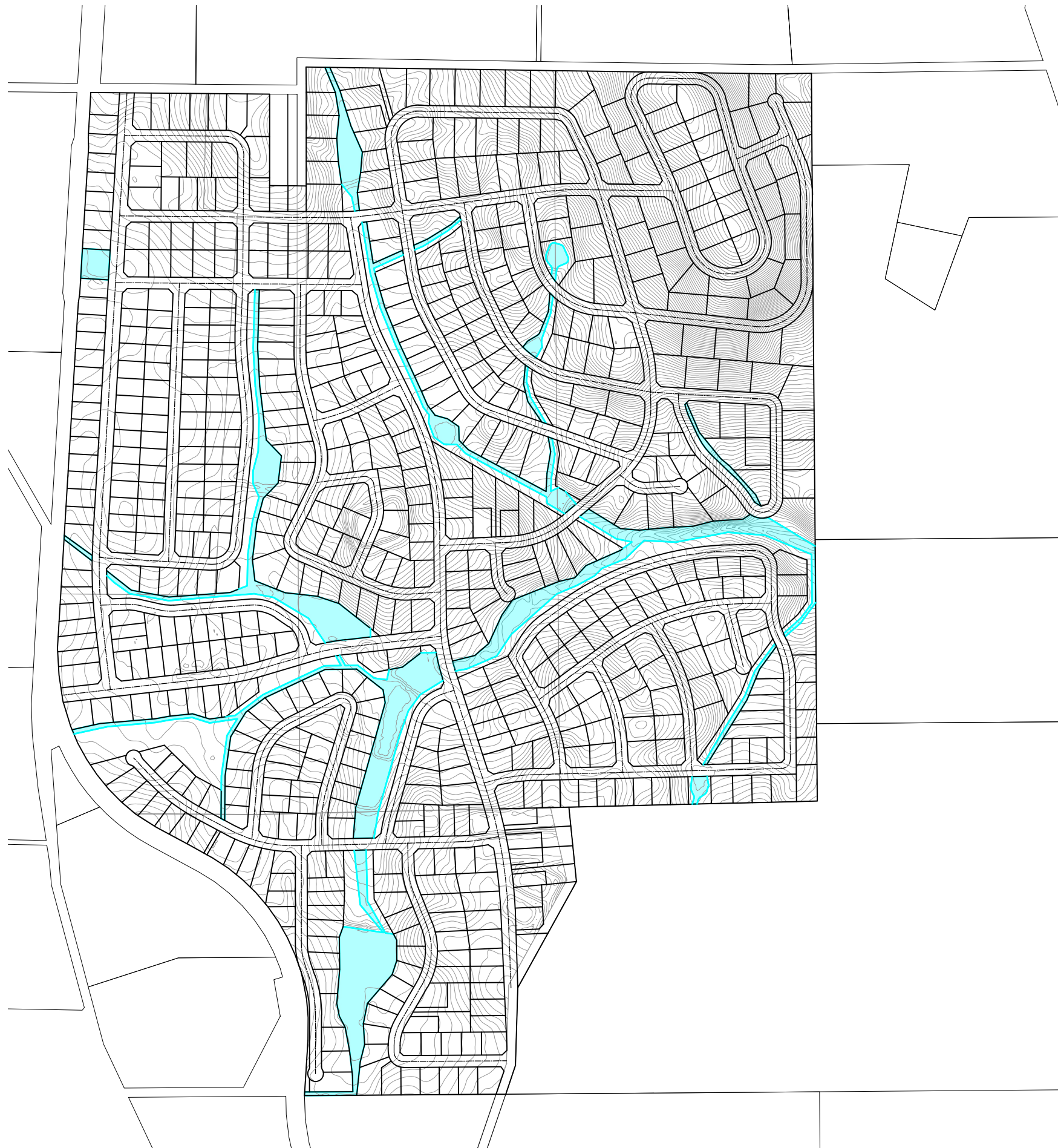
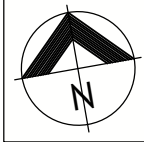
| Intersection                                           | Approach                   | Approach Movement | Movement | 2018 AM | 2018 PM | 2028 AM | 2028 PM | Comments                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------|----------------------------|-------------------|----------|---------|---------|---------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Leeds Parade / Northern Distributor                    | Leeds Parade               | NB                | NBL      | 113     | 199     | 183     | 232     | For TAZ 316 the trips coming form and going to south Northern Distributor Road (NDR) are loaded from Colliers Ave. As a results trips from south NDR to Hanrahan Place (and vice-a-versa) are zero. In other words, NWBR2 and WBL2 movements have zero volume. Hanrahan Place is another loading point of TAZ 316 trips. |
|                                                        |                            |                   | NBT      | 52      | 21      | 57      | 23      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | NBR      | 67      | 31      | 86      | 58      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | NBR2     | 91      | 20      | 116     | 22      |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Leeds Parade               | SB                | NBU      | 0       | 0       | 0       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SBL2     | 4       | 1       | 5       | 4       |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SBL      | 13      | 43      | 15      | 39      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SBT      | 27      | 46      | 30      | 65      |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Hanrahan Place             | WB                | SBR      | 64      | 153     | 69      | 161     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SBU      | 0       | 0       | 0       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | WBL2     | 0       | 0       | 0       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | WBL      | 13      | 34      | 32      | 48      |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Northern Distributor Road  | NWB               | WBT      | 19      | 63      | 34      | 73      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | WBR      | 4       | 3       | 7       | 4       |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | WBU      | 0       | 0       | 0       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | NWBL     | 24      | 64      | 27      | 55      |                                                                                                                                                                                                                                                                                                                          |
| Clergate Road / Northern Distributor                   | Northern Distributor Road  | NWB               | NWBT     | 240     | 361     | 290     | 404     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | NWBR     | 36      | 12      | 31      | 13      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | NWBR2    | 0       | 0       | 0       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | NWBU     | 0       | 0       | 0       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Northern Distributor Road  | SEB               | SEBL2    | 43      | 15      | 48      | 17      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SEBL     | 105     | 79      | 119     | 102     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SEBT     | 356     | 217     | 412     | 252     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SEBR     | 190     | 217     | 244     | 250     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SEBU     | 0       | 0       | 0       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Clergate Road              | SB                | SBL      | 262     | 173     | 301     | 220     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SBR      | 65      | 195     | 91      | 192     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | EBL      | 42      | 59      | 118     | 99      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | EBT      | 464     | 334     | 566     | 388     |                                                                                                                                                                                                                                                                                                                          |
| Clergate Road / Farrell Road                           | Northern Distributor Road  | EB                | WBT      | 252     | 536     | 311     | 598     | The trip attractions for the zone adjacent to Clergate road are very less in AM peak. Most of the traffic from the zone is getting loaded on south of Northern Distributor road (Anson street) instead from Clergate road. As a result NBL volume is zero at this intersection in AM Peak.                               |
|                                                        |                            |                   | WBR      | 184     | 240     | 266     | 273     |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Northern Distributor Road  | WB                | NBL      | 0       | 17      | 0       | 16      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | NBT      | 226     | 282     | 384     | 356     |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Clergate Road              | SB                | SBT      | 291     | 361     | 363     | 400     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SBR      | 17      | 61      | 22      | 149     |                                                                                                                                                                                                                                                                                                                          |
| Farrell Road / Telopea Way                             | Farrell Road               | EB                | EBL      | 151     | 39      | 214     | 36      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | EBR      | 36      | 6       | 29      | 11      |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Telopea Way                | NB                | NBL      | 92      | 258     | 139     | 315     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | NBR      | 135     | 144     | 165     | 117     |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Telopea Way                | SB                | SBL      | 22      | 38      | 29      | 45      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SBR      | 126     | 265     | 136     | 233     |                                                                                                                                                                                                                                                                                                                          |
| Telopea Way (Farrell Road) / Northern Distributor Road | Farrell Road               | WB                | WBL      | 168     | 71      | 153     | 116     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | WBR      | 16      | 34      | 20      | 42      |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Telopea Way (Farrell Road) | SB                | SBL      | 154     | 161     | 162     | 195     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SBR      | 139     | 176     | 127     | 155     |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Northern Distributor Road  | EB                | EBL      | 160     | 214     | 223     | 235     |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | EBT      | 341     | 238     | 547     | 325     |                                                                                                                                                                                                                                                                                                                          |
| Pearce Lane / Clergate Road                            | Northern Distributor Road  | WB                | WBT      | 230     | 490     | 307     | 593     | The OD demand for the TAZ connected through the SB approach of this intersection is very low (almost zero) as a results SB approach has zero/one volume.                                                                                                                                                                 |
|                                                        |                            |                   | WBR      | 67      | 188     | 81      | 198     |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Clergate Road              | SB                | SBL      | 0       | 0       | 0       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SBR      | 0       | 1       | 0       | 1       |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Pearce Lane                | EB                | EBL      | 2       | 0       | 2       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | EBT      | 5       | 11      | 6       | 13      |                                                                                                                                                                                                                                                                                                                          |
| Dawson Gates Road / Clergate Road                      | Pearce Lane                | WB                | WBT      | 12      | 3       | 15      | 4       | No growth predicted in TAZs on left side of the intersection and therefore NBL and EBR movements shows zero volume.                                                                                                                                                                                                      |
|                                                        |                            |                   | WBR      | 0       | 0       | 0       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Clergate Road              | NB                | NBL      | 0       | 0       | 0       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | NBT      | 3       | 10      | 3       | 12      |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Clergate Road              | SB                | SBT      | 10      | 2       | 12      | 3       |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SBR      | 2       | 2       | 4       | 2       |                                                                                                                                                                                                                                                                                                                          |
| Dawson Gates Road / Burrendong Way                     | Dawson Gates Road          | EB                | EBL      | 4       | 1       | 4       | 1       | Growth predicted in the TAZs on right side of this intersection is very low, as a results NBR movments has zero volume in PM peak and negligible in AM peak.                                                                                                                                                             |
|                                                        |                            |                   | EBR      | 0       | 0       | 0       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Burrendong Way             | NB                | NBT      | 47      | 79      | 116     | 73      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | NBR      | 2       | 0       | 8       | 0       |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Burrendong Way             | SB                | SBL      | 47      | 23      | 48      | 23      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | SBT      | 102     | 46      | 122     | 56      |                                                                                                                                                                                                                                                                                                                          |
|                                                        | Dawson Gates Road          | WB                | WBL      | 1       | 3       | 1       | 10      |                                                                                                                                                                                                                                                                                                                          |
|                                                        |                            |                   | WBR      | 14      | 37      | 39      | 32      |                                                                                                                                                                                                                                                                                                                          |



## Appendix B

### Masterplan





## ISSUED FOR REVIEW

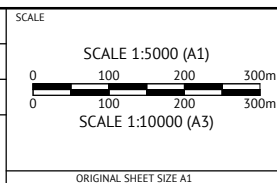
| DATE       | REV | DESCRIPTION           | REC | APP |
|------------|-----|-----------------------|-----|-----|
| 31/08/2021 | E   | LOT LAYOUT AMENDMENTS | JE  | MT  |
| 30/08/2021 | D   | LOT LAYOUT AMENDMENTS | JE  | MT  |
| 15/07/2021 | C   | LOT LAYOUT AMENDMENTS | JE  | DW  |
| 05/06/2021 | B   | LOT LAYOUT AMENDMENTS | JE  | MT  |
| 02/06/2021 | A   | ISSUED FOR REVIEW     | JE  | MT  |

REVISIONS



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|                                        |
|----------------------------------------|
| DESIGNED                               |
| CHECKED                                |
| PROJECT MANAGER<br><b>DAVID WALKER</b> |
| ENGINEERING CERTIFICATION              |



|             |                                        |  |              |
|-------------|----------------------------------------|--|--------------|
| CLIENT      | ROSEDALE GARDENS ESTATE PTY LTD        |  | JOB CODE     |
| PROJECT     | PROPOSED RURAL RESIDENTIAL SUBDIVISION |  | 221025_02    |
| LOCATION    | LEEDS PARADE, ORANGE                   |  | SHEET NUMBER |
| SHEET TITLE | PROPOSED LOT LAYOUT                    |  | REV          |
|             |                                        |  | TP01 E       |

## Appendix C

### Guidelines for Assessing Intersection Performance



The *RTA Guide to Traffic Generating Developments* (October 2002, Issue 2.2), details the assessment of intersections. The assessment of the level of service of an intersection is based on the evaluation of the following Measures of Effectiveness:

- Average delay (seconds/veh) (all forms of control)
- Delay to critical movement (seconds/veh) (all forms of control)
- Degree of saturation (traffic signals and roundabouts)
- Cycle length (traffic signals)

SIDRA was used to calculate the relevant intersection parameters. The SIDRA software is an advanced lane-based micro-analytical tool for design and evaluation of individual intersections and networks of intersections including modelling of separate movement classes (light vehicles, heavy vehicles, buses, cyclists, large trucks, light rail / trams and so on). It provides estimates of capacity, level of service and a wide range of performance measures, including; delay, queue length and stops for vehicles and pedestrians, as well as fuel consumption, pollution emissions and operating costs.

It can be used to analyse signalised intersections (fixed-time / pretimed and actuated), signalised and unsignalised pedestrian crossings, roundabouts (unsignalised), roundabouts with metering signals, fully-signalised roundabouts, two-way stop sign and give-way / yield sign control, all-way stop sign control, single point interchanges (signalised), freeway diamond interchanges (signalised, roundabout, sign control), diverging diamond interchanges and other alternative intersections and interchanges. It can also be used for uninterrupted traffic flow conditions and merge analysis.

The best indicator of the level of service at an intersection is the average delay experienced by vehicles at that intersection. For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections (with Stop and Give Way signs or operating under the T-junction rule) the critical movement for level of service assessment should be that with the highest average delay.

With traffic signals, delays per approach tend to be equalised, subject to any over-riding requirements of signal co-ordination as well as to variations within individual movements. With roundabouts and priority - control intersections, the critical criterion for assessment is the movement with the highest delay per vehicle. With this type of control the volume balance might be such that some movements suffer high levels of delay while other movements have minimal delay. An overall average delay for the intersection of 25 seconds might not be satisfactory if the average delay on one movement is 60 seconds.

The average delay for level of service E should be no more than 70 seconds. The accepted maximum practical cycle length for traffic signals under saturated conditions is 120 - 140 seconds. Under these conditions 120 seconds is near maximum for two and three phase intersections and 140 seconds near maximum for more complex phase designs. Drivers and pedestrians expect cycle lengths of these magnitudes and their inherent delays in peak hours. A cycle length of 140 seconds for an intersection which is almost saturated has an average vehicle delay of about 70 seconds, although this can vary. If the average vehicle delay is more than 70 seconds, the intersection is assumed to be at Level of Service F.

Table 16 sets out average delays for different levels of service. There is no consistent correlation between definitions of levels of service for road links as defined elsewhere in this section, and the ranges set out in Table 16. In assigning a level of service, the average delay to the motoring public needs to be considered, keeping in mind the location of the intersection. For example, drivers in inner urban areas of Sydney have a higher tolerance of delay than drivers in country areas. Table 16 provides a recommended baseline for assessment.

**Table 16: Level of Service Criteria for Intersections**

| Level of Service | Average Delay per Vehicle (sec/veh) | Traffic Signals, Roundabouts                                                                            | Give Way and Stop Signs                   |
|------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------|
| A                | Less than 14                        | Good operation                                                                                          | Good operation                            |
| B                | 15 – 28                             | Good with acceptable delays and spare capacity                                                          | Acceptable delays and spare capacity      |
| C                | 29 – 42                             | Satisfactory                                                                                            | Satisfactory, but accident study required |
| D                | 43 – 56                             | Operating near capacity                                                                                 | Near capacity and accident study required |
| E                | 57 - 70                             | At capacity<br>Signals, incidents will cause excessive delays<br>Roundabouts require other control mode | At capacity, require other control mode   |

The figures in Table 16 are intended as a guide only. Any particular assessment should take into account site-specific factors including maximum queue lengths (and their effect on lane blocking), the influence of nearby intersections and the sensitivity of the location to delays. In many situations, a comparison of the current and future average delay provides a better appreciation of the impact of a proposal, and not simply the change in the level of service.

