

# Traffic Impact Assessment

Project:

Rocky Creek Stage 5, Mount Peter



## Document Information

|                                                                                    |                                  |
|------------------------------------------------------------------------------------|----------------------------------|
| <b>Prepared for</b> Kroymans Developments Pty Ltd                                  | <b>Job Reference</b> MOD24029QLD |
| <b>Project:</b> Rocky Creek Stage 5, Mount Peter<br>Reconfiguration of a Lot (RoL) |                                  |

## Document Control

| Version | Date      | Description of Revision | Prepared by | Approved By |
|---------|-----------|-------------------------|-------------|-------------|
| A       | 22/8/2024 | Draft for client review | CS          | TA          |
| B       | 23/8/2024 | Final                   | CS          | TA          |

## RPEQ Certification

**Tetteh Anang**

Team Lead – Transport Advisory

*Tetteh Anang*

**RPEQ 22364**

BEng MIEAUST MAITPM

## MODUS TRANSPORT & TRAFFIC ENGINEERING

**ABN** 49 668 863 269

310 Edward Street  
Brisbane City QLD 4000

**P** 1300 606 408

**E** [info@moduseng.com.au](mailto:info@moduseng.com.au)

Here at Modus, we are a team of engineers with extensive knowledge and experience providing quality service to both public and private sectors, from large contractors and developers to state and local governments.

Whether your project is a small residential development, mixed use development, a large commercial precinct or anything in between, our experienced traffic engineers will apply sound and practical traffic engineering principles to achieve an outstanding outcome for your project.

For more information about our company and the services we provide, please visit [www.modusengineering.com.au](http://www.modusengineering.com.au)

Modus Engineering, trading under Altus Traffic Pty Ltd - The information contained in this document is intended solely for the use of the client identified on the report cover for the purpose for which it has been prepared and no representation is made or is to be implied as being made to any third party. Other than for the exclusive use of our client, no part of this report may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior written permission of Modus.

## Contents

|          |                                                     |               |
|----------|-----------------------------------------------------|---------------|
| <b>1</b> | <b>Introduction.....</b>                            | <b>- 4 -</b>  |
| 1.1      | Overview .....                                      | - 4 -         |
| 1.2      | References .....                                    | - 4 -         |
| 1.3      | Limitations .....                                   | - 4 -         |
| <b>2</b> | <b>Existing Conditions.....</b>                     | <b>- 5 -</b>  |
| 2.1      | Site Location .....                                 | - 5 -         |
| 2.2      | Existing Site Use.....                              | - 5 -         |
| 2.3      | Existing Road Network.....                          | - 6 -         |
| 2.4      | Public and Active Transport Facilities .....        | - 6 -         |
| 2.5      | Crash History .....                                 | - 6 -         |
| 2.6      | Cane Rail.....                                      | - 6 -         |
| 2.7      | Future Transport Upgrades.....                      | - 7 -         |
| <b>3</b> | <b>Proposed Development .....</b>                   | <b>- 10 -</b> |
| 3.1      | Overview .....                                      | - 10 -        |
| <b>4</b> | <b>Traffic and Transport Review.....</b>            | <b>- 11 -</b> |
| 4.1      | Vehicle Access .....                                | - 11 -        |
| 4.1.1    | Internal Road Layout .....                          | - 11 -        |
| 4.1.2    | Intersection Sight Distance .....                   | - 12 -        |
| 4.1.3    | External Environment.....                           | - 12 -        |
| 4.1.4    | Driveway Locations .....                            | - 14 -        |
| 4.2      | Parking Provision.....                              | - 14 -        |
| 4.3      | Servicing Arrangements.....                         | - 14 -        |
| 4.3.5    | Design Vehicle Requirement .....                    | - 14 -        |
| 4.3.6    | Swept Path Assessment .....                         | - 14 -        |
| 4.4      | Active Transport .....                              | - 15 -        |
| 4.5      | Public Transport .....                              | - 15 -        |
| 4.6      | Cane Rail Assessment .....                          | - 15 -        |
| <b>5</b> | <b>Traffic Assumptions and Characteristics.....</b> | <b>- 16 -</b> |
| 5.1      | Study Intersections.....                            | - 16 -        |
| 5.2      | Background Traffic Volumes.....                     | - 17 -        |
| 5.3      | Traffic Growth .....                                | - 17 -        |
| 5.4      | Traffic Generation.....                             | - 18 -        |

|           |                                                         |                                     |
|-----------|---------------------------------------------------------|-------------------------------------|
| <b>6</b>  | <b>Traffic Generation.....</b>                          | <b>- 19 -</b>                       |
| 6.1       | Traffic Generation Rate Sources.....                    | - 19 -                              |
| 6.2       | Adopted Traffic Generation Rates.....                   | - 19 -                              |
| 6.3       | Trip Distribution.....                                  | - 19 -                              |
| 6.4       | External Directional Trip Distribution .....            | - 20 -                              |
| <b>7</b>  | <b>Traffic Assessment Criteria.....</b>                 | <b>- 21 -</b>                       |
| 7.1       | Assessment Scenarios.....                               | - 21 -                              |
| 7.2       | Assessment Criteria.....                                | - 21 -                              |
| 7.2.1     | Intersection Degree of Saturation .....                 | - 21 -                              |
| 7.2.2     | Intersection Delay.....                                 | - 21 -                              |
| 7.2.3     | Intersection Queue Lengths.....                         | - 21 -                              |
| <b>8</b>  | <b>SIDRA Assessment.....</b>                            | <b>- 22 -</b>                       |
| 8.1       | Intersection 1: Cooper Road / Site Access.....          | - 22 -                              |
| 8.2       | Intersection 2: Mount Peter Road / Cooper Road .....    | - 23 -                              |
| 8.3       | Intersection 3: Mount Peter Road / Mackillop Road ..... | - 26 -                              |
| <b>9</b>  | <b>Turn Warrant Assessment.....</b>                     | <b>- 28 -</b>                       |
| 9.1       | Mount Peter Road / Cooper Road .....                    | - 28 -                              |
| 9.2       | Cooper Road / Site Access.....                          | - 29 -                              |
| <b>10</b> | <b>Lighting Facilities.....</b>                         | <b>- 30 -</b>                       |
| <b>11</b> | <b>Summary .....</b>                                    | <b>- 31 -</b>                       |
|           | <b>APPENDIX A .....</b>                                 | <b>- 33 -</b>                       |
|           | <b>APPENDIX B.....</b>                                  | <b>- 34 -</b>                       |
|           | <b>APPENDIX C .....</b>                                 | <b>Error! Bookmark not defined.</b> |
|           | <b>APPENDIX D .....</b>                                 | <b>- 35 -</b>                       |
|           | <b>APPENDIX E.....</b>                                  | <b>- 36 -</b>                       |
|           | <b>APPENDIX F.....</b>                                  | <b>- 37 -</b>                       |

# 1 Introduction

## 1.1 Overview

Modus has been commissioned by Kroymans Developments Pty Ltd, to provide traffic and transport advice in relation to the proposed RoL for Stage 5 of the Rocky Creek sub- division project in Mount Peter.

This Traffic Impact Assessment (TIA) has been produced by Modus to assess the traffic and transport engineering items in support of Stage 5 of the proposed development. A copy of the proposed development plans has been provided at **Appendix A**.

## 1.2 References

The following resources were referred to in the preparation of the report:

- ▶ Austroads Guide to Road Design Part 1 to 7
- ▶ Austroads Guide to Road Safety Part 1 o 7
- ▶ AS/NZS 1158 – Lighting for Roads and Public Spaces
- ▶ Cairns Regional Council Planning Scheme
- ▶ FNQROC Regional Development Manual Design Guidelines Issue 8 2019
- ▶ AS2890.1 Australian Standards Parking Facilities Part 1: Off-Street Car Parking
- ▶ AS2890.2 Australian Standards Parking Facilities Part 2: Off-Street Commercial Vehicle Facilities
- ▶ RTA Guide to Traffic Generating Developments, 2002
- ▶ IPWEA Street Design Manual, 2020

## 1.3 Limitations

Modus has completed this traffic report in accordance with the usual care and thoroughness of the consulting profession. The assessment is based on accepted traffic engineering practises and standards applicable at the time of undertaking the assessment. Modus disclaims responsibility for any changes to project planning or road conditions that may occur after completion of the assessment.

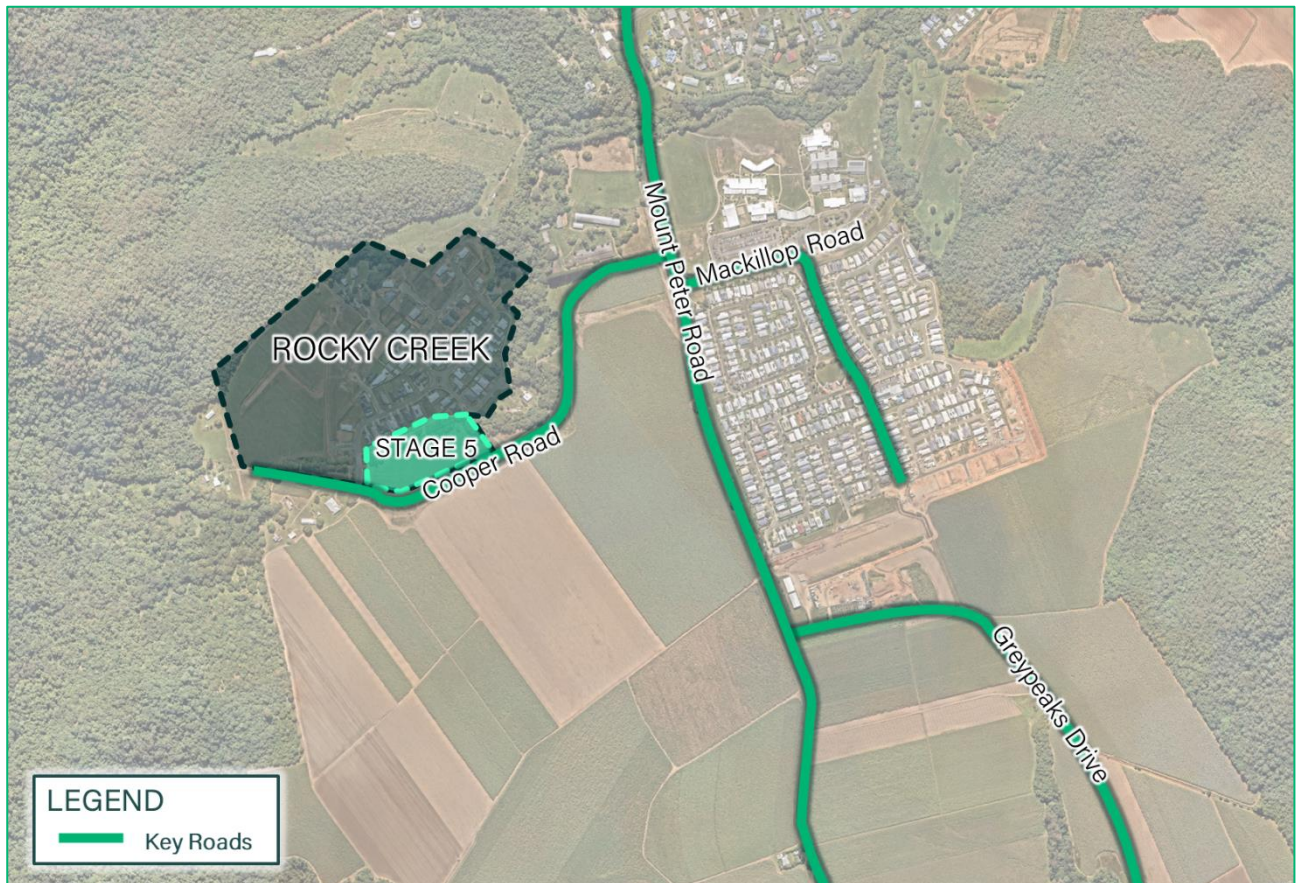
## 2 Existing Conditions

### 2.1 Site Location

The Rocky Creek development is part of the Pinecrest Master Planned Community (PMPC), recognised as a major urban growth area in the Cairns Region. Stage 5 of the development is located on Lot 100SP322661, south of the previously approved Stages and is bound by Cooper Road to the south and Rocky Creek Drive to the west.

The site is identified within the Council Planning Scheme as a Low-medium Density Residential zone and is surrounded by similar zones in all directions. The site location is shown on Figure 2-1.

Figure 2-1 Site Location



Source: Nearmap

### 2.2 Existing Site Use

The site is currently vacant land, part of the Rocky Creek development.

## 2.3 Existing Road Network

Table 2-1 outlines the characteristics of the existing road network in close proximity to the proposed development site.

Table 2-1 Key Road Characteristics

| Road             | Hierarchy                      | Authority | Speed Limit | Typical Form         |
|------------------|--------------------------------|-----------|-------------|----------------------|
| Cooper Road      | Rural Road                     | Council   | 50km/h      | Two lanes, undivided |
| Mount Peter Road | Sub-arterial Road / Rural Road | Council   | 60km/h      | Two lanes, undivided |
| MacKillop Road   | Rural Road                     | Council   | 50km/h      | Two lanes, undivided |
| Greypeaks Drive  | Rural Road                     | Council   | 50km/h      | Two lanes, undivided |

## 2.4 Public and Active Transport Facilities

The proposed development is serviced by the active transport facilities provided as part of the upgrade to Cooper Road and subsequent stages of the Rocky Creek development. The provided active transport facilities connect the proposed stage 5 development to the MacKillop Catholic College.

It is noted that on-road cycle lanes are provided on Mount Peter Road and MacKillop Road to enable cyclist trips.

Furthermore, the proposed development site is not serviced by public transport facilities within a comfortable 400m radius (5-minute walk) of the site.

## 2.5 Crash History

Modus has reviewed the TMR Crash Data sourced from TMR to understand the traffic conditions on the study road network particularly on Mount Peter Road.

The crash data revealed that within the last 5 years only two (2) vehicle crashes occurred along Mount Peter Road within close proximity of the proposed development. The crashes comprised of a hospitalisation and a fatal crash which is expected to be attributed to driver error and not associated with the alignment of the intersection.

## 2.6 Cane Rail

A rail line runs parallel to Mount Peter Road, as depicted in Figure 2-2, and supports the local sugar cane operations. This rail line operates only during the sugar cane season, which typically spans from late in the year for about five to six months. Recently, the cane crossing location on Cooper Road has been upgraded to provide safety improvements through line marking.

Figure 2-2 Cane Rail Line



Information obtained from MSF Sugar, indicates that rail operations begin around June 11 at the earliest and extend until late November or early December at the latest. MSF operates a day shift train departing the mill between 7:30 AM and 9:00 AM, and an afternoon train leaving between 3:30 PM and 4:30 PM. The morning train reaches Cooper Rd between 8:00 AM and 10:00 AM, returning approximately between 1:00 PM and 3:00 PM. The afternoon train arrives at Cooper Rd between 4:00 PM and 5:30 PM, with the return trip between 9:00 PM and 11:00 PM. This schedule suggests there will likely be one train during both the morning and evening peak periods.

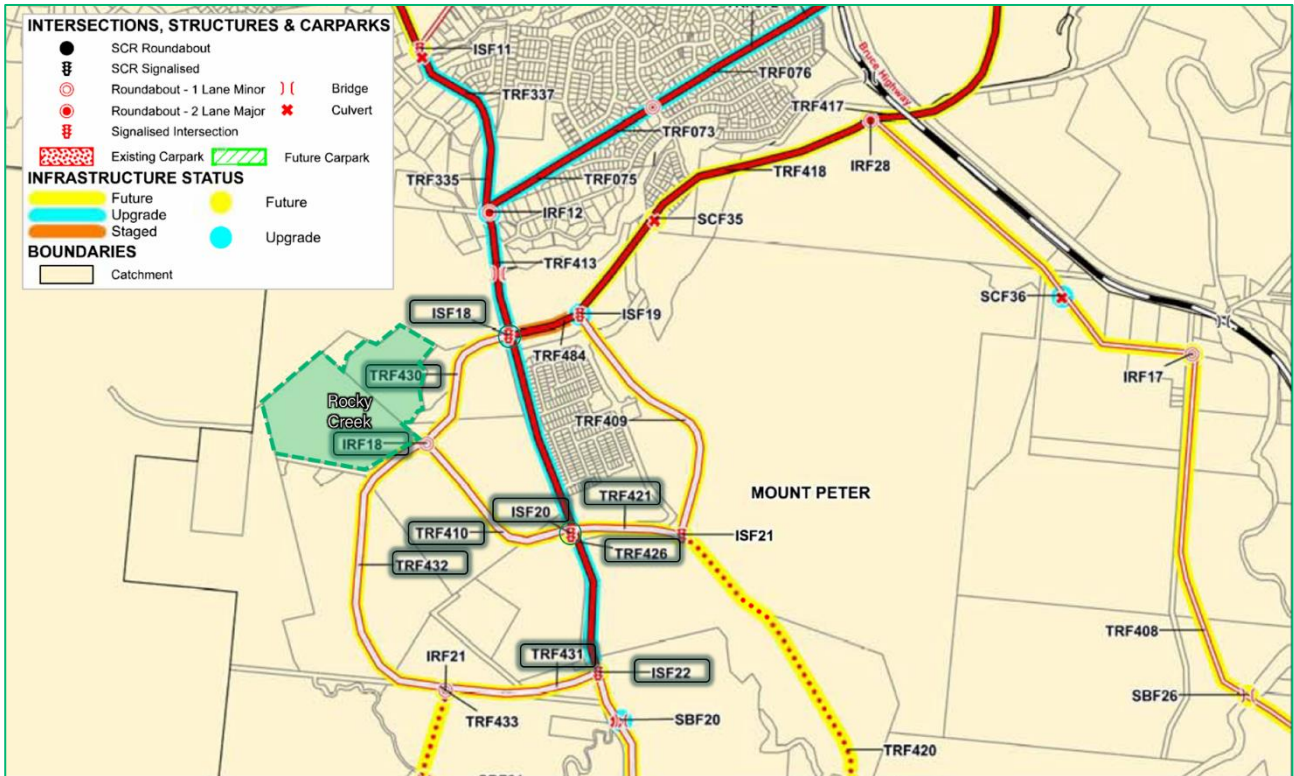
## 2.7 Future Transport Upgrades

Modus has reviewed the Council's Local Government Infrastructure Plan (LGIP) and the Queensland Transport Roads Investment Program (QTRIP), with a summary provided in Table 2-2 and illustrated in Figures 2-3 and 2-4. It is important to note that QTRIP did not indicate any planned upgrades near the proposed site. Particularly as the upgrade to the Bruce Highway between Edmonton to Gordonvale has been recently completed.

Table 2-2 Council LGIP Upgrades

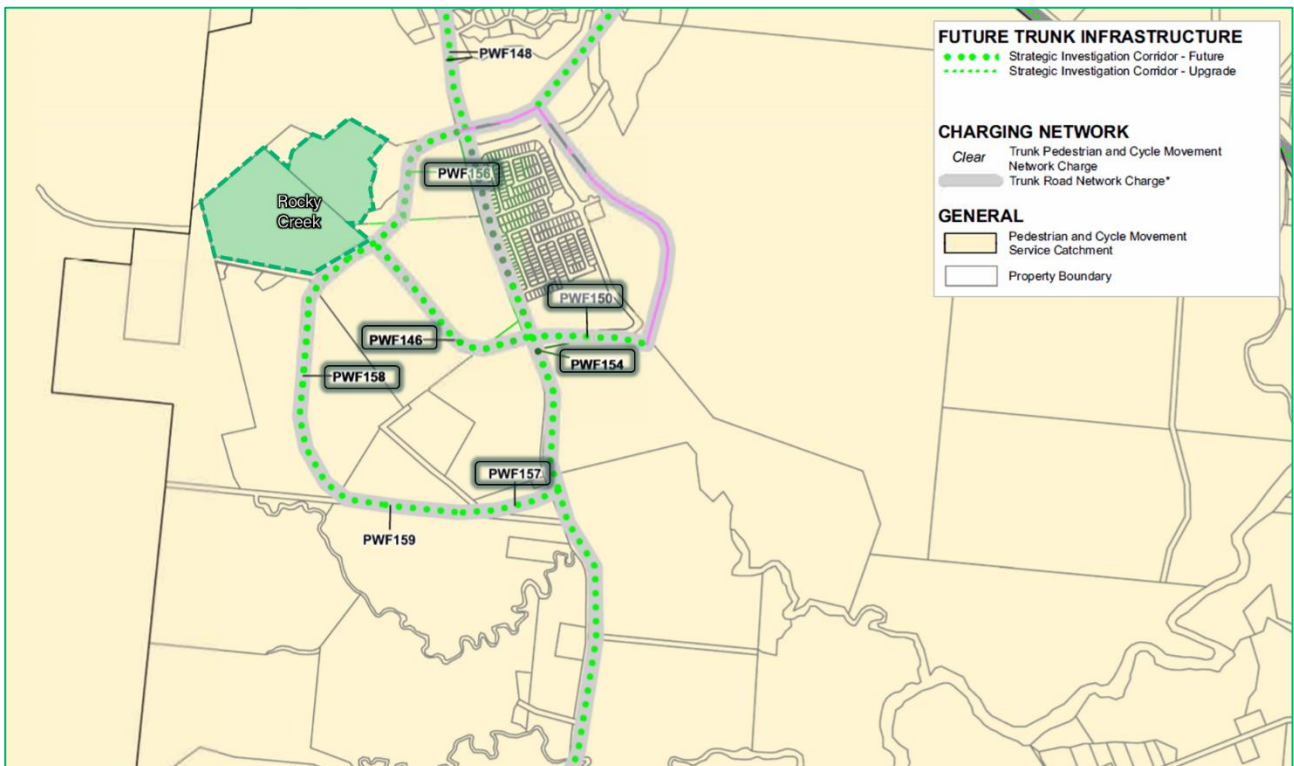
| Location                             | ID      | Details                                           | Status             | Timing (approx.) | Authority |
|--------------------------------------|---------|---------------------------------------------------|--------------------|------------------|-----------|
| <b>Roads</b>                         |         |                                                   |                    |                  |           |
| Mount Peter Road: MacKillop Road     | ISF18   | Signalised Intersection                           | Future             | 2023             | Council   |
| Mount Peter Road: Unnamed Road       | ISF20   | Signalised Intersection                           | Future             | 2031             | Council   |
| Mount Peter Road: Unnamed Road       | ISF22   | Signalised Intersection                           | Future             | 2031             | Council   |
| Mount Peter Road                     | TRF 426 | Sub-Arterial Road - 4 Lane Median Divided         | Major Road Upgrade | 2036             | Council   |
| Greypeaks Drive Stage 3              | TRF421  | Sub-Arterial Road - 2 Lane Median Divided         | Future             | 2024             | Council   |
| Mt Peter Rd: Cooper Rd               | TRF410  | Sub-Arterial Road - 2 Lane Median Divided         | Future             | 2031             | Council   |
| Cooper Road: New Road                | IRF18   | Roundabout - 1 Lane Minor                         | Future             | 2031             | Council   |
| Mackillop Rd West                    | TRF430  | Sub-Arterial Road - 2 Lane Median Divided         | Future             | 2024             | Council   |
| Sandy Road                           | TRF431  | Sub-Arterial Road - 2 Lane Median Divided         | Future             | 2036             | Council   |
| Sandy Road                           | TRF432  | Sub-Arterial Road - 2 Lane Median Divided         | Future             | 2036             | Council   |
| <b>Pedestrian and Cycle Movement</b> |         |                                                   |                    |                  |           |
| Pathway                              | PWF146  | Asset value incorporated into trunk road network. | Future             | 2026             | Council   |
| Pathway                              | PWF154  | Asset value incorporated into trunk road network. | Future             | 2026             | Council   |
| Pathway                              | PWF150  | Asset value incorporated into trunk road network. | Future             | 2026             | Council   |
| Pathway                              | PWF156  | Asset value incorporated into trunk road network. | Future             | 2026             | Council   |
| Pathway                              | PWF157  | Asset value incorporated into trunk road network. | Future             | 2031             | Council   |
| Pathway                              | PWF158  | Asset value incorporated into trunk road network. | Future             | 2031             | Council   |

Figure 2-3 Council Future Road Upgrades



Source: CairnsPlan 2016 Local Government Infrastructure Plan, Plans for Trunk Infrastructure Transport (Roads)

Figure 2-4 Council Future Pedestrian and Cyclist Upgrades



Source: CairnsPlan 2016 Local Government Infrastructure Plan, Plans for Trunk Infrastructure Transport (Pedestrian and Cycle Movement)

## 3 Proposed Development

### 3.1 Overview

The development proposes a one into 37 lot subdivision. The development will construct 37 additional lots to form Stage Five of the approved Rocky Creek Development in Mount Peter. The Rocky Creek development is to be constructed stages as outlined in Table 3-1.

Table 3-1 Development Staging

| Stage        | Yield (dwellings)    | Anticipated Timing |
|--------------|----------------------|--------------------|
| Stage 1      | 48                   | 2021               |
| Stage 2      | 43                   | 2022               |
| Stage 3      | 68                   | 2023               |
| Stage 4      | 6                    | 2024               |
| Stage 5      | 37                   | 2025               |
| <b>Total</b> | <b>202 dwellings</b> | <b>2025</b>        |

The proposed development plan is illustrated in Figure 3-1. A copy of the development plans can be found at **Appendix A**.

Figure 3-1 Proposed Development Plan



Source: Stantec Drawing No. SP03 Revision B

## 4 Traffic and Transport Review

### 4.1 Vehicle Access

Access to the development is proposed to be provided through a new intersection with Cooper Road. In the interim this intersection will provide all movements access from Cooper Road. Proposed development traffic will then be able to distribute onto the external road network at the Mount Peter Road / Cooper Road intersection.

The interim arrangement will be provided until developments to the south of Cooper Road are constructed. The development to the south of Cooper Road will influence the ultimate form of Cooper Road which will be median divided with roundabouts to facilitate access. In the ultimate arrangement, the proposed intersection will provide left in / left out access.

#### 4.1.1 Internal Road Layout

The development proposes to provide a new access street in line with the FNQROC's Development Manual Table D1.1. The proposed road hierarchy is illustrated in Figure 4-1 and outlined in Table 4-1.

Figure 4-1 Proposed Development Road Hierarchy

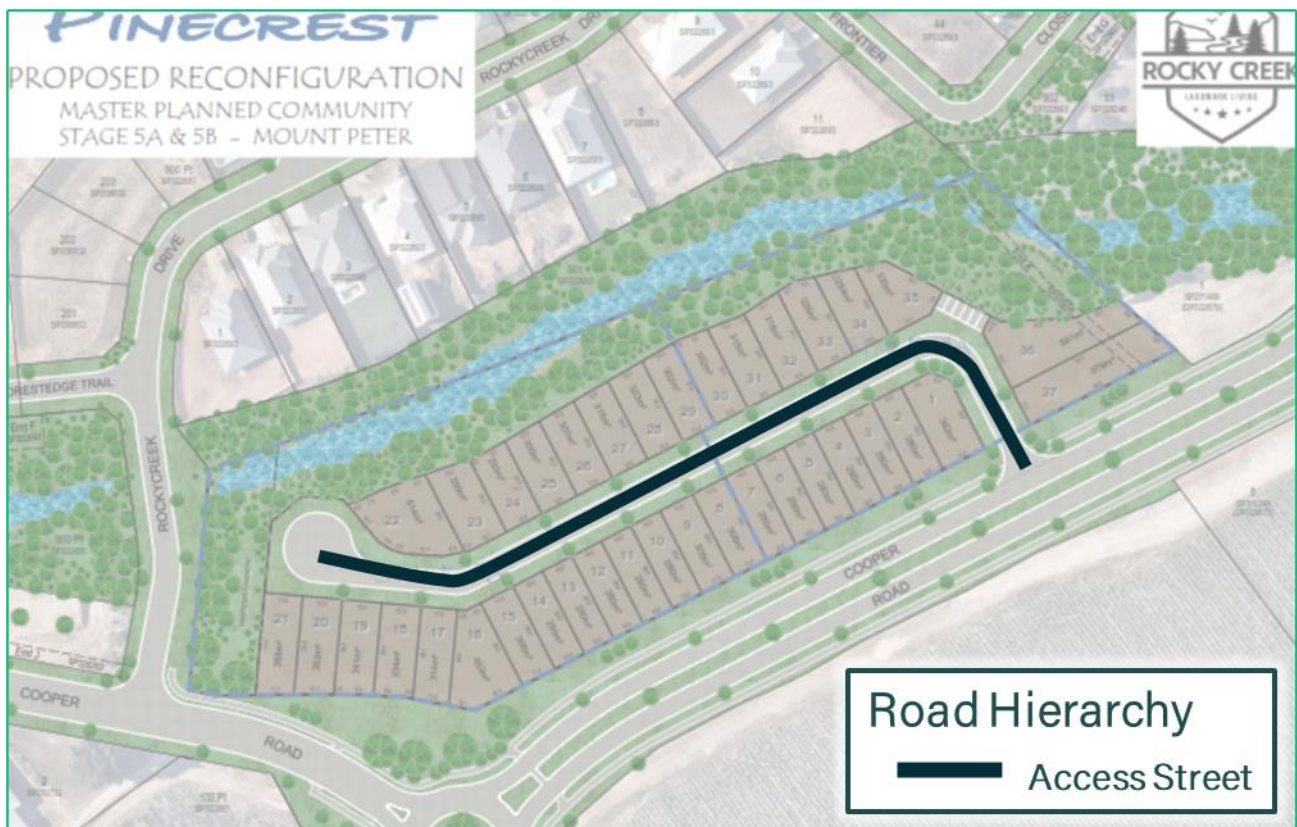


Table 4-1 Proposed Road Hierarchy

| Road Type     | Road Reserve Width | Carriageway Width | Footpath | Catchment         |
|---------------|--------------------|-------------------|----------|-------------------|
| Access Street | 15.5m              | 6.5m              | One side | 26 – 90 dwellings |

#### 4.1.2 Intersection Sight Distance

Provision of safe sight distance at the proposed intersection with Cooper Road is required to be achieved in both directions to ensure adequate visibility of oncoming vehicles.

