

## APPENDIX F

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### TRAFFIC IMPACT ASSESSMENT FOR PHASE 1F OF THE RBIDZ

# Richards Bay Industrial Development Zone Phase 1F

Updated Traffic Impact Assessment for Richards Bay  
Industrial Development Zone Phase 1F, uMhlathuze  
Municipality

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# VERIFICATION FOR A TRAFFIC IMPACT ASSESSMENT

## For Richards Bay Industrial Development Zone Phase 1F TIA Update

The undersigned has been appointed as the registered professional for this Traffic Impact Assessment and has applied due diligence to the content of this report and endeavoured to ensure that the TIA is free of technical errors and takes full responsibility for its contents.

It is herewith certified that this Traffic Impact Assessment has been prepared according to requirements of the South African Traffic Impact and Site Traffic Assessment Manual.

I also undertake to attend any forum where the TIA is in dispute to report on matters that relate to the TIA. I understand and agree that the municipality shall not be liable to compensate me in this regard.



.....

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## Abbreviations

RBIDZ: Richards Bay Industrial Development Zone

SIDRA: Signalised & unsignalized Intersection Design and Research Aid

# 1 Introduction

Zutari (Pty) Ltd was appointed by the Richards Bay Industrial Development Zone (RBIDZ) to update a Traffic Impact Assessment (TIA) previously prepared by SMEC in 2013, titled “Richards Bay Industrial Development Zone Phase 1F.” RBIDZ Phase 1F is located in the Alton North area of Richards Bay. It comprises approximately 130.25 hectares of land designated for industrial use, of which the Nyanza Light Metals Plant constitutes approximately 69 hectares. Tata Steel was previously part of Phase 1F but now is no longer within the proclaimed boundary according to the Land Allocation map and is therefore outside the scope of this project.

## 2 Study Area

The Phase 1F land parcel encompasses approximately 130.25 hectares (ha) located in Alton North approximately six kilometres north of the Port of Richards Bay and three kilometres east of the Richards Bay Central Business District (CBD). To the west of Phase 1F is the Nsezi Rail Yard, while the Alton Industrial Area is situated to the southeast of Phase 1F. There are substantial undeveloped lands, as well as commercial, industrial and residential development within 500m of RBIDZ Phase 1F, mostly in the north and northwest.

The RBIDZ Phase 1F site is within the of the uMhlathuze Municipality. The project site has two important arterial roads in close proximity: the R619, aligned past the northeast boundary of the site, and the R34 John Ross Parkway, which is the main link to the N2 highway between Durban and Richards Bay, aligned to the south of the site. The location of RBIDZ Phase 1F in relation to these roads is shown in Figure 1 – Locality Plan below.

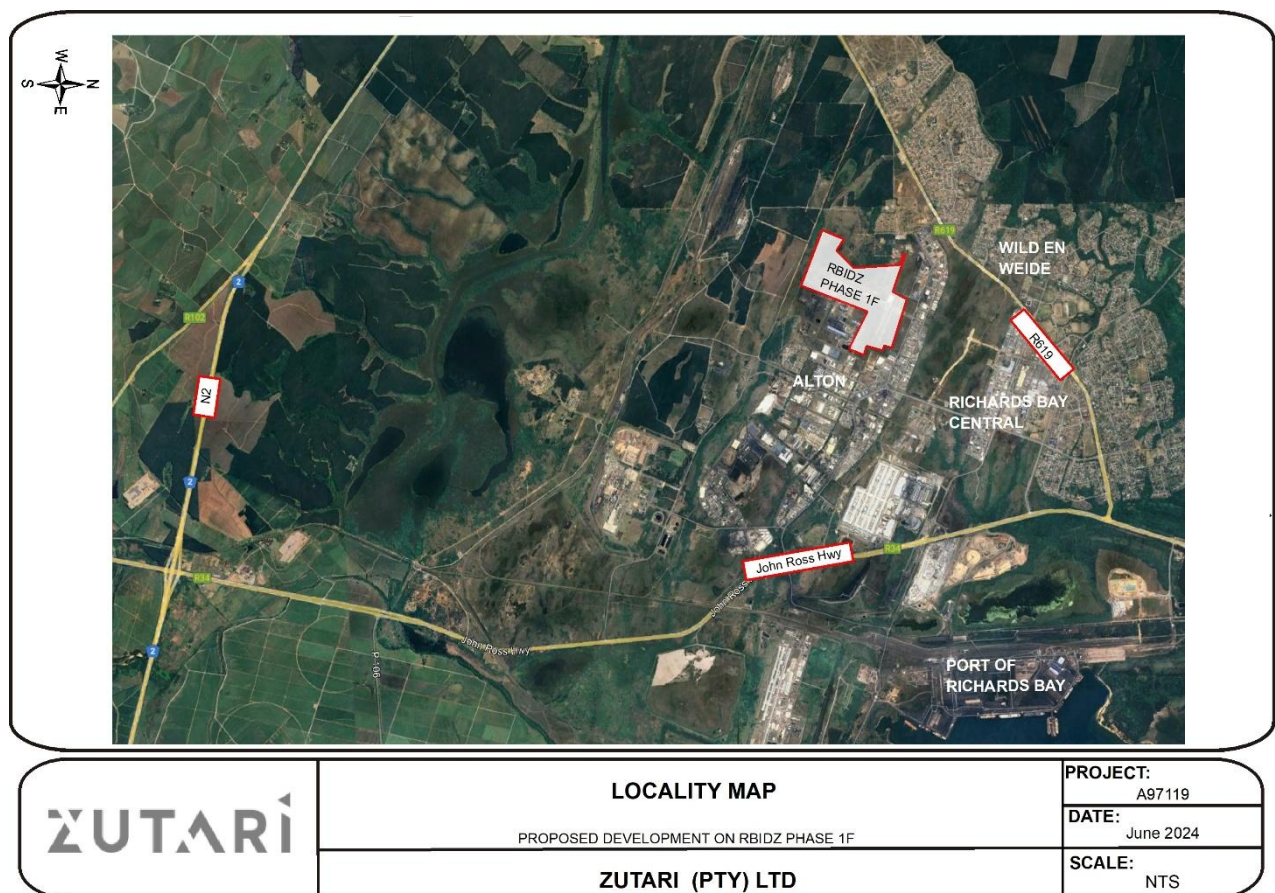


Figure 1: Locality Plan

### 3 Scope and Objectives

This specialist traffic impact assessment as an update to the 2013 Traffic Impact Assessment of RBIDZ Phase 1F is required to address the following:

- Assess the performance of the existing road network and adjacent road network based on current traffic volumes, and in comparison, with the 2013 counted traffic volumes.
- Quantify potential trips generated as a result of the proposed development as per the investor pipeline.
- Determine and assess the local impact of the proposed land use on the road and transportation system surrounding the development.
- Identify whether it is possible accommodate the proposed higher density land use, with or without the implementation of mitigation measures.
- Consider, and report on potential additional vehicular access points from the proposed Western Arterial (from the north, and /or south) in support of the existing main vehicular entrance to Phase 1F from Alumina Allee, Alton North
- Road Safety Issues
- Public Transport Infrastructure and Potential Requirements
- Pedestrian Movements in the vicinity of RBIDZ Phase 1F
- On-Street Truck Parking along the roads in the immediate vicinity of the RBIDZ Phase 1F

## 4 Approach and Methodology

The traffic engineering assessment has been undertaken in accordance with the COTO TMH 16 Volume 1 & 2 'Traffic Impact and Site Traffic Assessment Manual' and COTO TMH 17 'Trip Data Manual'. The following methodology was adopted:

**Site Investigation:** A site visit was conducted to assess the existing road network, including observation of the existing access onto the road network and key intersections, public transport activity, pedestrian movement and on-street truck parking. The site visit included observations regarding road safety conditions, site constraints and the general road surface condition of the surrounding road network, non-motorised transport (NMT) and public transport activities within the study area.

- Collection of existing traffic data: Classified (light vehicles, minibus taxis, buses, and heavy vehicles) traffic counts were undertaken over a 12-hour period from 06h00 to 18h00 recording all turning movements at all intersections. The following intersections were counted in accordance with the Scope of Work:
  - Heliumhoogte, Via Davallia and R619 Intersection
  - Alumina Allee and Chalk Line Intersection
  - Ceramic Curve and Chalk Line Intersection
  - Alumina Allee and South-Central Arterial Intersection
- During the site visit it was identified that the access roundabout Alumina Allee and Diamantpyp Intersection did not form part of the scope of work, and it was therefore added to the scope by means of a variation order.
- A list of some of the technical information was obtained from the project team and the client that included:
  - Site development plan showing the future rail network design.
  - The Phase 1F proposed zoning, extent, and Gross Leasable Area
  - Total number of staff at RBIDZ Phase 1F industrial development and their movements and modes of transport (car, public transport, walk, bicycle) for existing conditions.
  - Normal operating hours of RBIDZ Phase 1F industrial development.
  - Truck movements and access points.
  - The proposed access plans and the internal staging plan and location.
  - Potential future access points for RBIDZ Phase 1F.

**Projection of future traffic:** Based on the proposed site areas and potential floor areas for the RBIDZ Phase 1F industrial development, the future traffic generation and distribution patterns can be projected and compared with the existing traffic data.

- The generated trips were distributed and assigned onto the existing road network surrounding RBIDZ Phase 1F industrial development based on the same distribution pattern as contained in the previously approved SMEC report.

**Identification of potential impacts:** The study identifies the potential impacts of proposed RBIDZ phase 1F on the surrounding road network, including traffic congestion, delay, safety, and environmental impacts.

**Evaluation of mitigation measures:** The traffic generated by Phase 1F is then added to the forecast design horizon traffic volumes and analysed. Various mitigation measures, such as improving existing road intersections, upgrading to traffic signals, additional access points or building bypasses, to minimize the negative impacts of the increased traffic volume are then evaluated by the model.

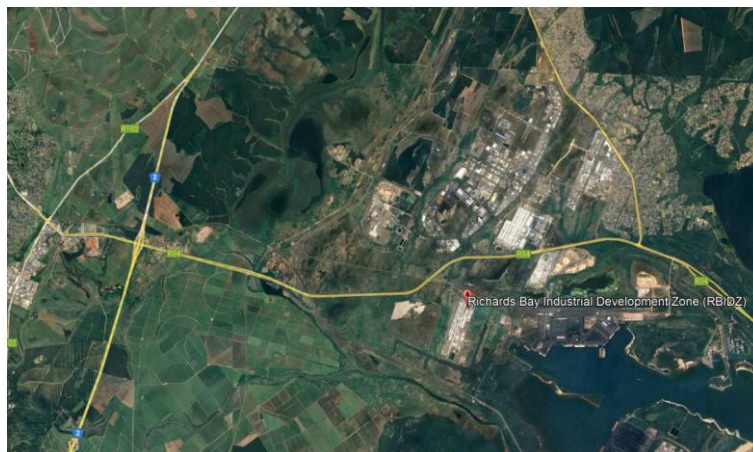
**Preparation of a report:** The study concludes with the preparation of a report for submission and approval by the Client and the local traffic authority, summarizing the findings and recommendations for mitigating the traffic impacts of the RBIDZ Phase 1F industrial development.

## 5 Site Investigation

A description of the road network most likely to be affected by the proposed RBIDZ Phase 1F development is presented below. During the site visit no adverse road safety or traffic conditions were observed during the respective peak hours

### 5.1 National Road 2 (N2)

The city of uMhlathuze is strategically located in close proximity to the N2 national route, which is of strategic importance for transporting materials and products to / from the RBIDZ development. The N2 is a Class 1 Principal Arterial Road that carries intercity traffic from the Western Cape through KwaZulu-Natal to Ermelo. Within KwaZulu-Natal the N2 links Richards Bay to Durban as the two main commercial and industrial centres in the Province.



**Figure 2: Aerial View of N2**

### 5.2 R619

The R619, also known as the North Central Arterial, features a single lane in each direction, with road widening at intersections to accommodate turning lanes within the study area. The road is 7 meters wide and runs in a southeast to northwest direction. As a Class 2 Major Arterial Road, the R619 provides crucial mobility for the region. Located in the northern part of Richards Bay, it links the area to the N2 highway and provides primary access to surrounding residential settlements, the CBD, and industrial regions. The road is heavily utilized by both heavy and light vehicles.



**Figure 3: R619**

## 5.3 Alumina Allee

Alumina Allee is a 14.0-meter-wide road with two lanes in each direction, featuring widened intersections to accommodate turning lanes. It runs in a north-south direction between the John Ross Highway in the south and the R619 in the north. As a Class 3 Minor Urban Arterial Road, it connects the southern and northern areas of Richards Bay, facilitating access to the site and linking to the R34 in the south. Towards the north, the road becomes Heliumhoogte Road and connects to the R619. This road experiences high volumes of heavy vehicle traffic.



**Figure 4: Alumina Allee**

## 5.4 Chalk Line

Chalk Line is a dual carriageway with two lanes in each direction, separated by a centre median. This road runs in an east-west direction between Alumina Allee in the west and the East Central Arterial in the east. It is a Class 3 Minor Urban Arterial Road, connecting the eastern and western areas of Richards Bay.



**Figure 5: Chalk Line**

## 5.5 R34 (John Ross Highway)

The R34 is a Class 2 Major Arterial Road located in the southern region of Richards Bay. It provides essential mobility for the area, connecting to the N2 highway and offering primary access to the township settlements of Bhiliya and surrounding areas via the P106, as well as to the industrial regions and the Port of Richards Bay.



**Figure 6: John Ross Highway**

## 6 Traffic Demand Estimation

### 6.1 Assessment Years and Hours

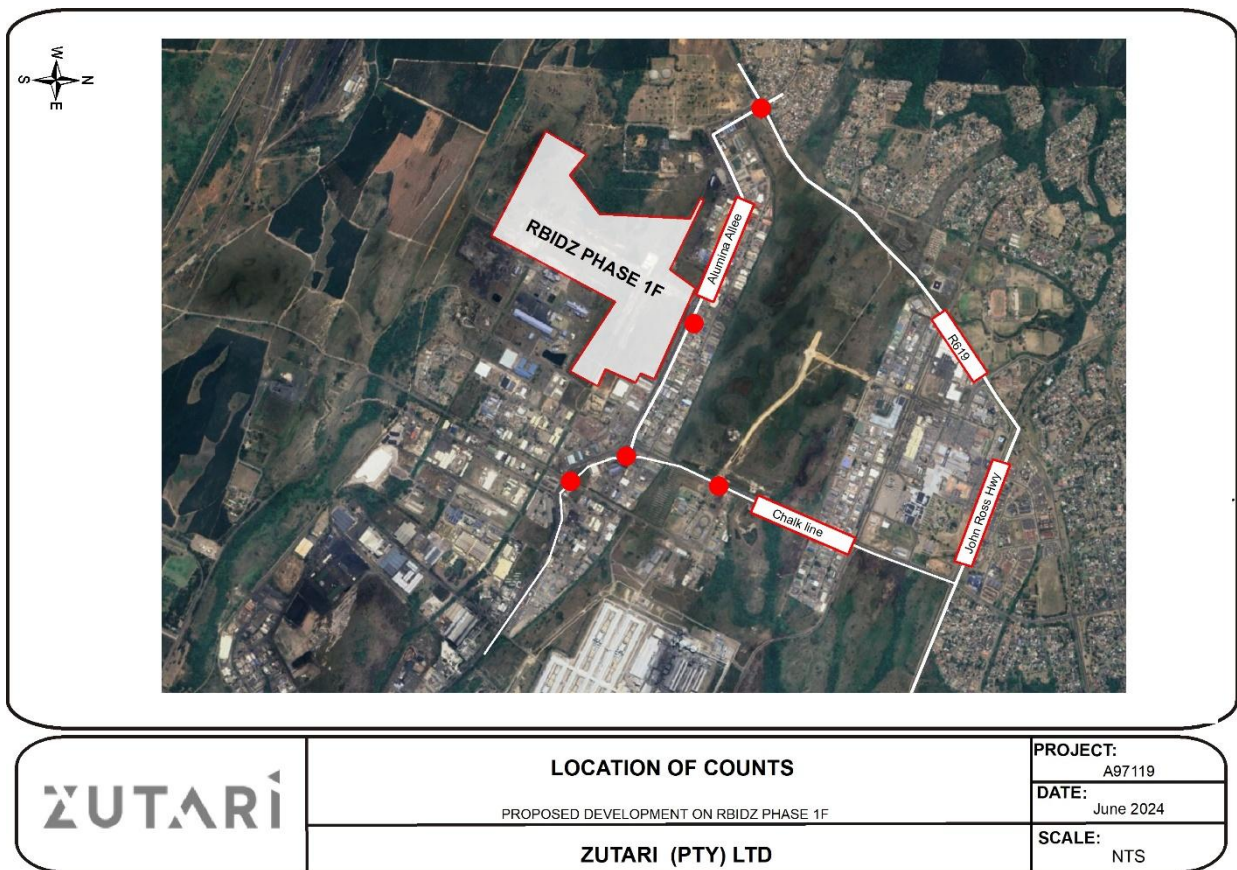
For the maximum impact scenario of the proposed development, a weekday AM peak hour and PM peak hour will be analysed further in this TIA. The maximum potential trip generation of the proposed RBIDZ Phase 1F development during the above peak periods will be more than 2 000 veh/h and therefore a design horizon year of 10 years (2034) needs to be assessed in terms of the TMH 16 Manual for Traffic Impact Assessments and Site Traffic Assessments.

### 6.2 Traffic Counts

The existing traffic volumes on the surrounding road network immediately surrounding the site were obtained from classified traffic counts undertaken by Bala Survey and Research at the following intersections on Thursday, 29 February 2024. These were the intersections that were included in the Scope of Works.

- Heliumhoogte, Via Davallia and R619 Intersection
- Alumina Allee and Chalk Line Intersection
- Ceramic Curve and Chalk Line Intersection
- Alumina Allee and South-Central Arterial Intersection

During the site visit it was identified that the Site Access roundabout in Alumina Allee also needed to be counted and it was therefore counted by Bala Survey and Research on Tuesday, 19 March 2024:



**Figure 7: Location of Counts**

The traffic counts were undertaken from 06:00 to 18:00 on a typical weekday, recording all movements by vehicle type. An analysis of the traffic counts revealed that the weekday AM peak hour at these intersections was from 06:45 to 07:45 and the weekday PM peak hour was from 15:45 to 16:45, both of which are typical peak periods for a weekday morning and afternoon commuter peak periods. The results of the traffic counts are contained in Appendix A of this report.

The existing 2024 weekday AM peak hour and PM peak hour traffic volumes on the surrounding road network are shown on Figure 8 below.

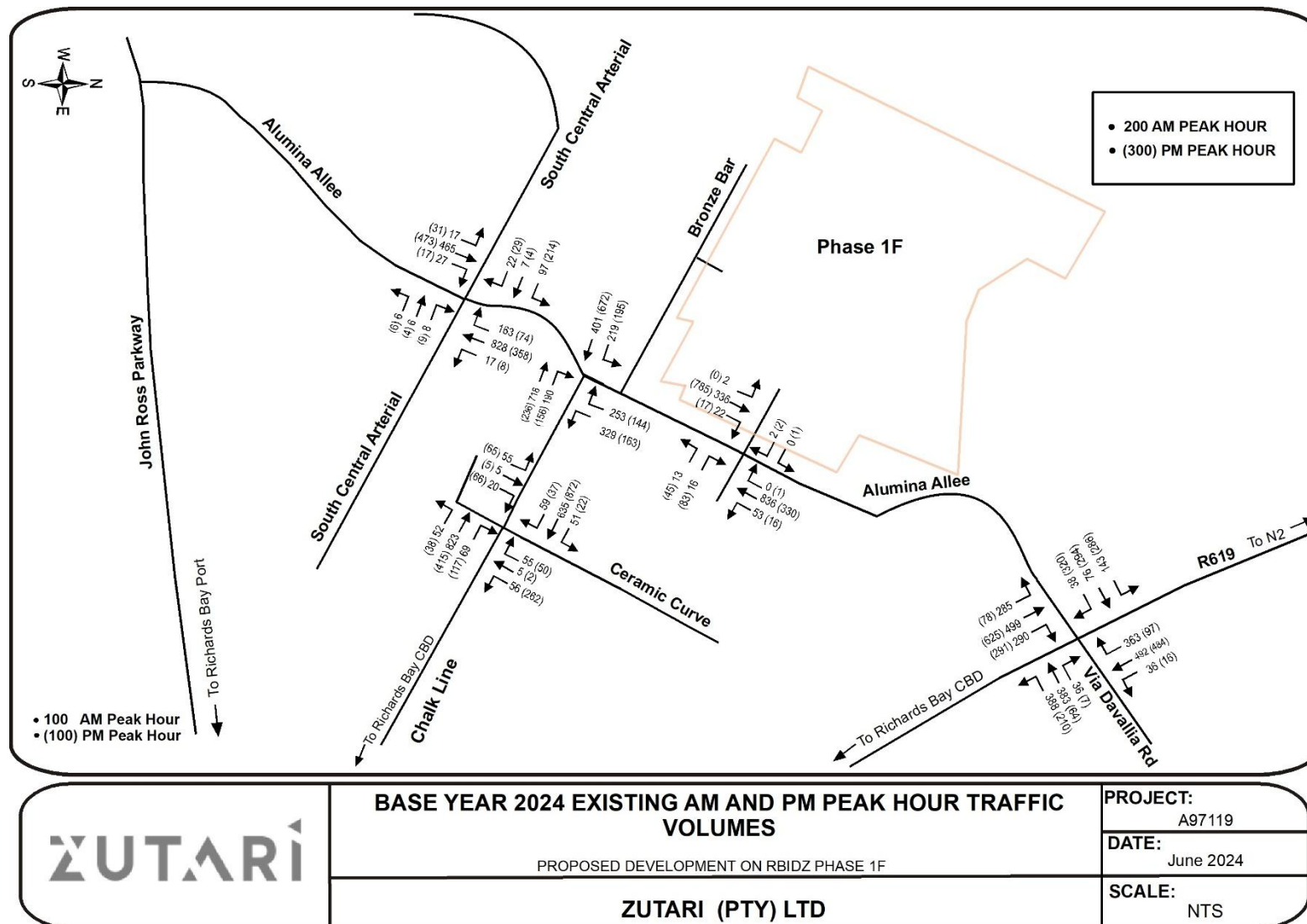


Figure 8: 2024 Weekday AM & PM Peak Hour Traffic Volumes

## 6.3 Traffic Growth Rates

To project the traffic for the 10-year design horizon, the 2024 existing background peak hour traffic needs to be adjusted based on a specified growth rate from 2024 to 2034.

For consistency with the previously approved SMEC report, an annual growth rate of 3.5% was used in this update assessment. Situated in Alton North, an industrial sector of Richards Bay, RBIDZ Phase 1F falls within the RBIDZ in the uMhlathuze Municipality. Given its strategic location, the area is anticipated to undergo an above-average growth rate of 3.5% per annum. This estimation aligns with the recommendations contained in the TMH 16 Manual for Traffic Impact Assessments and Site Traffic Assessments, particularly regarding the projected impact on roads resulting from the traffic generated by the proposed RBIDZ Phase 1F development.

The existing traffic volumes were thus extrapolated using a compound growth annual growth rate of 3.5% per annum to get 2034 Design year 10-year design horizon traffic flows as shown in Figure 9 below.

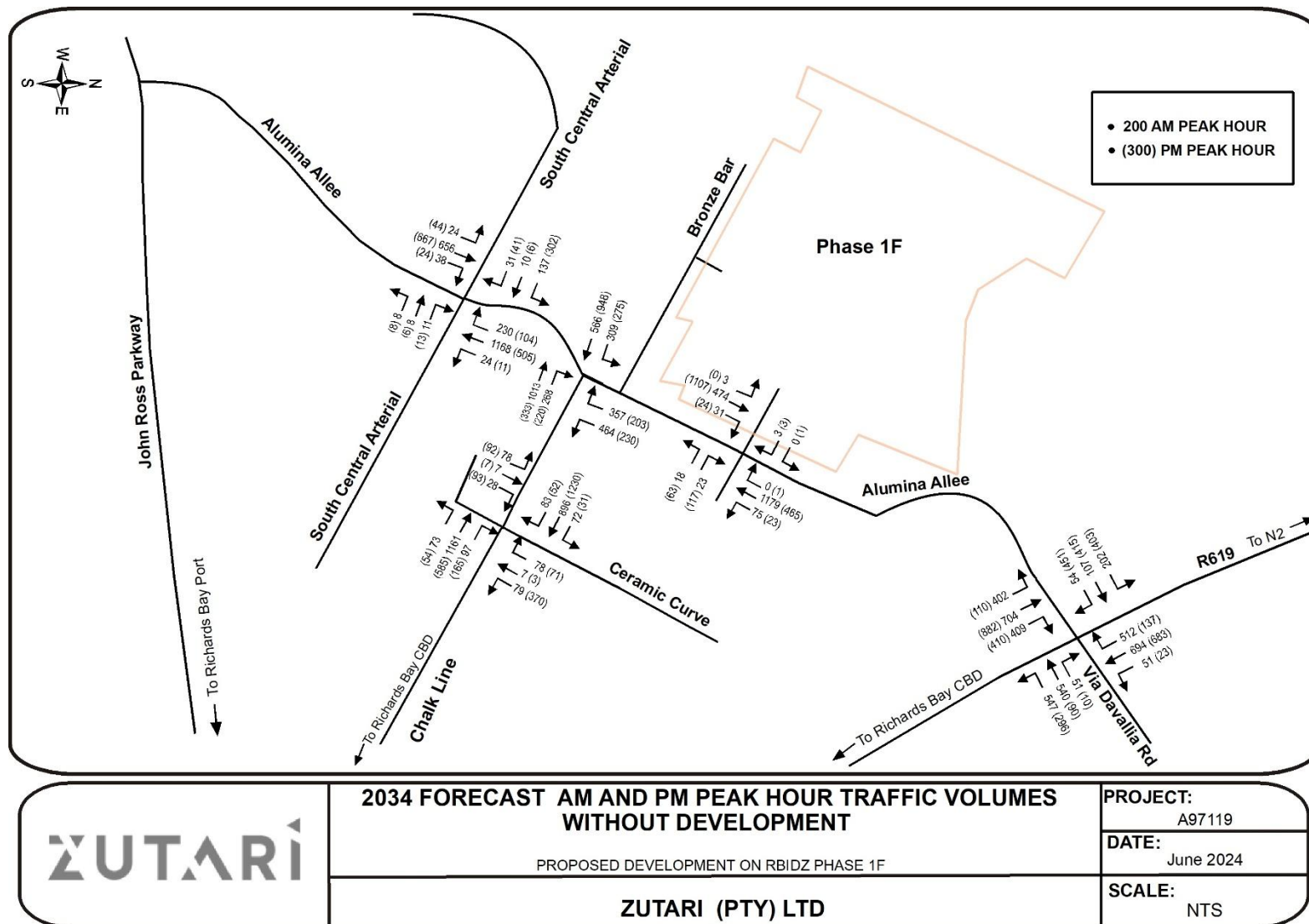


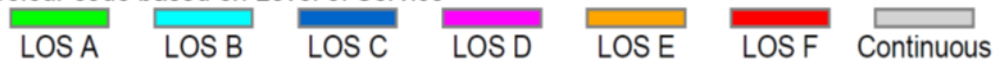
Figure 9: 2034 Design Year AM and PM Peak Hour Volumes

## 6.4 2034 Design Year Analysis Without Development Generated Traffic

The SIDRA (Signalised & unsignalized Intersection Design and Research Aid) computer software package was used to analyse the design year traffic conditions with and without development generated traffic at the intersections within the study area. The underlying objective of intersection analysis is to quantify the performance of an intersection with regard to specified traffic volumes and environmental conditions. This traffic operational performance can be measured in terms of 'Level of Service' (LOS). Six levels of service exist, ranging from A to F. LOS A represents the best operating conditions (free-flow conditions and no delay or congestion) whereas LOS F represents the worst, (breakdown conditions with congestion and very high delays). LOS D is deemed the minimum acceptable level of service.

The legend hereafter is used to depict the LOS of each movement at the intersections.

Colour code based on Level of Service



The 2034 10-year design horizon background traffic without development generated traffic analysis results are presented below with the details contained in Appendix C to this report.

6.4.1 Heliumhoogte, Via Davallia and R619 Intersection

The following intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year without development generated traffic at this intersection are shown in Table 1 hereafter:

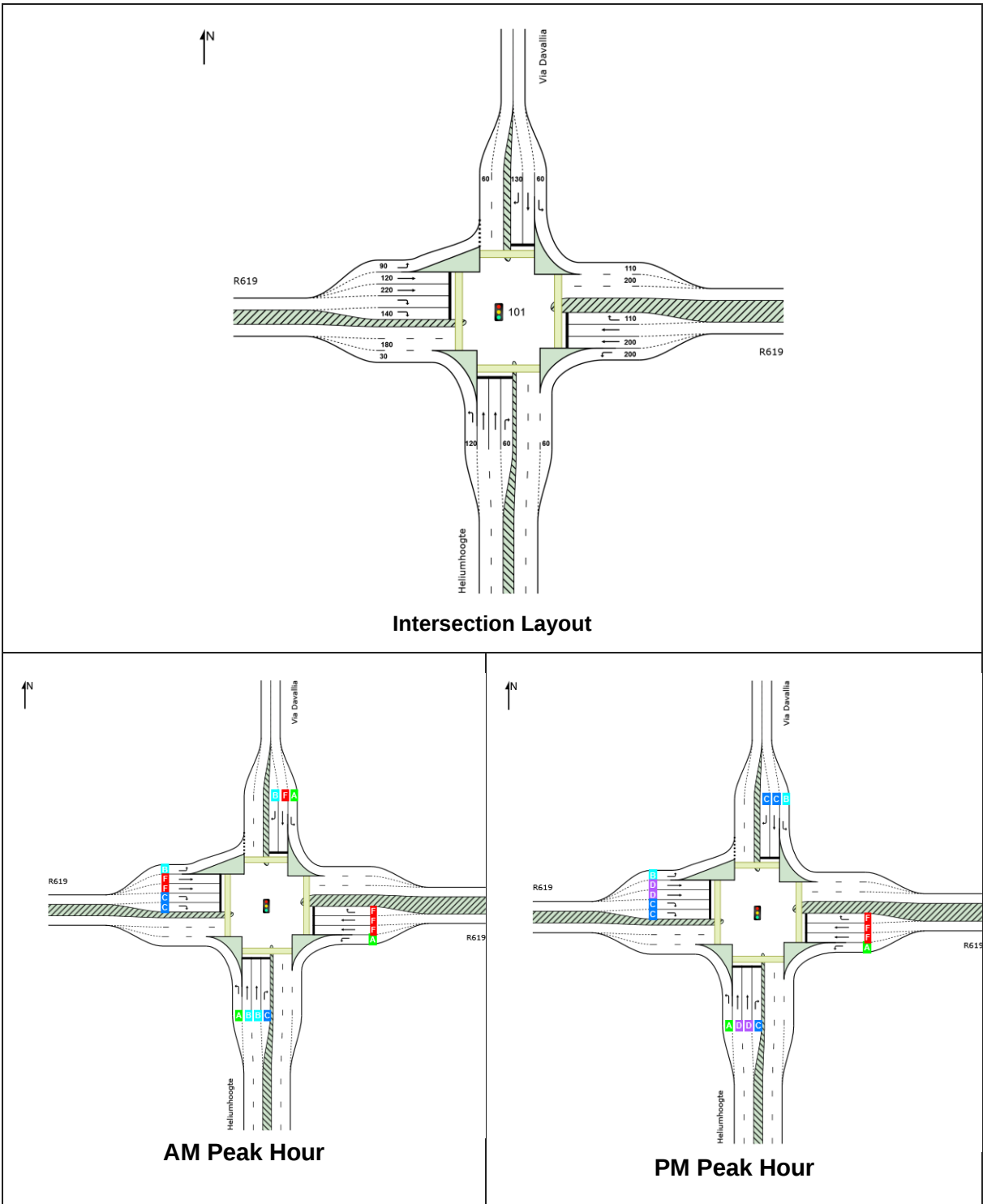
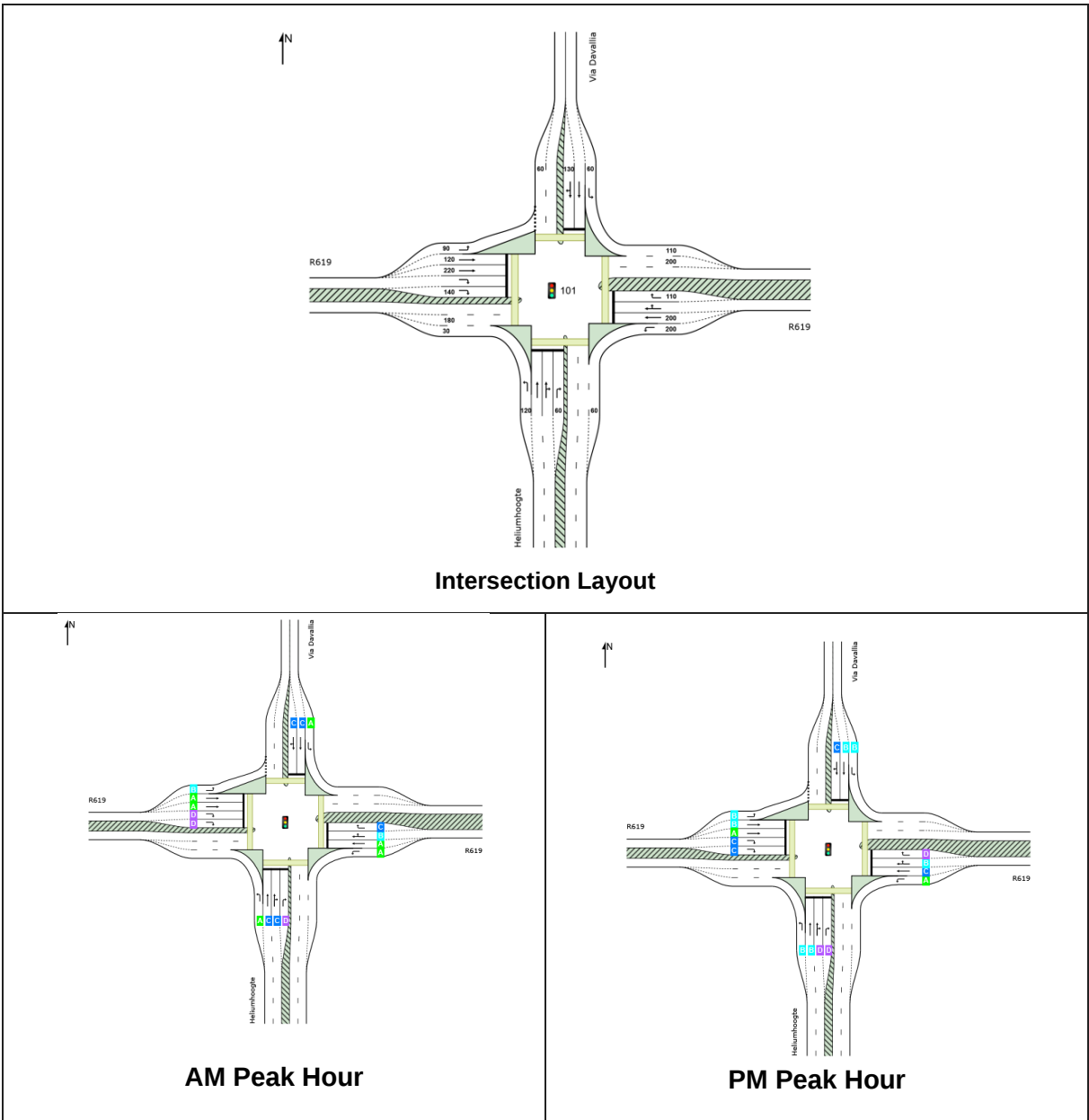


Table 1 2034 Design Year without Development Generated Traffic - Heliumhoogte, Via Davallia and R619

From the SIDRA results, it is evident that this intersection will experience congestion during the weekday AM and PM peak hours. The average delays will be 74.1 seconds and 80.8 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 350.7 metres and 365.9 metres during the AM and PM peak hours respectively. Further upgrades are required to this intersection in order to accommodate the 2034 Design year without development generated traffic.

# Heliumhoogte, Via Davallia and R619 Intersection Upgraded

The following intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year without development generated traffic at this intersection are shown in Table 2 hereafter:



**Table 2 2034 Design Year without Development Generated Traffic - Heliumhoogte, Via Davallia and R619**

From the SIDRA results, it is evident that this upgraded intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 16.9 seconds and 21.7 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 94.3 metres and 197.9 metres during the AM and PM peak hours respectively. No further upgrades are required to this intersection in order to accommodate the 2034 Design year without development generated traffic. According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

6.4.2 Alumina Allee and Chalk Line Intersection

The following intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year without development generated traffic at this intersection are shown in Table 3 hereafter:

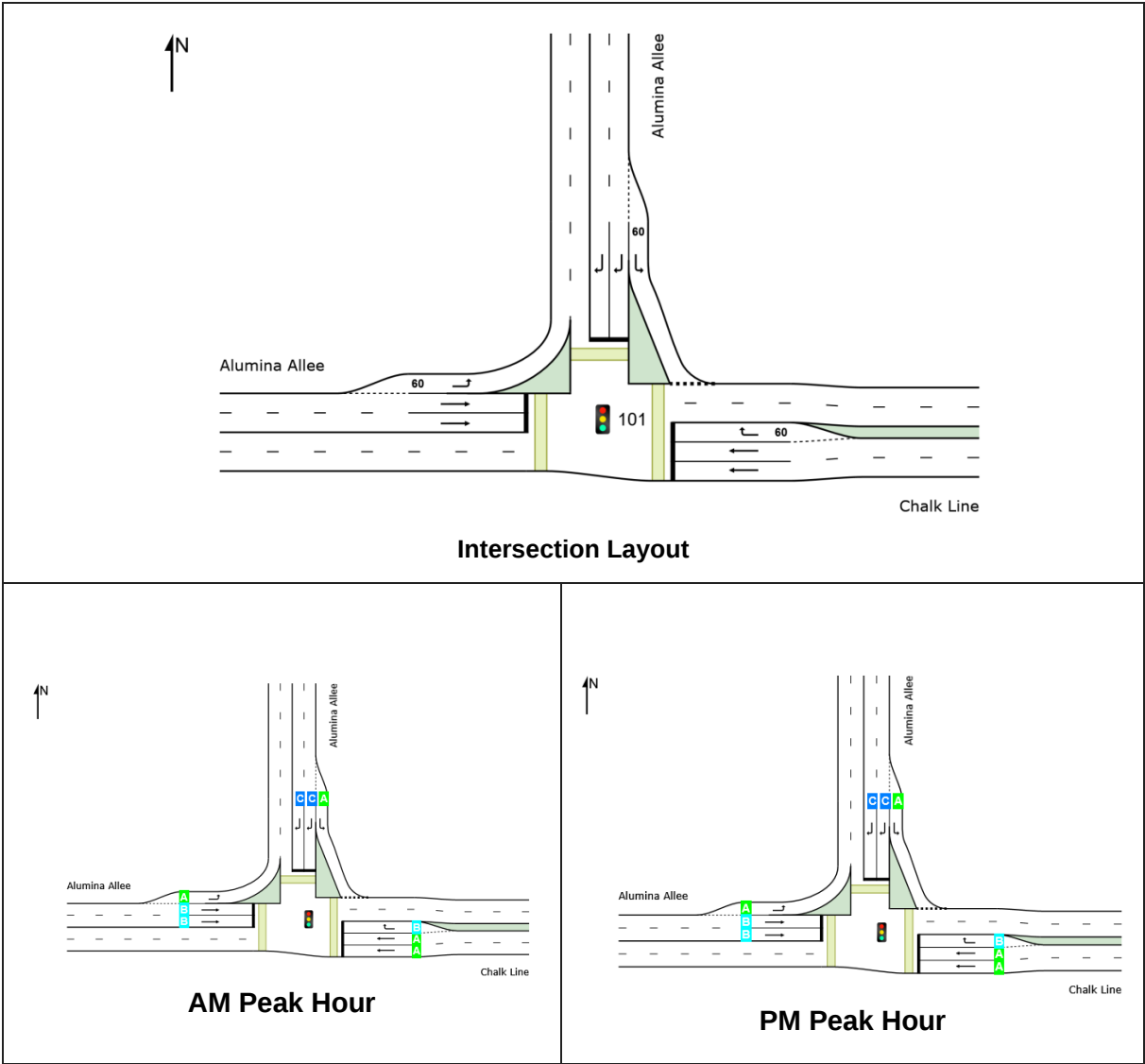


Table 3 2034 Design Year without Development Generated Traffic - Alumina Allee and Chalk Line

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 12 seconds and 12.7 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 46.2 metres and 74.6 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 Design year without development generated traffic.

6.4.3 Chalk Line and Ceramic Curve Intersection

The following intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year without development generated traffic at this intersection are shown in Table 4 hereafter:

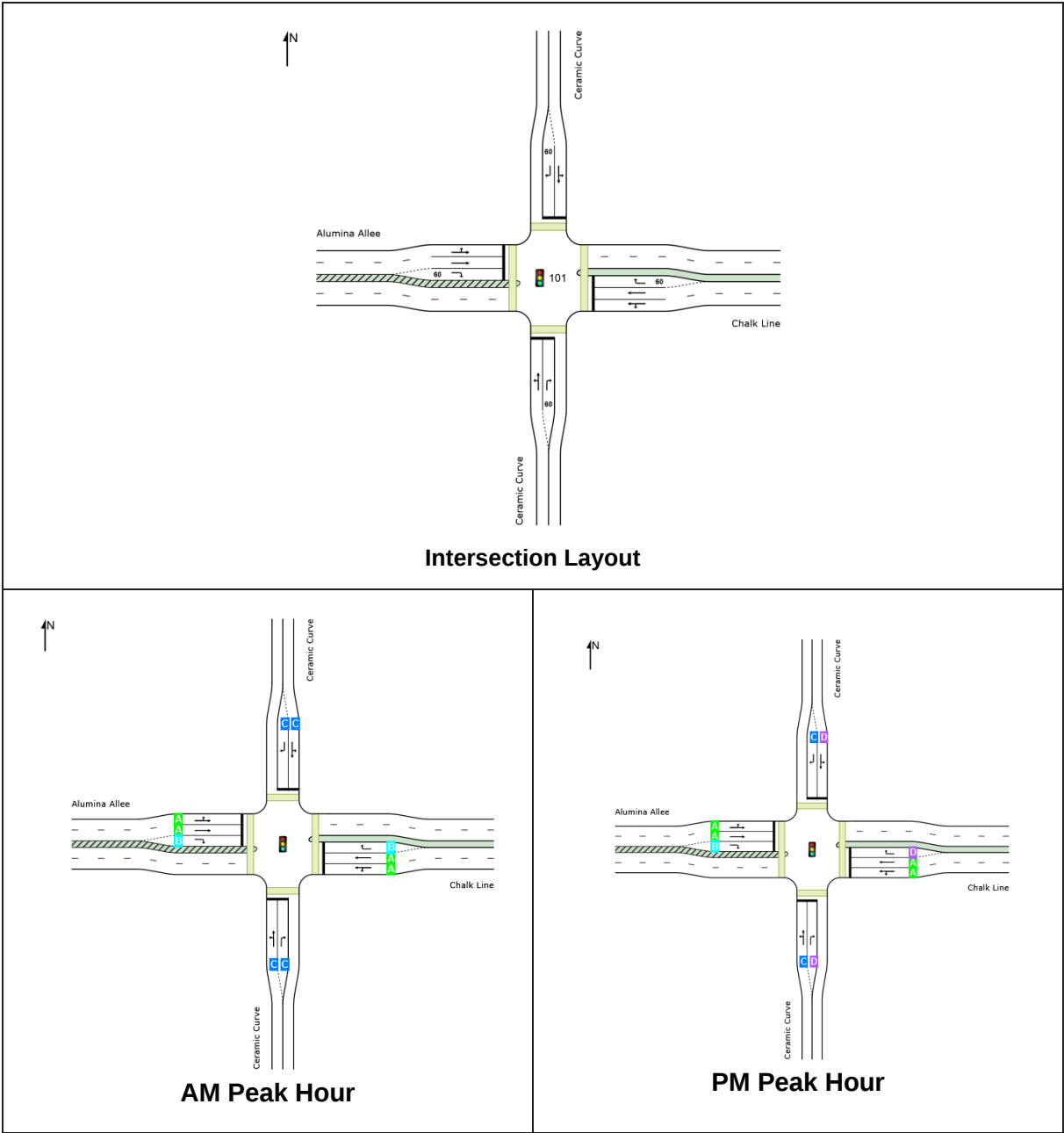


Table 4 2034 Design Year without Development Generated Traffic - Chalk Line and Ceramic Curve

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 8.8 seconds and 16 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 66.9 metres and 92.3 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 Design year without development generated traffic. According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

6.4.4 Alumina Allee and South-Central Arterial Intersection

The following intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year without development generated traffic at this intersection are shown in Table 5 hereafter:

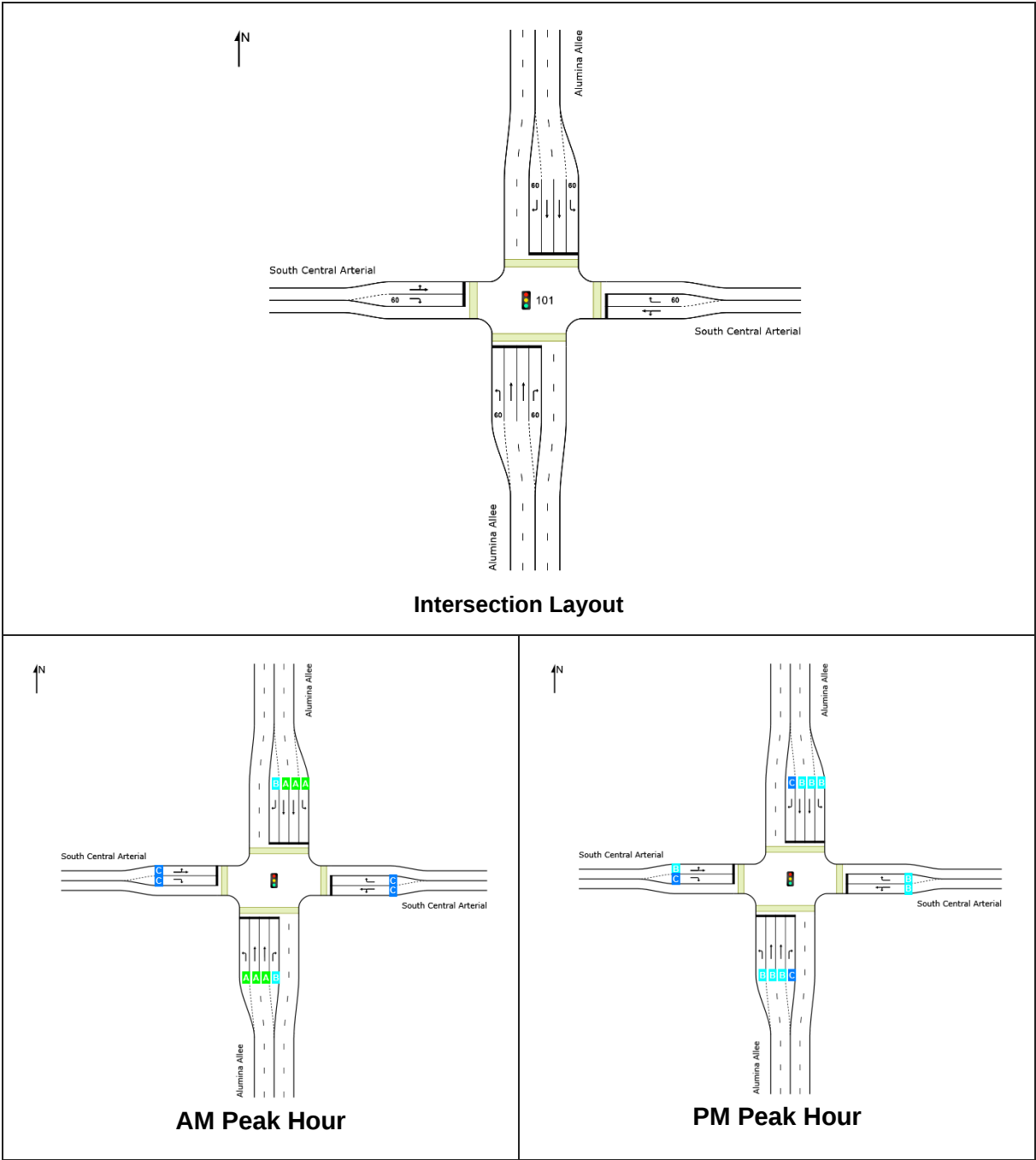


Table 5 2034 Design Year without Development Generated Traffic - Alumina Allee and South Central Arterial

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 8.2 seconds and 15.3 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 61.3 metres and 51.9 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 Design year without development generated traffic.

6.4.5 Site Access (Alumina Allee and Diamantpyp Intersection)

The following intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year without development generated traffic at this intersection are shown in Table 6 hereafter:

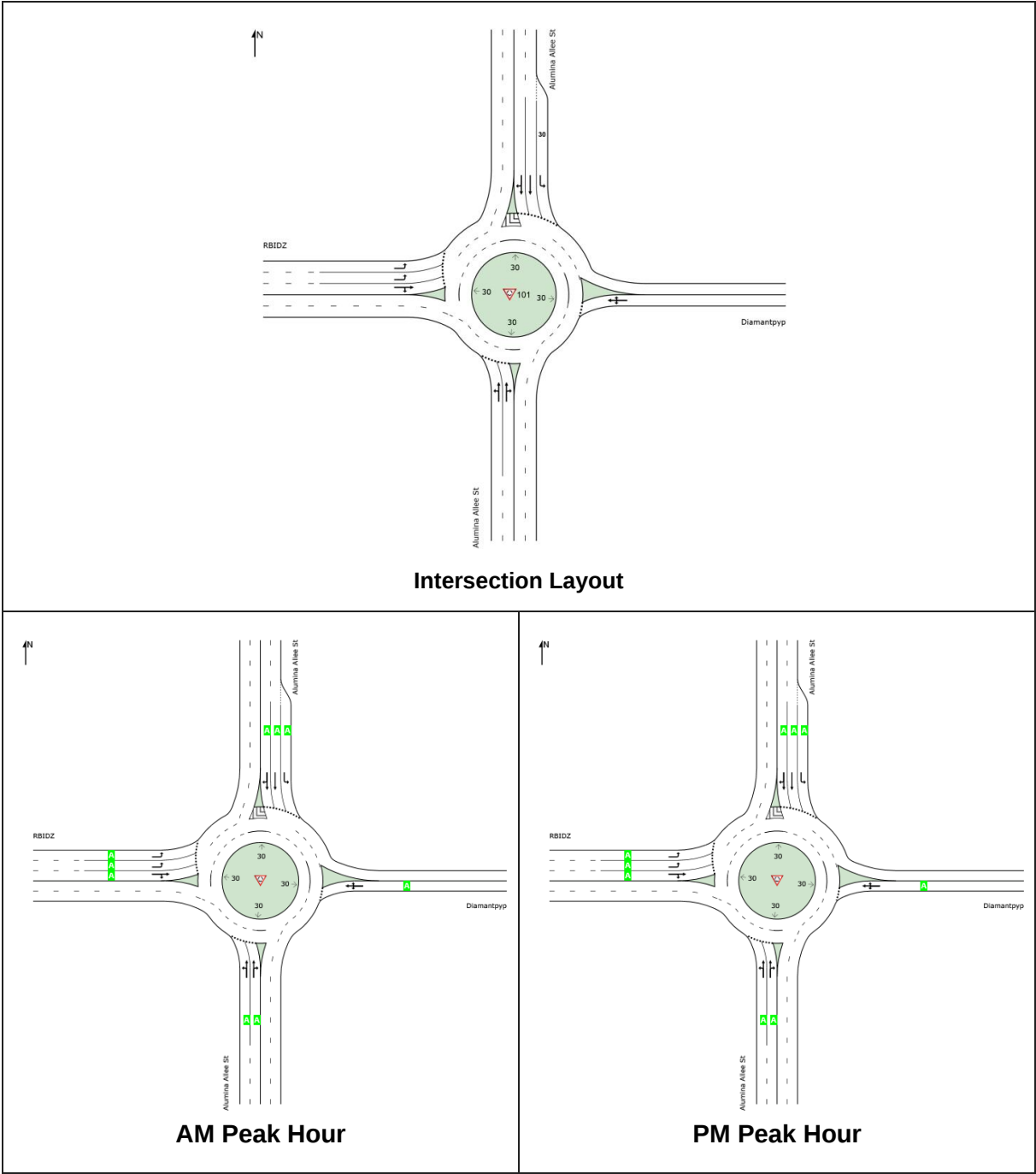


Table 6 2034 Design Year without Development Generated Traffic - Alumina Allee and Diamantpyp

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 3.9 seconds and 4.5 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 14.1 metres and 19.7 metres during the AM and PM peak hours respectively. No upgrades are required to this roundabout in order to accommodate the 2034 Design year without development generated traffic.