## Appendix D

### SIDRA Results



## SITE LAYOUT

 **Site: 101 [Northern Distributor Road / Leeds Parade (Site Folder: General)]**

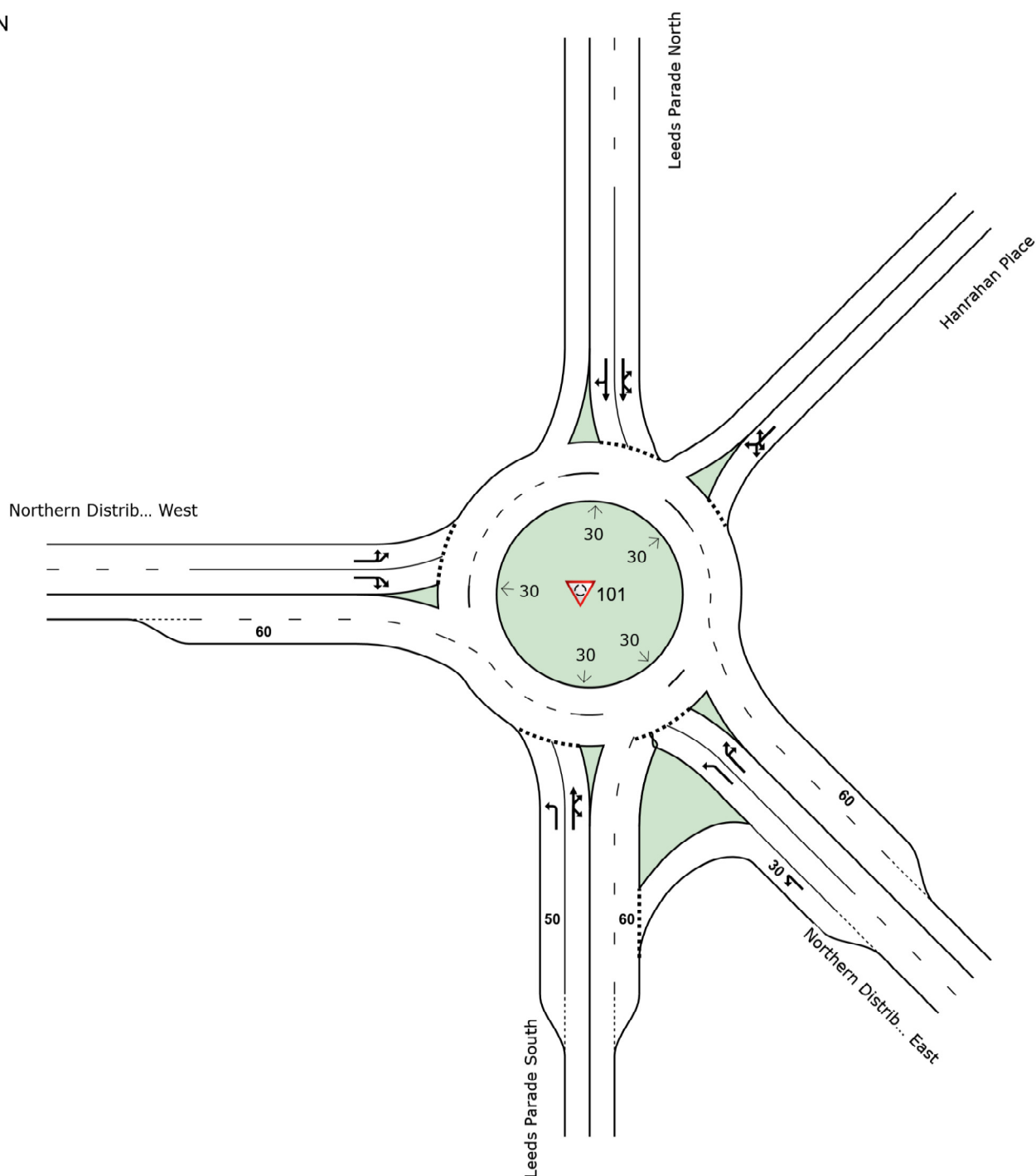
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AM Peak - Strategic Model Volumes 2028

Site Category: (None)

Roundabout

[Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.](#)



# MOVEMENT SUMMARY

 **Site: 101 [Northern Distributor Road / Leeds Parade (Site Folder: General)]**

AM Peak - Strategic Model Volumes 2028  
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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
| South: Leeds Parade South                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 1                                         | L2   | 183           | 5.0    | 193           | 5.0    | 0.200     | 5.6         | LOS A            | 0.9               | 6.4      | 0.49      | 0.63                | 0.49             | 54.4        |
| 2                                         | T1   | 57            | 5.0    | 60            | 5.0    | 0.239     | 4.9         | LOS A            | 1.1               | 8.1      | 0.48      | 0.69                | 0.48             | 53.0        |
| 3a                                        | R1   | 86            | 5.0    | 91            | 5.0    | 0.239     | 9.4         | LOS A            | 1.1               | 8.1      | 0.48      | 0.69                | 0.48             | 52.6        |
| 3b                                        | R3   | 116           | 5.0    | 122           | 5.0    | 0.239     | 11.8        | LOS B            | 1.1               | 8.1      | 0.48      | 0.69                | 0.48             | 54.0        |
| Approach                                  |      | 442           | 5.0    | 465           | 5.0    | 0.239     | 7.9         | LOS A            | 1.1               | 8.1      | 0.48      | 0.66                | 0.48             | 53.8        |
| SouthEast: Northern Distributor Road East |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 21b                                       | L3   | 27            | 5.0    | 28            | 5.0    | 0.019     | 4.7         | LOS A            | 0.1               | 0.6      | 0.36      | 0.50                | 0.36             | 54.5        |
| 21a                                       | L1   | 290           | 5.0    | 305           | 5.0    | 0.217     | 4.6         | LOS A            | 1.2               | 8.6      | 0.49      | 0.48                | 0.49             | 55.7        |
| 23a                                       | R1   | 31            | 5.0    | 33            | 5.0    | 0.034     | 9.5         | LOS A            | 0.1               | 1.1      | 0.46      | 0.64                | 0.46             | 52.6        |
| 23                                        | R2   | 1             | 5.0    | 1             | 5.0    | 0.034     | 10.7        | LOS B            | 0.1               | 1.1      | 0.46      | 0.64                | 0.46             | 53.3        |
| Approach                                  |      | 349           | 5.0    | 367           | 5.0    | 0.217     | 5.1         | LOS A            | 1.2               | 8.6      | 0.47      | 0.50                | 0.47             | 55.3        |
| NorthEast: Hanrahan Place                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 24                                        | L2   | 1             | 5.0    | 1             | 5.0    | 0.128     | 9.4         | LOS A            | 0.7               | 5.1      | 0.74      | 0.82                | 0.74             | 51.0        |
| 24a                                       | L1   | 32            | 5.0    | 34            | 5.0    | 0.128     | 8.5         | LOS A            | 0.7               | 5.1      | 0.74      | 0.82                | 0.74             | 52.0        |
| 26a                                       | R1   | 34            | 5.0    | 36            | 5.0    | 0.128     | 12.9        | LOS B            | 0.7               | 5.1      | 0.74      | 0.82                | 0.74             | 52.1        |
| 26b                                       | R3   | 7             | 5.0    | 7             | 5.0    | 0.128     | 15.3        | LOS B            | 0.7               | 5.1      | 0.74      | 0.82                | 0.74             | 53.4        |
| Approach                                  |      | 74            | 5.0    | 78            | 5.0    | 0.128     | 11.2        | LOS B            | 0.7               | 5.1      | 0.74      | 0.82                | 0.74             | 52.2        |
| North: Leeds Parade North                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7b                                        | L3   | 4             | 5.0    | 4             | 5.0    | 0.055     | 7.5         | LOS A            | 0.2               | 1.7      | 0.65      | 0.72                | 0.65             | 52.7        |
| 7a                                        | L1   | 15            | 5.0    | 16            | 5.0    | 0.055     | 8.1         | LOS A            | 0.2               | 1.7      | 0.65      | 0.72                | 0.65             | 54.6        |
| 8                                         | T1   | 30            | 5.0    | 32            | 5.0    | 0.108     | 6.9         | LOS A            | 0.5               | 3.8      | 0.65      | 0.75                | 0.65             | 53.5        |
| 9                                         | R2   | 69            | 5.0    | 73            | 5.0    | 0.108     | 11.9        | LOS B            | 0.5               | 3.8      | 0.66      | 0.78                | 0.66             | 52.7        |
| Approach                                  |      | 118           | 5.0    | 124           | 5.0    | 0.108     | 10.0        | LOS A            | 0.5               | 3.8      | 0.65      | 0.76                | 0.65             | 53.1        |
| West: Northern Distributor Road West      |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                                        | L2   | 17            | 5.0    | 18            | 5.0    | 0.190     | 5.9         | LOS A            | 0.9               | 6.4      | 0.49      | 0.57                | 0.49             | 54.4        |
| 10a                                       | L1   | 119           | 5.0    | 125           | 5.0    | 0.190     | 5.4         | LOS A            | 0.9               | 6.4      | 0.49      | 0.57                | 0.49             | 55.7        |
| 12a                                       | R1   | 412           | 5.0    | 434           | 5.0    | 0.565     | 9.9         | LOS A            | 4.2               | 30.9     | 0.61      | 0.72                | 0.62             | 51.8        |
| 12                                        | R2   | 244           | 5.0    | 257           | 5.0    | 0.565     | 11.1        | LOS B            | 4.2               | 30.9     | 0.61      | 0.72                | 0.62             | 52.4        |
| Approach                                  |      | 792           | 5.0    | 834           | 5.0    | 0.565     | 9.5         | LOS A            | 4.2               | 30.9     | 0.59      | 0.69                | 0.60             | 52.6        |
| All Vehicles                              |      | 1775          | 5.0    | 1868          | 5.0    | 0.565     | 8.3         | LOS A            | 4.2               | 30.9     | 0.55      | 0.66                | 0.55             | 53.4        |

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

Roundabout LOS Method: SIDRA Roundabout LOS.

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.



# MOVEMENT SUMMARY

 **Site: 101 [Northern Distributor Road / Leeds Parade (Site Folder: General)]**

AM Peak - Future Volumes 2028  
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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
| South: Leeds Parade South                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 1                                         | L2   | 187           | 5.0    | 197           | 5.0    | 0.222     | 6.2         | LOS A            | 1.0               | 7.0      | 0.53      | 0.68                | 0.53             | 54.2        |
| 2                                         | T1   | 90            | 5.0    | 95            | 5.0    | 0.282     | 5.2         | LOS A            | 1.3               | 9.6      | 0.53      | 0.71                | 0.53             | 53.2        |
| 3a                                        | R1   | 86            | 5.0    | 91            | 5.0    | 0.282     | 9.7         | LOS A            | 1.3               | 9.6      | 0.53      | 0.71                | 0.53             | 52.8        |
| 3b                                        | R3   | 116           | 5.0    | 122           | 5.0    | 0.282     | 12.1        | LOS B            | 1.3               | 9.6      | 0.53      | 0.71                | 0.53             | 54.1        |
| Approach                                  |      | 479           | 5.0    | 504           | 5.0    | 0.282     | 8.1         | LOS A            | 1.3               | 9.6      | 0.53      | 0.70                | 0.53             | 53.8        |
| SouthEast: Northern Distributor Road East |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 21b                                       | L3   | 27            | 5.0    | 28            | 5.0    | 0.020     | 5.3         | LOS A            | 0.1               | 0.7      | 0.43      | 0.53                | 0.43             | 54.3        |
| 21a                                       | L1   | 294           | 5.0    | 309           | 5.0    | 0.247     | 5.7         | LOS A            | 1.5               | 10.7     | 0.62      | 0.57                | 0.62             | 55.0        |
| 23a                                       | R1   | 41            | 5.0    | 43            | 5.0    | 0.049     | 10.4        | LOS B            | 0.2               | 1.7      | 0.57      | 0.70                | 0.57             | 52.2        |
| 23                                        | R2   | 1             | 5.0    | 1             | 5.0    | 0.049     | 11.6        | LOS B            | 0.2               | 1.7      | 0.57      | 0.70                | 0.57             | 52.9        |
| Approach                                  |      | 363           | 5.0    | 382           | 5.0    | 0.247     | 6.2         | LOS A            | 1.5               | 10.7     | 0.60      | 0.58                | 0.60             | 54.6        |
| NorthEast: Hanrahan Place                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 24                                        | L2   | 1             | 5.0    | 1             | 5.0    | 0.157     | 11.9        | LOS B            | 0.9               | 6.3      | 0.81      | 0.90                | 0.81             | 49.4        |
| 24a                                       | L1   | 32            | 5.0    | 34            | 5.0    | 0.157     | 11.2        | LOS B            | 0.9               | 6.3      | 0.81      | 0.90                | 0.81             | 50.3        |
| 26a                                       | R1   | 34            | 5.0    | 36            | 5.0    | 0.157     | 15.3        | LOS B            | 0.9               | 6.3      | 0.81      | 0.90                | 0.81             | 50.4        |
| 26b                                       | R3   | 7             | 5.0    | 7             | 5.0    | 0.157     | 17.7        | LOS B            | 0.9               | 6.3      | 0.81      | 0.90                | 0.81             | 51.7        |
| Approach                                  |      | 74            | 5.0    | 78            | 5.0    | 0.157     | 13.7        | LOS B            | 0.9               | 6.3      | 0.81      | 0.90                | 0.81             | 50.5        |
| North: Leeds Parade North                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7b                                        | L3   | 4             | 5.0    | 4             | 5.0    | 0.185     | 8.0         | LOS A            | 0.8               | 6.1      | 0.70      | 0.80                | 0.70             | 52.3        |
| 7a                                        | L1   | 54            | 5.0    | 57            | 5.0    | 0.185     | 8.8         | LOS A            | 0.8               | 6.1      | 0.70      | 0.80                | 0.70             | 54.3        |
| 8                                         | T1   | 161           | 5.0    | 169           | 5.0    | 0.362     | 7.4         | LOS A            | 2.0               | 14.9     | 0.74      | 0.82                | 0.76             | 53.1        |
| 9                                         | R2   | 161           | 5.0    | 169           | 5.0    | 0.362     | 12.7        | LOS B            | 2.0               | 14.9     | 0.76      | 0.83                | 0.78             | 52.8        |
| Approach                                  |      | 380           | 5.0    | 400           | 5.0    | 0.362     | 9.8         | LOS A            | 2.0               | 14.9     | 0.74      | 0.82                | 0.76             | 53.2        |
| West: Northern Distributor Road West      |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                                        | L2   | 40            | 5.0    | 42            | 5.0    | 0.231     | 6.2         | LOS A            | 1.1               | 8.1      | 0.53      | 0.62                | 0.53             | 54.2        |
| 10a                                       | L1   | 119           | 5.0    | 125           | 5.0    | 0.231     | 5.8         | LOS A            | 1.1               | 8.1      | 0.53      | 0.62                | 0.53             | 55.5        |
| 12a                                       | R1   | 428           | 5.0    | 451           | 5.0    | 0.615     | 10.8        | LOS B            | 5.4               | 39.4     | 0.69      | 0.78                | 0.75             | 51.5        |
| 12                                        | R2   | 260           | 5.0    | 274           | 5.0    | 0.615     | 12.0        | LOS B            | 5.4               | 39.4     | 0.69      | 0.78                | 0.75             | 52.2        |
| Approach                                  |      | 847           | 5.0    | 892           | 5.0    | 0.615     | 10.2        | LOS B            | 5.4               | 39.4     | 0.66      | 0.75                | 0.71             | 52.4        |
| All Vehicles                              |      | 2143          | 5.0    | 2256          | 5.0    | 0.615     | 9.1         | LOS A            | 5.4               | 39.4     | 0.64      | 0.73                | 0.66             | 53.1        |