As Cooper Road has a frontage road speed of 50km/h, the minimum Safe Intersection Sight Distance (SISD) required as per Austroads, in both directions is 97m measured along the roadway and 5m from the conflict point.

Table 4-2 outlines the requirements for SISD and what the proposed intersection location achieves.

Table 4-2 Sight Distance at Proposed Intersection

| Austroads Requirement | Proposed Sight Distance |       | Compliant |
|-----------------------|-------------------------|-------|-----------|
|                       | Left                    | Right |           |
| 97m                   | +97m                    | +97m  | ✓         |

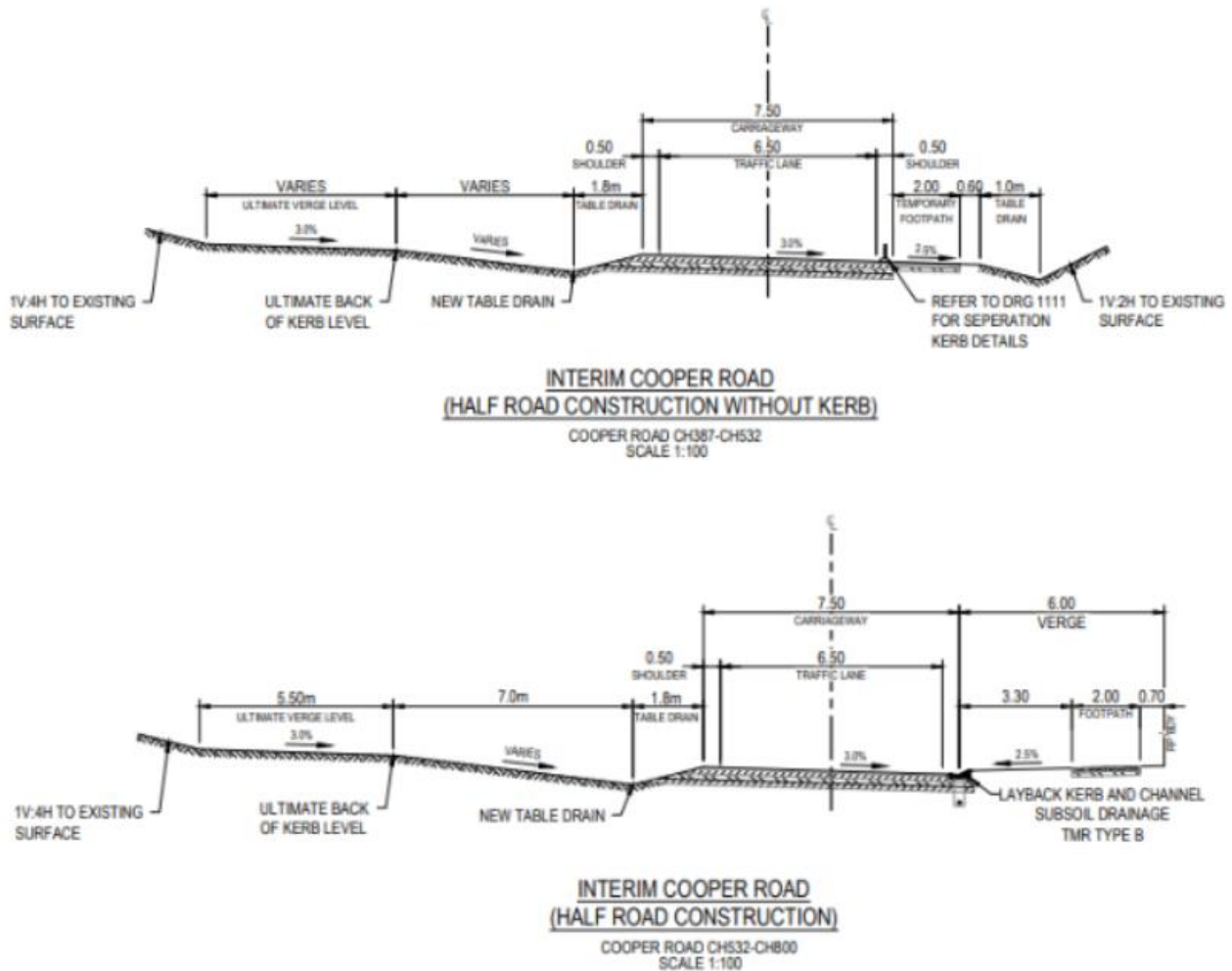
As detailed in Table 4-2, the proposed intersection achieves well in excess of the minimum SISD in both directions.

It is noted the sight distance required for each individual lot will be undertaken at the detailed design stage of each lot.

#### 4.1.3 External Environment

Cooper Road has recently been upgraded to an interim formation which provides 7.5m wide carriageway including 6.5m lanes and 0.5m shoulders. This is effectively in line with a minor collector according the FNQROC Design Guidelines. The recently constructed cross section is outlined in Figure 4-2 .

Figure 4-2 Recently Constructed Cooper Road Cross Section



Ultimately Cooper Road will be upgraded to provide a Type 8 cross section in line with the FNQROC Design Guidelines which is a two lane median divided formation. The recently constructed Cooper Road effectively forms one half of the ultimate cross section.

To ensure that the interim Cooper Road formation is sufficient and the trigger for the need to upgrade to the ultimate cross section, Modus has reviewed the anticipated traffic catchment on Cooper Road. As the interim formation of Cooper Road is effectively a minor collector, the environmental capacity is 300 dwellings. With the provision of Stage 5, the total dwelling as part of Rocky Creek is 202 dwellings. This indicates that 98 dwellings can be provided before Cooper Road will require an upgrade. However, this does not include existing uses on Cooper Road.

Excluding the Rocky Creek development, Cooper Road provides access for agricultural and residential uses. Traffic surveys undertaken by Austraffic and Stantec (refer to section 5.2), indicate that there is approx. 85vpd utilising Cooper Road. This correlates to approx. 9 dwellings of traffic generation. Reducing the available capacity left in the interim Cooper Road to 89 dwellings.

According to the timing of the Pinecrest development (refer to section 5.3), this is expected to occur during Stage 2 of the Pinecrest development when development to the south of Cooper Road is

constructed. It is anticipated that as part of the ultimate Cooper Road formation that roundabouts will be provided to facilitate development to the south of Cooper Road. It is noted that this is not immediately required from a capacity perspective but rather to ensure functionality and cost savings for the developer and Council.

#### 4.1.4 Driveway Locations

A preliminary plan illustrating driveway locations has been produced and is provided in **Appendix A**. The plan illustrates that the proposed driveway locations are able to achieve the following separation:

- ▶ 0.6m from side property boundary
- ▶ 6m from the property boundary of an intersecting road

Therefore, each proposed development lot can achieve a suitability driveway location is in compliance with the AS2890.1 and FNQROC design guidelines.

## 4.2 Parking Provision

The Rocky Creek Stage 3 development will ensure ample and convenient parking for residents, visitors, and service vehicles, while preventing any obstruction or traffic hazards caused by parked vehicles. The parking design for this development adheres to Section 9.4.7 of the CairnsPlan Parking and Access Code.

Parking requirements for each lot will be determined based on the specific development plans at the time of construction, following Table 9.4.8.3.b of the CairnsPlan where low-density and low-medium density dwelling houses are provided at a rate of 2 parking spaces per dwelling.

In terms of on-street car parking, the IPWEAQ Street Design Manual Section 4.3 outlines that the development is required to provide 0.75 on-street car parking spaces per dwelling. A review of the preliminary plans in **Appendix A** outlines that a total of 29 car parking spaces which is above the IPWEA requirement. It is expected that parking spaces will be designed and constructed in compliance with Australian Standard AS2890.

## 4.3 Servicing Arrangements

#### 4.3.5 Design Vehicle Requirement

As the proposed development is a residential use, the minimum design vehicle required within the CairnsPlan for refuse servicing is a Refuse Collection Vehicle (RCV).

#### 4.3.6 Swept Path Assessment

A swept path assessment has been undertaken for the largest design vehicle anticipated on site (RCV). The swept paths indicate that the RCV can enter and exit the proposed development safely and efficiently. The RCV swept paths can be found in **Appendix B**.

## 4.4 Active Transport

The upgrade to Cooper Road to half the width of the ultimate cross section included the provision of a footpath path from the existing Rocky Creek development to Mount Peter Road. This connects to the existing facilities on Mackillop Road and allows for active travel to key destinations such as the MacKillop Catholic College. Although the walk to Mount Peter Road is approx. 750m which translates to a 10-minute walk.

The Stage 5 Rocky Creek development will provide a footpath on one side as part of the proposed access road. This will connect to the recently completed footpath on Cooper Road to encourage active travel. It is anticipated that pedestrian / cyclist volumes will be low until further development occurs to the south of Cooper Road.

## 4.5 Public Transport

No public transport provision is proposed as part of the Stage 5 Rocky Creek development. It is anticipated that public transport facilities will be provided as part of the Stage 5 or 6 Pinecrest development. The timing of the public transport facilities is unknown at the time of writing but could not be provided until 2036. When public transport facilities are provided, it is planned that a bus stop will be provided on Cooper Road and will be within a walkable catchment (400m) of the Stage 5 Rocky Creek development.

## 4.6 Cane Rail Assessment

To assess the safety at the cane rail crossing location on Cooper Road, a queuing assessment was undertaken for the operation of the Mount Peter Road / Cooper Road intersection. The cane rail crossing provides approx. 12m separation from the Mount Peter Road / Cooper Road intersection which is sufficient storage for two light vehicles or one heavy vehicle.

SIDRA was utilised to determine the anticipated queuing at the cane rail crossing, further information on the assessment is provided in section 8. The anticipated queuing is outlined in Table 4-3 for the 2025 and 2028 with development assessment scenarios.

Table 4-3 Peak Hour Queuing at Cane Rail Crossing

| Year | Western Approach Queuing |              | Northern Right Turn and Southern Left Turn Queuing |              |
|------|--------------------------|--------------|----------------------------------------------------|--------------|
|      | AM Peak                  | PM Peak      | AM Peak                                            | PM Peak      |
| 2025 | 1.3 Vehicles             | 0.2 Vehicles | 0.4 Vehicles                                       | 0.6 Vehicles |
| 2028 | 1.6 Vehicles             | 0.3 Vehicles | 0.5 Vehicles                                       | 0.7 Vehicles |

SIDRA assumes a vehicle is 6m long when outputting the anticipated queuing. The queuing outlined in Table 4-3 indicates that the anticipated queuing will not exceed the queue storage within the peak periods. It is also noted that there is only a maximum of one train in each peak period which limits the potential interaction with vehicles at the cane crossing location. Thus, the recently constructed treatments at the cane crossing location will accommodate the proposed Stage 5 Rocky Creek traffic.

## 5 Traffic Assumptions and Characteristics

To remain consistent with previous analysis undertaken for the Rocky Creek development, Modus has review work undertaken by Stantec on the previous stages. Assumptions adopt as part of the analysis by Stantec has been retained for this analysis and is outlined further below.

### 5.1 Study Intersections

The study intersections are illustrated in Figure 5-1 and further detail is provided below in Table 5-1.

Figure 5-1 Study Intersections



Source: NearMap

Table 5-1 Study Intersections

| Study Intersection ID | Study Intersection                | Control             |
|-----------------------|-----------------------------------|---------------------|
| 1                     | Cooper Road / Site Access         | Priority Controlled |
| 2                     | Mount Peter Road / Cooper Road    | Priority Controlled |
| 3                     | Mount Peter Road / Mackillop Road | Priority Controlled |

## 5.2 Background Traffic Volumes

To understand the existing traffic conditions along Cooper Road, traffic surveys were undertaken on Tuesday 17 August 2021 at the Mount Peter Road and Mackillop Road intersection. To supplement the traffic survey, Stantec undertook a survey of the Mount Peter Road and Cooper Road intersection on Wednesday 25 August 2021. Furthermore, to determine the impact of the development on the existing road network, each study intersection has been analysed for the AM and PM peak periods.

The peak periods have been summarised in Table 5-2.

Table 5-2 Peak Periods

| Study Intersection ID | Peak Periods      |                   |
|-----------------------|-------------------|-------------------|
|                       | AM                | PM                |
| 1 and 2               | 7:30 AM – 8:30 AM | 4:30 pm – 5:30 pm |

It is noted that as the traffic volumes produced by Stantec in their Traffic Impact Assessment (TIA) dated 2 February 2024 have been assumed to be the background for assessment years.

## 5.3 Traffic Growth

To remain consistent with previous analysis undertaken by Stantec, Modus has adopted the growth assumptions outlined in Stantec's TIA dated 2 February 2024. The Stantec TIA adopted growth based on future lot released as outlined in Table 5-3. The cumulative lot releases have been assumed until 2031 to align with the identified year of multiple LGIP items. Noting that Modus has assumed a year of opening of 2025 for Stage 5 of Rocky Creek.

Table 5-3 Assumed Mount Peter Cumulative Lot Releases

| Year | Pinecrest | Kenfrost North | Kenfrost South | Fabcot | Catholic | Total |
|------|-----------|----------------|----------------|--------|----------|-------|
| 2021 | 0         | 200            | 0              | 0      | 0        | 200   |
| 2024 | 163       | 285            | 0              | 80     | 0        | 528   |
| 2025 | 241       | 315            | 0              | 80     | 0        | 636   |
| 2028 | 449       | 565            | 0              | 80     | 0        | 1,094 |
| 2031 | 679       | 565            | 150            | 80     | 86       | 1,554 |

Additionally, as Stage 5 of Rocky Creek increases the overall number of lots to 202 dwellings, the assumed Pinecrest cumulative lot releases has been increased accordingly in Table 5-4.

Table 5-4 Assumed Mount Peter Cumulative Lot Releases

| Year | Stage 1 (Rocky Creek) | Stage 2 | Stage 3 | Stage 4 | Total |
|------|-----------------------|---------|---------|---------|-------|
| 2021 | 0                     | 0       | 0       | 0       | 0     |

|             |     |     |     |    |     |
|-------------|-----|-----|-----|----|-----|
| <b>2024</b> | 163 | 0   | 0   | 0  | 163 |
| <b>2025</b> | 202 | 39  | 0   | 0  | 241 |
| <b>2028</b> | 202 | 145 | 141 | 0  | 488 |
| <b>2031</b> | 202 | 145 | 282 | 88 | 717 |

It is noted that the timing of the Pinecrest stages has remained consistent with the previous assessments undertaken by Stantec. While the existing Rocky Creek development has not been developed in line with this timing, a review of timing will be undertaken when subsequent stages are developed.

## 5.4 Traffic Generation

The traffic generation rates for the proposed development have been adopted from the Roads and Traffic Authority (RTA). The anticipated traffic generation of the Stage 5 development has been summarised in Table 5-5.

Table 5-5 Development Traffic Generation

| Land Use                | Yield        | Traffic Generation Rate | Traffic Generation | Source |
|-------------------------|--------------|-------------------------|--------------------|--------|
| Low Density Residential | 37 dwellings | 0.85 per dwelling       | 31vph              | RTA    |

As shown in Table 5-5, the proposed development is anticipated to generate 31vph during the peak hour periods. The proposed traffic generation also translates to 333vpd utilising the RTA trip rate of 9 vehicles a day per dwelling.

## 6 Traffic Generation

### 6.1 Traffic Generation Rate Sources

In order to determine the traffic demand of development, reference has been made to the RTA GTGD. The traffic generation rates, methodology undertaken to deduce these rates and sources adopted for the assessment herein are detailed below in Table 6-1.

Table 6-1 Assessment Traffic Generation Rates

| Land Use                | Traffic Generation Source | Peak Hour Traffic Generation Rate |
|-------------------------|---------------------------|-----------------------------------|
|                         |                           | AM / PM Peak                      |
| Low Density Residential | RTA GTGD                  | 0.85 vph / Dwelling               |

### 6.2 Adopted Traffic Generation Rates

Table 6-2 summarises the adopted trip generation rates for the Stage 5 development.

Table 6-2 Adopted Generation Rates

| Land Use                | Yield        | Traffic Generation Rate | Traffic Generation | Source |
|-------------------------|--------------|-------------------------|--------------------|--------|
| Low Density Residential | 37 dwellings | 0.85 per dwelling       | 31vph              | RTA    |

As shown in Table 5-5, the proposed development is anticipated to generate 31vph during the peak hour periods. The proposed traffic generation also translates to 333vpd utilising the RTA trip rate of 9 vehicles a day per dwelling.

### 6.3 Trip Distribution

Table 6-3 and Table 6-4 shows the peak hour traffic directional distribution and the resulting directional trips for the proposed development.

Table 6-3 Directional Distribution

| Land Use                | AM  |     | PM  |     |
|-------------------------|-----|-----|-----|-----|
|                         | IN  | OUT | IN  | OUT |
| Low Density Residential | 30% | 70% | 60% | 40% |

Table 6-4 Directional Trips

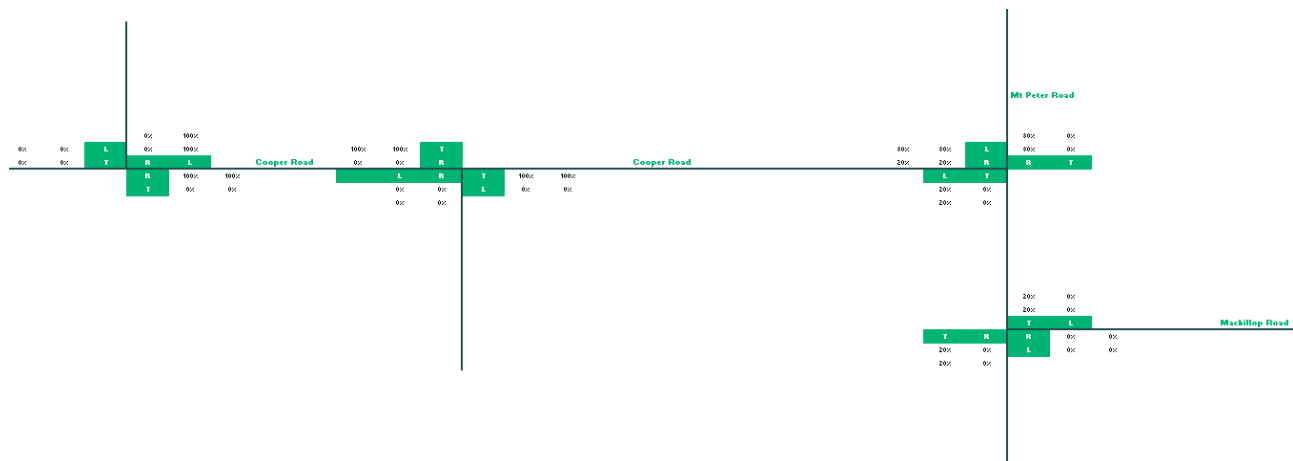
| Land Use                | AM    |        | PM     |        |
|-------------------------|-------|--------|--------|--------|
|                         | IN    | OUT    | IN     | OUT    |
| Low Density Residential | 9 vph | 22 vph | 19 vph | 12 vph |

As indicated in Table 6-4, the proposed development is anticipated to generate in the order of 31 vph in the AM and PM peak.

## 6.4 External Directional Trip Distribution

The external directional trip distribution has been adopted as per the previous distribution adopted for previous assessments of Rocky Creek. Therefore, the external directional trip distributions for inbound and outbound movements in both the AM and PM peak periods are shown in Figure 6-1.

Figure 6-1 External Traffic Distribution



The network flow diagrams are provided in **Appendix D**.

## 7 Traffic Assessment Criteria

### 7.1 Assessment Scenarios

Modus has assumed that the development year of opening is 2025, with consistent years utilised in line with previous assessments. Table 7-2 summarises the impact assessment scenarios.

Table 7-1 Assessment Scenarios

| Impact Assessment Scenario | Study Intersection ID |
|----------------------------|-----------------------|
| 2025 BG                    | 2 and 3               |
| 2028 BG                    | 2 and 3               |
| 2031 BG                    | 2 and 3               |
| 2025 BG + DEV              | All                   |
| 2028 BG + DEV              | All                   |
| 2031 BG + DEV              | All                   |

### 7.2 Assessment Criteria

#### 7.2.1 Intersection Degree of Saturation

The performance of each study intersection has been analysed using SIDRA Intersection 9.1 (SIDRA). SIDRA is the primary industry modelling software that estimates the capacity and performance of intersections. SIDRA analyses an intersection's Degree of Saturation (DOS), queues and delays. DOS is a measure of the proportion of traffic entering an intersection relative to the intersection's capacity.

Provided that study intersections are all priority-controlled, **the DOS threshold as defined by TMR is 0.80**. If DOS exceeds the abovementioned threshold, it indicates the intersection is nearing its practical capacity and upgrade works may be required. Above these threshold values, users of the intersection are likely to experience increasing delays and queueing.

#### 7.2.2 Intersection Delay

The TMR *Guide to Traffic Impact Assessments* (GTIA) recognises the intersection delay as a greater indicator of intersection performance in comparison to the previous TMR *Guidelines for Assessment of Road Impacts of Development* (GARID) significance on the degree of saturation (DOS). For priority-controlled intersections, where the average peak hour delays for any movement exceeds 42 seconds, as outlined in the GTIA, the intersection should be upgraded for safety reasons.

#### 7.2.3 Intersection Queue Lengths

The 95<sup>th</sup> percentile queue relates to the queue length which 95% of all observed queue lengths during the assessment hour fall under, or in other terms, the length which 5% of all observed queues exceed. This provides an indication of the maximum queue length which should be designed for such that upstream lanes are not adversely impacted.

## 8 SIDRA Assessment

### 8.1 Intersection 1: Cooper Road / Site Access

The Cooper Road / Site Access intersection is proposed to be a three-way priority-controlled intersection. Figure 8-1 illustrates the SIDRA layout for this study intersection.

Figure 8-1 Cooper Road / Site Access Intersection – SIDRA Layout

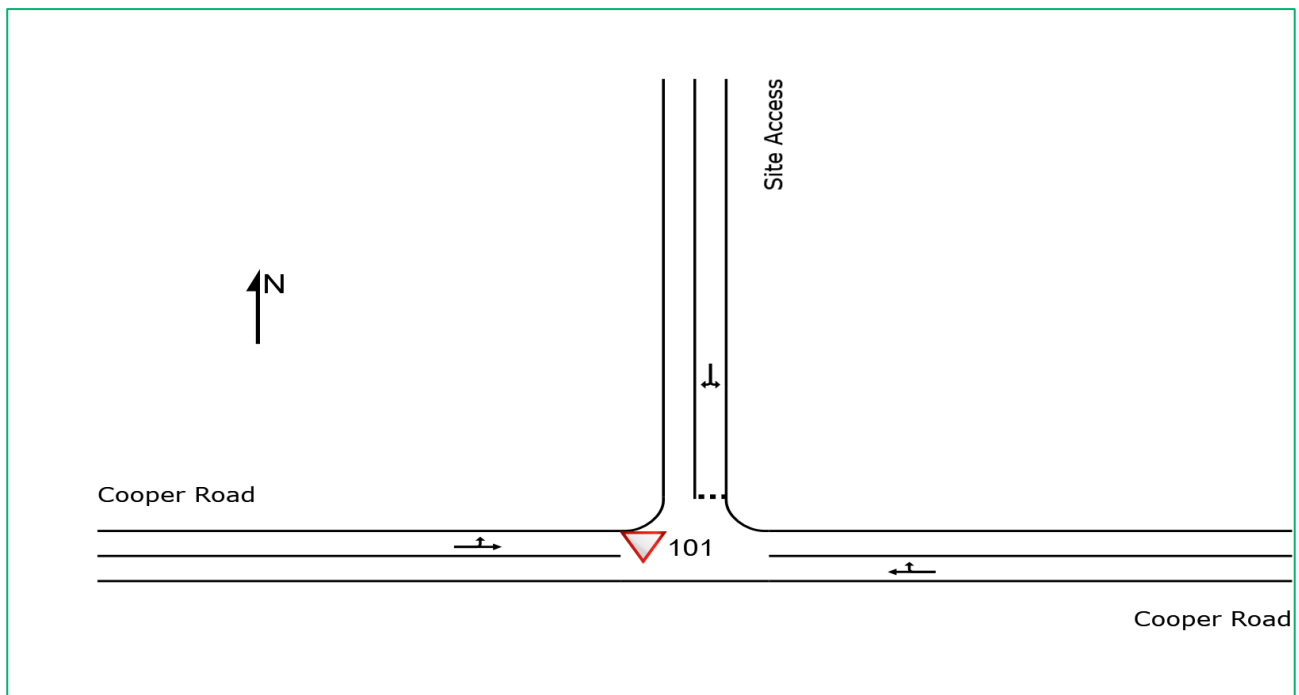


Table 8-1 outlines the SIDRA Assessment results for the Cooper Road / Site Access intersection for the background with development traffic scenarios. Full SIDRA results and layouts are provided in **Appendix E**.

Table 8-1 Cooper Road / Site Access Intersection – SIDRA Results

| Scenario              | DOS   | Critical Delay | 95th %ile Queue | Critical Movement  |
|-----------------------|-------|----------------|-----------------|--------------------|
| <b>AM Peak Period</b> |       |                |                 |                    |
| 2025 BG + DEV         | 0.067 | 5.9 sec        | 0.5m            | Eastern right turn |
| 2028 BG + DEV         | 0.067 | 5.9 sec        | 0.5m            | Eastern right turn |
| 2031 BG + DEV         | 0.128 | 6.3 sec        | 0.5m            | Eastern right turn |
| <b>PM Peak Period</b> |       |                |                 |                    |
| 2025 BG + DEV         | 0.039 | 5.7 sec        | 0.8m            | Eastern right turn |
| 2028 BG + DEV         | 0.039 | 5.7 sec        | 0.8m            | Eastern right turn |
| 2031 BG + DEV         | 0.125 | 6.0 sec        | 1.0m            | Eastern right turn |

Therefore, Table 8-1 indicates that the Cooper Road / Site Access intersection operates within acceptable operational capacity thresholds with the addition of the development traffic in all assessment scenarios.

## 8.2 Intersection 2: Mount Peter Road / Cooper Road

The Mount Peter Road / Cooper Road intersection is currently a three-way priority-controlled intersection. Figure 8-2 illustrates the existing and SIDRA layout for this study intersection. It is noted that Modus has adopted a short left turn lane on the western approach of the Mount Peter Road / Cooper Road intersection given the wide intersection treatment and capacity to facilitate both left and right turn movements at the same time. This is particularly encouraged with the treatment for the cane crossing where drivers will not queue over the crossing location.

Figure 8-2 Mount Peter Road / Cooper Road Intersection – Existing and SIDRA Layout

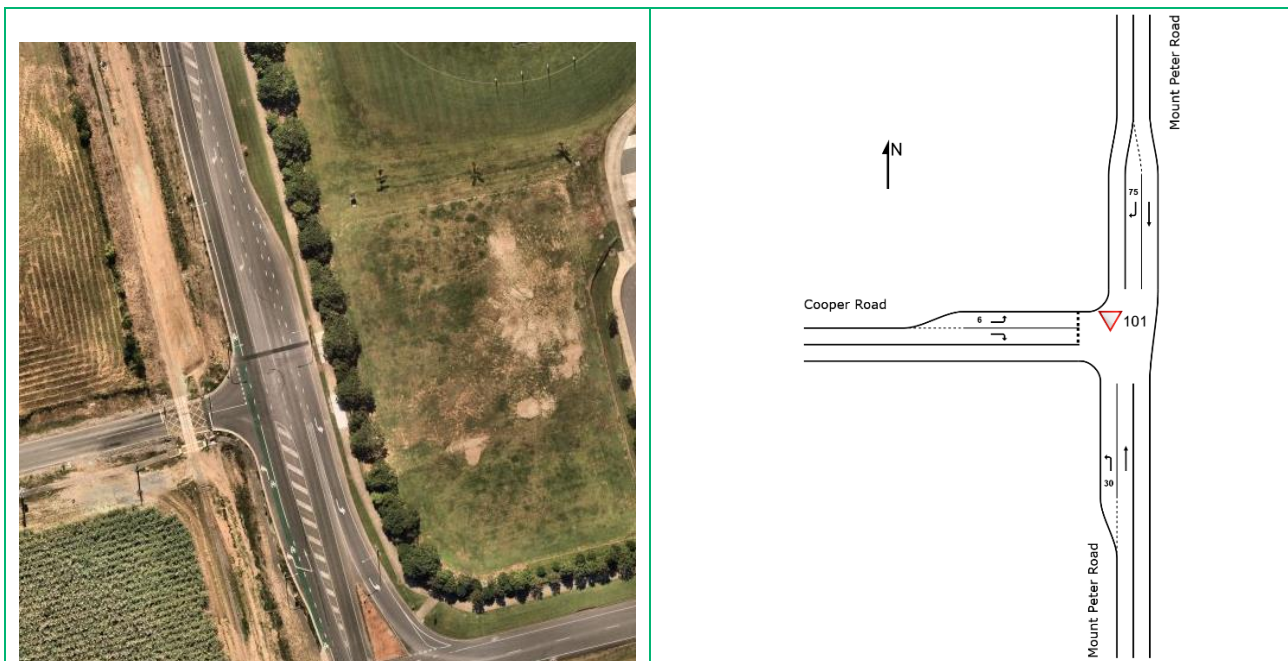


Table 8-2 outlines the SIDRA Assessment results for the Mount Peter Road / Cooper Road intersection for the background and background with development traffic scenarios. Full SIDRA results and layouts are provided in **Appendix E**.