## 6.5 Existing Pedestrians and Public Transport

There is minimal pedestrian activity along the N2/R619 on/off ramp and minor pedestrian movement in the vicinity of the site. However, pedestrian activity is notable along R619/Heliumhoogte, Alumina Allee Street/Chalk Line Road, and Alumina Allee Street/Diamantpyp Street. This pedestrian traffic is primarily attributed to workers commuting to and from surrounding industrial and commercial establishments, as well as domestic workers during peak commuting hours.

The roads in the vicinity of the proposed development, aside from Alumina Allee and Chalk Line Road, do not have sidewalks but feature wide grass verges which pedestrians utilize. These roads include Diamantpyp, Ceramic Curve, Bronze Bar, and South Central Arterial. Alumina Allee has a sidewalk on one side and a grass verge on the other.

During the site visit, existing public transport laybys were observed along Chalk Line Road and on the northwest approach of R619/Heliumhoogte, where taxis frequently stop to pick up and drop off passengers, predominantly workers from surrounding industrial and commercial businesses throughout the day. Additional public transport laybys are situated along Alumina Allee Street, strategically placed to serve the commuting needs of the general public and the workforce in the surrounding industrial area. Two transport laybys, identified as the closest to RBIDZ Phase 1F main access, offer a practical solution for workers relying on public transportation to commute to and from the industrial zone. The proximity of these laybys to RBIDZ ensures minimal walking distance, thereby enhancing convenience and safety for employees. An informal taxi stop was also observed along Alumina Allee Street, no formal taxi ranks were observed during the site visit.

However, the proportion of public transport vehicles along both roads is relatively low, with buses and minibuses accounting for only a small percentage of overall traffic along Alumina Allee and Chalk Line Road.

## 6.6 Existing Road Safety

Sight distance conditions along all the roads in the vicinity of the proposed development are acceptable. Traffic generally travels at acceptable speeds on the surrounding road network in the vicinity of the proposed development. South Central Arterial and Ceramic Curve are traffic calmed by means of speed bumps.

There are frequent accidents at the Richards Bay IDZ phase 1F entrance along Alumina Allee, with visible evidence of trucks driving straight over the roundabout. To address this issue, it is recommended to propose adding speed humps on Alumina Allee before the roundabout. Additionally, installing extra signage and possibly an illuminated sculpture in the centre of the roundabout could enhance visibility and safety.

## 6.7 The Development Proposals

The proposed RBIDZ Phase 1F has a total site area of 130.25 ha and comprises twenty (20) erven zoned for Noxious Industry in terms of the existing land use rights. Nyanza Light Metals is planned to occupy six of these erven. Table 7 summarises the existing zoning and property rights of RBIDZ Phase 1F erven; three of the erven are conservation and will remain undeveloped as per environmental legislation.

Approximately 102 hectares of land will be developed for industrial use. The current investor that has developed an operational building in Phase 1F is Nyanza Light Metals, the building is a 3,599 m<sup>2</sup> operational facility located on Erven 16789. The remainder of the site is currently undeveloped / vacant although it is already zoned for industrial use and have potential end-users already.

The proposed RBIDZ Phase 1F development is to consist of the following land use types:

- Conservation
- Road and service servitudes
- General industry

The approved layout plan and zoning is provided in Appendix A. This shows the property descriptions and approved zoning as per the approval in terms of the KwaZulu-Natal Planning and Development Act (No 6 of 2008)

|                                       | Erven         | FAR | Site Area (sqm) | Gross Leasable Area (GLA) sqm |
|---------------------------------------|---------------|-----|-----------------|-------------------------------|
| General Industry<br>FAR = 0.7 and 0.5 | 16786         | 0.5 | 6.225           | 31125                         |
|                                       | 16787         | 0.5 | 7.0925          | 35463                         |
|                                       | 16788         | 0.5 | 13.2966         | 66483                         |
|                                       | 16789         | 0.5 | 16.3716         | 81858                         |
|                                       | 16672         | 0.7 | 6.0230          | 42161                         |
|                                       | 17456         | 0.7 | 2.4260          | 16982                         |
|                                       | 17455         | 0.7 | 2.7820          | 19474                         |
|                                       | 17443         | 0.7 | 2.3380          | 16366                         |
|                                       | 17442         | 0.7 | 2.3380          | 16366                         |
|                                       | 16820         | 0.7 | 2.3370          | 16359                         |
|                                       | 16819         | 0.7 | 2.4180          | 16926                         |
|                                       | 16674         | 0.5 | 4.9810          | 24905                         |
|                                       | 16674         | 0.5 | 4.1840          | 20920                         |
|                                       | 16817         | 0.7 | 5.7010          | 39907                         |
|                                       | 16818 Lease 1 | 0.7 | 2.0230          | 14161                         |
|                                       | 16818 Lease 2 | 0.7 | 2.4880          | 17416                         |
|                                       | 16673 Lease 1 | 0.7 | 10.2700         | 71890                         |
|                                       | 16673 Lease 2 | 0.7 | 2.5250          | 17675                         |

**Table 7 Gross Leasable Area of All Sites within RBIDZ Phase 1F**

## 6.8 Trip Generation Rates

Based on the intention to develop this site for a mix of uses as described above, the weekday AM and PM peak hour trip generation rates as contained in the TMH 17 South African Trip Data Manual have been used to calculate the maximum potential traffic that could be generated by all components of this proposed change in land use.

This manual gives the following peak hour trip generation rates and directional splits for the above-mentioned land uses:

### Industrial / Manufacturing (code 120)

- Weekday AM Peak Hour – 0.5 veh/h two-way per 100m<sup>2</sup> GLA with a 75:25 directional split.
- Weekday PM peak hour – 0.7 veh/h two-way per 100m<sup>2</sup> GLA with a 25:75 directional split

### Industrial Area (Park) (code 130)

- Weekday AM Peak Hour – 0.8 veh/h two-way per 100m<sup>2</sup> GLA with a 70:30 directional split.
- Weekday PM Peak Hour – 0.8 veh/h two-way per 100m<sup>2</sup> GLA with a 25:75 directional split

## 6.9 Trip Generation Calculations

The current investor with an operational building in Phase 1F is Nyanza Light Metals, located on Erven 16789. The total area of the existing building is 3599 m<sup>2</sup>. To determine the total trips generated by Erven 16789, the area of the existing building was subtracted from the total area of Erven 16789, as the trips generated by the building are already accounted for on the recent traffic counts.

Based on the above trip generation rates, directional splits and floor areas, the maximum potential trip generation for the approved components of the Phase 1F development are calculated below in Table 8:

| RBIDZ PHASE 1F APPROVED DEVELOPMENT |       |                                         |                                    |                          |                 |     |                 |     |
|-------------------------------------|-------|-----------------------------------------|------------------------------------|--------------------------|-----------------|-----|-----------------|-----|
| Land Use                            | Erven | Area m <sup>2</sup><br>(GLA) /<br>Units | Trip Gen Rate                      | Total 2-<br>way<br>Trips | AM Peak<br>Hour |     | PM Peak<br>Hour |     |
|                                     |       |                                         |                                    |                          | In              | Out | In              | Out |
| General<br>Industry                 | 16786 | 31125                                   | AM: 0.5<br>trips/100m <sup>2</sup> | 156                      | 117             | 39  | 54              | 163 |
|                                     |       |                                         | PM: 0.7<br>trips/100m <sup>2</sup> | 218                      |                 |     |                 |     |
|                                     | 16787 | 35463                                   | AM: 0.5<br>trips/100m <sup>2</sup> | 177                      | 133             | 44  | 62              | 186 |
|                                     |       |                                         | PM: 0.7<br>trips/100m <sup>2</sup> | 248                      |                 |     |                 |     |
|                                     | 16788 | 66483                                   | AM: 0.5<br>trips/100m <sup>2</sup> | 332                      | 249             | 83  | 116             | 349 |
|                                     |       |                                         | PM: 0.7<br>trips/100m <sup>2</sup> | 465                      |                 |     |                 |     |
|                                     | 16789 | 81858                                   | AM: 0.5<br>trips/100m <sup>2</sup> | 409                      | 307             | 102 | 143             | 430 |
|                                     |       |                                         | PM: 0.7<br>trips/100m <sup>2</sup> | 573                      |                 |     |                 |     |
|                                     | 16672 | 42161                                   | AM: 0.5<br>trips/100m <sup>2</sup> | 211                      | 158             | 53  | 74              | 221 |
|                                     |       |                                         | PM: 0.7<br>trips/100m <sup>2</sup> | 295                      |                 |     |                 |     |
|                                     | 17456 | 16982                                   | AM: 0.8<br>trips/100m <sup>2</sup> | 136                      | 95              | 41  | 34              | 102 |
|                                     |       |                                         | PM: 0.8<br>trips/100m <sup>2</sup> | 136                      |                 |     |                 |     |

|  |               |       |                                    |     |      |     |      |      |
|--|---------------|-------|------------------------------------|-----|------|-----|------|------|
|  | 17455         | 19474 | AM: 0.8<br>trips/100m <sup>2</sup> | 156 | 109  | 47  | 39   | 117  |
|  |               |       | PM: 0.8<br>trips/100m <sup>2</sup> | 156 |      |     |      |      |
|  | 17443         | 16366 | AM: 0.8<br>trips/100m <sup>2</sup> | 131 | 92   | 39  | 33   | 98   |
|  |               |       | PM: 0.8<br>trips/100m <sup>2</sup> | 131 |      |     |      |      |
|  | 17442         | 16366 | AM: 0.8<br>trips/100m <sup>2</sup> | 13  | 92   | 39  | 33   | 98   |
|  |               |       | PM: 0.8<br>trips/100m <sup>2</sup> | 131 |      |     |      |      |
|  | 16820         | 16359 | AM: 0.8<br>trips/100m <sup>2</sup> | 131 | 92   | 39  | 33   | 98   |
|  |               |       | PM: 0.8<br>trips/100m <sup>2</sup> | 131 |      |     |      |      |
|  | 16819         | 16926 | AM: 0.8<br>trips/100m <sup>2</sup> | 135 | 95   | 41  | 34   | 102  |
|  |               |       | PM: 0.8<br>trips/100m <sup>2</sup> | 135 |      |     |      |      |
|  | 16674         | 24905 | AM: 0.5<br>trips/100m <sup>2</sup> | 125 | 93   | 31  | 44   | 131  |
|  |               |       | PM: 0.7<br>trips/100m <sup>2</sup> | 174 |      |     |      |      |
|  | 16674         | 20920 | AM: 0.5<br>trips/100m <sup>2</sup> | 105 | 78   | 26  | 37   | 110  |
|  |               |       | PM: 0.7<br>trips/100m <sup>2</sup> | 146 |      |     |      |      |
|  | 16817         | 39907 | AM: 0.5<br>trips/100m <sup>2</sup> | 200 | 150  | 50  | 70   | 210  |
|  |               |       | PM: 0.7<br>trips/100m <sup>2</sup> | 279 |      |     |      |      |
|  | 16818 Lease 1 | 14161 | AM: 0.5<br>trips/100m <sup>2</sup> | 71  | 53   | 18  | 25   | 74   |
|  |               |       | PM: 0.7<br>trips/100m <sup>2</sup> | 99  |      |     |      |      |
|  | 16818 Lease 2 | 17416 | AM: 0.5<br>trips/100m <sup>2</sup> | 87  | 65   | 22  | 30   | 91   |
|  |               |       | PM: 0.7<br>trips/100m <sup>2</sup> | 122 |      |     |      |      |
|  | 16673 Lease 1 | 71890 | AM: 0.5<br>trips/100m <sup>2</sup> | 359 | 270  | 90  | 126  | 377  |
|  |               |       | PM: 0.7<br>trips/100m <sup>2</sup> | 503 |      |     |      |      |
|  | 16673 Lease 2 | 17675 | AM: 0.5<br>trips/100m <sup>2</sup> | 88  | 66   | 22  | 31   | 93   |
|  |               |       | PM: 0.7<br>trips/100m <sup>2</sup> | 124 |      |     |      |      |
|  |               | TOTAL |                                    |     | 2314 | 826 | 1017 | 3051 |

**Table 8 Maximum Potential Trip Generation for the Phase 1F Approved Components of the Development**

## 6.9.1 Nyanza Light Metals Rail Discount

The rail network design for Alton North makes provision for access to the proposed Phase 1F site, and existing corridors will be retained to make provision for linkage into the planned network and the Phase 1F site. It is anticipated that this proposed rail network will reduce the Nyanza generated road-based traffic by 65%.



**Figure 10: Proposed Rail Network**

The proposed Nyanza Plant has a total area of approximately 69ha and comprises six (6) erven, zoned for General Industry in terms of land use rights. Two of the erven are wetland areas and will remain undeveloped as per environmental legislation.

It is predicted that in 2034 Nyanza Light Metals will have their products transported by rail. The following estimations were provided by Nyanza Light Metals:

- Materials transportation into the site is estimated 417 600 tons per year.
- Materials transportation out of the site is estimated at 494855 tons per year.
- Total materials inbound and outbound = 912455 tons
- Inbound and outbound rail transportation of materials is estimated at 595938 tonnes per year, which translates to about 65% of the total.

There 65% discount was applied to Erven 16786,16787,16788,16789 and 16817 only. The total trips generated by the entire RBIDZ 1F development, incorporating the discounted Nyanza-generated trips, are summarized in Table 9 below:

| PHASE 1 APPROVED DEVELOPMENT AFTER NYANZA RAIL DISCOUNTED TRIPS |               |  |                                 |                   |              |     |              |     |
|-----------------------------------------------------------------|---------------|--|---------------------------------|-------------------|--------------|-----|--------------|-----|
| Land Use                                                        | Erven         |  | Trip Gen Rate                   | Total 2-way Trips | AM Peak Hour |     | PM Peak Hour |     |
|                                                                 |               |  |                                 |                   | In           | Out | In           | Out |
| General Industry                                                | 16786         |  | AM: 0.5 trips/100m <sup>2</sup> | 156               | 41           | 14  | 19           | 57  |
|                                                                 |               |  | PM: 0.7 trips/100m <sup>2</sup> | 218               |              |     |              |     |
|                                                                 | 16787         |  | AM: 0.5 trips/100m <sup>2</sup> | 177               | 47           | 16  | 22           | 65  |
|                                                                 |               |  | PM: 0.7 trips/100m <sup>2</sup> | 248               |              |     |              |     |
|                                                                 | 16788         |  | AM: 0.5 trips/100m <sup>2</sup> | 332               | 87           | 29  | 41           | 122 |
|                                                                 |               |  | PM: 0.7 trips/100m <sup>2</sup> | 465               |              |     |              |     |
|                                                                 | 16789         |  | AM: 0.5 trips/100m <sup>2</sup> | 409               | 107          | 36  | 50           | 150 |
|                                                                 |               |  | PM: 0.7 trips/100m <sup>2</sup> | 573               |              |     |              |     |
|                                                                 | 16672         |  | AM: 0.5 trips/100m <sup>2</sup> | 211               | 158          | 53  | 74           | 221 |
|                                                                 |               |  | PM: 0.7 trips/100m <sup>2</sup> | 295               |              |     |              |     |
|                                                                 | 17456         |  | AM: 0.8 trips/100m <sup>2</sup> | 136               | 95           | 41  | 34           | 102 |
|                                                                 |               |  | PM: 0.8 trips/100m <sup>2</sup> | 136               |              |     |              |     |
|                                                                 | 17455         |  | AM: 0.8 trips/100m <sup>2</sup> | 156               | 109          | 47  | 39           | 117 |
|                                                                 |               |  | PM: 0.8 trips/100m <sup>2</sup> | 156               |              |     |              |     |
|                                                                 | 17443         |  | AM: 0.8 trips/100m <sup>2</sup> | 131               | 92           | 39  | 33           | 98  |
|                                                                 |               |  | PM: 0.8 trips/100m <sup>2</sup> | 131               |              |     |              |     |
|                                                                 | 17442         |  | AM: 0.8 trips/100m <sup>2</sup> | 131               | 92           | 39  | 33           | 98  |
|                                                                 |               |  | PM: 0.8 trips/100m <sup>2</sup> | 131               |              |     |              |     |
|                                                                 | 16820         |  | AM: 0.8 trips/100m <sup>2</sup> | 131               | 92           | 39  | 33           | 98  |
|                                                                 |               |  | PM: 0.8 trips/100m <sup>2</sup> | 131               |              |     |              |     |
|                                                                 | 16819         |  | AM: 0.8 trips/100m <sup>2</sup> | 135               | 95           | 41  | 34           | 102 |
|                                                                 |               |  | PM: 0.8 trips/100m <sup>2</sup> | 135               |              |     |              |     |
|                                                                 | 16674         |  | AM: 0.5 trips/100m <sup>2</sup> | 125               | 93           | 31  | 44           | 131 |
|                                                                 |               |  | PM: 0.7 trips/100m <sup>2</sup> | 174               |              |     |              |     |
|                                                                 | 16674         |  | AM: 0.5 trips/100m <sup>2</sup> | 105               | 78           | 26  | 37           | 110 |
|                                                                 |               |  | PM: 0.7 trips/100m <sup>2</sup> | 146               |              |     |              |     |
|                                                                 | 16817         |  | AM: 0.5 trips/100m <sup>2</sup> | 200               | 150          | 50  | 70           | 210 |
|                                                                 |               |  | PM: 0.7 trips/100m <sup>2</sup> | 279               |              |     |              |     |
|                                                                 | 16818 Lease 1 |  | AM: 0.5 trips/100m <sup>2</sup> | 71                | 53           | 18  | 25           | 74  |
|                                                                 |               |  | PM: 0.7 trips/100m <sup>2</sup> | 99                |              |     |              |     |

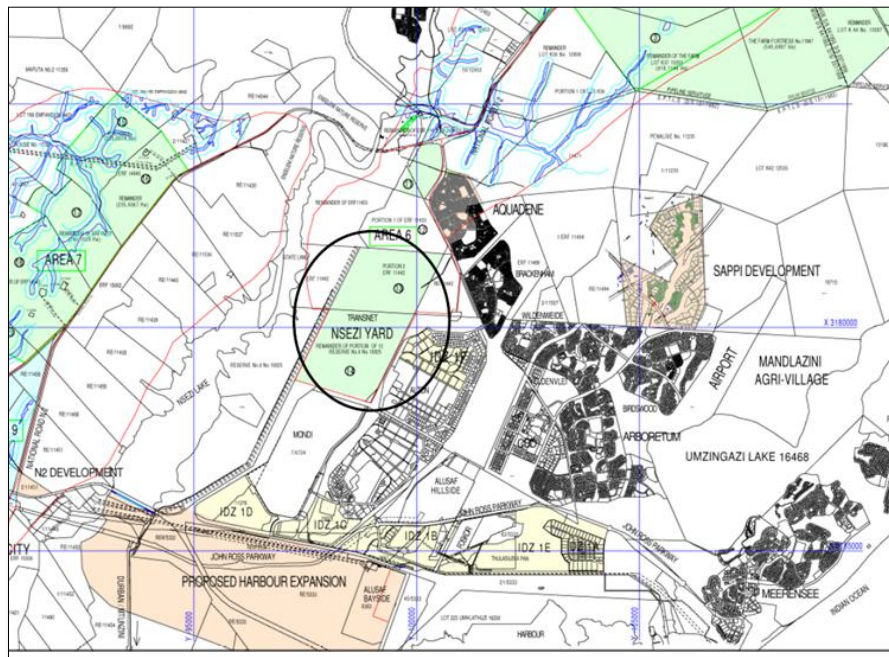
|  |                  |  |                                 |     |      |     |     |      |
|--|------------------|--|---------------------------------|-----|------|-----|-----|------|
|  | 16818 Lease<br>2 |  | AM: 0.5 trips/100m <sup>2</sup> | 87  | 65   | 22  | 30  | 91   |
|  |                  |  | PM: 0.7 trips/100m <sup>2</sup> | 122 |      |     |     |      |
|  | 16673 Lease<br>1 |  | AM: 0.5 trips/100m <sup>2</sup> | 359 | 270  | 90  | 126 | 377  |
|  |                  |  | PM: 0.7 trips/100m <sup>2</sup> | 503 |      |     |     |      |
|  | 16673 Lease<br>2 |  | AM: 0.5 trips/100m <sup>2</sup> | 88  | 66   | 22  | 31  | 93   |
|  |                  |  | PM: 0.7 trips/100m <sup>2</sup> | 124 |      |     |     |      |
|  | TOTAL            |  |                                 |     | 1693 | 619 | 727 | 2181 |

**Table 9 Maximum Potential Trip Generation for the Phase 1F Approved Components of the Development with Nyanza Rail Discount**

Based on the Maximum potential trip generation calculations provided above, the following scenario was analysed to determine if the existing main access to the entire Phase 1F development and the surrounding intersections could accommodate the traffic generated by the proposed development without resulting in congestion.

## 6.9.2 Rail Worst Case Scenario

The Richards Bay Industrial Development Zone (RBIDZ) is preparing for a worst-case scenario due to the unreliability of the rail network. To ensure continuous production during rail network disruptions, a shared truck stop will be established for businesses within the RBIDZ to use when needed. RBIDZ is actively working to acquire the Nsezi Yard, situated to the left of Phase 1F, to support this truck stop and other critical projects. The layout below in Figure 11 illustrates the location of the Nsezi Yard.



**Figure 11 Nsezi Yard**

## 7 Scenario A – 2034 Design year plus Development Generated Traffic

The following traffic impact assessment has been based on the combined traffic volumes as indicated below:

- 2034 Design Year Weekday AM and PM peak hour traffic volumes.
- Maximum potential Weekday AM and PM peak hour traffic expected to be generated by the proposed RBIDZ Phase 1F development with a rail discount for Nyanza Light Metals.

For this scenario, all of the traffic generated by RBIDZ Phase 1F will use the existing main access.

The main entrance to the RBIDZ Phase 1 development is at the intersection of Alumina Allee Street and Diamantpyp Street in Alton as shown in Figure 11 below, that links to the R619 (the North Central Arterial Road) either via Chalk Line Road or via Heliumhoogte Road to ultimately link in with the Richards Bay CBD.

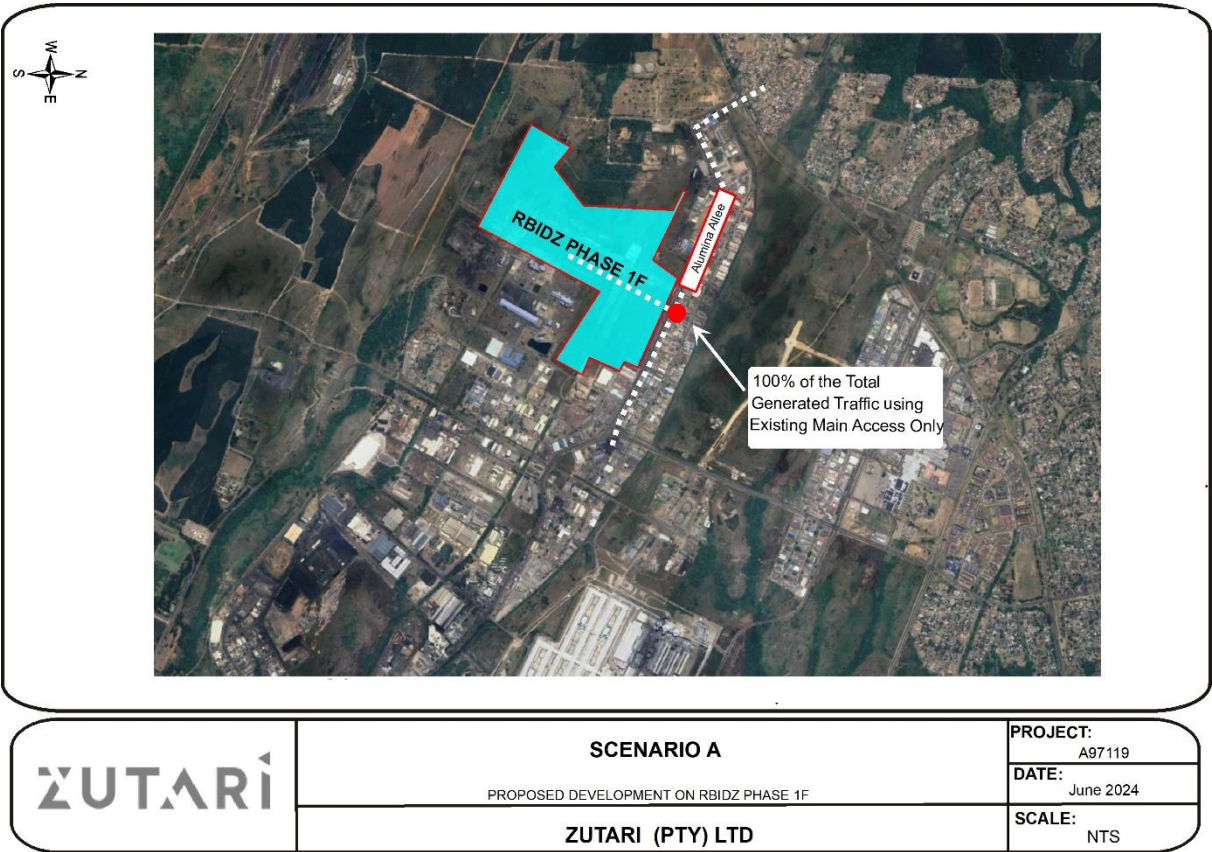


Figure 12: Existing Site Access to RBIDZ Phase 1F.

### 7.1 Trip Distribution

The trips generated by RBIDZ Phase 1F were distributed onto the existing surrounding road network in the exact same ratio as the previously approved 2013 SMEC report. The majority of the traffic will be attracted towards the Richards Bay CBD and Port of Richards Bay via John Ross Parkway to the south and the R619 to the north. It should be noted that the John Ross Parkway as well as the R619 provide access to the N2 and are therefore considered origins / destinations for the purpose of this study. The distribution of traffic generated by RBIDZ Phase 1F is shown in Figure 12 below.

## 7.2 Trip Assignment

Based on the distribution pattern as described above, the maximum potential Weekday AM and PM peak hour traffic expected to be generated by the proposed development has been assigned onto the surrounding road network as shown in Figure 14 below.

The 2034 forecast year plus the development generated traffic (Scenario A) is shown in Figure 15 below.

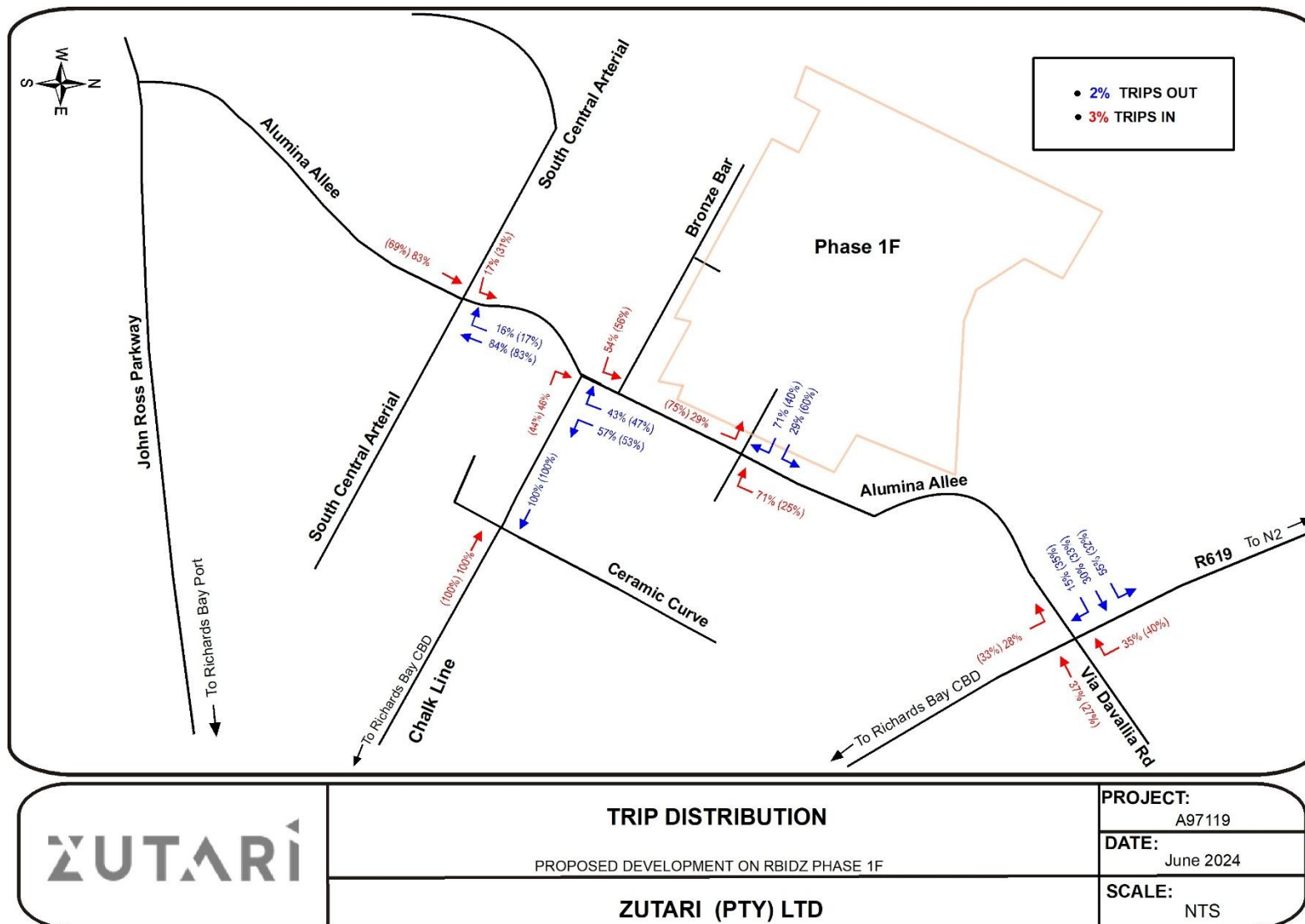


Figure 13: Trip Distribution Scenario A

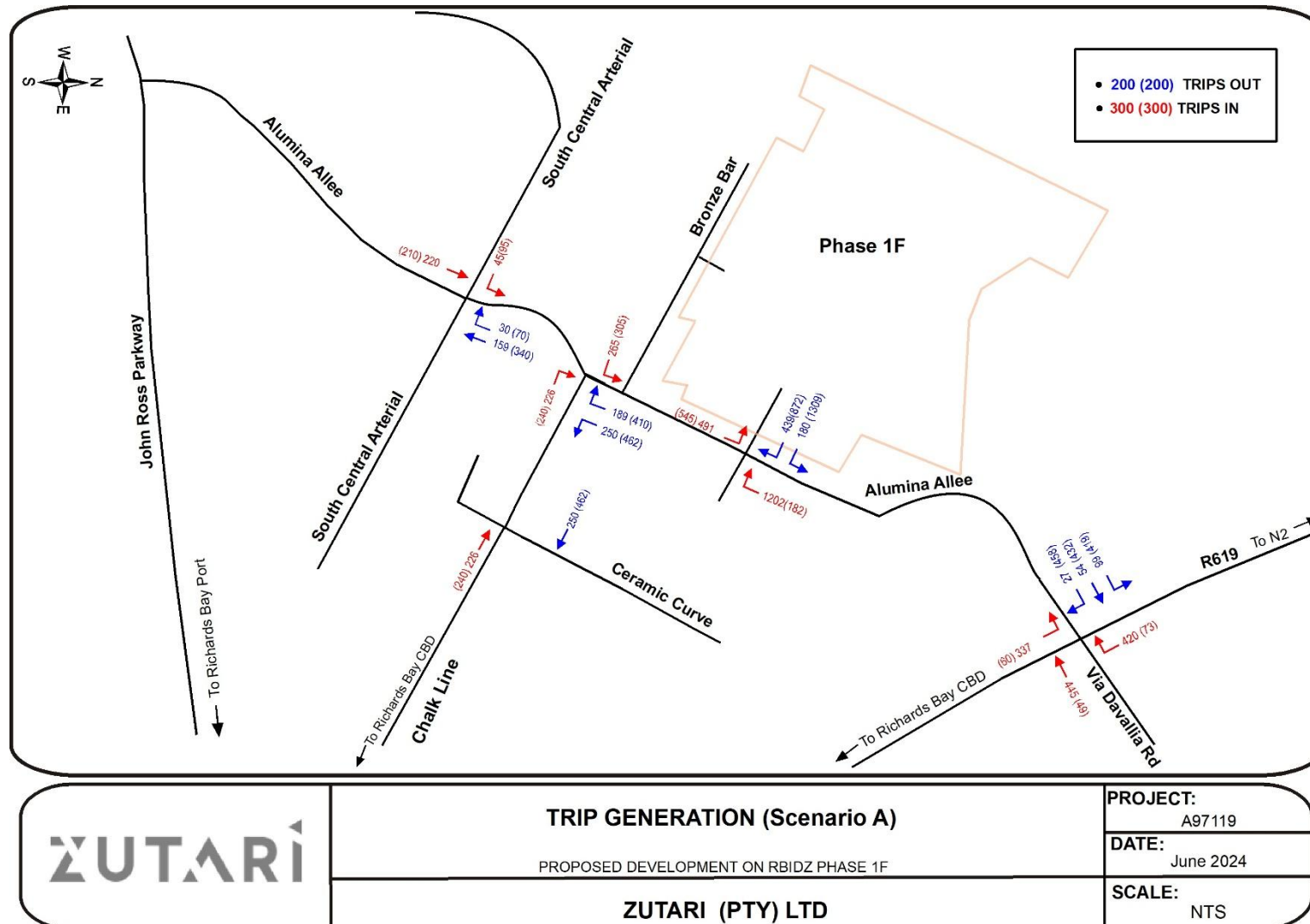


Figure 14: Trip Generation Scenario A

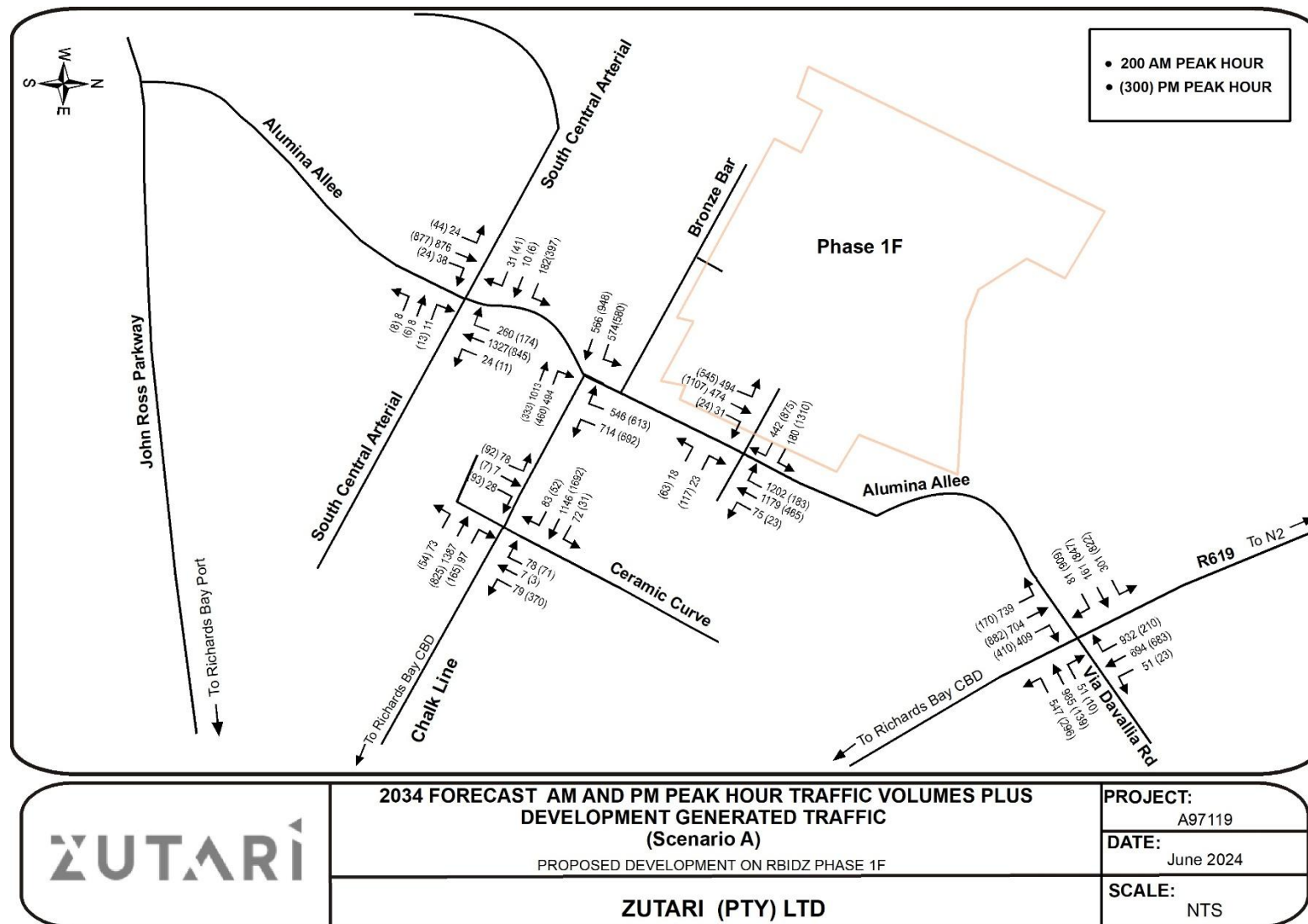


Figure 15: 2034 Design Year Peak Hour Volumes with Development Generated Volumes Scenario A

### 7.3 Traffic Impact Assessment – Scenario A

The following traffic impact assessment has been based on the 2034 Design Year Weekday AM and PM peak hour traffic volumes plus the maximum potential Weekday AM and PM peak hour traffic expected to be generated by the proposed RBIDZ Phase 1F development as shown in Figure 14 above. The results of these SIDRA analyses are contained in Appendix C.

#### 7.3.1 Heliumhoogte and Via Davallia and R619 Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 10 hereafter:

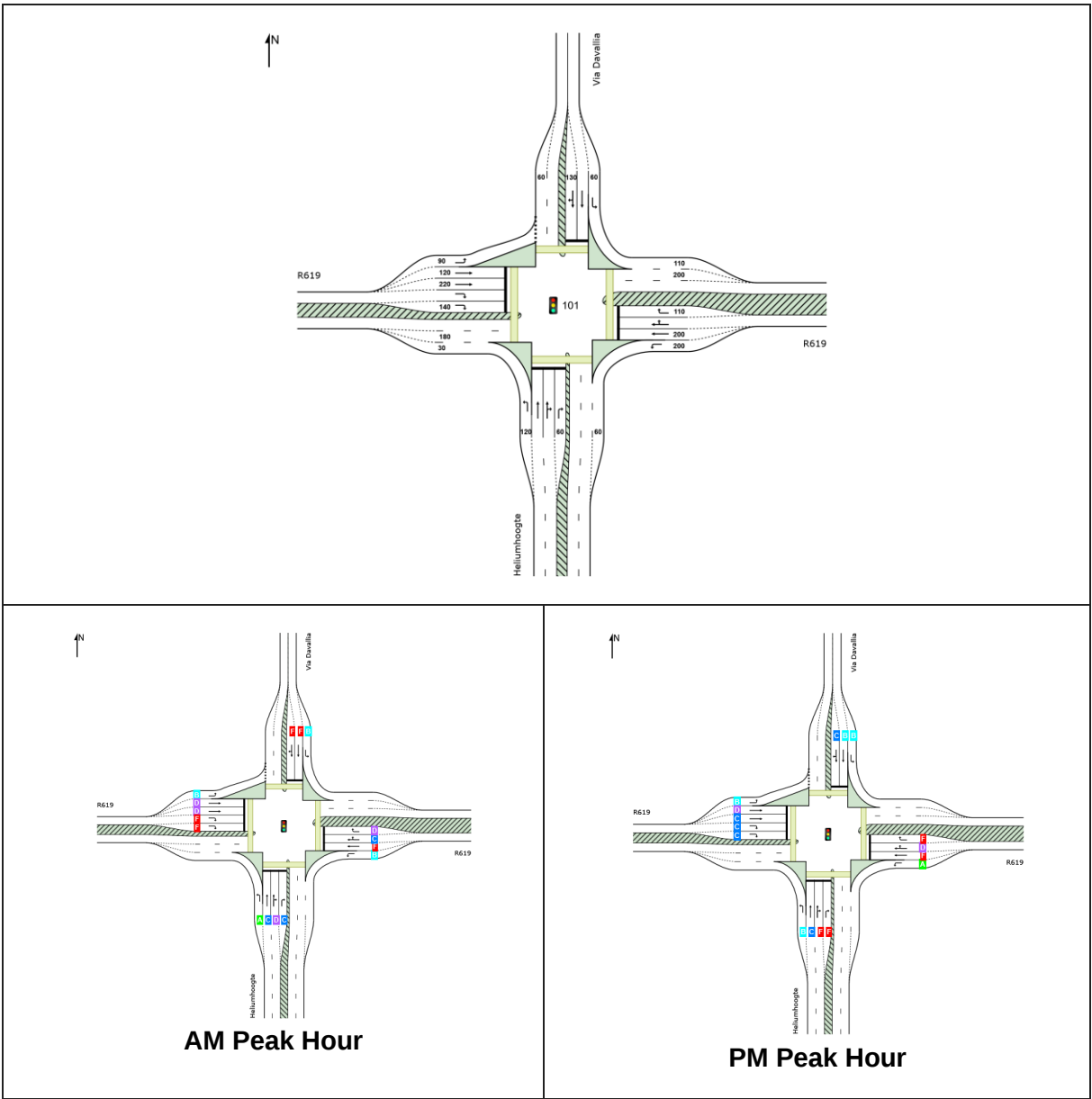
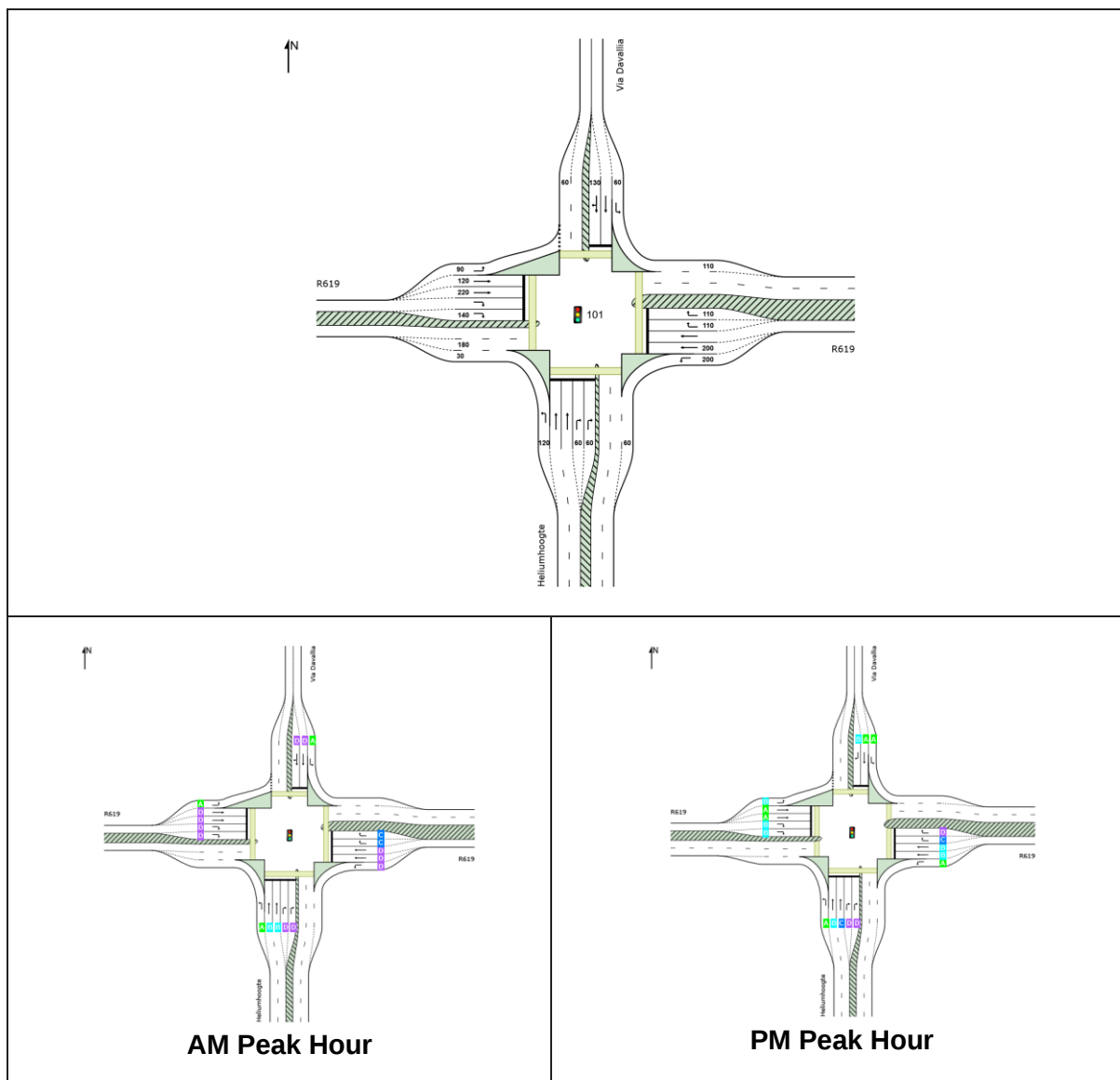


Table 10 2034 Design Year with Development Generated Traffic - Heliumhoogte, Via Davallia and R619

From the SIDRA results, it is evident that the intersection will experience congestion during the weekday AM and PM peak hours. The average delays will be 101.1 seconds and 254.4 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 535.5 metres and 897.4 metres during the AM and PM peak hours respectively. Upgrades are required for this intersection as follows.