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

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

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# MOVEMENT SUMMARY

 **Site: 101 [Northern Distributor Road / Leeds Parade (Site Folder: General)]**

PM Peak - Strategic Model Volumes 2028  
Site Category: (None)  
Roundabout

| Vehicle Movement Performance              |      |                                          |     |                                         |     |                      |                        |                  |                                             |      |           |                     |                  |                         |
|-------------------------------------------|------|------------------------------------------|-----|-----------------------------------------|-----|----------------------|------------------------|------------------|---------------------------------------------|------|-----------|---------------------|------------------|-------------------------|
| Mov ID                                    | Turn | INPUT VOLUMES<br>[ Total HV ]<br>veh/h % |     | DEMAND FLOWS<br>[ Total HV ]<br>veh/h % |     | Deg. Satn<br><br>v/c | Aver. Delay<br><br>sec | Level of Service | 95% BACK OF QUEUE<br>[ Veh. Dist ]<br>veh m |      | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed<br><br>km/h |
| South: Leeds Parade South                 |      |                                          |     |                                         |     |                      |                        |                  |                                             |      |           |                     |                  |                         |
| 1                                         | L2   | 232                                      | 5.0 | 244                                     | 5.0 | 0.239                | 6.3                    | LOS A            | 1.1                                         | 8.2  | 0.57      | 0.66                | 0.57             | 54.1                    |
| 2                                         | T1   | 23                                       | 5.0 | 24                                      | 5.0 | 0.143                | 6.1                    | LOS A            | 0.6                                         | 4.3  | 0.57      | 0.76                | 0.57             | 53.0                    |
| 3a                                        | R1   | 58                                       | 5.0 | 61                                      | 5.0 | 0.143                | 10.6                   | LOS B            | 0.6                                         | 4.3  | 0.57      | 0.76                | 0.57             | 52.6                    |
| 3b                                        | R3   | 22                                       | 5.0 | 23                                      | 5.0 | 0.143                | 13.0                   | LOS B            | 0.6                                         | 4.3  | 0.57      | 0.76                | 0.57             | 53.9                    |
| Approach                                  |      | 335                                      | 5.0 | 353                                     | 5.0 | 0.239                | 7.5                    | LOS A            | 1.1                                         | 8.2  | 0.57      | 0.69                | 0.57             | 53.7                    |
| SouthEast: Northern Distributor Road East |      |                                          |     |                                         |     |                      |                        |                  |                                             |      |           |                     |                  |                         |
| 21b                                       | L3   | 55                                       | 5.0 | 58                                      | 5.0 | 0.039                | 4.9                    | LOS A            | 0.2                                         | 1.2  | 0.36      | 0.53                | 0.36             | 54.5                    |
| 21a                                       | L1   | 404                                      | 5.0 | 425                                     | 5.0 | 0.322                | 5.9                    | LOS A            | 1.9                                         | 13.8 | 0.60      | 0.57                | 0.60             | 55.1                    |
| 23a                                       | R1   | 13                                       | 5.0 | 14                                      | 5.0 | 0.015                | 10.1                   | LOS B            | 0.1                                         | 0.5  | 0.52      | 0.64                | 0.52             | 52.4                    |
| 23                                        | R2   | 1                                        | 5.0 | 1                                       | 5.0 | 0.015                | 11.3                   | LOS B            | 0.1                                         | 0.5  | 0.52      | 0.64                | 0.52             | 53.0                    |
| Approach                                  |      | 473                                      | 5.0 | 498                                     | 5.0 | 0.322                | 5.9                    | LOS A            | 1.9                                         | 13.8 | 0.57      | 0.57                | 0.57             | 55.0                    |
| NorthEast: Hanrahan Place                 |      |                                          |     |                                         |     |                      |                        |                  |                                             |      |           |                     |                  |                         |
| 24                                        | L2   | 1                                        | 5.0 | 1                                       | 5.0 | 0.178                | 7.7                    | LOS A            | 0.8                                         | 6.2  | 0.64      | 0.79                | 0.64             | 51.7                    |
| 24a                                       | L1   | 48                                       | 5.0 | 51                                      | 5.0 | 0.178                | 7.5                    | LOS A            | 0.8                                         | 6.2  | 0.64      | 0.79                | 0.64             | 52.7                    |
| 26a                                       | R1   | 73                                       | 5.0 | 77                                      | 5.0 | 0.178                | 11.8                   | LOS B            | 0.8                                         | 6.2  | 0.64      | 0.79                | 0.64             | 52.8                    |
| 26b                                       | R3   | 4                                        | 5.0 | 4                                       | 5.0 | 0.178                | 14.2                   | LOS B            | 0.8                                         | 6.2  | 0.64      | 0.79                | 0.64             | 54.1                    |
| Approach                                  |      | 126                                      | 5.0 | 133                                     | 5.0 | 0.178                | 10.2                   | LOS B            | 0.8                                         | 6.2  | 0.64      | 0.79                | 0.64             | 52.8                    |
| North: Leeds Parade North                 |      |                                          |     |                                         |     |                      |                        |                  |                                             |      |           |                     |                  |                         |
| 7b                                        | L3   | 5                                        | 5.0 | 5                                       | 5.0 | 0.104                | 6.7                    | LOS A            | 0.4                                         | 3.1  | 0.56      | 0.66                | 0.56             | 53.1                    |
| 7a                                        | L1   | 39                                       | 5.0 | 41                                      | 5.0 | 0.104                | 6.7                    | LOS A            | 0.4                                         | 3.1  | 0.56      | 0.66                | 0.56             | 55.1                    |
| 8                                         | T1   | 65                                       | 5.0 | 68                                      | 5.0 | 0.204                | 6.3                    | LOS A            | 0.9                                         | 6.9  | 0.56      | 0.71                | 0.56             | 53.9                    |
| 9                                         | R2   | 161                                      | 5.0 | 169                                     | 5.0 | 0.204                | 11.3                   | LOS B            | 0.9                                         | 6.9  | 0.56      | 0.75                | 0.56             | 53.0                    |
| Approach                                  |      | 270                                      | 5.0 | 284                                     | 5.0 | 0.204                | 9.4                    | LOS A            | 0.9                                         | 6.9  | 0.56      | 0.73                | 0.56             | 53.5                    |
| West: Northern Distributor Road West      |      |                                          |     |                                         |     |                      |                        |                  |                                             |      |           |                     |                  |                         |
| 10                                        | L2   | 48                                       | 5.0 | 51                                      | 5.0 | 0.167                | 4.5                    | LOS A            | 0.8                                         | 5.7  | 0.31      | 0.44                | 0.31             | 55.2                    |
| 10a                                       | L1   | 102                                      | 5.0 | 107                                     | 5.0 | 0.167                | 4.0                    | LOS A            | 0.8                                         | 5.7  | 0.31      | 0.44                | 0.31             | 56.5                    |
| 12a                                       | R1   | 252                                      | 5.0 | 265                                     | 5.0 | 0.373                | 8.6                    | LOS A            | 2.3                                         | 16.9 | 0.33      | 0.60                | 0.33             | 52.7                    |
| 12                                        | R2   | 250                                      | 5.0 | 263                                     | 5.0 | 0.373                | 9.8                    | LOS A            | 2.3                                         | 16.9 | 0.33      | 0.60                | 0.33             | 53.3                    |
| Approach                                  |      | 652                                      | 5.0 | 686                                     | 5.0 | 0.373                | 8.0                    | LOS A            | 2.3                                         | 16.9 | 0.33      | 0.57                | 0.33             | 53.7                    |
| All Vehicles                              |      | 1856                                     | 5.0 | 1954                                    | 5.0 | 0.373                | 7.7                    | LOS A            | 2.3                                         | 16.9 | 0.49      | 0.63                | 0.49             | 53.9                    |

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

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

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# MOVEMENT SUMMARY

 **Site: 101 [Northern Distributor Road / Leeds Parade (Site Folder: General)]**

PM Peak - Future Volumes 2028  
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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
| South: Leeds Parade South                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 1                                         | L2   | 245           | 5.0    | 258           | 5.0    | 0.259     | 6.7         | LOS A            | 1.2               | 8.9      | 0.60      | 0.68                | 0.60             | 54.0        |
| 2                                         | T1   | 127           | 5.0    | 134           | 5.0    | 0.265     | 6.2         | LOS A            | 1.2               | 8.7      | 0.61      | 0.71                | 0.61             | 53.9        |
| 3a                                        | R1   | 58            | 5.0    | 61            | 5.0    | 0.265     | 10.7        | LOS B            | 1.2               | 8.7      | 0.61      | 0.71                | 0.61             | 53.5        |
| 3b                                        | R3   | 22            | 5.0    | 23            | 5.0    | 0.265     | 13.0        | LOS B            | 1.2               | 8.7      | 0.61      | 0.71                | 0.61             | 54.9        |
| Approach                                  |      | 452           | 5.0    | 476           | 5.0    | 0.265     | 7.4         | LOS A            | 1.2               | 8.9      | 0.61      | 0.69                | 0.61             | 54.0        |
| SouthEast: Northern Distributor Road East |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 21b                                       | L3   | 55            | 5.0    | 58            | 5.0    | 0.040     | 5.1         | LOS A            | 0.2               | 1.3      | 0.40      | 0.54                | 0.40             | 54.4        |
| 21a                                       | L1   | 417           | 5.0    | 439           | 5.0    | 0.349     | 6.5         | LOS A            | 2.2               | 15.9     | 0.66      | 0.61                | 0.66             | 54.9        |
| 23a                                       | R1   | 44            | 5.0    | 46            | 5.0    | 0.052     | 10.5        | LOS B            | 0.2               | 1.8      | 0.57      | 0.70                | 0.57             | 52.2        |
| 23                                        | R2   | 1             | 5.0    | 1             | 5.0    | 0.052     | 11.7        | LOS B            | 0.2               | 1.8      | 0.57      | 0.70                | 0.57             | 52.9        |
| Approach                                  |      | 517           | 5.0    | 544           | 5.0    | 0.349     | 6.7         | LOS A            | 2.2               | 15.9     | 0.62      | 0.61                | 0.62             | 54.6        |
| NorthEast: Hanrahan Place                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 24                                        | L2   | 1             | 5.0    | 1             | 5.0    | 0.194     | 8.3         | LOS A            | 1.0               | 7.0      | 0.69      | 0.83                | 0.69             | 51.3        |
| 24a                                       | L1   | 48            | 5.0    | 51            | 5.0    | 0.194     | 8.2         | LOS A            | 1.0               | 7.0      | 0.69      | 0.83                | 0.69             | 52.3        |
| 26a                                       | R1   | 73            | 5.0    | 77            | 5.0    | 0.194     | 12.4        | LOS B            | 1.0               | 7.0      | 0.69      | 0.83                | 0.69             | 52.4        |
| 26b                                       | R3   | 4             | 5.0    | 4             | 5.0    | 0.194     | 14.8        | LOS B            | 1.0               | 7.0      | 0.69      | 0.83                | 0.69             | 53.7        |
| Approach                                  |      | 126           | 5.0    | 133           | 5.0    | 0.194     | 10.8        | LOS B            | 1.0               | 7.0      | 0.69      | 0.83                | 0.69             | 52.4        |
| North: Leeds Parade North                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7b                                        | L3   | 5             | 5.0    | 5             | 5.0    | 0.143     | 6.8         | LOS A            | 0.6               | 4.5      | 0.59      | 0.68                | 0.59             | 52.9        |
| 7a                                        | L1   | 52            | 5.0    | 55            | 5.0    | 0.143     | 6.8         | LOS A            | 0.6               | 4.5      | 0.59      | 0.68                | 0.59             | 54.9        |
| 8                                         | T1   | 110           | 5.0    | 116           | 5.0    | 0.280     | 6.4         | LOS A            | 1.4               | 10.4     | 0.61      | 0.73                | 0.61             | 53.7        |
| 9                                         | R2   | 192           | 5.0    | 202           | 5.0    | 0.280     | 11.5        | LOS B            | 1.4               | 10.4     | 0.62      | 0.76                | 0.62             | 53.1        |
| Approach                                  |      | 359           | 5.0    | 378           | 5.0    | 0.280     | 9.2         | LOS A            | 1.4               | 10.4     | 0.61      | 0.74                | 0.61             | 53.5        |
| West: Northern Distributor Road West      |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                                        | L2   | 121           | 5.0    | 127           | 5.0    | 0.248     | 5.2         | LOS A            | 1.3               | 9.3      | 0.46      | 0.55                | 0.46             | 54.5        |
| 10a                                       | L1   | 102           | 5.0    | 107           | 5.0    | 0.248     | 4.7         | LOS A            | 1.3               | 9.3      | 0.46      | 0.55                | 0.46             | 55.8        |
| 12a                                       | R1   | 257           | 5.0    | 271           | 5.0    | 0.431     | 9.3         | LOS A            | 2.8               | 20.5     | 0.51      | 0.67                | 0.51             | 52.1        |
| 12                                        | R2   | 255           | 5.0    | 268           | 5.0    | 0.431     | 10.5        | LOS B            | 2.8               | 20.5     | 0.51      | 0.67                | 0.51             | 52.7        |
| Approach                                  |      | 735           | 5.0    | 774           | 5.0    | 0.431     | 8.4         | LOS A            | 2.8               | 20.5     | 0.50      | 0.64                | 0.50             | 53.2        |
| All Vehicles                              |      | 2189          | 5.0    | 2304          | 5.0    | 0.431     | 8.1         | LOS A            | 2.8               | 20.5     | 0.58      | 0.67                | 0.58             | 53.7        |

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

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

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## SITE LAYOUT

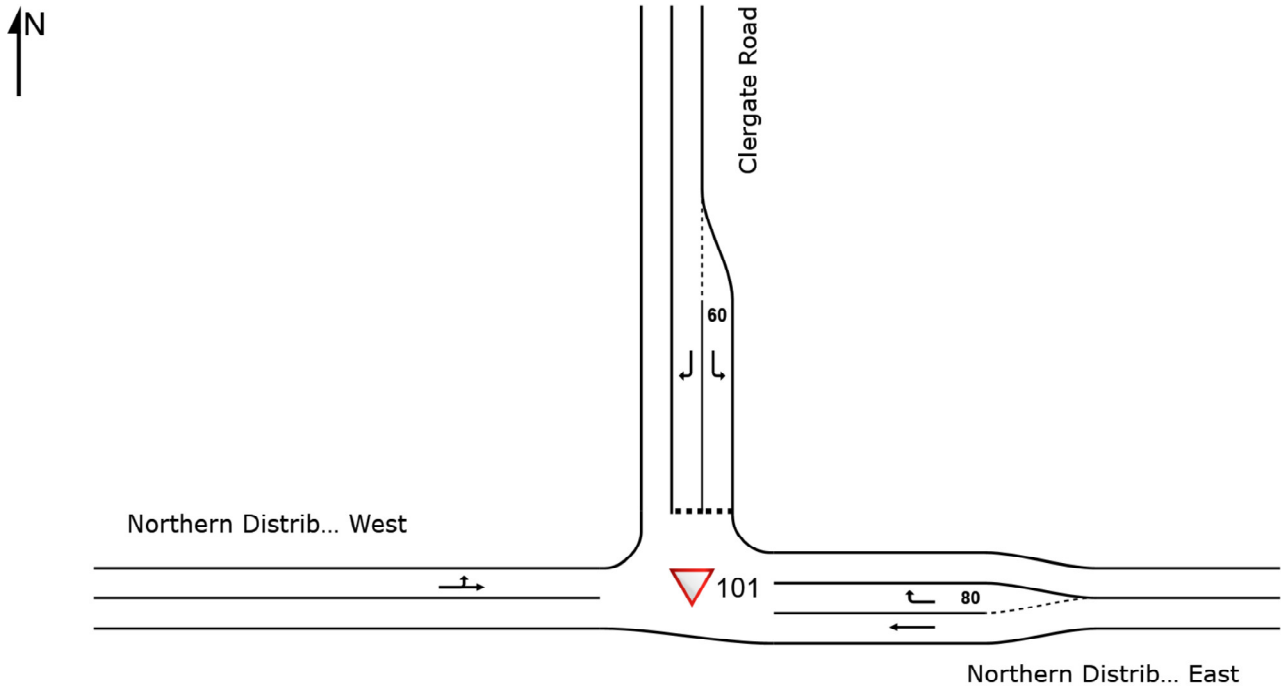
▽ Site: 101 [Northern Distributor Road / Clergate Road (Site Folder: General)]

PM Peak - Future Volumes 2028

Site Category: (None)

Give-Way (Two-Way)

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



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# MOVEMENT SUMMARY

Site: 101 [Northern Distributor Road / Clergate Road (Site Folder: General)]