Table 8-2 Mount Peter Road / Cooper Road Intersection – SIDRA Results

| Scenario              | DOS   | Critical Delay | 95th %ile Queue | Critical Movement  |
|-----------------------|-------|----------------|-----------------|--------------------|
| <b>AM Peak Period</b> |       |                |                 |                    |
| 2025 BG               | 0.325 | 34.1 sec       | 7.8m            | Western right turn |
| 2028 BG               | 0.433 | 42.1 sec       | 10.6m           | Western right turn |
| 2031 BG               | 0.643 | 62.3 sec       | 17.0m           | Western right turn |
| 2025 BG + DEV         | 0.366 | 35.8 sec       | 9.0m            | Western right turn |
| 2028 BG + DEV         | 0.473 | 44.2 sec       | 11.8m           | Western right turn |

|                       |       |          |       |                    |
|-----------------------|-------|----------|-------|--------------------|
| 2031 BG + DEV         | 0.695 | 67.8 sec | 19.1m | Western right turn |
| <b>PM Peak Period</b> |       |          |       |                    |
| 2025 BG               | 0.139 | 11.3 sec | 3.5m  | Western right turn |
| 2028 BG               | 0.192 | 15.0 sec | 4.4m  | Western right turn |
| 2031 BG               | 0.268 | 21.1 sec | 6.4m  | Western right turn |
| 2025 BG + DEV         | 0.139 | 11.6 sec | 4.0m  | Western right turn |
| 2028 BG + DEV         | 0.192 | 15.4 sec | 0.7m  | Western right turn |
| 2031 BG + DEV         | 0.268 | 21.7 sec | 7.0m  | Western right turn |

Therefore, Table 8-2 indicates that the Mount Peter Road / Cooper Road intersection operates within acceptable operational capacity thresholds with the addition of the development traffic in all assessment scenarios with the exception of the 2028 and 2031 design horizons. The existing intersection exceeds the delay thresholds in both the background and background plus development scenarios in the AM peak.

The Mount Peter Road / Cooper Road intersection will require an upgrade to the ultimate form to a signalised intersection amalgamated with the Mackillop Road intersection. This is required before the completion of development in 2028 which includes the following:

- ▶ 449 Pinecrest lots (including 202 Rocky Creek lots)
- ▶ 565 Kenfrost lots
- ▶ 80 Fabcot lots

It is noted that the above assessment is conservative as the development yield assumptions include lots which won't be accessed via Cooper Road and will form a new connection on Mount Peter Road. Based on this, the number of lots achievable before the signalisation occurs may increase and it recommended that the trigger is reassessed as part of future developments, particularly if development timings change in the future.

The ultimate signalised form has been assessed for the 2031 design horizon to ensure the proposed development can be accommodated in the ultimate form. The proposed ultimate form is a four-way signalised formation as illustrated in Figure 8-3.

Figure 8-3 Mount Peter Road / Cooper Road Intersection – SIDRA Layout

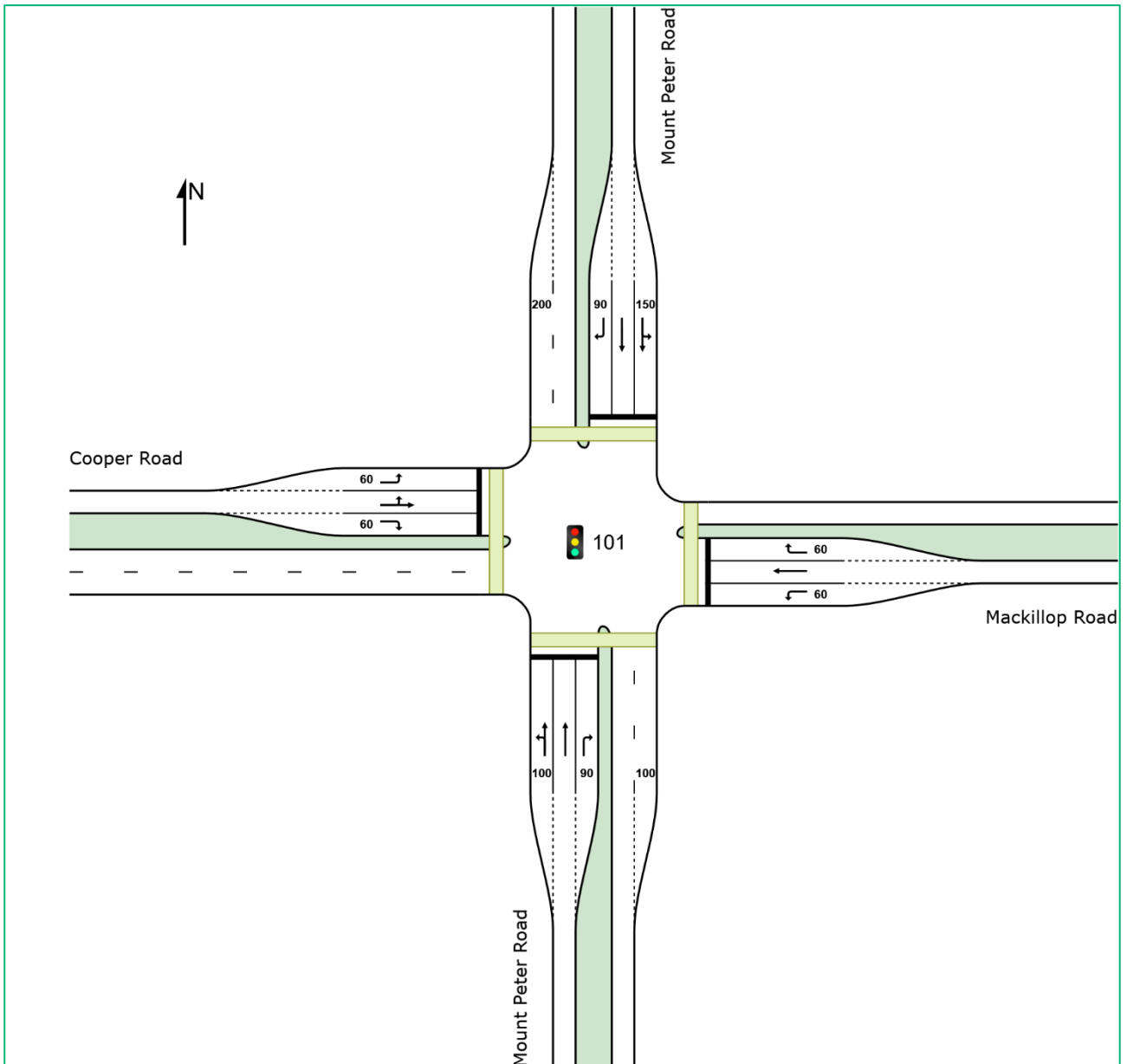


Table 8-3 outlines the SIDRA Assessment results for the Mount Peter Road / Cooper Road intersection for the 2031 background with development traffic scenario. Full SIDRA results and layouts are provided in **Appendix E**.

Table 8-3 Mount Peter Road / Cooper Road Intersection – SIDRA Results

| Scenario              | DOS   | Average Delay | 95th %ile Queue | Critical Movement  |
|-----------------------|-------|---------------|-----------------|--------------------|
| <b>AM Peak Period</b> |       |               |                 |                    |
| 2031 BG + DEV         | 0.777 | 63.9 sec      | 226.2m          | Eastern right turn |
| <b>PM Peak Period</b> |       |               |                 |                    |
| 2031 BG + DEV         | 0.499 | 20.2 sec      | 144.8m          | Eastern right turn |

Therefore, Table 8-1 indicates that the Mount Peter Road / Cooper Road ultimate signalised intersection operates within acceptable operational capacity thresholds with the addition of the development traffic in the 2031 design horizon.

### 8.3 Intersection 3: Mount Peter Road / Mackillop Road

The Mount Peter Road / Mackillop Road intersection is currently a three-way priority-controlled intersection. Figure 8-4 illustrates the exiting and SIDRA layout for this study intersection.

Figure 8-4 Mount Peter Road / Mackillop Road Intersection – Existing and SIDRA Layout

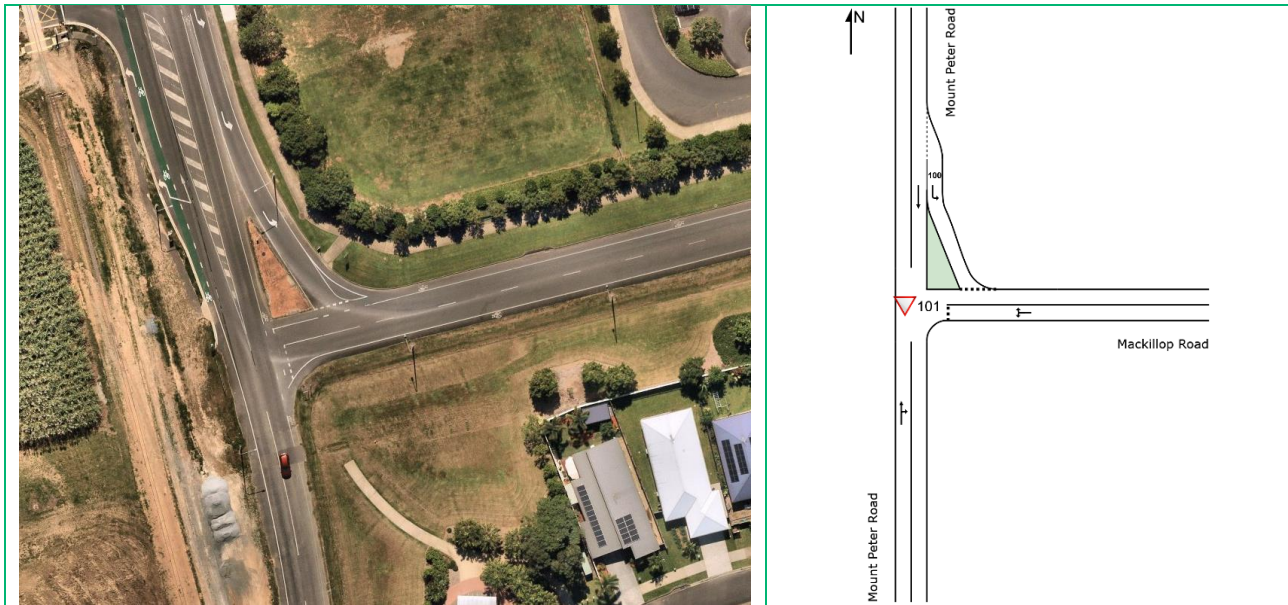


Table 8-4 outlines the SIDRA Assessment results for the Mount Peter Road / Mackillop Road intersection for the background and background with development traffic scenarios. Full SIDRA results and layouts are provided in **Appendix E**.

Table 8-4 Mount Peter Road / Mackillop Road Intersection – SIDRA Results

| Scenario              | DOS   | Critical Delay | 95th %ile Queue | Critical Movement  |
|-----------------------|-------|----------------|-----------------|--------------------|
| <b>AM Peak Period</b> |       |                |                 |                    |
| 2025 BG               | 0.703 | 12.6 sec       | 56.9m           | Western right turn |
| 2028 BG               | 0.721 | 14.4 sec       | 48.3m           | Western right turn |
| 2031 BG               | 0.958 | 37.2 sec       | 123.3m          | Western right turn |
| 2025 BG + DEV         | 0.708 | 12.7 sec       | 57.0m           | Western right turn |
| 2028 BG + DEV         | 0.726 | 14.6 sec       | 48.8m           | Western right turn |
| 2031 BG + DEV         | 0.966 | 39.6 sec       | 129.5m          | Western right turn |
| <b>PM Peak Period</b> |       |                |                 |                    |
| 2025 BG               | 0.168 | 6.5 sec        | 4.4m            | Western right turn |
| 2028 BG               | 0.187 | 7.6 sec        | 4.8m            | Western right turn |

|               |       |         |      |                    |
|---------------|-------|---------|------|--------------------|
| 2031 BG       | 0.257 | 9.8 sec | 7.0m | Western right turn |
| 2025 BG + DEV | 0.169 | 6.5 sec | 4.5m | Western right turn |
| 2028 BG + DEV | 0.188 | 7.7 sec | 4.9m | Western right turn |
| 2031 BG + DEV | 0.259 | 9.9 sec | 7.0m | Western right turn |

Therefore, Table 8-2 indicates that the Mount Peter Road / Mackillop Road intersection operates within acceptable operational capacity thresholds with the addition of the development traffic in all assessment scenarios with the exception of the 2031 design horizon. However, it is expected that by the 2031 design horizon, the Mount Peter Road / Mackillop Road Intersection will be upgraded to a signalised formation and amalgamated with the Mount Peter Road / Cooper Road intersection.

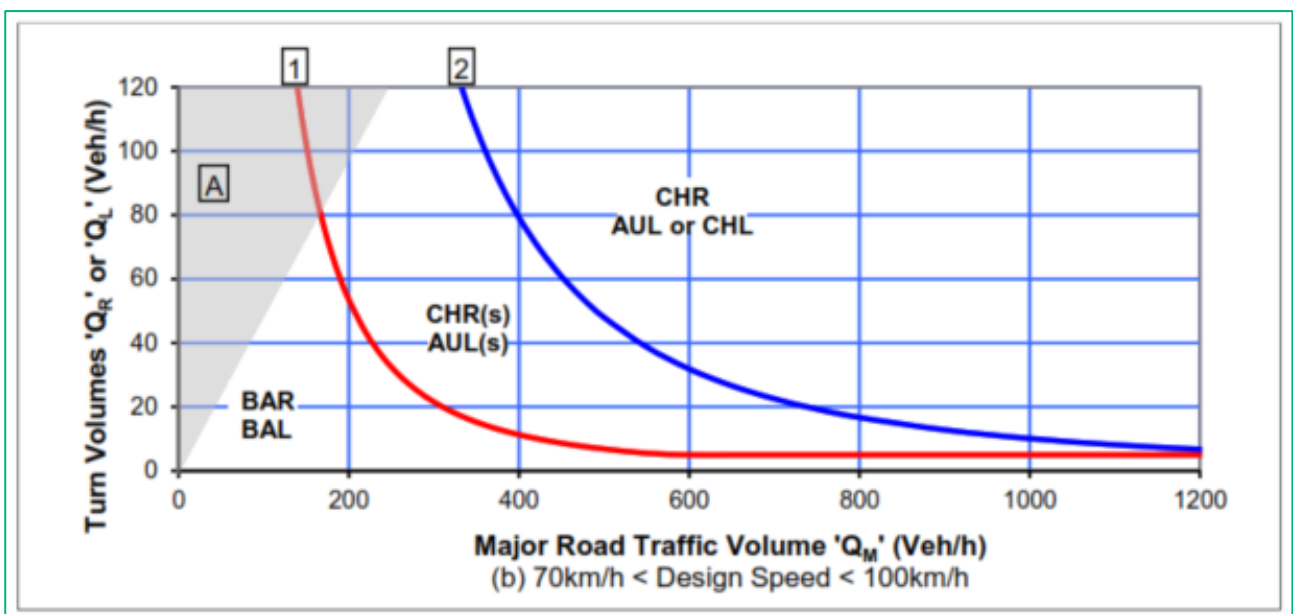
## 9 Turn Warrant Assessment

### 9.1 Mount Peter Road / Cooper Road

The turn lane configurations for the access into the site have been assessed in correlation to the method set out in Austroads *Guide to Traffic Management* (AGTM) Part 6. Section 3.3.6 of the guide sets out road characterises and scenarios in which to apply the turn warrant assessment.

The assessment has been conducted on the left and right turn warrants for a road with a posted speed of 60km/h (design speed = 70km/h). Figure 9-1 illustrates the warrants for turn treatments on major roads at priority-controlled intersections.

Figure 9-1 Turn Warrant Assessment - of 70km/h < Design Speed < 100km/h, Major Road Frontage



Source: AGTM Part 6, Figure 3.25

The turn warrants have been assessed using the 2028 background with development traffic opening year as the priority controlled intersection is expected to be upgraded after this design horizon. The turn warrant assessment has been conducted for both the AM and PM peak period.

The required turn warrant treatments for each peak are shown in Table 9-1, with detailed turn lane warrant assessments provided in **Appendix F**.

Table 9-1 Turn Warrant Assessment

| Treatment                     | AM Peak | PM Peak |
|-------------------------------|---------|---------|
| Right Turn Treatment Required | CHR     | CHR     |
| Left Turn Treatment Required  | AUL(S)  | AUL(S)  |

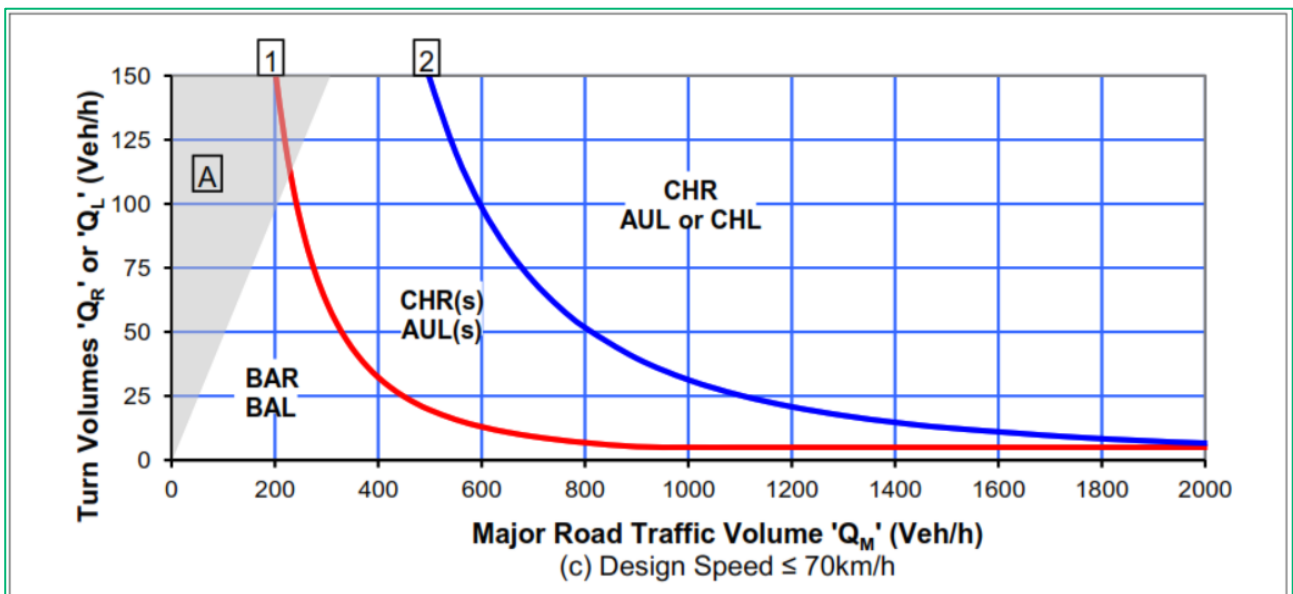
The existing formation of the Mount Peter Road / Cooper Road intersection provides a CHR and AUL(s). This is compliant with the requirements of the turn warrant assessment and no upgrades are required before the ultimate formation is provided.

## 9.2 Cooper Road / Site Access

The turn lane configurations for the access into the site have been assessed in correlation to the method set out in Austroads *Guide to Traffic Management* (AGTM) Part 6. Section 3.3.6 of the guide sets out road characterises and scenarios in which to apply the turn warrant assessment.

The assessment has been conducted on the left and right turn warrants for a road with a posted speed of 50km/h (design speed = 60km/h). Figure 9-2 illustrates the warrants for turn treatments on major roads at priority-controlled intersections.

Figure 9-2 Turn Warrant Assessment - of Design Speed <70km/h, Major Road Frontage



Source: AGTM Part 6, Figure 3.25

The turn warrants have been assessed using the 2028 background with development traffic opening year as the priority controlled intersection is expected to be restricted to left in / left out with the upgrade of Cooper Road to the ultimate cross section. As noted above, this is anticipated to occur between 2025 and 2028 when 89 dwelling are provided but has been assessed in 2028 as a conservative assessment. The turn warrant assessment has been conducted for both the AM and PM peak period.

The required turn warrant treatments for each peak are shown in Table 9-2, with detailed turn lane warrant assessments provided in **Appendix F**.

Table 9-2 Turn Warrant Assessment

| Treatment                     | AM Peak | PM Peak |
|-------------------------------|---------|---------|
| Right Turn Treatment Required | BAR     | BAR     |
| Left Turn Treatment Required  | BAL     | BAL     |

The proposed Cooper Road / Site Access intersection requires a BAR and BAL treatment before the completion of the Stage 5 construction.

## 10 Lighting Facilities

Cooper Road is a two-lane rural road featuring two driveways for rural properties between the planned Stage 5 development access and Mount Peter Road. The road will maintain its predominantly rural character until development occurs south of Cooper Road, with no new access points other than the Stage 5 development access. Traffic volumes are expected to stay relatively low, with the full development of Rocky Creek adding approximately 1,818 vehicles per day. Given the road's characteristics and traffic levels, street lighting will be necessary only at intersections or pedestrian crossings in the Interim design.

Lighting was recently provided as part of the Stage 3 Rocky Creek development to provide flag lighting at the pedestrian crossing location along Cooper Road. The proposed Stage 5 Rocky Creek development is not anticipated to change the conditions of Cooper Road with a rural environment maintained. Thus, the findings of the lighting assessment in Stantec's TIA are highly relevant and consistent for Stage 5.

## 11 Summary

Modus has been commissioned by Kroymans Developments Pty Ltd, to provide traffic and transport advice in relation to the proposed RoL for Stage 5 of the Rocky Creek sub-division project in Mount Peter. The Traffic Impact Assessment (TIA) has been produced by Modus to provide a response to Item 12 of the Councils negotiated decision notice.

Based on our review, Modus has the following key findings:

### Existing Conditions

- ▶ The Rocky Creek Stage 5 development is part of the Pinecrest Master Planned Community (PMPC), recognised as a major urban growth area in the Cairns Region.
- ▶ The site is identified within the Council Planning Scheme as a Low-medium Density Residential zone and is surrounded by similar zones in all directions.
- ▶ Only two crashes occurred in the last five years which is expected to be attributed to driver error.
- ▶ A rail line runs parallel to Mount Peter Road, and supports the local sugar cane operations. This rail line operates only during the sugar cane season, which typically spans from late in the year for about five to six months.

### Proposed Development

- ▶ The development proposes a one into 37 lot subdivision. The development will construct 37 additional lots to form Stage Five of the approved Rocky Creek Development in Mount Peter.

### Traffic and Transport Review

- ▶ The Stage 5 Rocky Creek development provides a new all movement access intersection on Cooper Road. Ultimately this access will be restricted to left-in / left-out.
- ▶ The development proposes a new internal access street which will be constructed in line with the FNQROC design guidelines.
- ▶ Sight distance for the proposed development access intersection is provided in line with the AS2890.1 requirements.
- ▶ The interim form of Cooper Road is suitable for the Stage 5 Rocky Creek development and will require an upgrade once 89 dwellings have been provided as part of Stage 2 of the Pinecrest development.
- ▶ The proposed driveways are compliant with AS2890.1 and FNQROC design guidelines.

- ▶ The minimum on-street car parking requirement has been provided on-site.
- ▶ A swept path assessment has confirmed that a RCV vehicle can safely and efficiently manoeuvre to, within and from the proposed development.
- ▶ The proposed development will not significantly impact the cane rail crossing on Cooper Road and anticipated queuing will be within the provided queue storage.
- ▶ SIDRA intersection analysis has confirmed that the proposed site access intersection operates within acceptable operational capacity thresholds for the year of opening to the 2031 design horizon.
- ▶ The SIDRA assessment for the Mount Peter Road / Cooper Road and Mount Peter Road / Mackillop Road will operate sufficiently until 2028 where the ultimate signalised formation will be required. The signalised formation will amalgamate the two existing intersections into a four-way arrangement.
- ▶ A turn warrant assessment confirms that the Cooper Road / Site Access intersection can be accommodated via BAL and BAR turn treatments.
- ▶ A turn warrant assessment confirms that the existing turn treatments at the Mount Peter Road / Cooper Road intersection will accommodate the proposed development.
- ▶ Given the rural nature of Cooper Road with the construction of the full Rocky Creek development, no additional light is required. Additional lighting facilities will be provided as part of development to the south

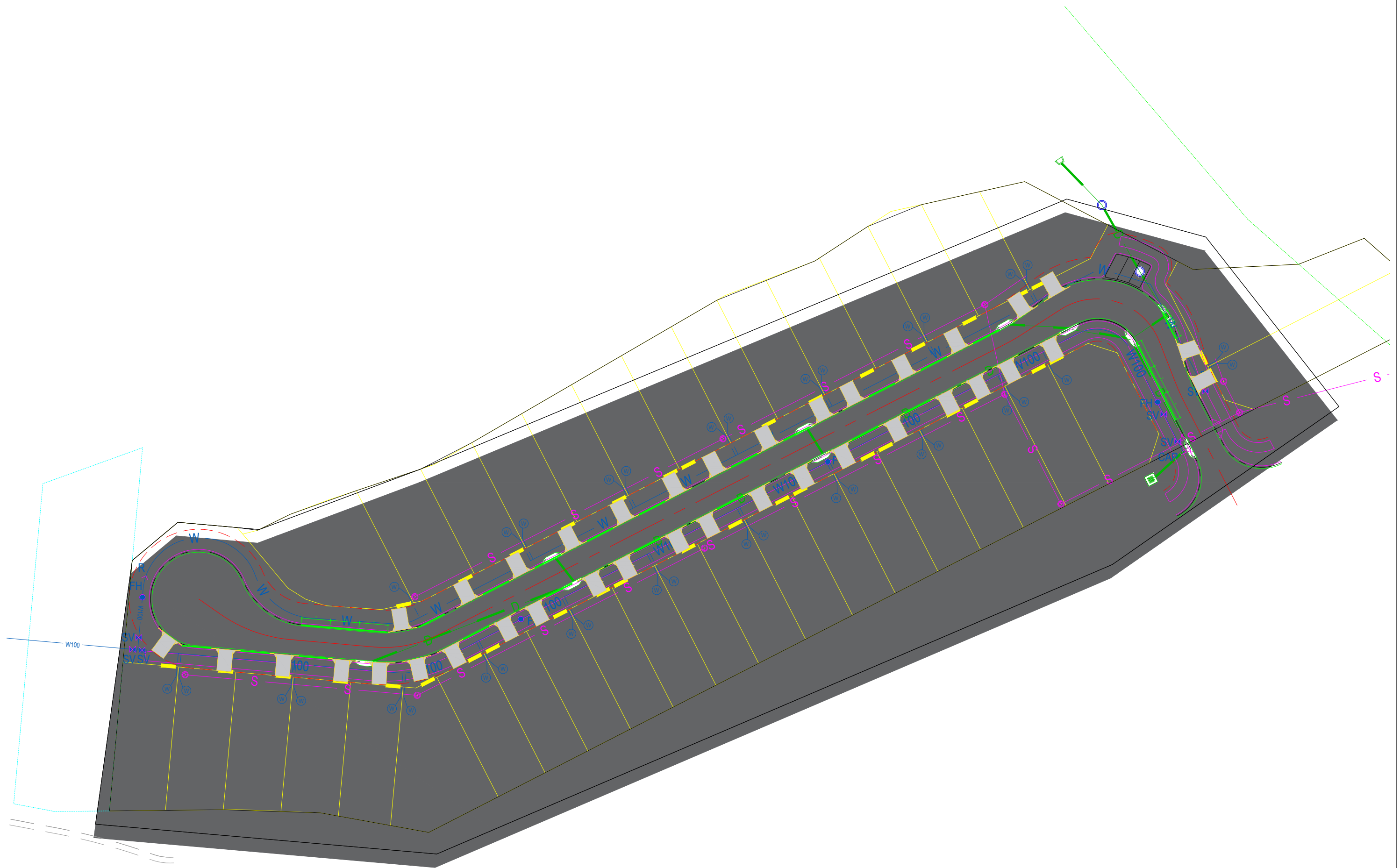
# APPENDIX A

## DEVELOPMENT PLANS

# PINECREST

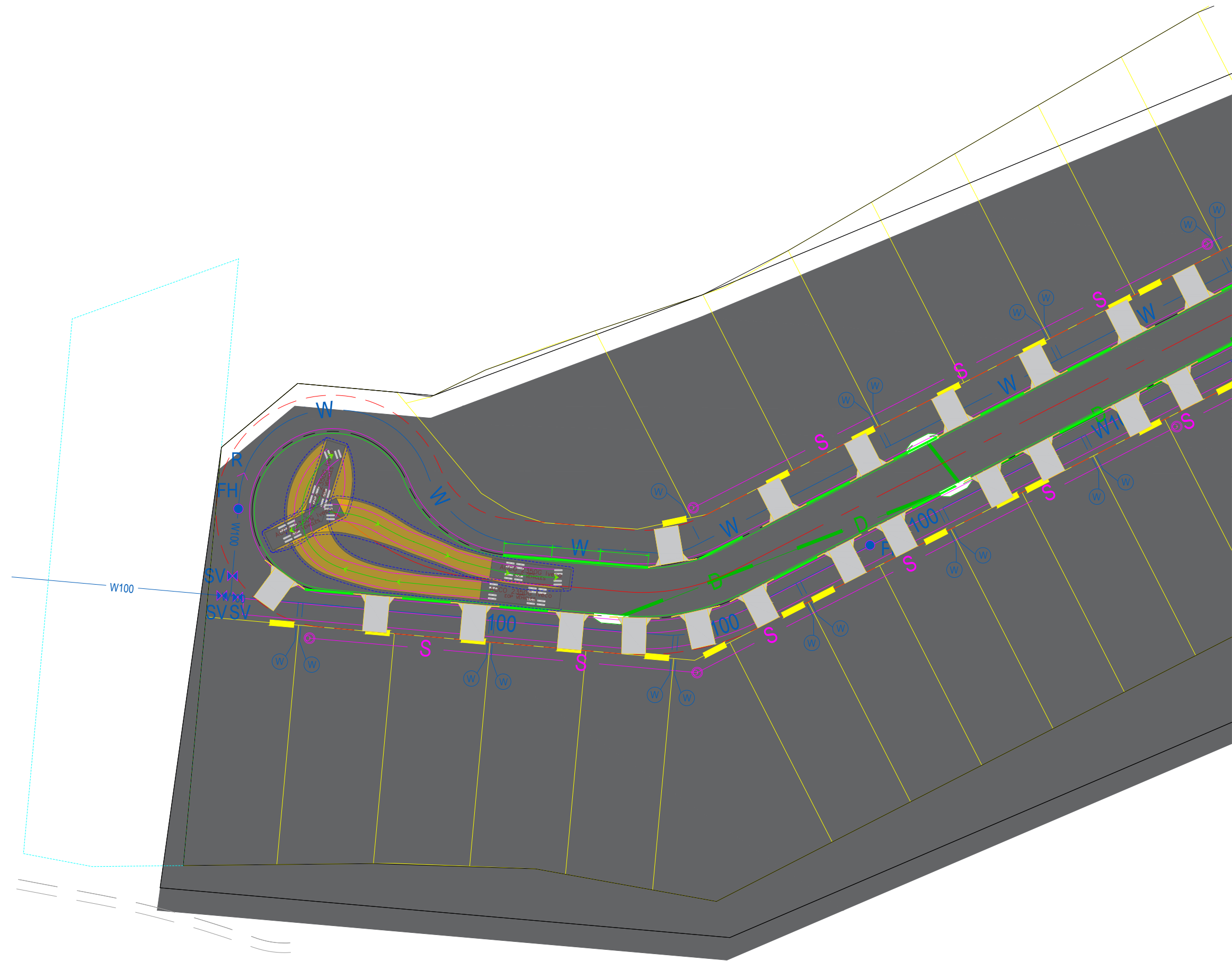
## PROPOSED RECONFIGURATION MASTER PLANNED COMMUNITY STAGES 5A & 5B - MOUNT PETER



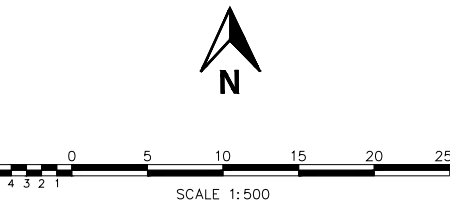
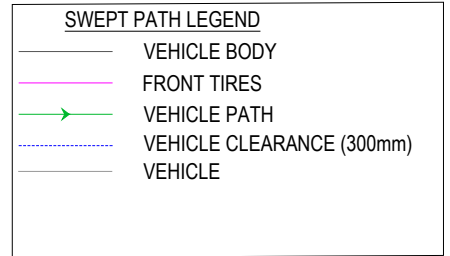
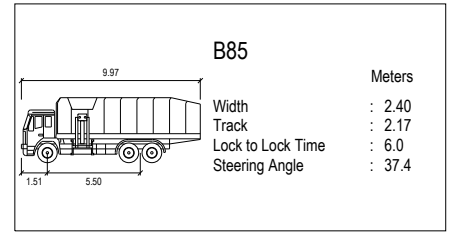


# APPENDIX B

## SWEPT PATH ASSESSMENT



VEHICLE USED IN SIMULATION



PROJECT

ROCKY CREEK STAGE 5

CLIENT

KROYMANS  
DEVELOPMENTS PTY LTD

DRAWING TITLE

RCV SWEPT PATH  
ASSESSMENT

DRAWING NUMBER

MOD24029 - SK01

| DATE        | REVISION |
|-------------|----------|
| 23 AUG 2023 | A        |

| REV | DRAWN BY | APPROVED | DATE | AMENDMENT DETAILS |
|-----|----------|----------|------|-------------------|
|     |          |          |      |                   |
|     |          |          |      |                   |
|     |          |          |      |                   |
|     |          |          |      |                   |
|     |          |          |      |                   |
|     |          |          |      |                   |

**MODUS**  
Transport and Traffic Engineering

ABN 49 668 863 269  
310 Edward Street, BRISBANE CITY QLD 4000  
T: 1300 606 408 E: marketing@moduseng.com.au  
W: www.modusengineering.com.au

**PRELIMINARY ADVICE ONLY**  
**NOT TO BE USED FOR CONSTRUCTION**

MODUS ENGINEERING ALL RIGHTS RESERVED. THIS DOCUMENT IS PRODUCED BY MODUS ENGINEERING SOLELY FOR THE BENEFIT OF AND USE BY THE CLIENT IN ACCORDANCE WITH THE TERMS OF THE RETAINER. MODUS ENGINEERING DOES NOT AND SHALL NOT ASSUME ANY RESPONSIBILITY OR LIABILITY WHATSOEVER TO ANY THIRD PARTY ARISING OUT OF ANY USE OR RELIANCE BY THIRD PARTY ON THE CONTENT OF THIS DOCUMENT.