## Heliumhoogte and Via Davallia and R619 Intersection Upgraded

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 11 hereafter:



**Table 11 2034 Design Year with Development Generated Traffic - Heliumhoogte, Via Davallia and R619 Upgrade**

The following upgrades are proposed for this intersection:

- East exit: Change short lane to a full-length lane
- East Approach: Additional 60m short right turn lane
- South Approach: Additional 60m short right turn lane
- North Approach: Change short right turn lane into a through and right turn lane

From the SIDRA results, it is evident that this upgraded intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 37.2 seconds and 22.6 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 209.1 metres and 121.1 metres during the AM and PM peak hours respectively. No further upgrades are required to this intersection in order to accommodate the 2034 design year plus the development generated traffic. According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

7.3.2 Alumina Allee and Chalk Line Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 12 hereafter:

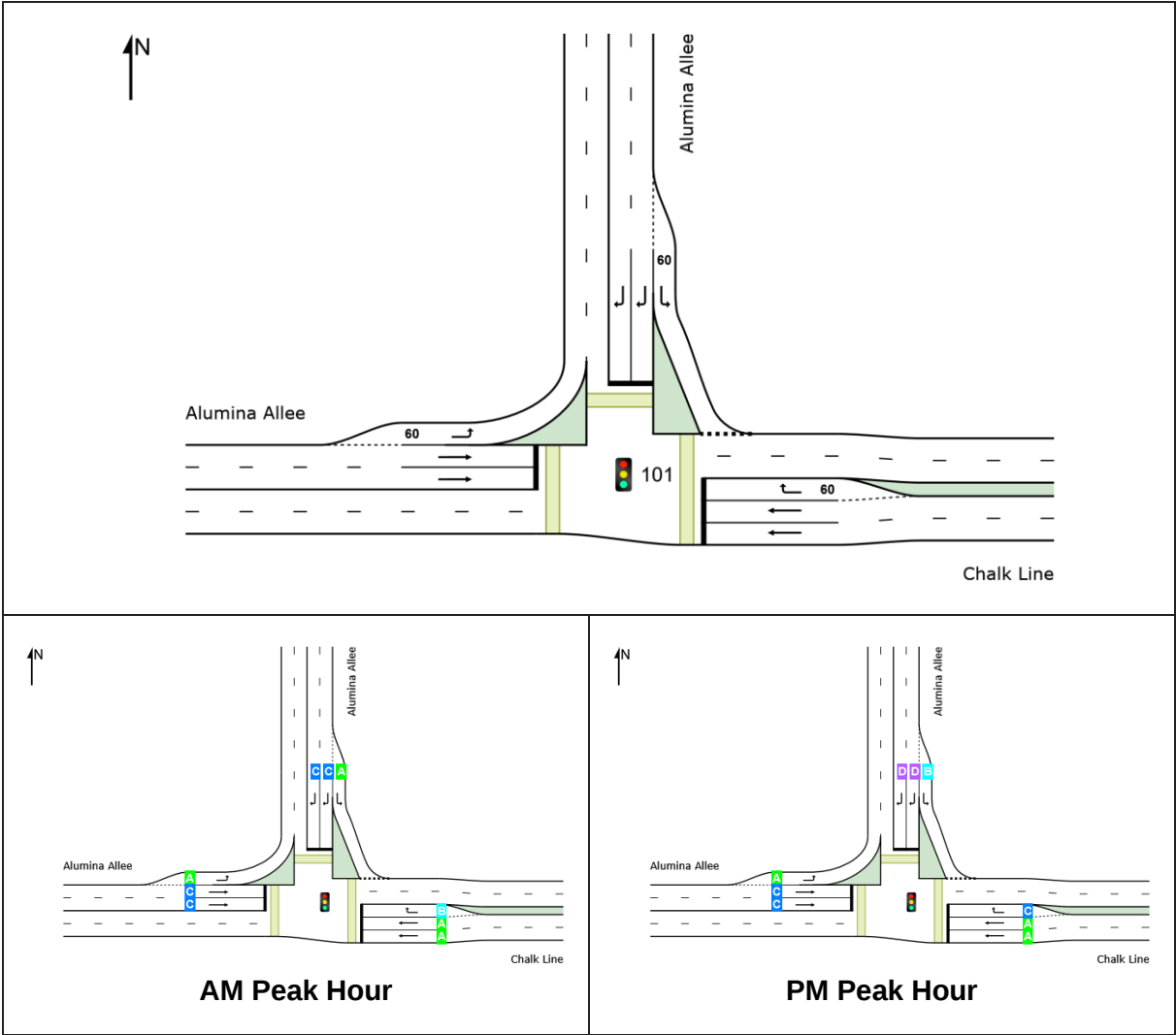
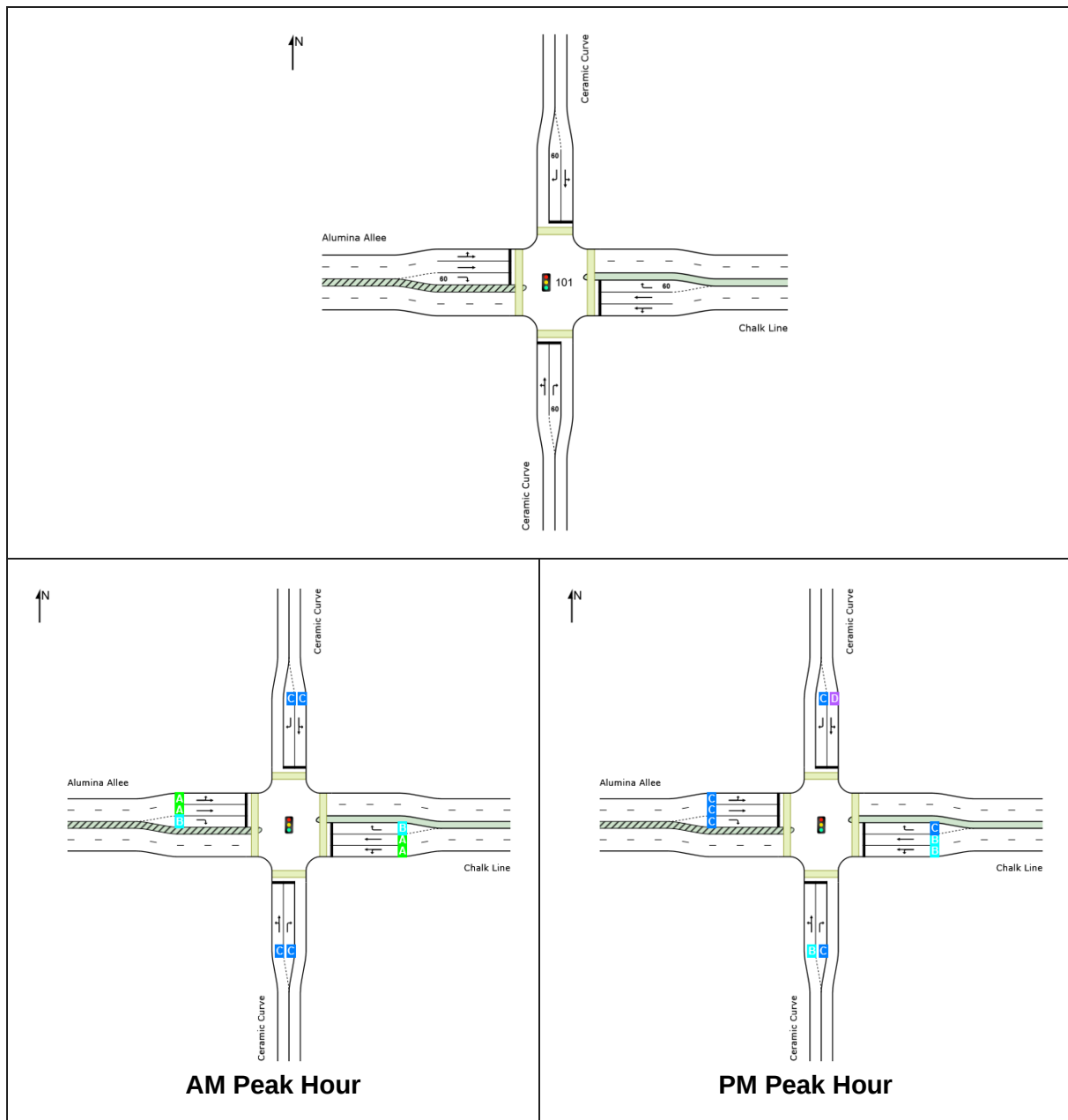


Table 12 2034 Design Year with Development Generated Traffic - Alumina Allee and Chalk Line

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 15.8 seconds and 24.1 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 68.2 metres and 131.0 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 design year plus the development generated traffic. According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

### 7.3.3 Chalk Line and Ceramic Curve Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 13 hereafter:



**Table 13 2034 Design Year with Development Generated Traffic - Chalk Line and Ceramic Curve**

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 8.8 seconds and 19.8 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 87.1 metres and 170.9 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 design year plus the development generated traffic. According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

7.3.4 Alumina Allee and South-Central Arterial Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 14 hereafter:

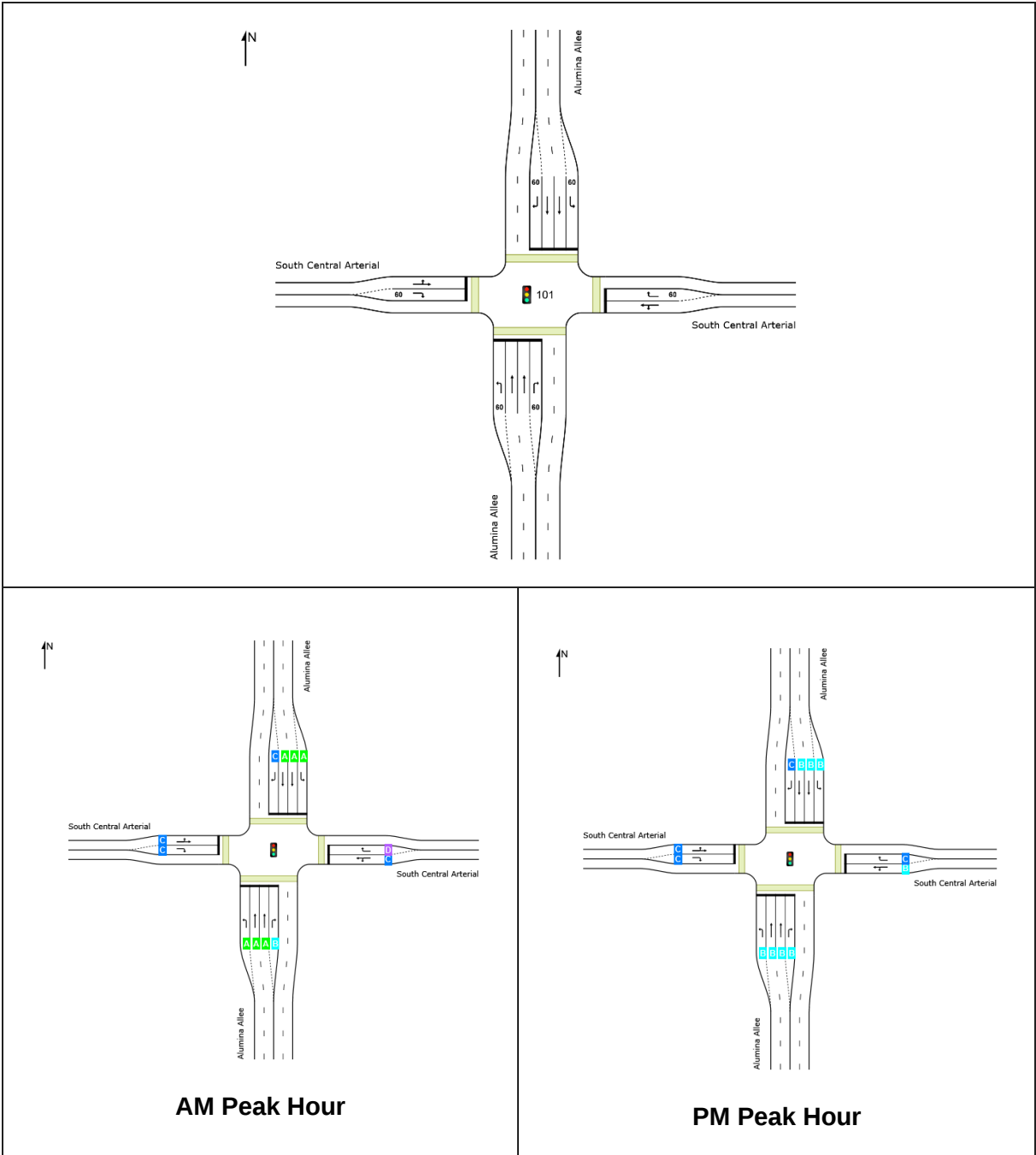
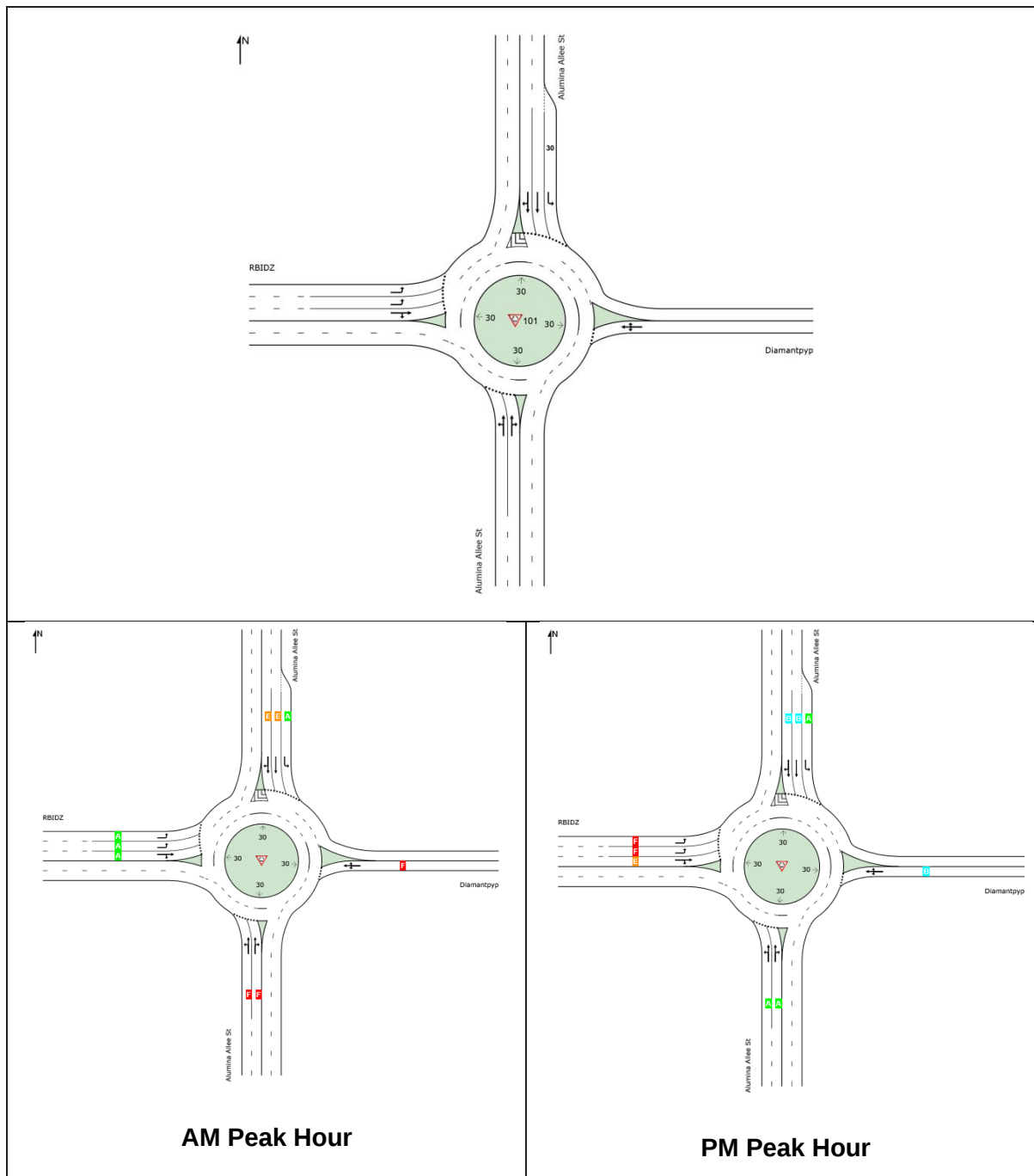


Table 14 2034 Design Year with Development Generated Traffic - Alumina Allee and South Central Arterial

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 9.3 seconds and 14.7 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 74.4 metres and 79.0 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 Design year plus the development generated traffic. According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

### 7.3.5 Site Access (Alumina Allee and Diamantpyp Intersection)

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 15 hereafter:

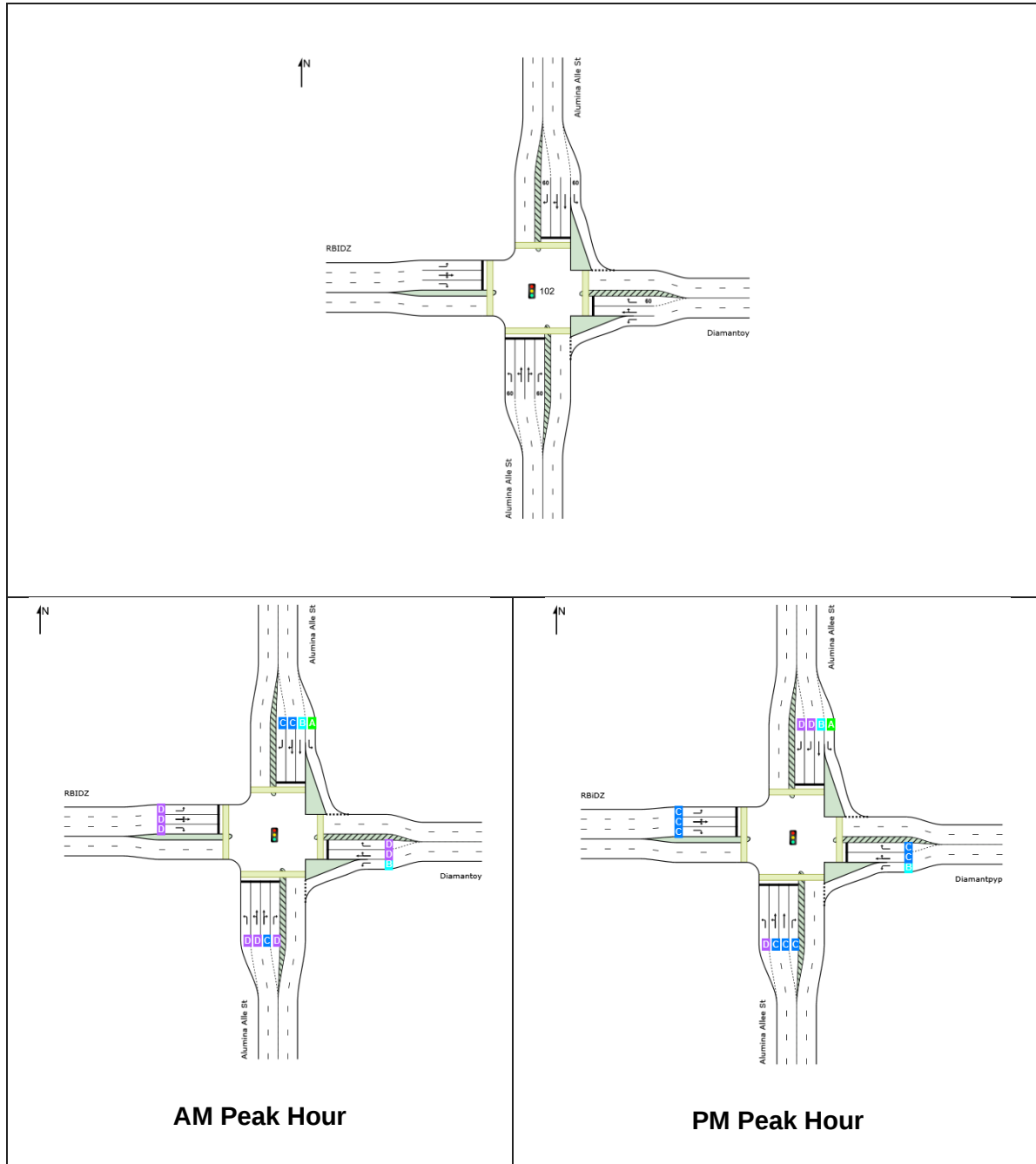


**Table 15 2034 Design Year with Development Generated Traffic - Alumina Allee and Diamantpyp**

From the SIDRA results, it is evident that the intersection will experience congestion during the weekday AM and PM peak hours. The average delays will be 220.6 seconds and 60.3 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 1288.5 metres and 481.2 metres during the AM and PM peak hours respectively. Upgrades are therefore required for this intersection as follows.

## Site Access (Alumina Allee and Diamantpyp Intersection) Upgraded

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 design year plus the development generated traffic are shown in Table 16 hereafter:



**Table 16 2034 Design Year with Development Generated Traffic - Alumina Allee and Diamantpyp Upgrade**

The following upgrades are proposed for this intersection:

- Upgrade to a signalized intersection for the existing geometric layout.

From the SIDRA results, it is evident that this Upgraded intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 27.7 seconds and 30.2 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 204.7 metres and 180.1 metres during the AM and PM peak hours respectively. No further upgrades are required to this

intersection in order to accommodate the 2034 design year plus the development generated traffic. According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

### 7.3.6 Main Access Queue Analysis

#### **Main Site Access Queue Analysis for Scenario A**

|                                                  |          |                                          |
|--------------------------------------------------|----------|------------------------------------------|
| In: (1693/480) *100 = 353 (6 Channels Required)  | Nque = 4 | 4*20m (truck length) = 6 Lanes,80m long  |
| Out: (2181/480) *100 = 454 (6 Channels Required) | Nque = 5 | 5*20m (truck length) = 6 Lanes,100m long |

Based on the above queue analysis of the Main Access gatehouse, it has been calculated that **6** Channels (lanes) are necessary for both the incoming and outgoing traffic volumes during the peak periods. This requirement has extensive land requirements and will be extremely difficult to operate and therefore a secondary access point to RBIDZ Phase 1F is deemed necessary.

## 8 Options for a Proposed Secondary Access

Below are the secondary access options that were proposed in support of the existing vehicular entrance to Phase 1F from Alumina Allee, Alton North.

### 8.1 Option 1A

Proposed Secondary Access Option 1A intersects with the RBIDZ Phase 1F main access road approximately 800m from the access gate and extends to the north through Erf 16788 to intersect with Heliumhoogte to the north. The land to the north of Phase 1F through which this option is aligned, is owned by the uMhlathuze Municipality.

This proposed access directly off Heliumhoogte and Hitebaan to the north of RBIDZ is deemed unsuitable from a traffic engineering perspective due to the following reasons:

- The access road will conflict with the proposed staging area for rail and the future rail siding within RBIDZ Phase 1F intended to run along the Nyanza Light Metals Erven

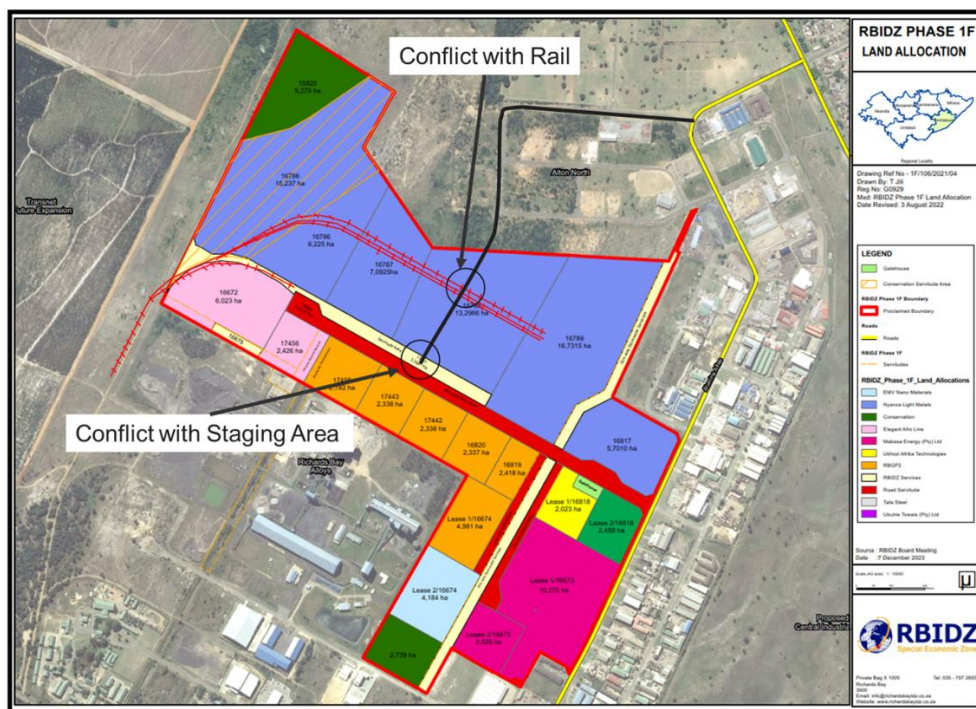


Figure 16: Proposed Secondary Access Option 1A.

### 8.2 Option 1B

Option 1B is an alternative to Option 1A in that it has the same alignment as Option 1A but does not extend beyond the proposed rail line thus removing the two conflicts identified in Option 1A. This secondary access option would, however, only be able to serve Nyanza Light Metals and no other tenants.

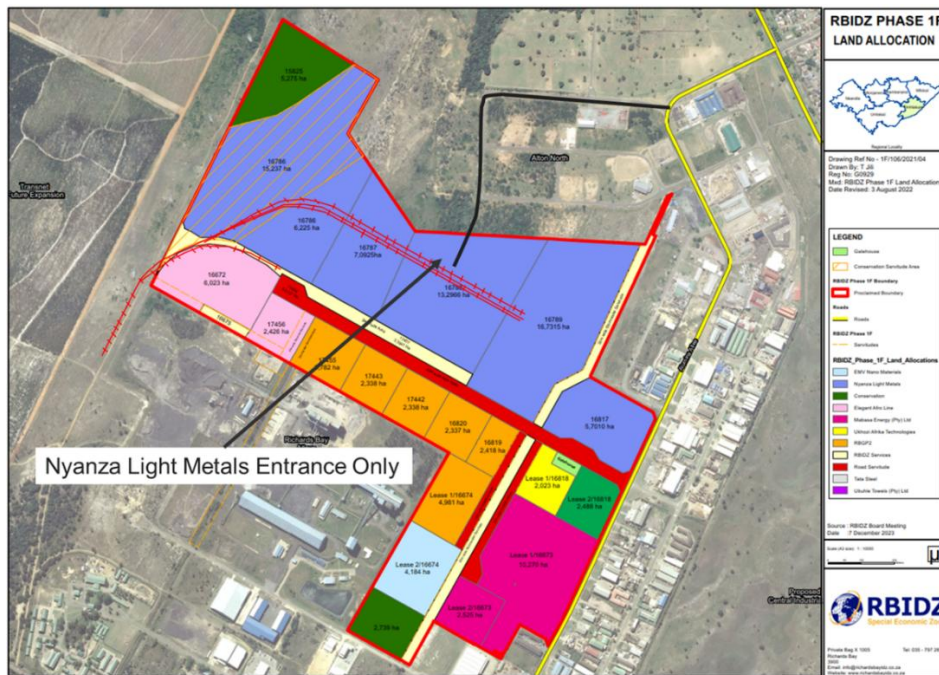


Figure 17: Proposed Secondary Access Option 1B.

### 8.3 Option 2

The proposed Option 2 secondary access is aligned directly off Ferro Gang to the north of RBIDZ. The road would need to be constructed on top of an existing stormwater drain. This option is considered unsuitable for the following reasons:

- The access is too close to the existing main access gate, potentially leading to congestion issues at this intersection and at the main access.
- The cost of constructing a slab over the stormwater drain that can accommodate heavy vehicle traffic is deemed to be very high.

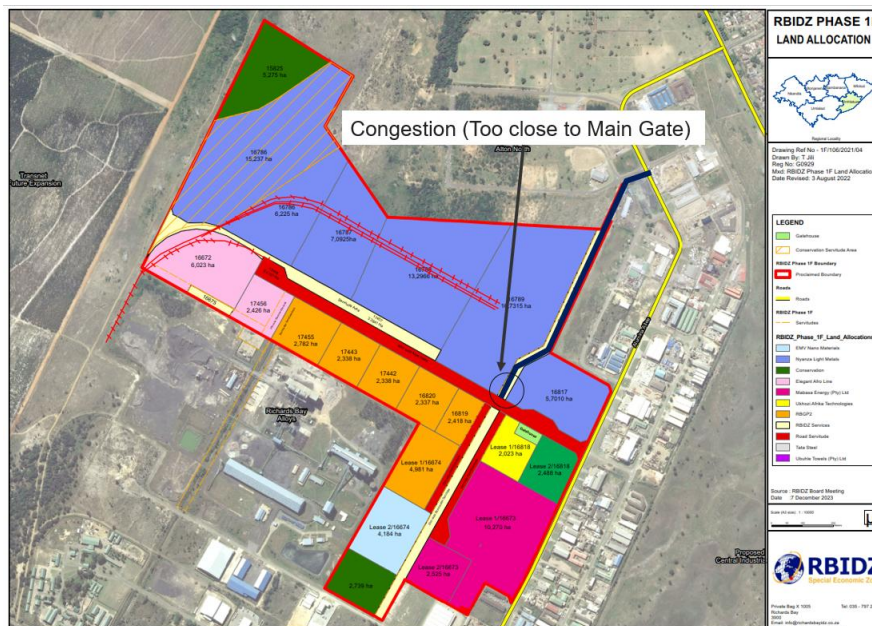


Figure 18: Proposed Secondary Access Option 2



- There would be a main spine road going through the centre of RBIDZ Phase 1F and existing sites will be impacted the least.
- It provides an opportunity for a future public transport facility located close to RBIDZ Phase 1F which is discussed further below.

The uMhlathuze Municipality has proposed that the access road should be located on the west side of the proposed rail line at the RBIDZ. The North Central Arterial (NCA) / R619 will not be open to heavy traffic until the NCA has been upgraded to a 4-lane carriageway road to the N2. As a result, all heavy vehicles will need to enter via John Ross highway from the south. Consequently, Option 4 is supported until the North Central Arterial is doubled.

A roundabout is recommended at the intersection of South Central, Western Arterial, and the Phase 1F Option 4 entrance.

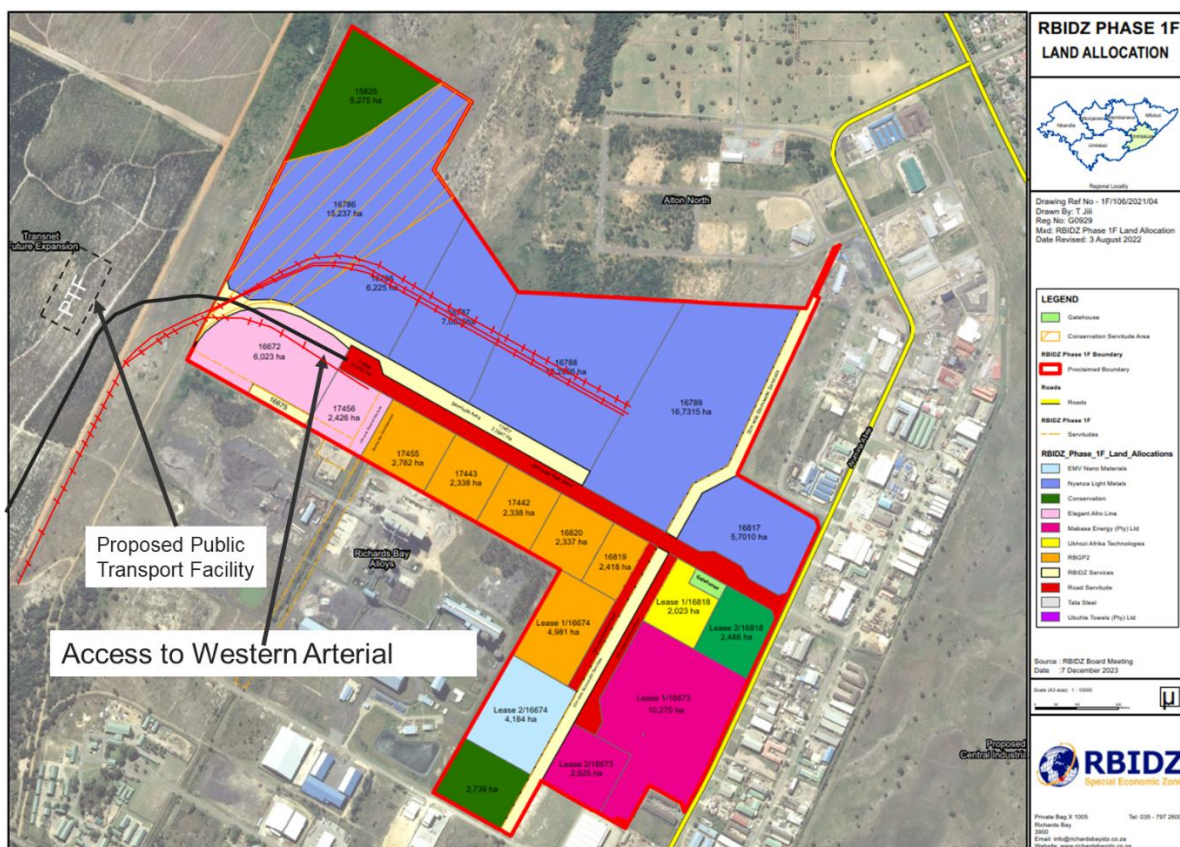


Figure 20: Proposed Secondary Access Option 4

## 8.6 Recommended Secondary Access for Analysis

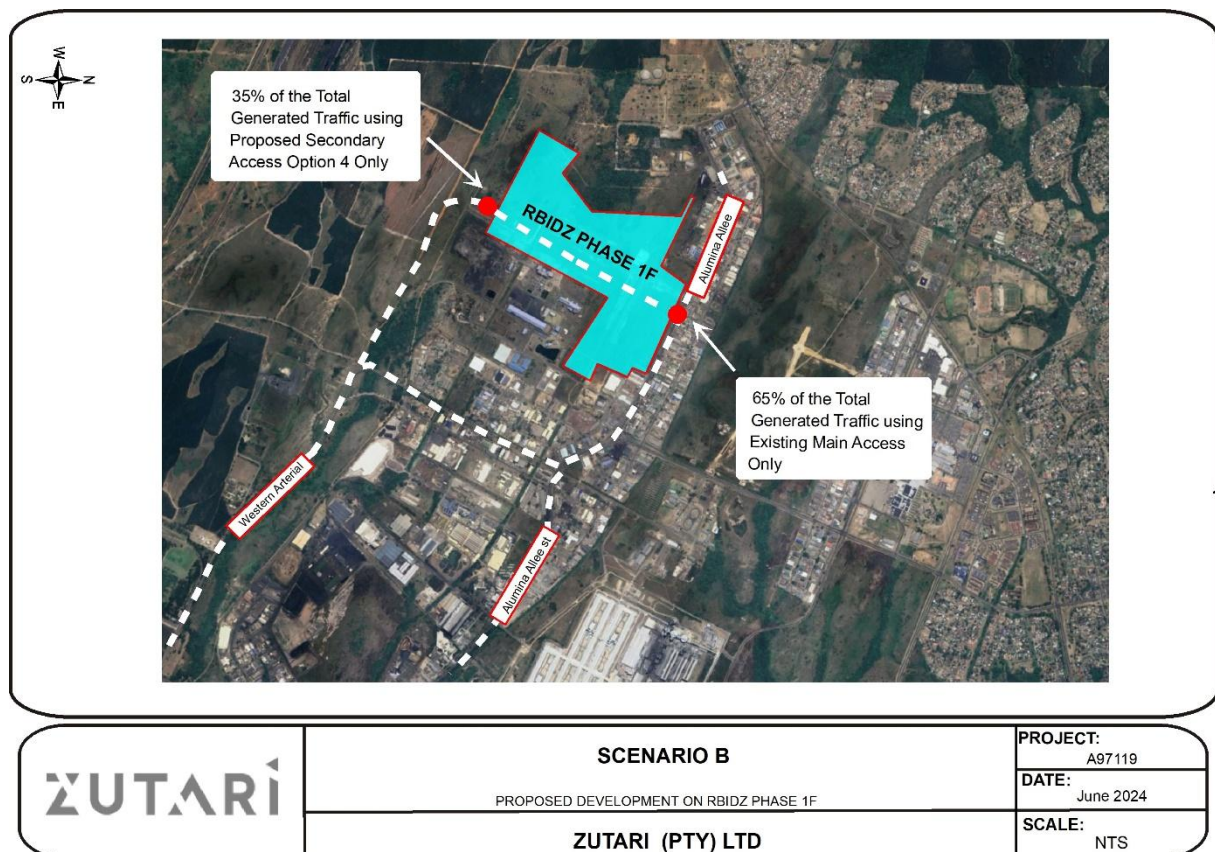
Option 1B and Option 4 were the only two options that are technically feasible and cost effective and were therefore analysed further.

## 9 Traffic Impact Analysis - Scenario B

The following traffic impact assessment has been based on the combined traffic volumes as indicated below:

- 2034 Design Year Weekday AM and PM peak hour traffic volumes.
- Maximum potential Weekday AM and PM peak hour traffic expected to be generated by the proposed RBIDZ Phase 1F development which is split in the following ratios between the main access and the recommended proposed secondary access (Option 4) in the following percentages.
  - 35% of generated traffic will use the proposed secondary access - Option 4.
  - 65% of generated traffic will use the existing main access.

The proposed secondary access (Option 4) to Phase 1F is proposed via the Western Arterial which is a local industrial arterial on the southern side of RBIDZ Phase 1F. It is the main route through Alton and provides linkage to the John Ross Highway to the south of Alumina Allee (see Figure 21 below), and then to the N2.



**Figure 21: Proposed Secondary Access Option 4**

## 9.1 Trip Distribution

The trips generated by RBIDZ Phase 1F were distributed onto the existing road network to determine the impact of secondary access Option 4. The distribution pattern from the original approved SMEC TIA was used as the base distribution which was adapted to take into account the proposed secondary access (Option 4). As discussed above, the majority of the traffic will be attracted towards the Richards Bay CBD, the Port of Richards Bay; John Ross Parkway to the south; and R619 to the north.

The development generated traffic was split into the following ratios between the two accesses:

- 35% of all Phase 1F generated traffic will use the proposed secondary access - Option 4.
- 65% of all Phase 1F generated traffic will use existing Main Access.

## 9.2 Trip Assignment

Based on the distribution pattern as described above, the maximum potential Weekday AM and PM peak hour traffic expected to be generated by RBIDZ Phase 1F has been assigned onto the surrounding road network as shown in Figure 22 below. The 2034 design year peak hour volumes with development generated volumes for Scenario B (Option 4) is shown in Figure 22 below.

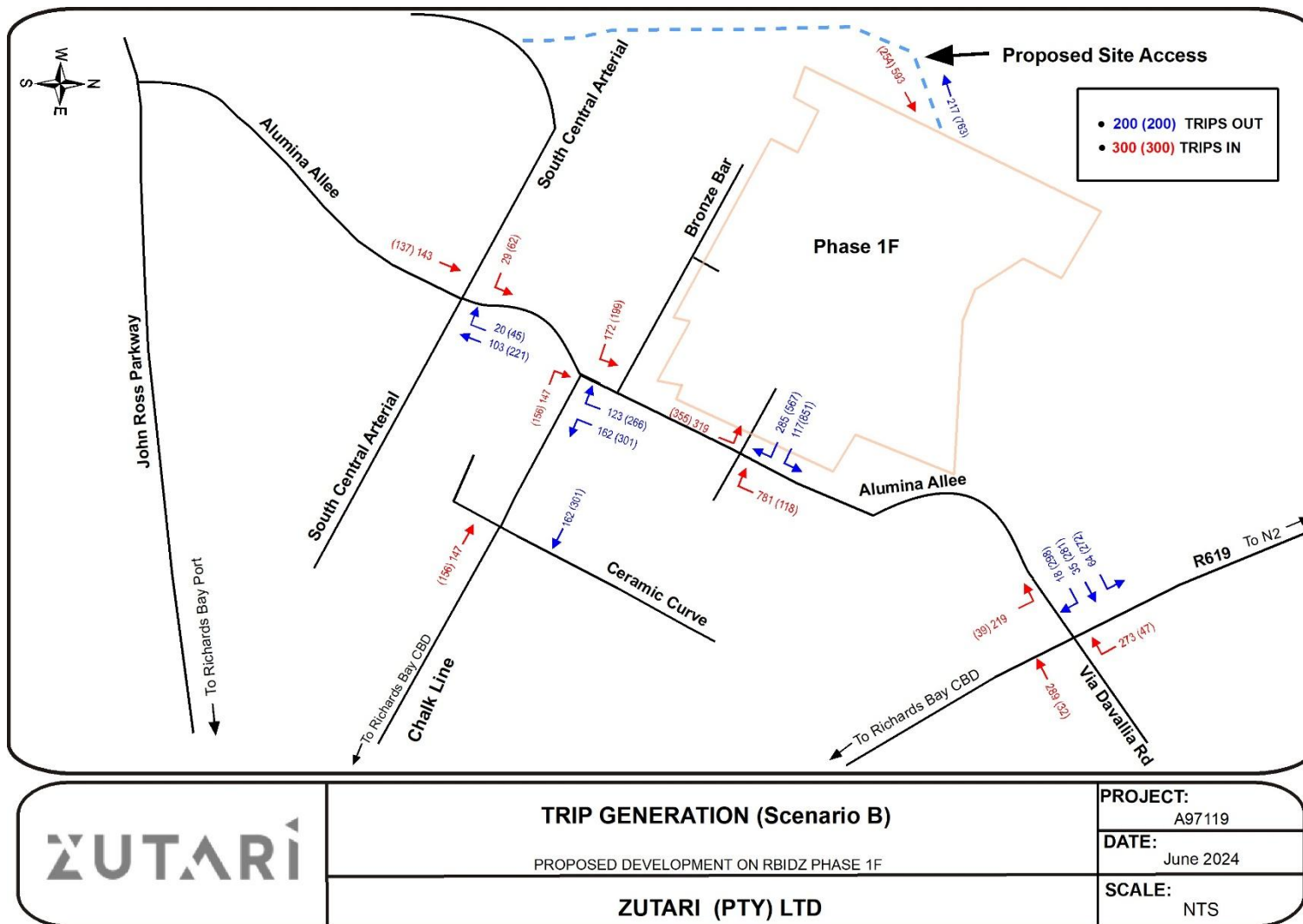


Figure 22: Trip Generation Scenario B

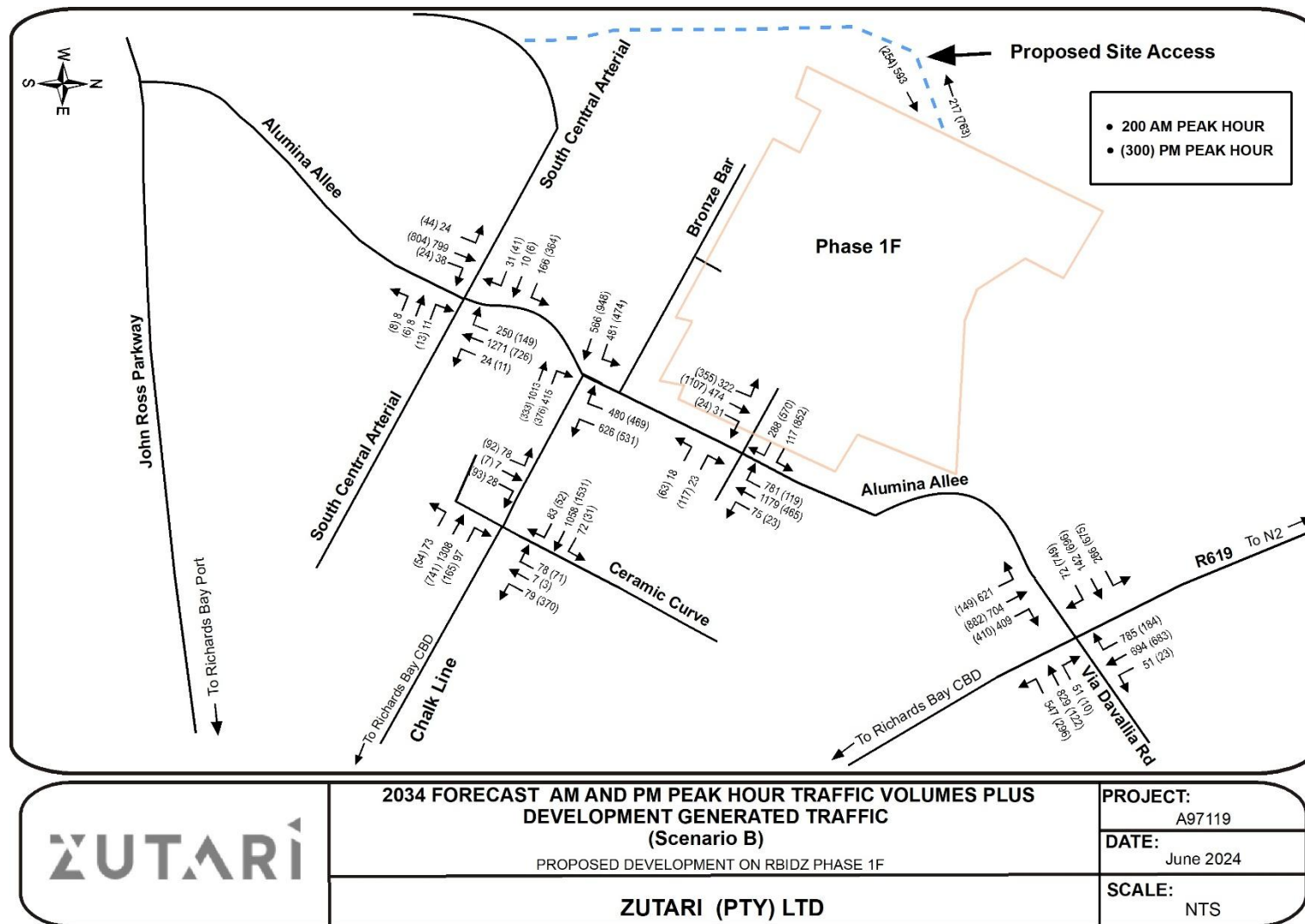


Figure 23: 2034 Design Year Peak Hour Volumes with Development Generated Volumes - Scenario B

### 9.3 Traffic Impact Assessment – Scenario B

The following traffic impact assessment has been based on the 2034 Design Year Weekday AM and PM peak hour traffic volumes plus the maximum potential Weekday AM and PM peak hour traffic expected to be generated by the RBIDZ Phase 1F development, split between two accesses: the existing main access and the proposed secondary access (Option 4). The results of these SIDRA analyses are contained in Appendix C.

#### 9.3.1 Heliumhoogte, Via Davallia and R619 Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 17 hereafter:

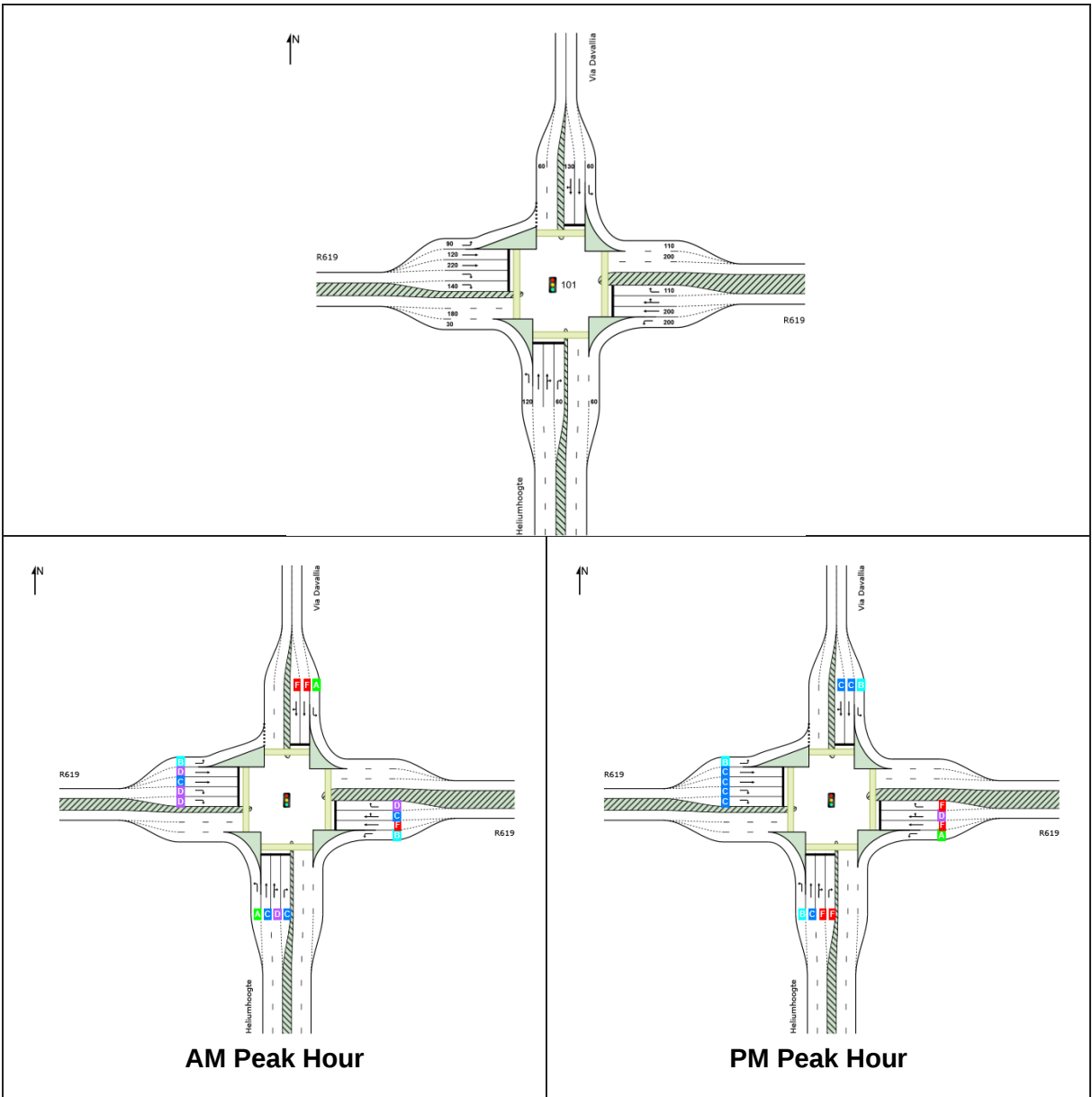
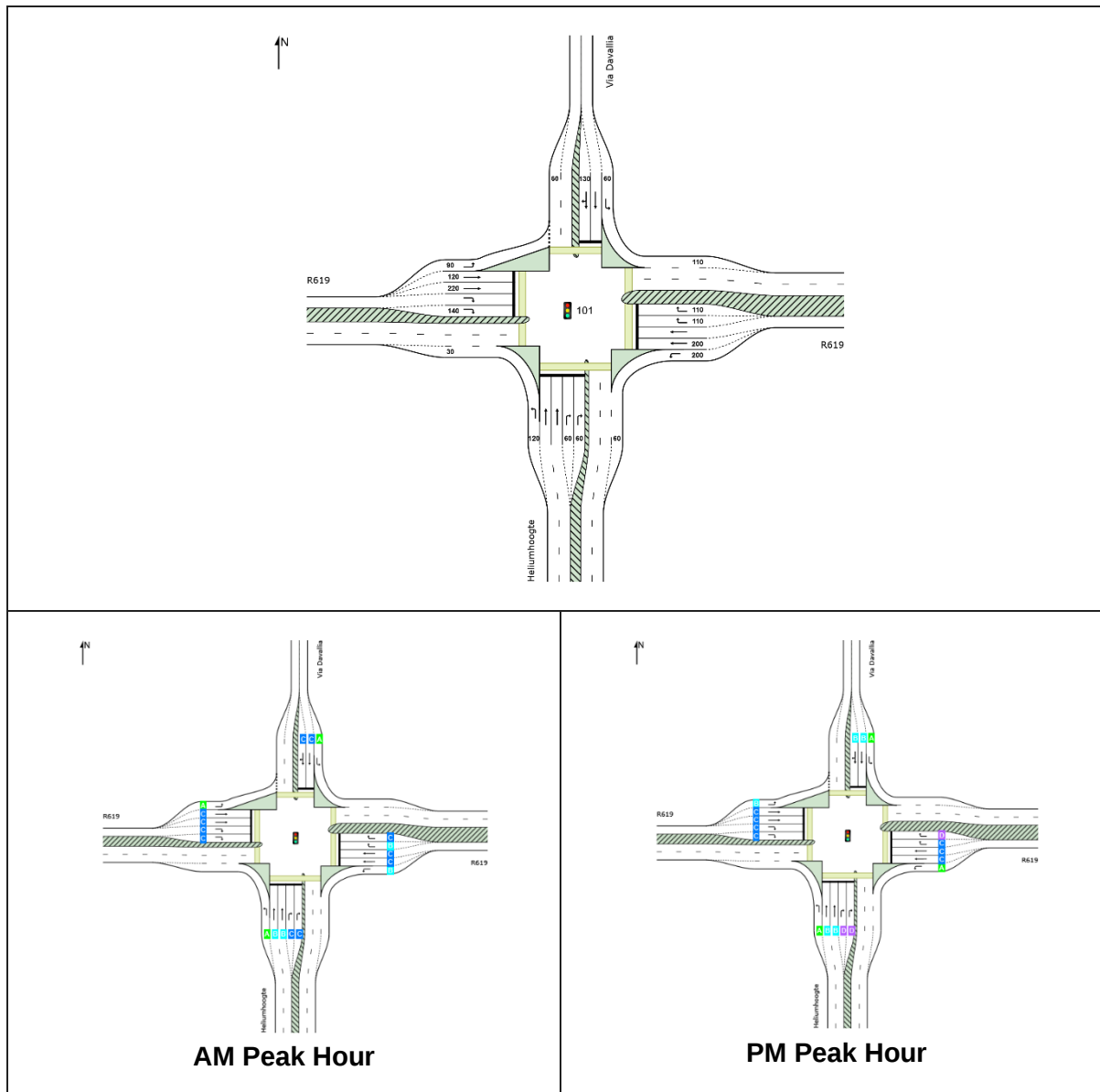


Table 17 2034 Design Year with Development Generated Traffic - Heliumhoogte, Via Davallia and R619 Scenario B

From the SIDRA results, it is evident that the intersection will experience congestion during the weekday AM and PM peak hours. The average delays will be 60.6 seconds and 177.4 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 365.8 metres and 745.4 metres during the AM and PM peak hours respectively. Upgrades are required for this intersection as follows.

## Heliumhoogte, Via Davallia and R619 Intersection Upgrade

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 18 hereafter:



**Table 18 Design Year with Development Generated Traffic - Heliumhoogte, Via Davallia and R619 Upgrade Scenario B**

The following upgrades are proposed for this intersection:

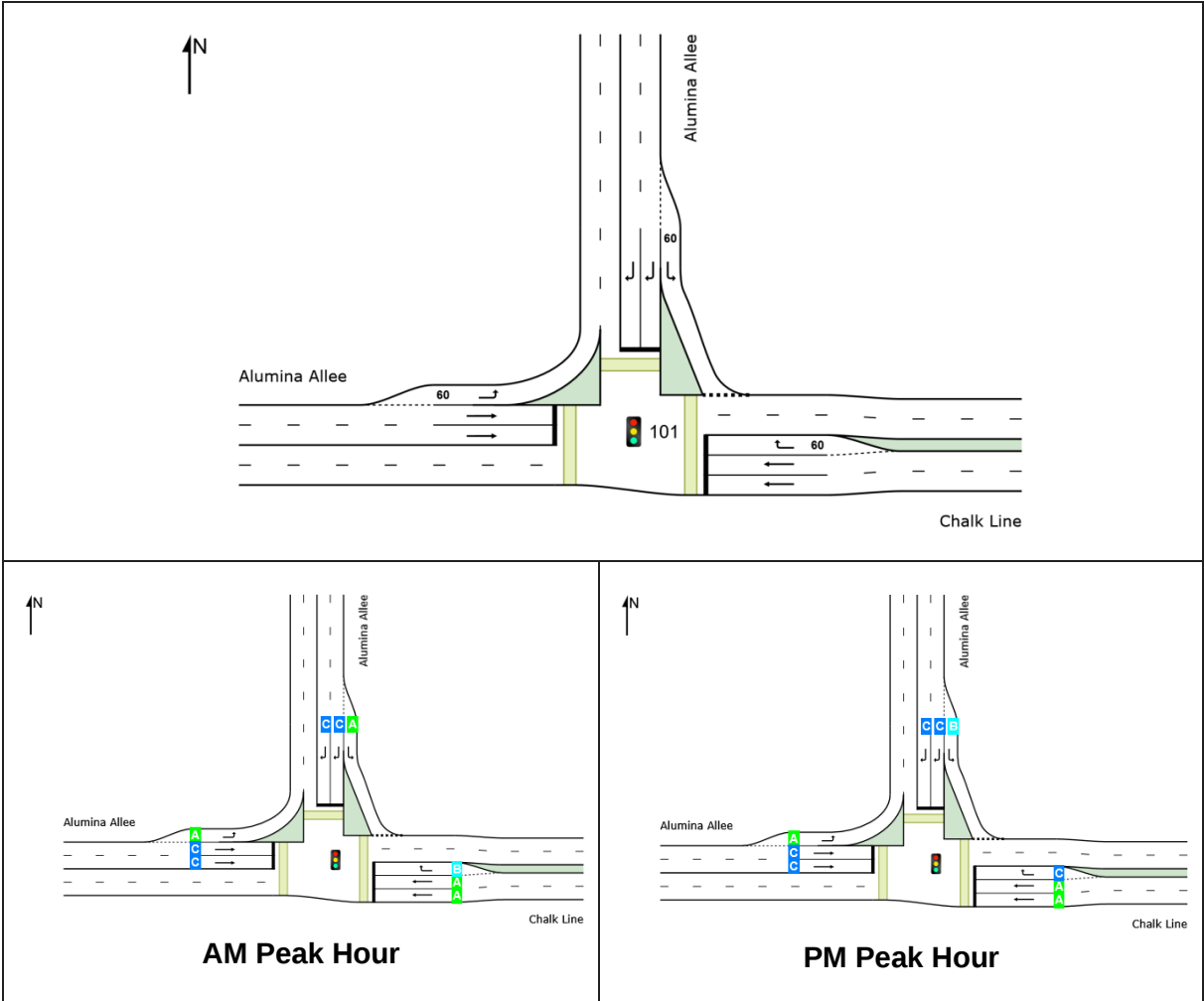
- West Approach: Change through lane into a through and right turn lane
- East Approach: Additional 60m short right turn lane
- South Approach: Additional 60m short right turn lane
- North Approach: Change short right turn lane into a short through and right turn lane

From the SIDRA results, it is evident that this upgraded intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 20.2 seconds and 25.0 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 89.7 metres and 114.5 metres during the AM and PM peak hours respectively. No further upgrades are required to this intersection in order to accommodate the 2034 Design year plus the development generated traffic.