AM Peak - Strategic Model Volumes 2028  
Site Category: (None)  
Give-Way (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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
| East: Northern Distributor Road East |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 5                                    | T1   | 311           | 3.0    | 327           | 3.0    | 0.172     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00                | 0.00             | 59.9        |
| 6                                    | R2   | 266           | 3.0    | 280           | 3.0    | 0.368     | 10.9        | LOS B            | 1.9               | 13.9     | 0.68      | 0.93                | 0.88             | 49.4        |
| Approach                             |      | 577           | 3.0    | 607           | 3.0    | 0.368     | 5.0         | NA               | 1.9               | 13.9     | 0.31      | 0.43                | 0.40             | 54.6        |
| North: Clergate Road                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7                                    | L2   | 91            | 3.0    | 96            | 3.0    | 0.113     | 8.4         | LOS A            | 0.4               | 3.0      | 0.54      | 0.76                | 0.54             | 51.4        |
| 9                                    | R2   | 301           | 3.0    | 317           | 3.0    | 1.754     | 710.9       | LOS F            | 92.6              | 664.5    | 1.00      | 5.11                | 17.35            | 4.6         |
| Approach                             |      | 392           | 3.0    | 413           | 3.0    | 1.754     | 547.8       | LOS F            | 92.6              | 664.5    | 0.89      | 4.10                | 13.45            | 5.9         |
| West: Northern Distributor Road West |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                                   | L2   | 118           | 3.0    | 124           | 3.0    | 0.380     | 5.7         | LOS A            | 0.0               | 0.0      | 0.00      | 0.10                | 0.00             | 57.1        |
| 11                                   | T1   | 566           | 3.0    | 596           | 3.0    | 0.380     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.10                | 0.00             | 58.8        |
| Approach                             |      | 684           | 3.0    | 720           | 3.0    | 0.380     | 1.1         | NA               | 0.0               | 0.0      | 0.00      | 0.10                | 0.00             | 58.5        |
| All Vehicles                         |      | 1653          | 3.0    | 1740          | 3.0    | 1.754     | 132.1       | NA               | 92.6              | 664.5    | 0.32      | 1.16                | 3.33             | 18.6        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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# MOVEMENT SUMMARY

Site: 101 [Northern Distributor Road / Clergate Road (Site Folder: General)]

AM Peak - Future Volumes 2028  
Site Category: (None)  
Give-Way (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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
|                                      |      |               |        |               |        | v/c       | sec         |                  |                   |          |           |                     |                  | km/h        |
| East: Northern Distributor Road East |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 5                                    | T1   | 403           | 3.0    | 424           | 3.0    | 0.223     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00                | 0.00             | 59.9        |
| 6                                    | R2   | 274           | 3.0    | 288           | 3.0    | 0.403     | 11.6        | LOS B            | 2.2               | 15.5     | 0.71      | 0.96                | 0.97             | 48.9        |
| Approach                             |      | 677           | 3.0    | 713           | 3.0    | 0.403     | 4.7         | NA               | 2.2               | 15.5     | 0.29      | 0.39                | 0.39             | 54.9        |
| North: Clergate Road                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7                                    | L2   | 123           | 3.0    | 129           | 3.0    | 0.158     | 8.7         | LOS A            | 0.6               | 4.3      | 0.56      | 0.79                | 0.56             | 51.2        |
| 9                                    | R2   | 315           | 3.0    | 332           | 3.0    | 2.374     | 1266.5      | LOS F            | 128.4             | 921.8    | 1.00      | 5.38                | 18.97            | 2.7         |
| Approach                             |      | 438           | 3.0    | 461           | 3.0    | 2.374     | 913.3       | LOS F            | 128.4             | 921.8    | 0.88      | 4.09                | 13.80            | 3.7         |
| West: Northern Distributor Road West |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                                   | L2   | 129           | 3.0    | 136           | 3.0    | 0.399     | 5.7         | LOS A            | 0.0               | 0.0      | 0.00      | 0.11                | 0.00             | 57.1        |
| 11                                   | T1   | 589           | 3.0    | 620           | 3.0    | 0.399     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.11                | 0.00             | 58.8        |
| Approach                             |      | 718           | 3.0    | 756           | 3.0    | 0.399     | 1.1         | NA               | 0.0               | 0.0      | 0.00      | 0.11                | 0.00             | 58.5        |
| All Vehicles                         |      | 1833          | 3.0    | 1929          | 3.0    | 2.374     | 220.4       | NA               | 128.4             | 921.8    | 0.32      | 1.16                | 3.44             | 12.8        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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## MOVEMENT SUMMARY

Site: 101 [Northern Distributor Road / Clergate Road (Site Folder: General)]

PM Peak - Strategic Model Volumes 2028  
Site Category: (None)  
Give-Way (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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
|                                      |      |               |        |               |        | v/c       | sec         |                  |                   |          |           |                     |                  | km/h        |
| East: Northern Distributor Road East |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 5                                    | T1   | 598           | 3.0    | 629           | 3.0    | 0.331     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00                | 0.00             | 59.8        |
| 6                                    | R2   | 273           | 3.0    | 287           | 3.0    | 0.279     | 8.2         | LOS A            | 1.3               | 9.6      | 0.58      | 0.78                | 0.60             | 51.3        |
| Approach                             |      | 871           | 3.0    | 917           | 3.0    | 0.331     | 2.6         | NA               | 1.3               | 9.6      | 0.18      | 0.24                | 0.19             | 56.8        |
| North: Clergate Road                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7                                    | L2   | 192           | 3.0    | 202           | 3.0    | 0.187     | 7.3         | LOS A            | 0.8               | 5.6      | 0.47      | 0.69                | 0.47             | 52.0        |
| 9                                    | R2   | 220           | 3.0    | 232           | 3.0    | 1.540     | 529.7       | LOS F            | 57.3              | 411.5    | 1.00      | 3.93                | 12.94            | 6.0         |
| Approach                             |      | 412           | 3.0    | 434           | 3.0    | 1.540     | 286.3       | LOS F            | 57.3              | 411.5    | 0.75      | 2.42                | 7.13             | 10.3        |
| West: Northern Distributor Road West |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                                   | L2   | 99            | 3.0    | 104           | 3.0    | 0.271     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.12                | 0.00             | 57.1        |
| 11                                   | T1   | 388           | 3.0    | 408           | 3.0    | 0.271     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.12                | 0.00             | 58.8        |
| Approach                             |      | 487           | 3.0    | 513           | 3.0    | 0.271     | 1.2         | NA               | 0.0               | 0.0      | 0.00      | 0.12                | 0.00             | 58.4        |
| All Vehicles                         |      | 1770          | 3.0    | 1863          | 3.0    | 1.540     | 68.3        | NA               | 57.3              | 411.5    | 0.26      | 0.72                | 1.75             | 27.8        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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## MOVEMENT SUMMARY

Site: 101 [Northern Distributor Road / Clergate Road (Site Folder: General)]

PM Peak - Future Volumes 2028

Site Category: (None)

Give-Way (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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
| East: Northern Distributor Road East |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 5                                    | T1   | 629           | 3.0    | 662           | 3.0    | 0.349     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00                | 0.00             | 59.8        |
| 6                                    | R2   | 298           | 3.0    | 314           | 3.0    | 0.356     | 9.7         | LOS A            | 1.9               | 13.9     | 0.65      | 0.91                | 0.80             | 50.2        |
| Approach                             |      | 927           | 3.0    | 976           | 3.0    | 0.356     | 3.2         | NA               | 1.9               | 13.9     | 0.21      | 0.29                | 0.26             | 56.3        |
| North: Clergate Road                 |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7                                    | L2   | 203           | 3.0    | 214           | 3.0    | 0.217     | 7.9         | LOS A            | 0.9               | 6.4      | 0.52      | 0.74                | 0.52             | 51.8        |
| 9                                    | R2   | 225           | 3.0    | 237           | 3.0    | 2.116     | 1044.7      | LOS F            | 85.4              | 613.4    | 1.00      | 4.31                | 14.89            | 3.2         |
| Approach                             |      | 428           | 3.0    | 451           | 3.0    | 2.116     | 552.9       | LOS F            | 85.4              | 613.4    | 0.77      | 2.62                | 8.08             | 5.8         |
| West: Northern Distributor Road West |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                                   | L2   | 133           | 3.0    | 140           | 3.0    | 0.331     | 5.7         | LOS A            | 0.0               | 0.0      | 0.00      | 0.13                | 0.00             | 56.9        |
| 11                                   | T1   | 461           | 3.0    | 485           | 3.0    | 0.331     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.13                | 0.00             | 58.6        |
| Approach                             |      | 594           | 3.0    | 625           | 3.0    | 0.331     | 1.4         | NA               | 0.0               | 0.0      | 0.00      | 0.13                | 0.00             | 58.2        |
| All Vehicles                         |      | 1949          | 3.0    | 2052          | 3.0    | 2.116     | 123.4       | NA               | 85.4              | 613.4    | 0.27      | 0.75                | 1.90             | 19.5        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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## SITE LAYOUT

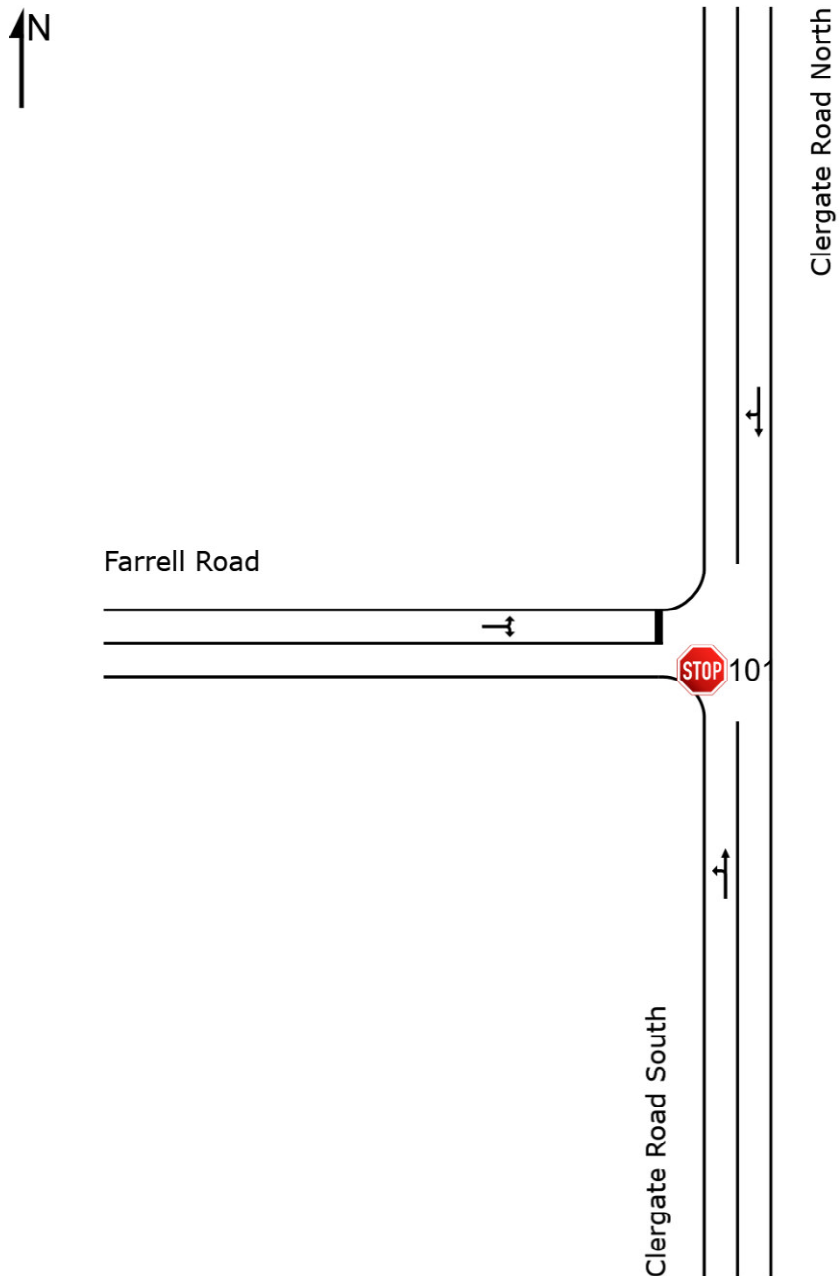
 **Site: 101 [Clergate Road / Farrell Road (Site Folder: General)]**

AM Peak - Strategic Model Volumes 2028

Site Category: (None)

Stop (Two-Way)

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



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# MOVEMENT SUMMARY

 **Site: 101 [Clergate Road / Farrell Road (Site Folder: General)]**

AM Peak - Strategic Model Volumes 2028  
 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 % | [ Total veh/h | HV % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
|                              |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| South: Clergate Road South   |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| 1                            | L2   | 30            | 3.0  | 32            | 3.0  | 0.229     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.04                | 0.00             | 57.7        |
| 2                            | T1   | 384           | 3.0  | 404           | 3.0  | 0.229     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.04                | 0.00             | 59.5        |
| Approach                     |      | 414           | 3.0  | 436           | 3.0  | 0.229     | 0.5         | NA               | 0.0               | 0.0      | 0.00      | 0.04                | 0.00             | 59.4        |
|                              |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| North: Clergate Road North   |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| 8                            | T1   | 363           | 3.0  | 382           | 3.0  | 0.221     | 0.2         | LOS A            | 0.3               | 1.9      | 0.08      | 0.04                | 0.08             | 59.3        |
| 9                            | R2   | 22            | 3.0  | 23            | 3.0  | 0.221     | 7.7         | LOS A            | 0.3               | 1.9      | 0.08      | 0.04                | 0.08             | 57.0        |
| Approach                     |      | 385           | 3.0  | 405           | 3.0  | 0.221     | 0.6         | NA               | 0.3               | 1.9      | 0.08      | 0.04                | 0.08             | 59.2        |
|                              |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| West: Farrell Road           |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| 10                           | L2   | 214           | 3.0  | 225           | 3.0  | 0.320     | 10.9        | LOS B            | 1.5               | 10.8     | 0.55      | 0.98                | 0.62             | 50.0        |
| 12                           | R2   | 29            | 3.0  | 31            | 3.0  | 0.320     | 15.9        | LOS C            | 1.5               | 10.8     | 0.55      | 0.98                | 0.62             | 49.6        |
| Approach                     |      | 243           | 3.0  | 256           | 3.0  | 0.320     | 11.5        | LOS B            | 1.5               | 10.8     | 0.55      | 0.98                | 0.62             | 50.0        |
|                              |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| All Vehicles                 |      | 1042          | 3.0  | 1097          | 3.0  | 0.320     | 3.1         | NA               | 1.5               | 10.8     | 0.16      | 0.26                | 0.17             | 56.8        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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# MOVEMENT SUMMARY

 **Site: 101 [Clergate Road / Farrell Road (Site Folder: General)]**

AM Peak - Future Volumes 2028  
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 % | [ Total veh/h | HV % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
|                              |      |               |      |               |      | v/c       | sec         |                  |                   |          |           |                     |                  | km/h        |
| South: Clergate Road South   |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| 1                            | L2   | 30            | 3.0  | 32            | 3.0  | 0.235     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.04                | 0.00             | 57.7        |
| 2                            | T1   | 395           | 3.0  | 416           | 3.0  | 0.235     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.04                | 0.00             | 59.5        |
| Approach                     |      | 425           | 3.0  | 447           | 3.0  | 0.235     | 0.5         | NA               | 0.0               | 0.0      | 0.00      | 0.04                | 0.00             | 59.4        |
| North: Clergate Road North   |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| 8                            | T1   | 408           | 3.0  | 429           | 3.0  | 0.327     | 1.0         | LOS A            | 1.4               | 10.0     | 0.30      | 0.14                | 0.32             | 57.7        |
| 9                            | R2   | 106           | 3.0  | 112           | 3.0  | 0.327     | 8.1         | LOS A            | 1.4               | 10.0     | 0.30      | 0.14                | 0.32             | 55.4        |
| Approach                     |      | 514           | 3.0  | 541           | 3.0  | 0.327     | 2.4         | NA               | 1.4               | 10.0     | 0.30      | 0.14                | 0.32             | 57.2        |
| West: Farrell Road           |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| 10                           | L2   | 235           | 3.0  | 247           | 3.0  | 0.369     | 11.4        | LOS B            | 1.9               | 13.5     | 0.57      | 1.02                | 0.71             | 49.5        |
| 12                           | R2   | 29            | 3.0  | 31            | 3.0  | 0.369     | 19.7        | LOS C            | 1.9               | 13.5     | 0.57      | 1.02                | 0.71             | 49.1        |
| Approach                     |      | 264           | 3.0  | 278           | 3.0  | 0.369     | 12.3        | LOS B            | 1.9               | 13.5     | 0.57      | 1.02                | 0.71             | 49.5        |
| All Vehicles                 |      | 1203          | 3.0  | 1266          | 3.0  | 0.369     | 3.9         | NA               | 1.9               | 13.5     | 0.25      | 0.30                | 0.29             | 56.0        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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# MOVEMENT SUMMARY