GENERAL NOTES:  
1.PRELIMINARY DESIGN ISSUED FOR COMMENT ONLY.  
2.ALL DIMENSIONS ARE PROVIDED IN METERS UNLESS NOTED OTHERWISE.

RPEQ Certified

# APPENDIX C

## NETWORK FLOW DIAGRAMS

Legend

L

Left turn

T

Through

R

Right turn

U

U-turn

00

AM Peak Hour Volumes

(00)

PM Peak Hour Volumes

Development Area

Date year

#REF!

Assessment year

#REF!

Linear Growth Rate

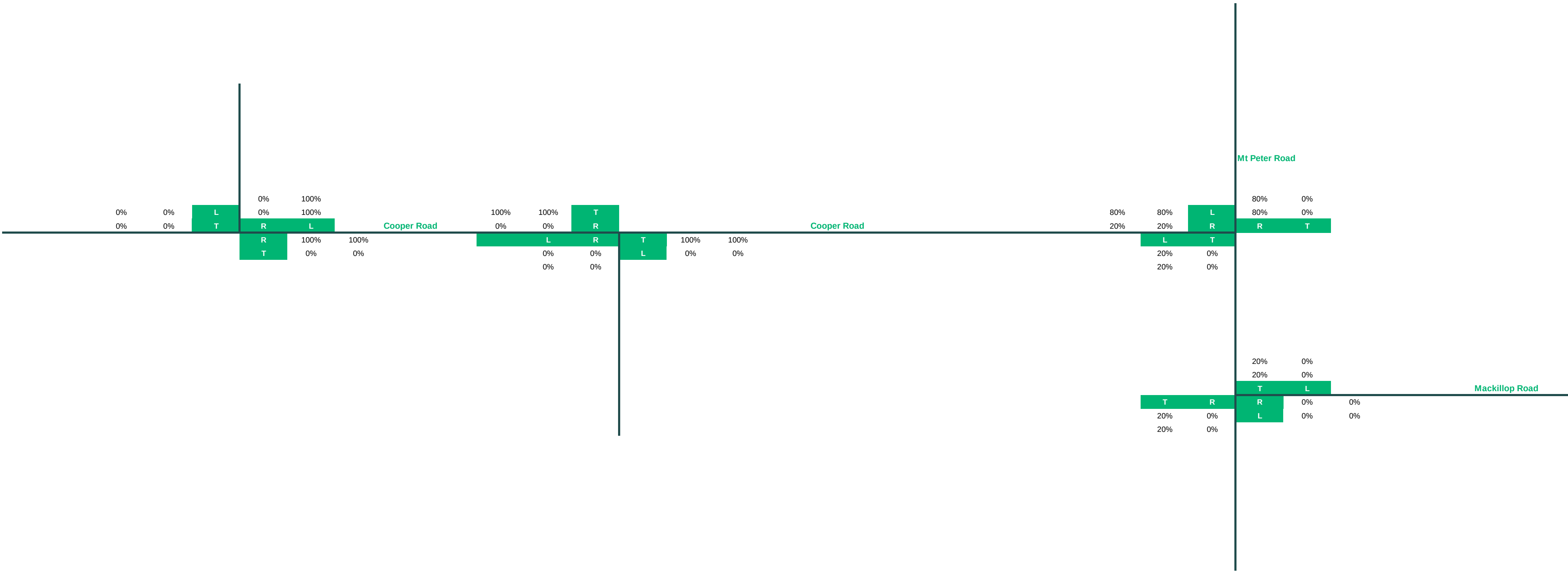
#REF!

AM Peak Hour End

#REF!

PM Peak Hour End

#REF!



Legend

L

Left turn

T

Through

R

Right turn

U

U-turn

00

AM Peak Hour Volumes

(00)

PM Peak Hour Volumes

Development Area

Base year

#REF!

Assessment year

#REF!

Linear Growth Rate

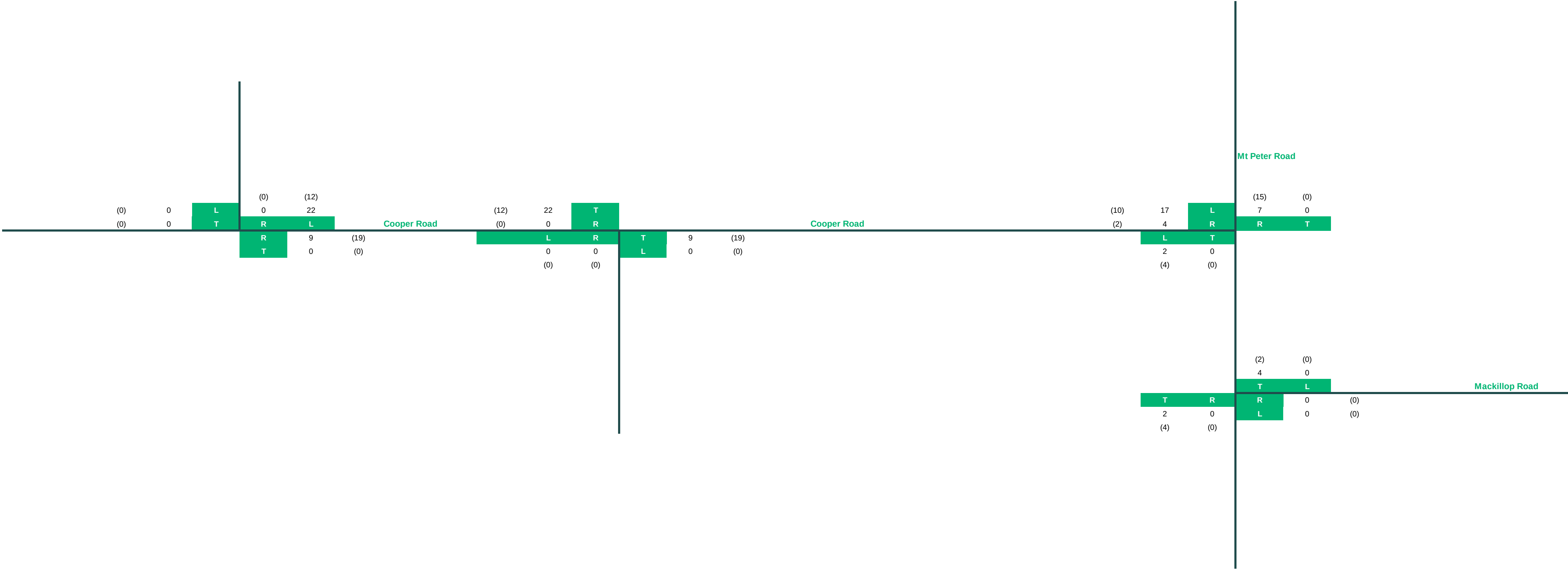
#REF!

AM Peak Hour End

#REF!

PM Peak Hour End

#REF!



Legend

L

Left turn

T

Through

R

Right turn

U

U-turn

00

AM Peak Hour Volumes

(00)

PM Peak Hour Volumes

Development Area

Date year

#REF!

Assessment year

#REF!

Linear Growth Rate

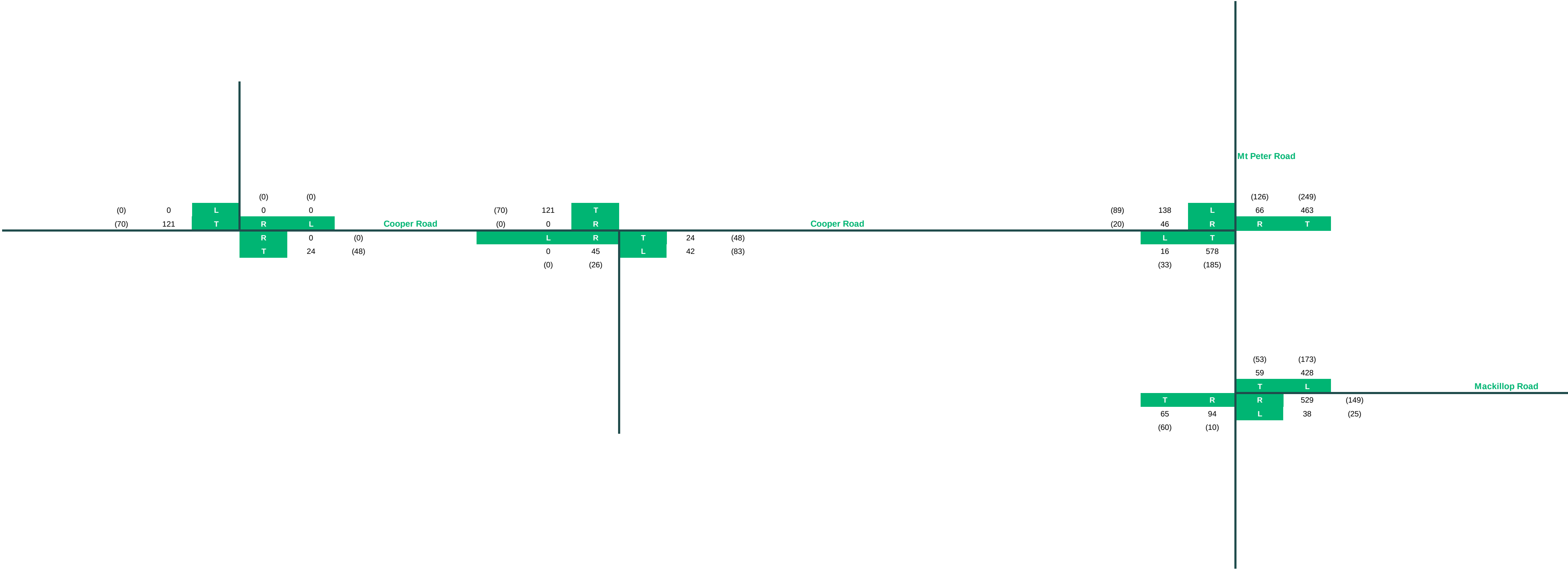
#REF!

AM Peak Hour End

#REF!

PM Peak Hour End

#REF!



Legend

L

Left turn

T

Through

R

Right turn

U

U-turn

00

AM Peak Hour Volumes

(00)

PM Peak Hour Volumes

Development Area

Date year

#REF!

Assessment year

#REF!

Linear Growth Rate

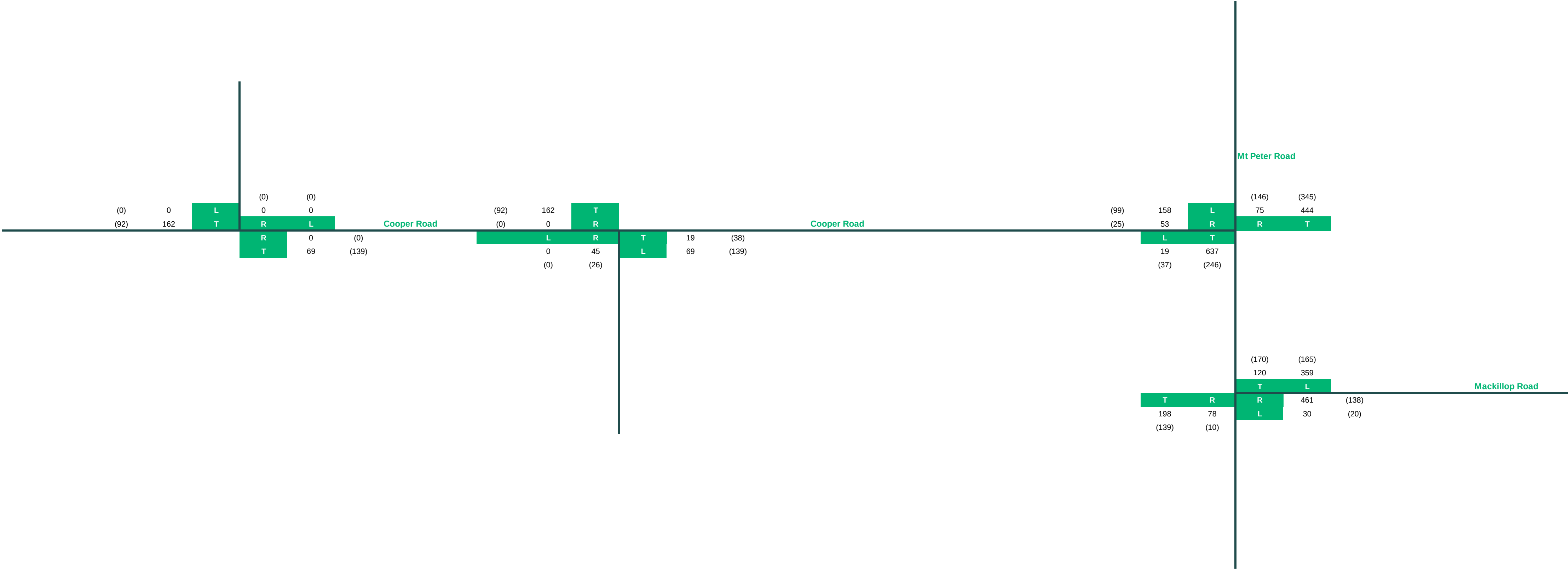
#REF!

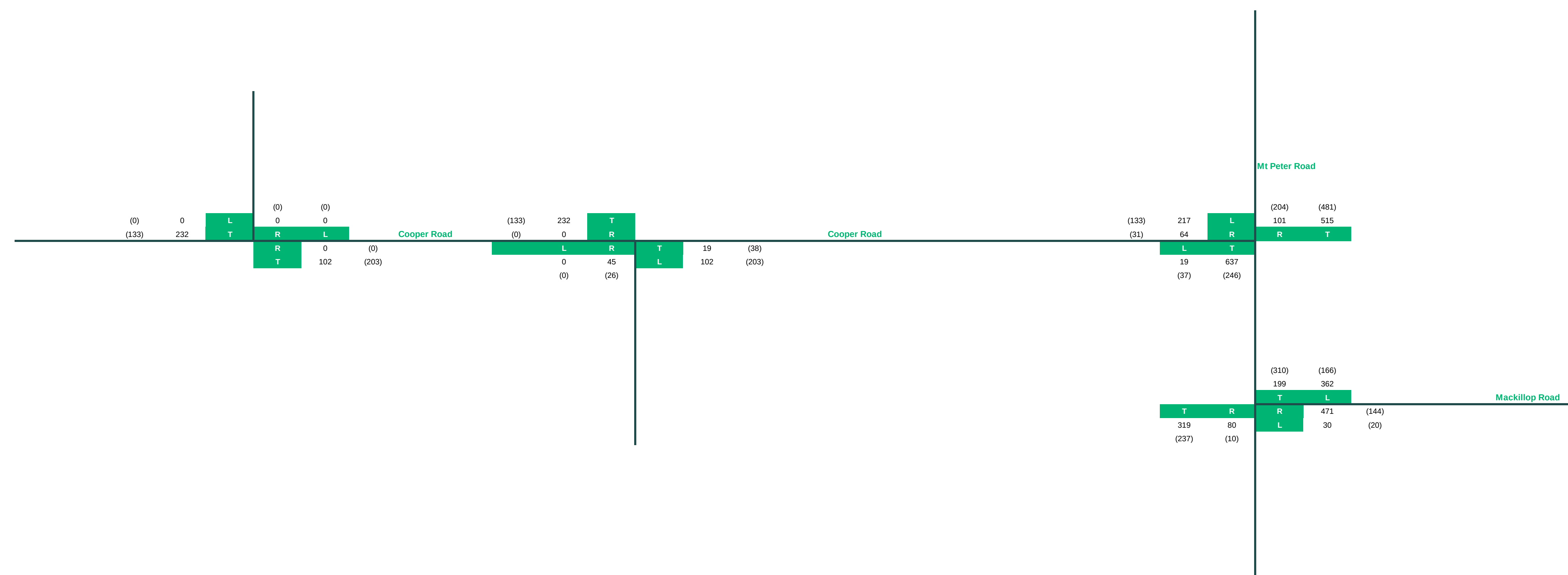
AM Peak Hour End

#REF!

PM Peak Hour End

#REF!





Legend

- L Left turn
- T Through
- R Right turn
- U U-turn
- 00 AM Peak Hour Volumes
- (00) PM Peak Hour Volumes
- Development Area

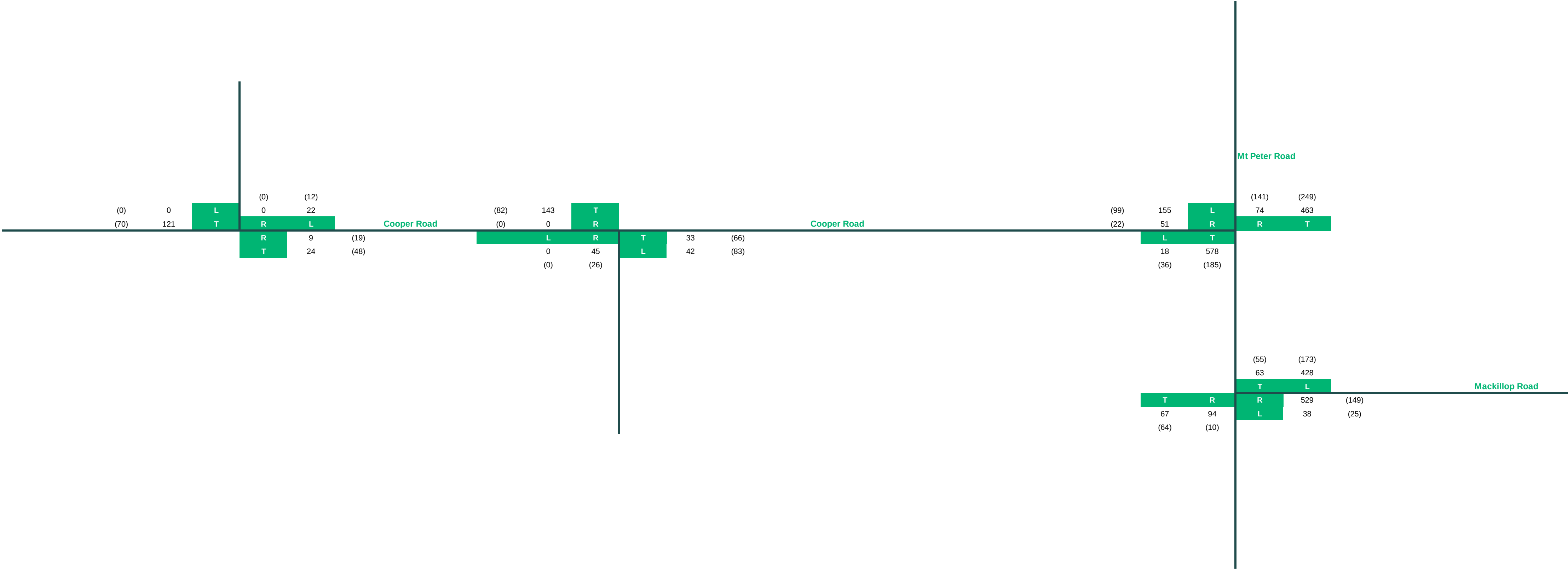
Date year #REF!

Assessment year #REF!

Linear Growth Rate #REF!

AM Peak Hour End #REF!

PM Peak Hour End #REF!



Legend

- L Left turn
- T Through
- R Right turn
- U U-turn
- 00 AM Peak Hour Volumes
- (00) PM Peak Hour Volumes
- Development Area

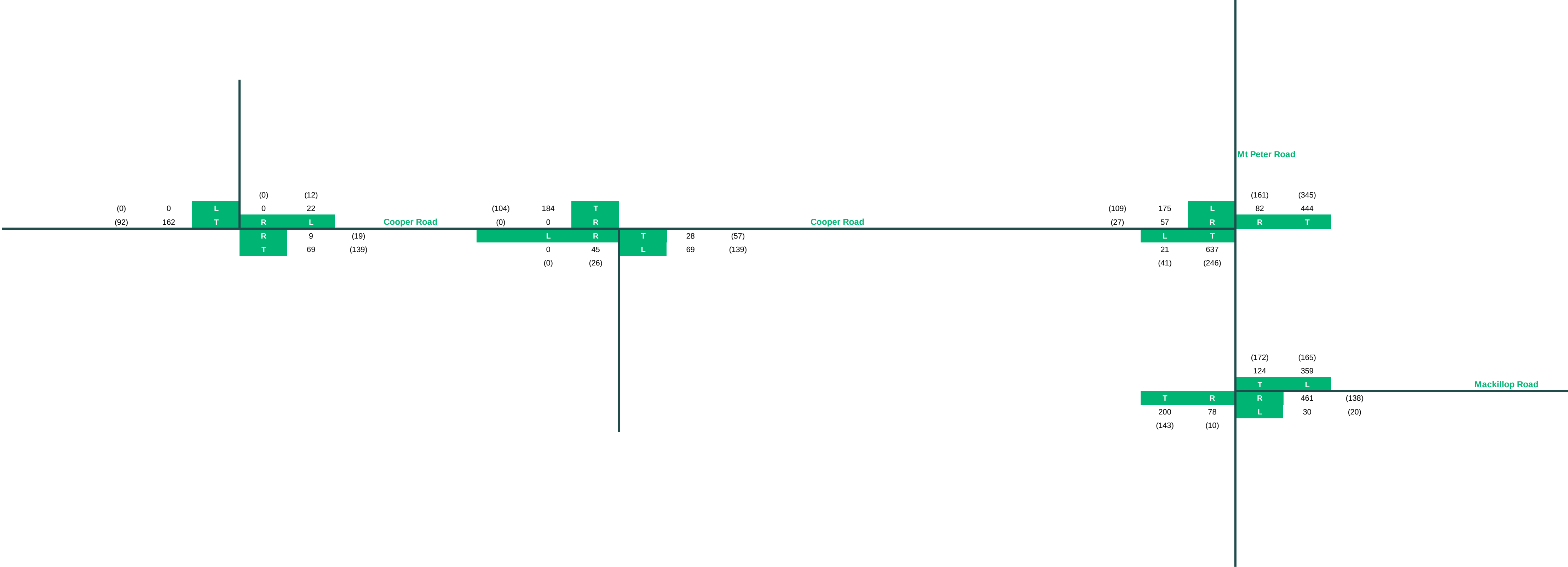
Date year #REF!

Assessment year #REF!

Linear Growth Rate #REF!

AM Peak Hour End #REF!

PM Peak Hour End #REF!



Legend

- L Left turn
- T Through
- R Right turn
- U U-turn
- 00 AM Peak Hour Volumes
- (00) PM Peak Hour Volumes
- Development Area

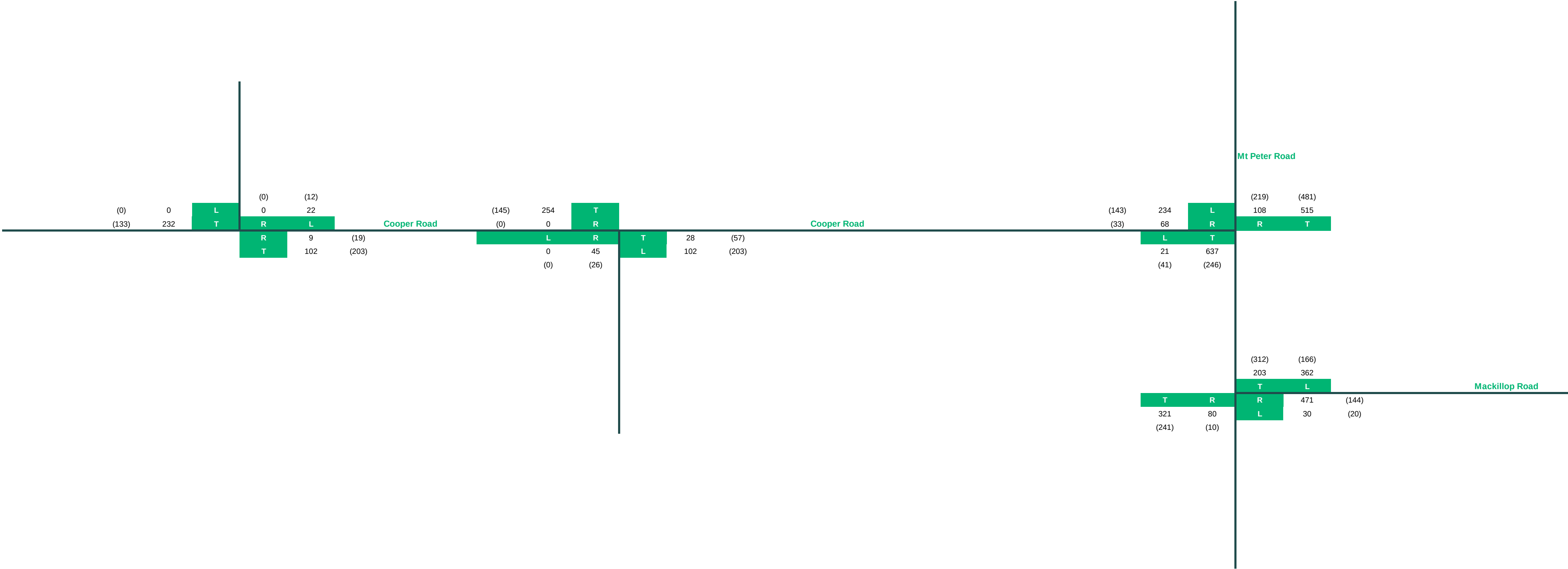
Date year #REF!

Assessment year #REF!

Linear Growth Rate #REF!

AM Peak Hour End #REF!

PM Peak Hour End #REF!