According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

### 9.3.2 Alumina Allee and Chalk Line Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 19 hereafter:



**Table 19 2034 Design Year with Development Generated Traffic - Alumina Allee and Chalk Line Scenario B**

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 13.9 seconds and 18.5 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 54.7 metres and 100.1 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 design year plus the development generated traffic.

9.3.3 Chalk Line and Ceramic Curve Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 20 hereafter:

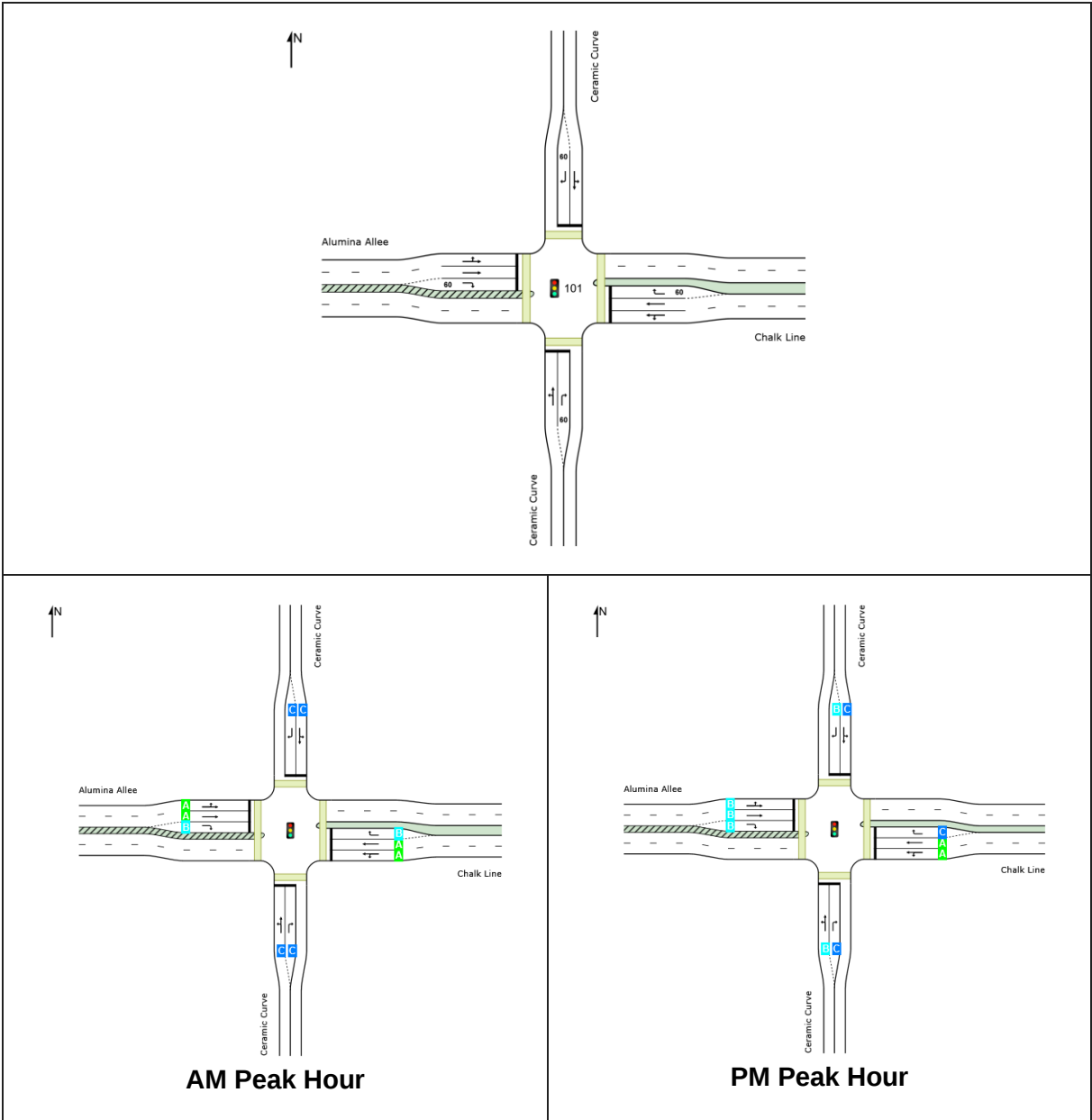


Table 20 2034 Design Year with Development Generated Traffic - Chalk Line and Ceramic Curve Scenario  
B

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 8.8 seconds and 16.5 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 79.6 metres and 127.7 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 design year plus the development generated traffic.

9.3.4 Alumina Allee and South-Central Arterial Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 21 hereafter:

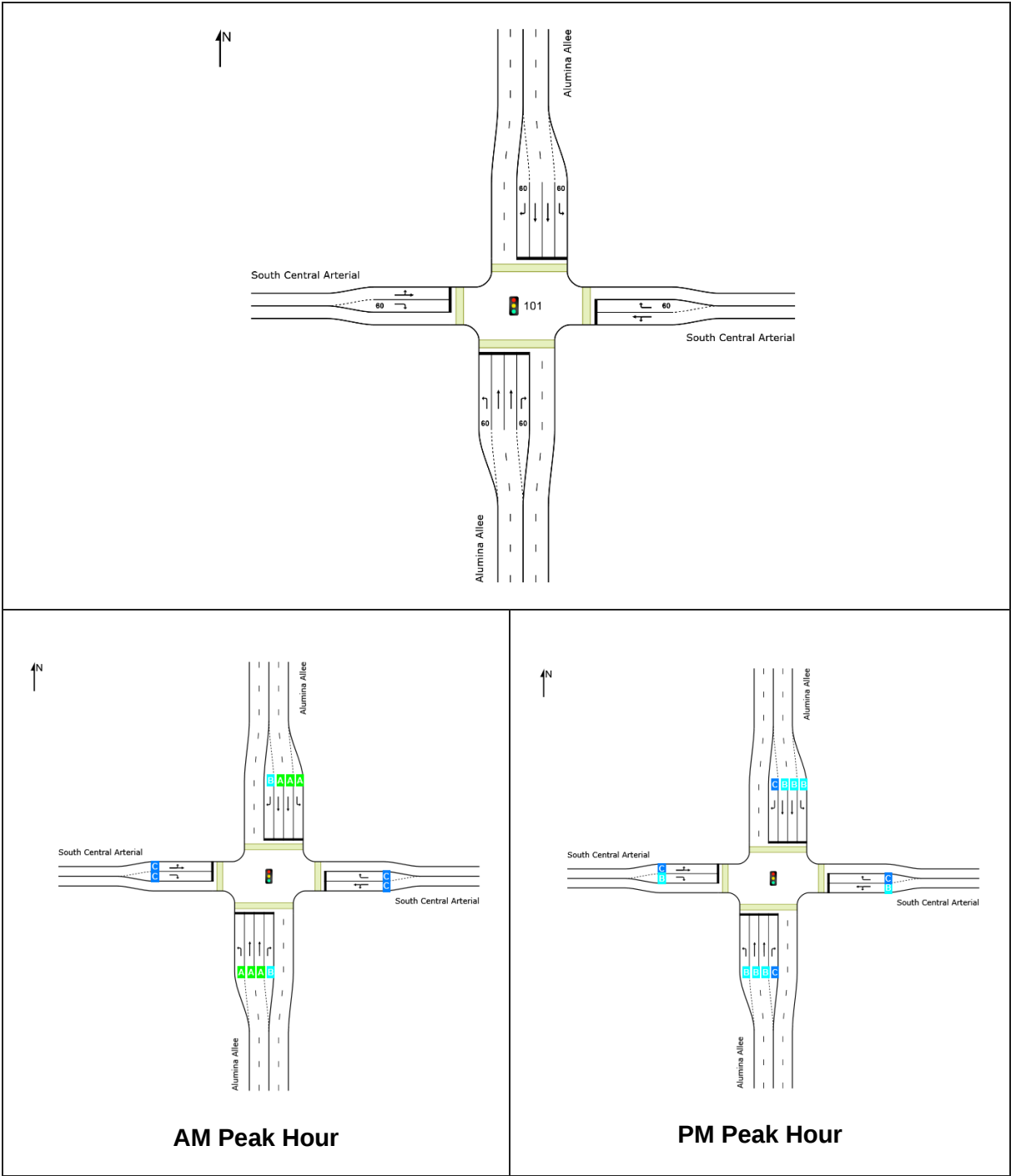


Table 21 2034 Design Year with Development Generated Traffic - Alumina Allee and South-Central Arterial Scenario B

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 8.7 seconds and 14.8 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 69.6 metres and 65.4 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 design year plus the development generated traffic.

9.3.5 Site Access (Alumina Allee and Diamantpyp Intersection)

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 22 hereafter:

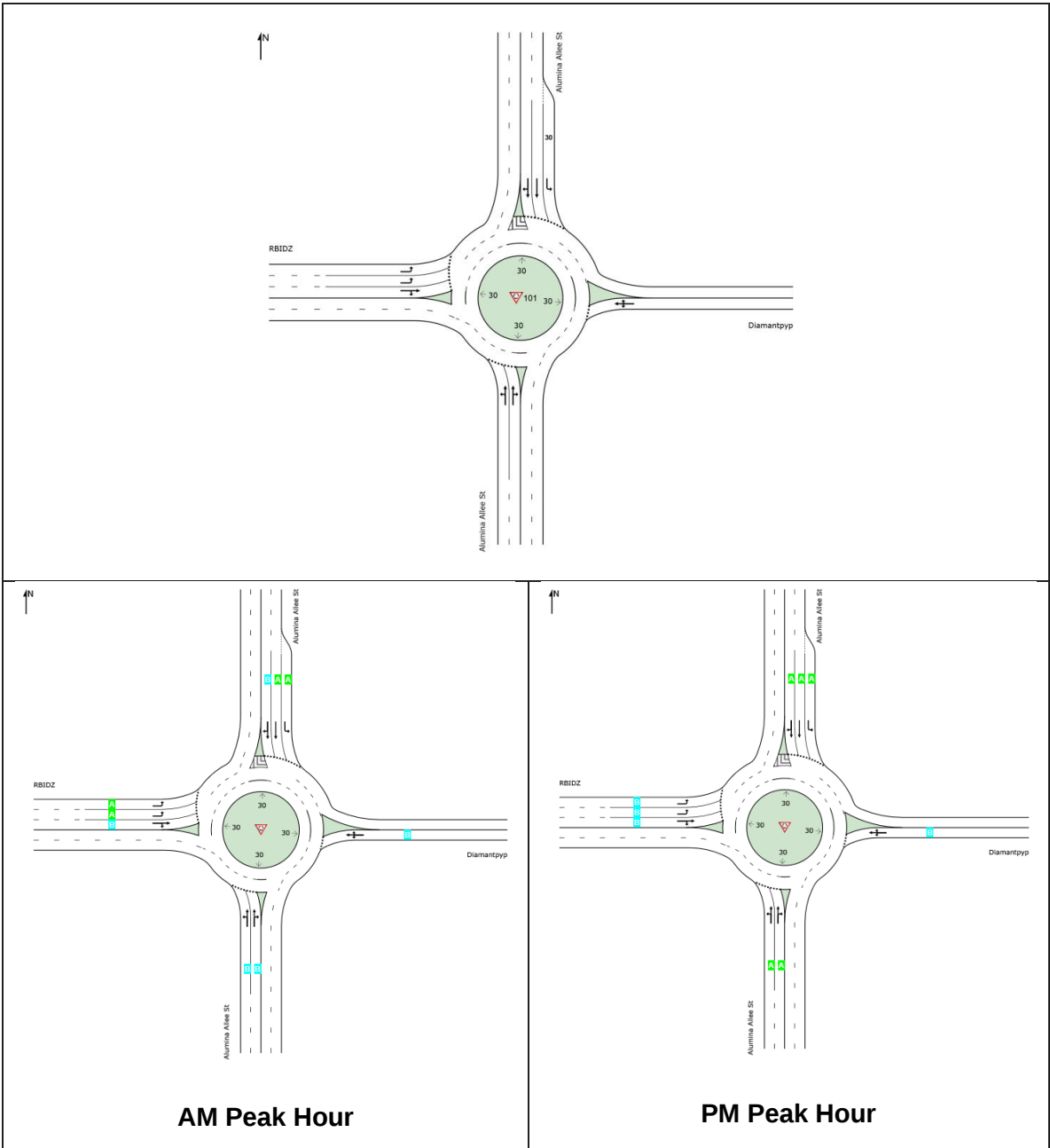


Table 22 2034 Design Year with Development Generated Traffic - Alumina Allee and Diamantpyp Scenario B

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 10.7 seconds and 8.8 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 69.3 metres and 35.8 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 design year plus the development generated traffic.

### 9.3.6 Queue Analysis of Scenario B Access Gates

#### **Main Site Access Queue Analysis:**

In:  $(1693/480) * 100 = 229$  (3 Channels Required)     $N_{que} = 8$      $8 * 20\text{m}$  (truck length) = 3 Lanes, 160m long  
Out:  $(1418/480) * 100 = 295$  (4 Channels Required)     $N_{que} = 5$      $5 * 20\text{m}$  (truck length) = 4 Lanes, 100m long

#### **Proposed Western Arterial Access 2 (Option 4):**

In:  $(593/480) * 100 = 124$  (2 Channels Required)     $N_{que} = 4$      $4 * 20\text{m}$  (truck length) = 2 Lanes, 80m long  
Out:  $(763/480) * 100 = 159$  (3 Channels Required)     $N_{que} = 3$      $3 * 20\text{m}$  (truck length) = 3 Lanes, 60m long

## 10 Traffic Impact Analysis - Scenario C

The following traffic impact assessment has been based on the combined traffic volumes as indicated below:

- 2034 Design Year Weekday AM and PM peak hour traffic volumes.
- Maximum potential Weekday AM and PM peak hour traffic expected to be generated by the RBIDZ Phase 1F development which is split in the following ratios between the main access and the proposed secondary access Option1B in the following percentages.
  - 100% of the discounted Nyanza generated traffic will use the proposed secondary access - Option 1B.
  - The remaining development generated traffic will be use the Main Access

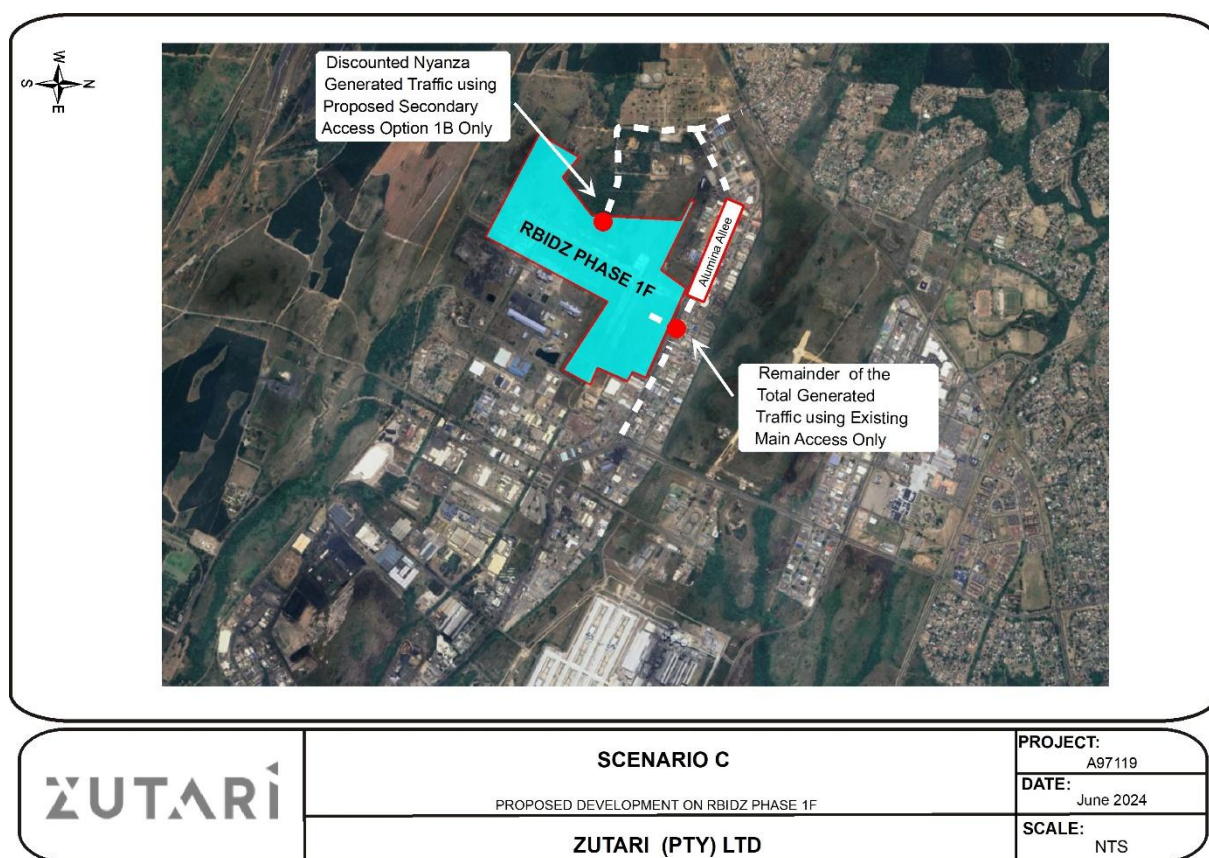


Figure 24: Scenario C

### 10.1 Trip Distribution

The trips generated by RBIDZ Phase 1F was therefore distributed onto the existing road network to determine the traffic impact of secondary access Option 1B. The distribution pattern as extracted from the original approved SMEC TIA was used as a base and then re-distributed to take into account the proposed secondary access (Option 1B). The majority of the traffic will be attracted towards the Richards Bay CBD and Port of Richards Bay; John Ross Parkway to the south; and R619 to the north.

The development generated traffic was split into the ratios as described above between the two accesses.

## 10.2 Trip Assignment

Based on the preceding distribution pattern, the maximum potential Weekday AM and PM peak hour traffic expected to be generated by the proposed development has been assigned onto the surrounding road network as shown in Figure 25 below. The 2034 design year peak hour volumes with development generated volumes - Scenario C (Option 1B) is shown in Figure 25 below.

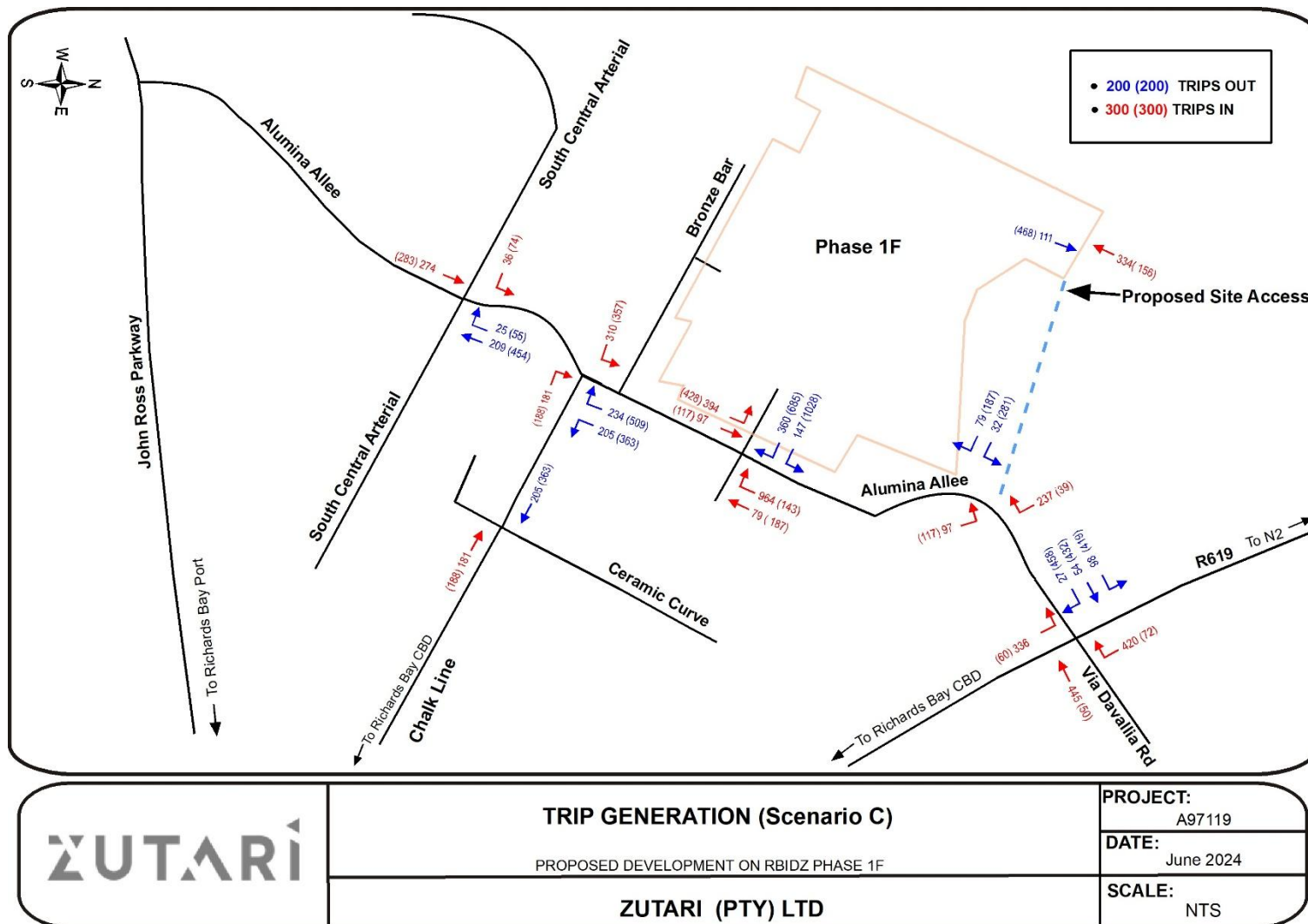


Figure 25: Trip Generation Scenario C

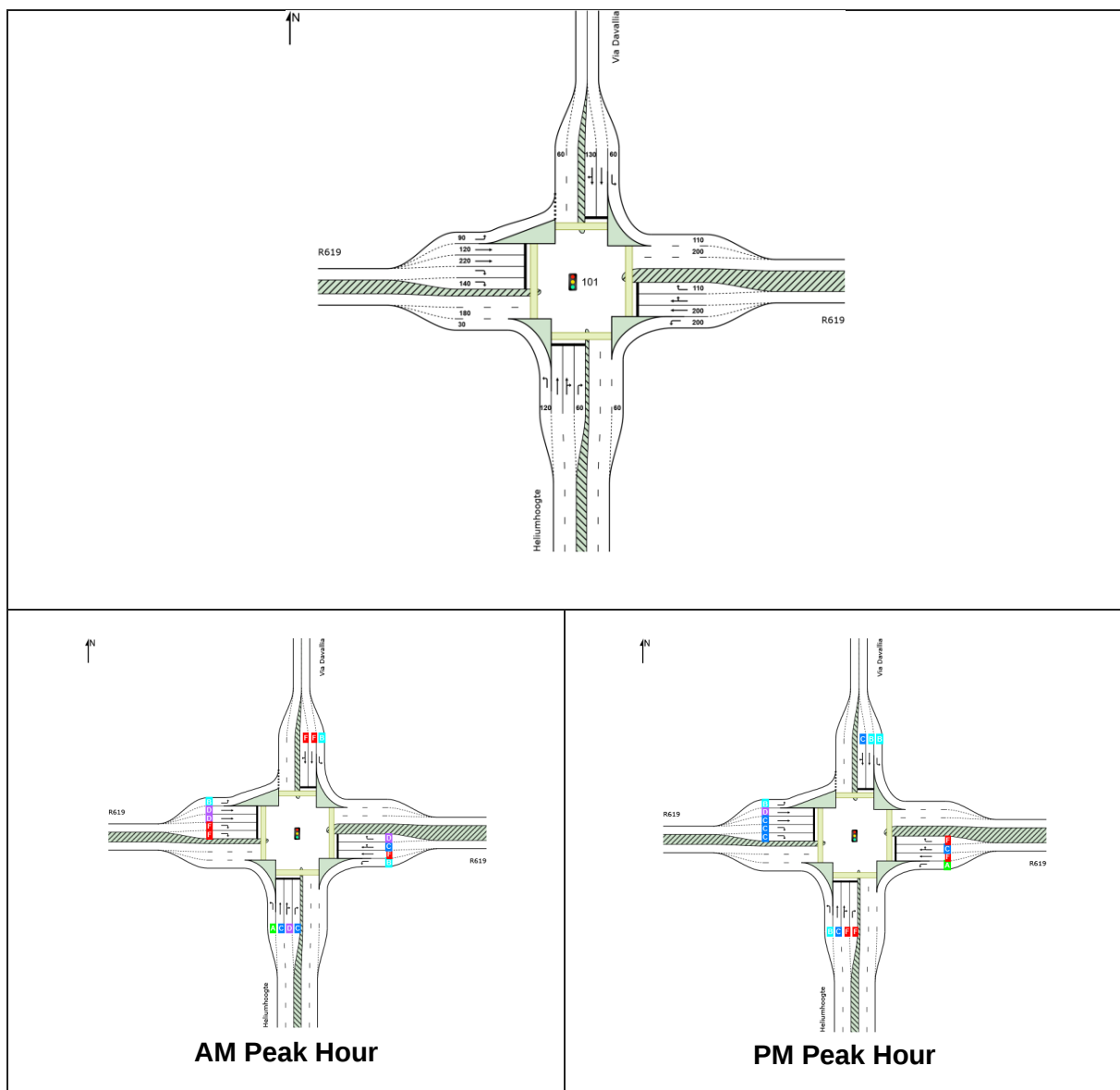


## 10.3 Traffic Impact Assessment – Scenario C

The following traffic impact assessment has been based on the 2034 Design Year Weekday AM and PM peak hour traffic volumes plus the maximum potential Weekday AM and PM peak hour traffic expected to be generated by the proposed RBIDZ Phase 1F development split between the existing main access and the proposed secondary access option 1B. The results of these SIDRA analyses are contained in Appendix C.

### 10.3.1 Heliumhoogte, Via Davallia and R619 Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 23 hereafter:

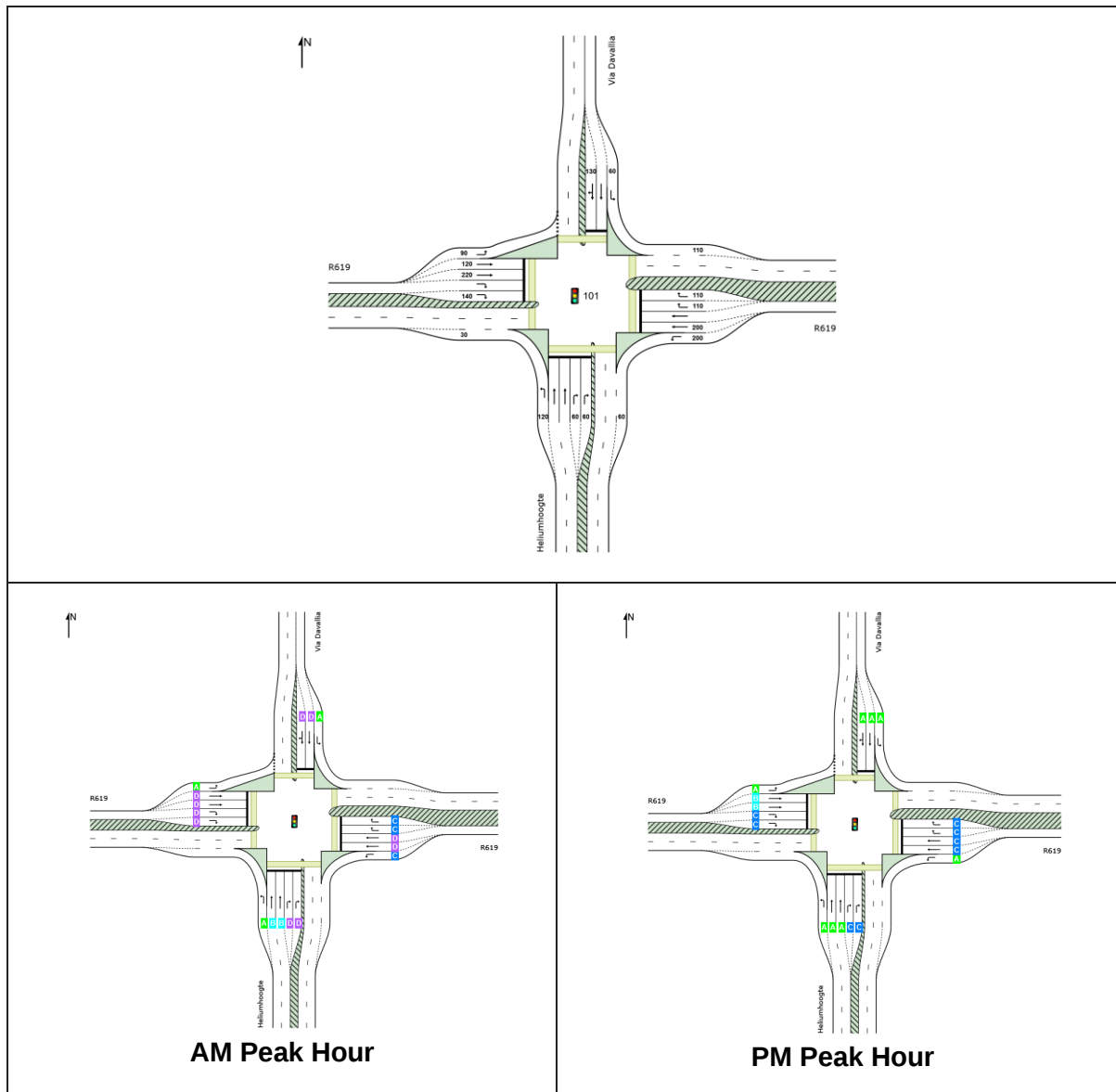


**Table 23 2034 Design Year with Development Generated Traffic - Heliumhoogte, Via Davallia and R619 Scenario C**

From the SIDRA results, it is evident that the intersection will experience congestion during the weekday AM and PM peak hours. The average delays will be 101.1 seconds and 247.3 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 535.5 metres and 894.7 metres during the AM and PM peak hours respectively. Upgrades are required for this intersection as follows.

## Heliumhoogte, Via Davallia and R619 Intersection Upgrade

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 24 hereafter:



**Table 24 2034 Design Year with Development Generated Traffic - Heliumhoogte, Via Davallia and R619 Upgrade Scenario C**

The following upgrades are proposed for this intersection:

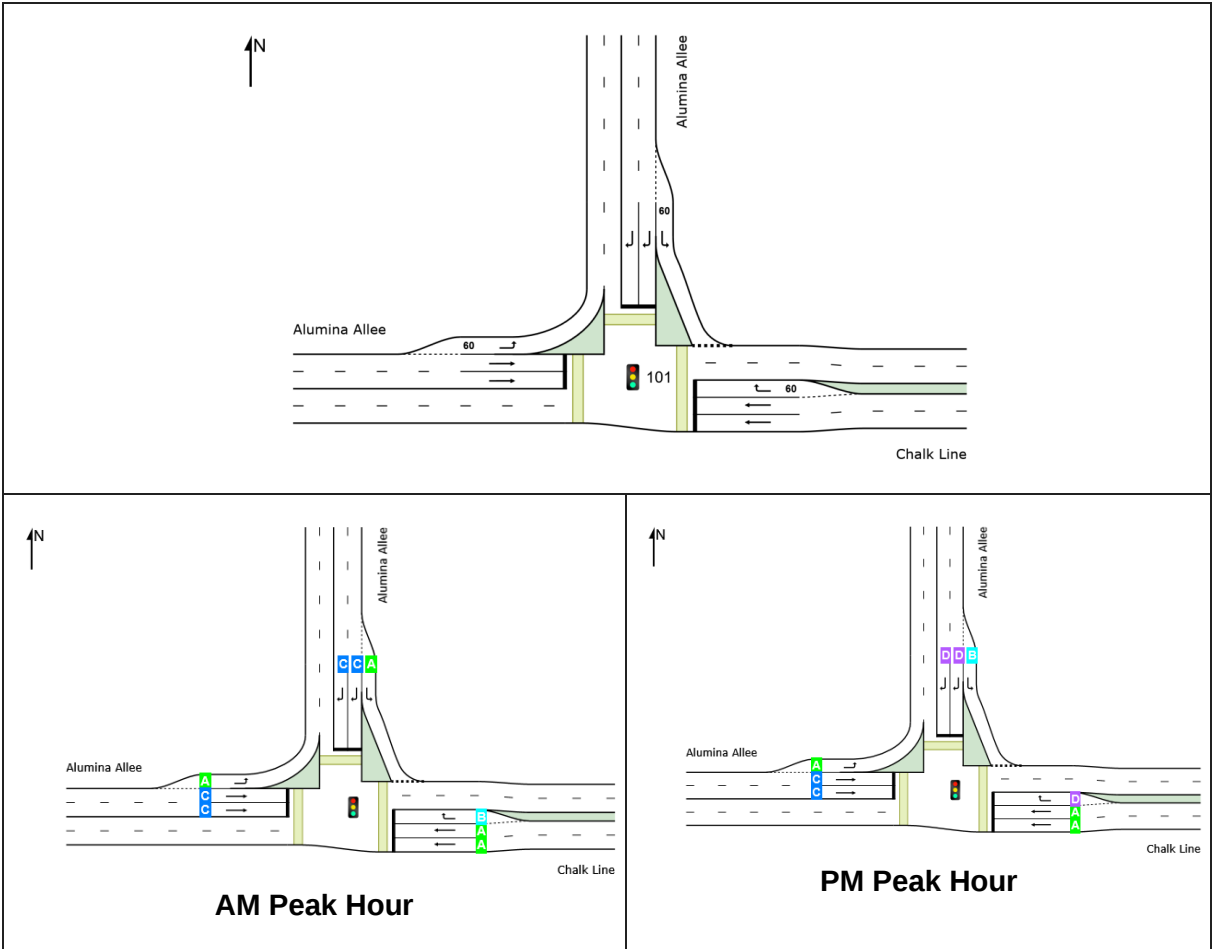
- North Exit: Change short exit lane to a full lane
- North Approach: Change short right turn lane to a short through and right turn lane
- West Exit: Change short exit lane to a full lane
- East Approach: Additional 60m short right turn lane
- South Approach: Additional 60m short right turn lane

From the SIDRA results, it is evident that this upgraded intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 34.3 seconds and 14.9 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 208.3 metres and 66.4 metres during the AM and PM peak hours respectively. No further upgrades are required to this intersection in order to accommodate the 2034 Design year plus the development generated traffic.

According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

### 10.3.2 Alumina Allee and Chalk Line Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 25 hereafter:



**Table 25 2034 Design Year with Development Generated Traffic - Alumina Allee and Chalk Line Scenario C**

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 15.0 seconds and 23.5 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 62.1 metres and 120.4metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 Design year plus the development generated traffic. According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

10.3.3 Chalk Line and Ceramic Curve Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 26 hereafter:

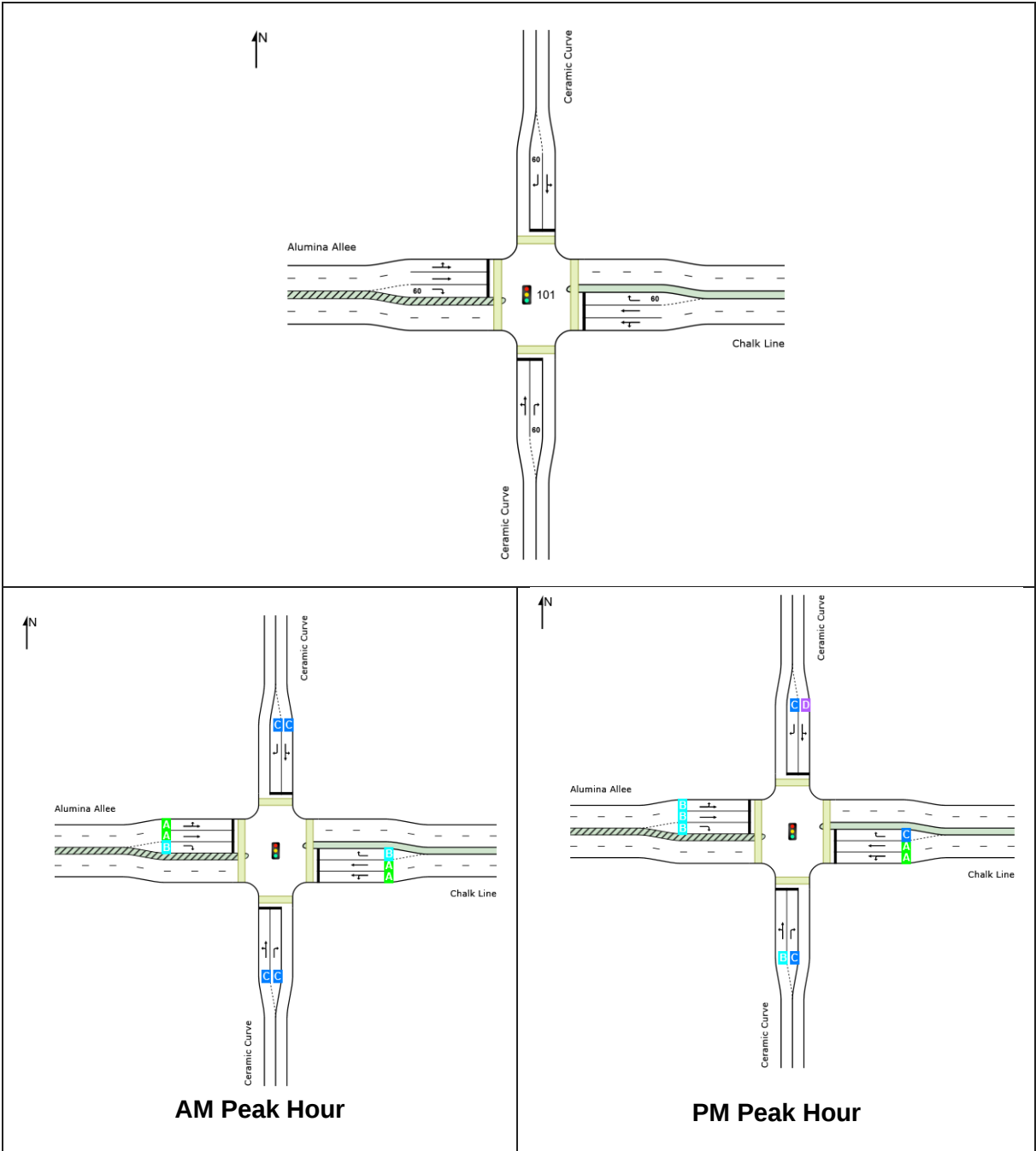
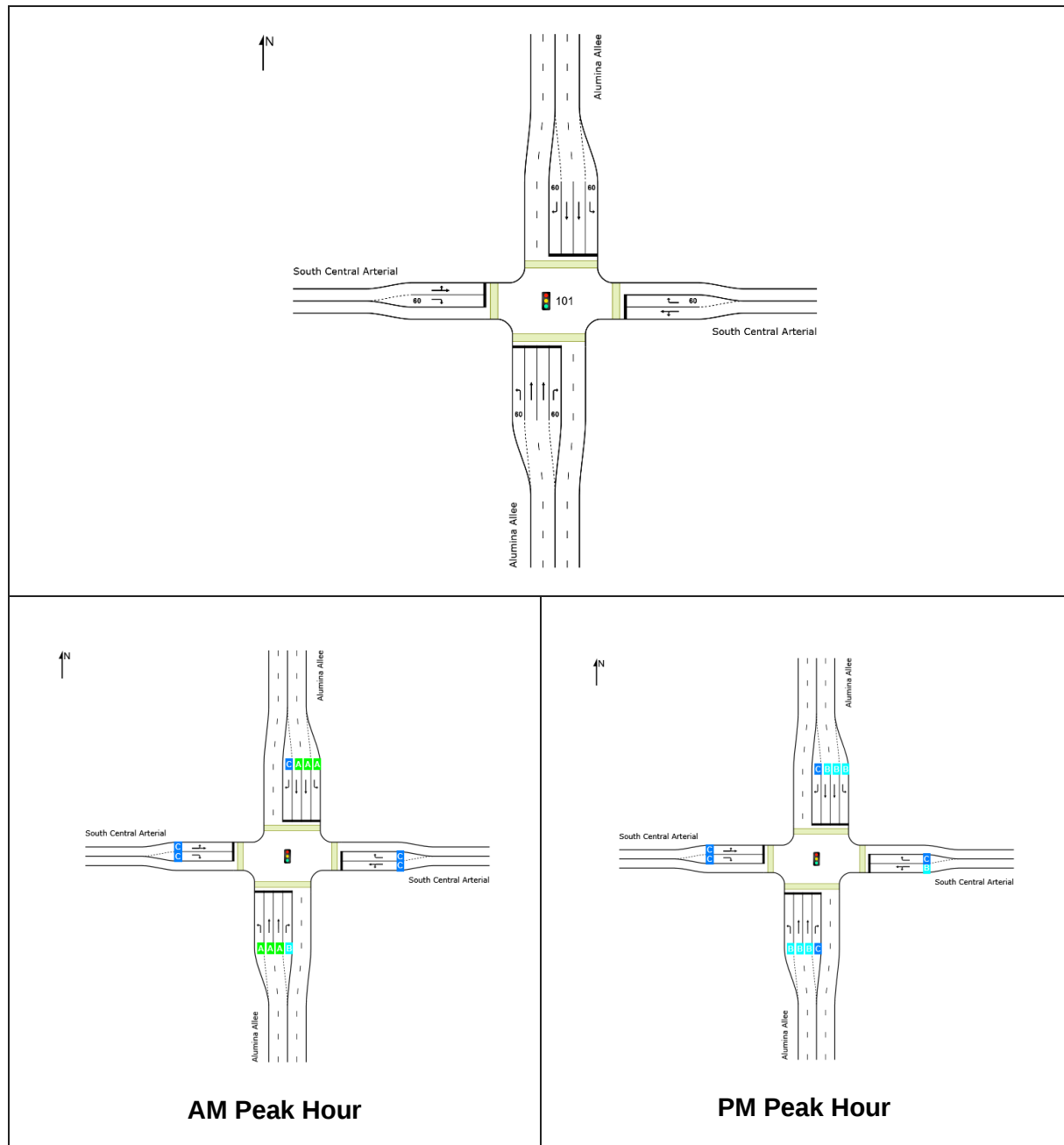


Table 26 2034 Design Year with Development Generated Traffic - Chalk Line and Ceramic Curve- Scenario C

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 8.8 seconds and 16.9 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 82.8 metres and 128.2 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 Design year plus the development generated traffic. According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

### 10.3.4 Alumina Allee and South-Central Arterial Intersection

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 27 hereafter:

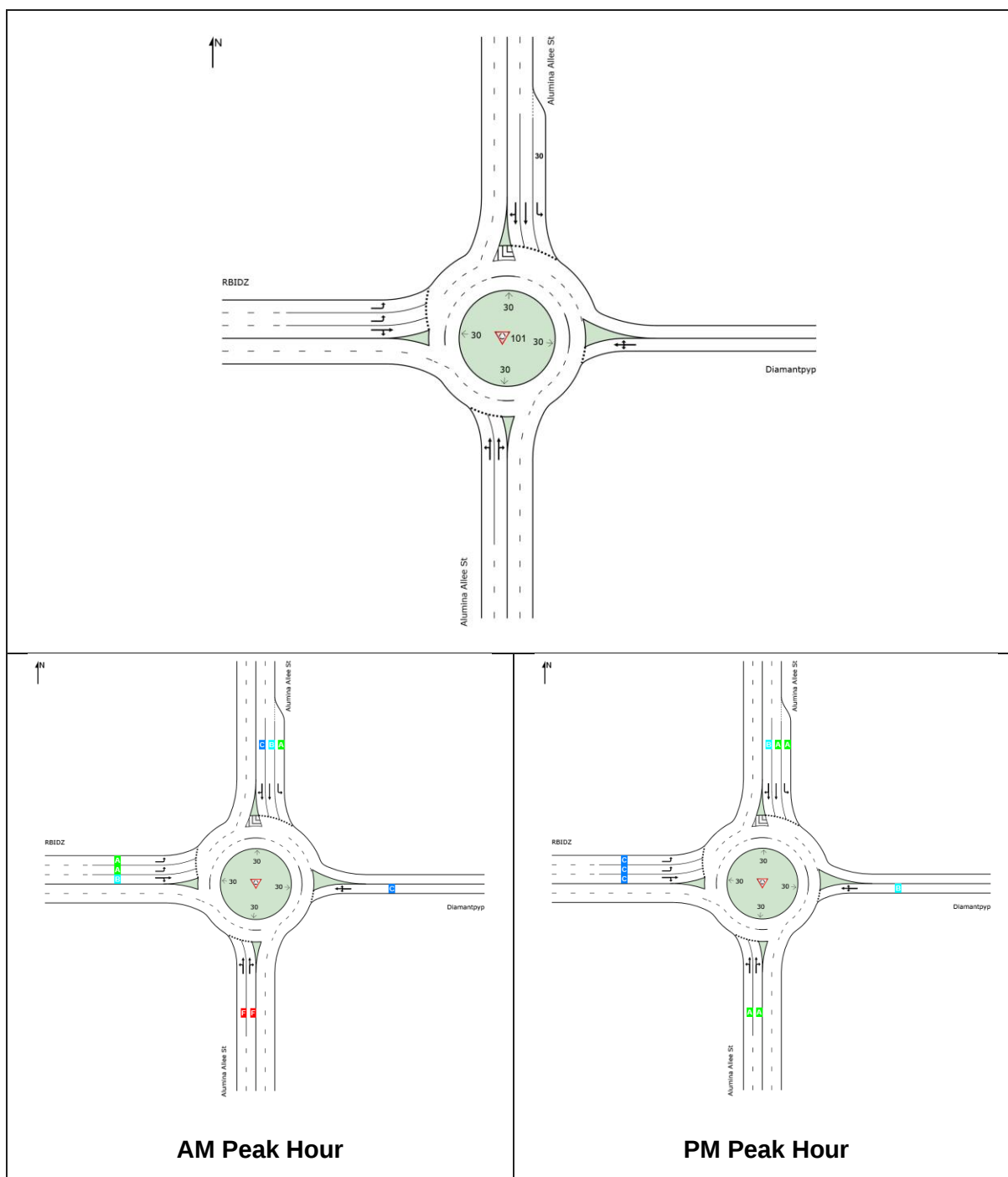


**Table 27 2034 Design Year with Development Generated Traffic - Alumina Allee and South-Central Arterial Scenario C**

From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 9.3 seconds and 14.4 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 78.9 metres and 72.4 metres during the AM and PM peak hours respectively. No upgrades are required to this intersection in order to accommodate the 2034 Design year plus the development generated traffic.

### 10.3.5 Site Access (Alumina Allee and Diamantpyp Intersection)

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 28 hereafter:

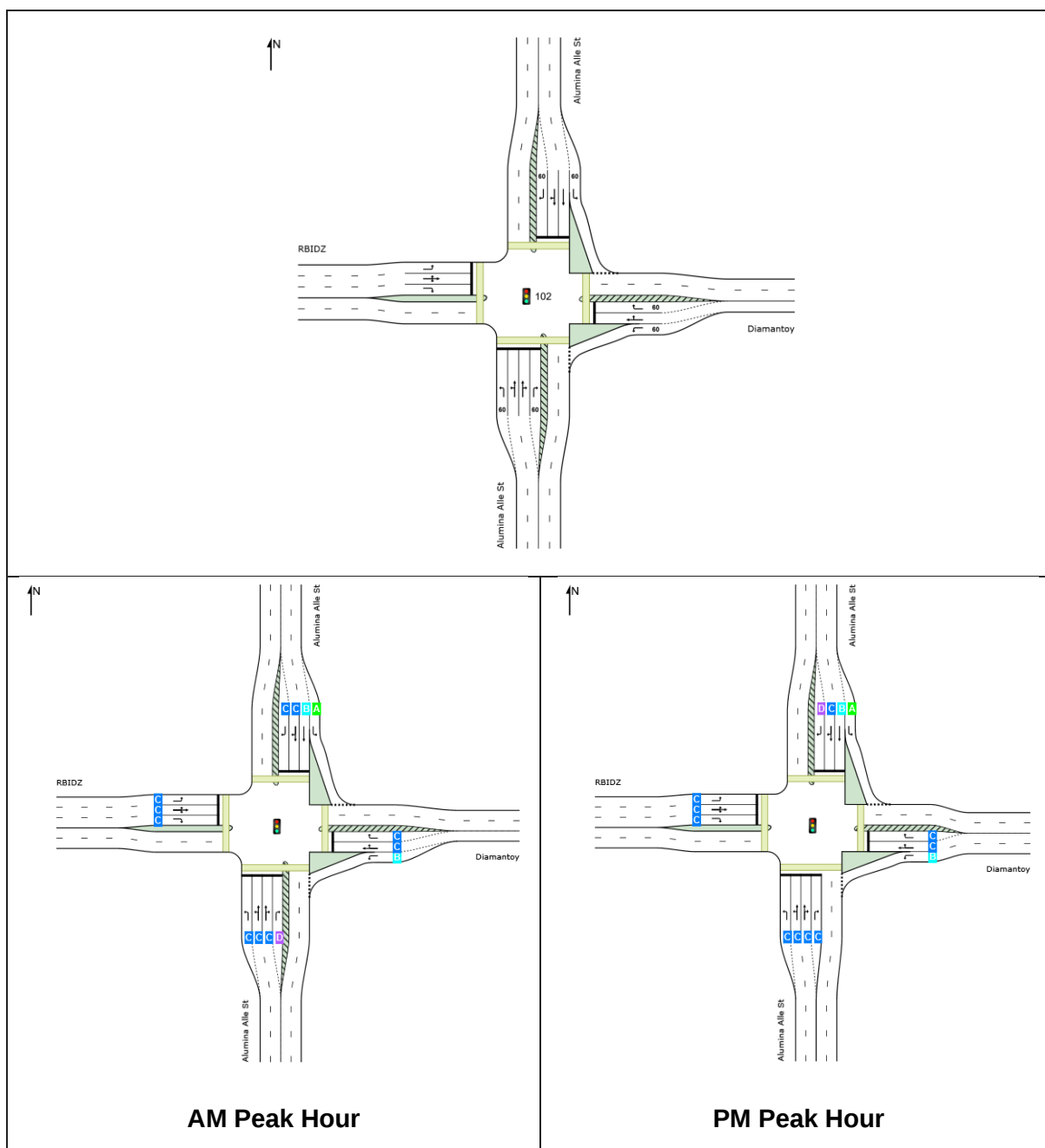


**Table 28 2034 Design Year with Development Generated Traffic - Alumina Allee and Diamantpyp Scenario C**

From the SIDRA results, it is evident that the intersection will experience congestion during the weekday AM and PM peak hours. The average delays will be 69.9 seconds and 15.4 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 572.9 metres and 96.1 metres during the AM and PM peak hours respectively. Upgrades are required for this intersection as follows.

## Site Access (Alumina Allee and Diamantpyp Intersection) Upgrade

The intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year plus the development generated traffic are shown in Table 29 hereafter:



**Table 29 2034 Design Year with Development Generated Traffic - Alumina Allee and Diamantpyp Upgrade Scenario C**

The following upgrades are proposed for this intersection:

1. Upgrade to a signalized intersection for the existing geometric layout.

From the SIDRA results, it is evident that this Upgraded intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 23.9 seconds and 23.3 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 171.6 metres and 140.9 metres during the AM and PM peak hours respectively. No further upgrades are required to this intersection in order to accommodate the 2034 Design year plus the development generated traffic.

According to the Guidelines for Traffic Impact Assessments TMH 16 Vol 2, LOS D is the acceptable LoS for peak hours. This is the threshold LoS for all TIA's including in Metropolitan Municipalities and regardless of the Road Class.

### 10.3.6 Queue Analysis on Scenario C Access Gates

#### Access Gate Queue Analysis

##### Main Access:

In:  $1358/480 = 283$  (4 Channels)      Nque = 5      5\*20m (truck length) = 4 Lanes, 100m long

Out:  $1713/480 = 357$  (5 Channels)      Nque = 4      4\*20m (truck length) = 5 Lanes, 100m long

##### Proposed Nyanza Light metals Access 2

In:  $(334/480) * 100 = 70$  (1 Channel)      Nque = 9      9\*20m (truck length) = 1 Lane, 180m long

Out:  $(468/480) * 100 = 98$  (2 Channels)      Nque = 3      3\*20m (truck length) = 2 Lanes, 60m long

## 11 Summary of all Three Scenarios

The following scenarios were analysed:

Scenario A - Maximum Impact of the existing main access only.