 **Site: 101 [Clergate Road / Farrell Road (Site Folder: General)]**

PM Peak - Strategic Model Volumes 2028  
 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 % | [ Total veh/h | HV % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
|                              |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| South: Clergate Road South   |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| 1                            | L2   | 16            | 3.0  | 17            | 3.0  | 0.205     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.03                | 0.00             | 57.9        |
| 2                            | T1   | 356           | 3.0  | 375           | 3.0  | 0.205     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.03                | 0.00             | 59.7        |
| Approach                     |      | 372           | 3.0  | 392           | 3.0  | 0.205     | 0.3         | NA               | 0.0               | 0.0      | 0.00      | 0.03                | 0.00             | 59.6        |
|                              |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| North: Clergate Road North   |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| 8                            | T1   | 400           | 3.0  | 421           | 3.0  | 0.354     | 1.1         | LOS A            | 1.8               | 13.0     | 0.35      | 0.19                | 0.38             | 57.2        |
| 9                            | R2   | 149           | 3.0  | 157           | 3.0  | 0.354     | 7.8         | LOS A            | 1.8               | 13.0     | 0.35      | 0.19                | 0.38             | 55.0        |
| Approach                     |      | 549           | 3.0  | 578           | 3.0  | 0.354     | 2.9         | NA               | 1.8               | 13.0     | 0.35      | 0.19                | 0.38             | 56.5        |
|                              |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| West: Farrell Road           |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| 10                           | L2   | 36            | 3.0  | 38            | 3.0  | 0.075     | 9.9         | LOS A            | 0.3               | 1.9      | 0.49      | 0.91                | 0.49             | 49.9        |
| 12                           | R2   | 11            | 3.0  | 12            | 3.0  | 0.075     | 16.6        | LOS C            | 0.3               | 1.9      | 0.49      | 0.91                | 0.49             | 49.5        |
| Approach                     |      | 47            | 3.0  | 49            | 3.0  | 0.075     | 11.5        | LOS B            | 0.3               | 1.9      | 0.49      | 0.91                | 0.49             | 49.8        |
|                              |      |               |      |               |      |           |             |                  |                   |          |           |                     |                  |             |
| All Vehicles                 |      | 968           | 3.0  | 1019          | 3.0  | 0.354     | 2.3         | NA               | 1.8               | 13.0     | 0.22      | 0.16                | 0.24             | 57.3        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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# MOVEMENT SUMMARY

 **Site: 101 [Clergate Road / Farrell Road (Site Folder: General)]**

PM Peak - Future Volumes 2028  
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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
| South: Clergate Road South   |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 1                            | L2   | 16            | 3.0    | 17            | 3.0    | 0.225     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.02                | 0.00             | 57.9        |
| 2                            | T1   | 392           | 3.0    | 413           | 3.0    | 0.225     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.02                | 0.00             | 59.7        |
| Approach                     |      | 408           | 3.0    | 429           | 3.0    | 0.225     | 0.3         | NA               | 0.0               | 0.0      | 0.00      | 0.02                | 0.00             | 59.6        |
| North: Clergate Road North   |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 8                            | T1   | 415           | 3.0    | 437           | 3.0    | 0.396     | 1.6         | LOS A            | 2.5               | 18.0     | 0.42      | 0.23                | 0.50             | 56.7        |
| 9                            | R2   | 178           | 3.0    | 187           | 3.0    | 0.396     | 8.3         | LOS A            | 2.5               | 18.0     | 0.42      | 0.23                | 0.50             | 54.5        |
| Approach                     |      | 593           | 3.0    | 624           | 3.0    | 0.396     | 3.6         | NA               | 2.5               | 18.0     | 0.42      | 0.23                | 0.50             | 56.0        |
| West: Farrell Road           |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                           | L2   | 103           | 3.0    | 108           | 3.0    | 0.161     | 10.4        | LOS B            | 0.6               | 4.3      | 0.51      | 0.93                | 0.51             | 50.2        |
| 12                           | R2   | 11            | 3.0    | 12            | 3.0    | 0.161     | 19.4        | LOS C            | 0.6               | 4.3      | 0.51      | 0.93                | 0.51             | 49.7        |
| Approach                     |      | 114           | 3.0    | 120           | 3.0    | 0.161     | 11.2        | LOS B            | 0.6               | 4.3      | 0.51      | 0.93                | 0.51             | 50.1        |
| All Vehicles                 |      | 1115          | 3.0    | 1174          | 3.0    | 0.396     | 3.2         | NA               | 2.5               | 18.0     | 0.27      | 0.22                | 0.32             | 56.6        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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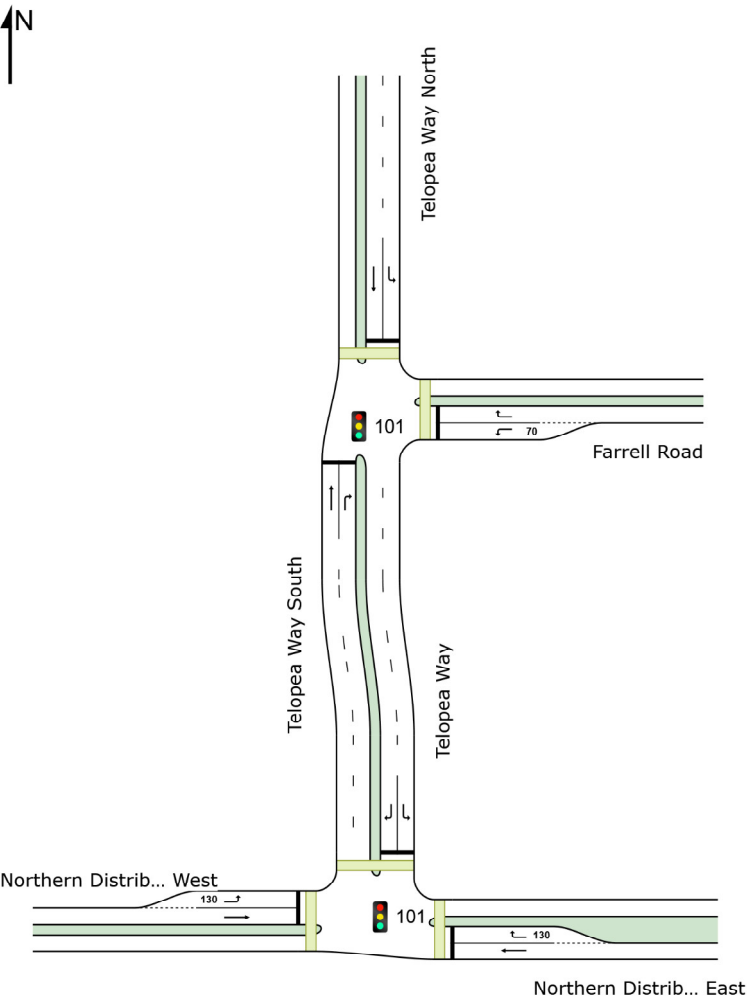
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# NETWORK LAYOUT

■ ■ Network: N101 [Telopea Way / Farrell Road / Northern Distributor Road (Network Folder: General)]

New Network  
Network Category: (None)

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



| SITES IN NETWORK |        |                                         |
|------------------|--------|-----------------------------------------|
| Site ID          | CCG ID | Site Name                               |
| 101              | NA     | Farrell Road / Telopea Way              |
| 101              | NA     | Telopea Way / Northern Distributor Road |

# MOVEMENT SUMMARY

 Site: 101 [Farrell Road / Telopea Way (Site Folder: General)]

 Network: N101 [Telopea Way / Farrell Road / Northern Distributor Road (Network Folder: General)]

AM Peak - Strategic Model Volumes 2028

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 50 seconds (Network Optimum Cycle Time - Minimum Delay)

| Vehicle Movement Performance |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
|------------------------------|------|---------------|------|---------------|------|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | DEMAND FLOWS  |      | ARRIVAL FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total veh/h | HV % | [ Total veh/h | HV % | v/c       | sec         |                  | [ Veh. veh            | Dist ] m |           |                     |                  | km/h        |
| South: Telopea Way South     |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
| 2                            | T1   | 146           | 3.0  | 146           | 3.0  | 0.120     | 3.6         | LOS A            | 0.8                   | 5.8      | 0.39      | 0.32                | 0.39             | 54.0        |
| 3                            | R2   | 174           | 3.0  | 174           | 3.0  | * 0.398   | 14.7        | LOS B            | 1.7                   | 12.4     | 0.67      | 0.71                | 0.67             | 39.5        |
| Approach                     |      | 320           | 3.0  | 320           | 3.0  | 0.398     | 9.6         | LOS A            | 1.7                   | 12.4     | 0.54      | 0.53                | 0.54             | 45.0        |
| East: Farrell Road           |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
| 4                            | L2   | 161           | 3.0  | 161           | 3.0  | 0.261     | 14.2        | LOS B            | 1.5                   | 10.6     | 0.63      | 0.74                | 0.63             | 41.2        |
| 6                            | R2   | 21            | 3.0  | 21            | 3.0  | 0.096     | 28.0        | LOS C            | 0.3                   | 2.1      | 0.92      | 0.69                | 0.92             | 40.1        |
| Approach                     |      | 182           | 3.0  | 182           | 3.0  | 0.261     | 15.8        | LOS B            | 1.5                   | 10.6     | 0.66      | 0.73                | 0.66             | 41.0        |
| North: Telopea Way North     |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
| 7                            | L2   | 31            | 3.0  | 31            | 3.0  | * 0.140   | 28.3        | LOS C            | 0.4                   | 3.1      | 0.93      | 0.71                | 0.93             | 40.2        |
| 8                            | T1   | 143           | 3.0  | 143           | 3.0  | * 0.378   | 16.5        | LOS B            | 1.8                   | 13.1     | 0.85      | 0.69                | 0.85             | 39.1        |
| Approach                     |      | 174           | 3.0  | 174           | 3.0  | 0.378     | 18.6        | LOS B            | 1.8                   | 13.1     | 0.86      | 0.69                | 0.86             | 39.4        |
| All Vehicles                 |      | 676           | 3.0  | 676           | 3.0  | 0.398     | 13.6        | LOS B            | 1.8                   | 13.1     | 0.66      | 0.63                | 0.66             | 42.2        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

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

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

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

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

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

\* Critical Movement (Signal Timing)

| Pedestrian Movement Performance |          |           |             |                  |                       |          |           |                     |             |              |             |
|---------------------------------|----------|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|-------------|--------------|-------------|
| Mov ID                          | Crossing | Dem. Flow | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Travel Time | Travel Dist. | Aver. Speed |
|                                 |          | ped/h     | sec         |                  | [ Ped ped             | Dist ] m |           |                     | sec         | m            | m/sec       |
| East: Farrell Road              |          |           |             |                  |                       |          |           |                     |             |              |             |
| P2                              | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| North: Telopea Way North        |          |           |             |                  |                       |          |           |                     |             |              |             |
| P3                              | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| All Pedestrians                 |          | 105       | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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# MOVEMENT SUMMARY

 Site: 101 [Farrell Road / Telopea Way (Site Folder: General)]

 Network: N101 [Telopea Way / Farrell Road / Northern Distributor Road (Network Folder: General)]

AM Peak - Future Volumes 2028

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 50 seconds (Network Optimum Cycle Time - Minimum Delay)

| Vehicle Movement Performance |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
|------------------------------|------|---------------|------|--------------------|-----|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | DEMAND FLOWS  |      | ARRIVAL FLOWS      |     | Deg. Satn | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total veh/h | HV % | [ Total HV ] veh/h | %   | v/c       | sec         |                  | [ Veh. veh            | Dist ] m |           |                     |                  | km/h        |
| South: Telopea Way South     |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 2                            | T1   | 204           | 3.0  | 204                | 3.0 | 0.167     | 3.7         | LOS A            | 1.2                   | 8.4      | 0.40      | 0.34                | 0.40             | 53.8        |
| 3                            | R2   | 174           | 3.0  | 174                | 3.0 | * 0.434   | 7.0         | LOS A            | 0.7                   | 5.4      | 0.29      | 0.60                | 0.29             | 47.0        |
| Approach                     |      | 378           | 3.0  | 378                | 3.0 | 0.434     | 5.2         | LOS A            | 1.2                   | 8.4      | 0.35      | 0.46                | 0.35             | 50.5        |
| East: Farrell Road           |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 4                            | L2   | 192           | 3.0  | 192                | 3.0 | 0.365     | 15.4        | LOS B            | 1.9                   | 13.9     | 0.69      | 0.76                | 0.69             | 40.1        |
| 6                            | R2   | 78            | 3.0  | 78                 | 3.0 | * 0.357   | 29.2        | LOS C            | 1.2                   | 8.3      | 0.96      | 0.75                | 0.96             | 39.6        |
| Approach                     |      | 269           | 3.0  | 269                | 3.0 | 0.365     | 19.4        | LOS B            | 1.9                   | 13.9     | 0.77      | 0.76                | 0.77             | 39.9        |
| North: Telopea Way North     |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 7                            | L2   | 45            | 3.0  | 45                 | 3.0 | 0.207     | 28.6        | LOS C            | 0.7                   | 4.7      | 0.94      | 0.73                | 0.94             | 40.0        |
| 8                            | T1   | 158           | 3.0  | 158                | 3.0 | * 0.438   | 16.2        | LOS B            | 2.0                   | 14.5     | 0.85      | 0.70                | 0.85             | 39.3        |
| Approach                     |      | 203           | 3.0  | 203                | 3.0 | 0.438     | 18.9        | LOS B            | 2.0                   | 14.5     | 0.87      | 0.71                | 0.87             | 39.6        |
| All Vehicles                 |      | 851           | 3.0  | 851                | 3.0 | 0.438     | 13.0        | LOS B            | 2.0                   | 14.5     | 0.61      | 0.61                | 0.61             | 43.4        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

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

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

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

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

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

\* Critical Movement (Signal Timing)

| Pedestrian Movement Performance |          |           |             |                  |                       |          |           |                     |             |              |             |
|---------------------------------|----------|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|-------------|--------------|-------------|
| Mov ID                          | Crossing | Dem. Flow | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Travel Time | Travel Dist. | Aver. Speed |
|                                 |          | ped/h     | sec         |                  | [ Ped ped             | Dist ] m |           |                     | sec         | m            | m/sec       |
| East: Farrell Road              |          |           |             |                  |                       |          |           |                     |             |              |             |
| P2                              | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| North: Telopea Way North        |          |           |             |                  |                       |          |           |                     |             |              |             |
| P3                              | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| All Pedestrians                 |          | 105       | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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# MOVEMENT SUMMARY

 Site: 101 [Farrell Road / Telopea Way (Site Folder: General)]

 Network: N101 [Telopea Way / Farrell Road / Northern Distributor Road (Network Folder: General)]

PM Peak - Strategic Model Volumes 2028

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 40 seconds (Network Optimum Cycle Time - Minimum Delay)

| Vehicle Movement Performance |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
|------------------------------|------|---------------|------|---------------|------|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | DEMAND FLOWS  |      | ARRIVAL FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total veh/h | HV % | [ Total veh/h | HV % | v/c       | sec         |                  | [ Veh. veh            | Dist ] m |           |                     |                  | km/h        |
| South: Telopea Way South     |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
| 2                            | T1   | 332           | 3.0  | 332           | 3.0  | 0.315     | 4.3         | LOS A            | 1.6                   | 11.7     | 0.43      | 0.36                | 0.43             | 52.8        |
| 3                            | R2   | 123           | 3.0  | 123           | 3.0  | * 0.452   | 20.9        | LOS C            | 1.4                   | 10.2     | 0.92      | 0.76                | 0.92             | 35.1        |
| Approach                     |      | 455           | 3.0  | 455           | 3.0  | 0.452     | 8.8         | LOS A            | 1.6                   | 11.7     | 0.56      | 0.47                | 0.56             | 46.5        |
| East: Farrell Road           |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
| 4                            | L2   | 122           | 3.0  | 122           | 3.0  | 0.172     | 12.9        | LOS B            | 0.9                   | 6.4      | 0.63      | 0.72                | 0.63             | 42.4        |
| 6                            | R2   | 44            | 3.0  | 44            | 3.0  | 0.162     | 22.7        | LOS C            | 0.5                   | 3.6      | 0.90      | 0.72                | 0.90             | 42.6        |
| Approach                     |      | 166           | 3.0  | 166           | 3.0  | 0.172     | 15.5        | LOS B            | 0.9                   | 6.4      | 0.70      | 0.72                | 0.70             | 42.5        |
| North: Telopea Way North     |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
| 7                            | L2   | 47            | 3.0  | 47            | 3.0  | * 0.174   | 22.8        | LOS C            | 0.5                   | 3.8      | 0.91      | 0.72                | 0.91             | 42.7        |
| 8                            | T1   | 245           | 3.0  | 245           | 3.0  | * 0.592   | 15.5        | LOS B            | 2.8                   | 20.2     | 0.93      | 0.79                | 0.97             | 39.9        |
| Approach                     |      | 293           | 3.0  | 293           | 3.0  | 0.592     | 16.7        | LOS B            | 2.8                   | 20.2     | 0.93      | 0.78                | 0.96             | 40.7        |
| All Vehicles                 |      | 914           | 3.0  | 914           | 3.0  | 0.592     | 12.6        | LOS B            | 2.8                   | 20.2     | 0.70      | 0.62                | 0.72             | 43.6        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