# APPENDIX D

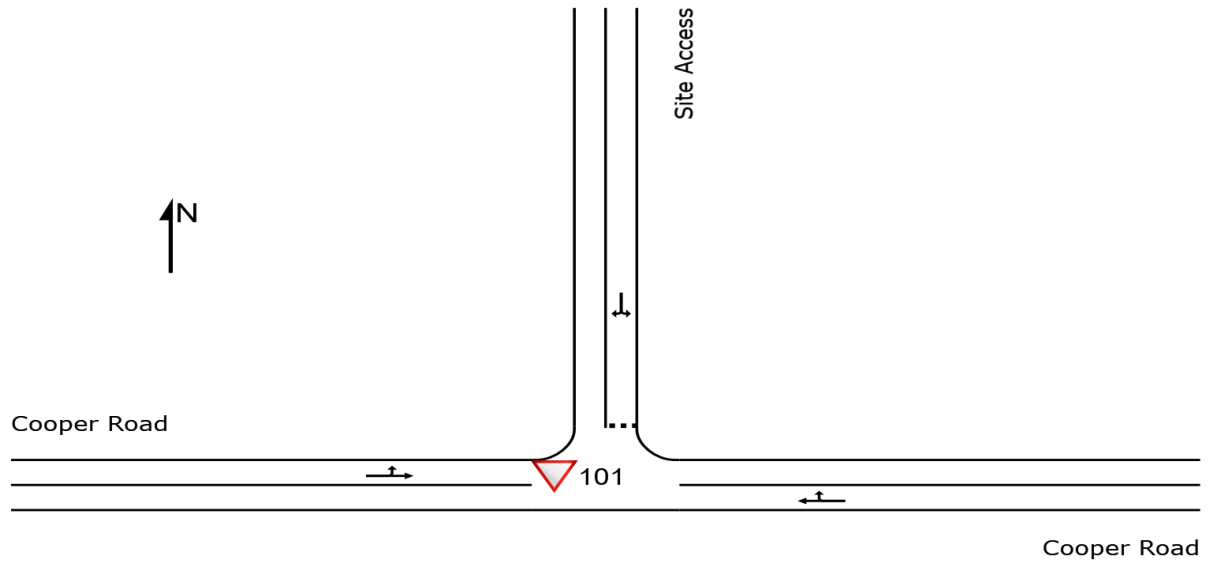
## SIDRA OUTPUTS

# SITE LAYOUT

 **Site: 101 [2025BG+DEV AM Peak - Site (Site Folder: General)]**

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

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



**SIDRA INTERSECTION 9.1 | Copyright © 2000-2024 Akcelik and Associates Pty Ltd | [sidrasolutions.com](http://sidrasolutions.com)**  
Organisation: MODUS TRAFFIC ENGINEERING PTY LTD | Licence: NETWORK / 1PC | Created: Friday, 23 August 2024 1:46:36 PM  
Project: C:\Users\TettehAnang\Modus Engineering\Projects 2024 - 2025 - Documents\General\Projects 2024 - 2025\QLD\MOD24029QLD - Rocky Creek Stage 5\3 ANALYSIS\SIDRA\Rocky Creek SIDRA.sip9

# MOVEMENT SUMMARY

Site: 101 [2025BG+DEV AM Peak - Site (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
|------------------------------|------|-----------|--------------|--------------|---------------|------------|-----------|-------------|------------------|-------------------|-----|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |              | Arrival Flows |            | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |     | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | [ Total HV ] | [ Veh. veh ]  | [ Dist ] m |           |             |                  |                   |     |           |                |                     |             |
| East: Cooper Road            |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
| 5                            | T1   | All MCs   | 25           | 3.0          | 25            | 3.0        | 0.019     | 0.2         | LOS A            | 0.1               | 0.4 | 0.14      | 0.19           | 0.14                | 57.6        |
| 6                            | R2   | All MCs   | 9            | 3.0          | 9             | 3.0        | 0.019     | 5.9         | LOS A            | 0.1               | 0.4 | 0.14      | 0.19           | 0.14                | 52.7        |
| Approach                     |      |           | 35           | 3.0          | 35            | 3.0        | 0.019     | 1.7         | NA               | 0.1               | 0.4 | 0.14      | 0.19           | 0.14                | 56.6        |
| North: Site Access           |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
| 7                            | L2   | All MCs   | 23           | 3.0          | 23            | 3.0        | 0.017     | 3.9         | LOS A            | 0.1               | 0.5 | 0.22      | 0.51           | 0.22                | 49.6        |
| 9                            | R2   | All MCs   | 1            | 0.0          | 1             | 0.0        | 0.017     | 3.9         | LOS A            | 0.1               | 0.5 | 0.22      | 0.51           | 0.22                | 45.6        |
| Approach                     |      |           | 24           | 2.9          | 24            | 2.9        | 0.017     | 3.9         | LOS A            | 0.1               | 0.5 | 0.22      | 0.51           | 0.22                | 49.5        |
| West: Cooper Road            |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
| 10                           | L2   | All MCs   | 1            | 0.0          | 1             | 0.0        | 0.067     | 5.5         | LOS A            | 0.0               | 0.0 | 0.00      | 0.00           | 0.00                | 24.5        |
| 11                           | T1   | All MCs   | 127          | 3.0          | 127           | 3.0        | 0.067     | 0.0         | LOS A            | 0.0               | 0.0 | 0.00      | 0.00           | 0.00                | 59.9        |
| Approach                     |      |           | 128          | 3.0          | 128           | 3.0        | 0.067     | 0.1         | NA               | 0.0               | 0.0 | 0.00      | 0.00           | 0.00                | 59.6        |
| All Vehicles                 |      |           | 187          | 3.0          | 187           | 3.0        | 0.067     | 0.9         | NA               | 0.1               | 0.5 | 0.05      | 0.11           | 0.05                | 58.0        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2025BG+DEV PM Peak - Site (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
|------------------------------|------|-----------|--------------|--------------|---------------|------------|-----------|-------------|------------------|-------------------|-----|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |              | Arrival Flows |            | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |     | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | [ Total HV ] | [ Veh. veh    | [ Dist ] m |           |             |                  |                   |     |           |                |                     |             |
|                              |      |           | veh/h        | %            | veh/h         | %          | v/c       | sec         |                  |                   |     |           |                |                     | km/h        |
| East: Cooper Road            |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
| 5                            | T1   | All MCs   | 51           | 3.0          | 51            | 3.0        | 0.039     | 0.1         | LOS A            | 0.1               | 0.8 | 0.10      | 0.19           | 0.10                | 57.7        |
| 6                            | R2   | All MCs   | 20           | 3.0          | 20            | 3.0        | 0.039     | 5.7         | LOS A            | 0.1               | 0.8 | 0.10      | 0.19           | 0.10                | 52.8        |
| Approach                     |      |           | 71           | 3.0          | 71            | 3.0        | 0.039     | 1.7         | NA               | 0.1               | 0.8 | 0.10      | 0.19           | 0.10                | 56.6        |
| North: Site Access           |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
| 7                            | L2   | All MCs   | 13           | 3.0          | 13            | 3.0        | 0.009     | 3.7         | LOS A            | 0.0               | 0.3 | 0.16      | 0.50           | 0.16                | 49.9        |
| 9                            | R2   | All MCs   | 1            | 0.0          | 1             | 0.0        | 0.009     | 3.8         | LOS A            | 0.0               | 0.3 | 0.16      | 0.50           | 0.16                | 45.8        |
| Approach                     |      |           | 14           | 2.8          | 14            | 2.8        | 0.009     | 3.7         | LOS A            | 0.0               | 0.3 | 0.16      | 0.50           | 0.16                | 49.6        |
| West: Cooper Road            |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
| 10                           | L2   | All MCs   | 1            | 0.0          | 1             | 0.0        | 0.039     | 5.5         | LOS A            | 0.0               | 0.0 | 0.00      | 0.01           | 0.00                | 24.5        |
| 11                           | T1   | All MCs   | 74           | 3.0          | 74            | 3.0        | 0.039     | 0.0         | LOS A            | 0.0               | 0.0 | 0.00      | 0.01           | 0.00                | 59.9        |
| Approach                     |      |           | 75           | 3.0          | 75            | 3.0        | 0.039     | 0.1         | NA               | 0.0               | 0.0 | 0.00      | 0.01           | 0.00                | 59.3        |
| All Vehicles                 |      |           | 159          | 3.0          | 159           | 3.0        | 0.039     | 1.1         | NA               | 0.1               | 0.8 | 0.06      | 0.13           | 0.06                | 57.5        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2028BG+DEV AM Peak - Site (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |              |               |          |           |             |                  |                   |     |           |                |                     |             |
|------------------------------|------|-----------|--------------|--------------|---------------|----------|-----------|-------------|------------------|-------------------|-----|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |              | Arrival Flows |          | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |     | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | [ Total HV ] | [ Veh. veh    | Dist ] m |           |             |                  |                   |     |           |                |                     |             |
|                              |      |           | veh/h        | %            | veh/h         | %        | v/c       | sec         |                  |                   |     |           |                |                     | km/h        |
| East: Cooper Road            |      |           |              |              |               |          |           |             |                  |                   |     |           |                |                     |             |
| 5                            | T1   | All MCs   | 25           | 3.0          | 25            | 3.0      | 0.019     | 0.2         | LOS A            | 0.1               | 0.4 | 0.14      | 0.19           | 0.14                | 57.6        |
| 6                            | R2   | All MCs   | 9            | 3.0          | 9             | 3.0      | 0.019     | 5.9         | LOS A            | 0.1               | 0.4 | 0.14      | 0.19           | 0.14                | 52.7        |
| Approach                     |      |           | 35           | 3.0          | 35            | 3.0      | 0.019     | 1.7         | NA               | 0.1               | 0.4 | 0.14      | 0.19           | 0.14                | 56.6        |
| North: Site Access           |      |           |              |              |               |          |           |             |                  |                   |     |           |                |                     |             |
| 7                            | L2   | All MCs   | 23           | 3.0          | 23            | 3.0      | 0.017     | 3.9         | LOS A            | 0.1               | 0.5 | 0.22      | 0.51           | 0.22                | 49.6        |
| 9                            | R2   | All MCs   | 1            | 0.0          | 1             | 0.0      | 0.017     | 3.9         | LOS A            | 0.1               | 0.5 | 0.22      | 0.51           | 0.22                | 45.6        |
| Approach                     |      |           | 24           | 2.9          | 24            | 2.9      | 0.017     | 3.9         | LOS A            | 0.1               | 0.5 | 0.22      | 0.51           | 0.22                | 49.5        |
| West: Cooper Road            |      |           |              |              |               |          |           |             |                  |                   |     |           |                |                     |             |
| 10                           | L2   | All MCs   | 1            | 0.0          | 1             | 0.0      | 0.067     | 5.5         | LOS A            | 0.0               | 0.0 | 0.00      | 0.00           | 0.00                | 24.5        |
| 11                           | T1   | All MCs   | 127          | 3.0          | 127           | 3.0      | 0.067     | 0.0         | LOS A            | 0.0               | 0.0 | 0.00      | 0.00           | 0.00                | 59.9        |
| Approach                     |      |           | 128          | 3.0          | 128           | 3.0      | 0.067     | 0.1         | NA               | 0.0               | 0.0 | 0.00      | 0.00           | 0.00                | 59.6        |
| All Vehicles                 |      |           | 187          | 3.0          | 187           | 3.0      | 0.067     | 0.9         | NA               | 0.1               | 0.5 | 0.05      | 0.11           | 0.05                | 58.0        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2028BG+DEV PM Peak - Site (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |              |               |          |           |             |                  |                   |     |           |                |                     |             |
|------------------------------|------|-----------|--------------|--------------|---------------|----------|-----------|-------------|------------------|-------------------|-----|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |              | Arrival Flows |          | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |     | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | [ Total HV ] | [ Veh. veh    | Dist ] m |           |             |                  |                   |     |           |                |                     |             |
|                              |      |           | veh/h        | %            | veh/h         | %        | v/c       | sec         |                  |                   |     |           |                |                     | km/h        |
| East: Cooper Road            |      |           |              |              |               |          |           |             |                  |                   |     |           |                |                     |             |
| 5                            | T1   | All MCs   | 51           | 3.0          | 51            | 3.0      | 0.039     | 0.1         | LOS A            | 0.1               | 0.8 | 0.10      | 0.19           | 0.10                | 57.7        |
| 6                            | R2   | All MCs   | 20           | 3.0          | 20            | 3.0      | 0.039     | 5.7         | LOS A            | 0.1               | 0.8 | 0.10      | 0.19           | 0.10                | 52.8        |
| Approach                     |      |           | 71           | 3.0          | 71            | 3.0      | 0.039     | 1.7         | NA               | 0.1               | 0.8 | 0.10      | 0.19           | 0.10                | 56.6        |
| North: Site Access           |      |           |              |              |               |          |           |             |                  |                   |     |           |                |                     |             |
| 7                            | L2   | All MCs   | 13           | 3.0          | 13            | 3.0      | 0.009     | 3.7         | LOS A            | 0.0               | 0.3 | 0.16      | 0.50           | 0.16                | 49.9        |
| 9                            | R2   | All MCs   | 1            | 0.0          | 1             | 0.0      | 0.009     | 3.8         | LOS A            | 0.0               | 0.3 | 0.16      | 0.50           | 0.16                | 45.8        |
| Approach                     |      |           | 14           | 2.8          | 14            | 2.8      | 0.009     | 3.7         | LOS A            | 0.0               | 0.3 | 0.16      | 0.50           | 0.16                | 49.6        |
| West: Cooper Road            |      |           |              |              |               |          |           |             |                  |                   |     |           |                |                     |             |
| 10                           | L2   | All MCs   | 1            | 0.0          | 1             | 0.0      | 0.039     | 5.5         | LOS A            | 0.0               | 0.0 | 0.00      | 0.01           | 0.00                | 24.5        |
| 11                           | T1   | All MCs   | 74           | 3.0          | 74            | 3.0      | 0.039     | 0.0         | LOS A            | 0.0               | 0.0 | 0.00      | 0.01           | 0.00                | 59.9        |
| Approach                     |      |           | 75           | 3.0          | 75            | 3.0      | 0.039     | 0.1         | NA               | 0.0               | 0.0 | 0.00      | 0.01           | 0.00                | 59.3        |
| All Vehicles                 |      |           | 159          | 3.0          | 159           | 3.0      | 0.039     | 1.1         | NA               | 0.1               | 0.8 | 0.06      | 0.13           | 0.06                | 57.5        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2031BG+DEV AM Peak - Site (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
| East: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 5                            | T1   | All MCs   | 107          | 3.0 | 107           | 3.0 | 0.063     | 0.1         | LOS A            | 0.1               | 0.5      | 0.07      | 0.08           | 0.07                | 59.1        |
| 6                            | R2   | All MCs   | 9            | 3.0 | 9             | 3.0 | 0.063     | 6.3         | LOS A            | 0.1               | 0.5      | 0.07      | 0.08           | 0.07                | 54.6        |
| Approach                     |      |           | 117          | 3.0 | 117           | 3.0 | 0.063     | 0.6         | NA               | 0.1               | 0.5      | 0.07      | 0.08           | 0.07                | 58.8        |
| North: Site Access           |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 23           | 3.0 | 23            | 3.0 | 0.019     | 4.3         | LOS A            | 0.1               | 0.5      | 0.32      | 0.54           | 0.32                | 49.3        |
| 9                            | R2   | All MCs   | 1            | 0.0 | 1             | 0.0 | 0.019     | 4.7         | LOS A            | 0.1               | 0.5      | 0.32      | 0.54           | 0.32                | 45.1        |
| Approach                     |      |           | 24           | 2.9 | 24            | 2.9 | 0.019     | 4.3         | LOS A            | 0.1               | 0.5      | 0.32      | 0.54           | 0.32                | 49.1        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 1            | 0.0 | 1             | 0.0 | 0.128     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 24.5        |
| 11                           | T1   | All MCs   | 244          | 3.0 | 244           | 3.0 | 0.128     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| Approach                     |      |           | 245          | 3.0 | 245           | 3.0 | 0.128     | 0.0         | NA               | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.7        |
| All Vehicles                 |      |           | 386          | 3.0 | 386           | 3.0 | 0.128     | 0.5         | NA               | 0.1               | 0.5      | 0.04      | 0.06           | 0.04                | 58.9        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2031BG+DEV PM Peak - Site (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
|------------------------------|------|-----------|--------------|--------------|---------------|------------|-----------|-------------|------------------|-------------------|-----|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |              | Arrival Flows |            | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |     | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | [ Total HV ] | [ Veh. veh    | [ Dist ] m |           |             |                  |                   |     |           |                |                     |             |
|                              |      |           | veh/h        | %            | veh/h         | %          | v/c       | sec         |                  |                   |     |           |                |                     | km/h        |
| East: Cooper Road            |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
| 5                            | T1   | All MCs   | 214          | 3.0          | 214           | 3.0        | 0.125     | 0.1         | LOS A            | 0.1               | 1.0 | 0.05      | 0.07           | 0.05                | 59.2        |
| 6                            | R2   | All MCs   | 20           | 3.0          | 20            | 3.0        | 0.125     | 6.0         | LOS A            | 0.1               | 1.0 | 0.05      | 0.07           | 0.05                | 54.7        |
| Approach                     |      |           | 234          | 3.0          | 234           | 3.0        | 0.125     | 0.6         | NA               | 0.1               | 1.0 | 0.05      | 0.07           | 0.05                | 58.9        |
| North: Site Access           |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
| 7                            | L2   | All MCs   | 13           | 3.0          | 13            | 3.0        | 0.010     | 3.9         | LOS A            | 0.0               | 0.3 | 0.24      | 0.51           | 0.24                | 49.6        |
| 9                            | R2   | All MCs   | 1            | 0.0          | 1             | 0.0        | 0.010     | 4.7         | LOS A            | 0.0               | 0.3 | 0.24      | 0.51           | 0.24                | 45.5        |
| Approach                     |      |           | 14           | 2.8          | 14            | 2.8        | 0.010     | 4.0         | LOS A            | 0.0               | 0.3 | 0.24      | 0.51           | 0.24                | 49.3        |
| West: Cooper Road            |      |           |              |              |               |            |           |             |                  |                   |     |           |                |                     |             |
| 10                           | L2   | All MCs   | 1            | 0.0          | 1             | 0.0        | 0.074     | 5.6         | LOS A            | 0.0               | 0.0 | 0.00      | 0.00           | 0.00                | 24.5        |
| 11                           | T1   | All MCs   | 140          | 3.0          | 140           | 3.0        | 0.074     | 0.0         | LOS A            | 0.0               | 0.0 | 0.00      | 0.00           | 0.00                | 59.9        |
| Approach                     |      |           | 141          | 3.0          | 141           | 3.0        | 0.074     | 0.1         | NA               | 0.0               | 0.0 | 0.00      | 0.00           | 0.00                | 59.6        |
| All Vehicles                 |      |           | 388          | 3.0          | 388           | 3.0        | 0.125     | 0.5         | NA               | 0.1               | 1.0 | 0.04      | 0.06           | 0.04                | 58.9        |

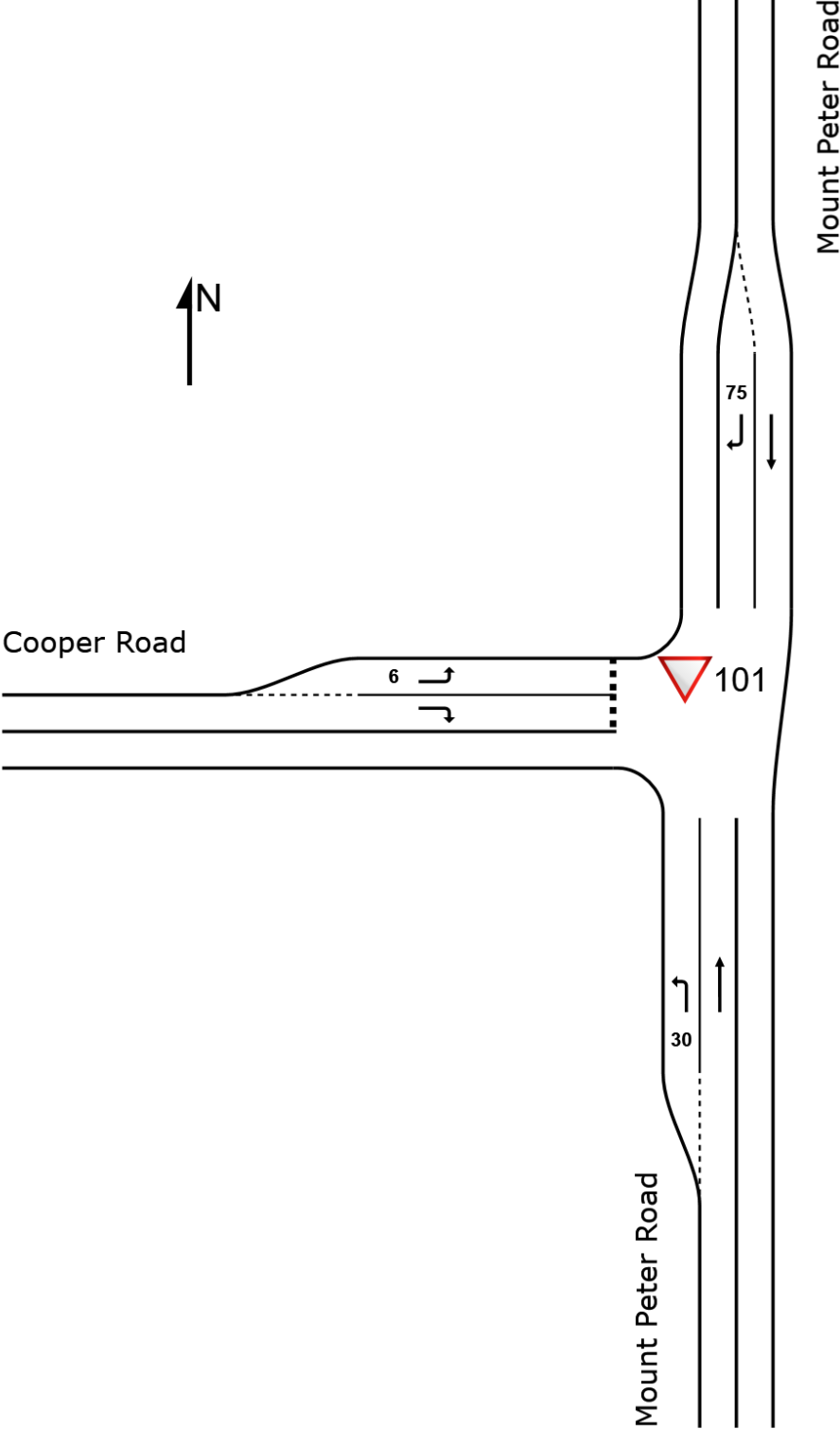
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
Vehicle movement LOS values are based on average delay per movement.  
Minor Road Approach LOS values are based on average delay for all vehicle movements.  
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# SITE LAYOUT

 **Site: 101 [2025BG AM Peak (Site Folder: General)]**

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

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



# MOVEMENT SUMMARY

▼ Site: 101 [2025BG AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        | %   | veh/h         | %   | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 17           | 3.0 | 17            | 3.0 | 0.009     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 608          | 5.0 | 608           | 5.0 | 0.322     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.8        |
| Approach                     |      |           | 625          | 4.9 | 625           | 4.9 | 0.322     | 0.2         | NA               | 0.0               | 0.0      | 0.00      | 0.02           | 0.00                | 59.6        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 487          | 5.0 | 487           | 5.0 | 0.258     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| 9                            | R2   | All MCs   | 69           | 3.0 | 69            | 3.0 | 0.106     | 9.6         | LOS A            | 0.4               | 2.8      | 0.57      | 0.80           | 0.57                | 48.3        |
| Approach                     |      |           | 557          | 4.8 | 557           | 4.8 | 0.258     | 1.3         | NA               | 0.4               | 2.8      | 0.07      | 0.10           | 0.07                | 58.3        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 145          | 3.0 | 145           | 3.0 | 0.234     | 10.1        | LOS B            | 0.9               | 6.2      | 0.59      | 0.83           | 0.62                | 48.1        |
| 12                           | R2   | All MCs   | 48           | 3.0 | 48            | 3.0 | 0.325     | 34.1        | LOS D            | 1.1               | 7.8      | 0.90      | 1.00           | 1.06                | 35.0        |
| Approach                     |      |           | 194          | 3.0 | 194           | 3.0 | 0.325     | 16.1        | LOS C            | 1.1               | 7.8      | 0.66      | 0.88           | 0.73                | 44.0        |
| All Vehicles                 |      |           | 1376         | 4.6 | 1376          | 4.6 | 0.325     | 2.9         | NA               | 1.1               | 7.8      | 0.12      | 0.17           | 0.13                | 56.6        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2025BG PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        | %   | veh/h         | %   | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 35           | 3.0 | 35            | 3.0 | 0.019     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 195          | 5.0 | 195           | 5.0 | 0.103     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 60.0        |
| Approach                     |      |           | 229          | 4.7 | 229           | 4.7 | 0.103     | 0.9         | NA               | 0.0               | 0.0      | 0.00      | 0.09           | 0.00                | 58.7        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 262          | 5.0 | 262           | 5.0 | 0.139     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| 9                            | R2   | All MCs   | 133          | 3.0 | 133           | 3.0 | 0.118     | 6.6         | LOS A            | 0.5               | 3.5      | 0.35      | 0.61           | 0.35                | 50.4        |
| Approach                     |      |           | 395          | 4.3 | 395           | 4.3 | 0.139     | 2.2         | NA               | 0.5               | 3.5      | 0.12      | 0.20           | 0.12                | 56.7        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 94           | 3.0 | 94            | 3.0 | 0.087     | 6.4         | LOS A            | 0.3               | 2.3      | 0.30      | 0.59           | 0.30                | 50.7        |
| 12                           | R2   | All MCs   | 21           | 3.0 | 21            | 3.0 | 0.046     | 11.3        | LOS B            | 0.2               | 1.2      | 0.58      | 0.77           | 0.58                | 47.1        |
| Approach                     |      |           | 115          | 3.0 | 115           | 3.0 | 0.087     | 7.3         | LOS A            | 0.3               | 2.3      | 0.35      | 0.62           | 0.35                | 50.0        |
| All Vehicles                 |      |           | 739          | 4.2 | 739           | 4.2 | 0.139     | 2.6         | NA               | 0.5               | 3.5      | 0.12      | 0.23           | 0.12                | 56.3        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2028BG AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        | %   | veh/h         | %   | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 20           | 3.0 | 20            | 3.0 | 0.011     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 671          | 5.0 | 671           | 5.0 | 0.355     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.8        |
| Approach                     |      |           | 691          | 4.9 | 691           | 4.9 | 0.355     | 0.3         | NA               | 0.0               | 0.0      | 0.00      | 0.02           | 0.00                | 59.5        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 467          | 5.0 | 467           | 5.0 | 0.247     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| 9                            | R2   | All MCs   | 79           | 3.0 | 79            | 3.0 | 0.134     | 10.4        | LOS B            | 0.5               | 3.5      | 0.61      | 0.84           | 0.61                | 47.7        |
| Approach                     |      |           | 546          | 4.7 | 546           | 4.7 | 0.247     | 1.6         | NA               | 0.5               | 3.5      | 0.09      | 0.12           | 0.09                | 58.0        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 166          | 3.0 | 166           | 3.0 | 0.297     | 11.4        | LOS B            | 1.2               | 8.5      | 0.65      | 0.89           | 0.77                | 47.1        |
| 12                           | R2   | All MCs   | 56           | 3.0 | 56            | 3.0 | 0.433     | 42.1        | LOS E            | 1.5               | 10.6     | 0.92      | 1.03           | 1.18                | 32.1        |
| Approach                     |      |           | 222          | 3.0 | 222           | 3.0 | 0.433     | 19.1        | LOS C            | 1.5               | 10.6     | 0.72      | 0.92           | 0.87                | 42.2        |
| All Vehicles                 |      |           | 1459         | 4.6 | 1459          | 4.6 | 0.433     | 3.6         | NA               | 1.5               | 10.6     | 0.14      | 0.19           | 0.17                | 55.9        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2028BG PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        | %   | veh/h         | %   | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 39           | 3.0 | 39            | 3.0 | 0.021     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 259          | 5.0 | 259           | 5.0 | 0.137     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| Approach                     |      |           | 298          | 4.7 | 298           | 4.7 | 0.137     | 0.8         | NA               | 0.0               | 0.0      | 0.00      | 0.08           | 0.00                | 58.9        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 363          | 5.0 | 363           | 5.0 | 0.192     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| 9                            | R2   | All MCs   | 154          | 3.0 | 154           | 3.0 | 0.148     | 7.0         | LOS A            | 0.6               | 4.4      | 0.41      | 0.64           | 0.41                | 50.2        |
| Approach                     |      |           | 517          | 4.4 | 517           | 4.4 | 0.192     | 2.1         | NA               | 0.6               | 4.4      | 0.12      | 0.19           | 0.12                | 57.0        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 104          | 3.0 | 104           | 3.0 | 0.104     | 6.8         | LOS A            | 0.4               | 2.7      | 0.35      | 0.62           | 0.35                | 50.5        |
| 12                           | R2   | All MCs   | 26           | 3.0 | 26            | 3.0 | 0.079     | 15.0        | LOS B            | 0.3               | 1.9      | 0.70      | 0.88           | 0.70                | 44.6        |
| Approach                     |      |           | 131          | 3.0 | 131           | 3.0 | 0.104     | 8.4         | LOS A            | 0.4               | 2.7      | 0.42      | 0.67           | 0.42                | 49.2        |
| All Vehicles                 |      |           | 945          | 4.3 | 945           | 4.3 | 0.192     | 2.6         | NA               | 0.6               | 4.4      | 0.13      | 0.22           | 0.13                | 56.5        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