Scenario B - Two accesses with the proposed secondary access aligned south down the west side of RBIDZ Phase 1F (Option 4).

Scenario C - Two accesses with the proposed secondary access serving Nyanza traffic only to the north (Option 1B).

The assumptions shown in Table 30 below were made for each of the above scenarios:

| Scenario A                                                                                            | Scenario B                             | Scenario C                                                      |
|-------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>100% Traffic Generated by Development on one Access</li> </ul> | 35% Proposed Access<br>65% Main Access | 100% Nyanza generated Traffic on Proposed Secondary Access Only |

**Table 30 Assumptions for Scenario A, Scenario B and Scenario C**

Based on the analysis of the above scenarios, Scenario B is the most suitable solution and would have the maximum positive impact on both the accessibility of RBIDZ Phase 1F and the surrounding road network.

## 12 Proposed Staging Areas

The proposed internal staging area within the RBIDZ is shown in brown in Figure 26 below.

This holding area is strategically located to minimize congestion and ensure smooth logistical operations, providing sufficient space for trucks to wait or be staged prior to entering specific sites. The plan considers the scale of operations and anticipates future growth, ensuring that the truck holding areas are capable of handling increased demand as the industrial development area expands.

The proposed staging area covers approximately 2.1 hectares, with dimensions of 550 meters in length and 42 meters in width. The calculation for the number of trucks that can be accommodated within this staging area is as follows:

The average truck size, including manoeuvring space, is approximately 20 meters in length and 3 meters in width, equating to an area of about 60m<sup>2</sup> per truck.

1. Proposed usable area:
  - Total Area = 21,620 m<sup>2</sup>
2. Total area divided by the area required per truck:
  - Estimated number of Trucks =  $21,62060/60 = 360$  trucks

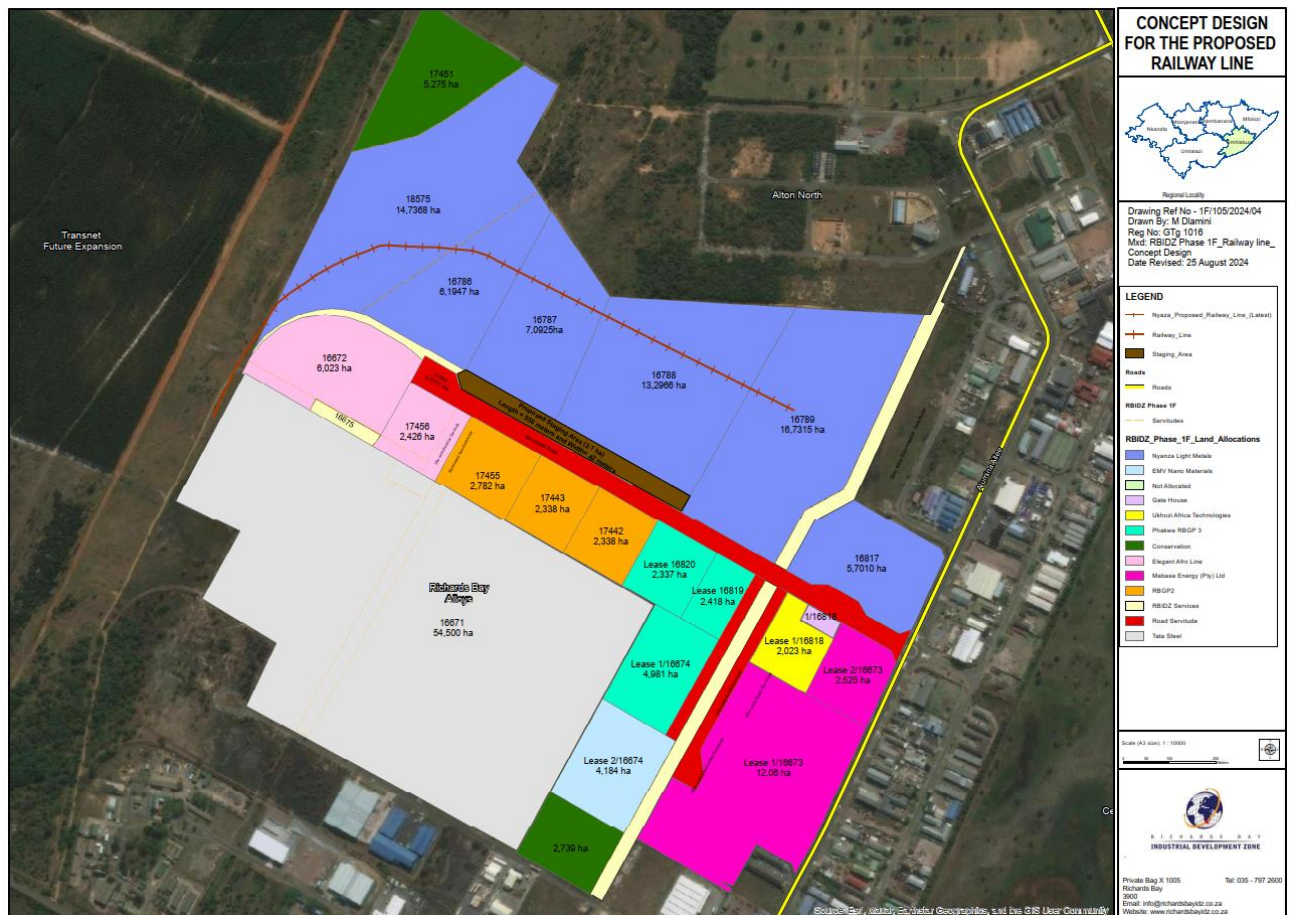


Figure 27 Proposed staging area

## 13 Future Road Conditions

### 13.1 Pedestrians and Public Transport

The RBIDZ Phase 1F development is expected to create a large number of new employment opportunities and many of these will be unskilled and semi-skilled workers most of which will use public transport to commute to and from work. RBIDZ Phase 1F is therefore expected to generate fairly high numbers of public transport passengers that will also be pedestrians. Public transport laybys already exist along Alumina Allee near the Site Access intersection, and it caters for existing public transport vehicles and passengers, however, the majority of RBIDZ Phase 1F is still vacant so the volume of public transport passengers and vehicles is therefore expected to increase significantly.

There is very little available vacant land in the vicinity of the RBIDZ Phase 1F main access gate as shown in Figure 28 below, however, there is a potential site at the end of Diamant which could accommodate a municipal public transport facility. Should this site be developed as a public transport facility as an example, then there will be major pedestrian activity between this facility and the main access gate.

Diamantyp is however planned to be extended to the east through this vacant land and therefore it is proposed that a 20-meter-wide road servitude be reserved for this planned road extension and the public transport facility is then located on either side of this road extension as shown in Figure 26 below. For this option a minimum of 3m wide sidewalks will be required along Diamantyp and along the Phase 1F access road through the gatehouse and into the Phase 1F site.

The Public Transport Facility must be linked with the internal pedestrian sidewalks. In addition, all the existing and future signalised intersections will have pedestrian crossings, signals and phases to provide safe crossing opportunities for these pedestrians.



Figure 28 Potential Public Transport Facility Site at Main Access

### 13.1.1 Proposed Public Transport Facility at Secondary Access (Option 1B)

Similarly for Secondary Access Option 1B there is a potential site immediately outside the RBIDZ Phase 1F boundary as shown in Figure 29 to accommodate a municipal public transport facility. Should this option be pursued, and the site developed as a public transport facility, then there will be major pedestrian activity between this facility and the Nyanza Light Metals development. For this option a minimum of 3m wide sidewalks along both sides of the new access road will be required along this secondary access road through the gatehouse and into the Nyanza Light Metals development.

In addition, all the existing and future signalised intersections will have pedestrian crossings, signals and phases to provide safe crossing opportunities for these pedestrians.

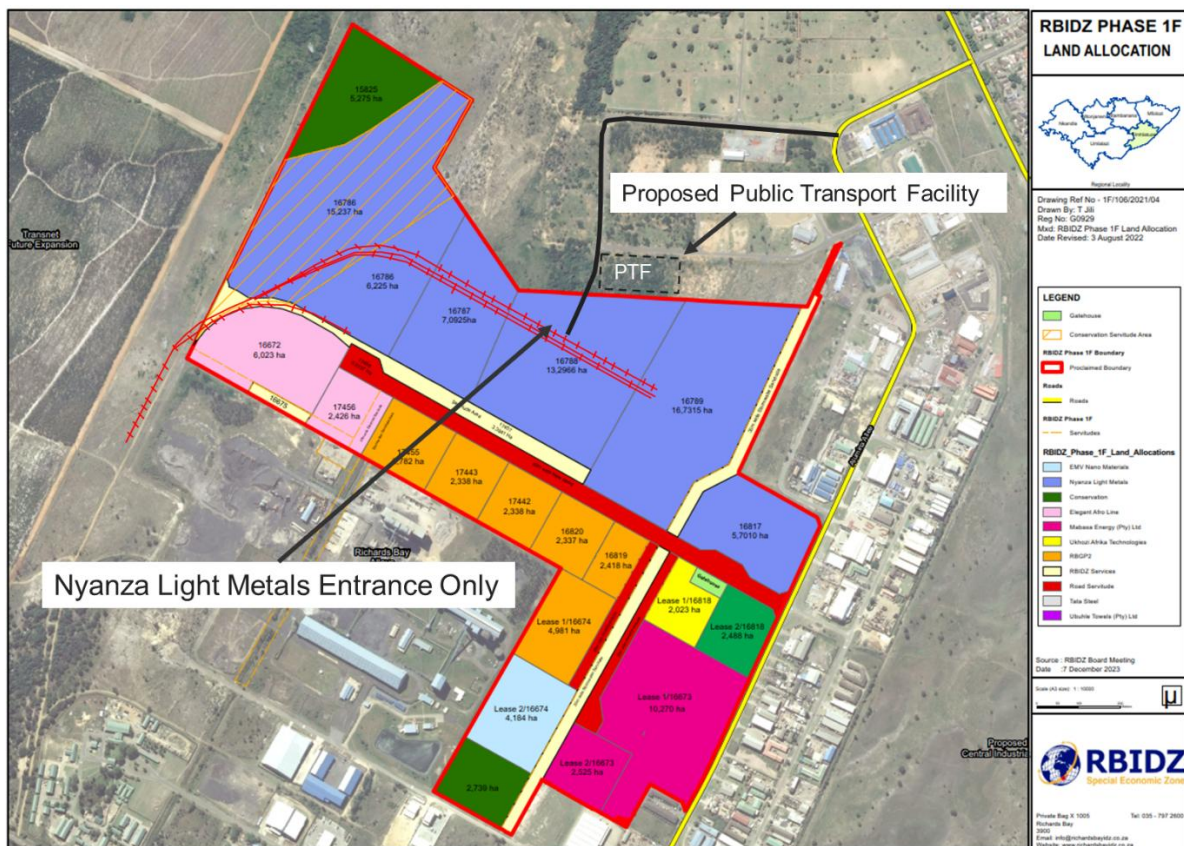


Figure 29 Proposed Public Transport Facility Option 1B

### 13.1.2 Proposed Public Transport Facility at Secondary Access (Option 4)

Similarly for Secondary Access Option 4 there is a potential site immediately outside the RBIDZ Phase 1F boundary as shown in Figure 30 below, to accommodate a municipal public transport facility. Should this option be pursued, and the site developed as a public transport facility, then there will be major pedestrian activity between this facility and the proposed facility through the new gatehouse. For this option a minimum of 3m wide sidewalks along both sides of the main access extension will be required along this secondary access road through the gatehouse and into the facility.

In addition, all the existing and future signalised intersections will have pedestrian crossings, signals and phases to provide safe crossing opportunities for these pedestrians.

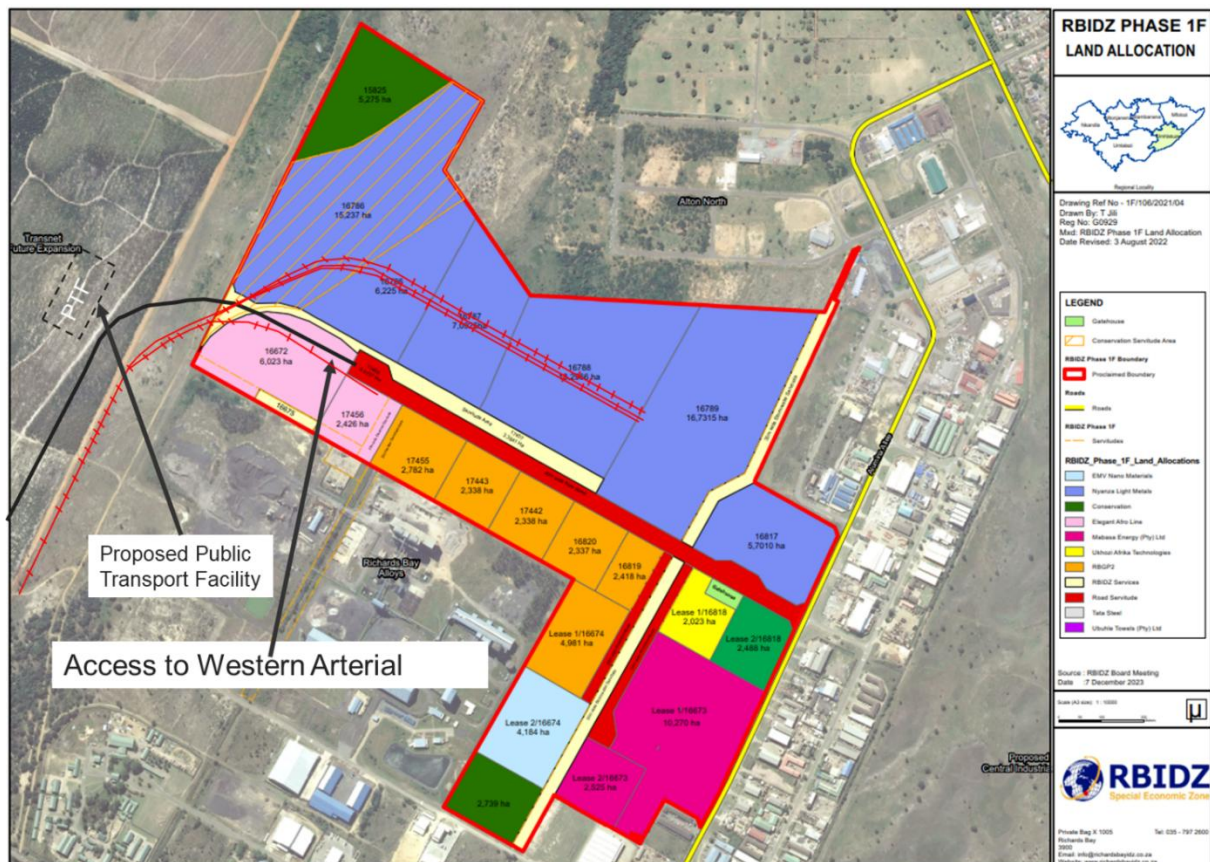


Figure 30 Proposed Public Transport Facility Option 4

## 13.2 Road Safety

No significant Road Safety concerns were identified during the site visits; however, this needs to be monitored as more sites get developed within RBIDZ Phase 1F. All roads are flat and relative straight with no poor sight distance conditions. Signalised intersections have pedestrian crossings, signals and phases and generally there does not appear to be significant conflict between pedestrians and traffic. Traffic speeds are generally not high due to side road friction and signalised intersections and roundabouts which are natural forms of traffic calming.

## 13.3 Pedestrian Movement

Similarly, whilst there is pedestrian movement along Alumina Allee during peak periods, during off-peak periods pedestrian activity is low. Pedestrian activity will also need to be monitored as more sites get developed especially at the main access gate as the pedestrian movement desire lines will be very much dependent on where the public transport facility is located.

IDZ has also indicated that a significant number of workers will be present on-site during the construction phase. There are provisions for safe drop-and-go facilities to accommodate this workforce as there are existing laybys available near the main excess.

## 13.4 On-verge Parking

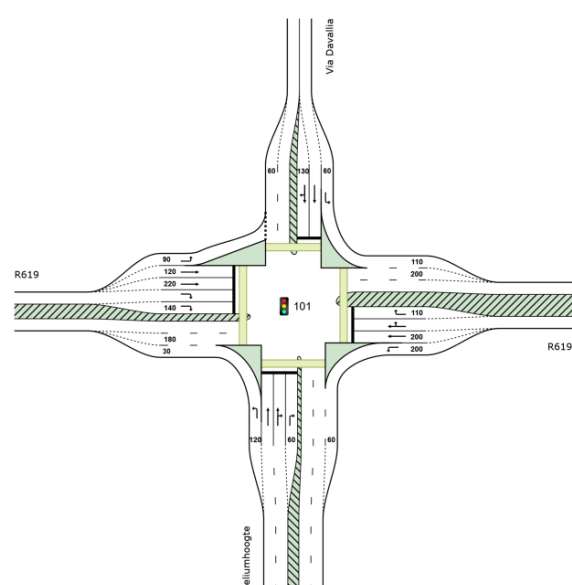
No trucks were observed parking along the verge of the RBIDZ Phase 1F during the site visit however, trucks were observed parking along other sections of Alumina Allee in the vicinity of RBIDZ Phase 1F but most of these are parking in lay-byes and those few trucks that do park on the verge along Alumina Allee do not impede the free flow traffic in both directions. RBIDZ has however, advised that trucks do frequently park along their road verges, with drivers often doing vehicle repairs. RBIDZ has been in communication with the city to strengthen law enforcement efforts and will continue to engage with them on this matter. The RBIDZ are considering barriers or bollards to prevent the trucks from parking on the verge.

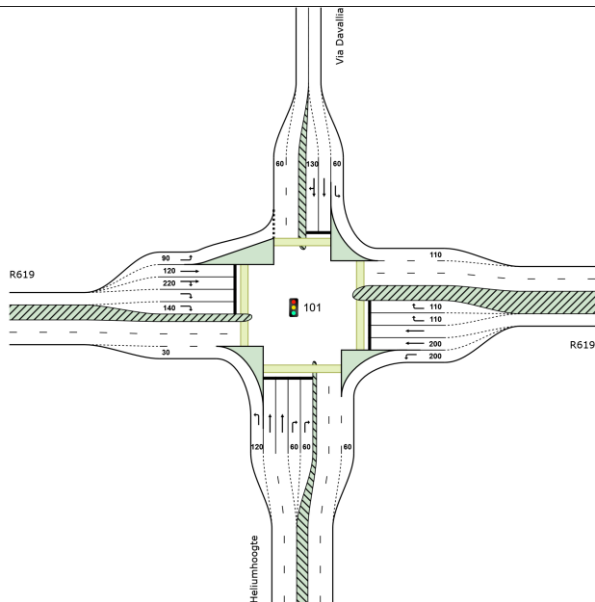
The section of road network that is impacted the most by heavy vehicles parking along the verges is at Alumina Allee before and after the South Central Arterial intersection which is some distance from RBIDZ Phase 1F.

## 14 Proposed Road Network Improvements

### 14.1 2034 Design Year with Development Generated Traffic for Scenario A, Scenario B and Scenario C

The following geometric road network improvements are required in the 2034 design year with the surrounding development traffic plus the development generated traffic.

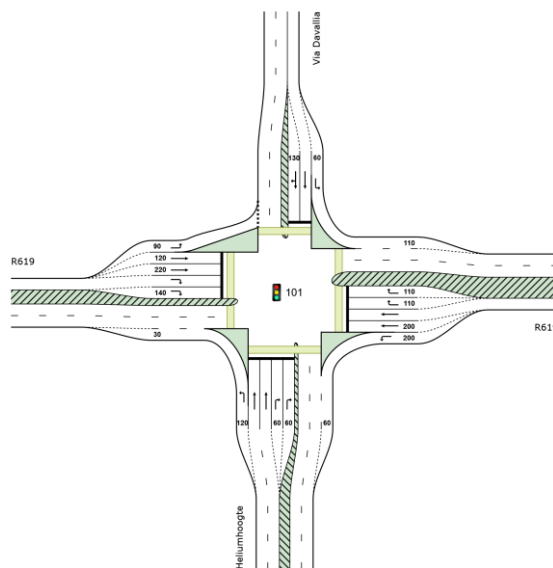
| Intersection                                                        | Layout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Heliumhoogte,<br/>Via Davallia and<br/>R619<br/>Intersection</p> |  <p><b>Upgrades: Scenario A</b></p> <p>The following upgrades are proposed for this intersection:</p> <ul style="list-style-type: none"> <li>• East exit: Change short lane to a full-length lane</li> <li>• East Approach: Additional 60m short right turn lane</li> <li>• South Approach: Additional 60m short right turn lane</li> <li>• North Approach: Change short right turn lane into a through and right turn lane</li> </ul> |



### Upgrades: Scenario B

The following upgrades are proposed for this intersection:

- West Approach: Change through lane into a through and right turn lane
- East Approach: Additional 60m short right turn lane
- South Approach: Additional 60m short right turn lane
- North Approach: Change short right turn lane into a short through and right turn lane

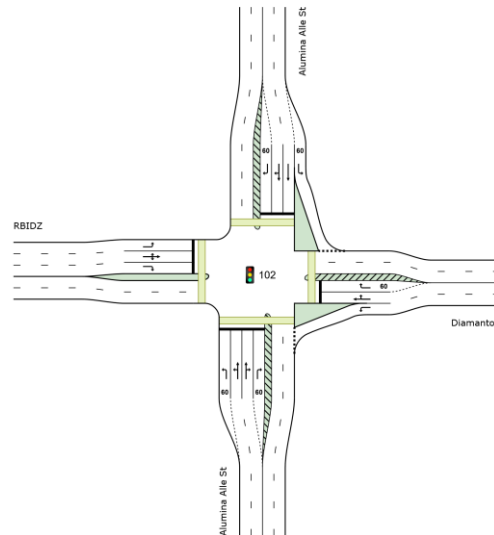


### Upgrades: Scenario C

The following upgrades are proposed for this intersection:

- North Exit: Change short exit lane to a full lane
- North Approach: Change short right turn lane to a short through and right turn lane
- West Exit: Change short exit lane to a full lane
- East Approach: Additional 60m short right turn lane
- South Approach: Additional 60m short right turn lane

Site Access  
(Alumina Allee  
and Diamantpyp  
Intersection)



**Upgrades: Scenario A and Scenario C**

Upgraded to a signalized intersection for existing geometric layout.

## 15 Conclusions

Zutari (Pty) Ltd was appointed by the Richards Bay Industrial Development Zone (RBIDZ) to update a Traffic Impact Assessment (TIA) that was previously prepared by SMEC in 2013 titled "Richards Bay Industrial Development Zone Phase 1F". RBIDZ Phase 1F is located in Richards Bay's Alton North area. It is made up of about 130.25 hectares of industrial designated land, of which the Nyanza Light Metals Plant constitutes approximately 69 hectares of this area.

The proposed RBIDZ 1F development is to consist of the following land use types:

- Conservation
- Road and service servitudes
- General industry

The following conclusions are noted:

- The 10-year forecast traffic without the development generated traffic analysis shows acceptable levels of service and upgrades are necessary, as the intersections function satisfactorily overall, maintaining an acceptable level of service.
- The full development of RBIDZ Phase 1F will generate 5 220 two-way trips in the AM and PM peak hours in the 10 years (2034).
- Scenario A is the Maximum potential weekday AM and PM peak hour traffic expected to be generated by the proposed RBIDZ Phase 1F development using the existing main access only.
- For Scenario A the analysis indicated that the Heliumhoogte, Via Davallia and R619 Intersection and the Main Site Access (Alumina Allee and Diamantpyp Intersection) will experience congestion during the weekday AM and PM peak hours and will need to be upgraded.
- Five secondary access options were proposed in support of the existing main vehicular entrance to Phase 1F from Alumina Allee, Alton North. The following two secondary access options listed below were deemed to be feasible from a technical and financial perspective:
  - Option 1B
  - Option 4
- These options were therefore analysed as Scenarios B and C to compare their suitability, convenience, and cost-effectiveness, with the objective to determine the optimal solution.
- Scenario B is based on the 2034 Design Year Weekday AM and PM peak hour traffic volumes plus the maximum potential Weekday AM and PM peak hour traffic expected to be generated by the proposed RBIDZ Phase 1F development for Option 4 with development generated traffic split between two accesses.
- The Scenario B analysis indicated that the Heliumhoogte / Via Davallia and R619 Intersection will experience congestion during the weekday AM and PM peak hours and will need to be upgraded.
- Scenario C is based on the 2034 Design Year Weekday AM and PM peak hour traffic volumes plus the maximum potential Weekday AM and PM peak hour traffic expected to be generated by the proposed RBIDZ Phase 1F for Option 1B with the development generated traffic split between the two accesses.
- The Scenario C analysis indicated that the Heliumhoogte, Via Davallia and R619 Intersection and the Main Site Access (Alumina Allee and Diamantpyp Intersection) will experience congestion during the weekday AM and PM peak hours and will need to be upgraded.

- It can be concluded that Scenario B – Western By-pass link is the preferred secondary access option, as it distributes the Phase 1F traffic onto a wider road network and requires fewer channels at the main access gate. This is, however, not favoured by the municipality who would prefer that Alton North and RBIDZ 1F use the North Central Arterial (R619).

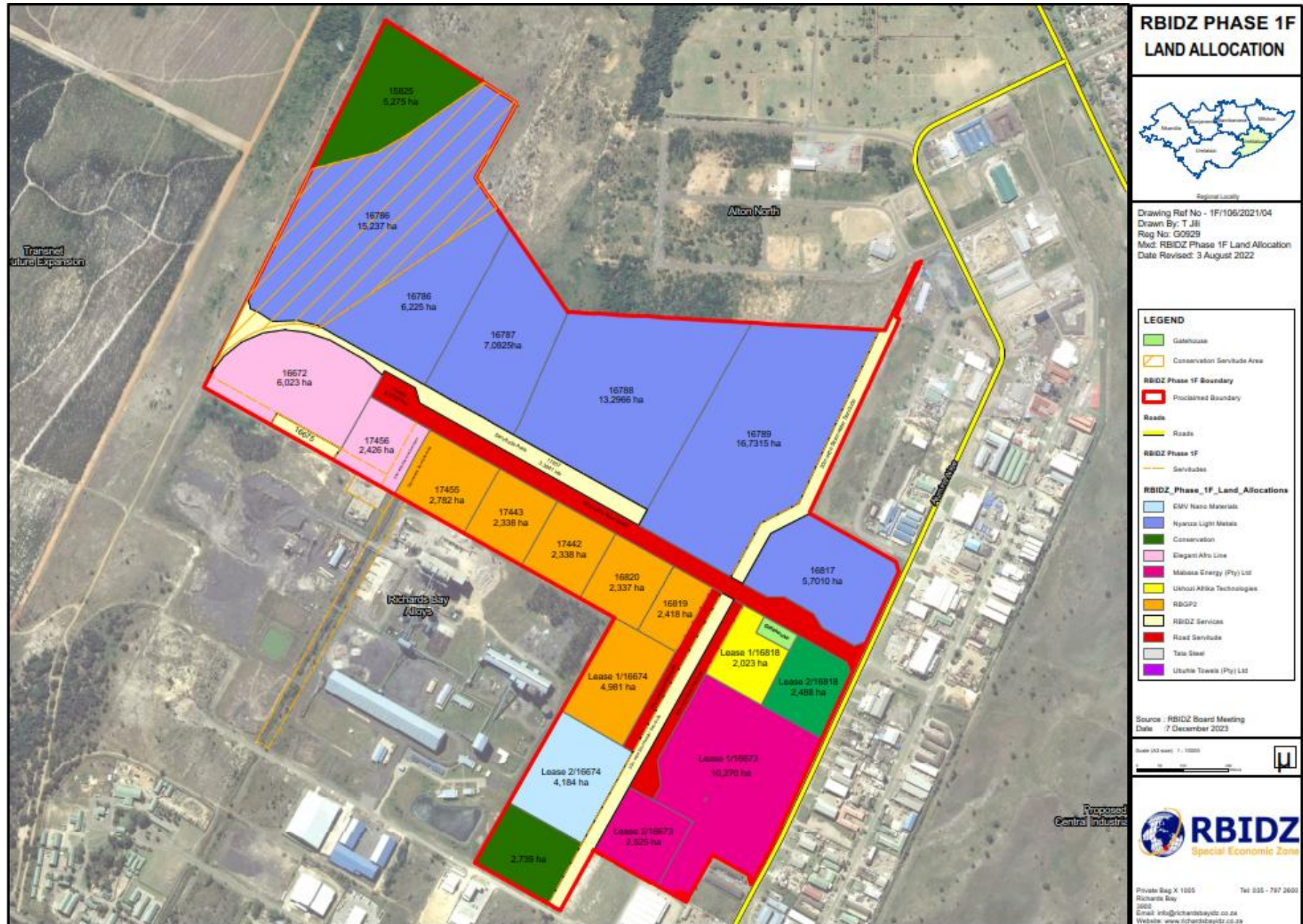
## 16 Recommendations

The following recommendations are made based on the above extensive analysis:

1. Scenario B (Option 4) is the recommended option for a secondary access to RBIDZ Phase 1F.
2. The identified external road upgrades will be required only once the RBIDZ is more developed, and congestion start occurring at the two intersections concerned.
3. A more detail assessment of the Main Gatehouse will be required in order to establish whether there is sufficient space to accommodate additional channels as calculated and recommended above.
4. RBIDZ needs to engage with the uMhlathuze Municipality regarding the location of future public transport facilities.
5. Wherever these public transport facilities are located in the future, the roads along which the pedestrians will walk between RBIDZ and these facilities will need 3m wide sidewalks along both edges.
6. RBIDZ needs to engage with the uMhlathuze Municipality regarding future road and rail planning especially to the south and west of RBIDZ Phase 1F.
7. Road safety conditions need to be monitored on a regular basis as more development occurs at RBIDZ Phase 1F and pedestrian activity increases.
8. Pedestrian activity needs to be monitored on a regular basis as more development occurs at RBIDZ Phase 1F and public transport facilities are provided by the municipality.
9. The parking of heavy vehicles along the verges of roads needs to be monitored on a regular basis and should this start occurring, additional appropriate signage needs to be erected along these roads and active law enforcement should be requested from the uMhlathuze Municipality.

# Appendices

# Appendix A: Site Development Plan





# Appendix B: Traffic Counts

| TRAFFIC SURVEY |                                                         |    |     |    |       |          |   |    |   |       |            |    |    |   |       |                  |  |
|----------------|---------------------------------------------------------|----|-----|----|-------|----------|---|----|---|-------|------------|----|----|---|-------|------------------|--|
| CLIENT:        |                                                         |    |     |    |       |          |   |    |   |       |            |    |    |   |       |                  |  |
| SITE:          | INTERSECTION OF R619 AND HELIUMUHOOGTE AND VIA DAVALLIA |    |     |    |       |          |   |    |   |       |            |    |    |   |       |                  |  |
| DATE:          | 12 HOUR COUNT ON THURSDAY 29 FEBRUARY 2024              |    |     |    |       |          |   |    |   |       |            |    |    |   |       |                  |  |
| UNITS:         | CLASSIFIED                                              |    |     |    |       |          |   |    |   |       |            |    |    |   |       |                  |  |
| APPROACH FROM  | WEST<br>HELIUMUHOOGTE                                   |    |     |    |       |          |   |    |   |       |            |    |    |   |       | TOTAL            |  |
| NAME           |                                                         |    |     |    |       |          |   |    |   |       |            |    |    |   |       | ALL<br>MOVEMENTS |  |
| MOVEMENT       | LEFT TURN                                               |    |     |    |       | STRAIGHT |   |    |   |       | RIGHT TURN |    |    |   |       |                  |  |
| TIME           | C                                                       | T  | H   | B  | TOTAL | C        | T | H  | B | TOTAL | C          | T  | H  | B | TOTAL |                  |  |
| 06:00 - 06:15  | 17                                                      | 5  | 3   | 1  | 26    | 11       | 1 | 1  | 0 | 13    | 12         | 5  | 1  | 0 | 18    | 57               |  |
| 06:15 - 06:30  | 18                                                      | 9  | 8   | 2  | 37    | 10       | 0 | 0  | 0 | 10    | 3          | 1  | 0  | 0 | 4     | 51               |  |
| 06:30 - 06:45  | 27                                                      | 6  | 2   | 3  | 38    | 12       | 0 | 0  | 0 | 12    | 4          | 0  | 0  | 0 | 4     | 54               |  |
| 06:45 - 07:00  | 22                                                      | 9  | 1   | 0  | 32    | 9        | 0 | 0  | 0 | 9     | 3          | 0  | 1  | 1 | 5     | 46               |  |
| 07:00 - 07:15  | 35                                                      | 5  | 5   | 3  | 48    | 24       | 1 | 1  | 0 | 26    | 6          | 0  | 0  | 0 | 6     | 80               |  |
| 07:15 - 07:30  | 31                                                      | 6  | 3   | 1  | 41    | 21       | 0 | 0  | 1 | 22    | 19         | 0  | 0  | 0 | 19    | 82               |  |
| 07:30 - 07:45  | 16                                                      | 2  | 4   | 0  | 22    | 19       | 0 | 0  | 0 | 19    | 8          | 0  | 0  | 0 | 8     | 49               |  |
| 07:45 - 08:00  | 17                                                      | 2  | 3   | 0  | 22    | 19       | 0 | 0  | 0 | 19    | 17         | 0  | 0  | 0 | 17    | 58               |  |
| 08:00 - 08:15  | 25                                                      | 0  | 4   | 0  | 29    | 8        | 0 | 0  | 0 | 8     | 22         | 0  | 1  | 0 | 23    | 60               |  |
| 08:15 - 08:30  | 16                                                      | 0  | 2   | 0  | 18    | 10       | 0 | 0  | 0 | 10    | 18         | 0  | 2  | 0 | 20    | 48               |  |
| 08:30 - 08:45  | 23                                                      | 0  | 2   | 0  | 25    | 9        | 0 | 0  | 0 | 9     | 12         | 1  | 1  | 0 | 14    | 48               |  |
| 08:45 - 09:00  | 32                                                      | 0  | 7   | 0  | 39    | 19       | 0 | 1  | 0 | 20    | 21         | 0  | 1  | 0 | 22    | 81               |  |
| 09:00 - 09:15  | 13                                                      | 0  | 10  | 0  | 23    | 19       | 0 | 0  | 0 | 19    | 17         | 0  | 0  | 0 | 17    | 59               |  |
| 09:15 - 09:30  | 18                                                      | 0  | 3   | 0  | 21    | 24       | 0 | 0  | 0 | 24    | 17         | 1  | 1  | 0 | 19    | 64               |  |
| 09:30 - 09:45  | 22                                                      | 0  | 5   | 1  | 28    | 18       | 0 | 0  | 0 | 18    | 20         | 0  | 0  | 0 | 20    | 66               |  |
| 09:45 - 10:00  | 14                                                      | 1  | 3   | 0  | 18    | 20       | 0 | 1  | 0 | 21    | 14         | 2  | 1  | 0 | 17    | 56               |  |
| 10:00 - 10:15  | 14                                                      | 0  | 2   | 0  | 16    | 10       | 1 | 0  | 0 | 11    | 22         | 0  | 0  | 0 | 22    | 49               |  |
| 10:15 - 10:30  | 17                                                      | 0  | 5   | 0  | 22    | 16       | 0 | 2  | 0 | 18    | 28         | 0  | 1  | 0 | 29    | 69               |  |
| 10:30 - 10:45  | 18                                                      | 0  | 4   | 0  | 22    | 11       | 0 | 1  | 0 | 12    | 9          | 0  | 3  | 0 | 12    | 46               |  |
| 10:45 - 11:00  | 15                                                      | 0  | 5   | 0  | 20    | 5        | 0 | 0  | 0 | 5     | 15         | 0  | 1  | 0 | 16    | 41               |  |
| 11:00 - 11:15  | 19                                                      | 0  | 7   | 0  | 26    | 11       | 0 | 0  | 0 | 11    | 9          | 0  | 1  | 0 | 10    | 47               |  |
| 11:15 - 11:30  | 27                                                      | 1  | 1   | 0  | 29    | 16       | 0 | 1  | 0 | 17    | 27         | 0  | 2  | 0 | 29    | 75               |  |
| 11:30 - 11:45  | 34                                                      | 1  | 3   | 1  | 39    | 15       | 1 | 0  | 0 | 16    | 20         | 0  | 0  | 0 | 20    | 75               |  |
| 11:45 - 12:00  | 27                                                      | 0  | 4   | 1  | 32    | 20       | 0 | 1  | 0 | 21    | 22         | 0  | 2  | 0 | 24    | 77               |  |
| 12:00 - 12:15  | 29                                                      | 1  | 8   | 0  | 38    | 38       | 0 | 1  | 0 | 39    | 29         | 2  | 3  | 1 | 35    | 112              |  |
| 12:15 - 12:30  | 24                                                      | 0  | 3   | 0  | 27    | 0        | 0 | 0  | 0 | 0     | 17         | 0  | 0  | 0 | 17    | 44               |  |
| 12:30 - 12:45  | 36                                                      | 0  | 3   | 0  | 39    | 32       | 0 | 0  | 0 | 32    | 15         | 0  | 2  | 0 | 17    | 88               |  |
| 12:45 - 13:00  | 26                                                      | 1  | 1   | 0  | 28    | 19       | 0 | 1  | 0 | 20    | 19         | 0  | 0  | 0 | 19    | 67               |  |
| 13:00 - 13:15  | 25                                                      | 1  | 3   | 0  | 29    | 4        | 0 | 0  | 0 | 4     | 24         | 0  | 0  | 0 | 24    | 57               |  |
| 13:15 - 13:30  | 18                                                      | 0  | 2   | 0  | 20    | 4        | 0 | 2  | 1 | 7     | 21         | 1  | 0  | 0 | 22    | 49               |  |
| 13:30 - 13:45  | 41                                                      | 1  | 5   | 0  | 47    | 22       | 0 | 0  | 0 | 22    | 26         | 0  | 0  | 0 | 26    | 95               |  |
| 13:45 - 14:00  | 18                                                      | 1  | 8   | 1  | 28    | 19       | 1 | 1  | 0 | 21    | 27         | 1  | 0  | 0 | 28    | 77               |  |
| 14:00 - 14:15  | 41                                                      | 2  | 2   | 1  | 46    | 59       | 3 | 1  | 1 | 64    | 28         | 0  | 0  | 0 | 28    | 138              |  |
| 14:15 - 14:30  | 30                                                      | 2  | 1   | 3  | 36    | 32       | 1 | 0  | 1 | 34    | 27         | 0  | 0  | 0 | 27    | 97               |  |
| 14:30 - 14:45  | 18                                                      | 2  | 2   | 0  | 22    | 9        | 0 | 0  | 0 | 9     | 14         | 0  | 0  | 0 | 14    | 45               |  |
| 14:45 - 15:00  | 23                                                      | 0  | 2   | 1  | 26    | 20       | 0 | 0  | 0 | 20    | 17         | 0  | 1  | 0 | 18    | 64               |  |
| 15:00 - 15:15  | 8                                                       | 1  | 1   | 1  | 11    | 25       | 0 | 1  | 0 | 26    | 34         | 0  | 0  | 0 | 34    | 71               |  |
| 15:15 - 15:30  | 30                                                      | 1  | 3   | 0  | 34    | 24       | 0 | 0  | 0 | 24    | 35         | 0  | 0  | 0 | 35    | 93               |  |
| 15:30 - 15:45  | 23                                                      | 2  | 5   | 1  | 31    | 21       | 0 | 0  | 1 | 22    | 19         | 0  | 0  | 1 | 20    | 73               |  |
| 15:45 - 16:00  | 34                                                      | 1  | 4   | 0  | 39    | 34       | 0 | 1  | 0 | 35    | 35         | 1  | 1  | 0 | 37    | 111              |  |
| 16:00 - 16:15  | 67                                                      | 1  | 3   | 1  | 72    | 81       | 0 | 2  | 0 | 83    | 101        | 0  | 0  | 0 | 101   | 256              |  |
| 16:15 - 16:30  | 96                                                      | 1  | 1   | 1  | 99    | 74       | 0 | 0  | 1 | 75    | 91         | 0  | 1  | 0 | 92    | 266              |  |
| 16:30 - 16:45  | 72                                                      | 2  | 0   | 2  | 76    | 101      | 0 | 0  | 0 | 101   | 90         | 0  | 0  | 0 | 90    | 267              |  |
| 16:45 - 17:00  | 58                                                      | 1  | 0   | 2  | 61    | 66       | 0 | 1  | 0 | 67    | 48         | 1  | 0  | 1 | 50    | 178              |  |
| 17:00 - 17:15  | 63                                                      | 3  | 3   | 4  | 73    | 84       | 0 | 0  | 0 | 84    | 45         | 2  | 0  | 0 | 47    | 204              |  |
| 17:15 - 17:30  | 46                                                      | 1  | 4   | 2  | 53    | 67       | 0 | 0  | 1 | 68    | 14         | 2  | 0  | 0 | 16    | 137              |  |
| 17:30 - 17:45  | 20                                                      | 1  | 3   | 1  | 25    | 29       | 0 | 0  | 0 | 29    | 13         | 2  | 0  | 0 | 15    | 69               |  |
| 17:45 - 18:00  | 42                                                      | 0  | 1   | 0  | 43    | 24       | 0 | 0  | 0 | 24    | 10         | 1  | 0  | 0 | 11    | 78               |  |
| TOTAL          | 1405                                                    | 73 | 164 | 34 | 1676  | 1244     | 9 | 20 | 7 | 1280  | 1164       | 23 | 27 | 4 | 1218  | 4174             |  |

| TRAFFIC SURVEY |                                              |    |     |    |       |          |     |     |     |       |            |   |   |   |       |                  |
|----------------|----------------------------------------------|----|-----|----|-------|----------|-----|-----|-----|-------|------------|---|---|---|-------|------------------|
| CLIENT:        |                                              |    |     |    |       |          |     |     |     |       |            |   |   |   |       |                  |
| SITE:          | INTERSECTION OF ALUMINA ALLEE AND CHALK LINE |    |     |    |       |          |     |     |     |       |            |   |   |   |       |                  |
| DATE:          | 12 HOUR COUNT ON THURSDAY 29 FEBRUARY 2024   |    |     |    |       |          |     |     |     |       |            |   |   |   |       |                  |
| UNITS:         | CLASSIFIED                                   |    |     |    |       |          |     |     |     |       |            |   |   |   |       |                  |
| APPROACH FROM  | WEST                                         |    |     |    |       |          |     |     |     |       |            |   |   |   |       | TOTAL            |
| NAME           | ALUMINA ALLEE                                |    |     |    |       |          |     |     |     |       |            |   |   |   |       | ALL<br>MOVEMENTS |
| MOVEMENT       | LEFT TURN                                    |    |     |    |       | STRAIGHT |     |     |     |       | RIGHT TURN |   |   |   |       |                  |
| TIME           | C                                            | T  | H   | B  | TOTAL | C        | T   | H   | B   | TOTAL | C          | T | H | B | TOTAL |                  |
| 06:00 - 06:15  | 21                                           | 8  | 4   | 1  | 34    | 25       | 4   | 1   | 9   | 39    | 0          | 0 | 0 | 0 | 0     | 73               |
| 06:15 - 06:30  | 20                                           | 8  | 5   | 10 | 43    | 36       | 12  | 2   | 10  | 60    | 0          | 0 | 0 | 0 | 0     | 103              |
| 06:30 - 06:45  | 41                                           | 4  | 4   | 4  | 53    | 57       | 13  | 4   | 3   | 77    | 0          | 0 | 0 | 0 | 0     | 130              |
| 06:45 - 07:00  | 56                                           | 10 | 10  | 3  | 79    | 73       | 19  | 4   | 8   | 104   | 0          | 0 | 0 | 0 | 0     | 183              |
| 07:00 - 07:15  | 41                                           | 6  | 3   | 3  | 53    | 74       | 11  | 7   | 4   | 96    | 0          | 0 | 0 | 0 | 0     | 149              |
| 07:15 - 07:30  | 28                                           | 4  | 5   | 1  | 38    | 80       | 11  | 4   | 3   | 98    | 0          | 0 | 0 | 0 | 0     | 136              |
| 07:30 - 07:45  | 35                                           | 2  | 12  | 0  | 49    | 73       | 12  | 10  | 8   | 103   | 0          | 0 | 0 | 0 | 0     | 152              |
| 07:45 - 08:00  | 27                                           | 0  | 9   | 0  | 36    | 63       | 7   | 12  | 2   | 84    | 0          | 0 | 0 | 0 | 0     | 120              |
| 08:00 - 08:15  | 35                                           | 0  | 15  | 0  | 50    | 70       | 7   | 12  | 4   | 93    | 0          | 0 | 0 | 0 | 0     | 143              |
| 08:15 - 08:30  | 33                                           | 0  | 10  | 0  | 43    | 66       | 6   | 10  | 2   | 84    | 0          | 0 | 0 | 0 | 0     | 127              |
| 08:30 - 08:45  | 20                                           | 0  | 5   | 0  | 25    | 70       | 8   | 4   | 2   | 84    | 0          | 0 | 0 | 0 | 0     | 109              |
| 08:45 - 09:00  | 24                                           | 0  | 15  | 0  | 39    | 46       | 7   | 8   | 2   | 63    | 0          | 0 | 0 | 0 | 0     | 102              |
| 09:00 - 09:15  | 24                                           | 2  | 9   | 0  | 35    | 68       | 4   | 3   | 2   | 77    | 0          | 0 | 0 | 0 | 0     | 112              |
| 09:15 - 09:30  | 30                                           | 0  | 13  | 0  | 43    | 99       | 5   | 8   | 1   | 113   | 0          | 0 | 0 | 0 | 0     | 156              |
| 09:30 - 09:45  | 18                                           | 0  | 10  | 0  | 28    | 82       | 4   | 5   | 1   | 92    | 0          | 0 | 0 | 0 | 0     | 120              |
| 09:45 - 10:00  | 27                                           | 0  | 8   | 0  | 35    | 71       | 5   | 2   | 3   | 81    | 0          | 0 | 0 | 0 | 0     | 116              |
| 10:00 - 10:15  | 19                                           | 1  | 9   | 0  | 29    | 67       | 8   | 10  | 1   | 86    | 0          | 0 | 0 | 0 | 0     | 115              |
| 10:15 - 10:30  | 34                                           | 0  | 14  | 0  | 48    | 95       | 3   | 5   | 3   | 106   | 0          | 0 | 0 | 0 | 0     | 154              |
| 10:30 - 10:45  | 35                                           | 0  | 13  | 0  | 48    | 95       | 3   | 7   | 1   | 106   | 0          | 0 | 0 | 0 | 0     | 154              |
| 10:45 - 11:00  | 10                                           | 0  | 12  | 0  | 22    | 54       | 2   | 1   | 0   | 57    | 0          | 0 | 0 | 0 | 0     | 79               |
| 11:00 - 11:15  | 8                                            | 0  | 9   | 0  | 17    | 40       | 5   | 0   | 1   | 46    | 0          | 0 | 0 | 0 | 0     | 63               |
| 11:15 - 11:30  | 11                                           | 0  | 5   | 0  | 16    | 51       | 5   | 5   | 0   | 61    | 0          | 0 | 0 | 0 | 0     | 77               |
| 11:30 - 11:45  | 16                                           | 0  | 7   | 0  | 23    | 69       | 4   | 3   | 2   | 78    | 0          | 0 | 0 | 0 | 0     | 101              |
| 11:45 - 12:00  | 30                                           | 0  | 6   | 1  | 37    | 79       | 4   | 5   | 6   | 94    | 0          | 0 | 0 | 0 | 0     | 131              |
| 12:00 - 12:15  | 27                                           | 1  | 5   | 0  | 33    | 102      | 2   | 8   | 0   | 112   | 0          | 0 | 0 | 0 | 0     | 145              |
| 12:15 - 12:30  | 34                                           | 0  | 8   | 0  | 42    | 80       | 5   | 10  | 2   | 97    | 0          | 0 | 0 | 0 | 0     | 139              |
| 12:30 - 12:45  | 24                                           | 0  | 8   | 0  | 32    | 97       | 6   | 5   | 3   | 111   | 0          | 0 | 0 | 0 | 0     | 143              |
| 12:45 - 13:00  | 25                                           | 0  | 5   | 0  | 30    | 69       | 5   | 8   | 1   | 83    | 0          | 0 | 0 | 0 | 0     | 113              |
| 13:00 - 13:15  | 24                                           | 0  | 8   | 0  | 32    | 88       | 6   | 2   | 3   | 99    | 0          | 0 | 0 | 0 | 0     | 131              |
| 13:15 - 13:30  | 33                                           | 0  | 9   | 1  | 43    | 70       | 6   | 8   | 5   | 89    | 0          | 0 | 0 | 0 | 0     | 132              |
| 13:30 - 13:45  | 19                                           | 0  | 6   | 0  | 25    | 80       | 8   | 4   | 8   | 100   | 0          | 0 | 0 | 0 | 0     | 125              |
| 13:45 - 14:00  | 11                                           | 0  | 2   | 0  | 13    | 73       | 9   | 3   | 5   | 90    | 0          | 0 | 0 | 0 | 0     | 103              |
| 14:00 - 14:15  | 54                                           | 1  | 12  | 4  | 71    | 168      | 9   | 8   | 7   | 192   | 0          | 0 | 0 | 0 | 0     | 263              |
| 14:15 - 14:30  | 31                                           | 0  | 13  | 2  | 46    | 99       | 3   | 6   | 3   | 111   | 0          | 0 | 0 | 0 | 0     | 157              |
| 14:30 - 14:45  | 21                                           | 0  | 11  | 0  | 32    | 89       | 5   | 7   | 3   | 104   | 0          | 0 | 0 | 0 | 0     | 136              |
| 14:45 - 15:00  | 24                                           | 0  | 10  | 2  | 36    | 69       | 2   | 5   | 3   | 79    | 0          | 0 | 0 | 0 | 0     | 115              |
| 15:00 - 15:15  | 30                                           | 0  | 5   | 0  | 35    | 81       | 1   | 7   | 2   | 91    | 0          | 0 | 0 | 0 | 0     | 126              |
| 15:15 - 15:30  | 26                                           | 0  | 10  | 0  | 36    | 83       | 3   | 5   | 5   | 96    | 0          | 0 | 0 | 0 | 0     | 132              |
| 15:30 - 15:45  | 30                                           | 0  | 9   | 2  | 41    | 96       | 5   | 7   | 3   | 111   | 0          | 0 | 0 | 0 | 0     | 152              |
| 15:45 - 16:00  | 18                                           | 0  | 1   | 0  | 19    | 148      | 4   | 3   | 2   | 157   | 0          | 0 | 0 | 0 | 0     | 176              |
| 16:00 - 16:15  | 32                                           | 1  | 4   | 3  | 40    | 175      | 5   | 2   | 1   | 183   | 0          | 0 | 0 | 0 | 0     | 223              |
| 16:15 - 16:30  | 52                                           | 2  | 12  | 3  | 69    | 154      | 5   | 5   | 4   | 168   | 0          | 0 | 0 | 0 | 0     | 237              |
| 16:30 - 16:45  | 57                                           | 1  | 7   | 2  | 67    | 144      | 9   | 6   | 5   | 164   | 0          | 0 | 0 | 0 | 0     | 231              |
| 16:45 - 17:00  | 39                                           | 1  | 9   | 0  | 49    | 184      | 6   | 5   | 5   | 200   | 0          | 0 | 0 | 0 | 0     | 249              |
| 17:00 - 17:15  | 38                                           | 2  | 4   | 2  | 46    | 116      | 3   | 0   | 0   | 119   | 0          | 0 | 0 | 0 | 0     | 165              |
| 17:15 - 17:30  | 12                                           | 3  | 2   | 1  | 18    | 54       | 2   | 2   | 2   | 60    | 0          | 0 | 0 | 0 | 0     | 78               |
| 17:30 - 17:45  | 24                                           | 1  | 7   | 1  | 33    | 43       | 5   | 2   | 4   | 54    | 0          | 0 | 0 | 0 | 0     | 87               |
| 17:45 - 18:00  | 14                                           | 4  | 2   | 1  | 21    | 43       | 4   | 1   | 2   | 50    | 0          | 0 | 0 | 0 | 0     | 71               |
| TOTAL          | 1342                                         | 62 | 381 | 47 | 1832  | 4008     | 287 | 251 | 156 | 4702  | 0          | 0 | 0 | 0 | 0     | 6534             |