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

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

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

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

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

\* Critical Movement (Signal Timing)

| Pedestrian Movement Performance |          |           |             |                  |                       |          |           |                     |             |              |             |
|---------------------------------|----------|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|-------------|--------------|-------------|
| Mov ID                          | Crossing | Dem. Flow | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Travel Time | Travel Dist. | Aver. Speed |
|                                 |          | ped/h     | sec         |                  | [ Ped ped             | Dist ] m |           |                     | sec         | m            | m/sec       |
| East: Farrell Road              |          |           |             |                  |                       |          |           |                     |             |              |             |
| P2                              | Full     | 53        | 14.5        | LOS B            | 0.1                   | 0.1      | 0.85      | 0.85                | 179.0       | 213.9        | 1.19        |
| North: Telopea Way North        |          |           |             |                  |                       |          |           |                     |             |              |             |
| P3                              | Full     | 53        | 14.5        | LOS B            | 0.1                   | 0.1      | 0.85      | 0.85                | 179.0       | 213.9        | 1.19        |
| All Pedestrians                 |          | 105       | 14.5        | LOS B            | 0.1                   | 0.1      | 0.85      | 0.85                | 179.0       | 213.9        | 1.19        |

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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- Telopea - Farrell - NDR 210817.sip9

# MOVEMENT SUMMARY

 Site: 101 [Farrell Road / Telopea Way (Site Folder: General)]

 Network: N101 [Telopea Way / Farrell Road / Northern Distributor Road (Network Folder: General)]

PM Peak - Future Volumes 2028

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 50 seconds (Network Optimum Cycle Time - Minimum Delay)

| Vehicle Movement Performance |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
|------------------------------|------|---------------|------|--------------------|-----|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | DEMAND FLOWS  |      | ARRIVAL FLOWS      |     | Deg. Satn | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total veh/h | HV % | [ Total HV ] veh/h | %   | v/c       | sec         |                  | [ Veh. veh            | Dist ] m |           |                     |                  | km/h        |
| South: Telopea Way South     |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 2                            | T1   | 352           | 3.0  | 352                | 3.0 | 0.287     | 3.3         | LOS A            | 1.6                   | 11.6     | 0.33      | 0.28                | 0.33             | 54.4        |
| 3                            | R2   | 123           | 3.0  | 123                | 3.0 | * 0.564   | 27.3        | LOS C            | 1.9                   | 13.6     | 0.98      | 0.80                | 1.04             | 31.4        |
| Approach                     |      | 475           | 3.0  | 475                | 3.0 | 0.564     | 9.5         | LOS A            | 1.9                   | 13.6     | 0.50      | 0.41                | 0.51             | 45.7        |
| East: Farrell Road           |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 4                            | L2   | 133           | 3.0  | 133                | 3.0 | 0.317     | 18.7        | LOS B            | 1.5                   | 10.8     | 0.76      | 0.76                | 0.76             | 37.4        |
| 6                            | R2   | 64            | 3.0  | 64                 | 3.0 | 0.294     | 28.9        | LOS C            | 0.9                   | 6.8      | 0.95      | 0.74                | 0.95             | 39.7        |
| Approach                     |      | 197           | 3.0  | 197                | 3.0 | 0.317     | 22.0        | LOS C            | 1.5                   | 10.8     | 0.82      | 0.76                | 0.82             | 38.5        |
| North: Telopea Way North     |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 7                            | L2   | 93            | 3.0  | 93                 | 3.0 | * 0.425   | 29.5        | LOS C            | 1.4                   | 10.0     | 0.97      | 0.76                | 0.97             | 39.6        |
| 8                            | T1   | 292           | 3.0  | 292                | 3.0 | * 0.597   | 13.5        | LOS B            | 3.6                   | 26.1     | 0.84      | 0.72                | 0.85             | 41.7        |
| Approach                     |      | 384           | 3.0  | 384                | 3.0 | 0.597     | 17.3        | LOS B            | 3.6                   | 26.1     | 0.87      | 0.73                | 0.88             | 40.9        |
| All Vehicles                 |      | 1056          | 3.0  | 1056               | 3.0 | 0.597     | 14.7        | LOS B            | 3.6                   | 26.1     | 0.69      | 0.59                | 0.70             | 42.1        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

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

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

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

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

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

\* Critical Movement (Signal Timing)

| Pedestrian Movement Performance |          |           |             |                  |                       |          |           |                     |             |              |             |
|---------------------------------|----------|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|-------------|--------------|-------------|
| Mov ID                          | Crossing | Dem. Flow | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Travel Time | Travel Dist. | Aver. Speed |
|                                 |          | ped/h     | sec         |                  | [ Ped ped             | Dist ] m |           |                     | sec         | m            | m/sec       |
| East: Farrell Road              |          |           |             |                  |                       |          |           |                     |             |              |             |
| P2                              | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| North: Telopea Way North        |          |           |             |                  |                       |          |           |                     |             |              |             |
| P3                              | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| All Pedestrians                 |          | 105       | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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- Telopea - Farrell - NDR 210817.sip9

# MOVEMENT SUMMARY

 **Site: 101 [Telopea Way / Northern Distributor Road (Site Folder: General)]**

 **Network: N101 [Telopea Way / Farrell Road / Northern Distributor Road (Network Folder: General)]**

AM Peak - Strategic Model Volumes 2028

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 50 seconds (Network Optimum Cycle Time - Minimum Delay)

| Vehicle Movement Performance         |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
|--------------------------------------|------|---------------|------|---------------|------|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|------------------|-------------|
| Mov ID                               | Turn | DEMAND FLOWS  |      | ARRIVAL FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                                      |      | [ Total veh/h | HV % | [ Total veh/h | HV % | v/c       | sec         |                  | [ Veh. veh            | Dist ] m |           |                     |                  | km/h        |
| East: Northern Distributor Road East |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
| 5                                    | T1   | 323           | 3.0  | 323           | 3.0  | 0.264     | 4.2         | LOS A            | 2.1                   | 15.1     | 0.46      | 0.39                | 0.46             | 56.1        |
| 6                                    | R2   | 85            | 3.0  | 85            | 3.0  | * 0.406   | 29.4        | LOS C            | 1.3                   | 9.2      | 0.96      | 0.76                | 0.96             | 30.7        |
| Approach                             |      | 408           | 3.0  | 408           | 3.0  | 0.406     | 9.5         | LOS A            | 2.1                   | 15.1     | 0.57      | 0.47                | 0.57             | 51.1        |
| North: Telopea Way                   |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
| 7                                    | L2   | 171           | 3.0  | 171           | 3.0  | 0.261     | 17.4        | LOS B            | 2.2                   | 16.0     | 0.90      | 0.79                | 0.90             | 37.5        |
| 9                                    | R2   | 134           | 3.0  | 134           | 3.0  | * 0.613   | 27.6        | LOS C            | 2.2                   | 15.5     | 1.00      | 0.82                | 1.08             | 31.3        |
| Approach                             |      | 304           | 3.0  | 304           | 3.0  | 0.613     | 21.9        | LOS C            | 2.2                   | 16.0     | 0.94      | 0.80                | 0.98             | 34.5        |
| West: Northern Distributor Road West |      |               |      |               |      |           |             |                  |                       |          |           |                     |                  |             |
| 10                                   | L2   | 235           | 3.0  | 235           | 3.0  | 0.202     | 9.6         | LOS A            | 1.5                   | 10.5     | 0.44      | 0.69                | 0.44             | 45.8        |
| 11                                   | T1   | 576           | 3.0  | 576           | 3.0  | * 0.753   | 16.3        | LOS B            | 8.2                   | 59.1     | 0.92      | 0.87                | 1.03             | 47.3        |
| Approach                             |      | 811           | 3.0  | 811           | 3.0  | 0.753     | 14.4        | LOS B            | 8.2                   | 59.1     | 0.78      | 0.82                | 0.86             | 47.1        |
| All Vehicles                         |      | 1523          | 3.0  | 1523          | 3.0  | 0.753     | 14.6        | LOS B            | 8.2                   | 59.1     | 0.75      | 0.72                | 0.80             | 46.0        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

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

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

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

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

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

\* Critical Movement (Signal Timing)

| Pedestrian Movement Performance      |          |           |             |                  |                       |          |           |                     |             |              |             |
|--------------------------------------|----------|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|-------------|--------------|-------------|
| Mov ID                               | Crossing | Dem. Flow | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Travel Time | Travel Dist. | Aver. Speed |
|                                      |          | ped/h     | sec         |                  | [ Ped ped             | Dist ] m |           |                     | sec         | m            | m/sec       |
| East: Northern Distributor Road East |          |           |             |                  |                       |          |           |                     |             |              |             |
| P2                                   | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| North: Telopea Way                   |          |           |             |                  |                       |          |           |                     |             |              |             |
| P3                                   | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 186.5       | 217.2        | 1.16        |
| West: Northern Distributor Road West |          |           |             |                  |                       |          |           |                     |             |              |             |
| P4                                   | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| All Pedestrians                      |          | 158       | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 184.8       | 215.0        | 1.16        |

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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



## MOVEMENT SUMMARY

 **Site: 101 [Telopea Way / Northern Distributor Road (Site Folder: General)]**

 **Network: N101 [Telopea Way / Farrell Road / Northern Distributor Road (Network Folder: General)]**

AM Peak - Future Volumes 2028

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 50 seconds (Network Optimum Cycle Time - Minimum Delay)

| Vehicle Movement Performance         |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
|--------------------------------------|------|---------------|------|--------------------|-----|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|------------------|-------------|
| Mov ID                               | Turn | DEMAND FLOWS  |      | ARRIVAL FLOWS      |     | Deg. Satn | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                                      |      | [ Total veh/h | HV % | [ Total HV ] veh/h | %   | v/c       | sec         |                  | [ Veh. veh            | Dist ] m |           |                     |                  | km/h        |
| East: Northern Distributor Road East |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 5                                    | T1   | 376           | 3.0  | 376                | 3.0 | 0.307     | 4.4         | LOS A            | 2.5                   | 18.2     | 0.48      | 0.41                | 0.48             | 56.0        |
| 6                                    | R2   | 143           | 3.0  | 143                | 3.0 | * 0.656   | 31.0        | LOS C            | 2.3                   | 16.5     | 1.00      | 0.85                | 1.16             | 29.9        |
| Approach                             |      | 519           | 3.0  | 519                | 3.0 | 0.656     | 11.7        | LOS B            | 2.5                   | 18.2     | 0.62      | 0.53                | 0.67             | 49.1        |
| North: Telopea Way                   |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 7                                    | L2   | 184           | 3.0  | 184                | 3.0 | 0.281     | 17.6        | LOS B            | 2.4                   | 17.4     | 0.91      | 0.79                | 0.91             | 37.4        |
| 9                                    | R2   | 164           | 3.0  | 164                | 3.0 | * 0.753   | 30.6        | LOS C            | 2.7                   | 19.6     | 1.00      | 0.86                | 1.16             | 29.8        |
| Approach                             |      | 348           | 3.0  | 348                | 3.0 | 0.753     | 23.7        | LOS C            | 2.7                   | 19.6     | 0.95      | 0.82                | 1.02             | 33.4        |
| West: Northern Distributor Road West |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 10                                   | L2   | 235           | 3.0  | 235                | 3.0 | 0.202     | 9.6         | LOS A            | 1.5                   | 10.5     | 0.44      | 0.69                | 0.44             | 45.8        |
| 11                                   | T1   | 597           | 3.0  | 597                | 3.0 | * 0.780   | 17.5        | LOS B            | 8.9                   | 63.9     | 0.93      | 0.91                | 1.08             | 46.6        |
| Approach                             |      | 832           | 3.0  | 832                | 3.0 | 0.780     | 15.2        | LOS B            | 8.9                   | 63.9     | 0.79      | 0.85                | 0.90             | 46.5        |
| All Vehicles                         |      | 1699          | 3.0  | 1699               | 3.0 | 0.780     | 15.9        | LOS B            | 8.9                   | 63.9     | 0.77      | 0.75                | 0.85             | 44.9        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

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

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

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

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

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

\* Critical Movement (Signal Timing)

| Pedestrian Movement Performance      |          |           |             |                  |                       |          |           |                     |             |              |             |
|--------------------------------------|----------|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|-------------|--------------|-------------|
| Mov ID                               | Crossing | Dem. Flow | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Travel Time | Travel Dist. | Aver. Speed |
|                                      |          | ped/h     | sec         |                  | [ Ped ped             | Dist ] m |           |                     | sec         | m            | m/sec       |
| East: Northern Distributor Road East |          |           |             |                  |                       |          |           |                     |             |              |             |
| P2                                   | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| North: Telopea Way                   |          |           |             |                  |                       |          |           |                     |             |              |             |
| P3                                   | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 186.5       | 217.2        | 1.16        |
| West: Northern Distributor Road West |          |           |             |                  |                       |          |           |                     |             |              |             |
| P4                                   | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| All Pedestrians                      |          | 158       | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 184.8       | 215.0        | 1.16        |

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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# MOVEMENT SUMMARY

 **Site: 101 [Telopea Way / Northern Distributor Road (Site Folder: General)]**

 **Network: N101 [Telopea Way / Farrell Road / Northern Distributor Road (Network Folder: General)]**

PM Peak - Strategic Model Volumes 2028

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 40 seconds (Network Optimum Cycle Time - Minimum Delay)

| Vehicle Movement Performance         |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
|--------------------------------------|------|---------------|------|--------------------|-----|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|------------------|-------------|
| Mov ID                               | Turn | DEMAND FLOWS  |      | ARRIVAL FLOWS      |     | Deg. Satn | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                                      |      | [ Total veh/h | HV % | [ Total HV ] veh/h | %   | v/c       | sec         |                  | [ Veh. veh            | Dist ] m |           |                     |                  | km/h        |
| East: Northern Distributor Road East |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 5                                    | T1   | 624           | 3.0  | 624                | 3.0 | 0.593     | 6.6         | LOS A            | 5.1                   | 36.7     | 0.72      | 0.63                | 0.72             | 54.1        |
| 6                                    | R2   | 208           | 3.0  | 208                | 3.0 | * 0.764   | 27.0        | LOS C            | 2.8                   | 20.3     | 1.00      | 0.94                | 1.35             | 32.0        |
| Approach                             |      | 833           | 3.0  | 833                | 3.0 | 0.764     | 11.7        | LOS B            | 5.1                   | 36.7     | 0.79      | 0.71                | 0.87             | 49.2        |
| North: Telopea Way                   |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 7                                    | L2   | 205           | 3.0  | 205                | 3.0 | 0.251     | 11.4        | LOS B            | 1.9                   | 13.4     | 0.78      | 0.76                | 0.78             | 42.5        |
| 9                                    | R2   | 163           | 3.0  | 163                | 3.0 | * 0.598   | 19.8        | LOS B            | 1.9                   | 13.8     | 0.93      | 0.80                | 0.98             | 35.9        |
| Approach                             |      | 368           | 3.0  | 368                | 3.0 | 0.598     | 15.1        | LOS B            | 1.9                   | 13.8     | 0.85      | 0.77                | 0.87             | 39.3        |
| West: Northern Distributor Road West |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 10                                   | L2   | 247           | 3.0  | 247                | 3.0 | 0.250     | 10.7        | LOS B            | 1.6                   | 11.3     | 0.55      | 0.72                | 0.55             | 44.6        |
| 11                                   | T1   | 342           | 3.0  | 342                | 3.0 | * 0.715   | 17.1        | LOS B            | 4.2                   | 30.3     | 0.97      | 0.89                | 1.13             | 46.8        |
| Approach                             |      | 589           | 3.0  | 589                | 3.0 | 0.715     | 14.4        | LOS B            | 4.2                   | 30.3     | 0.79      | 0.82                | 0.89             | 46.2        |
| All Vehicles                         |      | 1791          | 3.0  | 1791               | 3.0 | 0.764     | 13.3        | LOS B            | 5.1                   | 36.7     | 0.80      | 0.76                | 0.88             | 46.5        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