▼ Site: 101 [2031BG AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |     | veh/h         |     | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 20           | 3.0 | 20            | 3.0 | 0.011     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 671          | 5.0 | 671           | 5.0 | 0.355     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.8        |
| Approach                     |      |           | 691          | 4.9 | 691           | 4.9 | 0.355     | 0.3         | NA               | 0.0               | 0.0      | 0.00      | 0.02           | 0.00                | 59.5        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 542          | 5.0 | 542           | 5.0 | 0.287     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.8        |
| 9                            | R2   | All MCs   | 106          | 3.0 | 106           | 3.0 | 0.181     | 10.6        | LOS B            | 0.7               | 4.8      | 0.63      | 0.85           | 0.63                | 47.6        |
| Approach                     |      |           | 648          | 4.7 | 648           | 4.7 | 0.287     | 1.8         | NA               | 0.7               | 4.8      | 0.10      | 0.14           | 0.10                | 57.7        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 228          | 3.0 | 228           | 3.0 | 0.408     | 12.4        | LOS B            | 1.9               | 13.4     | 0.69      | 0.94           | 0.94                | 46.4        |
| 12                           | R2   | All MCs   | 67           | 3.0 | 67            | 3.0 | 0.643     | 62.3        | LOS F            | 2.4               | 17.0     | 0.96      | 1.10           | 1.46                | 26.6        |
| Approach                     |      |           | 296          | 3.0 | 296           | 3.0 | 0.643     | 23.8        | LOS C            | 2.4               | 17.0     | 0.75      | 0.98           | 1.06                | 39.7        |
| All Vehicles                 |      |           | 1635         | 4.5 | 1635          | 4.5 | 0.643     | 5.1         | NA               | 2.4               | 17.0     | 0.18      | 0.24           | 0.23                | 54.5        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2031BG PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        | %   | veh/h         | %   | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 39           | 3.0 | 39            | 3.0 | 0.021     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 259          | 5.0 | 259           | 5.0 | 0.137     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| Approach                     |      |           | 298          | 4.7 | 298           | 4.7 | 0.137     | 0.8         | NA               | 0.0               | 0.0      | 0.00      | 0.08           | 0.00                | 58.9        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 506          | 5.0 | 506           | 5.0 | 0.268     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.8        |
| 9                            | R2   | All MCs   | 215          | 3.0 | 215           | 3.0 | 0.207     | 7.1         | LOS A            | 0.9               | 6.4      | 0.43      | 0.65           | 0.43                | 50.2        |
| Approach                     |      |           | 721          | 4.4 | 721           | 4.4 | 0.268     | 2.2         | NA               | 0.9               | 6.4      | 0.13      | 0.19           | 0.13                | 56.9        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 140          | 3.0 | 140           | 3.0 | 0.139     | 6.8         | LOS A            | 0.5               | 3.7      | 0.36      | 0.63           | 0.36                | 50.5        |
| 12                           | R2   | All MCs   | 33           | 3.0 | 33            | 3.0 | 0.146     | 21.1        | LOS C            | 0.5               | 3.4      | 0.81      | 0.92           | 0.81                | 41.0        |
| Approach                     |      |           | 173          | 3.0 | 173           | 3.0 | 0.146     | 9.5         | LOS A            | 0.5               | 3.7      | 0.45      | 0.68           | 0.45                | 48.3        |
| All Vehicles                 |      |           | 1192         | 4.3 | 1192          | 4.3 | 0.268     | 2.9         | NA               | 0.9               | 6.4      | 0.14      | 0.23           | 0.14                | 56.1        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

▼ Site: 101 [2025BG+Dev AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        | %   | veh/h         | %   | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 19           | 3.0 | 19            | 3.0 | 0.010     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 608          | 5.0 | 608           | 5.0 | 0.322     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.8        |
| Approach                     |      |           | 627          | 4.9 | 627           | 4.9 | 0.322     | 0.3         | NA               | 0.0               | 0.0      | 0.00      | 0.02           | 0.00                | 59.6        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 487          | 5.0 | 487           | 5.0 | 0.258     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| 9                            | R2   | All MCs   | 78           | 3.0 | 78            | 3.0 | 0.119     | 9.6         | LOS A            | 0.4               | 3.1      | 0.58      | 0.81           | 0.58                | 48.3        |
| Approach                     |      |           | 565          | 4.7 | 565           | 4.7 | 0.258     | 1.4         | NA               | 0.4               | 3.1      | 0.08      | 0.11           | 0.08                | 58.2        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 163          | 3.0 | 163           | 3.0 | 0.262     | 10.3        | LOS B            | 1.0               | 7.3      | 0.60      | 0.85           | 0.66                | 48.0        |
| 12                           | R2   | All MCs   | 54           | 3.0 | 54            | 3.0 | 0.366     | 35.8        | LOS E            | 1.3               | 9.0      | 0.90      | 1.01           | 1.10                | 34.3        |
| Approach                     |      |           | 217          | 3.0 | 217           | 3.0 | 0.366     | 16.6        | LOS C            | 1.3               | 9.0      | 0.67      | 0.89           | 0.77                | 43.7        |
| All Vehicles                 |      |           | 1409         | 4.6 | 1409          | 4.6 | 0.366     | 3.2         | NA               | 1.3               | 9.0      | 0.14      | 0.19           | 0.15                | 56.2        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2025BG+Dev PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        | %   | veh/h         | %   | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 38           | 3.0 | 38            | 3.0 | 0.021     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 195          | 5.0 | 195           | 5.0 | 0.103     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 60.0        |
| Approach                     |      |           | 233          | 4.7 | 233           | 4.7 | 0.103     | 0.9         | NA               | 0.0               | 0.0      | 0.00      | 0.09           | 0.00                | 58.6        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 262          | 5.0 | 262           | 5.0 | 0.139     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| 9                            | R2   | All MCs   | 148          | 3.0 | 148           | 3.0 | 0.133     | 6.6         | LOS A            | 0.6               | 4.0      | 0.36      | 0.61           | 0.36                | 50.4        |
| Approach                     |      |           | 411          | 4.3 | 411           | 4.3 | 0.139     | 2.4         | NA               | 0.6               | 4.0      | 0.13      | 0.22           | 0.13                | 56.5        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 104          | 3.0 | 104           | 3.0 | 0.096     | 6.4         | LOS A            | 0.4               | 2.5      | 0.30      | 0.59           | 0.30                | 50.7        |
| 12                           | R2   | All MCs   | 23           | 3.0 | 23            | 3.0 | 0.052     | 11.6        | LOS B            | 0.2               | 1.3      | 0.59      | 0.79           | 0.59                | 46.9        |
| Approach                     |      |           | 127          | 3.0 | 127           | 3.0 | 0.096     | 7.4         | LOS A            | 0.4               | 2.5      | 0.35      | 0.62           | 0.35                | 49.9        |
| All Vehicles                 |      |           | 771          | 4.2 | 771           | 4.2 | 0.139     | 2.8         | NA               | 0.6               | 4.0      | 0.13      | 0.25           | 0.13                | 56.0        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2028BG+Dev AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        | %   | veh/h         | %   | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 22           | 3.0 | 22            | 3.0 | 0.012     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 671          | 5.0 | 671           | 5.0 | 0.355     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.8        |
| Approach                     |      |           | 693          | 4.9 | 693           | 4.9 | 0.355     | 0.3         | NA               | 0.0               | 0.0      | 0.00      | 0.02           | 0.00                | 59.5        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 467          | 5.0 | 467           | 5.0 | 0.247     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| 9                            | R2   | All MCs   | 86           | 3.0 | 86            | 3.0 | 0.147     | 10.5        | LOS B            | 0.5               | 3.8      | 0.62      | 0.84           | 0.62                | 47.7        |
| Approach                     |      |           | 554          | 4.7 | 554           | 4.7 | 0.247     | 1.7         | NA               | 0.5               | 3.8      | 0.10      | 0.13           | 0.10                | 57.8        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 184          | 3.0 | 184           | 3.0 | 0.329     | 11.7        | LOS B            | 1.4               | 9.8      | 0.66      | 0.90           | 0.82                | 46.9        |
| 12                           | R2   | All MCs   | 60           | 3.0 | 60            | 3.0 | 0.473     | 44.2        | LOS E            | 1.6               | 11.8     | 0.93      | 1.04           | 1.22                | 31.4        |
| Approach                     |      |           | 244          | 3.0 | 244           | 3.0 | 0.473     | 19.7        | LOS C            | 1.6               | 11.8     | 0.73      | 0.94           | 0.92                | 41.9        |
| All Vehicles                 |      |           | 1491         | 4.5 | 1491          | 4.5 | 0.473     | 4.0         | NA               | 1.6               | 11.8     | 0.16      | 0.21           | 0.19                | 55.5        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2028BG+Dev PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        | %   | veh/h         | %   | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 43           | 3.0 | 43            | 3.0 | 0.024     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 259          | 5.0 | 259           | 5.0 | 0.137     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| Approach                     |      |           | 302          | 4.7 | 302           | 4.7 | 0.137     | 0.8         | NA               | 0.0               | 0.0      | 0.00      | 0.08           | 0.00                | 58.8        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 363          | 5.0 | 363           | 5.0 | 0.192     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| 9                            | R2   | All MCs   | 169          | 3.0 | 169           | 3.0 | 0.164     | 7.1         | LOS A            | 0.7               | 4.9      | 0.42      | 0.65           | 0.42                | 50.2        |
| Approach                     |      |           | 533          | 4.4 | 533           | 4.4 | 0.192     | 2.3         | NA               | 0.7               | 4.9      | 0.13      | 0.21           | 0.13                | 56.8        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 115          | 3.0 | 115           | 3.0 | 0.114     | 6.8         | LOS A            | 0.4               | 3.0      | 0.36      | 0.62           | 0.36                | 50.5        |
| 12                           | R2   | All MCs   | 28           | 3.0 | 28            | 3.0 | 0.088     | 15.4        | LOS C            | 0.3               | 2.1      | 0.71      | 0.88           | 0.71                | 44.3        |
| Approach                     |      |           | 143          | 3.0 | 143           | 3.0 | 0.114     | 8.5         | LOS A            | 0.4               | 3.0      | 0.43      | 0.67           | 0.43                | 49.1        |
| All Vehicles                 |      |           | 978          | 4.3 | 978           | 4.3 | 0.192     | 2.7         | NA               | 0.7               | 4.9      | 0.13      | 0.24           | 0.13                | 56.2        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2031BG+Dev AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |     | veh/h         |     | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 22           | 3.0 | 22            | 3.0 | 0.012     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 671          | 5.0 | 671           | 5.0 | 0.355     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.8        |
| Approach                     |      |           | 693          | 4.9 | 693           | 4.9 | 0.355     | 0.3         | NA               | 0.0               | 0.0      | 0.00      | 0.02           | 0.00                | 59.5        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 542          | 5.0 | 542           | 5.0 | 0.287     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.8        |
| 9                            | R2   | All MCs   | 114          | 3.0 | 114           | 3.0 | 0.193     | 10.6        | LOS B            | 0.7               | 5.1      | 0.63      | 0.85           | 0.63                | 47.6        |
| Approach                     |      |           | 656          | 4.7 | 656           | 4.7 | 0.287     | 1.9         | NA               | 0.7               | 5.1      | 0.11      | 0.15           | 0.11                | 57.6        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 246          | 3.0 | 246           | 3.0 | 0.440     | 12.7        | LOS B            | 2.1               | 15.1     | 0.70      | 0.96           | 1.00                | 46.2        |
| 12                           | R2   | All MCs   | 72           | 3.0 | 72            | 3.0 | 0.695     | 67.8        | LOS F            | 2.7               | 19.1     | 0.97      | 1.13           | 1.57                | 25.4        |
| Approach                     |      |           | 318          | 3.0 | 318           | 3.0 | 0.695     | 25.1        | LOS D            | 2.7               | 19.1     | 0.76      | 1.00           | 1.12                | 39.0        |
| All Vehicles                 |      |           | 1666         | 4.5 | 1666          | 4.5 | 0.695     | 5.7         | NA               | 2.7               | 19.1     | 0.19      | 0.26           | 0.26                | 54.0        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2031BG+Dev PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   | v/c       | sec         |                  | [ Veh. veh        | Dist ] m |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 1                            | L2   | All MCs   | 43           | 3.0 | 43            | 3.0 | 0.024     | 5.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.58           | 0.00                | 51.7        |
| 2                            | T1   | All MCs   | 259          | 5.0 | 259           | 5.0 | 0.137     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| Approach                     |      |           | 302          | 4.7 | 302           | 4.7 | 0.137     | 0.8         | NA               | 0.0               | 0.0      | 0.00      | 0.08           | 0.00                | 58.8        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 8                            | T1   | All MCs   | 506          | 5.0 | 506           | 5.0 | 0.268     | 0.1         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.8        |
| 9                            | R2   | All MCs   | 231          | 3.0 | 231           | 3.0 | 0.223     | 7.2         | LOS A            | 1.0               | 7.0      | 0.44      | 0.65           | 0.44                | 50.2        |
| Approach                     |      |           | 737          | 4.4 | 737           | 4.4 | 0.268     | 2.3         | NA               | 1.0               | 7.0      | 0.14      | 0.20           | 0.14                | 56.8        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |          |           |                |                     |             |
| 10                           | L2   | All MCs   | 151          | 3.0 | 151           | 3.0 | 0.150     | 6.9         | LOS A            | 0.6               | 4.1      | 0.37      | 0.63           | 0.37                | 50.4        |
| 12                           | R2   | All MCs   | 35           | 3.0 | 35            | 3.0 | 0.160     | 21.7        | LOS C            | 0.5               | 3.7      | 0.82      | 0.93           | 0.82                | 40.6        |
| Approach                     |      |           | 185          | 3.0 | 185           | 3.0 | 0.160     | 9.7         | LOS A            | 0.6               | 4.1      | 0.45      | 0.68           | 0.45                | 48.3        |
| All Vehicles                 |      |           | 1224         | 4.3 | 1224          | 4.3 | 0.268     | 3.0         | NA               | 1.0               | 7.0      | 0.15      | 0.25           | 0.15                | 55.9        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2025BG AM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %    | [ Total HV ]  | %    |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |      | veh/h         |      | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 2                            | T1   | All MCs   | 68           | 10.0 | 68            | 10.0 | 0.097     | 0.2         | LOS A            | 0.4               | 3.3      | 0.16      | 0.35           | 0.16                | 56.4        |
| 3                            | R2   | All MCs   | 99           | 3.0  | 99            | 3.0  | 0.097     | 5.7         | LOS A            | 0.4               | 3.3      | 0.16      | 0.35           | 0.16                | 51.6        |
| Approach                     |      |           | 167          | 5.9  | 167           | 5.9  | 0.097     | 3.4         | NA               | 0.4               | 3.3      | 0.16      | 0.35           | 0.16                | 53.8        |
| East: Mackillop Road         |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 4                            | L2   | All MCs   | 40           | 3.0  | 40            | 3.0  | 0.703     | 8.8         | LOS A            | 7.9               | 56.9     | 0.69      | 0.96           | 1.26                | 45.1        |
| 6                            | R2   | All MCs   | 557          | 3.0  | 557           | 3.0  | 0.703     | 12.6        | LOS B            | 7.9               | 56.9     | 0.69      | 0.96           | 1.26                | 45.0        |
| Approach                     |      |           | 597          | 3.0  | 597           | 3.0  | 0.703     | 12.3        | LOS B            | 7.9               | 56.9     | 0.69      | 0.96           | 1.26                | 45.0        |
| North: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 451          | 3.0  | 451           | 3.0  | 0.305     | 6.1         | LOS A            | 1.6               | 11.2     | 0.24      | 0.53           | 0.24                | 49.9        |
| 8                            | T1   | All MCs   | 62           | 10.0 | 62            | 10.0 | 0.034     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 60.0        |
| Approach                     |      |           | 513          | 3.8  | 513           | 3.8  | 0.305     | 5.3         | LOS A            | 1.6               | 11.2     | 0.21      | 0.46           | 0.21                | 51.2        |
| All Vehicles                 |      |           | 1277         | 3.7  | 1277          | 3.7  | 0.703     | 8.4         | NA               | 7.9               | 56.9     | 0.43      | 0.68           | 0.70                | 48.5        |

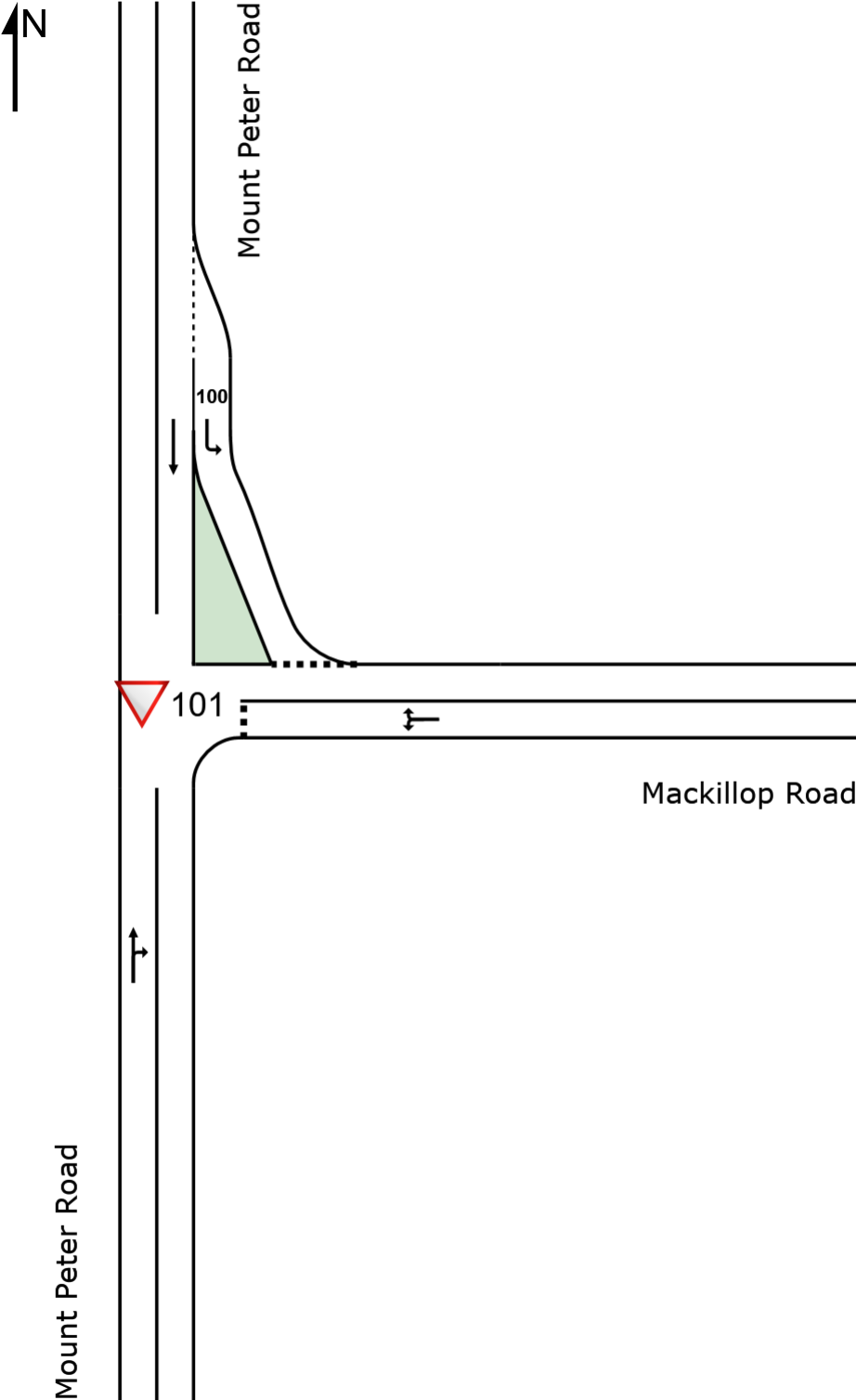
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
Vehicle movement LOS values are based on average delay per movement.  
Minor Road Approach LOS values are based on average delay for all vehicle movements.  
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# SITE LAYOUT

▼ Site: 101 [2025BG AM Peak - Mac (Site Folder: General)]

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

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



# MOVEMENT SUMMARY

Site: 101 [2025BG PM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %    | [ Total HV ]  | %    |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |      | veh/h         |      | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 2                            | T1   | All MCs   | 63           | 10.0 | 63            | 10.0 | 0.041     | 0.0         | LOS A            | 0.1               | 0.5      | 0.05      | 0.09           | 0.05                | 59.0        |
| 3                            | R2   | All MCs   | 11           | 3.0  | 11            | 3.0  | 0.041     | 5.6         | LOS A            | 0.1               | 0.5      | 0.05      | 0.09           | 0.05                | 54.6        |
| Approach                     |      |           | 74           | 9.0  | 74            | 9.0  | 0.041     | 0.8         | NA               | 0.1               | 0.5      | 0.05      | 0.09           | 0.05                | 58.5        |
| East: Mackillop Road         |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 4                            | L2   | All MCs   | 26           | 3.0  | 26            | 3.0  | 0.168     | 5.8         | LOS A            | 0.6               | 4.4      | 0.27      | 0.58           | 0.27                | 49.8        |
| 6                            | R2   | All MCs   | 157          | 3.0  | 157           | 3.0  | 0.168     | 6.5         | LOS A            | 0.6               | 4.4      | 0.27      | 0.58           | 0.27                | 49.7        |
| Approach                     |      |           | 183          | 3.0  | 183           | 3.0  | 0.168     | 6.4         | LOS A            | 0.6               | 4.4      | 0.27      | 0.58           | 0.27                | 49.7        |
| North: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 182          | 3.0  | 182           | 3.0  | 0.114     | 5.7         | LOS A            | 0.5               | 3.6      | 0.05      | 0.53           | 0.05                | 50.7        |
| 8                            | T1   | All MCs   | 56           | 10.0 | 56            | 10.0 | 0.030     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 60.0        |
| Approach                     |      |           | 238          | 4.6  | 238           | 4.6  | 0.114     | 4.3         | LOS A            | 0.5               | 3.6      | 0.04      | 0.40           | 0.04                | 53.0        |
| All Vehicles                 |      |           | 495          | 4.7  | 495           | 4.7  | 0.168     | 4.6         | NA               | 0.6               | 4.4      | 0.13      | 0.42           | 0.13                | 52.7        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

▼ Site: 101 [2028BG AM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %    | [ Total HV ]  | %    |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |      | veh/h         |      | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 2                            | T1   | All MCs   | 208          | 10.0 | 208           | 10.0 | 0.166     | 0.2         | LOS A            | 0.5               | 4.0      | 0.16      | 0.21           | 0.16                | 57.8        |
| 3                            | R2   | All MCs   | 82           | 3.0  | 82            | 3.0  | 0.166     | 6.0         | LOS A            | 0.5               | 4.0      | 0.16      | 0.21           | 0.16                | 53.3        |
| Approach                     |      |           | 291          | 8.0  | 291           | 8.0  | 0.166     | 1.8         | NA               | 0.5               | 4.0      | 0.16      | 0.21           | 0.16                | 56.7        |
| East: Mackillop Road         |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 4                            | L2   | All MCs   | 32           | 3.0  | 32            | 3.0  | 0.721     | 9.7         | LOS A            | 6.7               | 48.3     | 0.75      | 1.12           | 1.55                | 43.8        |
| 6                            | R2   | All MCs   | 485          | 3.0  | 485           | 3.0  | 0.721     | 14.4        | LOS B            | 6.7               | 48.3     | 0.75      | 1.12           | 1.55                | 43.7        |
| Approach                     |      |           | 517          | 3.0  | 517           | 3.0  | 0.721     | 14.1        | LOS B            | 6.7               | 48.3     | 0.75      | 1.12           | 1.55                | 43.7        |
| North: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 378          | 3.0  | 378           | 3.0  | 0.252     | 6.0         | LOS A            | 1.2               | 8.8      | 0.21      | 0.52           | 0.21                | 50.0        |
| 8                            | T1   | All MCs   | 126          | 10.0 | 126           | 10.0 | 0.069     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 60.0        |
| Approach                     |      |           | 504          | 4.8  | 504           | 4.8  | 0.252     | 4.5         | LOS A            | 1.2               | 8.8      | 0.16      | 0.39           | 0.16                | 52.7        |
| All Vehicles                 |      |           | 1312         | 4.8  | 1312          | 4.8  | 0.721     | 7.7         | NA               | 6.7               | 48.3     | 0.39      | 0.64           | 0.70                | 49.9        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2028BG PM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %    | [ Total HV ]  | %    |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |      | veh/h         |      | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 2                            | T1   | All MCs   | 146          | 10.0 | 146           | 10.0 | 0.087     | 0.1         | LOS A            | 0.1               | 0.6      | 0.05      | 0.06           | 0.05                | 59.4        |
| 3                            | R2   | All MCs   | 11           | 3.0  | 11            | 3.0  | 0.087     | 6.1         | LOS A            | 0.1               | 0.6      | 0.05      | 0.06           | 0.05                | 55.1        |
| Approach                     |      |           | 157          | 9.5  | 157           | 9.5  | 0.087     | 0.5         | NA               | 0.1               | 0.6      | 0.05      | 0.06           | 0.05                | 59.2        |
| East: Mackillop Road         |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 4                            | L2   | All MCs   | 21           | 3.0  | 21            | 3.0  | 0.187     | 6.3         | LOS A            | 0.7               | 4.8      | 0.42      | 0.68           | 0.42                | 49.0        |
| 6                            | R2   | All MCs   | 145          | 3.0  | 145           | 3.0  | 0.187     | 7.6         | LOS A            | 0.7               | 4.8      | 0.42      | 0.68           | 0.42                | 48.9        |
| Approach                     |      |           | 166          | 3.0  | 166           | 3.0  | 0.187     | 7.5         | LOS A            | 0.7               | 4.8      | 0.42      | 0.68           | 0.42                | 48.9        |
| North: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 174          | 3.0  | 174           | 3.0  | 0.109     | 5.7         | LOS A            | 0.5               | 3.4      | 0.05      | 0.53           | 0.05                | 50.7        |
| 8                            | T1   | All MCs   | 179          | 10.0 | 179           | 10.0 | 0.098     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 60.0        |
| Approach                     |      |           | 353          | 6.6  | 353           | 6.6  | 0.109     | 2.8         | LOS A            | 0.5               | 3.4      | 0.03      | 0.26           | 0.03                | 55.6        |
| All Vehicles                 |      |           | 676          | 6.4  | 676           | 6.4  | 0.187     | 3.4         | NA               | 0.7               | 4.8      | 0.13      | 0.32           | 0.13                | 54.9        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

▼ Site: 101 [2031BG AM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %    | [ Total HV ]  | %    |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |      | veh/h         |      | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 2                            | T1   | All MCs   | 336          | 10.0 | 336           | 10.0 | 0.242     | 0.3         | LOS A            | 0.7               | 4.9      | 0.16      | 0.19           | 0.16                | 58.2        |
| 3                            | R2   | All MCs   | 84           | 3.0  | 84            | 3.0  | 0.242     | 6.4         | LOS A            | 0.7               | 4.9      | 0.16      | 0.19           | 0.16                | 53.7        |
| Approach                     |      |           | 420          | 8.6  | 420           | 8.6  | 0.242     | 1.5         | NA               | 0.7               | 4.9      | 0.16      | 0.19           | 0.16                | 57.4        |
| East: Mackillop Road         |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 4                            | L2   | All MCs   | 32           | 3.0  | 32            | 3.0  | 0.958     | 29.5        | LOS D            | 17.2              | 123.3    | 0.97      | 2.06           | 4.53                | 32.2        |
| 6                            | R2   | All MCs   | 496          | 3.0  | 496           | 3.0  | 0.958     | 37.2        | LOS E            | 17.2              | 123.3    | 0.97      | 2.06           | 4.53                | 32.1        |
| Approach                     |      |           | 527          | 3.0  | 527           | 3.0  | 0.958     | 36.8        | LOS E            | 17.2              | 123.3    | 0.97      | 2.06           | 4.53                | 32.1        |
| North: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 381          | 3.0  | 381           | 3.0  | 0.254     | 6.0         | LOS A            | 1.2               | 8.9      | 0.21      | 0.52           | 0.21                | 50.0        |
| 8                            | T1   | All MCs   | 209          | 10.0 | 209           | 10.0 | 0.114     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| Approach                     |      |           | 591          | 5.5  | 591           | 5.5  | 0.254     | 3.9         | LOS A            | 1.2               | 8.9      | 0.14      | 0.34           | 0.14                | 53.7        |
| All Vehicles                 |      |           | 1538         | 5.5  | 1538          | 5.5  | 0.958     | 14.5        | NA               | 17.2              | 123.3    | 0.43      | 0.89           | 1.65                | 45.3        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