| TRAFFIC SURVEY |                                              |   |    |   |       |          |     |     |     |       |            |   |    |   |       |                  |  |
|----------------|----------------------------------------------|---|----|---|-------|----------|-----|-----|-----|-------|------------|---|----|---|-------|------------------|--|
| CLIENT:        |                                              |   |    |   |       |          |     |     |     |       |            |   |    |   |       |                  |  |
| SITE:          | INTERSECTION OF CERAMIC CURVE AND CHALK LINE |   |    |   |       |          |     |     |     |       |            |   |    |   |       |                  |  |
| DATE:          | 12 HOUR COUNT ON THURSDAY 29 FEBRUARY 2024   |   |    |   |       |          |     |     |     |       |            |   |    |   |       |                  |  |
| UNITS:         | CLASSIFIED                                   |   |    |   |       |          |     |     |     |       |            |   |    |   |       |                  |  |
| APPROACH FROM  | WEST                                         |   |    |   |       |          |     |     |     |       |            |   |    |   |       | TOTAL            |  |
| NAME           | CHALK LINE                                   |   |    |   |       |          |     |     |     |       |            |   |    |   |       | ALL<br>MOVEMENTS |  |
| MOVEMENT       | LEFT TURN                                    |   |    |   |       | STRAIGHT |     |     |     |       | RIGHT TURN |   |    |   |       |                  |  |
| TIME           | C                                            | T | H  | B | TOTAL | C        | T   | H   | B   | TOTAL | C          | T | H  | B | TOTAL |                  |  |
| 06:00 - 06:15  | 3                                            | 0 | 0  | 0 | 3     | 29       | 7   | 2   | 7   | 45    | 1          | 1 | 1  | 0 | 3     | 51               |  |
| 06:15 - 06:30  | 5                                            | 0 | 1  | 0 | 6     | 34       | 12  | 2   | 10  | 58    | 8          | 0 | 0  | 0 | 8     | 72               |  |
| 06:30 - 06:45  | 10                                           | 0 | 0  | 0 | 10    | 71       | 10  | 4   | 4   | 89    | 14         | 0 | 1  | 0 | 15    | 114              |  |
| 06:45 - 07:00  | 16                                           | 2 | 1  | 0 | 19    | 95       | 18  | 3   | 9   | 125   | 12         | 0 | 1  | 0 | 13    | 157              |  |
| 07:00 - 07:15  | 10                                           | 0 | 0  | 0 | 10    | 127      | 12  | 3   | 5   | 147   | 12         | 0 | 4  | 0 | 16    | 173              |  |
| 07:15 - 07:30  | 14                                           | 0 | 0  | 0 | 14    | 173      | 12  | 9   | 3   | 197   | 13         | 0 | 1  | 0 | 14    | 225              |  |
| 07:30 - 07:45  | 7                                            | 0 | 1  | 0 | 8     | 140      | 9   | 8   | 9   | 166   | 13         | 0 | 3  | 0 | 16    | 190              |  |
| 07:45 - 08:00  | 8                                            | 0 | 0  | 0 | 8     | 79       | 9   | 11  | 2   | 101   | 8          | 0 | 5  | 0 | 13    | 122              |  |
| 08:00 - 08:15  | 8                                            | 0 | 2  | 0 | 10    | 87       | 9   | 10  | 3   | 109   | 12         | 0 | 3  | 0 | 15    | 134              |  |
| 08:15 - 08:30  | 3                                            | 0 | 5  | 0 | 8     | 95       | 6   | 7   | 2   | 110   | 11         | 0 | 1  | 0 | 12    | 130              |  |
| 08:30 - 08:45  | 6                                            | 0 | 0  | 0 | 6     | 96       | 9   | 9   | 2   | 116   | 7          | 0 | 0  | 0 | 7     | 129              |  |
| 08:45 - 09:00  | 6                                            | 0 | 1  | 0 | 7     | 90       | 6   | 8   | 2   | 106   | 8          | 0 | 1  | 0 | 9     | 122              |  |
| 09:00 - 09:15  | 10                                           | 0 | 2  | 0 | 12    | 104      | 5   | 4   | 2   | 115   | 4          | 0 | 6  | 0 | 10    | 137              |  |
| 09:15 - 09:30  | 9                                            | 0 | 1  | 0 | 10    | 90       | 4   | 3   | 2   | 99    | 7          | 0 | 0  | 0 | 7     | 116              |  |
| 09:30 - 09:45  | 7                                            | 0 | 0  | 0 | 7     | 127      | 6   | 11  | 2   | 146   | 12         | 0 | 6  | 0 | 18    | 171              |  |
| 09:45 - 10:00  | 5                                            | 0 | 0  | 0 | 5     | 96       | 6   | 6   | 2   | 110   | 8          | 0 | 1  | 1 | 10    | 125              |  |
| 10:00 - 10:15  | 7                                            | 0 | 1  | 0 | 8     | 87       | 8   | 11  | 0   | 106   | 8          | 0 | 5  | 0 | 13    | 127              |  |
| 10:15 - 10:30  | 5                                            | 0 | 0  | 0 | 5     | 105      | 4   | 3   | 4   | 116   | 16         | 0 | 3  | 0 | 19    | 140              |  |
| 10:30 - 10:45  | 3                                            | 0 | 1  | 0 | 4     | 110      | 4   | 6   | 1   | 121   | 4          | 0 | 0  | 0 | 4     | 129              |  |
| 10:45 - 11:00  | 5                                            | 0 | 0  | 0 | 5     | 70       | 3   | 6   | 0   | 79    | 9          | 0 | 3  | 0 | 12    | 96               |  |
| 11:00 - 11:15  | 10                                           | 0 | 1  | 0 | 11    | 69       | 6   | 2   | 1   | 78    | 13         | 1 | 4  | 0 | 18    | 107              |  |
| 11:15 - 11:30  | 3                                            | 0 | 2  | 0 | 5     | 66       | 6   | 12  | 0   | 84    | 16         | 0 | 0  | 0 | 16    | 105              |  |
| 11:30 - 11:45  | 7                                            | 0 | 0  | 0 | 7     | 85       | 5   | 11  | 4   | 105   | 13         | 0 | 0  | 0 | 13    | 125              |  |
| 11:45 - 12:00  | 6                                            | 0 | 0  | 0 | 6     | 74       | 3   | 4   | 4   | 85    | 11         | 0 | 1  | 0 | 12    | 103              |  |
| 12:00 - 12:15  | 10                                           | 0 | 1  | 0 | 11    | 110      | 5   | 9   | 3   | 127   | 11         | 0 | 1  | 0 | 12    | 150              |  |
| 12:15 - 12:30  | 8                                            | 0 | 1  | 0 | 9     | 106      | 6   | 9   | 6   | 127   | 7          | 0 | 5  | 0 | 12    | 148              |  |
| 12:30 - 12:45  | 6                                            | 0 | 1  | 0 | 7     | 117      | 10  | 4   | 1   | 132   | 8          | 0 | 2  | 0 | 10    | 149              |  |
| 12:45 - 13:00  | 5                                            | 0 | 1  | 0 | 6     | 93       | 5   | 7   | 1   | 106   | 10         | 0 | 4  | 0 | 14    | 126              |  |
| 13:00 - 13:15  | 6                                            | 0 | 1  | 0 | 7     | 117      | 6   | 6   | 4   | 133   | 16         | 0 | 1  | 0 | 17    | 157              |  |
| 13:15 - 13:30  | 10                                           | 0 | 0  | 0 | 10    | 80       | 6   | 8   | 4   | 98    | 17         | 0 | 3  | 0 | 20    | 128              |  |
| 13:30 - 13:45  | 6                                            | 0 | 0  | 0 | 6     | 96       | 12  | 5   | 8   | 121   | 11         | 0 | 3  | 1 | 15    | 142              |  |
| 13:45 - 14:00  | 2                                            | 0 | 2  | 0 | 4     | 99       | 8   | 8   | 6   | 121   | 11         | 0 | 0  | 0 | 11    | 136              |  |
| 14:00 - 14:15  | 3                                            | 0 | 0  | 0 | 3     | 191      | 9   | 14  | 1   | 215   | 6          | 0 | 0  | 0 | 6     | 224              |  |
| 14:15 - 14:30  | 5                                            | 0 | 0  | 0 | 5     | 122      | 2   | 10  | 1   | 135   | 12         | 0 | 3  | 0 | 15    | 155              |  |
| 14:30 - 14:45  | 5                                            | 0 | 1  | 0 | 6     | 99       | 5   | 4   | 1   | 109   | 10         | 0 | 1  | 0 | 11    | 126              |  |
| 14:45 - 15:00  | 1                                            | 0 | 0  | 0 | 1     | 87       | 2   | 5   | 0   | 94    | 6          | 0 | 1  | 0 | 7     | 102              |  |
| 15:00 - 15:15  | 3                                            | 0 | 0  | 0 | 3     | 111      | 1   | 6   | 5   | 123   | 11         | 0 | 2  | 0 | 13    | 139              |  |
| 15:15 - 15:30  | 7                                            | 0 | 2  | 0 | 9     | 87       | 4   | 3   | 4   | 98    | 9          | 0 | 1  | 1 | 11    | 118              |  |
| 15:30 - 15:45  | 3                                            | 0 | 2  | 0 | 5     | 111      | 4   | 7   | 3   | 125   | 9          | 0 | 0  | 0 | 9     | 139              |  |
| 15:45 - 16:00  | 7                                            | 0 | 1  | 0 | 8     | 190      | 9   | 2   | 2   | 203   | 10         | 0 | 5  | 0 | 15    | 226              |  |
| 16:00 - 16:15  | 6                                            | 0 | 0  | 0 | 6     | 231      | 7   | 8   | 1   | 247   | 7          | 0 | 3  | 0 | 10    | 263              |  |
| 16:15 - 16:30  | 4                                            | 0 | 1  | 0 | 5     | 182      | 8   | 6   | 4   | 200   | 11         | 0 | 0  | 0 | 11    | 216              |  |
| 16:30 - 16:45  | 3                                            | 0 | 0  | 0 | 3     | 205      | 8   | 4   | 5   | 222   | 1          | 0 | 0  | 0 | 1     | 226              |  |
| 16:45 - 17:00  | 2                                            | 0 | 0  | 0 | 2     | 111      | 6   | 6   | 5   | 128   | 3          | 0 | 0  | 0 | 3     | 133              |  |
| 17:00 - 17:15  | 3                                            | 0 | 0  | 0 | 3     | 160      | 8   | 3   | 2   | 173   | 1          | 0 | 0  | 0 | 1     | 177              |  |
| 17:15 - 17:30  | 3                                            | 0 | 1  | 0 | 4     | 79       | 6   | 2   | 3   | 90    | 4          | 2 | 5  | 0 | 11    | 105              |  |
| 17:30 - 17:45  | 0                                            | 0 | 1  | 0 | 1     | 81       | 6   | 4   | 5   | 96    | 5          | 0 | 1  | 0 | 6     | 103              |  |
| 17:45 - 18:00  | 0                                            | 0 | 1  | 0 | 1     | 53       | 6   | 0   | 2   | 61    | 2          | 1 | 0  | 0 | 3     | 65               |  |
| TOTAL          | 281                                          | 2 | 36 | 0 | 319   | 5117     | 328 | 295 | 157 | 5897  | 438        | 5 | 91 | 3 | 537   | 6753             |  |

| TRAFFIC SURVEY |                                                          |          |           |          |             |           |          |          |          |           |            |          |            |          |            |                  |  |
|----------------|----------------------------------------------------------|----------|-----------|----------|-------------|-----------|----------|----------|----------|-----------|------------|----------|------------|----------|------------|------------------|--|
| CLIENT:        |                                                          |          |           |          |             |           |          |          |          |           |            |          |            |          |            |                  |  |
| SITE:          | INTERSECTION OF ALUMINA ALLEE AND SOUTH CENTRAL ARTERIAL |          |           |          |             |           |          |          |          |           |            |          |            |          |            |                  |  |
| DATE:          | 12 HOUR COUNT ON THURSDAY 29 FEBRUARY 2024               |          |           |          |             |           |          |          |          |           |            |          |            |          |            |                  |  |
| UNITS:         | CLASSIFIED                                               |          |           |          |             |           |          |          |          |           |            |          |            |          |            |                  |  |
| APPROACH FROM  | WEST                                                     |          |           |          |             |           |          |          |          |           |            |          |            |          |            | TOTAL            |  |
| NAME           | SOUTH CENTRAL ARTERIAL                                   |          |           |          |             |           |          |          |          |           |            |          |            |          |            | ALL<br>MOVEMENTS |  |
| MOVEMENT       | LEFT TURN                                                |          |           |          |             | STRAIGHT  |          |          |          |           | RIGHT TURN |          |            |          |            |                  |  |
| TIME           | C                                                        | T        | H         | B        | TOTAL       | C         | T        | H        | B        | TOTAL     | C          | T        | H          | B        | TOTAL      |                  |  |
| 06:00 - 06:15  | 19                                                       | 1        | 0         | 1        | 21          | 1         | 0        | 0        | 0        | 1         | 2          | 2        | 2          | 1        | 7          | 29               |  |
| 06:15 - 06:30  | 12                                                       | 0        | 1         | 0        | 13          | 0         | 0        | 0        | 0        | 0         | 1          | 0        | 0          | 0        | 1          | 14               |  |
| 06:30 - 06:45  | 23                                                       | 0        | 0         | 0        | 23          | 4         | 0        | 0        | 0        | 4         | 12         | 0        | 1          | 0        | 13         | 40               |  |
| 06:45 - 07:00  | 30                                                       | 0        | 0         | 1        | 31          | 2         | 0        | 0        | 0        | 2         | 3          | 0        | 2          | 1        | 6          | 39               |  |
| 07:00 - 07:15  | 26                                                       | 0        | 3         | 0        | 29          | 1         | 0        | 0        | 0        | 1         | 2          | 0        | 0          | 0        | 2          | 32               |  |
| 07:15 - 07:30  | 16                                                       | 0        | 1         | 0        | 17          | 1         | 0        | 0        | 0        | 1         | 7          | 0        | 1          | 0        | 8          | 26               |  |
| 07:30 - 07:45  | 18                                                       | 0        | 2         | 0        | 20          | 3         | 0        | 0        | 0        | 3         | 2          | 0        | 4          | 0        | 6          | 29               |  |
| 07:45 - 08:00  | 13                                                       | 0        | 1         | 0        | 14          | 1         | 0        | 0        | 0        | 1         | 5          | 0        | 3          | 0        | 8          | 23               |  |
| 08:00 - 08:15  | 16                                                       | 0        | 1         | 0        | 17          | 4         | 0        | 0        | 0        | 4         | 3          | 0        | 5          | 0        | 8          | 29               |  |
| 08:15 - 08:30  | 8                                                        | 0        | 2         | 0        | 10          | 0         | 0        | 0        | 0        | 0         | 6          | 0        | 2          | 0        | 8          | 18               |  |
| 08:30 - 08:45  | 9                                                        | 0        | 0         | 0        | 9           | 1         | 0        | 0        | 0        | 1         | 5          | 0        | 5          | 0        | 10         | 20               |  |
| 08:45 - 09:00  | 14                                                       | 0        | 2         | 0        | 16          | 2         | 0        | 0        | 0        | 2         | 4          | 0        | 0          | 0        | 4          | 22               |  |
| 09:00 - 09:15  | 12                                                       | 0        | 1         | 0        | 13          | 0         | 0        | 0        | 0        | 0         | 9          | 0        | 3          | 0        | 12         | 25               |  |
| 09:15 - 09:30  | 15                                                       | 0        | 0         | 0        | 15          | 1         | 0        | 0        | 0        | 1         | 3          | 0        | 2          | 0        | 5          | 21               |  |
| 09:30 - 09:45  | 15                                                       | 0        | 0         | 0        | 15          | 1         | 0        | 0        | 0        | 1         | 1          | 0        | 1          | 0        | 2          | 18               |  |
| 09:45 - 10:00  | 15                                                       | 0        | 1         | 0        | 16          | 0         | 0        | 0        | 0        | 0         | 2          | 0        | 4          | 0        | 6          | 22               |  |
| 10:00 - 10:15  | 9                                                        | 0        | 3         | 0        | 12          | 0         | 0        | 0        | 0        | 0         | 5          | 0        | 1          | 0        | 6          | 18               |  |
| 10:15 - 10:30  | 16                                                       | 0        | 3         | 0        | 19          | 0         | 0        | 0        | 0        | 0         | 7          | 0        | 2          | 0        | 9          | 28               |  |
| 10:30 - 10:45  | 14                                                       | 0        | 1         | 0        | 15          | 1         | 0        | 0        | 0        | 1         | 9          | 0        | 2          | 0        | 11         | 27               |  |
| 10:45 - 11:00  | 26                                                       | 0        | 3         | 0        | 29          | 1         | 0        | 0        | 0        | 1         | 6          | 0        | 3          | 0        | 9          | 39               |  |
| 11:00 - 11:15  | 8                                                        | 0        | 3         | 0        | 11          | 0         | 0        | 1        | 0        | 1         | 7          | 0        | 3          | 0        | 10         | 22               |  |
| 11:15 - 11:30  | 29                                                       | 0        | 2         | 0        | 31          | 1         | 0        | 0        | 0        | 1         | 6          | 0        | 1          | 0        | 7          | 39               |  |
| 11:30 - 11:45  | 10                                                       | 0        | 1         | 0        | 11          | 1         | 0        | 0        | 0        | 1         | 3          | 0        | 5          | 0        | 8          | 20               |  |
| 11:45 - 12:00  | 20                                                       | 0        | 1         | 0        | 21          | 1         | 0        | 0        | 0        | 1         | 3          | 0        | 2          | 0        | 5          | 27               |  |
| 12:00 - 12:15  | 26                                                       | 0        | 4         | 0        | 30          | 1         | 0        | 0        | 0        | 1         | 5          | 0        | 0          | 0        | 5          | 36               |  |
| 12:15 - 12:30  | 19                                                       | 0        | 2         | 0        | 21          | 1         | 0        | 0        | 0        | 1         | 1          | 0        | 1          | 2        | 4          | 26               |  |
| 12:30 - 12:45  | 14                                                       | 0        | 1         | 0        | 15          | 1         | 0        | 0        | 0        | 1         | 6          | 0        | 3          | 0        | 9          | 25               |  |
| 12:45 - 13:00  | 15                                                       | 0        | 3         | 0        | 18          | 1         | 0        | 0        | 0        | 1         | 7          | 0        | 3          | 0        | 10         | 29               |  |
| 13:00 - 13:15  | 17                                                       | 0        | 1         | 0        | 18          | 1         | 0        | 0        | 0        | 1         | 3          | 0        | 4          | 0        | 7          | 26               |  |
| 13:15 - 13:30  | 9                                                        | 0        | 1         | 0        | 10          | 2         | 0        | 0        | 0        | 2         | 3          | 0        | 3          | 0        | 6          | 18               |  |
| 13:30 - 13:45  | 16                                                       | 0        | 3         | 0        | 19          | 2         | 0        | 0        | 0        | 2         | 7          | 0        | 3          | 0        | 10         | 31               |  |
| 13:45 - 14:00  | 19                                                       | 0        | 1         | 0        | 20          | 1         | 0        | 0        | 0        | 1         | 5          | 0        | 2          | 0        | 7          | 28               |  |
| 14:00 - 14:15  | 17                                                       | 0        | 0         | 1        | 18          | 1         | 0        | 0        | 0        | 1         | 4          | 0        | 2          | 0        | 6          | 25               |  |
| 14:15 - 14:30  | 27                                                       | 0        | 1         | 0        | 28          | 0         | 0        | 0        | 0        | 0         | 7          | 0        | 3          | 0        | 10         | 38               |  |
| 14:30 - 14:45  | 26                                                       | 0        | 1         | 0        | 27          | 2         | 0        | 0        | 0        | 2         | 2          | 0        | 0          | 0        | 2          | 31               |  |
| 14:45 - 15:00  | 25                                                       | 0        | 2         | 0        | 27          | 2         | 0        | 0        | 0        | 2         | 4          | 0        | 6          | 0        | 10         | 39               |  |
| 15:00 - 15:15  | 12                                                       | 0        | 5         | 0        | 17          | 2         | 0        | 0        | 0        | 2         | 8          | 0        | 3          | 0        | 11         | 30               |  |
| 15:15 - 15:30  | 21                                                       | 0        | 2         | 0        | 23          | 3         | 0        | 0        | 0        | 3         | 1          | 0        | 6          | 0        | 7          | 33               |  |
| 15:30 - 15:45  | 27                                                       | 0        | 2         | 2        | 31          | 3         | 0        | 0        | 0        | 3         | 2          | 0        | 3          | 0        | 5          | 39               |  |
| 15:45 - 16:00  | 18                                                       | 1        | 1         | 0        | 20          | 1         | 0        | 0        | 0        | 1         | 6          | 0        | 2          | 0        | 8          | 29               |  |
| 16:00 - 16:15  | 49                                                       | 0        | 4         | 0        | 53          | 1         | 0        | 1        | 0        | 2         | 7          | 0        | 2          | 1        | 10         | 65               |  |
| 16:15 - 16:30  | 62                                                       | 0        | 4         | 1        | 67          | 0         | 0        | 0        | 0        | 0         | 1          | 0        | 4          | 1        | 6          | 73               |  |
| 16:30 - 16:45  | 71                                                       | 0        | 2         | 1        | 74          | 0         | 0        | 1        | 0        | 1         | 3          | 0        | 1          | 1        | 5          | 80               |  |
| 16:45 - 17:00  | 35                                                       | 0        | 2         | 0        | 37          | 1         | 0        | 0        | 0        | 1         | 4          | 0        | 1          | 1        | 6          | 44               |  |
| 17:00 - 17:15  | 28                                                       | 0        | 1         | 0        | 29          | 1         | 0        | 0        | 0        | 1         | 1          | 0        | 0          | 0        | 1          | 31               |  |
| 17:15 - 17:30  | 20                                                       | 0        | 1         | 1        | 22          | 1         | 0        | 0        | 0        | 1         | 1          | 0        | 1          | 0        | 2          | 25               |  |
| 17:30 - 17:45  | 11                                                       | 0        | 1         | 0        | 12          | 0         | 0        | 0        | 0        | 0         | 2          | 0        | 0          | 0        | 2          | 14               |  |
| 17:45 - 18:00  | 13                                                       | 1        | 2         | 0        | 16          | 0         | 0        | 0        | 0        | 0         | 2          | 0        | 1          | 0        | 3          | 19               |  |
| <b>TOTAL</b>   | <b>990</b>                                               | <b>3</b> | <b>79</b> | <b>8</b> | <b>1080</b> | <b>55</b> | <b>0</b> | <b>3</b> | <b>0</b> | <b>58</b> | <b>205</b> | <b>2</b> | <b>108</b> | <b>8</b> | <b>323</b> | <b>1461</b>      |  |

| TRAFFIC SURVEY                            |                                                     |   |   |   |       |          |    |     |    |       |            |   |   |   |       |           |
|-------------------------------------------|-----------------------------------------------------|---|---|---|-------|----------|----|-----|----|-------|------------|---|---|---|-------|-----------|
| CLIENT:                                   |                                                     |   |   |   |       |          |    |     |    |       |            |   |   |   |       |           |
| SITE:                                     | INTERSECTION OF ALUMINA ALLEE STREET AND DIAMANTPYP |   |   |   |       |          |    |     |    |       |            |   |   |   |       |           |
| DATE:                                     | 12 HOUR COUNT ON TUESDAY 19 MARCH 2024              |   |   |   |       |          |    |     |    |       |            |   |   |   |       |           |
| UNITS:                                    | CLASSIFIED                                          |   |   |   |       |          |    |     |    |       |            |   |   |   |       |           |
| APPROACH FROM<br>NAME<br>MOVEMENT<br>TIME | NORTH<br>ALUMINA ALLEE STREET                       |   |   |   |       |          |    |     |    |       |            |   |   |   |       | TOTAL     |
|                                           | LEFT TURN                                           |   |   |   |       | STRAIGHT |    |     |    |       | RIGHT TURN |   |   |   |       | ALL       |
|                                           | C                                                   | T | H | B | TOTAL | C        | T  | H   | B  | TOTAL | C          | T | H | B | TOTAL | MOVEMENTS |
| 06:00 - 06:15                             | 3                                                   | 0 | 0 | 0 | 3     | 44       | 4  | 2   | 2  | 52    | 0          | 0 | 0 | 0 | 0     | 55        |
| 06:15 - 06:30                             | 4                                                   | 0 | 0 | 0 | 4     | 103      | 8  | 4   | 0  | 115   | 0          | 0 | 0 | 0 | 0     | 119       |
| 06:30 - 06:45                             | 11                                                  | 0 | 0 | 0 | 11    | 215      | 8  | 7   | 5  | 235   | 0          | 0 | 0 | 0 | 0     | 246       |
| 06:45 - 07:00                             | 21                                                  | 0 | 0 | 0 | 21    | 219      | 7  | 7   | 2  | 235   | 0          | 0 | 0 | 0 | 0     | 256       |
| 07:00 - 07:15                             | 16                                                  | 0 | 0 | 0 | 16    | 239      | 3  | 11  | 3  | 256   | 0          | 0 | 0 | 0 | 0     | 272       |
| 07:15 - 07:30                             | 11                                                  | 0 | 0 | 0 | 11    | 202      | 5  | 9   | 2  | 218   | 0          | 0 | 0 | 0 | 0     | 229       |
| 07:30 - 07:45                             | 5                                                   | 0 | 0 | 0 | 5     | 121      | 2  | 2   | 2  | 127   | 0          | 0 | 0 | 0 | 0     | 132       |
| 07:45 - 08:00                             | 8                                                   | 0 | 0 | 0 | 8     | 131      | 1  | 9   | 0  | 141   | 4          | 0 | 0 | 0 | 4     | 153       |
| 08:00 - 08:15                             | 2                                                   | 0 | 0 | 0 | 2     | 47       | 1  | 5   | 1  | 54    | 0          | 0 | 0 | 0 | 0     | 56        |
| 08:15 - 08:30                             | 6                                                   | 0 | 0 | 0 | 6     | 58       | 1  | 5   | 0  | 64    | 0          | 0 | 0 | 0 | 0     | 70        |
| 08:30 - 08:45                             | 3                                                   | 0 | 1 | 0 | 4     | 50       | 0  | 11  | 0  | 61    | 0          | 0 | 0 | 0 | 0     | 65        |
| 08:45 - 09:00                             | 2                                                   | 0 | 0 | 0 | 2     | 50       | 0  | 8   | 0  | 58    | 0          | 0 | 0 | 0 | 0     | 60        |
| 09:00 - 09:15                             | 5                                                   | 0 | 1 | 0 | 6     | 29       | 0  | 9   | 0  | 38    | 0          | 0 | 0 | 0 | 0     | 44        |
| 09:15 - 09:30                             | 0                                                   | 0 | 2 | 0 | 2     | 40       | 2  | 7   | 0  | 49    | 0          | 0 | 0 | 0 | 0     | 51        |
| 09:30 - 09:45                             | 0                                                   | 1 | 0 | 0 | 1     | 37       | 0  | 14  | 0  | 51    | 0          | 0 | 0 | 0 | 0     | 52        |
| 09:45 - 10:00                             | 3                                                   | 0 | 0 | 0 | 3     | 53       | 0  | 17  | 0  | 70    | 0          | 0 | 0 | 0 | 0     | 73        |
| 10:00 - 10:15                             | 1                                                   | 0 | 0 | 0 | 1     | 34       | 0  | 6   | 0  | 40    | 0          | 0 | 0 | 0 | 0     | 41        |
| 10:15 - 10:30                             | 4                                                   | 0 | 1 | 0 | 5     | 48       | 0  | 7   | 0  | 55    | 0          | 0 | 0 | 0 | 0     | 60        |
| 10:30 - 10:45                             | 3                                                   | 0 | 0 | 0 | 3     | 48       | 0  | 1   | 1  | 50    | 0          | 0 | 0 | 0 | 0     | 53        |
| 10:45 - 11:00                             | 2                                                   | 0 | 0 | 0 | 2     | 57       | 0  | 5   | 0  | 62    | 0          | 0 | 0 | 0 | 0     | 64        |
| 11:00 - 11:15                             | 1                                                   | 0 | 0 | 0 | 1     | 36       | 0  | 8   | 0  | 44    | 0          | 0 | 0 | 0 | 0     | 45        |
| 11:15 - 11:30                             | 3                                                   | 0 | 0 | 0 | 3     | 55       | 1  | 9   | 0  | 65    | 0          | 0 | 0 | 0 | 0     | 68        |
| 11:30 - 11:45                             | 2                                                   | 0 | 0 | 0 | 2     | 34       | 1  | 7   | 0  | 42    | 0          | 0 | 0 | 0 | 0     | 44        |
| 11:45 - 12:00                             | 5                                                   | 0 | 0 | 0 | 5     | 47       | 0  | 7   | 0  | 54    | 0          | 0 | 0 | 0 | 0     | 59        |
| 12:00 - 12:15                             | 3                                                   | 0 | 0 | 0 | 3     | 43       | 0  | 7   | 1  | 51    | 0          | 0 | 0 | 0 | 0     | 54        |
| 12:15 - 12:30                             | 1                                                   | 0 | 0 | 0 | 1     | 34       | 2  | 6   | 0  | 42    | 0          | 0 | 0 | 0 | 0     | 43        |
| 12:30 - 12:45                             | 1                                                   | 0 | 0 | 0 | 1     | 54       | 2  | 9   | 0  | 65    | 0          | 0 | 0 | 0 | 0     | 66        |
| 12:45 - 13:00                             | 2                                                   | 0 | 0 | 0 | 2     | 29       | 0  | 4   | 0  | 33    | 1          | 0 | 0 | 0 | 1     | 36        |
| 13:00 - 13:15                             | 3                                                   | 0 | 0 | 0 | 3     | 20       | 0  | 5   | 0  | 25    | 0          | 0 | 0 | 0 | 0     | 28        |
| 13:15 - 13:30                             | 4                                                   | 0 | 0 | 0 | 4     | 25       | 0  | 3   | 0  | 28    | 0          | 0 | 0 | 0 | 0     | 32        |
| 13:30 - 13:45                             | 3                                                   | 0 | 0 | 0 | 3     | 51       | 2  | 8   | 0  | 61    | 0          | 0 | 0 | 0 | 0     | 64        |
| 13:45 - 14:00                             | 1                                                   | 0 | 0 | 0 | 1     | 66       | 1  | 3   | 0  | 70    | 0          | 0 | 0 | 0 | 0     | 71        |
| 14:00 - 14:15                             | 3                                                   | 0 | 1 | 0 | 4     | 49       | 1  | 10  | 0  | 60    | 0          | 0 | 0 | 0 | 0     | 64        |
| 14:15 - 14:30                             | 6                                                   | 0 | 0 | 0 | 6     | 52       | 0  | 4   | 1  | 57    | 0          | 0 | 0 | 0 | 0     | 63        |
| 14:30 - 14:45                             | 1                                                   | 0 | 0 | 0 | 1     | 69       | 1  | 20  | 3  | 93    | 0          | 0 | 0 | 0 | 0     | 94        |
| 14:45 - 15:00                             | 3                                                   | 0 | 0 | 0 | 3     | 35       | 0  | 8   | 2  | 45    | 0          | 0 | 0 | 0 | 0     | 48        |
| 15:00 - 15:15                             | 1                                                   | 0 | 0 | 0 | 1     | 40       | 0  | 8   | 0  | 48    | 0          | 0 | 0 | 0 | 0     | 49        |
| 15:15 - 15:30                             | 3                                                   | 0 | 0 | 0 | 3     | 53       | 1  | 13  | 1  | 68    | 0          | 0 | 0 | 0 | 0     | 71        |
| 15:30 - 15:45                             | 2                                                   | 0 | 0 | 0 | 2     | 36       | 0  | 6   | 1  | 43    | 0          | 0 | 0 | 0 | 0     | 45        |
| 15:45 - 16:00                             | 4                                                   | 0 | 0 | 0 | 4     | 78       | 1  | 15  | 1  | 95    | 0          | 0 | 0 | 0 | 0     | 99        |
| 16:00 - 16:15                             | 4                                                   | 0 | 1 | 0 | 5     | 76       | 3  | 6   | 4  | 89    | 0          | 0 | 0 | 0 | 0     | 94        |
| 16:15 - 16:30                             | 2                                                   | 0 | 0 | 0 | 2     | 57       | 2  | 8   | 1  | 68    | 0          | 0 | 0 | 0 | 0     | 70        |
| 16:30 - 16:45                             | 5                                                   | 0 | 0 | 0 | 5     | 58       | 4  | 14  | 2  | 78    | 1          | 0 | 0 | 0 | 1     | 84        |
| 16:45 - 17:00                             | 3                                                   | 0 | 0 | 0 | 3     | 36       | 2  | 2   | 1  | 41    | 1          | 0 | 0 | 0 | 1     | 45        |
| 17:00 - 17:15                             | 1                                                   | 0 | 0 | 0 | 1     | 47       | 1  | 3   | 1  | 52    | 2          | 0 | 0 | 0 | 2     | 55        |
| 17:15 - 17:30                             | 0                                                   | 1 | 0 | 0 | 1     | 43       | 3  | 5   | 2  | 53    | 0          | 0 | 0 | 0 | 0     | 54        |
| 17:30 - 17:45                             | 1                                                   | 0 | 0 | 0 | 1     | 32       | 1  | 3   | 1  | 37    | 0          | 1 | 0 | 0 | 1     | 39        |
| 17:45 - 18:00                             | 3                                                   | 0 | 0 | 0 | 3     | 33       | 0  | 5   | 1  | 39    | 0          | 0 | 0 | 0 | 0     | 42        |
| TOTAL                                     | 181                                                 | 2 | 7 | 0 | 190   | 3113     | 71 | 352 | 41 | 3577  | 9          | 1 | 0 | 0 | 10    | 3777      |

|                |  |                                                     |   |   |   |       |          |    |     |    |       |            |   |    |   |       |                  |
|----------------|--|-----------------------------------------------------|---|---|---|-------|----------|----|-----|----|-------|------------|---|----|---|-------|------------------|
| TRAFFIC SURVEY |  |                                                     |   |   |   |       |          |    |     |    |       |            |   |    |   |       |                  |
| CLIENT:        |  |                                                     |   |   |   |       |          |    |     |    |       |            |   |    |   |       |                  |
| SITE:          |  | INTERSECTION OF ALUMINA ALLEE STREET AND DIAMANTPYP |   |   |   |       |          |    |     |    |       |            |   |    |   |       |                  |
| DATE:          |  | 12 HOUR COUNT ON TUESDAY 19 MARCH 2024              |   |   |   |       |          |    |     |    |       |            |   |    |   |       |                  |
| UNITS:         |  | CLASSIFIED                                          |   |   |   |       |          |    |     |    |       |            |   |    |   |       |                  |
| APPROACH FROM  |  | SOUTH                                               |   |   |   |       |          |    |     |    |       |            |   |    |   |       | TOTAL            |
| NAME           |  | ALUMINA ALLEE STREET                                |   |   |   |       |          |    |     |    |       |            |   |    |   |       | ALL<br>MOVEMENTS |
| MOVEMENT       |  | LEFT TURN                                           |   |   |   |       | STRAIGHT |    |     |    |       | RIGHT TURN |   |    |   |       |                  |
| TIME           |  | C                                                   | T | H | B | TOTAL | C        | T  | H   | B  | TOTAL | C          | T | H  | B | TOTAL |                  |
| 06:00 - 06:15  |  | 0                                                   | 0 | 0 | 0 | 0     | 38       | 12 | 4   | 2  | 56    | 1          | 0 | 0  | 0 | 1     | 57               |
| 06:15 - 06:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 25       | 5  | 6   | 1  | 37    | 1          | 0 | 0  | 0 | 1     | 38               |
| 06:30 - 06:45  |  | 0                                                   | 0 | 0 | 0 | 0     | 49       | 12 | 7   | 3  | 71    | 3          | 0 | 0  | 0 | 3     | 74               |
| 06:45 - 07:00  |  | 0                                                   | 0 | 0 | 0 | 0     | 67       | 6  | 3   | 1  | 77    | 5          | 0 | 0  | 0 | 5     | 82               |
| 07:00 - 07:15  |  | 2                                                   | 0 | 0 | 0 | 2     | 84       | 1  | 5   | 5  | 95    | 7          | 0 | 2  | 1 | 10    | 107              |
| 07:15 - 07:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 80       | 2  | 9   | 3  | 94    | 3          | 0 | 0  | 0 | 3     | 97               |
| 07:30 - 07:45  |  | 0                                                   | 0 | 0 | 0 | 0     | 62       | 0  | 7   | 1  | 70    | 4          | 0 | 0  | 0 | 4     | 74               |
| 07:45 - 08:00  |  | 1                                                   | 0 | 0 | 0 | 1     | 56       | 1  | 6   | 0  | 63    | 1          | 0 | 0  | 0 | 1     | 65               |
| 08:00 - 08:15  |  | 0                                                   | 0 | 0 | 0 | 0     | 43       | 1  | 11  | 0  | 55    | 6          | 0 | 1  | 0 | 7     | 62               |
| 08:15 - 08:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 60       | 3  | 9   | 0  | 72    | 11         | 0 | 0  | 0 | 11    | 83               |
| 08:30 - 08:45  |  | 0                                                   | 0 | 0 | 0 | 0     | 39       | 0  | 3   | 0  | 42    | 4          | 0 | 0  | 0 | 4     | 46               |
| 08:45 - 09:00  |  | 0                                                   | 0 | 0 | 0 | 0     | 37       | 1  | 2   | 0  | 40    | 3          | 0 | 1  | 0 | 4     | 44               |
| 09:00 - 09:15  |  | 0                                                   | 0 | 0 | 0 | 0     | 45       | 1  | 11  | 0  | 57    | 5          | 0 | 0  | 0 | 5     | 62               |
| 09:15 - 09:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 92       | 1  | 17  | 1  | 111   | 8          | 0 | 0  | 0 | 8     | 119              |
| 09:30 - 09:45  |  | 0                                                   | 0 | 0 | 0 | 0     | 70       | 0  | 13  | 3  | 86    | 6          | 0 | 0  | 0 | 6     | 92               |
| 09:45 - 10:00  |  | 0                                                   | 0 | 0 | 0 | 0     | 67       | 0  | 12  | 0  | 79    | 5          | 0 | 0  | 0 | 5     | 84               |
| 10:00 - 10:15  |  | 0                                                   | 0 | 0 | 0 | 0     | 73       | 1  | 7   | 0  | 81    | 7          | 0 | 1  | 0 | 8     | 89               |
| 10:15 - 10:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 70       | 0  | 10  | 0  | 80    | 8          | 0 | 1  | 0 | 9     | 89               |
| 10:30 - 10:45  |  | 0                                                   | 0 | 0 | 0 | 0     | 40       | 1  | 11  | 0  | 52    | 6          | 0 | 0  | 0 | 6     | 58               |
| 10:45 - 11:00  |  | 0                                                   | 0 | 0 | 0 | 0     | 59       | 3  | 19  | 0  | 81    | 6          | 0 | 0  | 0 | 6     | 87               |
| 11:00 - 11:15  |  | 0                                                   | 0 | 0 | 0 | 0     | 47       | 0  | 6   | 0  | 53    | 4          | 0 | 1  | 0 | 5     | 58               |
| 11:15 - 11:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 52       | 0  | 11  | 0  | 63    | 13         | 0 | 0  | 0 | 13    | 76               |
| 11:30 - 11:45  |  | 0                                                   | 0 | 0 | 0 | 0     | 42       | 1  | 7   | 0  | 50    | -2         | 0 | 1  | 1 | 0     | 50               |
| 11:45 - 12:00  |  | 0                                                   | 0 | 0 | 0 | 0     | 47       | 1  | 7   | 0  | 55    | 5          | 0 | 0  | 0 | 5     | 60               |
| 12:00 - 12:15  |  | 0                                                   | 0 | 0 | 0 | 0     | 98       | 0  | 10  | 0  | 108   | 2          | 0 | 0  | 0 | 2     | 110              |
| 12:15 - 12:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 58       | 3  | 12  | 0  | 73    | 6          | 0 | 0  | 0 | 6     | 79               |
| 12:30 - 12:45  |  | 0                                                   | 0 | 0 | 0 | 0     | 53       | 1  | 10  | 0  | 64    | -3         | 0 | 0  | 0 | -3    | 61               |
| 12:45 - 13:00  |  | 2                                                   | 0 | 0 | 0 | 2     | 31       | 3  | 12  | 0  | 46    | 0          | 0 | 0  | 0 | 0     | 48               |
| 13:00 - 13:15  |  | 0                                                   | 0 | 0 | 0 | 0     | 41       | 0  | 11  | 0  | 52    | 2          | 0 | 0  | 0 | 2     | 54               |
| 13:15 - 13:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 34       | 1  | 7   | 0  | 42    | 1          | 0 | 0  | 0 | 1     | 43               |
| 13:30 - 13:45  |  | 0                                                   | 0 | 0 | 0 | 0     | 81       | 0  | 8   | 0  | 89    | 4          | 0 | 0  | 0 | 4     | 93               |
| 13:45 - 14:00  |  | 0                                                   | 0 | 0 | 0 | 0     | 82       | 1  | 10  | 1  | 94    | 3          | 0 | 1  | 1 | 5     | 99               |
| 14:00 - 14:15  |  | 0                                                   | 0 | 0 | 0 | 0     | 127      | 1  | 9   | 0  | 137   | 8          | 0 | 2  | 0 | 10    | 147              |
| 14:15 - 14:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 108      | 1  | 17  | 5  | 131   | 3          | 0 | 0  | 0 | 3     | 134              |
| 14:30 - 14:45  |  | 0                                                   | 0 | 1 | 0 | 1     | 76       | 0  | 15  | 0  | 91    | 2          | 0 | 1  | 0 | 3     | 95               |
| 14:45 - 15:00  |  | 0                                                   | 0 | 1 | 0 | 1     | 45       | 2  | 10  | 0  | 57    | 6          | 0 | 0  | 0 | 6     | 64               |
| 15:00 - 15:15  |  | 0                                                   | 0 | 0 | 0 | 0     | 36       | 0  | 5   | 0  | 41    | 4          | 0 | 2  | 0 | 6     | 47               |
| 15:15 - 15:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 98       | 1  | 7   | 1  | 107   | 3          | 0 | 1  | 0 | 4     | 111              |
| 15:30 - 15:45  |  | 0                                                   | 0 | 0 | 0 | 0     | 77       | 0  | 7   | 1  | 85    | 2          | 0 | 0  | 0 | 2     | 87               |
| 15:45 - 16:00  |  | 0                                                   | 0 | 0 | 0 | 0     | 99       | 1  | 14  | 0  | 114   | 10         | 0 | 0  | 0 | 10    | 124              |
| 16:00 - 16:15  |  | 0                                                   | 0 | 0 | 0 | 0     | 221      | 2  | 7   | 3  | 233   | 3          | 0 | 0  | 0 | 3     | 236              |
| 16:15 - 16:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 177      | 4  | 5   | 0  | 186   | 3          | 0 | 0  | 0 | 3     | 189              |
| 16:30 - 16:45  |  | 0                                                   | 0 | 0 | 0 | 0     | 236      | 3  | 11  | 2  | 252   | 1          | 0 | 0  | 0 | 1     | 253              |
| 16:45 - 17:00  |  | 0                                                   | 0 | 0 | 0 | 0     | 114      | 3  | 8   | 3  | 128   | 1          | 0 | 1  | 1 | 3     | 131              |
| 17:00 - 17:15  |  | 0                                                   | 0 | 0 | 0 | 0     | 86       | 0  | 4   | 4  | 94    | 0          | 0 | 0  | 0 | 0     | 94               |
| 17:15 - 17:30  |  | 0                                                   | 0 | 0 | 0 | 0     | 92       | 4  | 5   | 0  | 101   | 2          | 0 | 0  | 0 | 2     | 103              |
| 17:30 - 17:45  |  | 0                                                   | 0 | 0 | 0 | 0     | 25       | 1  | 1   | 2  | 29    | 1          | 0 | 0  | 0 | 1     | 30               |
| 17:45 - 18:00  |  | 0                                                   | 0 | 0 | 0 | 0     | 20       | 1  | 5   | 0  | 26    | 0          | 0 | 0  | 0 | 0     | 26               |
| TOTAL          |  | 5                                                   | 0 | 2 | 0 | 7     | 3459     | 86 | 413 | 42 | 4000  | 184        | 0 | 16 | 4 | 204   | 4211             |

| TRAFFIC SURVEY |                                                     |   |    |   |       |          |   |   |   |       |            |   |    |   |       |                  |  |
|----------------|-----------------------------------------------------|---|----|---|-------|----------|---|---|---|-------|------------|---|----|---|-------|------------------|--|
| CLIENT:        |                                                     |   |    |   |       |          |   |   |   |       |            |   |    |   |       |                  |  |
| SITE:          | INTERSECTION OF ALUMINA ALLEE STREET AND DIAMANTPYP |   |    |   |       |          |   |   |   |       |            |   |    |   |       |                  |  |
| DATE:          | 12 HOUR COUNT ON TUESDAY 19 MARCH 2024              |   |    |   |       |          |   |   |   |       |            |   |    |   |       |                  |  |
| UNITS:         | CLASSIFIED                                          |   |    |   |       |          |   |   |   |       |            |   |    |   |       |                  |  |
| APPROACH FROM  | EAST<br>DIAMANTPYP                                  |   |    |   |       |          |   |   |   |       |            |   |    |   |       | TOTAL            |  |
| NAME           |                                                     |   |    |   |       |          |   |   |   |       |            |   |    |   |       | ALL<br>MOVEMENTS |  |
| MOVEMENT       | LEFT TURN                                           |   |    |   |       | STRAIGHT |   |   |   |       | RIGHT TURN |   |    |   |       |                  |  |
| TIME           | C                                                   | T | H  | B | TOTAL | C        | T | H | B | TOTAL | C          | T | H  | B | TOTAL |                  |  |
| 06:00 - 06:15  | 0                                                   | 0 | 0  | 0 | 0     | 0        | 0 | 0 | 0 | 0     | 2          | 0 | 0  | 0 | 2     | 2                |  |
| 06:15 - 06:30  | 0                                                   | 0 | 0  | 0 | 0     | 0        | 0 | 0 | 0 | 0     | 1          | 0 | 1  | 0 | 2     | 2                |  |
| 06:30 - 06:45  | 7                                                   | 0 | 0  | 0 | 7     | 0        | 0 | 0 | 0 | 0     | 11         | 0 | 0  | 0 | 11    | 18               |  |
| 06:45 - 07:00  | 3                                                   | 0 | 0  | 0 | 3     | 0        | 0 | 0 | 0 | 0     | 3          | 0 | 0  | 0 | 3     | 6                |  |
| 07:00 - 07:15  | 6                                                   | 0 | 0  | 0 | 6     | 0        | 0 | 0 | 0 | 0     | 6          | 0 | 0  | 0 | 6     | 12               |  |
| 07:15 - 07:30  | 1                                                   | 0 | 0  | 1 | 2     | 0        | 0 | 0 | 0 | 0     | 2          | 0 | 0  | 0 | 2     | 4                |  |
| 07:30 - 07:45  | 2                                                   | 0 | 0  | 0 | 2     | 0        | 0 | 0 | 0 | 0     | 5          | 0 | 0  | 0 | 5     | 7                |  |
| 07:45 - 08:00  | 4                                                   | 0 | 0  | 0 | 4     | 0        | 0 | 0 | 0 | 0     | 9          | 0 | 1  | 0 | 10    | 14               |  |
| 08:00 - 08:15  | 0                                                   | 1 | 0  | 0 | 1     | 0        | 0 | 0 | 0 | 0     | 0          | 0 | 1  | 0 | 1     | 2                |  |
| 08:15 - 08:30  | 5                                                   | 0 | 0  | 0 | 5     | 0        | 0 | 0 | 0 | 0     | 4          | 0 | 0  | 0 | 4     | 9                |  |
| 08:30 - 08:45  | 5                                                   | 0 | 2  | 0 | 7     | 0        | 0 | 0 | 0 | 0     | 5          | 0 | 0  | 0 | 5     | 12               |  |
| 08:45 - 09:00  | 4                                                   | 0 | 0  | 0 | 4     | 0        | 0 | 0 | 0 | 0     | 1          | 0 | 0  | 0 | 1     | 5                |  |
| 09:00 - 09:15  | 2                                                   | 0 | 0  | 0 | 2     | 0        | 0 | 0 | 0 | 0     | 4          | 0 | 2  | 0 | 6     | 8                |  |
| 09:15 - 09:30  | 6                                                   | 0 | 0  | 0 | 6     | 0        | 0 | 0 | 0 | 0     | 0          | 0 | 0  | 0 | 0     | 6                |  |
| 09:30 - 09:45  | 6                                                   | 0 | 0  | 0 | 6     | 0        | 0 | 0 | 0 | 0     | 3          | 0 | 0  | 0 | 3     | 9                |  |
| 09:45 - 10:00  | 1                                                   | 0 | 0  | 0 | 1     | 0        | 0 | 0 | 0 | 0     | 1          | 0 | 1  | 0 | 2     | 3                |  |
| 10:00 - 10:15  | 4                                                   | 0 | 0  | 0 | 4     | 0        | 0 | 0 | 0 | 0     | 1          | 0 | 0  | 0 | 1     | 5                |  |
| 10:15 - 10:30  | 1                                                   | 0 | 1  | 0 | 2     | 0        | 0 | 0 | 0 | 0     | 3          | 0 | 0  | 0 | 3     | 5                |  |
| 10:30 - 10:45  | 7                                                   | 0 | 0  | 0 | 7     | 0        | 0 | 0 | 0 | 0     | 2          | 0 | 0  | 0 | 2     | 9                |  |
| 10:45 - 11:00  | 2                                                   | 0 | 1  | 0 | 3     | 0        | 0 | 0 | 0 | 0     | 0          | 0 | 0  | 0 | 0     | 3                |  |
| 11:00 - 11:15  | 2                                                   | 0 | 0  | 0 | 2     | 0        | 0 | 0 | 0 | 0     | 1          | 0 | 0  | 0 | 1     | 3                |  |
| 11:15 - 11:30  | 4                                                   | 0 | 1  | 0 | 5     | 0        | 0 | 0 | 0 | 0     | 3          | 0 | 0  | 0 | 3     | 8                |  |
| 11:30 - 11:45  | 1                                                   | 0 | 1  | 0 | 2     | 0        | 0 | 0 | 0 | 0     | 1          | 0 | 0  | 0 | 1     | 3                |  |
| 11:45 - 12:00  | 0                                                   | 0 | 0  | 0 | 0     | 0        | 0 | 0 | 0 | 0     | 5          | 0 | 1  | 0 | 6     | 6                |  |
| 12:00 - 12:15  | 2                                                   | 0 | 1  | 0 | 3     | 0        | 0 | 0 | 0 | 0     | 5          | 0 | 0  | 0 | 5     | 8                |  |
| 12:15 - 12:30  | 4                                                   | 0 | 0  | 0 | 4     | 0        | 0 | 0 | 0 | 0     | 8          | 0 | 0  | 0 | 8     | 12               |  |
| 12:30 - 12:45  | 3                                                   | 0 | 0  | 0 | 3     | 0        | 0 | 0 | 0 | 0     | 2          | 0 | 0  | 0 | 2     | 5                |  |
| 12:45 - 13:00  | 1                                                   | 0 | 0  | 0 | 1     | 0        | 0 | 0 | 0 | 0     | 4          | 0 | 0  | 0 | 4     | 5                |  |
| 13:00 - 13:15  | 3                                                   | 0 | 0  | 0 | 3     | 0        | 0 | 0 | 0 | 0     | 4          | 0 | 1  | 0 | 5     | 8                |  |
| 13:15 - 13:30  | 2                                                   | 0 | 0  | 0 | 2     | 0        | 0 | 0 | 0 | 0     | 5          | 0 | 0  | 0 | 5     | 7                |  |
| 13:30 - 13:45  | 3                                                   | 0 | 1  | 0 | 4     | 0        | 0 | 0 | 0 | 0     | 9          | 0 | 0  | 0 | 9     | 13               |  |
| 13:45 - 14:00  | 2                                                   | 0 | 1  | 0 | 3     | 0        | 0 | 0 | 0 | 0     | 8          | 0 | 0  | 0 | 8     | 11               |  |
| 14:00 - 14:15  | 3                                                   | 0 | 0  | 0 | 3     | 0        | 0 | 0 | 0 | 0     | 4          | 0 | 0  | 0 | 4     | 7                |  |
| 14:15 - 14:30  | 4                                                   | 0 | 1  | 0 | 5     | 0        | 0 | 0 | 0 | 0     | 2          | 0 | 1  | 0 | 3     | 8                |  |
| 14:30 - 14:45  | 5                                                   | 0 | 0  | 0 | 5     | 0        | 0 | 0 | 0 | 0     | 3          | 0 | 0  | 0 | 3     | 8                |  |
| 14:45 - 15:00  | 2                                                   | 0 | 0  | 0 | 2     | 0        | 0 | 0 | 0 | 0     | 1          | 0 | 0  | 0 | 1     | 3                |  |
| 15:00 - 15:15  | 3                                                   | 0 | 1  | 0 | 4     | 0        | 0 | 0 | 0 | 0     | 5          | 0 | 0  | 0 | 5     | 9                |  |
| 15:15 - 15:30  | 7                                                   | 0 | 1  | 0 | 8     | 0        | 0 | 0 | 0 | 0     | 12         | 0 | 0  | 0 | 12    | 20               |  |
| 15:30 - 15:45  | 4                                                   | 0 | 0  | 0 | 4     | 0        | 0 | 0 | 0 | 0     | 1          | 0 | 0  | 0 | 1     | 5                |  |
| 15:45 - 16:00  | 7                                                   | 0 | 4  | 0 | 11    | 0        | 0 | 0 | 0 | 0     | 9          | 1 | 0  | 0 | 10    | 21               |  |
| 16:00 - 16:15  | 11                                                  | 0 | 0  | 0 | 11    | 0        | 0 | 0 | 0 | 0     | 25         | 0 | 2  | 0 | 27    | 38               |  |
| 16:15 - 16:30  | 11                                                  | 0 | 0  | 0 | 11    | 0        | 0 | 0 | 0 | 0     | 14         | 1 | 0  | 0 | 15    | 26               |  |
| 16:30 - 16:45  | 12                                                  | 0 | 0  | 0 | 12    | 0        | 0 | 0 | 0 | 0     | 31         | 0 | 0  | 0 | 31    | 43               |  |
| 16:45 - 17:00  | 1                                                   | 0 | 0  | 0 | 1     | 0        | 0 | 0 | 0 | 0     | 4          | 0 | 0  | 0 | 4     | 5                |  |
| 17:00 - 17:15  | 3                                                   | 0 | 0  | 0 | 3     | 0        | 0 | 0 | 0 | 0     | 6          | 0 | 0  | 0 | 6     | 9                |  |
| 17:15 - 17:30  | 3                                                   | 0 | 0  | 0 | 3     | 0        | 0 | 0 | 0 | 0     | 2          | 0 | 0  | 0 | 2     | 5                |  |
| 17:30 - 17:45  | 0                                                   | 0 | 0  | 0 | 0     | 0        | 0 | 0 | 0 | 0     | 1          | 0 | 0  | 0 | 1     | 1                |  |
| 17:45 - 18:00  | 3                                                   | 0 | 0  | 0 | 3     | 0        | 0 | 0 | 0 | 0     | 2          | 0 | 0  | 0 | 2     | 5                |  |
| TOTAL          | 172                                                 | 1 | 16 | 1 | 190   | 0        | 0 | 0 | 0 | 0     | 240        | 2 | 11 | 0 | 253   | 443              |  |

| TRAFFIC SURVEY                            |                                                     |          |          |          |          |          |          |          |          |          |            |          |          |          |           |                  |
|-------------------------------------------|-----------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------------|----------|----------|----------|-----------|------------------|
| CLIENT:                                   |                                                     |          |          |          |          |          |          |          |          |          |            |          |          |          |           |                  |
| SITE:                                     | INTERSECTION OF ALUMINA ALLEE STREET AND DIAMANTPYP |          |          |          |          |          |          |          |          |          |            |          |          |          |           |                  |
| DATE:                                     | 12 HOUR COUNT ON TUESDAY 19 MARCH 2024              |          |          |          |          |          |          |          |          |          |            |          |          |          |           |                  |
| UNITS:                                    | CLASSIFIED                                          |          |          |          |          |          |          |          |          |          |            |          |          |          |           |                  |
| APPROACH FROM<br>NAME<br>MOVEMENT<br>TIME | WEST<br>RBIDS PRIVATE AREA ACCESS(BOOM GATE)        |          |          |          |          |          |          |          |          |          |            |          |          |          |           | TOTAL            |
|                                           | LEFT TURN                                           |          |          |          |          | STRAIGHT |          |          |          |          | RIGHT TURN |          |          |          |           | ALL<br>MOVEMENTS |
|                                           | C                                                   | T        | H        | B        | TOTAL    | C        | T        | H        | B        | TOTAL    | C          | T        | H        | B        | TOTAL     |                  |
| 06:00 - 06:15                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 06:15 - 06:30                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 06:30 - 06:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 06:45 - 07:00                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 07:00 - 07:15                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 2          | 0        | 0        | 0        | 2         | 2                |
| 07:15 - 07:30                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 07:30 - 07:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 07:45 - 08:00                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1          | 0        | 0        | 0        | 1         | 1                |
| 08:00 - 08:15                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 08:15 - 08:30                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 08:30 - 08:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 08:45 - 09:00                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 09:00 - 09:15                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 09:15 - 09:30                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 2          | 0        | 0        | 0        | 2         | 2                |
| 09:30 - 09:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1          | 0        | 0        | 0        | 1         | 1                |
| 09:45 - 10:00                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 10:00 - 10:15                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 10:15 - 10:30                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 10:30 - 10:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 10:45 - 11:00                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 11:00 - 11:15                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 11:15 - 11:30                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 11:30 - 11:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 11:45 - 12:00                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 12:00 - 12:15                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 12:15 - 12:30                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 12:30 - 12:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 12:45 - 13:00                             | 1                                                   | 0        | 0        | 0        | 1        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 1                |
| 13:00 - 13:15                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 13:15 - 13:30                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 13:30 - 13:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1          | 0        | 0        | 0        | 1         | 1                |
| 13:45 - 14:00                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 14:00 - 14:15                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 14:15 - 14:30                             | 2                                                   | 0        | 0        | 0        | 2        | 0        | 0        | 0        | 0        | 0        | 1          | 0        | 0        | 0        | 1         | 3                |
| 14:30 - 14:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 14:45 - 15:00                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 15:00 - 15:15                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 15:15 - 15:30                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 15:30 - 15:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1          | 0        | 0        | 0        | 1         | 1                |
| 15:45 - 16:00                             | 0                                                   | 0        | 1        | 0        | 1        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 1                |
| 16:00 - 16:15                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 16:15 - 16:30                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 16:30 - 16:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 1          | 0        | 1        | 0        | 2         | 2                |
| 16:45 - 17:00                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 17:00 - 17:15                             | 2                                                   | 0        | 0        | 0        | 2        | 1        | 0        | 0        | 0        | 1        | 0          | 0        | 0        | 0        | 0         | 3                |
| 17:15 - 17:30                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| 17:30 - 17:45                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 1        | 0        | 0        | 1         | 1                |
| 17:45 - 18:00                             | 0                                                   | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0          | 0        | 0        | 0        | 0         | 0                |
| <b>TOTAL</b>                              | <b>5</b>                                            | <b>0</b> | <b>1</b> | <b>0</b> | <b>6</b> | <b>1</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>1</b> | <b>10</b>  | <b>1</b> | <b>1</b> | <b>0</b> | <b>12</b> | <b>19</b>        |