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

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

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

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

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

\* Critical Movement (Signal Timing)

| Pedestrian Movement Performance      |          |           |             |                  |                       |          |           |                     |             |              |             |
|--------------------------------------|----------|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|-------------|--------------|-------------|
| Mov ID                               | Crossing | Dem. Flow | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Travel Time | Travel Dist. | Aver. Speed |
|                                      |          | ped/h     | sec         |                  | [ Ped ped             | Dist ] m |           |                     | sec         | m            | m/sec       |
| East: Northern Distributor Road East |          |           |             |                  |                       |          |           |                     |             |              |             |
| P2                                   | Full     | 53        | 14.5        | LOS B            | 0.1                   | 0.1      | 0.85      | 0.85                | 179.0       | 213.9        | 1.19        |
| North: Telopea Way                   |          |           |             |                  |                       |          |           |                     |             |              |             |
| P3                                   | Full     | 53        | 14.5        | LOS B            | 0.1                   | 0.1      | 0.85      | 0.85                | 181.6       | 217.2        | 1.20        |
| West: Northern Distributor Road West |          |           |             |                  |                       |          |           |                     |             |              |             |
| P4                                   | Full     | 53        | 14.5        | LOS B            | 0.1                   | 0.1      | 0.85      | 0.85                | 179.0       | 213.9        | 1.19        |
| All Pedestrians                      |          | 158       | 14.5        | LOS B            | 0.1                   | 0.1      | 0.85      | 0.85                | 179.9       | 215.0        | 1.20        |

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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## MOVEMENT SUMMARY

 **Site: 101 [Telopea Way / Northern Distributor Road (Site Folder: General)]**

 **Network: N101 [Telopea Way / Farrell Road / Northern Distributor Road (Network Folder: General)]**

PM Peak - Future Volumes 2028

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 50 seconds (Network Optimum Cycle Time - Minimum Delay)

| Vehicle Movement Performance         |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
|--------------------------------------|------|---------------|------|--------------------|-----|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|------------------|-------------|
| Mov ID                               | Turn | DEMAND FLOWS  |      | ARRIVAL FLOWS      |     | Deg. Satn | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                                      |      | [ Total veh/h | HV % | [ Total HV ] veh/h | %   | v/c       | sec         |                  | [ Veh. veh            | Dist ] m |           |                     |                  | km/h        |
| East: Northern Distributor Road East |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 5                                    | T1   | 642           | 3.0  | 642                | 3.0 | 0.541     | 5.9         | LOS A            | 5.6                   | 39.9     | 0.61      | 0.55                | 0.61             | 54.7        |
| 6                                    | R2   | 228           | 3.0  | 228                | 3.0 | * 0.736   | 29.4        | LOS C            | 3.7                   | 26.4     | 0.99      | 0.91                | 1.22             | 30.7        |
| Approach                             |      | 871           | 3.0  | 871                | 3.0 | 0.736     | 12.1        | LOS B            | 5.6                   | 39.9     | 0.71      | 0.64                | 0.77             | 48.9        |
| North: Telopea Way                   |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 7                                    | L2   | 252           | 3.0  | 252                | 3.0 | 0.301     | 12.0        | LOS B            | 2.4                   | 17.2     | 0.66      | 0.73                | 0.66             | 42.0        |
| 9                                    | R2   | 174           | 3.0  | 174                | 3.0 | * 0.682   | 20.0        | LOS C            | 2.4                   | 17.0     | 0.88      | 0.78                | 0.92             | 35.7        |
| Approach                             |      | 425           | 3.0  | 425                | 3.0 | 0.682     | 15.3        | LOS B            | 2.4                   | 17.2     | 0.75      | 0.75                | 0.77             | 39.1        |
| West: Northern Distributor Road West |      |               |      |                    |     |           |             |                  |                       |          |           |                     |                  |             |
| 10                                   | L2   | 247           | 3.0  | 247                | 3.0 | 0.243     | 11.7        | LOS B            | 1.9                   | 13.7     | 0.54      | 0.72                | 0.54             | 43.6        |
| 11                                   | T1   | 408           | 3.0  | 408                | 3.0 | * 0.712   | 18.7        | LOS B            | 5.9                   | 42.6     | 0.95      | 0.86                | 1.04             | 45.9        |
| Approach                             |      | 656           | 3.0  | 656                | 3.0 | 0.712     | 16.1        | LOS B            | 5.9                   | 42.6     | 0.79      | 0.81                | 0.85             | 45.3        |
| All Vehicles                         |      | 1952          | 3.0  | 1952               | 3.0 | 0.736     | 14.1        | LOS B            | 5.9                   | 42.6     | 0.75      | 0.72                | 0.80             | 45.9        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).

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

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

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

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

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

\* Critical Movement (Signal Timing)

| Pedestrian Movement Performance      |          |           |             |                  |                       |          |           |                     |             |              |             |
|--------------------------------------|----------|-----------|-------------|------------------|-----------------------|----------|-----------|---------------------|-------------|--------------|-------------|
| Mov ID                               | Crossing | Dem. Flow | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Travel Time | Travel Dist. | Aver. Speed |
|                                      |          | ped/h     | sec         |                  | [ Ped ped             | Dist ] m |           |                     | sec         | m            | m/sec       |
| East: Northern Distributor Road East |          |           |             |                  |                       |          |           |                     |             |              |             |
| P2                                   | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| North: Telopea Way                   |          |           |             |                  |                       |          |           |                     |             |              |             |
| P3                                   | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 186.5       | 217.2        | 1.16        |
| West: Northern Distributor Road West |          |           |             |                  |                       |          |           |                     |             |              |             |
| P4                                   | Full     | 53        | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 183.9       | 213.9        | 1.16        |
| All Pedestrians                      |          | 158       | 19.4        | LOS B            | 0.1                   | 0.1      | 0.88      | 0.88                | 184.8       | 215.0        | 1.16        |

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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## SITE LAYOUT

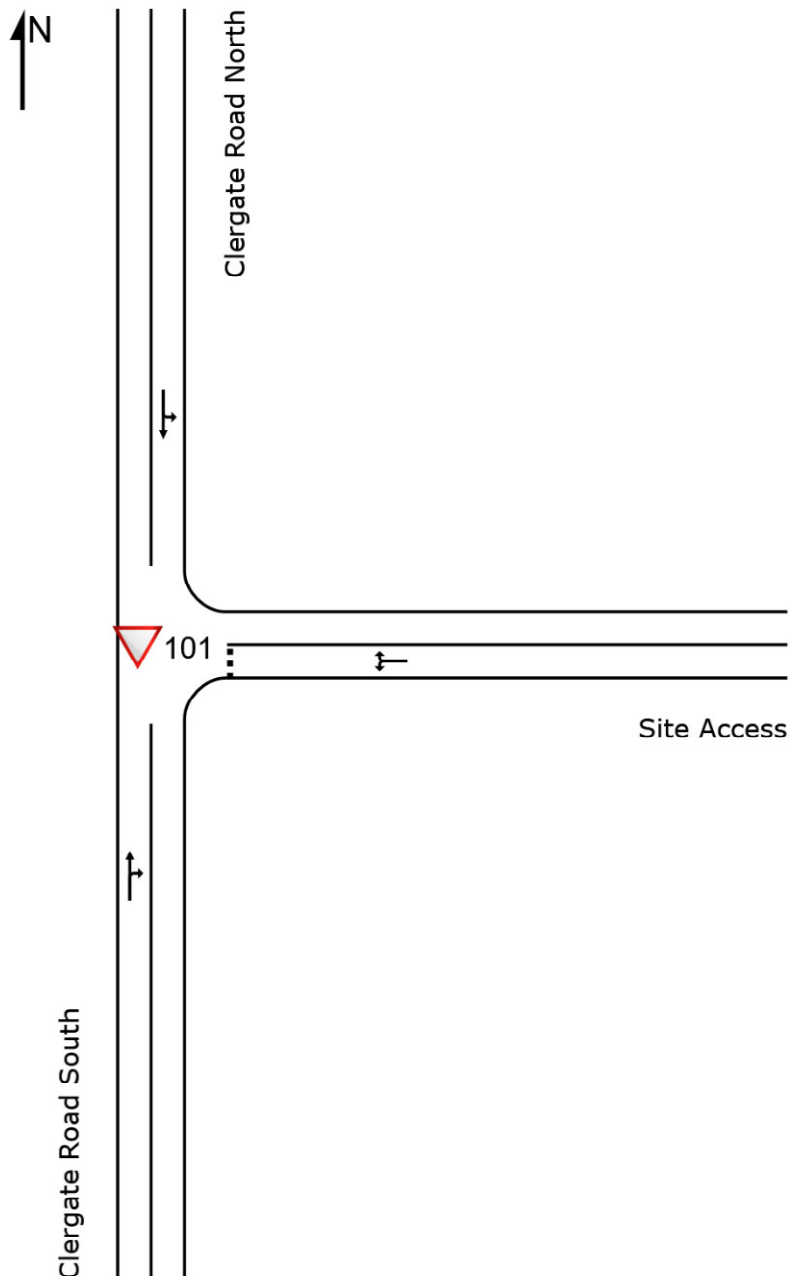
▼ Site: 101 [Clergate Road / Site Access (Site Folder: General)]

PM Peak - 2028 Future Traffic Volumes

Site Category: (None)

Give-Way (Two-Way)

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# MOVEMENT SUMMARY

 **Site: 101 [Clergate Road / Site Access (Site Folder: General)]**

AM Peak - 2028 Future Traffic Volumes

Site Category: (None)

Give-Way (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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| South: Clergate Road South   |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 2                            | T1   | 8             | 3.0    | 8             | 3.0    | 0.022     | 0.1         | LOS A            | 0.1               | 0.7      | 0.12      | 0.44                | 0.12             | 55.7        |
| 3                            | R2   | 28            | 3.0    | 29            | 3.0    | 0.022     | 5.6         | LOS A            | 0.1               | 0.7      | 0.12      | 0.44                | 0.12             | 53.6        |
| Approach                     |      | 36            | 3.0    | 38            | 3.0    | 0.022     | 4.4         | NA               | 0.1               | 0.7      | 0.12      | 0.44                | 0.12             | 54.1        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| East: Site Access            |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 4                            | L2   | 111           | 3.0    | 117           | 3.0    | 0.092     | 5.7         | LOS A            | 0.4               | 2.7      | 0.11      | 0.55                | 0.11             | 53.2        |
| 6                            | R2   | 20            | 3.0    | 21            | 3.0    | 0.092     | 5.8         | LOS A            | 0.4               | 2.7      | 0.11      | 0.55                | 0.11             | 52.6        |
| Approach                     |      | 131           | 3.0    | 138           | 3.0    | 0.092     | 5.7         | LOS A            | 0.4               | 2.7      | 0.11      | 0.55                | 0.11             | 53.1        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| North: Clergate Road North   |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7                            | L2   | 5             | 3.0    | 5             | 3.0    | 0.021     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.08                | 0.00             | 57.5        |
| 8                            | T1   | 33            | 3.0    | 35            | 3.0    | 0.021     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.08                | 0.00             | 59.3        |
| Approach                     |      | 38            | 3.0    | 40            | 3.0    | 0.021     | 0.7         | NA               | 0.0               | 0.0      | 0.00      | 0.08                | 0.00             | 59.0        |
| All Vehicles                 |      | 205           | 3.0    | 216           | 3.0    | 0.092     | 4.5         | NA               | 0.4               | 2.7      | 0.09      | 0.44                | 0.09             | 54.3        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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# MOVEMENT SUMMARY

Site: 101 [Clergate Road / Site Access (Site Folder: General)]

PM Peak - 2028 Future Traffic Volumes  
Site Category: (None)  
Give-Way (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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| South: Clergate Road South   |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 2                            | T1   | 27            | 3.0    | 28            | 3.0    | 0.070     | 0.1         | LOS A            | 0.3               | 2.4      | 0.10      | 0.44                | 0.10             | 55.8        |
| 3                            | R2   | 89            | 3.0    | 94            | 3.0    | 0.070     | 5.6         | LOS A            | 0.3               | 2.4      | 0.10      | 0.44                | 0.10             | 53.7        |
| Approach                     |      | 116           | 3.0    | 122           | 3.0    | 0.070     | 4.3         | NA               | 0.3               | 2.4      | 0.10      | 0.44                | 0.10             | 54.2        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| East: Site Access            |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 4                            | L2   | 38            | 3.0    | 40            | 3.0    | 0.032     | 5.6         | LOS A            | 0.1               | 0.9      | 0.04      | 0.57                | 0.04             | 53.4        |
| 6                            | R2   | 7             | 3.0    | 7             | 3.0    | 0.032     | 6.0         | LOS A            | 0.1               | 0.9      | 0.04      | 0.57                | 0.04             | 52.9        |
| Approach                     |      | 45            | 3.0    | 47            | 3.0    | 0.032     | 5.7         | LOS A            | 0.1               | 0.9      | 0.04      | 0.57                | 0.04             | 53.3        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| North: Clergate Road North   |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7                            | L2   | 16            | 3.0    | 17            | 3.0    | 0.015     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.36                | 0.00             | 55.2        |
| 8                            | T1   | 10            | 3.0    | 11            | 3.0    | 0.015     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.36                | 0.00             | 56.8        |
| Approach                     |      | 26            | 3.0    | 27            | 3.0    | 0.015     | 3.4         | NA               | 0.0               | 0.0      | 0.00      | 0.36                | 0.00             | 55.8        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| All Vehicles                 |      | 187           | 3.0    | 197           | 3.0    | 0.070     | 4.5         | NA               | 0.3               | 2.4      | 0.07      | 0.46                | 0.07             | 54.2        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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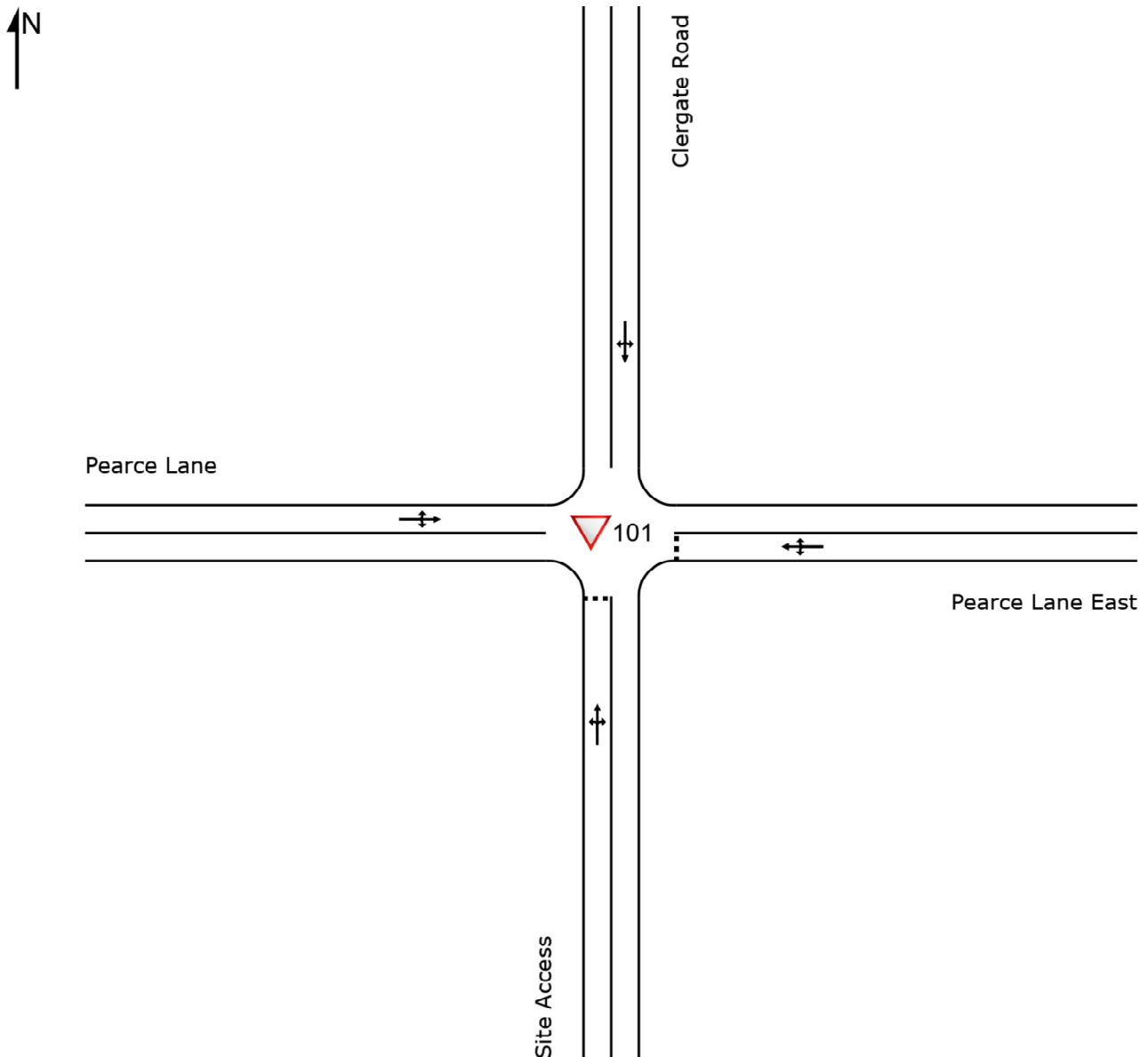
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## SITE LAYOUT