▼ Site: 101 [2031BG PM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %    | [ Total HV ]  | %    |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |      | veh/h         |      | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 2                            | T1   | All MCs   | 249          | 10.0 | 249           | 10.0 | 0.145     | 0.1         | LOS A            | 0.1               | 0.7      | 0.04      | 0.05           | 0.04                | 59.6        |
| 3                            | R2   | All MCs   | 11           | 3.0  | 11            | 3.0  | 0.145     | 6.8         | LOS A            | 0.1               | 0.7      | 0.04      | 0.05           | 0.04                | 55.3        |
| Approach                     |      |           | 260          | 9.7  | 260           | 9.7  | 0.145     | 0.4         | NA               | 0.1               | 0.7      | 0.04      | 0.05           | 0.04                | 59.4        |
| East: Mackillop Road         |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 4                            | L2   | All MCs   | 21           | 3.0  | 21            | 3.0  | 0.257     | 7.2         | LOS A            | 1.0               | 7.0      | 0.56      | 0.81           | 0.60                | 47.3        |
| 6                            | R2   | All MCs   | 152          | 3.0  | 152           | 3.0  | 0.257     | 9.8         | LOS A            | 1.0               | 7.0      | 0.56      | 0.81           | 0.60                | 47.2        |
| Approach                     |      |           | 173          | 3.0  | 173           | 3.0  | 0.257     | 9.5         | LOS A            | 1.0               | 7.0      | 0.56      | 0.81           | 0.60                | 47.2        |
| North: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 175          | 3.0  | 175           | 3.0  | 0.109     | 5.7         | LOS A            | 0.5               | 3.4      | 0.05      | 0.53           | 0.05                | 50.7        |
| 8                            | T1   | All MCs   | 326          | 10.0 | 326           | 10.0 | 0.178     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| Approach                     |      |           | 501          | 7.6  | 501           | 7.6  | 0.178     | 2.0         | LOS A            | 0.5               | 3.4      | 0.02      | 0.18           | 0.02                | 56.9        |
| All Vehicles                 |      |           | 934          | 7.3  | 934           | 7.3  | 0.257     | 2.9         | NA               | 1.0               | 7.0      | 0.13      | 0.26           | 0.13                | 55.8        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2025BG+Dev AM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %    | [ Total HV ]  | %    |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |      | veh/h         |      | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 2                            | T1   | All MCs   | 71           | 10.0 | 71            | 10.0 | 0.098     | 0.2         | LOS A            | 0.5               | 3.3      | 0.16      | 0.35           | 0.16                | 56.4        |
| 3                            | R2   | All MCs   | 99           | 3.0  | 99            | 3.0  | 0.098     | 5.7         | LOS A            | 0.5               | 3.3      | 0.16      | 0.35           | 0.16                | 51.6        |
| Approach                     |      |           | 169          | 5.9  | 169           | 5.9  | 0.098     | 3.4         | NA               | 0.5               | 3.3      | 0.16      | 0.35           | 0.16                | 53.8        |
| East: Mackillop Road         |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 4                            | L2   | All MCs   | 40           | 3.0  | 40            | 3.0  | 0.708     | 8.9         | LOS A            | 7.9               | 57.0     | 0.70      | 0.97           | 1.29                | 45.0        |
| 6                            | R2   | All MCs   | 557          | 3.0  | 557           | 3.0  | 0.708     | 12.7        | LOS B            | 7.9               | 57.0     | 0.70      | 0.97           | 1.29                | 44.9        |
| Approach                     |      |           | 597          | 3.0  | 597           | 3.0  | 0.708     | 12.5        | LOS B            | 7.9               | 57.0     | 0.70      | 0.97           | 1.29                | 44.9        |
| North: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 451          | 3.0  | 451           | 3.0  | 0.305     | 6.1         | LOS A            | 1.6               | 11.2     | 0.24      | 0.53           | 0.24                | 49.9        |
| 8                            | T1   | All MCs   | 66           | 10.0 | 66            | 10.0 | 0.036     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 60.0        |
| Approach                     |      |           | 517          | 3.9  | 517           | 3.9  | 0.305     | 5.3         | LOS A            | 1.6               | 11.2     | 0.21      | 0.46           | 0.21                | 51.3        |
| All Vehicles                 |      |           | 1283         | 3.7  | 1283          | 3.7  | 0.708     | 8.4         | NA               | 7.9               | 57.0     | 0.43      | 0.68           | 0.71                | 48.5        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2025BG+Dev PM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %    | [ Total HV ]  | %    |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |      | veh/h         |      | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 2                            | T1   | All MCs   | 67           | 10.0 | 67            | 10.0 | 0.043     | 0.0         | LOS A            | 0.1               | 0.5      | 0.05      | 0.09           | 0.05                | 59.0        |
| 3                            | R2   | All MCs   | 11           | 3.0  | 11            | 3.0  | 0.043     | 5.6         | LOS A            | 0.1               | 0.5      | 0.05      | 0.09           | 0.05                | 54.7        |
| Approach                     |      |           | 78           | 9.1  | 78            | 9.1  | 0.043     | 0.8         | NA               | 0.1               | 0.5      | 0.05      | 0.09           | 0.05                | 58.5        |
| East: Mackillop Road         |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 4                            | L2   | All MCs   | 26           | 3.0  | 26            | 3.0  | 0.169     | 5.8         | LOS A            | 0.6               | 4.5      | 0.27      | 0.59           | 0.27                | 49.8        |
| 6                            | R2   | All MCs   | 157          | 3.0  | 157           | 3.0  | 0.169     | 6.5         | LOS A            | 0.6               | 4.5      | 0.27      | 0.59           | 0.27                | 49.7        |
| Approach                     |      |           | 183          | 3.0  | 183           | 3.0  | 0.169     | 6.4         | LOS A            | 0.6               | 4.5      | 0.27      | 0.59           | 0.27                | 49.7        |
| North: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 182          | 3.0  | 182           | 3.0  | 0.114     | 5.7         | LOS A            | 0.5               | 3.6      | 0.05      | 0.53           | 0.05                | 50.7        |
| 8                            | T1   | All MCs   | 58           | 10.0 | 58            | 10.0 | 0.032     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 60.0        |
| Approach                     |      |           | 240          | 4.7  | 240           | 4.7  | 0.114     | 4.3         | LOS A            | 0.5               | 3.6      | 0.04      | 0.40           | 0.04                | 53.1        |
| All Vehicles                 |      |           | 501          | 4.8  | 501           | 4.8  | 0.169     | 4.5         | NA               | 0.6               | 4.5      | 0.13      | 0.42           | 0.13                | 52.8        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2028BG+Dev AM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %    | [ Total HV ]  | %    |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |      | veh/h         |      | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 2                            | T1   | All MCs   | 211          | 10.0 | 211           | 10.0 | 0.168     | 0.2         | LOS A            | 0.5               | 4.0      | 0.16      | 0.21           | 0.16                | 57.8        |
| 3                            | R2   | All MCs   | 82           | 3.0  | 82            | 3.0  | 0.168     | 6.0         | LOS A            | 0.5               | 4.0      | 0.16      | 0.21           | 0.16                | 53.3        |
| Approach                     |      |           | 293          | 8.0  | 293           | 8.0  | 0.168     | 1.8         | NA               | 0.5               | 4.0      | 0.16      | 0.21           | 0.16                | 56.7        |
| East: Mackillop Road         |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 4                            | L2   | All MCs   | 32           | 3.0  | 32            | 3.0  | 0.726     | 9.8         | LOS A            | 6.8               | 48.8     | 0.75      | 1.14           | 1.58                | 43.7        |
| 6                            | R2   | All MCs   | 485          | 3.0  | 485           | 3.0  | 0.726     | 14.6        | LOS B            | 6.8               | 48.8     | 0.75      | 1.14           | 1.58                | 43.6        |
| Approach                     |      |           | 517          | 3.0  | 517           | 3.0  | 0.726     | 14.3        | LOS B            | 6.8               | 48.8     | 0.75      | 1.14           | 1.58                | 43.6        |
| North: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 378          | 3.0  | 378           | 3.0  | 0.252     | 6.0         | LOS A            | 1.2               | 8.8      | 0.21      | 0.52           | 0.21                | 50.0        |
| 8                            | T1   | All MCs   | 131          | 10.0 | 131           | 10.0 | 0.071     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 60.0        |
| Approach                     |      |           | 508          | 4.8  | 508           | 4.8  | 0.252     | 4.4         | LOS A            | 1.2               | 8.8      | 0.15      | 0.39           | 0.15                | 52.7        |
| All Vehicles                 |      |           | 1318         | 4.8  | 1318          | 4.8  | 0.726     | 7.7         | NA               | 6.8               | 48.8     | 0.39      | 0.64           | 0.71                | 49.9        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2028BG+Dev PM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %    | [ Total HV ]  | %    |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |      | veh/h         |      | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 2                            | T1   | All MCs   | 151          | 10.0 | 151           | 10.0 | 0.089     | 0.1         | LOS A            | 0.1               | 0.6      | 0.05      | 0.06           | 0.05                | 59.4        |
| 3                            | R2   | All MCs   | 11           | 3.0  | 11            | 3.0  | 0.089     | 6.1         | LOS A            | 0.1               | 0.6      | 0.05      | 0.06           | 0.05                | 55.1        |
| Approach                     |      |           | 161          | 9.5  | 161           | 9.5  | 0.089     | 0.5         | NA               | 0.1               | 0.6      | 0.05      | 0.06           | 0.05                | 59.2        |
| East: Mackillop Road         |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 4                            | L2   | All MCs   | 21           | 3.0  | 21            | 3.0  | 0.188     | 6.3         | LOS A            | 0.7               | 4.9      | 0.43      | 0.68           | 0.43                | 49.0        |
| 6                            | R2   | All MCs   | 145          | 3.0  | 145           | 3.0  | 0.188     | 7.7         | LOS A            | 0.7               | 4.9      | 0.43      | 0.68           | 0.43                | 48.9        |
| Approach                     |      |           | 166          | 3.0  | 166           | 3.0  | 0.188     | 7.5         | LOS A            | 0.7               | 4.9      | 0.43      | 0.68           | 0.43                | 48.9        |
| North: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 174          | 3.0  | 174           | 3.0  | 0.109     | 5.7         | LOS A            | 0.5               | 3.4      | 0.05      | 0.53           | 0.05                | 50.7        |
| 8                            | T1   | All MCs   | 181          | 10.0 | 181           | 10.0 | 0.099     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 60.0        |
| Approach                     |      |           | 355          | 6.6  | 355           | 6.6  | 0.109     | 2.8         | LOS A            | 0.5               | 3.4      | 0.03      | 0.26           | 0.03                | 55.6        |
| All Vehicles                 |      |           | 682          | 6.4  | 682           | 6.4  | 0.188     | 3.4         | NA               | 0.7               | 4.9      | 0.13      | 0.31           | 0.13                | 54.9        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2031BG+Dev AM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |                                         |      |                                          |      |                      |                        |                  |                                                                       |       |           |                |                     |                         |
|------------------------------|------|-----------|-----------------------------------------|------|------------------------------------------|------|----------------------|------------------------|------------------|-----------------------------------------------------------------------|-------|-----------|----------------|---------------------|-------------------------|
| Mov ID                       | Turn | Mov Class | Demand Flows<br>[ Total HV ]<br>veh/h % |      | Arrival 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. veh      Dist ]<br>veh                  m |       | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed<br><br>km/h |
| South: Mount Peter Road      |      |           |                                         |      |                                          |      |                      |                        |                  |                                                                       |       |           |                |                     |                         |
| 2                            | T1   | All MCs   | 338                                     | 10.0 | 338                                      | 10.0 | 0.243                | 0.3                    | LOS A            | 0.7                                                                   | 4.9   | 0.17      | 0.19           | 0.17                | 58.2                    |
| 3                            | R2   | All MCs   | 84                                      | 3.0  | 84                                       | 3.0  | 0.243                | 6.4                    | LOS A            | 0.7                                                                   | 4.9   | 0.17      | 0.19           | 0.17                | 53.7                    |
| Approach                     |      |           | 422                                     | 8.6  | 422                                      | 8.6  | 0.243                | 1.5                    | NA               | 0.7                                                                   | 4.9   | 0.17      | 0.19           | 0.17                | 57.5                    |
| East: Mackillop Road         |      |           |                                         |      |                                          |      |                      |                        |                  |                                                                       |       |           |                |                     |                         |
| 4                            | L2   | All MCs   | 32                                      | 3.0  | 32                                       | 3.0  | 0.966                | 31.8                   | LOS D            | 18.0                                                                  | 129.5 | 0.97      | 2.12           | 4.74                | 31.3                    |
| 6                            | R2   | All MCs   | 496                                     | 3.0  | 496                                      | 3.0  | 0.966                | 39.6                   | LOS E            | 18.0                                                                  | 129.5 | 0.97      | 2.12           | 4.74                | 31.3                    |
| Approach                     |      |           | 527                                     | 3.0  | 527                                      | 3.0  | 0.966                | 39.1                   | LOS E            | 18.0                                                                  | 129.5 | 0.97      | 2.12           | 4.74                | 31.3                    |
| North: Mount Peter Road      |      |           |                                         |      |                                          |      |                      |                        |                  |                                                                       |       |           |                |                     |                         |
| 7                            | L2   | All MCs   | 381                                     | 3.0  | 381                                      | 3.0  | 0.254                | 6.0                    | LOS A            | 1.2                                                                   | 8.9   | 0.21      | 0.52           | 0.21                | 50.0                    |
| 8                            | T1   | All MCs   | 214                                     | 10.0 | 214                                      | 10.0 | 0.117                | 0.0                    | LOS A            | 0.0                                                                   | 0.0   | 0.00      | 0.00           | 0.00                | 59.9                    |
| Approach                     |      |           | 595                                     | 5.5  | 595                                      | 5.5  | 0.254                | 3.8                    | LOS A            | 1.2                                                                   | 8.9   | 0.14      | 0.34           | 0.14                | 53.8                    |
| All Vehicles                 |      |           | 1544                                    | 5.5  | 1544                                     | 5.5  | 0.966                | 15.2                   | NA               | 18.0                                                                  | 129.5 | 0.43      | 0.91           | 1.72                | 44.8                    |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

Site: 101 [2031BG+Dev PM Peak - Mac (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|----------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |          | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %    | [ Total HV ]  | %    |           |             |                  | [ Veh. veh        | Dist ] m |           |                |                     |             |
|                              |      |           | veh/h        |      | veh/h         |      | v/c       | sec         |                  |                   |          |           |                |                     | km/h        |
| South: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 2                            | T1   | All MCs   | 254          | 10.0 | 254           | 10.0 | 0.147     | 0.1         | LOS A            | 0.1               | 0.7      | 0.04      | 0.05           | 0.04                | 59.6        |
| 3                            | R2   | All MCs   | 11           | 3.0  | 11            | 3.0  | 0.147     | 6.9         | LOS A            | 0.1               | 0.7      | 0.04      | 0.05           | 0.04                | 55.3        |
| Approach                     |      |           | 264          | 9.7  | 264           | 9.7  | 0.147     | 0.4         | NA               | 0.1               | 0.7      | 0.04      | 0.05           | 0.04                | 59.4        |
| East: Mackillop Road         |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 4                            | L2   | All MCs   | 21           | 3.0  | 21            | 3.0  | 0.259     | 7.2         | LOS A            | 1.0               | 7.0      | 0.56      | 0.82           | 0.61                | 47.3        |
| 6                            | R2   | All MCs   | 152          | 3.0  | 152           | 3.0  | 0.259     | 9.9         | LOS A            | 1.0               | 7.0      | 0.56      | 0.82           | 0.61                | 47.1        |
| Approach                     |      |           | 173          | 3.0  | 173           | 3.0  | 0.259     | 9.6         | LOS A            | 1.0               | 7.0      | 0.56      | 0.82           | 0.61                | 47.1        |
| North: Mount Peter Road      |      |           |              |      |               |      |           |             |                  |                   |          |           |                |                     |             |
| 7                            | L2   | All MCs   | 175          | 3.0  | 175           | 3.0  | 0.109     | 5.7         | LOS A            | 0.5               | 3.4      | 0.05      | 0.53           | 0.05                | 50.7        |
| 8                            | T1   | All MCs   | 328          | 10.0 | 328           | 10.0 | 0.179     | 0.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.00           | 0.00                | 59.9        |
| Approach                     |      |           | 503          | 7.6  | 503           | 7.6  | 0.179     | 2.0         | LOS A            | 0.5               | 3.4      | 0.02      | 0.18           | 0.02                | 56.9        |
| All Vehicles                 |      |           | 940          | 7.3  | 940           | 7.3  | 0.259     | 2.9         | NA               | 1.0               | 7.0      | 0.12      | 0.26           | 0.13                | 55.9        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).  
Two-Way Sign Control Capacity Model: SIDRA Standard.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# SITE LAYOUT

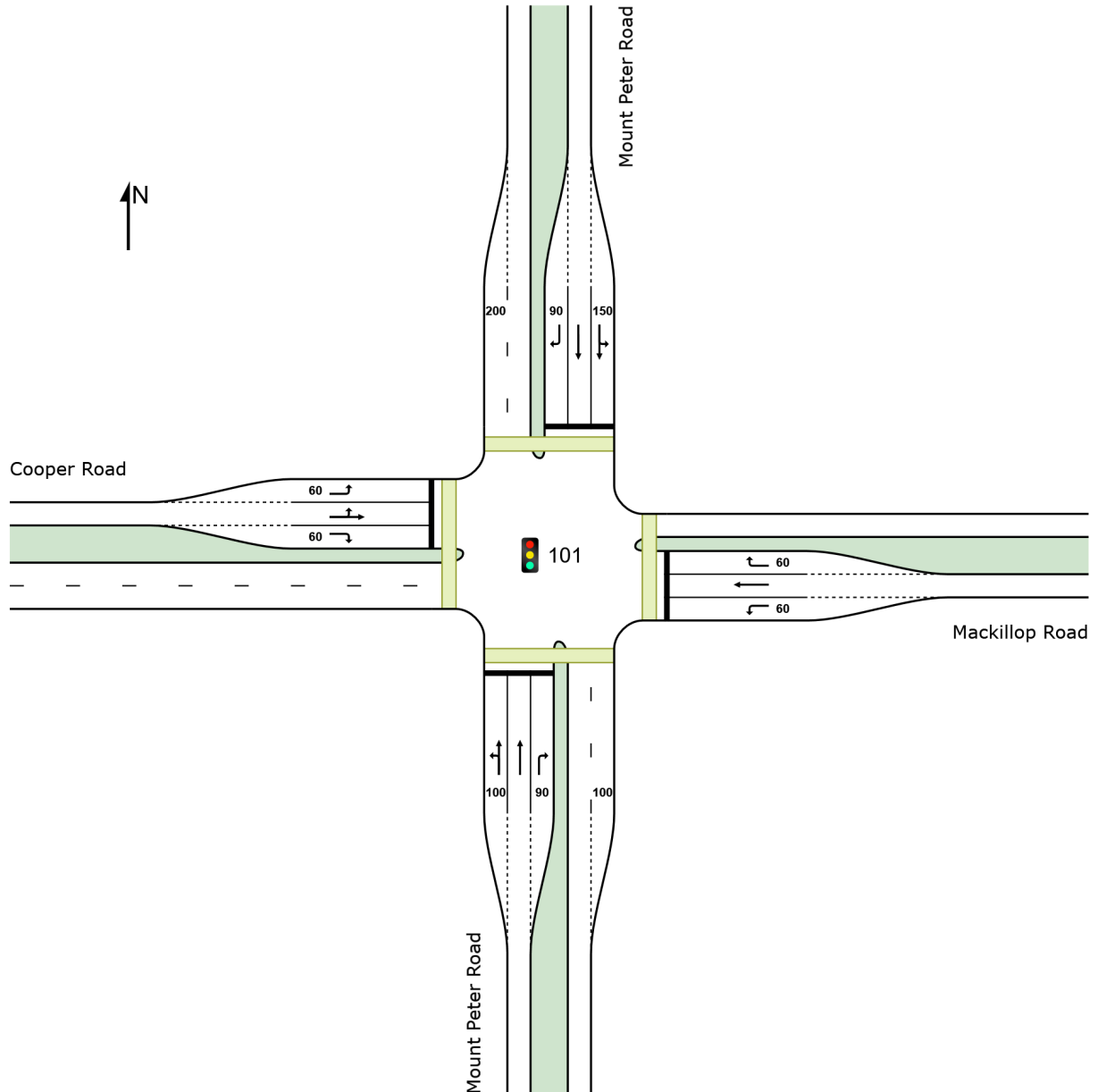
 **Site: 101 [2031BG+Dev AM Peak (Site Folder: General)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



**SIDRA INTERSECTION 9.1 | Copyright © 2000-2024 Akcelik and Associates Pty Ltd | [sidrasolutions.com](http://sidrasolutions.com)**

Organisation: MODUS TRAFFIC ENGINEERING PTY LTD | Licence: NETWORK / 1PC | Created: Friday, 23 August 2024 1:46:46 PM

Project: C:\Users\TettehAnang\Modus Engineering\Projects 2024 - 2025 - Documents\General\Projects 2024 - 2025\QLD\MOD24029QLD - Rocky Creek Stage 5\3 ANALYSIS\SIDRA\Rocky Creek SIDRA.sip9

# MOVEMENT SUMMARY

 Site: 101 [2031BG+Dev AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site

Site Category: (None)

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |            |               |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|------------|---------------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Queue  | Back Of Queue | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] | %   | [ Total HV ]  | %   |           |             |                  | [ Veh. veh | Dist ]        |           |                |                     | km/h        |
|                              |      |           | veh/h        |     | veh/h         |     | v/c       | sec         |                  |            | m             |           |                |                     |             |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |            |               |           |                |                     |             |
| 1                            | L2   | All MCs   | 26           | 3.0 | 26            | 3.0 | 0.352     | 52.4        | LOS D            | 10.5       | 76.8          | 0.85      | 0.72           | 0.85                | 32.9        |
| 2                            | T1   | All MCs   | 336          | 5.0 | 336           | 5.0 | 0.352     | 48.1        | LOS D            | 10.6       | 77.4          | 0.85      | 0.71           | 0.85                | 33.9        |
| 3                            | R2   | All MCs   | 84           | 3.0 | 84            | 3.0 | 0.579     | 80.2        | LOS F            | 6.2        | 44.4          | 1.00      | 0.78           | 1.00                | 25.5        |
| Approach                     |      |           | 446          | 4.5 | 446           | 4.5 | 0.579     | 54.4        | LOS D            | 10.6       | 77.4          | 0.88      | 0.73           | 0.88                | 31.9        |
| East: Mackillop Road         |      |           |              |     |               |     |           |             |                  |            |               |           |                |                     |             |
| 4                            | L2   | All MCs   | 32           | 3.0 | 32            | 3.0 | 0.124     | 67.1        | LOS E            | 2.0        | 14.6          | 0.91      | 0.72           | 0.91                | 28.0        |
| 5                            | T1   | All MCs   | 15           | 3.0 | 15            | 3.0 | 0.055     | 83.3        | LOS F            | 0.9        | 6.7           | 0.90      | 0.63           | 0.90                | 30.3        |
| 6                            | R2   | All MCs   | 482          | 3.0 | 482           | 3.0 | * 0.777   | 76.2        | LOS E            | 31.5       | 226.2         | 0.96      | 0.88           | 0.97                | 31.5        |
| Approach                     |      |           | 528          | 3.0 | 528           | 3.0 | 0.777     | 75.8        | LOS E            | 31.5       | 226.2         | 0.96      | 0.86           | 0.96                | 26.3        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |            |               |           |                |                     |             |
| 7                            | L2   | All MCs   | 385          | 3.0 | 385           | 3.0 | * 0.775   | 61.1        | LOS E            | 26.5       | 190.1         | 0.99      | 0.88           | 1.01                | 29.3        |
| 8                            | T1   | All MCs   | 209          | 5.0 | 209           | 5.0 | 0.406     | 47.6        | LOS D            | 12.4       | 90.9          | 0.87      | 0.73           | 0.87                | 33.8        |
| 9                            | R2   | All MCs   | 106          | 3.0 | 106           | 3.0 | * 0.731   | 83.1        | LOS F            | 8.1        | 58.0          | 1.00      | 0.86           | 1.11                | 25.0        |
| Approach                     |      |           | 701          | 3.6 | 701           | 3.6 | 0.775     | 60.4        | LOS E            | 26.5       | 190.1         | 0.95      | 0.83           | 0.99                | 29.7        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |            |               |           |                |                     |             |
| 10                           | L2   | All MCs   | 228          | 3.0 | 228           | 3.0 | 0.476     | 72.0        | LOS E            | 8.4        | 60.0          | 0.97      | 0.79           | 0.97                | 27.3        |
| 11                           | T1   | All MCs   | 15           | 3.0 | 15            | 3.0 | * 0.476   | 65.0        | LOS E            | 8.4        | 60.0          | 0.97      | 0.79           | 0.97                | 28.0        |
| 12                           | R2   | All MCs   | 58           | 3.0 | 58            | 3.0 | 0.092     | 40.5        | LOS D            | 2.8        | 20.1          | 0.71      | 0.72           | 0.71                | 35.3        |
| Approach                     |      |           | 301          | 3.0 | 301           | 3.0 | 0.476     | 65.6        | LOS E            | 8.4        | 60.0          | 0.92      | 0.78           | 0.92                | 28.6        |
| All Vehicles                 |      |           | 1977         | 3.6 | 1977          | 3.6 | 0.777     | 63.9        | LOS E            | 31.5       | 226.2         | 0.93      | 0.81           | 0.95                | 29.0        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

| Pedestrian Movement Performance |          |            |           |             |                  |                       |          |           |                |             |              |             |
|---------------------------------|----------|------------|-----------|-------------|------------------|-----------------------|----------|-----------|----------------|-------------|--------------|-------------|
| Mov ID                          | Crossing | Input Vol. | Dem. Flow | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |          | Prop. Que | Eff. Stop Rate | Travel Time | Travel Dist. | Aver. Speed |
|                                 |          | ped/h      | ped/h     | sec         |                  | [ Ped ped             | Dist ] m |           |                | sec         | m            | m/sec       |
| South: Mount Peter Road         |          |            |           |             |                  |                       |          |           |                |             |              |             |
| P1                              | Full     | 50         | 53        | 69.3        | LOS F            | 0.2                   | 0.2      | 0.96      | 0.96           | 223.1       | 200.0        | 0.90        |
| East: Mackillop Road            |          |            |           |             |                  |                       |          |           |                |             |              |             |
| P2                              | Full     | 50         | 53        | 69.3        | LOS F            | 0.2                   | 0.2      | 0.96      | 0.96           | 223.1       | 200.0        | 0.90        |

|                         |      |     |     |      |       |     |     |      |      |       |       |      |
|-------------------------|------|-----|-----|------|-------|-----|-----|------|------|-------|-------|------|
| North: Mount Peter Road |      |     |     |      |       |     |     |      |      |       |       |      |
| P3                      | Full | 50  | 53  | 69.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 223.1 | 200.0 | 0.90 |
| West: Cooper Road       |      |     |     |      |       |     |     |      |      |       |       |      |
| P4                      | Full | 50  | 53  | 69.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 223.1 | 200.0 | 0.90 |
| All                     |      | 200 | 211 | 69.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 223.1 | 200.0 | 0.90 |
| Pedestrians             |      |     |     |      |       |     |     |      |      |       |       |      |

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 [2031BG+Dev PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site

Site Category: (None)

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

| Vehicle Movement Performance |      |           |              |     |               |     |           |             |                  |                   |        |           |                |                     |             |
|------------------------------|------|-----------|--------------|-----|---------------|-----|-----------|-------------|------------------|-------------------|--------|-----------|----------------|---------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |     | Arrival Flows |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |        | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                              |      |           | [ Total HV ] |     | [ Total HV ]  |     |           |             |                  | [ Veh. veh        | Dist ] |           |                |                     | km/h        |
|                              |      |           | veh/h        | %   | veh/h         | %   | v/c       | sec         |                  |                   | m      |           |                |                     |             |
| South: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |        |           |                |                     |             |
| 1                            | L2   | All MCs   | 26           | 3.0 | 26            | 3.0 | 0.046     | 32.5        | LOS C            | 1.5               | 10.7   | 0.62      | 0.64           | 0.62                | 38.6        |
| 2                            | T1   | All MCs   | 45           | 5.0 | 45            | 5.0 | 0.046     | 27.0        | LOS C            | 1.5               | 11.2   | 0.62      | 0.50           | 0.62                | 41.3        |
| 3                            | R2   | All MCs   | 12           | 3.0 | 12            | 3.0 | 0.050     | 67.7        | LOS E            | 0.7               | 5.4    | 0.91      | 0.68           | 0.91                | 28.0        |
| Approach                     |      |           | 83           | 4.1 | 83            | 4.1 | 0.050     | 34.4        | LOS C            | 1.5               | 11.2   | 0.66      | 0.57           | 0.66                | 37.9        |
| East: Mackillop Road         |      |           |              |     |               |     |           |             |                  |                   |        |           |                |                     |             |
| 4                            | L2   | All MCs   | 21           | 3.0 | 21            | 3.0 | 0.083     | 66.5        | LOS E            | 1.3               | 9.6    | 0.90      | 0.71           | 0.90                | 28.2        |
| 5                            | T1   | All MCs   | 17           | 3.0 | 17            | 3.0 | 0.063     | 60.1        | LOS E            | 1.1               | 7.7    | 0.90      | 0.64           | 0.90                | 30.3        |
| 6                            | R2   | All MCs   | 136          | 3.0 | 136           | 3.0 | * 0.487   | 69.0        | LOS E            | 9.2               | 66.2   | 0.96      | 0.80           | 0.96                | 27.7        |
| Approach                     |      |           | 174          | 3.0 | 174           | 3.0 | 0.487     | 67.8        | LOS E            | 9.2               | 66.2   | 0.95      | 0.77           | 0.95                | 28.0        |
| North: Mount Peter Road      |      |           |              |     |               |     |           |             |                  |                   |        |           |                |                     |             |
| 7                            | L2   | All MCs   | 381          | 3.0 | 381           | 3.0 | * 0.499   | 39.4        | LOS D            | 20.2              | 144.8  | 0.79      | 0.81           | 0.79                | 35.5        |
| 8                            | T1   | All MCs   | 214          | 5.0 | 214           | 5.0 | 0.269     | 30.0        | LOS C            | 10.0              | 73.3   | 0.70      | 0.59           | 0.70                | 40.3        |
| 9                            | R2   | All MCs   | 114          | 3.0 | 114           | 3.0 | * 0.494   | 72.6        | LOS E            | 7.9               | 56.8   | 0.98      | 0.79           | 0.98                | 27.0        |
| Approach                     |      |           | 708          | 3.6 | 708           | 3.6 | 0.499     | 41.9        | LOS D            | 20.2              | 144.8  | 0.79      | 0.74           | 0.79                | 34.9        |
| West: Cooper Road            |      |           |              |     |               |     |           |             |                  |                   |        |           |                |                     |             |
| 10                           | L2   | All MCs   | 151          | 3.0 | 151           | 3.0 | 0.298     | 68.9        | LOS E            | 5.0               | 36.2   | 0.94      | 0.77           | 0.94                | 27.6        |
| 11                           | T1   | All MCs   | 1            | 3.0 | 1             | 3.0 | * 0.298   | 63.1        | LOS E            | 5.0               | 36.2   | 0.94      | 0.77           | 0.94                | 28.2        |
| 12                           | R2   | All MCs   | 35           | 3.0 | 35            | 3.0 | 0.125     | 64.8        | LOS E            | 2.2               | 15.8   | 0.90      | 0.73           | 0.90                | 28.6        |
| Approach                     |      |           | 186          | 3.0 | 186           | 3.0 | 0.298     | 68.1        | LOS E            | 5.0               | 36.2   | 0.93      | 0.76           | 0.93                | 27.8        |
| All Vehicles                 |      |           | 1152         | 3.4 | 1152          | 3.4 | 0.499     | 49.5        | LOS D            | 20.2              | 144.8  | 0.83      | 0.74           | 0.83                | 32.6        |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

\* Critical Movement (Signal Timing)

| Pedestrian Movement Performance |          |            |           |             |                  |                       |            |           |                |             |             |
|---------------------------------|----------|------------|-----------|-------------|------------------|-----------------------|------------|-----------|----------------|-------------|-------------|
| Mov ID                          | Crossing | Input Vol. | Dem. Flow | Aver. Delay | Level of Service | AVERAGE BACK OF QUEUE |            | Prop. Que | Eff. Stop Rate | Travel Time | Aver. Speed |
|                                 |          | ped/h      | ped/h     | sec         |                  | [ Ped ped ]           | [ Dist ] m |           |                | sec         | m/sec       |
| South: Mount Peter Road         |          |            |           |             |                  |                       |            |           |                |             |             |
| P1                              | Full     | 50         | 53        | 69.3        | LOS F            | 0.2                   | 0.2        | 0.96      | 0.96           | 223.1       | 200.0       |
| East: Mackillop Road            |          |            |           |             |                  |                       |            |           |                |             |             |
| P2                              | Full     | 50         | 53        | 69.3        | LOS F            | 0.2                   | 0.2        | 0.96      | 0.96           | 223.1       | 200.0       |

|                         |      |     |     |      |       |     |     |      |      |       |       |      |
|-------------------------|------|-----|-----|------|-------|-----|-----|------|------|-------|-------|------|
| North: Mount Peter Road |      |     |     |      |       |     |     |      |      |       |       |      |
| P3                      | Full | 50  | 53  | 69.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 223.1 | 200.0 | 0.90 |
| West: Cooper Road       |      |     |     |      |       |     |     |      |      |       |       |      |
| P4                      | Full | 50  | 53  | 69.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 223.1 | 200.0 | 0.90 |
| All                     |      | 200 | 211 | 69.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | 223.1 | 200.0 | 0.90 |
| Pedestrians             |      |     |     |      |       |     |     |      |      |       |       |      |

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.