# Appendix C: SIDRA Analysis

## 2034 DESIGN YEAR WITH SURROUNDING DEVELOPMENT TRAFFIC BUT WITHOUT DEVELOPMENT GENERATED TRAFFIC

### MOVEMENT SUMMARY

Site: 101 [R619 -Via Davallia - AM PEAK (Site Folder: 2034 Without Development)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 82 seconds (Site Optimum Cycle Time - Minimum Delay)

| Vehicle Movement Performance |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
|------------------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 202           | 0     | 213          | 0.0  | 0.114     | 7.7         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 2                            | T1   | 107           | 0     | 113          | 0.0  | 0.114     | 19.3        | LOS B            | 2.1               | 14.8   | 0.70      | 0.54                | 0.70             | 45.9        |
| 3                            | R2   | 54            | 0     | 57           | 0.0  | 0.245     | 25.6        | LOS C            | 1.3               | 9.1    | 0.95      | 0.73                | 0.95             | 42.0        |
| Approach                     |      | 363           | 0     | 382          | 0.0  | 0.245     | 13.8        | LOS B            | 2.1               | 14.8   | 0.35      | 0.56                | 0.35             | 49.8        |
| East: R619                   |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 402           | 0     | 423          | 0.0  | 0.228     | 8.9         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 5                            | T1   | 704           | 0     | 741          | 0.0  | 1.039*    | 101.8       | LOS F            | 27.1              | 189.5  | 1.00      | 1.48                | 2.13             | 22.5        |
| 6                            | R2   | 409           | 0     | 431          | 0.0  | 1.169*    | 194.4       | LOS F            | 42.8              | 299.7  | 1.00      | 1.68                | 3.00             | 13.4        |
| Approach                     |      | 1515          | 0     | 1595         | 0.0  | 1.169     | 102.2       | LOS F            | 42.8              | 299.7  | 0.73      | 1.28                | 1.80             | 21.9        |
| North: Via Davallia          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 547           | 0     | 576          | 0.0  | 0.310     | 9.5         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 8                            | T1   | 540           | 0     | 568          | 0.0  | 1.076*    | 129.3       | LOS F            | 50.1              | 350.7  | 1.00      | 1.75                | 2.32             | 19.2        |
| 9                            | R2   | 51            | 0     | 54           | 0.0  | 0.090*    | 18.8        | LOS B            | 1.2               | 8.5    | 0.64      | 0.68                | 0.64             | 45.5        |
| Approach                     |      | 1138          | 0     | 1198         | 0.0  | 1.076     | 66.8        | LOS E            | 50.1              | 350.7  | 0.50      | 1.11                | 1.13             | 29.0        |
| West: R619                   |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 51            | 0     | 54           | 0.0  | 0.060     | 11.7        | LOS B            | 0.6               | 3.9    | 0.51      | 0.66                | 0.51             | 50.4        |
| 11                           | T1   | 694           | 0     | 731          | 0.0  | 1.024     | 93.3        | LOS F            | 25.3              | 177.1  | 1.00      | 1.43                | 2.04             | 23.9        |
| 12                           | R2   | 512           | 0     | 539          | 0.0  | 0.732     | 29.8        | LOS C            | 8.5               | 59.2   | 1.00      | 0.87                | 1.10             | 40.0        |
| Approach                     |      | 1257          | 0     | 1323         | 0.0  | 1.024     | 64.1        | LOS E            | 25.3              | 177.1  | 0.98      | 1.17                | 1.59             | 29.4        |
| All Vehicles                 |      | 4273          | 0     | 4498         | 0.0  | 1.169     | 74.1        | LOS E            | 50.1              | 350.7  | 0.71      | 1.14                | 1.44             | 27.0        |

## MOVEMENT SUMMARY

Site: 101 [R619 -Via Davallia - PM PEAK (Site Folder: 2034 Without Development)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 88 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID              | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|---------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                     |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                     |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                   | L2   | 403           | 0     | 424          | 0.0  | 0.228     | 9.2         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 2                   | T1   | 415           | 0     | 437          | 0.0  | 0.812*    | 40.0        | LOS D            | 14.0              | 97.8   | 0.97      | 0.89                | 1.11             | 36.6        |
| 3                   | R2   | 451           | 0     | 475          | 0.0  | 0.718*    | 24.6        | LOS C            | 15.0              | 104.7  | 0.89      | 0.84                | 0.91             | 42.4        |
| Approach            |      | 1269          | 0     | 1336         | 0.0  | 0.812     | 24.7        | LOS C            | 15.0              | 104.7  | 0.63      | 0.76                | 0.68             | 43.3        |
| East: R619          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                   | L2   | 110           | 0     | 116          | 0.0  | 0.062     | 5.9         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 5                   | T1   | 882           | 0     | 928          | 0.0  | 1.103*    | 151.5       | LOS F            | 44.0              | 308.2  | 1.00      | 1.75                | 2.43             | 17.2        |
| 6                   | R2   | 410           | 0     | 432          | 0.0  | 1.247*    | 262.9       | LOS F            | 52.3              | 365.9  | 1.00      | 1.82                | 3.36             | 10.6        |
| Approach            |      | 1402          | 0     | 1476         | 0.0  | 1.247     | 172.6       | LOS F            | 52.3              | 365.9  | 0.92      | 1.67                | 2.51             | 15.2        |
| North: Via Davallia |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                   | L2   | 296           | 0     | 312          | 0.0  | 0.168     | 12.1        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 8                   | T1   | 90            | 0     | 95           | 0.0  | 0.251     | 33.0        | LOS C            | 3.5               | 24.6   | 0.89      | 0.70                | 0.89             | 39.1        |
| 9                   | R2   | 10            | 0     | 11           | 0.0  | 0.020     | 20.7        | LOS C            | 0.2               | 1.7    | 0.75      | 0.65                | 0.75             | 44.5        |
| Approach            |      | 396           | 0     | 417          | 0.0  | 0.251     | 17.0        | LOS B            | 3.5               | 24.6   | 0.22      | 0.57                | 0.22             | 50.0        |
| West: R619          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                  | L2   | 23            | 0     | 24           | 0.0  | 0.024     | 13.4        | LOS B            | 0.4               | 2.6    | 0.46      | 0.63                | 0.46             | 49.7        |
| 11                  | T1   | 683           | 0     | 719          | 0.0  | 0.854     | 46.5        | LOS D            | 17.1              | 119.7  | 1.00      | 1.01                | 1.25             | 35.1        |
| 12                  | R2   | 137           | 0     | 144          | 0.0  | 0.210     | 26.5        | LOS C            | 2.0               | 13.8   | 0.90      | 0.74                | 0.90             | 41.5        |
| Approach            |      | 843           | 0     | 887          | 0.0  | 0.854     | 42.3        | LOS D            | 17.1              | 119.7  | 0.97      | 0.95                | 1.17             | 36.3        |
| All Vehicles        |      | 3910          | 0     | 4116         | 0.0  | 1.247     | 80.8        | LOS F            | 52.3              | 365.9  | 0.77      | 1.11                | 1.40             | 25.7        |

## MOVEMENT SUMMARY

**Site: 101 [R619 -Via Davallia - AM PEAK -upgrade (Site Folder: 2034 Without Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID              | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|---------------------|------|---------------|------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                     |      | [ Total       | HV ] | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                     |      | veh/h         | %    | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                   | L2   | 202           | 0.0  | 213          | 0.0  | 0.114     | 7.8         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 2                   | T1   | 107           | 0.0  | 113          | 0.0  | 0.307     | 24.3        | LOS C            | 2.1               | 14.7   | 0.89      | 0.68                | 0.89             | 42.9        |
| 3                   | R2   | 54            | 0.0  | 57           | 0.0  | 0.307     | 37.2        | LOS D            | 2.1               | 14.7   | 0.98      | 0.72                | 0.98             | 37.9        |
| Approach            |      | 363           | 0.0  | 382          | 0.0  | 0.307     | 17.1        | LOS B            | 2.1               | 14.7   | 0.41      | 0.60                | 0.41             | 47.8        |
| East: R619          |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                   | L2   | 402           | 0.0  | 423          | 0.0  | 0.228     | 7.7         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 5                   | T1   | 704           | 0.0  | 741          | 0.0  | 0.616     | 7.9         | LOS A            | 13.5              | 94.3   | 0.67      | 0.60                | 0.67             | 53.3        |
| 6                   | R2   | 409           | 0.0  | 431          | 0.0  | 0.716     | 19.2        | LOS B            | 8.1               | 56.7   | 0.74      | 0.84                | 0.84             | 45.1        |
| Approach            |      | 1515          | 0.0  | 1595         | 0.0  | 0.716     | 10.9        | LOS B            | 13.5              | 94.3   | 0.51      | 0.65                | 0.54             | 51.2        |
| North: Via Davallia |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                   | L2   | 547           | 0.0  | 576          | 0.0  | 0.310     | 9.7         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 8                   | T1   | 540           | 0.0  | 568          | 0.0  | 0.827     | 30.7        | LOS C            | 11.5              | 80.2   | 1.00      | 1.00                | 1.31             | 39.9        |
| 9                   | R2   | 51            | 0.0  | 54           | 0.0  | 0.827     | 37.4        | LOS D            | 9.1               | 63.5   | 1.00      | 1.00                | 1.35             | 38.8        |
| Approach            |      | 1138          | 0.0  | 1198         | 0.0  | 0.827     | 20.9        | LOS C            | 11.5              | 80.2   | 0.52      | 0.77                | 0.68             | 45.8        |
| West: R619          |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                  | L2   | 51            | 0.0  | 54           | 0.0  | 0.074     | 12.2        | LOS B            | 0.6               | 4.3    | 0.59      | 0.68                | 0.59             | 50.0        |
| 11                  | T1   | 694           | 0.0  | 731          | 0.0  | 0.304     | 7.2         | LOS A            | 5.0               | 35.3   | 0.50      | 0.44                | 0.50             | 54.8        |
| 12                  | R2   | 512           | 0.0  | 539          | 0.0  | 0.861     | 39.4        | LOS D            | 10.3              | 72.1   | 0.98      | 1.10                | 1.50             | 36.2        |
| Approach            |      | 1257          | 0.0  | 1323         | 0.0  | 0.861     | 20.5        | LOS C            | 10.3              | 72.1   | 0.70      | 0.72                | 0.91             | 45.2        |
| All Vehicles        |      | 4273          | 0.0  | 4498         | 0.0  | 0.861     | 16.9        | LOS B            | 13.5              | 94.3   | 0.56      | 0.70                | 0.68             | 47.6        |

## MOVEMENT SUMMARY

**Site: 101 [R619 -Via Davallia - PM PEAK - Upgrade (Site Folder: 2034 Without Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID              | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|---------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                     |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                     |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                   | L2   | 403           | 0     | 424          | 0.0  | 0.228     | 10.1        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 2                   | T1   | 415           | 0     | 437          | 0.0  | 0.883     | 27.0        | LOS C            | 14.0              | 97.9   | 0.92      | 0.89                | 1.15             | 41.5        |
| 3                   | R2   | 451           | 0     | 475          | 0.0  | 0.883*    | 42.9        | LOS D            | 14.0              | 97.9   | 1.00      | 1.10                | 1.50             | 36.0        |
| Approach            |      | 1269          | 0     | 1336         | 0.0  | 0.883     | 27.3        | LOS C            | 14.0              | 97.9   | 0.66      | 0.85                | 0.91             | 42.5        |
| East: R619          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                   | L2   | 110           | 0     | 116          | 0.0  | 0.062     | 5.9         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 5                   | T1   | 882           | 0     | 928          | 0.0  | 0.861     | 20.8        | LOS C            | 28.3              | 197.9  | 0.92      | 0.98                | 1.11             | 44.9        |
| 6                   | R2   | 410           | 0     | 432          | 0.0  | 0.861*    | 32.7        | LOS C            | 12.1              | 85.0   | 0.89      | 0.98                | 1.24             | 38.9        |
| Approach            |      | 1402          | 0     | 1476         | 0.0  | 0.861     | 23.1        | LOS C            | 28.3              | 197.9  | 0.84      | 0.95                | 1.06             | 43.6        |
| North: Via Davallia |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                   | L2   | 296           | 0     | 312          | 0.0  | 0.168     | 11.9        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 8                   | T1   | 90            | 0     | 95           | 0.0  | 0.107     | 17.7        | LOS B            | 1.3               | 9.4    | 0.78      | 0.60                | 0.78             | 46.3        |
| 9                   | R2   | 10            | 0     | 11           | 0.0  | 0.107     | 25.6        | LOS C            | 1.0               | 7.1    | 0.82      | 0.64                | 0.82             | 44.2        |
| Approach            |      | 396           | 0     | 417          | 0.0  | 0.168     | 13.5        | LOS B            | 1.3               | 9.4    | 0.20      | 0.55                | 0.20             | 52.4        |
| West: R619          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                  | L2   | 23            | 0     | 24           | 0.0  | 0.041     | 15.0        | LOS B            | 0.3               | 2.2    | 0.68      | 0.67                | 0.68             | 48.6        |
| 11                  | T1   | 683           | 0     | 719          | 0.0  | 0.346     | 11.1        | LOS B            | 6.0               | 42.3   | 0.61      | 0.53                | 0.61             | 52.6        |
| 12                  | R2   | 137           | 0     | 144          | 0.0  | 0.431     | 33.0        | LOS C            | 2.1               | 14.7   | 0.95      | 0.77                | 0.95             | 38.7        |
| Approach            |      | 843           | 0     | 887          | 0.0  | 0.431     | 14.8        | LOS B            | 6.0               | 42.3   | 0.67      | 0.57                | 0.67             | 49.6        |
| All Vehicles        |      | 3910          | 0     | 4116         | 0.0  | 0.883     | 21.7        | LOS C            | 28.3              | 197.9  | 0.68      | 0.79                | 0.84             | 45.2        |

## MOVEMENT SUMMARY

 **Site: 101 [Alumina Allee-Chalk Line-AM PEAK (Site Folder: 2034 Without Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 40 seconds (Site Practical Cycle Time)

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES    |           | DEMAND FLOWS     |           | Deg. Satn                    | Aver. Delay | Level of Service | 95% BACK OF QUEUE |             | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|------------------|-----------|------------------|-----------|------------------------------|-------------|------------------|-------------------|-------------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total<br>veh/h | HV ]<br>% | [ Total<br>veh/h | HV ]<br>% |                              |             |                  | [ Veh.<br>veh     | Dist ]<br>m |           |                     |                  |             |
| East: Chalk Line     |      |                  |           |                  |           |                              |             |                  |                   |             |           |                     |                  |             |
| 5                    | T1   | 1013             | 0.0       | 1066             | 0.0       | 0.497                        | 6.1         | LOS A            | 6.6               | 46.2        | 0.66      | 0.58                | 0.66             | 54.5        |
| 6                    | R2   | 268              | 0.0       | 282              | 0.0       | <div><div>*</div>0.508</div> | 13.2        | LOS B            | 3.2               | 22.1        | 0.89      | 0.79                | 0.89             | 48.4        |
| Approach             |      | 1281             | 0.0       | 1348             | 0.0       | 0.508                        | 7.6         | LOS A            | 6.6               | 46.2        | 0.71      | 0.62                | 0.71             | 53.1        |
| North: Alumina Allee |      |                  |           |                  |           |                              |             |                  |                   |             |           |                     |                  |             |
| 7                    | L2   | 464              | 0.0       | 488              | 0.0       | 0.430                        | 8.5         | LOS A            | 3.6               | 25.3        | 0.57      | 0.71                | 0.57             | 51.8        |
| 9                    | R2   | 357              | 0.0       | 376              | 0.0       | <div><div>*</div>0.674</div> | 25.4        | LOS C            | 3.9               | 27.6        | 0.99      | 0.87                | 1.18             | 41.7        |
| Approach             |      | 821              | 0.0       | 864              | 0.0       | 0.674                        | 15.9        | LOS B            | 3.9               | 27.6        | 0.75      | 0.78                | 0.83             | 46.9        |
| West: Alumina Allee  |      |                  |           |                  |           |                              |             |                  |                   |             |           |                     |                  |             |
| 10                   | L2   | 309              | 0.0       | 325              | 0.0       | 0.175                        | 5.7         | LOS A            | 0.0               | 0.0         | 0.00      | 0.53                | 0.00             | 54.9        |
| 11                   | T1   | 566              | 0.0       | 596              | 0.0       | <div><div>*</div>0.764</div> | 19.7        | LOS B            | 6.4               | 44.8        | 1.00      | 0.94                | 1.27             | 45.4        |
| Approach             |      | 875              | 0.0       | 921              | 0.0       | 0.764                        | 14.8        | LOS B            | 6.4               | 44.8        | 0.64      | 0.80                | 0.82             | 48.4        |
| All Vehicles         |      | 2977             | 0.0       | 3134             | 0.0       | 0.764                        | 12.0        | LOS B            | 6.6               | 46.2        | 0.70      | 0.72                | 0.78             | 49.8        |

## MOVEMENT SUMMARY

 **Site: 101 [Alumina Allee-Chalk Line - PM PEAK (Site Folder: 2034 Without Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES    |           | DEMAND FLOWS     |           | Deg. Satn                               | Aver. Delay | Level of Service | 95% BACK OF QUEUE |             | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|------------------|-----------|------------------|-----------|-----------------------------------------|-------------|------------------|-------------------|-------------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total<br>veh/h | HV ]<br>% | [ Total<br>veh/h | HV ]<br>% |                                         |             |                  | [ Veh.<br>veh     | Dist ]<br>m |           |                     |                  |             |
|                      |      |                  |           |                  |           |                                         |             |                  |                   |             |           |                     |                  |             |
| East: Chalk Line     |      |                  |           |                  |           |                                         |             |                  |                   |             |           |                     |                  |             |
| 5                    | T1   | 333              | 0.0       | 351              | 0.0       | 0.145                                   | 4.3         | LOS A            | 1.8               | 12.5        | 0.44      | 0.36                | 0.44             | 56.1        |
| 6                    | R2   | 220              | 0.0       | 232              | 0.0       | <div><div>*</div><div>0.542</div></div> | 14.3        | LOS B            | 2.7               | 18.9        | 0.88      | 0.79                | 0.88             | 47.7        |
| Approach             |      | 553              | 0.0       | 582              | 0.0       | 0.542                                   | 8.3         | LOS A            | 2.7               | 18.9        | 0.62      | 0.53                | 0.62             | 52.4        |
|                      |      |                  |           |                  |           |                                         |             |                  |                   |             |           |                     |                  |             |
| North: Alumina Allee |      |                  |           |                  |           |                                         |             |                  |                   |             |           |                     |                  |             |
| 7                    | L2   | 230              | 0.0       | 242              | 0.0       | 0.256                                   | 9.8         | LOS A            | 2.5               | 17.8        | 0.56      | 0.71                | 0.56             | 51.0        |
| 9                    | R2   | 203              | 0.0       | 214              | 0.0       | <div><div>*</div><div>0.411</div></div> | 28.3        | LOS C            | 2.6               | 17.9        | 0.95      | 0.77                | 0.95             | 40.4        |
| Approach             |      | 433              | 0.0       | 456              | 0.0       | 0.411                                   | 18.5        | LOS B            | 2.6               | 17.9        | 0.74      | 0.74                | 0.74             | 45.4        |
|                      |      |                  |           |                  |           |                                         |             |                  |                   |             |           |                     |                  |             |
| West: Alumina Allee  |      |                  |           |                  |           |                                         |             |                  |                   |             |           |                     |                  |             |
| 10                   | L2   | 275              | 0.0       | 289              | 0.0       | 0.156                                   | 5.6         | LOS A            | 0.0               | 0.0         | 0.00      | 0.53                | 0.00             | 54.9        |
| 11                   | T1   | 948              | 0.0       | 998              | 0.0       | <div><div>*</div><div>0.673</div></div> | 14.7        | LOS B            | 10.7              | 74.6        | 0.89      | 0.79                | 0.92             | 48.3        |
| Approach             |      | 1223             | 0.0       | 1287             | 0.0       | 0.673                                   | 12.7        | LOS B            | 10.7              | 74.6        | 0.69      | 0.73                | 0.71             | 49.7        |
| All Vehicles         |      | 2209             | 0.0       | 2325             | 0.0       | 0.673                                   | 12.7        | LOS B            | 10.7              | 74.6        | 0.68      | 0.68                | 0.69             | 49.4        |

## MOVEMENT SUMMARY

**Site: 101 [Alumina Allee- South Central-AM PEAK (Site Folder: 2034 Without Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID                       | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn          | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|------------------------------|------|---------------|------|--------------|------|--------------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                              |      | [ Total       | HV ] | [ Total      | HV ] |                    |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | %    | veh/h        | %    | v/c                | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee         |      |               |      |              |      |                    |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 24            | 0.0  | 25           | 0.0  | 0.020              | 9.1         | LOS A            | 0.2               | 1.7    | 0.35      | 0.63                | 0.35             | 51.0        |
| 2                            | T1   | 1168          | 0.0  | 1229         | 0.0  | 0.473              | 5.2         | LOS A            | 8.8               | 61.3   | 0.52      | 0.47                | 0.52             | 55.2        |
| 3                            | R2   | 230           | 0.0  | 242          | 0.0  | 0.496 <sup>*</sup> | 13.2        | LOS B            | 4.2               | 29.5   | 0.61      | 0.76                | 0.61             | 48.2        |
| Approach                     |      | 1422          | 0.0  | 1497         | 0.0  | 0.496              | 6.6         | LOS A            | 8.8               | 61.3   | 0.53      | 0.52                | 0.53             | 53.9        |
| East: South Central Arterial |      |               |      |              |      |                    |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 137           | 0.0  | 144          | 0.0  | 0.498              | 31.4        | LOS C            | 4.3               | 30.4   | 0.95      | 0.79                | 0.95             | 39.1        |
| 5                            | T1   | 10            | 0.0  | 11           | 0.0  | 0.498 <sup>*</sup> | 25.8        | LOS C            | 4.3               | 30.4   | 0.95      | 0.79                | 0.95             | 39.8        |
| 6                            | R2   | 31            | 0.0  | 33           | 0.0  | 0.116              | 29.5        | LOS C            | 0.8               | 5.9    | 0.88      | 0.71                | 0.88             | 39.9        |
| Approach                     |      | 178           | 0.0  | 187          | 0.0  | 0.498              | 30.7        | LOS C            | 4.3               | 30.4   | 0.94      | 0.78                | 0.94             | 39.2        |
| North: Alumina Allee         |      |               |      |              |      |                    |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 24            | 0.0  | 25           | 0.0  | 0.020              | 9.1         | LOS A            | 0.2               | 1.7    | 0.35      | 0.63                | 0.35             | 51.0        |
| 8                            | T1   | 656           | 0.0  | 691          | 0.0  | 0.266              | 4.3         | LOS A            | 4.1               | 28.6   | 0.43      | 0.37                | 0.43             | 56.0        |
| 9                            | R2   | 38            | 0.0  | 40           | 0.0  | 0.146              | 14.2        | LOS B            | 0.7               | 4.6    | 0.55      | 0.70                | 0.55             | 47.6        |
| Approach                     |      | 718           | 0.0  | 756          | 0.0  | 0.266              | 5.0         | LOS A            | 4.1               | 28.6   | 0.44      | 0.40                | 0.44             | 55.3        |
| West: South Central Arterial |      |               |      |              |      |                    |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 8             | 0.0  | 8            | 0.0  | 0.053              | 28.8        | LOS C            | 0.4               | 3.0    | 0.87      | 0.65                | 0.87             | 41.3        |
| 11                           | T1   | 8             | 0.0  | 8            | 0.0  | 0.053              | 23.3        | LOS C            | 0.4               | 3.0    | 0.87      | 0.65                | 0.87             | 42.1        |
| 12                           | R2   | 11            | 0.0  | 12           | 0.0  | 0.064              | 33.4        | LOS C            | 0.3               | 2.3    | 0.93      | 0.67                | 0.93             | 38.3        |
| Approach                     |      | 27            | 0.0  | 28           | 0.0  | 0.064              | 29.1        | LOS C            | 0.4               | 3.0    | 0.89      | 0.66                | 0.89             | 40.2        |
| All Vehicles                 |      | 2345          | 0.0  | 2468         | 0.0  | 0.498              | 8.2         | LOS A            | 8.8               | 61.3   | 0.54      | 0.50                | 0.54             | 52.6        |

## MOVEMENT SUMMARY

**Site: 101 [Alumina Allee- South Central - PM PEAK (Site Folder: 2034 Without Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID                       | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|------------------------------|------|---------------|------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                              |      | [ Total       | HV ] | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | %    | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 11            | 0.0  | 12           | 0.0  | 0.015     | 16.5        | LOS B            | 0.2               | 1.4    | 0.61      | 0.65                | 0.61             | 46.2        |
| 2                            | T1   | 505           | 0.0  | 532          | 0.0  | 0.327     | 12.9        | LOS B            | 5.3               | 37.2   | 0.72      | 0.60                | 0.72             | 49.5        |
| 3                            | R2   | 104           | 0.0  | 109          | 0.0  | 0.388*    | 24.7        | LOS C            | 2.7               | 19.0   | 0.83      | 0.78                | 0.83             | 41.9        |
| Approach                     |      | 620           | 0.0  | 653          | 0.0  | 0.388     | 14.9        | LOS B            | 5.3               | 37.2   | 0.73      | 0.63                | 0.73             | 48.0        |
| East: South Central Arterial |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 302           | 0.0  | 318          | 0.0  | 0.419     | 19.1        | LOS B            | 6.8               | 47.7   | 0.75      | 0.78                | 0.75             | 44.8        |
| 5                            | T1   | 6             | 0.0  | 6            | 0.0  | 0.419*    | 13.5        | LOS B            | 6.8               | 47.7   | 0.75      | 0.78                | 0.75             | 45.8        |
| 6                            | R2   | 41            | 0.0  | 43           | 0.0  | 0.069     | 17.0        | LOS B            | 0.8               | 5.4    | 0.63      | 0.69                | 0.63             | 46.2        |
| Approach                     |      | 349           | 0.0  | 367          | 0.0  | 0.419     | 18.7        | LOS B            | 6.8               | 47.7   | 0.74      | 0.77                | 0.74             | 45.0        |
| North: Alumina Allee         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 44            | 0.0  | 46           | 0.0  | 0.060     | 16.8        | LOS B            | 0.8               | 5.7    | 0.62      | 0.69                | 0.62             | 46.0        |
| 8                            | T1   | 667           | 0.0  | 702          | 0.0  | 0.432     | 13.6        | LOS B            | 7.4               | 51.9   | 0.76      | 0.65                | 0.76             | 49.0        |
| 9                            | R2   | 24            | 0.0  | 25           | 0.0  | 0.072     | 20.8        | LOS C            | 0.5               | 3.7    | 0.71      | 0.70                | 0.71             | 43.8        |
| Approach                     |      | 735           | 0.0  | 774          | 0.0  | 0.432     | 14.0        | LOS B            | 7.4               | 51.9   | 0.75      | 0.65                | 0.75             | 48.7        |
| West: South Central Arterial |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 8             | 0.0  | 8            | 0.0  | 0.019     | 16.5        | LOS B            | 0.3               | 1.8    | 0.61      | 0.56                | 0.61             | 47.6        |
| 11                           | T1   | 6             | 0.0  | 6            | 0.0  | 0.019     | 11.0        | LOS B            | 0.3               | 1.8    | 0.61      | 0.56                | 0.61             | 48.7        |
| 12                           | R2   | 13            | 0.0  | 14           | 0.0  | 0.037     | 22.0        | LOS C            | 0.3               | 2.0    | 0.73      | 0.67                | 0.73             | 43.5        |
| Approach                     |      | 27            | 0.0  | 28           | 0.0  | 0.037     | 17.9        | LOS B            | 0.3               | 2.0    | 0.67      | 0.62                | 0.67             | 45.8        |
| All Vehicles                 |      | 1731          | 0.0  | 1822         | 0.0  | 0.432     | 15.3        | LOS B            | 7.4               | 51.9   | 0.74      | 0.67                | 0.74             | 47.6        |

## MOVEMENT SUMMARY

 **Site: 101 [Ceramic Curve-Chalk Line- AM PEAK (Site Folder: 2034 Without Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total       | HV ] | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                      |      | veh/h         | %    | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                    | L2   | 78            | 0.0  | 82           | 0.0  | 0.288      | 30.3        | LOS C            | 2.4               | 16.8   | 0.91      | 0.75                | 0.91             | 39.6        |
| 2                    | T1   | 7             | 0.0  | 7            | 0.0  | 0.288      | 24.7        | LOS C            | 2.4               | 16.8   | 0.91      | 0.75                | 0.91             | 40.3        |
| 3                    | R2   | 28            | 0.0  | 29           | 0.0  | 0.130      | 31.6        | LOS C            | 0.8               | 5.6    | 0.91      | 0.71                | 0.91             | 38.8        |
| Approach             |      | 113           | 0.0  | 119          | 0.0  | 0.288      | 30.3        | LOS C            | 2.4               | 16.8   | 0.91      | 0.74                | 0.91             | 39.4        |
| East: Chalk Line     |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                    | L2   | 73            | 0.0  | 77           | 0.0  | 0.501      | 10.9        | LOS B            | 9.5               | 66.5   | 0.54      | 0.52                | 0.54             | 53.2        |
| 5                    | T1   | 1161          | 0.0  | 1222         | 0.0  | *<br>0.501 | 5.4         | LOS A            | 9.6               | 66.9   | 0.54      | 0.50                | 0.54             | 54.9        |
| 6                    | R2   | 97            | 0.0  | 102          | 0.0  | 0.300      | 13.8        | LOS B            | 1.7               | 11.9   | 0.57      | 0.72                | 0.57             | 47.8        |
| Approach             |      | 1331          | 0.0  | 1401         | 0.0  | 0.501      | 6.3         | LOS A            | 9.6               | 66.9   | 0.54      | 0.52                | 0.54             | 54.2        |
| North: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                    | L2   | 79            | 0.0  | 83           | 0.0  | 0.291      | 30.3        | LOS C            | 2.4               | 17.1   | 0.92      | 0.76                | 0.92             | 39.5        |
| 8                    | T1   | 7             | 0.0  | 7            | 0.0  | *<br>0.291 | 24.7        | LOS C            | 2.4               | 17.1   | 0.92      | 0.76                | 0.92             | 40.3        |
| 9                    | R2   | 78            | 0.0  | 82           | 0.0  | 0.361      | 32.8        | LOS C            | 2.3               | 16.4   | 0.95      | 0.76                | 0.95             | 38.3        |
| Approach             |      | 164           | 0.0  | 173          | 0.0  | 0.361      | 31.3        | LOS C            | 2.4               | 17.1   | 0.93      | 0.76                | 0.93             | 39.0        |
| West: Alumina Allee  |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                   | L2   | 72            | 0.0  | 76           | 0.0  | 0.393      | 10.4        | LOS B            | 6.7               | 47.0   | 0.48      | 0.47                | 0.48             | 53.5        |
| 11                   | T1   | 896           | 0.0  | 943          | 0.0  | 0.393      | 4.9         | LOS A            | 6.8               | 47.3   | 0.48      | 0.45                | 0.48             | 55.2        |
| 12                   | R2   | 83            | 0.0  | 87           | 0.0  | 0.349      | 16.1        | LOS B            | 1.7               | 11.7   | 0.64      | 0.74                | 0.64             | 46.4        |
| Approach             |      | 1051          | 0.0  | 1106         | 0.0  | 0.393      | 6.1         | LOS A            | 6.8               | 47.3   | 0.50      | 0.47                | 0.50             | 54.3        |
| All Vehicles         |      | 2659          | 0.0  | 2799         | 0.0  | 0.501      | 8.8         | LOS A            | 9.6               | 66.9   | 0.56      | 0.52                | 0.56             | 52.1        |

## MOVEMENT SUMMARY

 **Site: 101 [Ceramic Curve-Chalk Line - PM PEAK (Site Folder: 2034 Without Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total       | HV ] | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                      |      | veh/h         | %    | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Ceramic Curve |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                    | L2   | 92            | 0.0  | 97           | 0.0  | 0.224     | 25.3        | LOS C            | 2.5               | 17.5   | 0.83      | 0.75                | 0.83             | 41.7        |
| 2                    | T1   | 7             | 0.0  | 7            | 0.0  | 0.224     | 19.8        | LOS B            | 2.5               | 17.5   | 0.83      | 0.75                | 0.83             | 42.6        |
| 3                    | R2   | 93            | 0.0  | 98           | 0.0  | 0.747     | 40.3        | LOS D            | 3.2               | 22.5   | 1.00      | 0.85                | 1.32             | 35.6        |
| Approach             |      | 192           | 0.0  | 202          | 0.0  | 0.747     | 32.4        | LOS C            | 3.2               | 22.5   | 0.91      | 0.80                | 1.07             | 38.5        |
| East: Chalk Line     |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                    | L2   | 54            | 0.0  | 57           | 0.0  | 0.297     | 12.3        | LOS B            | 4.9               | 34.6   | 0.54      | 0.51                | 0.54             | 51.9        |
| 5                    | T1   | 585           | 0.0  | 616          | 0.0  | 0.297     | 6.8         | LOS A            | 5.0               | 34.9   | 0.54      | 0.48                | 0.54             | 53.6        |
| 6                    | R2   | 165           | 0.0  | 174          | 0.0  | 0.820     | 37.3        | LOS D            | 6.4               | 45.0   | 0.96      | 1.05                | 1.47             | 36.6        |
| Approach             |      | 804           | 0.0  | 846          | 0.0  | 0.820     | 13.4        | LOS B            | 6.4               | 45.0   | 0.62      | 0.60                | 0.73             | 48.8        |
| North: Ceramic Curve |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                    | L2   | 370           | 0.0  | 389          | 0.0  | 0.845     | 35.9        | LOS D            | 13.2              | 92.3   | 1.00      | 0.99                | 1.32             | 37.1        |
| 8                    | T1   | 3             | 0.0  | 3            | 0.0  | 0.845     | 30.3        | LOS C            | 13.2              | 92.3   | 1.00      | 0.99                | 1.32             | 37.8        |
| 9                    | R2   | 71            | 0.0  | 75           | 0.0  | 0.228     | 27.4        | LOS C            | 1.9               | 13.2   | 0.86      | 0.75                | 0.86             | 40.7        |
| Approach             |      | 444           | 0.0  | 467          | 0.0  | 0.845     | 34.5        | LOS C            | 13.2              | 92.3   | 0.98      | 0.95                | 1.25             | 37.7        |
| West: Alumina Allee  |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                   | L2   | 31            | 0.0  | 33           | 0.0  | 0.584     | 14.1        | LOS B            | 12.3              | 86.4   | 0.68      | 0.62                | 0.68             | 51.1        |
| 11                   | T1   | 1230          | 0.0  | 1295         | 0.0  | 0.584     | 8.6         | LOS A            | 12.4              | 86.6   | 0.68      | 0.61                | 0.68             | 52.5        |
| 12                   | R2   | 52            | 0.0  | 55           | 0.0  | 0.126     | 14.4        | LOS B            | 0.9               | 6.2    | 0.56      | 0.70                | 0.56             | 47.4        |
| Approach             |      | 1313          | 0.0  | 1382         | 0.0  | 0.584     | 8.9         | LOS A            | 12.4              | 86.6   | 0.68      | 0.62                | 0.68             | 52.2        |
| All Vehicles         |      | 2753          | 0.0  | 2898         | 0.0  | 0.845     | 16.0        | LOS B            | 13.2              | 92.3   | 0.73      | 0.68                | 0.81             | 47.2        |

# MOVEMENT SUMMARY

Site: 101 [Alumina Allee St AM PEAK (Site Folder: 2034 Without Development)]

New Site

Site Category: (None)

Roundabout

## Vehicle Movement Performance

| Mov ID                  | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|-------------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                         |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                         |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                       | L2   | 3             | 0     | 3            | 0.0  | 0.174     | 3.7         | LOS A            | 0.9               | 6.5    | 0.11      | 0.34                | 0.11             | 56.0        |
| 2                       | T1   | 474           | 0     | 499          | 0.0  | 0.174     | 3.6         | LOS A            | 0.9               | 6.5    | 0.12      | 0.36                | 0.12             | 57.6        |
| 3                       | R2   | 31            | 0     | 33           | 0.0  | 0.174     | 9.3         | LOS A            | 0.9               | 6.4    | 0.12      | 0.39                | 0.12             | 57.7        |
| Approach                |      | 508           | 0     | 535          | 0.0  | 0.174     | 4.0         | LOS A            | 0.9               | 6.5    | 0.12      | 0.36                | 0.12             | 57.6        |
| East: Diamantpyp        |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                       | L2   | 18            | 0     | 19           | 0.0  | 0.059     | 6.7         | LOS A            | 0.2               | 1.6    | 0.59      | 0.78                | 0.59             | 51.8        |
| 5                       | T1   | 1             | 0     | 1            | 0.0  | 0.059     | 6.9         | LOS A            | 0.2               | 1.6    | 0.59      | 0.78                | 0.59             | 53.3        |
| 6                       | R2   | 23            | 0     | 24           | 0.0  | 0.059     | 12.5        | LOS B            | 0.2               | 1.6    | 0.59      | 0.78                | 0.59             | 53.6        |
| Approach                |      | 42            | 0     | 44           | 0.0  | 0.059     | 9.9         | LOS A            | 0.2               | 1.6    | 0.59      | 0.78                | 0.59             | 52.8        |
| North: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                       | L2   | 75            | 0     | 79           | 0.0  | 0.061     | 4.0         | LOS A            | 0.2               | 1.7    | 0.12      | 0.43                | 0.12             | 55.7        |
| 8                       | T1   | 1179          | 0     | 1241         | 0.0  | 0.368     | 3.7         | LOS A            | 2.0               | 14.1   | 0.14      | 0.35                | 0.14             | 57.8        |
| 9                       | R2   | 1             | 0     | 1            | 0.0  | 0.368     | 9.3         | LOS A            | 2.0               | 14.1   | 0.14      | 0.35                | 0.14             | 58.1        |
| Approach                |      | 1255          | 0     | 1321         | 0.0  | 0.368     | 3.7         | LOS A            | 2.0               | 14.1   | 0.14      | 0.35                | 0.14             | 57.6        |
| West: RBIDZ             |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                      | L2   | 1             | 0     | 1            | 0.0  | 0.000     | 5.1         | LOS A            | 0.0               | 0.0    | 0.41      | 0.46                | 0.41             | 54.5        |
| 11                      | T1   | 1             | 0     | 1            | 0.0  | 0.003     | 4.3         | LOS A            | 0.0               | 0.1    | 0.37      | 0.57                | 0.37             | 53.7        |
| 12                      | R2   | 3             | 0     | 3            | 0.0  | 0.003     | 9.9         | LOS A            | 0.0               | 0.1    | 0.37      | 0.57                | 0.37             | 54.1        |
| Approach                |      | 5             | 0     | 5            | 0.0  | 0.003     | 7.8         | LOS A            | 0.0               | 0.1    | 0.38      | 0.55                | 0.38             | 54.1        |
| All Vehicles            |      | 1810          | 0     | 1905         | 0.0  | 0.368     | 3.9         | LOS A            | 2.0               | 14.1   | 0.14      | 0.37                | 0.14             | 57.5        |

# MOVEMENT SUMMARY

Site: 101 [Alumina Allee St PM PEAK (Site Folder: 2034 Without Development)]

New Site

Site Category: (None)

Roundabout

## Vehicle Movement Performance

| Mov ID                  | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|-------------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                         |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                         |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                       | L2   | 1             | 0     | 1            | 0.0  | 0.427     | 4.1         | LOS A            | 2.8               | 19.7   | 0.34      | 0.40                | 0.34             | 54.8        |
| 2                       | T1   | 1107          | 0     | 1165         | 0.0  | 0.427     | 4.1         | LOS A            | 2.8               | 19.7   | 0.35      | 0.41                | 0.35             | 56.5        |
| 3                       | R2   | 24            | 0     | 25           | 0.0  | 0.427     | 9.8         | LOS A            | 2.8               | 19.4   | 0.35      | 0.42                | 0.35             | 56.8        |
| Approach                |      | 1132          | 0     | 1192         | 0.0  | 0.427     | 4.2         | LOS A            | 2.8               | 19.7   | 0.35      | 0.41                | 0.35             | 56.5        |
| East: Diamantpyp        |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                       | L2   | 63            | 0     | 66           | 0.0  | 0.193     | 5.1         | LOS A            | 0.8               | 5.4    | 0.46      | 0.71                | 0.46             | 52.4        |
| 5                       | T1   | 1             | 0     | 1            | 0.0  | 0.193     | 5.2         | LOS A            | 0.8               | 5.4    | 0.46      | 0.71                | 0.46             | 53.9        |
| 6                       | R2   | 117           | 0     | 123          | 0.0  | 0.193     | 10.9        | LOS B            | 0.8               | 5.4    | 0.46      | 0.71                | 0.46             | 54.3        |
| Approach                |      | 181           | 0     | 191          | 0.0  | 0.193     | 8.9         | LOS A            | 0.8               | 5.4    | 0.46      | 0.71                | 0.46             | 53.6        |
| North: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                       | L2   | 23            | 0     | 24           | 0.0  | 0.035     | 4.0         | LOS A            | 0.1               | 1.0    | 0.11      | 0.39                | 0.11             | 55.8        |
| 8                       | T1   | 465           | 0     | 489          | 0.0  | 0.140     | 3.6         | LOS A            | 0.7               | 4.6    | 0.10      | 0.34                | 0.10             | 57.9        |
| 9                       | R2   | 1             | 0     | 1            | 0.0  | 0.140     | 9.3         | LOS A            | 0.6               | 4.5    | 0.11      | 0.34                | 0.11             | 58.3        |
| Approach                |      | 489           | 0     | 515          | 0.0  | 0.140     | 3.6         | LOS A            | 0.7               | 4.6    | 0.10      | 0.35                | 0.10             | 57.8        |
| West: RBIDZ             |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                      | L2   | 1             | 0     | 1            | 0.0  | 0.001     | 5.9         | LOS A            | 0.0               | 0.0    | 0.61      | 0.50                | 0.61             | 53.8        |
| 11                      | T1   | 1             | 0     | 1            | 0.0  | 0.003     | 5.2         | LOS A            | 0.0               | 0.1    | 0.61      | 0.61                | 0.61             | 52.9        |
| 12                      | R2   | 3             | 0     | 3            | 0.0  | 0.003     | 10.9        | LOS B            | 0.0               | 0.1    | 0.61      | 0.61                | 0.61             | 53.2        |
| Approach                |      | 5             | 0     | 5            | 0.0  | 0.003     | 8.8         | LOS A            | 0.0               | 0.1    | 0.61      | 0.59                | 0.61             | 53.3        |
| All Vehicles            |      | 1807          | 0     | 1902         | 0.0  | 0.427     | 4.5         | LOS A            | 2.8               | 19.7   | 0.29      | 0.42                | 0.29             | 56.5        |

## 2034 plus development -Scenario A

### MOVEMENT SUMMARY

**Site: 101 [R619 -Via Davallia - AM PEAK (Site Folder: 2034 With Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 83 seconds (Site Optimum Cycle Time - Minimum Delay)

#### Vehicle Movement Performance

| Mov ID              | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|---------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                     |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                     |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                   | L2   | 301           | 0     | 317          | 0.0  | 0.171     | 7.7         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 2                   | T1   | 161           | 0     | 169          | 0.0  | 0.328     | 36.6        | LOS D            | 4.7               | 32.6   | 0.87      | 0.71                | 0.87             | 37.7        |
| 3                   | R2   | 81            | 0     | 85           | 0.0  | 0.328     | 31.2        | LOS C            | 4.7               | 32.6   | 0.96      | 0.75                | 0.96             | 39.8        |
| Approach            |      | 543           | 0     | 572          | 0.0  | 0.328     | 19.8        | LOS B            | 4.7               | 32.6   | 0.40      | 0.62                | 0.40             | 46.1        |
| East: R619          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                   | L2   | 739           | 0     | 778          | 0.0  | 0.419     | 17.8        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.7        |
| 5                   | T1   | 704           | 0     | 741          | 0.0  | 1.197     | 171.0       | LOS F            | 63.0              | 441.3  | 0.98      | 1.79                | 2.52             | 15.7        |
| 6                   | R2   | 409           | 0     | 431          | 0.0  | 0.887     | 38.5        | LOS D            | 16.4              | 114.8  | 1.00      | 1.01                | 1.33             | 36.4        |
| Approach            |      | 1852          | 0     | 1949         | 0.0  | 1.197     | 80.6        | LOS F            | 63.0              | 441.3  | 0.59      | 1.11                | 1.25             | 26.6        |
| North: Via Davallia |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                   | L2   | 547           | 0     | 576          | 0.0  | 0.310     | 10.0        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 8                   | T1   | 985           | 0     | 1037         | 0.0  | 1.279     | 285.4       | LOS F            | 76.5              | 535.5  | 1.00      | 2.09                | 3.67             | 10.0        |
| 9                   | R2   | 51            | 0     | 54           | 0.0  | 1.279     | 279.4       | LOS F            | 72.8              | 509.4  | 1.00      | 1.63                | 3.67             | 9.8         |
| Approach            |      | 1583          | 0     | 1666         | 0.0  | 1.279     | 190.1       | LOS F            | 76.5              | 535.5  | 0.65      | 1.53                | 2.40             | 13.9        |
| West: R619          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                  | L2   | 51            | 0     | 54           | 0.0  | 0.062     | 13.6        | LOS B            | 0.8               | 5.4    | 0.56      | 0.67                | 0.56             | 49.3        |
| 11                  | T1   | 694           | 0     | 731          | 0.0  | 0.818     | 39.7        | LOS D            | 15.7              | 110.1  | 1.00      | 0.97                | 1.19             | 37.0        |
| 12                  | R2   | 932           | 0     | 981          | 0.0  | 1.031     | 88.6        | LOS F            | 30.0              | 210.0  | 1.00      | 1.28                | 2.01             | 22.2        |
| Approach            |      | 1677          | 0     | 1765         | 0.0  | 1.031     | 66.1        | LOS E            | 30.0              | 210.0  | 0.99      | 1.13                | 1.62             | 27.1        |
| All Vehicles        |      | 5655          | 0     | 5953         | 0.0  | 1.279     | 101.1       | LOS F            | 76.5              | 535.5  | 0.71      | 1.19                | 1.60             | 22.0        |