▽ Site: 101 [Clergate Road / Pearce Lane / Site Access (Site Folder: General)]

AM Peak - 2028 Orange Traffic Model Volumes  
Site Category: Future Conditions 1  
Give-Way (Two-Way)

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



# MOVEMENT SUMMARY

Site: 101 [Clergate Road / Pearce Lane / Site Access (Site Folder: General)]

AM Peak - 2028 Orange Traffic Model Volumes  
Site Category: Future Conditions 1  
Give-Way (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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| South: Site Access           |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 1                            | L2   | 1             | 5.0    | 1             | 5.0    | 0.002     | 5.6         | LOS A            | 0.0               | 0.1      | 0.08      | 0.54                | 0.08             | 53.6        |
| 2                            | T1   | 1             | 5.0    | 1             | 5.0    | 0.002     | 4.3         | LOS A            | 0.0               | 0.1      | 0.08      | 0.54                | 0.08             | 53.8        |
| 3                            | R2   | 1             | 5.0    | 1             | 5.0    | 0.002     | 5.6         | LOS A            | 0.0               | 0.1      | 0.08      | 0.54                | 0.08             | 53.0        |
| Approach                     |      | 3             | 5.0    | 3             | 5.0    | 0.002     | 5.2         | LOS A            | 0.0               | 0.1      | 0.08      | 0.54                | 0.08             | 53.4        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| East: Pearce Lane East       |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 4                            | L2   | 1             | 5.0    | 1             | 5.0    | 0.014     | 5.6         | LOS A            | 0.0               | 0.4      | 0.03      | 0.53                | 0.03             | 54.3        |
| 5                            | T1   | 15            | 5.0    | 16            | 5.0    | 0.014     | 4.2         | LOS A            | 0.0               | 0.4      | 0.03      | 0.53                | 0.03             | 54.5        |
| 6                            | R2   | 1             | 5.0    | 1             | 5.0    | 0.014     | 5.6         | LOS A            | 0.0               | 0.4      | 0.03      | 0.53                | 0.03             | 53.7        |
| Approach                     |      | 17            | 5.0    | 18            | 5.0    | 0.014     | 4.4         | LOS A            | 0.0               | 0.4      | 0.03      | 0.53                | 0.03             | 54.4        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| North: Clergate Road         |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7                            | L2   | 1             | 5.0    | 1             | 5.0    | 0.002     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.40                | 0.00             | 54.9        |
| 8                            | T1   | 1             | 5.0    | 1             | 5.0    | 0.002     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.40                | 0.00             | 56.6        |
| 9                            | R2   | 1             | 5.0    | 1             | 5.0    | 0.002     | 5.5         | LOS A            | 0.0               | 0.0      | 0.00      | 0.40                | 0.00             | 54.3        |
| Approach                     |      | 3             | 5.0    | 3             | 5.0    | 0.002     | 3.7         | NA               | 0.0               | 0.0      | 0.00      | 0.40                | 0.00             | 55.3        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| West: Pearce Lane            |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                           | L2   | 2             | 5.0    | 2             | 5.0    | 0.007     | 5.6         | LOS A            | 0.0               | 0.3      | 0.03      | 0.20                | 0.03             | 56.3        |
| 11                           | T1   | 6             | 5.0    | 6             | 5.0    | 0.007     | 0.0         | LOS A            | 0.0               | 0.3      | 0.03      | 0.20                | 0.03             | 58.1        |
| 12                           | R2   | 1             | 5.0    | 1             | 5.0    | 0.007     | 5.5         | LOS A            | 0.0               | 0.3      | 0.03      | 0.20                | 0.03             | 55.7        |
| Approach                     |      | 9             | 5.0    | 9             | 5.0    | 0.007     | 1.9         | NA               | 0.0               | 0.3      | 0.03      | 0.20                | 0.03             | 57.4        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| All Vehicles                 |      | 32            | 5.0    | 34            | 5.0    | 0.014     | 3.7         | NA               | 0.0               | 0.4      | 0.03      | 0.42                | 0.03             | 55.2        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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# MOVEMENT SUMMARY

▼ Site: 101 [Clergate Road / Pearce Lane / Site Access (Site Folder: General)]

AM Peak - 2028 Total Volumes  
Site Category: Future Conditions 1  
Give-Way (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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
| South: Site Access           |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 1                            | L2   | 22            | 5.0    | 23            | 5.0    | 0.034     | 5.7         | LOS A            | 0.1               | 0.9      | 0.08      | 0.53                | 0.08             | 53.7        |
| 2                            | T1   | 22            | 5.0    | 23            | 5.0    | 0.034     | 4.4         | LOS A            | 0.1               | 0.9      | 0.08      | 0.53                | 0.08             | 53.9        |
| 3                            | R2   | 1             | 5.0    | 1             | 5.0    | 0.034     | 5.7         | LOS A            | 0.1               | 0.9      | 0.08      | 0.53                | 0.08             | 53.1        |
| Approach                     |      | 45            | 5.0    | 47            | 5.0    | 0.034     | 5.0         | LOS A            | 0.1               | 0.9      | 0.08      | 0.53                | 0.08             | 53.8        |
| East: Pearce Lane East       |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 4                            | L2   | 1             | 5.0    | 1             | 5.0    | 0.014     | 5.6         | LOS A            | 0.0               | 0.4      | 0.06      | 0.52                | 0.06             | 54.2        |
| 5                            | T1   | 15            | 5.0    | 16            | 5.0    | 0.014     | 4.2         | LOS A            | 0.0               | 0.4      | 0.06      | 0.52                | 0.06             | 54.4        |
| 6                            | R2   | 1             | 5.0    | 1             | 5.0    | 0.014     | 5.8         | LOS A            | 0.0               | 0.4      | 0.06      | 0.52                | 0.06             | 53.6        |
| Approach                     |      | 17            | 5.0    | 18            | 5.0    | 0.014     | 4.4         | LOS A            | 0.0               | 0.4      | 0.06      | 0.52                | 0.06             | 54.3        |
| North: Clergate Road         |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7                            | L2   | 1             | 5.0    | 1             | 5.0    | 0.006     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.30                | 0.00             | 55.7        |
| 8                            | T1   | 5             | 5.0    | 5             | 5.0    | 0.006     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.30                | 0.00             | 57.4        |
| 9                            | R2   | 4             | 5.0    | 4             | 5.0    | 0.006     | 5.5         | LOS A            | 0.0               | 0.0      | 0.00      | 0.30                | 0.00             | 55.1        |
| Approach                     |      | 10            | 5.0    | 11            | 5.0    | 0.006     | 2.8         | NA               | 0.0               | 0.0      | 0.00      | 0.30                | 0.00             | 56.3        |
| West: Pearce Lane            |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                           | L2   | 16            | 5.0    | 17            | 5.0    | 0.018     | 5.6         | LOS A            | 0.1               | 0.5      | 0.05      | 0.44                | 0.05             | 54.2        |
| 11                           | T1   | 6             | 5.0    | 6             | 5.0    | 0.018     | 0.1         | LOS A            | 0.1               | 0.5      | 0.05      | 0.44                | 0.05             | 55.9        |
| 12                           | R2   | 5             | 5.0    | 5             | 5.0    | 0.018     | 5.5         | LOS A            | 0.1               | 0.5      | 0.05      | 0.44                | 0.05             | 53.7        |
| Approach                     |      | 27            | 5.0    | 28            | 5.0    | 0.018     | 4.4         | NA               | 0.1               | 0.5      | 0.05      | 0.44                | 0.05             | 54.5        |
| All Vehicles                 |      | 99            | 5.0    | 104           | 5.0    | 0.034     | 4.5         | NA               | 0.1               | 0.9      | 0.06      | 0.48                | 0.06             | 54.3        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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# MOVEMENT SUMMARY

▼ Site: 101 [Clergate Road / Pearce Lane / Site Access (Site Folder: General)]

PM Peak - 2028 Orange Traffic Model Volumes  
Site Category: Future Conditions 1  
Give-Way (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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
| South: Site Access           |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 1                            | L2   | 1             | 5.0    | 1             | 5.0    | 0.002     | 5.6         | LOS A            | 0.0               | 0.1      | 0.04      | 0.55                | 0.04             | 53.7        |
| 2                            | T1   | 1             | 5.0    | 1             | 5.0    | 0.002     | 4.3         | LOS A            | 0.0               | 0.1      | 0.04      | 0.55                | 0.04             | 53.9        |
| 3                            | R2   | 1             | 5.0    | 1             | 5.0    | 0.002     | 5.6         | LOS A            | 0.0               | 0.1      | 0.04      | 0.55                | 0.04             | 53.1        |
| Approach                     |      | 3             | 5.0    | 3             | 5.0    | 0.002     | 5.2         | LOS A            | 0.0               | 0.1      | 0.04      | 0.55                | 0.04             | 53.5        |
| East: Pearce Lane East       |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 4                            | L2   | 1             | 5.0    | 1             | 5.0    | 0.005     | 5.6         | LOS A            | 0.0               | 0.1      | 0.02      | 0.54                | 0.02             | 54.1        |
| 5                            | T1   | 4             | 5.0    | 4             | 5.0    | 0.005     | 4.2         | LOS A            | 0.0               | 0.1      | 0.02      | 0.54                | 0.02             | 54.3        |
| 6                            | R2   | 1             | 5.0    | 1             | 5.0    | 0.005     | 5.6         | LOS A            | 0.0               | 0.1      | 0.02      | 0.54                | 0.02             | 53.5        |
| Approach                     |      | 6             | 5.0    | 6             | 5.0    | 0.005     | 4.7         | LOS A            | 0.0               | 0.1      | 0.02      | 0.54                | 0.02             | 54.1        |
| North: Clergate Road         |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7                            | L2   | 1             | 5.0    | 1             | 5.0    | 0.002     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.40                | 0.00             | 54.9        |
| 8                            | T1   | 1             | 5.0    | 1             | 5.0    | 0.002     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.40                | 0.00             | 56.6        |
| 9                            | R2   | 1             | 5.0    | 1             | 5.0    | 0.002     | 5.5         | LOS A            | 0.0               | 0.0      | 0.00      | 0.40                | 0.00             | 54.3        |
| Approach                     |      | 3             | 5.0    | 3             | 5.0    | 0.002     | 3.7         | NA               | 0.0               | 0.0      | 0.00      | 0.40                | 0.00             | 55.3        |
| West: Pearce Lane            |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                           | L2   | 1             | 5.0    | 1             | 5.0    | 0.013     | 5.6         | LOS A            | 0.1               | 0.4      | 0.03      | 0.08                | 0.03             | 57.3        |
| 11                           | T1   | 13            | 5.0    | 14            | 5.0    | 0.013     | 0.0         | LOS A            | 0.1               | 0.4      | 0.03      | 0.08                | 0.03             | 59.1        |
| 12                           | R2   | 1             | 5.0    | 1             | 5.0    | 0.013     | 5.5         | LOS A            | 0.1               | 0.4      | 0.03      | 0.08                | 0.03             | 56.7        |
| Approach                     |      | 15            | 5.0    | 16            | 5.0    | 0.013     | 0.8         | NA               | 0.1               | 0.4      | 0.03      | 0.08                | 0.03             | 58.8        |
| All Vehicles                 |      | 27            | 5.0    | 28            | 5.0    | 0.013     | 2.4         | NA               | 0.1               | 0.4      | 0.03      | 0.27                | 0.03             | 56.7        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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# MOVEMENT SUMMARY

Site: 101 [Clergate Road / Pearce Lane / Site Access - (Site Folder: General)]

PM Peak - 2028 Total Volumes  
Site Category: Future Conditions 1  
Give-Way (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 ] % | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| South: Site Access           |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 1                            | L2   | 7             | 5.0    | 7             | 5.0    | 0.012     | 5.6         | LOS A            | 0.0               | 0.3      | 0.08      | 0.53                | 0.08             | 53.7        |
| 2                            | T1   | 7             | 5.0    | 7             | 5.0    | 0.012     | 4.4         | LOS A            | 0.0               | 0.3      | 0.08      | 0.53                | 0.08             | 53.9        |
| 3                            | R2   | 1             | 5.0    | 1             | 5.0    | 0.012     | 5.8         | LOS A            | 0.0               | 0.3      | 0.08      | 0.53                | 0.08             | 53.1        |
| Approach                     |      | 15            | 5.0    | 16            | 5.0    | 0.012     | 5.1         | LOS A            | 0.0               | 0.3      | 0.08      | 0.53                | 0.08             | 53.7        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| East: Pearce Lane East       |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 4                            | L2   | 1             | 5.0    | 1             | 5.0    | 0.005     | 5.7         | LOS A            | 0.0               | 0.1      | 0.12      | 0.52                | 0.12             | 53.8        |
| 5                            | T1   | 4             | 5.0    | 4             | 5.0    | 0.005     | 4.4         | LOS A            | 0.0               | 0.1      | 0.12      | 0.52                | 0.12             | 54.0        |
| 6                            | R2   | 1             | 5.0    | 1             | 5.0    | 0.005     | 5.8         | LOS A            | 0.0               | 0.1      | 0.12      | 0.52                | 0.12             | 53.2        |
| Approach                     |      | 6             | 5.0    | 6             | 5.0    | 0.005     | 4.8         | LOS A            | 0.0               | 0.1      | 0.12      | 0.52                | 0.12             | 53.8        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| North: Clergate Road         |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7                            | L2   | 1             | 5.0    | 1             | 5.0    | 0.017     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.26                | 0.00             | 56.0        |
| 8                            | T1   | 17            | 5.0    | 18            | 5.0    | 0.017     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.26                | 0.00             | 57.7        |
| 9                            | R2   | 12            | 5.0    | 13            | 5.0    | 0.017     | 5.5         | LOS A            | 0.0               | 0.0      | 0.00      | 0.26                | 0.00             | 55.4        |
| Approach                     |      | 30            | 5.0    | 32            | 5.0    | 0.017     | 2.4         | NA               | 0.0               | 0.0      | 0.00      | 0.26                | 0.00             | 56.7        |
|                              |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| West: Pearce Lane            |      |               |        |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                           | L2   | 6             | 5.0    | 6             | 5.0    | 0.026     | 5.7         | LOS A            | 0.1               | 0.9      | 0.12      | 0.36                | 0.12             | 54.7        |
| 11                           | T1   | 13            | 5.0    | 14            | 5.0    | 0.026     | 0.2         | LOS A            | 0.1               | 0.9      | 0.12      | 0.36                | 0.12             | 56.3        |
| 12                           | R2   | 17            | 5.0    | 18            | 5.0    | 0.026     | 5.6         | LOS A            | 0.1               | 0.9      | 0.12      | 0.36                | 0.12             | 54.1        |
| Approach                     |      | 36            | 5.0    | 38            | 5.0    | 0.026     | 3.7         | NA               | 0.1               | 0.9      | 0.12      | 0.36                | 0.12             | 55.0        |
| All Vehicles                 |      | 87            | 5.0    | 92            | 5.0    | 0.026     | 3.6         | NA               | 0.1               | 0.9      | 0.07      | 0.37                | 0.07             | 55.3        |

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

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