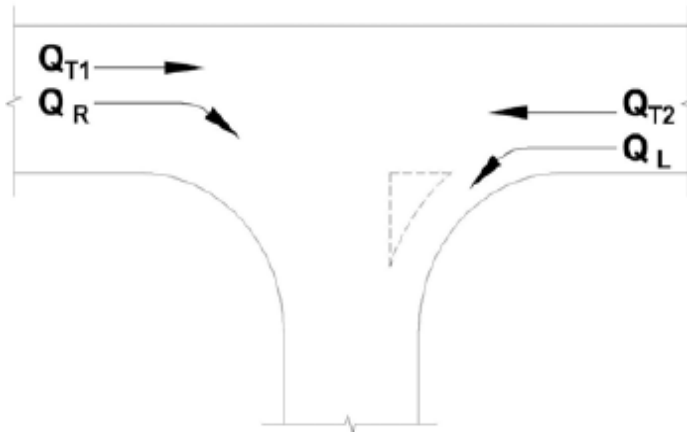
# APPENDIX E

## TURN WARRANT ASSESSMENT

# Mt Peter Road / Cooper Road

AM Peak Development Traffic Volumes

|            |    |
|------------|----|
| $Q_{T1}$ = | 53 |
| $Q_R$ =    | 9  |



|            |     |
|------------|-----|
| $Q_{T2}$ = | 121 |
| $Q_L$ =    | 0   |

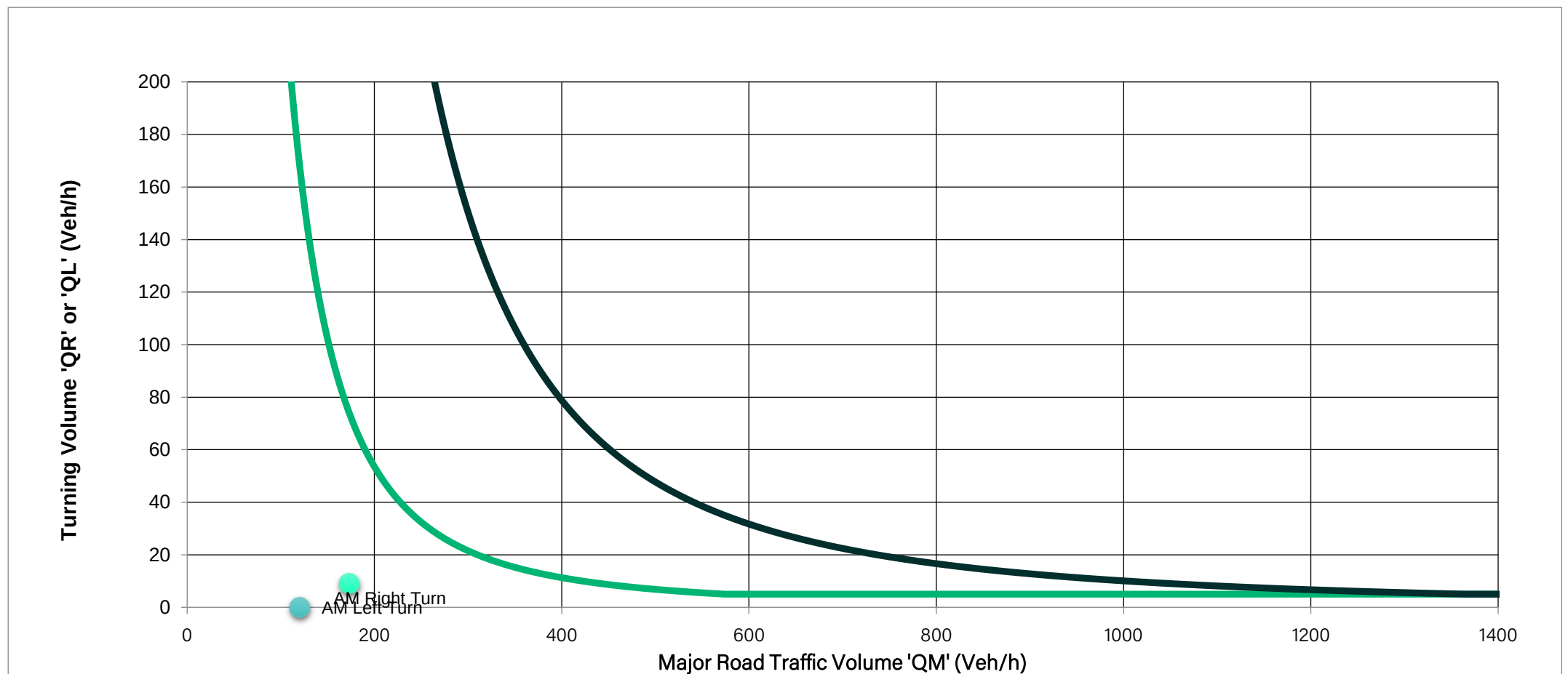
Through Road  
Design Year (use 10 as default)

Splitter Island?  
Speed Limit?

|                                 |                              |
|---------------------------------|------------------------------|
| Through Road                    | 2L2W                         |
| Design Year (use 10 as default) | 10                           |
| Splitter Island?                | No                           |
| Speed Limit?                    | 70km/h<Design Speed <100km/h |

|       | $Q_M$ | $Q_R/Q_L$ |
|-------|-------|-----------|
| Right | 174   | 9         |
| Left  | 121   | 0         |

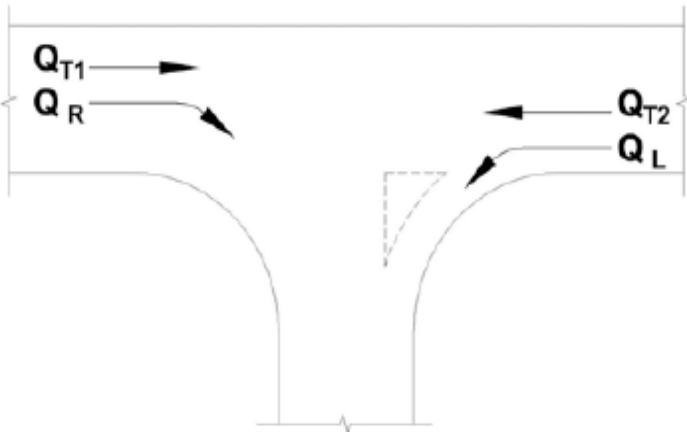
|                               |     |
|-------------------------------|-----|
| Right Turn Treatment Required | BAR |
| Left Turn Treatment Required  | BAL |



Mt Peter Road / Cooper Road

PM Peak Development Traffic Volumes

|            |     |
|------------|-----|
| $Q_{T1}$ = | 249 |
| $Q_R$ =    | 121 |

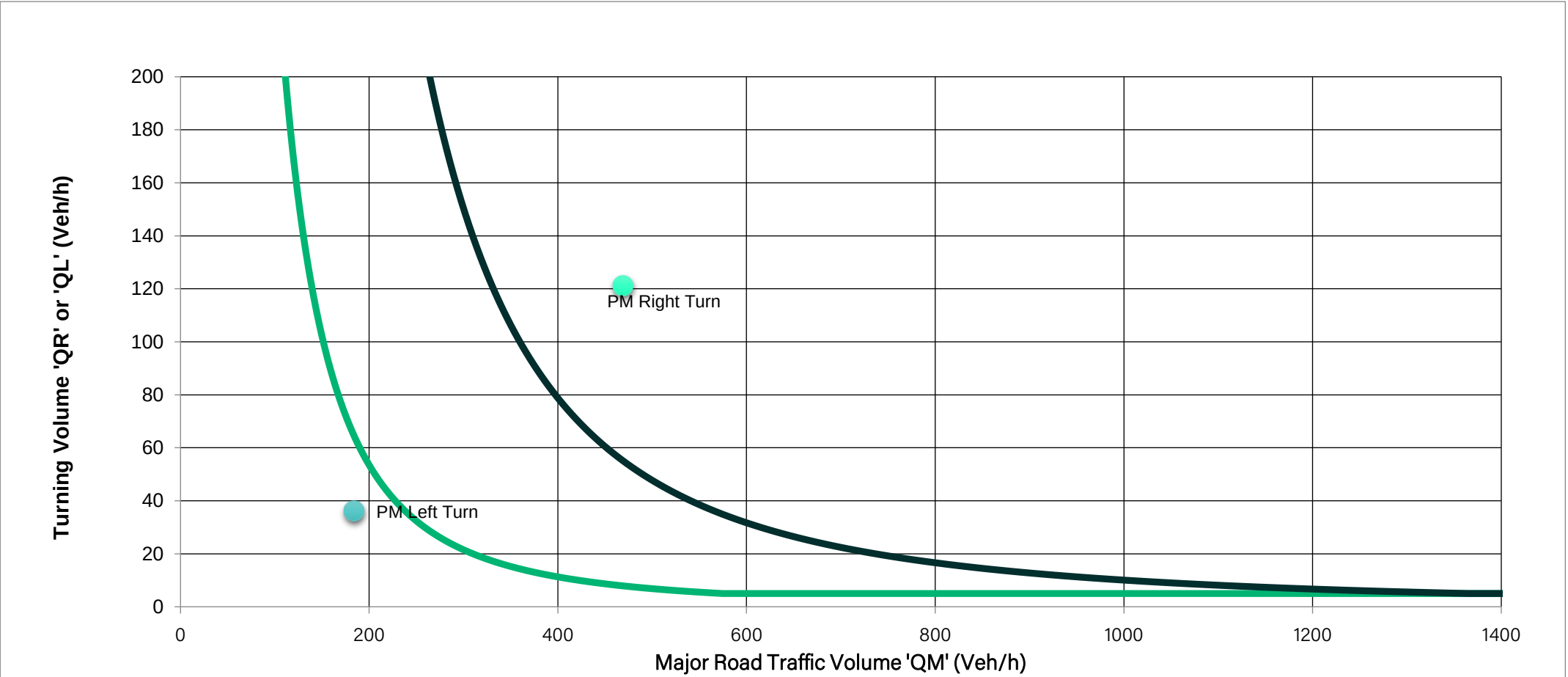


|            |     |
|------------|-----|
| $Q_{T2}$ = | 185 |
| $Q_L$ =    | 36  |

|                                 |                              |
|---------------------------------|------------------------------|
| Through Road                    | 2L2W                         |
| Design Year (use 10 as default) | 10                           |
| Splitter Island?                | No                           |
| Speed Limit?                    | 70km/h<Design Speed <100km/h |

|       |       |           |
|-------|-------|-----------|
|       | $Q_M$ | $Q_R/Q_L$ |
| Right | 470   | 121       |
| Left  | 185   | 36        |

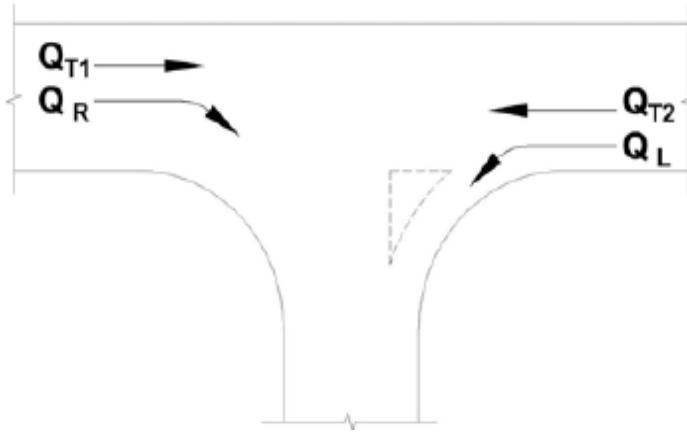
|                               |     |
|-------------------------------|-----|
| Right Turn Treatment Required | CHR |
| Left Turn Treatment Required  | BAL |



# Mt Peter Road / Cooper Road

## AM Peak Development Traffic Volumes

|          |     |
|----------|-----|
| $Q_{T1}$ | 444 |
| $Q_R$    | 82  |



|          |     |
|----------|-----|
| $Q_{T2}$ | 637 |
| $Q_L$    | 21  |

|       | $Q_M$ | $Q_R/Q_L$ |
|-------|-------|-----------|
| Right | 1102  | 82        |
| Left  | 637   | 21        |

Through Road  
Design Year (use 10 as default)

Splitter Island?

Speed Limit?

2L2W

10

No

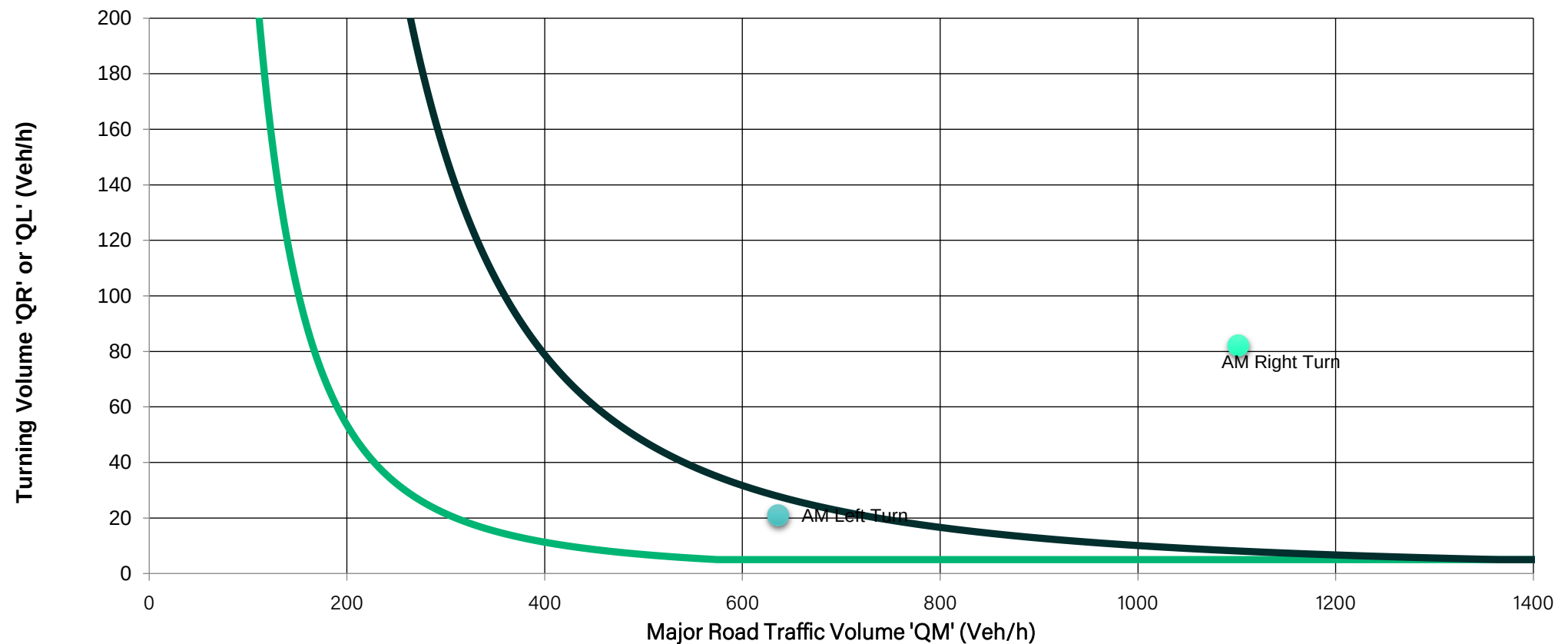
70km/h < Design Speed < 100km/h

Right Turn Treatment Required

Left Turn Treatment Required

CHR

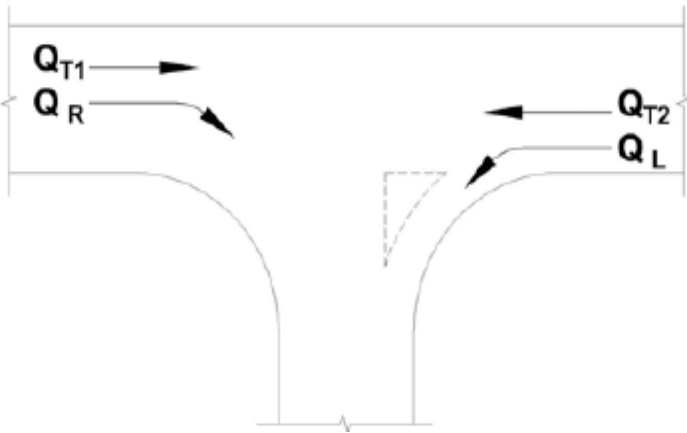
AUL(S)



# Mt Peter Road / Cooper Road

PM Peak Development Traffic Volumes

|            |     |
|------------|-----|
| $Q_{T1}$ = | 345 |
| $Q_R$ =    | 161 |

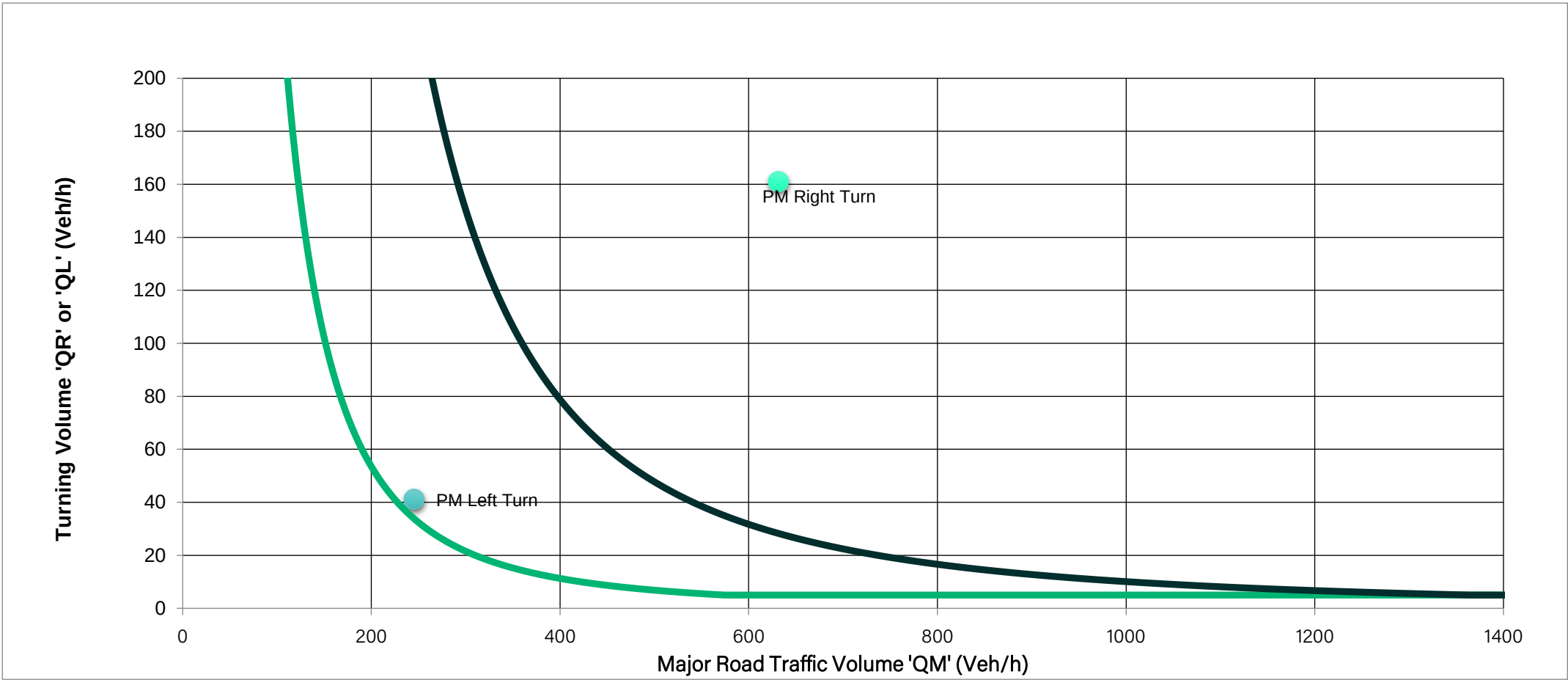


|            |     |
|------------|-----|
| $Q_{T2}$ = | 246 |
| $Q_L$ =    | 41  |

|                                 |                              |
|---------------------------------|------------------------------|
| Through Road                    | 2L2W                         |
| Design Year (use 10 as default) | 10                           |
| Splitter Island?                | No                           |
| Speed Limit?                    | 70km/h<Design Speed <100km/h |

|       | $Q_M$ | $Q_R/Q_L$ |
|-------|-------|-----------|
| Right | 632   | 161       |
| Left  | 246   | 41        |

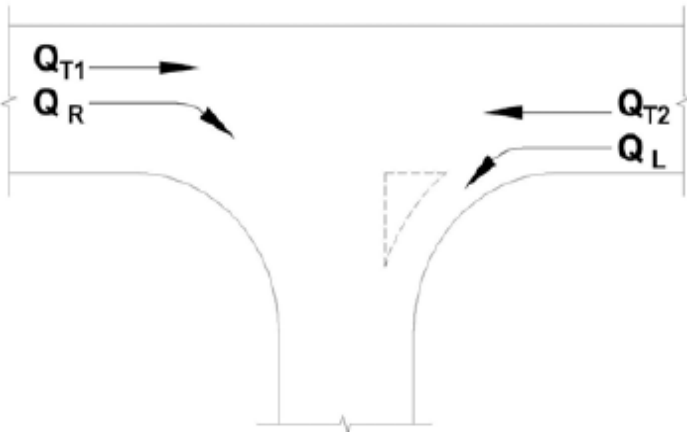
|                               |        |
|-------------------------------|--------|
| Right Turn Treatment Required | CHR    |
| Left Turn Treatment Required  | AUL(S) |



Cooper Road / Site Access

AM Peak Development Traffic Volumes

|            |    |
|------------|----|
| $Q_{T1}$ = | 69 |
| $Q_R$ =    | 9  |

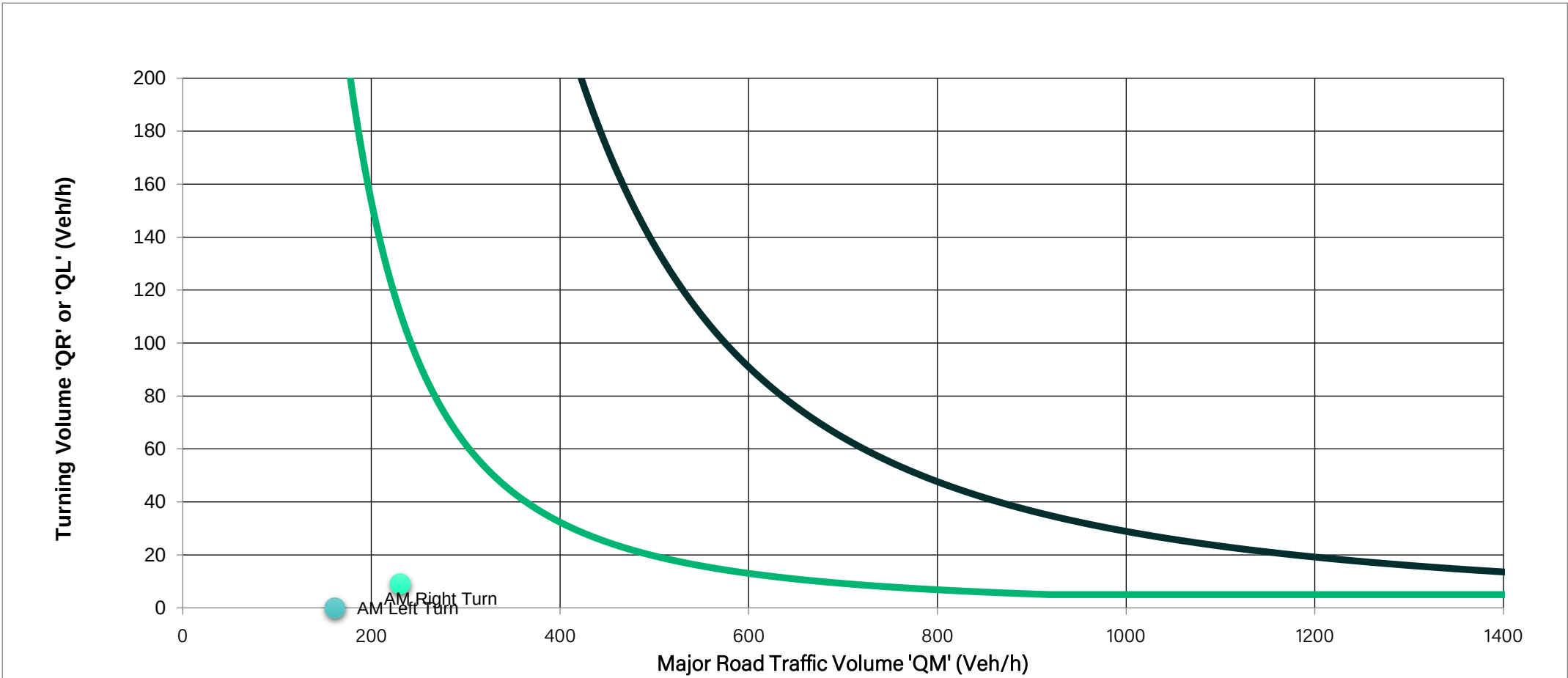


|            |     |
|------------|-----|
| $Q_{T2}$ = | 162 |
| $Q_L$ =    | 0   |

|                                 |         |
|---------------------------------|---------|
| Through Road                    | 2L2W    |
| Design Year (use 10 as default) | 10      |
| Splitter Island?                | No      |
| Speed Limit?                    | <70km/h |

|       |       |           |
|-------|-------|-----------|
|       | $Q_M$ | $Q_R/Q_L$ |
| Right | 231   | 9         |
| Left  | 162   | 0         |

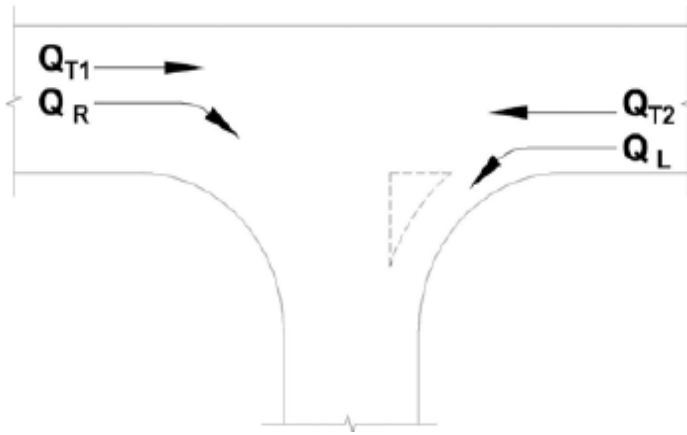
|                               |     |
|-------------------------------|-----|
| Right Turn Treatment Required | BAR |
| Left Turn Treatment Required  | BAL |



# Cooper Road / Site Access

## PM Peak Development Traffic Volumes

|            |     |
|------------|-----|
| $Q_{T1} =$ | 132 |
| $Q_R =$    | 19  |



|            |    |
|------------|----|
| $Q_{T2} =$ | 92 |
| $Q_L =$    | 0  |

Through Road  
Design Year (use 10 as default)

Splitter Island?  
Speed Limit?

|                                 |         |
|---------------------------------|---------|
| Through Road                    | 2L2W    |
| Design Year (use 10 as default) | 10      |
| Splitter Island?                | No      |
| Speed Limit?                    | <70km/h |

|       | $Q_M$ | $Q_R/Q_L$ |
|-------|-------|-----------|
| Right | 224   | 19        |
| Left  | 92    | 0         |

|                               |     |
|-------------------------------|-----|
| Right Turn Treatment Required | BAR |
| Left Turn Treatment Required  | BAL |