## MOVEMENT SUMMARY

Site: 101 [R619 -Via Davallia - PM PEAK (Site Folder: 2034 With Development)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 71 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID              | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|---------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                     |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                     |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                   | L2   | 822           | 0     | 865          | 0.0  | 0.466     | 12.2        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.7        |
| 2                   | T1   | 847           | 0     | 892          | 0.0  | 1.532*    | 279.3       | LOS F            | 122.1             | 854.8  | 0.96      | 1.72                | 3.44             | 10.4        |
| 3                   | R2   | 909           | 0     | 957          | 0.0  | 1.532*    | 510.3       | LOS F            | 124.1             | 868.6  | 1.00      | 2.71                | 5.62             | 6.2         |
| Approach            |      | 2578          | 0     | 2714         | 0.0  | 1.532     | 275.6       | LOS F            | 124.1             | 868.6  | 0.67      | 1.69                | 3.11             | 10.7        |
| East: R619          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                   | L2   | 170           | 0     | 179          | 0.0  | 0.096     | 6.0         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 5                   | T1   | 882           | 0     | 928          | 0.0  | 1.558*    | 407.3       | LOS F            | 128.2             | 897.4  | 0.99      | 2.87                | 4.49             | 7.8         |
| 6                   | R2   | 410           | 0     | 432          | 0.0  | 1.558*    | 523.8       | LOS F            | 75.2              | 526.5  | 1.00      | 2.53                | 5.72             | 6.0         |
| Approach            |      | 1462          | 0     | 1539         | 0.0  | 1.558     | 393.3       | LOS F            | 128.2             | 897.4  | 0.88      | 2.50                | 4.31             | 7.9         |
| North: Via Davallia |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                   | L2   | 296           | 0     | 312          | 0.0  | 0.168     | 16.3        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 8                   | T1   | 139           | 0     | 146          | 0.0  | 0.154     | 21.1        | LOS C            | 2.4               | 16.9   | 0.77      | 0.62                | 0.77             | 44.5        |
| 9                   | R2   | 10            | 0     | 11           | 0.0  | 0.154     | 31.8        | LOS C            | 1.7               | 12.0   | 0.83      | 0.69                | 0.83             | 41.3        |
| Approach            |      | 445           | 0     | 468          | 0.0  | 0.168     | 18.2        | LOS B            | 2.4               | 16.9   | 0.26      | 0.56                | 0.26             | 50.8        |
| West: R619          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                  | L2   | 23            | 0     | 24           | 0.0  | 0.044     | 17.9        | LOS B            | 0.3               | 2.3    | 0.75      | 0.67                | 0.75             | 47.1        |
| 11                  | T1   | 683           | 0     | 719          | 0.0  | 0.818     | 38.3        | LOS D            | 13.5              | 94.4   | 1.00      | 0.98                | 1.23             | 38.8        |
| 12                  | R2   | 210           | 0     | 221          | 0.0  | 0.412     | 25.4        | LOS C            | 2.7               | 19.2   | 0.96      | 0.76                | 0.96             | 42.0        |
| Approach            |      | 916           | 0     | 964          | 0.0  | 0.818     | 34.9        | LOS C            | 13.5              | 94.4   | 0.99      | 0.92                | 1.15             | 39.7        |
| All Vehicles        |      | 5401          | 0     | 5685         | 0.0  | 1.558     | 245.4       | LOS F            | 128.2             | 897.4  | 0.74      | 1.69                | 2.87             | 11.8        |

# MOVEMENT SUMMARY

**Site: 101 [R619 -Via Davallia - AM PEAK Upgrade (Site Folder: 2034 With Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site Optimum Cycle Time - Minimum Delay)

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

| Vehicle Movement Performance |      |                  |               |                  |           |                                         |             |                  |                   |             |           |                     |                  |             |
|------------------------------|------|------------------|---------------|------------------|-----------|-----------------------------------------|-------------|------------------|-------------------|-------------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES    |               | DEMAND FLOWS     |           | Deg. Satn                               | Aver. Delay | Level of Service | 95% BACK OF QUEUE |             | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total<br>veh/h | HV ]<br>veh/h | [ Total<br>veh/h | HV ]<br>% |                                         |             |                  | [ Veh.<br>veh     | Dist ]<br>m |           |                     |                  |             |
| South: Heliumhoogte          |      |                  |               |                  |           |                                         |             |                  |                   |             |           |                     |                  |             |
| 1                            | L2   | 301              | 0             | 317              | 0.0       | 0.171                                   | 8.3         | LOS A            | 0.0               | 0.0         | 0.00      | 0.53                | 0.00             | 54.9        |
| 2                            | T1   | 161              | 0             | 169              | 0.0       | 0.168                                   | 18.7        | LOS B            | 3.1               | 22.0        | 0.71      | 0.56                | 0.71             | 46.2        |
| 3                            | R2   | 81               | 0             | 85               | 0.0       | 0.355                                   | 45.1        | LOS D            | 1.7               | 11.9        | 0.97      | 0.74                | 0.97             | 34.5        |
| Approach                     |      | 543              | 0             | 572              | 0.0       | 0.355                                   | 16.9        | LOS B            | 3.1               | 22.0        | 0.35      | 0.57                | 0.35             | 48.0        |
| East: R619                   |      |                  |               |                  |           |                                         |             |                  |                   |             |           |                     |                  |             |
| 4                            | L2   | 739              | 0             | 778              | 0.0       | 0.419                                   | 35.8        | LOS D            | 0.0               | 0.0         | 0.00      | 0.53                | 0.00             | 54.7        |
| 5                            | T1   | 704              | 0             | 741              | 0.0       | <div><div>*</div><div>0.894</div></div> | 45.9        | LOS D            | 17.3              | 121.1       | 1.00      | 1.08                | 1.39             | 34.7        |
| 6                            | R2   | 409              | 0             | 431              | 0.0       | 0.579                                   | 32.0        | LOS C            | 9.6               | 67.5        | 0.87      | 0.87                | 0.87             | 39.0        |
| Approach                     |      | 1852             | 0             | 1949             | 0.0       | 0.894                                   | 38.8        | LOS D            | 17.3              | 121.1       | 0.57      | 0.81                | 0.72             | 41.8        |
| North: Via Davallia          |      |                  |               |                  |           |                                         |             |                  |                   |             |           |                     |                  |             |
| 7                            | L2   | 547              | 0             | 576              | 0.0       | 0.310                                   | 7.1         | LOS A            | 0.0               | 0.0         | 0.00      | 0.53                | 0.00             | 54.8        |
| 8                            | T1   | 985              | 0             | 1037             | 0.0       | <div><div>*</div><div>0.914</div></div> | 42.8        | LOS D            | 29.9              | 209.1       | 0.96      | 1.11                | 1.35             | 35.3        |
| 9                            | R2   | 51               | 0             | 54               | 0.0       | 0.914                                   | 48.6        | LOS D            | 29.9              | 209.1       | 1.00      | 1.14                | 1.36             | 35.0        |
| Approach                     |      | 1583             | 0             | 1666             | 0.0       | 0.914                                   | 30.7        | LOS C            | 29.9              | 209.1       | 0.63      | 0.91                | 0.88             | 40.3        |
| West: R619                   |      |                  |               |                  |           |                                         |             |                  |                   |             |           |                     |                  |             |
| 10                           | L2   | 51               | 0             | 54               | 0.0       | 0.049                                   | 8.6         | LOS A            | 0.4               | 2.9         | 0.31      | 0.62                | 0.31             | 52.7        |
| 11                           | T1   | 694              | 0             | 731              | 0.0       | 0.881                                   | 43.4        | LOS D            | 16.7              | 116.7       | 1.00      | 1.06                | 1.35             | 35.2        |
| 12                           | R2   | 932              | 0             | 981              | 0.0       | <div><div>*</div><div>0.919</div></div> | 53.6        | LOS D            | 20.6              | 144.4       | 1.00      | 1.21                | 1.42             | 31.9        |
| Approach                     |      | 1677             | 0             | 1765             | 0.0       | 0.919                                   | 48.0        | LOS D            | 20.6              | 144.4       | 0.98      | 1.13                | 1.36             | 33.6        |
| All Vehicles                 |      | 5655             | 0             | 5953             | 0.0       | 0.919                                   | 37.2        | LOS D            | 29.9              | 209.1       | 0.69      | 0.91                | 0.92             | 39.1        |

## MOVEMENT SUMMARY

**Site: 101 [R619 -Via Davallia - PM PEAK Upgrade (Site Folder: 2034 With Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 30 seconds (Site Optimum Cycle Time - Minimum Delay)

| Vehicle Movement Performance |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
|------------------------------|------|---------------|-------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total       | HV ]  | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | veh/h | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte          |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 822           | 0     | 865          | 0.0  | 0.466      | 8.6         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.7        |
| 2                            | T1   | 847           | 0     | 892          | 0.0  | 0.961      | 27.2        | LOS C            | 17.3              | 121.1  | 0.94      | 1.23                | 1.83             | 42.3        |
| 3                            | R2   | 909           | 0     | 957          | 0.0  | *<br>0.996 | 54.6        | LOS D            | 16.5              | 115.8  | 1.00      | 1.65                | 2.90             | 31.6        |
| Approach                     |      | 2578          | 0     | 2714         | 0.0  | 0.996      | 30.9        | LOS C            | 17.3              | 121.1  | 0.66      | 1.15                | 1.62             | 40.4        |
| East: R619                   |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 170           | 0     | 179          | 0.0  | 0.096      | 6.1         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 5                            | T1   | 882           | 0     | 928          | 0.0  | 0.714      | 11.4        | LOS B            | 6.9               | 48.1   | 0.93      | 0.87                | 1.10             | 50.6        |
| 6                            | R2   | 410           | 0     | 432          | 0.0  | *<br>0.982 | 39.8        | LOS D            | 9.2               | 64.7   | 0.97      | 1.28                | 2.32             | 36.4        |
| Approach                     |      | 1462          | 0     | 1539         | 0.0  | 0.982      | 18.8        | LOS B            | 9.2               | 64.7   | 0.83      | 0.95                | 1.31             | 46.0        |
| North: Via Davallia          |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 296           | 0     | 312          | 0.0  | 0.168      | 8.7         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 8                            | T1   | 139           | 0     | 146          | 0.0  | 0.225      | 8.2         | LOS A            | 1.6               | 11.4   | 0.76      | 0.60                | 0.76             | 53.0        |
| 9                            | R2   | 10            | 0     | 11           | 0.0  | 0.040      | 19.7        | LOS B            | 0.1               | 1.0    | 0.93      | 0.65                | 0.93             | 45.0        |
| Approach                     |      | 445           | 0     | 468          | 0.0  | 0.225      | 8.8         | LOS A            | 1.6               | 11.4   | 0.26      | 0.55                | 0.26             | 54.0        |
| West: R619                   |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 23            | 0     | 24           | 0.0  | 0.036      | 14.8        | LOS B            | 0.2               | 1.1    | 0.76      | 0.66                | 0.76             | 50.8        |
| 11                           | T1   | 683           | 0     | 719          | 0.0  | 0.553      | 9.4         | LOS A            | 4.6               | 32.0   | 0.87      | 0.73                | 0.87             | 52.1        |
| 12                           | R2   | 210           | 0     | 221          | 0.0  | 0.400      | 19.9        | LOS B            | 1.6               | 11.5   | 0.95      | 0.76                | 0.95             | 45.1        |
| Approach                     |      | 916           | 0     | 964          | 0.0  | 0.553      | 11.9        | LOS B            | 4.6               | 32.0   | 0.88      | 0.73                | 0.88             | 50.3        |
| All Vehicles                 |      | 5401          | 0     | 5685         | 0.0  | 0.996      | 22.6        | LOS C            | 17.3              | 121.1  | 0.71      | 0.98                | 1.30             | 44.3        |

## MOVEMENT SUMMARY

 **Site: 101 [Alumina Allee-Chalk Line-AM PEAK (Site Folder: 2034 With Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn             | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|------|--------------|------|-----------------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total       | HV ] | [ Total      | HV ] |                       |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                      |      | veh/h         | %    | veh/h        | %    | v/c                   | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| East: Chalk Line     |      |               |      |              |      |                       |             |                  |                   |        |           |                     |                  |             |
| 5                    | T1   | 1013          | 0.0  | 1066         | 0.0  | 0.471                 | 6.6         | LOS A            | 7.6               | 53.2   | 0.62      | 0.54                | 0.62             | 54.2        |
| 6                    | R2   | 494           | 0.0  | 520          | 0.0  | <sup>*</sup><br>0.791 | 19.3        | LOS B            | 9.7               | 68.2   | 0.95      | 0.92                | 1.14             | 44.8        |
| Approach             |      | 1507          | 0.0  | 1586         | 0.0  | 0.791                 | 10.8        | LOS B            | 9.7               | 68.2   | 0.73      | 0.67                | 0.79             | 50.7        |
| North: Alumina Allee |      |               |      |              |      |                       |             |                  |                   |        |           |                     |                  |             |
| 7                    | L2   | 714           | 0.0  | 752          | 0.0  | 0.610                 | 10.0        | LOS A            | 6.7               | 46.7   | 0.60      | 0.77                | 0.60             | 51.0        |
| 9                    | R2   | 546           | 0.0  | 575          | 0.0  | <sup>*</sup><br>0.860 | 34.7        | LOS C            | 8.5               | 59.3   | 1.00      | 1.04                | 1.50             | 37.7        |
| Approach             |      | 1260          | 0.0  | 1326         | 0.0  | 0.860                 | 20.7        | LOS C            | 8.5               | 59.3   | 0.78      | 0.89                | 0.99             | 44.3        |
| West: Alumina Allee  |      |               |      |              |      |                       |             |                  |                   |        |           |                     |                  |             |
| 10                   | L2   | 574           | 0.0  | 604          | 0.0  | 0.325                 | 5.7         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 11                   | T1   | 566           | 0.0  | 596          | 0.0  | <sup>*</sup><br>0.849 | 28.2        | LOS C            | 8.6               | 60.1   | 1.00      | 1.03                | 1.45             | 41.1        |
| Approach             |      | 1140          | 0.0  | 1200         | 0.0  | 0.849                 | 16.9        | LOS B            | 8.6               | 60.1   | 0.50      | 0.78                | 0.72             | 47.0        |
| All Vehicles         |      | 3907          | 0.0  | 4113         | 0.0  | 0.860                 | 15.8        | LOS B            | 9.7               | 68.2   | 0.68      | 0.77                | 0.83             | 47.4        |

## MOVEMENT SUMMARY

 **Site: 101 [Alumina Allee-Chalk Line - PM PEAK (Site Folder: 2034 With Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total       | HV ] | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                      |      | veh/h         | %    | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| East: Chalk Line     |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 5                    | T1   | 333           | 0.0  | 351          | 0.0  | 0.146     | 5.6         | LOS A            | 2.3               | 16.3   | 0.45      | 0.37                | 0.45             | 54.9        |
| 6                    | R2   | 460           | 0.0  | 484          | 0.0  | 0.878     | 32.9        | LOS C            | 14.4              | 101.1  | 1.00      | 1.04                | 1.35             | 38.4        |
| Approach             |      | 793           | 0.0  | 835          | 0.0  | 0.878     | 21.4        | LOS C            | 14.4              | 101.1  | 0.77      | 0.76                | 0.97             | 44.0        |
| North: Alumina Allee |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                    | L2   | 692           | 0.0  | 728          | 0.0  | 0.655     | 14.4        | LOS B            | 10.9              | 76.5   | 0.71      | 0.85                | 0.71             | 48.1        |
| 9                    | R2   | 613           | 0.0  | 645          | 0.0  | 0.869     | 41.8        | LOS D            | 12.1              | 84.8   | 1.00      | 1.02                | 1.41             | 35.1        |
| Approach             |      | 1305          | 0.0  | 1374         | 0.0  | 0.869     | 27.3        | LOS C            | 12.1              | 84.8   | 0.85      | 0.93                | 1.04             | 41.0        |
| West: Alumina Allee  |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                   | L2   | 580           | 0.0  | 611          | 0.0  | 0.329     | 5.7         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 11                   | T1   | 948           | 0.0  | 998          | 0.0  | 0.875     | 33.3        | LOS C            | 18.7              | 131.0  | 1.00      | 1.07                | 1.33             | 38.9        |
| Approach             |      | 1528          | 0.0  | 1608         | 0.0  | 0.875     | 22.8        | LOS C            | 18.7              | 131.0  | 0.62      | 0.87                | 0.83             | 43.7        |
| All Vehicles         |      | 3626          | 0.0  | 3817         | 0.0  | 0.878     | 24.1        | LOS C            | 18.7              | 131.0  | 0.73      | 0.87                | 0.94             | 42.8        |

## MOVEMENT SUMMARY

**Site: 101 [Alumina Allee- South Central-AM PEAK (Site Folder: 2034 With Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID                       | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|------------------------------|------|---------------|------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                              |      | [ Total       | HV ] | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | %    | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 24            | 0.0  | 25           | 0.0  | 0.020     | 9.1         | LOS A            | 0.2               | 1.7    | 0.35      | 0.63                | 0.35             | 51.0        |
| 2                            | T1   | 876           | 0.0  | 922          | 0.0  | 0.355     | 4.7         | LOS A            | 5.9               | 41.2   | 0.47      | 0.41                | 0.47             | 55.7        |
| 3                            | R2   | 38            | 0.0  | 40           | 0.0  | 0.173     | 15.7        | LOS B            | 0.7               | 5.0    | 0.59      | 0.71                | 0.59             | 46.7        |
| Approach                     |      | 938           | 0.0  | 987          | 0.0  | 0.355     | 5.2         | LOS A            | 5.9               | 41.2   | 0.47      | 0.43                | 0.47             | 55.1        |
| East: South Central Arterial |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 8             | 0.0  | 8            | 0.0  | 0.053     | 28.8        | LOS C            | 0.4               | 3.0    | 0.87      | 0.65                | 0.87             | 41.3        |
| 5                            | T1   | 8             | 0.0  | 8            | 0.0  | 0.053     | 23.3        | LOS C            | 0.4               | 3.0    | 0.87      | 0.65                | 0.87             | 42.1        |
| 6                            | R2   | 11            | 0.0  | 12           | 0.0  | 0.078     | 35.8        | LOS D            | 0.3               | 2.4    | 0.96      | 0.66                | 0.96             | 37.4        |
| Approach                     |      | 27            | 0.0  | 28           | 0.0  | 0.078     | 30.0        | LOS C            | 0.4               | 3.0    | 0.91      | 0.65                | 0.91             | 39.8        |
| North: Alumina Allee         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 24            | 0.0  | 25           | 0.0  | 0.020     | 9.1         | LOS A            | 0.2               | 1.7    | 0.35      | 0.63                | 0.35             | 51.0        |
| 8                            | T1   | 1327          | 0.0  | 1397         | 0.0  | 0.537     | 5.6         | LOS A            | 10.6              | 74.4   | 0.56      | 0.50                | 0.56             | 54.9        |
| 9                            | R2   | 260           | 0.0  | 274          | 0.0  | 0.721*    | 20.7        | LOS C            | 7.2               | 50.4   | 0.78      | 0.89                | 0.95             | 43.9        |
| Approach                     |      | 1611          | 0.0  | 1696         | 0.0  | 0.721     | 8.1         | LOS A            | 10.6              | 74.4   | 0.59      | 0.57                | 0.62             | 52.7        |
| West: South Central Arterial |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 182           | 0.0  | 192          | 0.0  | 0.651     | 32.9        | LOS C            | 6.0               | 41.9   | 0.98      | 0.85                | 1.07             | 38.4        |
| 11                           | T1   | 10            | 0.0  | 11           | 0.0  | 0.651*    | 27.3        | LOS C            | 6.0               | 41.9   | 0.98      | 0.85                | 1.07             | 39.1        |
| 12                           | R2   | 31            | 0.0  | 33           | 0.0  | 0.116     | 29.5        | LOS C            | 0.8               | 5.9    | 0.88      | 0.71                | 0.88             | 39.9        |
| Approach                     |      | 223           | 0.0  | 235          | 0.0  | 0.651     | 32.1        | LOS C            | 6.0               | 41.9   | 0.97      | 0.83                | 1.04             | 38.6        |
| All Vehicles                 |      | 2799          | 0.0  | 2946         | 0.0  | 0.721     | 9.3         | LOS A            | 10.6              | 74.4   | 0.58      | 0.54                | 0.61             | 51.8        |

## MOVEMENT SUMMARY

**Site: 101 [Alumina Allee- South Central - PM PEAK (Site Folder: 2034 With Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID                       | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|------------------------------|------|---------------|------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                              |      | [ Total       | HV ] | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | %    | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 44            | 0.0  | 46           | 0.0  | 0.050     | 13.8        | LOS B            | 0.7               | 4.8    | 0.54      | 0.68                | 0.54             | 47.9        |
| 2                            | T1   | 877           | 0.0  | 923          | 0.0  | 0.473     | 10.7        | LOS B            | 8.9               | 62.5   | 0.70      | 0.61                | 0.70             | 51.0        |
| 3                            | R2   | 24            | 0.0  | 25           | 0.0  | 0.088     | 19.6        | LOS B            | 0.5               | 3.6    | 0.68      | 0.70                | 0.68             | 44.5        |
| Approach                     |      | 945           | 0.0  | 995          | 0.0  | 0.473     | 11.0        | LOS B            | 8.9               | 62.5   | 0.69      | 0.62                | 0.69             | 50.7        |
| East: South Central Arterial |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 8             | 0.0  | 8            | 0.0  | 0.023     | 20.0        | LOS B            | 0.3               | 2.0    | 0.69      | 0.59                | 0.69             | 45.6        |
| 5                            | T1   | 6             | 0.0  | 6            | 0.0  | 0.023     | 14.5        | LOS B            | 0.3               | 2.0    | 0.69      | 0.59                | 0.69             | 46.6        |
| 6                            | R2   | 13            | 0.0  | 14           | 0.0  | 0.066     | 30.4        | LOS C            | 0.4               | 2.5    | 0.89      | 0.68                | 0.89             | 39.5        |
| Approach                     |      | 27            | 0.0  | 28           | 0.0  | 0.066     | 23.8        | LOS C            | 0.4               | 2.5    | 0.79      | 0.64                | 0.79             | 42.6        |
| North: Alumina Allee         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 11            | 0.0  | 12           | 0.0  | 0.012     | 13.6        | LOS B            | 0.2               | 1.2    | 0.52      | 0.64                | 0.52             | 48.0        |
| 8                            | T1   | 845           | 0.0  | 889          | 0.0  | 0.456     | 10.5        | LOS B            | 8.5               | 59.5   | 0.69      | 0.60                | 0.69             | 51.1        |
| 9                            | R2   | 174           | 0.0  | 183          | 0.0  | 0.677*    | 27.1        | LOS C            | 5.3               | 36.9   | 0.90      | 0.89                | 1.05             | 40.7        |
| Approach                     |      | 1030          | 0.0  | 1084         | 0.0  | 0.677     | 13.4        | LOS B            | 8.5               | 59.5   | 0.73      | 0.65                | 0.75             | 49.0        |
| West: South Central Arterial |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 397           | 0.0  | 418          | 0.0  | 0.685     | 25.3        | LOS C            | 11.3              | 79.0   | 0.92      | 0.86                | 0.96             | 41.6        |
| 11                           | T1   | 6             | 0.0  | 6            | 0.0  | 0.685*    | 19.8        | LOS B            | 11.3              | 79.0   | 0.92      | 0.86                | 0.96             | 42.4        |
| 12                           | R2   | 41            | 0.0  | 43           | 0.0  | 0.084     | 20.6        | LOS C            | 0.9               | 6.2    | 0.72      | 0.70                | 0.72             | 44.2        |
| Approach                     |      | 444           | 0.0  | 467          | 0.0  | 0.685     | 24.8        | LOS C            | 11.3              | 79.0   | 0.90      | 0.84                | 0.94             | 41.9        |
| All Vehicles                 |      | 2446          | 0.0  | 2575         | 0.0  | 0.685     | 14.7        | LOS B            | 11.3              | 79.0   | 0.75      | 0.67                | 0.76             | 48.0        |

# MOVEMENT SUMMARY

 Site: 101 [Ceramic Curve-Chalk Line AM PEAK (Site Folder: 2034 With Development)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

## Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total       | HV ] | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                      |      | veh/h         | %    | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                    | L2   | 78            | 0.0  | 82           | 0.0  | 0.288      | 30.3        | LOS C            | 2.4               | 16.8   | 0.91      | 0.75                | 0.91             | 39.6        |
| 2                    | T1   | 7             | 0.0  | 7            | 0.0  | 0.288      | 24.7        | LOS C            | 2.4               | 16.8   | 0.91      | 0.75                | 0.91             | 40.3        |
| 3                    | R2   | 28            | 0.0  | 29           | 0.0  | 0.130      | 31.6        | LOS C            | 0.8               | 5.6    | 0.91      | 0.71                | 0.91             | 38.8        |
| Approach             |      | 113           | 0.0  | 119          | 0.0  | 0.288      | 30.3        | LOS C            | 2.4               | 16.8   | 0.91      | 0.74                | 0.91             | 39.4        |
| East: Chalk Line     |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                    | L2   | 73            | 0.0  | 77           | 0.0  | 0.593      | 11.5        | LOS B            | 12.4              | 86.7   | 0.59      | 0.56                | 0.59             | 52.9        |
| 5                    | T1   | 1387          | 0.0  | 1460         | 0.0  | *<br>0.593 | 5.9         | LOS A            | 12.4              | 87.1   | 0.59      | 0.55                | 0.59             | 54.4        |
| 6                    | R2   | 97            | 0.0  | 102          | 0.0  | 0.400      | 15.8        | LOS B            | 2.0               | 13.8   | 0.65      | 0.75                | 0.65             | 46.6        |
| Approach             |      | 1557          | 0.0  | 1639         | 0.0  | 0.593      | 6.8         | LOS A            | 12.4              | 87.1   | 0.60      | 0.56                | 0.60             | 53.8        |
| North: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                    | L2   | 79            | 0.0  | 83           | 0.0  | 0.291      | 30.3        | LOS C            | 2.4               | 17.1   | 0.92      | 0.76                | 0.92             | 39.5        |
| 8                    | T1   | 7             | 0.0  | 7            | 0.0  | *<br>0.291 | 24.7        | LOS C            | 2.4               | 17.1   | 0.92      | 0.76                | 0.92             | 40.3        |
| 9                    | R2   | 78            | 0.0  | 82           | 0.0  | 0.361      | 32.8        | LOS C            | 2.3               | 16.4   | 0.95      | 0.76                | 0.95             | 38.3        |
| Approach             |      | 164           | 0.0  | 173          | 0.0  | 0.361      | 31.3        | LOS C            | 2.4               | 17.1   | 0.93      | 0.76                | 0.93             | 39.0        |
| West: Alumina Allee  |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                   | L2   | 72            | 0.0  | 76           | 0.0  | 0.495      | 10.9        | LOS B            | 9.3               | 65.2   | 0.54      | 0.51                | 0.54             | 53.2        |
| 11                   | T1   | 1146          | 0.0  | 1206         | 0.0  | 0.495      | 5.4         | LOS A            | 9.4               | 65.6   | 0.54      | 0.49                | 0.54             | 54.9        |
| 12                   | R2   | 83            | 0.0  | 87           | 0.0  | 0.440      | 19.0        | LOS B            | 1.9               | 13.5   | 0.72      | 0.76                | 0.72             | 44.8        |
| Approach             |      | 1301          | 0.0  | 1369         | 0.0  | 0.495      | 6.5         | LOS A            | 9.4               | 65.6   | 0.55      | 0.51                | 0.55             | 54.0        |
| All Vehicles         |      | 3135          | 0.0  | 3300         | 0.0  | 0.593      | 8.8         | LOS A            | 12.4              | 87.1   | 0.61      | 0.56                | 0.61             | 52.2        |

# MOVEMENT SUMMARY

**Site: 101 [Ceramic Curve-Chalk Line - PM PEAK (Site Folder: 2034 With Development)]**

New Site

Site Category: (None)

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

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

| Vehicle Movement Performance |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
|------------------------------|------|---------------|------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total       | HV ] | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | %    | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Ceramic Curve         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 92            | 0.0  | 97           | 0.0  | 0.249     | 20.0        | LOS C            | 1.8               | 12.4   | 0.86      | 0.75                | 0.86             | 44.4        |
| 2                            | T1   | 7             | 0.0  | 7            | 0.0  | 0.249     | 14.5        | LOS B            | 1.8               | 12.4   | 0.86      | 0.75                | 0.86             | 45.4        |
| 3                            | R2   | 93            | 0.0  | 98           | 0.0  | 0.494     | 26.8        | LOS C            | 2.0               | 14.3   | 1.00      | 0.76                | 1.02             | 40.9        |
| Approach                     |      | 192           | 0.0  | 202          | 0.0  | 0.494     | 23.1        | LOS C            | 2.0               | 14.3   | 0.93      | 0.75                | 0.94             | 42.7        |
| East: Chalk Line             |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 73            | 0.0  | 77           | 0.0  | 0.752     | 15.8        | LOS B            | 13.4              | 93.7   | 0.84      | 0.83                | 0.95             | 49.8        |
| 5                            | T1   | 1387          | 0.0  | 1460         | 0.0  | 0.752     | 10.2        | LOS B            | 13.4              | 94.1   | 0.84      | 0.82                | 0.95             | 51.2        |
| 6                            | R2   | 165           | 0.0  | 174          | 0.0  | 0.867     | 32.0        | LOS C            | 4.3               | 30.3   | 1.00      | 1.05                | 1.79             | 38.6        |
| Approach                     |      | 1625          | 0.0  | 1711         | 0.0  | 0.867     | 12.7        | LOS B            | 13.4              | 94.1   | 0.86      | 0.85                | 1.03             | 49.5        |
| North: Ceramic Curve         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 370           | 0.0  | 389          | 0.0  | 0.939     | 39.2        | LOS D            | 11.7              | 82.2   | 1.00      | 1.25                | 1.98             | 35.9        |
| 8                            | T1   | 3             | 0.0  | 3            | 0.0  | 0.939*    | 33.6        | LOS C            | 11.7              | 82.2   | 1.00      | 1.25                | 1.98             | 36.5        |
| 9                            | R2   | 71            | 0.0  | 75           | 0.0  | 0.227     | 21.0        | LOS C            | 1.3               | 9.2    | 0.87      | 0.74                | 0.87             | 43.8        |
| Approach                     |      | 444           | 0.0  | 467          | 0.0  | 0.939     | 36.2        | LOS D            | 11.7              | 82.2   | 0.98      | 1.17                | 1.81             | 37.0        |
| West: Alumina Allee          |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 31            | 0.0  | 33           | 0.0  | 0.899     | 27.2        | LOS C            | 24.4              | 170.9  | 0.97      | 1.16                | 1.42             | 43.2        |
| 11                           | T1   | 1692          | 0.0  | 1781         | 0.0  | 0.899*    | 21.7        | LOS C            | 24.4              | 170.9  | 0.96      | 1.15                | 1.41             | 44.2        |
| 12                           | R2   | 52            | 0.0  | 55           | 0.0  | 0.247     | 20.7        | LOS C            | 1.0               | 6.8    | 0.86      | 0.74                | 0.86             | 43.9        |
| Approach                     |      | 1775          | 0.0  | 1868         | 0.0  | 0.899     | 21.8        | LOS C            | 24.4              | 170.9  | 0.95      | 1.14                | 1.40             | 44.1        |
| All Vehicles                 |      | 4036          | 0.0  | 4248         | 0.0  | 0.939     | 19.8        | LOS B            | 24.4              | 170.9  | 0.92      | 1.01                | 1.27             | 45.1        |

# MOVEMENT SUMMARY

Site: 101 [Alumina Allee St AM PEAK (Site Folder: 2034 With Development)]

New Site

Site Category: (None)

Roundabout

## Vehicle Movement Performance

| Mov ID                  | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|-------------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                         |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                         |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                       | L2   | 494           | 0     | 520          | 0.0  | 1.795     | 748.9       | LOS F            | 184.1             | 1288.5 | 1.00      | 5.35                | 12.44            | 4.5         |
| 2                       | T1   | 474           | 0     | 499          | 0.0  | 1.795     | 750.0       | LOS F            | 184.1             | 1288.5 | 1.00      | 4.79                | 11.54            | 4.6         |
| 3                       | R2   | 31            | 0     | 33           | 0.0  | 1.795     | 755.9       | LOS F            | 144.8             | 1013.4 | 1.00      | 4.70                | 11.38            | 4.6         |
| Approach                |      | 999           | 0     | 1052         | 0.0  | 1.795     | 749.6       | LOS F            | 184.1             | 1288.5 | 1.00      | 5.06                | 11.98            | 4.6         |
| East: Diamantpyp        |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                       | L2   | 18            | 0     | 19           | 0.0  | 1.000     | 417.0       | LOS F            | 7.2               | 50.5   | 1.00      | 1.26                | 2.26             | 8.0         |
| 5                       | T1   | 1             | 0     | 1            | 0.0  | 1.000     | 417.1       | LOS F            | 7.2               | 50.5   | 1.00      | 1.26                | 2.26             | 8.1         |
| 6                       | R2   | 23            | 0     | 24           | 0.0  | 1.000     | 398.2       | LOS F            | 7.2               | 50.5   | 1.00      | 1.26                | 2.26             | 8.1         |
| Approach                |      | 42            | 0     | 44           | 0.0  | 1.000     | 406.7       | LOS F            | 7.2               | 50.5   | 1.00      | 1.26                | 2.26             | 8.1         |
| North: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                       | L2   | 75            | 0     | 79           | 0.0  | 0.081     | 5.7         | LOS A            | 0.4               | 2.8    | 0.52      | 0.59                | 0.52             | 54.1        |
| 8                       | T1   | 1179          | 0     | 1241         | 0.0  | 1.031     | 57.1        | LOS E            | 65.6              | 459.1  | 1.00      | 2.34                | 4.15             | 31.8        |
| 9                       | R2   | 1202          | 0     | 1265         | 0.0  | 1.031     | 58.1        | LOS E            | 65.6              | 459.1  | 1.00      | 2.33                | 4.04             | 32.3        |
| Approach                |      | 2456          | 0     | 2585         | 0.0  | 1.031     | 56.0        | LOS E            | 65.6              | 459.1  | 0.99      | 2.28                | 3.99             | 32.4        |
| West: RBIDZ             |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                      | L2   | 180           | 0     | 189          | 0.0  | 0.091     | 4.9         | LOS A            | 0.4               | 3.1    | 0.44      | 0.55                | 0.44             | 54.4        |
| 11                      | T1   | 1             | 0     | 1            | 0.0  | 0.317     | 4.3         | LOS A            | 2.0               | 14.1   | 0.49      | 0.67                | 0.49             | 52.2        |
| 12                      | R2   | 442           | 0     | 465          | 0.0  | 0.317     | 10.0        | LOS A            | 2.0               | 14.1   | 0.49      | 0.67                | 0.49             | 52.5        |
| Approach                |      | 623           | 0     | 656          | 0.0  | 0.317     | 8.5         | LOS A            | 2.0               | 14.1   | 0.48      | 0.63                | 0.48             | 53.1        |
| All Vehicles            |      | 4120          | 0     | 4337         | 0.0  | 1.795     | 220.6       | LOS F            | 184.1             | 1288.5 | 0.91      | 2.70                | 5.38             | 13.4        |

## MOVEMENT SUMMARY

Site: 101 [Alumina Allee St PM PEAK (Site Folder: 2034 With Development)]

New Site

Site Category: (None)

Roundabout

### Vehicle Movement Performance

| Mov ID                  | Turn | INPUT VOLUMES |            | DEMAND FLOWS  |        | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|-------------------------|------|---------------|------------|---------------|--------|-----------|-------------|------------------|-------------------|----------|-----------|---------------------|------------------|-------------|
|                         |      | [ Total veh/h | HV ] veh/h | [ Total veh/h | HV ] % |           |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
| South: Alumina Allee St |      |               |            |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 1                       | L2   | 545           | 0          | 574           | 0.0    | 0.747     | 7.2         | LOS A            | 9.1               | 64.0     | 0.79      | 0.75                | 0.90             | 53.1        |
| 2                       | T1   | 1107          | 0          | 1165          | 0.0    | 0.747     | 7.6         | LOS A            | 9.1               | 64.0     | 0.80      | 0.78                | 0.93             | 54.2        |
| 3                       | R2   | 24            | 0          | 25            | 0.0    | 0.747     | 13.5        | LOS B            | 9.1               | 63.4     | 0.81      | 0.79                | 0.95             | 54.3        |
| Approach                |      | 1676          | 0          | 1764          | 0.0    | 0.747     | 7.5         | LOS A            | 9.1               | 64.0     | 0.80      | 0.77                | 0.92             | 53.8        |
| East: Diamantpyp        |      |               |            |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 4                       | L2   | 63            | 0          | 66            | 0.0    | 0.454     | 14.1        | LOS B            | 2.9               | 20.1     | 0.90      | 1.03                | 1.10             | 46.8        |
| 5                       | T1   | 1             | 0          | 1             | 0.0    | 0.454     | 14.2        | LOS B            | 2.9               | 20.1     | 0.90      | 1.03                | 1.10             | 48.0        |
| 6                       | R2   | 117           | 0          | 123           | 0.0    | 0.454     | 19.9        | LOS B            | 2.9               | 20.1     | 0.90      | 1.03                | 1.10             | 48.3        |
| Approach                |      | 181           | 0          | 191           | 0.0    | 0.454     | 17.8        | LOS B            | 2.9               | 20.1     | 0.90      | 1.03                | 1.10             | 47.7        |
| North: Alumina Allee St |      |               |            |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 7                       | L2   | 23            | 0          | 24            | 0.0    | 0.043     | 9.2         | LOS A            | 0.3               | 2.2      | 0.89      | 0.72                | 0.89             | 51.9        |
| 8                       | T1   | 465           | 0          | 489           | 0.0    | 0.532     | 11.2        | LOS B            | 5.8               | 40.6     | 1.00      | 0.98                | 1.14             | 51.8        |
| 9                       | R2   | 183           | 0          | 193           | 0.0    | 0.532     | 18.4        | LOS B            | 4.9               | 34.5     | 1.00      | 1.05                | 1.18             | 49.2        |
| Approach                |      | 671           | 0          | 706           | 0.0    | 0.532     | 13.1        | LOS B            | 5.8               | 40.6     | 1.00      | 0.99                | 1.14             | 51.1        |
| West: RBIDZ             |      |               |            |               |        |           |             |                  |                   |          |           |                     |                  |             |
| 10                      | L2   | 1310          | 0          | 1379          | 0.0    | 1.142     | 153.5       | LOS F            | 68.7              | 481.2    | 1.00      | 3.80                | 9.08             | 17.0        |
| 11                      | T1   | 1             | 0          | 1             | 0.0    | 1.023     | 61.2        | LOS E            | 42.8              | 299.7    | 1.00      | 2.54                | 5.01             | 29.9        |
| 12                      | R2   | 875           | 0          | 921           | 0.0    | 1.023     | 66.9        | LOS E            | 42.8              | 299.7    | 1.00      | 2.54                | 5.01             | 30.0        |
| Approach                |      | 2186          | 0          | 2301          | 0.0    | 1.142     | 118.8       | LOS F            | 68.7              | 481.2    | 1.00      | 3.30                | 7.45             | 20.7        |
| All Vehicles            |      | 4714          | 0          | 4962          | 0.0    | 1.142     | 60.3        | LOS E            | 68.7              | 481.2    | 0.92      | 1.98                | 3.99             | 30.7        |

## MOVEMENT SUMMARY

**Site: 102 [Alumina Allee St AM PEAK -Upgrade (Site Folder: 2034 With Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 75 seconds (Site Optimum Cycle Time - Minimum Delay)

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

| Vehicle Movement Performance |      |                  |               |                  |           |                              |             |                  |                   |             |           |                     |                  |             |
|------------------------------|------|------------------|---------------|------------------|-----------|------------------------------|-------------|------------------|-------------------|-------------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES    |               | DEMAND FLOWS     |           | Deg. Satn                    | Aver. Delay | Level of Service | 95% BACK OF QUEUE |             | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total<br>veh/h | HV ]<br>veh/h | [ Total<br>veh/h | HV ]<br>% |                              |             |                  | [ Veh.<br>veh     | Dist ]<br>m |           |                     |                  |             |
| South: Alumina Alle St       |      |                  |               |                  |           |                              |             |                  |                   |             |           |                     |                  |             |
| 1                            | L2   | 494              | 0             | 520              | 0.0       | 0.788                        | 39.3        | LOS D            | 13.0              | 90.7        | 1.00      | 0.93                | 1.17             | 36.2        |
| 2                            | T1   | 474              | 0             | 499              | 0.0       | 0.788                        | 33.6        | LOS C            | 13.3              | 93.0        | 1.00      | 0.95                | 1.17             | 38.3        |
| 3                            | R2   | 31               | 0             | 33               | 0.0       | <div><div>*</div>0.309</div> | 46.6        | LOS D            | 1.3               | 8.9         | 1.00      | 0.70                | 1.00             | 33.6        |
| Approach                     |      | 999              | 0             | 1052             | 0.0       | 0.788                        | 36.8        | LOS D            | 13.3              | 93.0        | 1.00      | 0.93                | 1.16             | 37.1        |
| East: Diamantoy              |      |                  |               |                  |           |                              |             |                  |                   |             |           |                     |                  |             |
| 4                            | L2   | 18               | 0             | 19               | 0.0       | 0.053                        | 13.2        | LOS B            | 0.3               | 2.0         | 0.60      | 0.66                | 0.60             | 48.8        |
| 5                            | T1   | 1                | 0             | 1                | 0.0       | 0.084                        | 35.4        | LOS D            | 0.4               | 3.1         | 0.94      | 0.68                | 0.94             | 36.1        |
| 6                            | R2   | 23               | 0             | 24               | 0.0       | 0.084                        | 41.5        | LOS D            | 0.5               | 3.2         | 0.95      | 0.68                | 0.95             | 35.5        |
| Approach                     |      | 42               | 0             | 44               | 0.0       | 0.084                        | 29.2        | LOS C            | 0.5               | 3.2         | 0.80      | 0.67                | 0.80             | 40.2        |
| North: Alumina Alle St       |      |                  |               |                  |           |                              |             |                  |                   |             |           |                     |                  |             |
| 7                            | L2   | 75               | 0             | 79               | 0.0       | 0.054                        | 6.0         | LOS A            | 0.2               | 1.5         | 0.15      | 0.58                | 0.15             | 53.8        |
| 8                            | T1   | 1179             | 0             | 1241             | 0.0       | 0.824                        | 13.0        | LOS B            | 29.2              | 204.7       | 0.76      | 0.77                | 0.82             | 49.1        |
| 9                            | R2   | 1202             | 0             | 1265             | 0.0       | <div><div>*</div>0.824</div> | 29.7        | LOS C            | 21.7              | 152.2       | 0.93      | 1.04                | 1.04             | 40.0        |
| Approach                     |      | 2456             | 0             | 2585             | 0.0       | 0.824                        | 21.0        | LOS C            | 29.2              | 204.7       | 0.83      | 0.90                | 0.91             | 44.3        |
| West: RBIDZ                  |      |                  |               |                  |           |                              |             |                  |                   |             |           |                     |                  |             |
| 10                           | L2   | 180              | 0             | 189              | 0.0       | 0.589                        | 37.6        | LOS D            | 6.7               | 46.6        | 0.97      | 0.81                | 0.97             | 36.5        |
| 11                           | T1   | 1                | 0             | 1                | 0.0       | <div><div>*</div>0.732</div> | 34.9        | LOS C            | 8.8               | 61.6        | 1.00      | 0.89                | 1.14             | 36.1        |
| 12                           | R2   | 442              | 0             | 465              | 0.0       | 0.732                        | 40.5        | LOS D            | 8.8               | 61.6        | 1.00      | 0.89                | 1.14             | 35.8        |
| Approach                     |      | 623              | 0             | 656              | 0.0       | 0.732                        | 39.6        | LOS D            | 8.8               | 61.6        | 0.99      | 0.86                | 1.09             | 36.0        |
| All Vehicles                 |      | 4120             | 0             | 4337             | 0.0       | 0.824                        | 27.7        | LOS C            | 29.2              | 204.7       | 0.89      | 0.90                | 1.00             | 40.9        |

## MOVEMENT SUMMARY

**Site: 102 [Alumina Allee St PM PEAK -Upgrade (Site Folder: 2034 With Development)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

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

| Vehicle Movement Performance |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
|------------------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee St      |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 545           | 0     | 574          | 0.0  | 0.892     | 37.6        | LOS D            | 20.9              | 146.4  | 0.99      | 1.04                | 1.40             | 36.5        |
| 2                            | T1   | 1107          | 0     | 1165         | 0.0  | 0.892     | 31.7        | LOS C            | 21.8              | 152.6  | 1.00      | 1.12                | 1.38             | 39.5        |
| 3                            | R2   | 24            | 0     | 25           | 0.0  | 0.127     | 31.8        | LOS C            | 0.7               | 4.9    | 0.91      | 0.71                | 0.91             | 38.9        |
| Approach                     |      | 1676          | 0     | 1764         | 0.0  | 0.892     | 33.6        | LOS C            | 21.8              | 152.6  | 0.99      | 1.09                | 1.38             | 38.5        |
| East: Diamantpy              |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 63            | 0     | 66           | 0.0  | 0.161     | 16.2        | LOS B            | 1.0               | 6.9    | 0.81      | 0.72                | 0.81             | 46.9        |
| 5                            | T1   | 1             | 0     | 1            | 0.0  | 0.427     | 28.5        | LOS C            | 1.9               | 13.0   | 0.96      | 0.76                | 0.96             | 38.6        |
| 6                            | R2   | 117           | 0     | 123          | 0.0  | 0.427     | 34.5        | LOS C            | 1.9               | 13.1   | 0.96      | 0.76                | 0.96             | 38.0        |
| Approach                     |      | 181           | 0     | 191          | 0.0  | 0.427     | 28.1        | LOS C            | 1.9               | 13.1   | 0.91      | 0.75                | 0.91             | 40.7        |
| North: Alumina Allee St      |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 23            | 0     | 24           | 0.0  | 0.017     | 6.1         | LOS A            | 0.1               | 0.4    | 0.18      | 0.58                | 0.18             | 53.7        |
| 8                            | T1   | 465           | 0     | 489          | 0.0  | 0.717     | 19.7        | LOS B            | 13.2              | 92.5   | 0.93      | 0.84                | 0.98             | 45.4        |
| 9                            | R2   | 183           | 0     | 193          | 0.0  | 0.716     | 39.5        | LOS D            | 3.1               | 22.0   | 1.00      | 0.85                | 1.27             | 35.9        |
| Approach                     |      | 671           | 0     | 706          | 0.0  | 0.717     | 24.7        | LOS C            | 13.2              | 92.5   | 0.92      | 0.84                | 1.03             | 42.6        |
| West: RBiDZ                  |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 1310          | 0     | 1379         | 0.0  | 0.866     | 29.4        | LOS C            | 25.7              | 180.1  | 0.96      | 0.99                | 1.20             | 39.7        |
| 11                           | T1   | 1             | 0     | 1            | 0.0  | 0.866     | 24.0        | LOS C            | 25.3              | 177.3  | 0.96      | 0.99                | 1.20             | 40.4        |
| 12                           | R2   | 875           | 0     | 921          | 0.0  | 0.866     | 29.6        | LOS C            | 25.3              | 177.3  | 0.96      | 0.99                | 1.20             | 40.0        |
| Approach                     |      | 2186          | 0     | 2301         | 0.0  | 0.866     | 29.5        | LOS C            | 25.7              | 180.1  | 0.96      | 0.99                | 1.20             | 39.8        |
| All Vehicles                 |      | 4714          | 0     | 4962         | 0.0  | 0.892     | 30.2        | LOS C            | 25.7              | 180.1  | 0.96      | 0.99                | 1.23             | 39.7        |

## SCENARIO B

## MOVEMENT SUMMARY

## Site: 101 [R619 -Via Davallia - AM PEAK (Site Folder: Scenario B)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 82 seconds (Site Optimum Cycle Time - Minimum Delay)

| Vehicle Movement Performance |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
|------------------------------|------|---------------|-------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total       | HV ]  | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | veh/h | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte          |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 266           | 0     | 280          | 0.0  | 0.151      | 7.7         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 2                            | T1   | 142           | 0     | 149          | 0.0  | 0.291      | 36.5        | LOS D            | 4.2               | 29.2   | 0.87      | 0.71                | 0.87             | 37.8        |
| 3                            | R2   | 72            | 0     | 76           | 0.0  | 0.291      | 30.8        | LOS C            | 4.2               | 29.2   | 0.95      | 0.74                | 0.95             | 40.0        |
| Approach                     |      | 480           | 0     | 505          | 0.0  | 0.291      | 19.7        | LOS B            | 4.2               | 29.2   | 0.40      | 0.61                | 0.40             | 46.1        |
| East: R619                   |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 621           | 0     | 654          | 0.0  | 0.352      | 11.1        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 5                            | T1   | 704           | 0     | 741          | 0.0  | *<br>1.123 | 126.4       | LOS F            | 52.3              | 365.8  | 0.97      | 1.58                | 2.16             | 19.4        |
| 6                            | R2   | 409           | 0     | 431          | 0.0  | *<br>0.897 | 39.0        | LOS D            | 16.3              | 113.8  | 1.00      | 1.02                | 1.37             | 36.3        |
| Approach                     |      | 1734          | 0     | 1825         | 0.0  | 1.123      | 64.5        | LOS E            | 52.3              | 365.8  | 0.63      | 1.07                | 1.20             | 29.5        |
| North: Via Davallia          |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 547           | 0     | 576          | 0.0  | 0.310      | 9.9         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 8                            | T1   | 829           | 0     | 873          | 0.0  | *<br>1.116 | 146.9       | LOS F            | 45.0              | 315.1  | 1.00      | 1.60                | 2.63             | 16.1        |
| 9                            | R2   | 51            | 0     | 54           | 0.0  | *<br>1.116 | 139.1       | LOS F            | 42.1              | 294.4  | 1.00      | 1.32                | 2.63             | 15.6        |
| Approach                     |      | 1427          | 0     | 1502         | 0.0  | 1.116      | 94.1        | LOS F            | 45.0              | 315.1  | 0.62      | 1.18                | 1.62             | 22.1        |
| West: R619                   |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 51            | 0     | 54           | 0.0  | 0.061      | 13.1        | LOS B            | 0.7               | 5.0    | 0.55      | 0.67                | 0.55             | 49.6        |
| 11                           | T1   | 694           | 0     | 731          | 0.0  | 0.768      | 35.8        | LOS D            | 14.7              | 102.8  | 0.99      | 0.91                | 1.10             | 38.6        |
| 12                           | R2   | 785           | 0     | 826          | 0.0  | 0.900      | 40.9        | LOS D            | 16.0              | 112.3  | 1.00      | 1.03                | 1.38             | 35.7        |
| Approach                     |      | 1530          | 0     | 1611         | 0.0  | 0.900      | 37.7        | LOS D            | 16.0              | 112.3  | 0.98      | 0.97                | 1.23             | 37.3        |
| All Vehicles                 |      | 5171          | 0     | 5443         | 0.0  | 1.123      | 60.6        | LOS E            | 52.3              | 365.8  | 0.71      | 1.03                | 1.25             | 29.6        |

# MOVEMENT SUMMARY

## Site: 101 [R619 -Via Davallia - PM PEAK (Site Folder: Scenario B)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 71 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID              | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|---------------------|------|---------------|-------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                     |      | [ Total       | HV ]  | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                     |      | veh/h         | veh/h | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                   | L2   | 675           | 0     | 711          | 0.0  | 0.383      | 10.9        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 2                   | T1   | 696           | 0     | 733          | 0.0  | *<br>1.384 | 215.8       | LOS F            | 85.7              | 600.0  | 0.96      | 1.51                | 3.07             | 12.6        |
| 3                   | R2   | 749           | 0     | 788          | 0.0  | *<br>1.384 | 378.0       | LOS F            | 88.5              | 619.6  | 1.00      | 2.33                | 4.80             | 8.0         |
| Approach            |      | 2120          | 0     | 2232         | 0.0  | 1.384      | 207.9       | LOS F            | 88.5              | 619.6  | 0.67      | 1.49                | 2.71             | 13.2        |
| East: R619          |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                   | L2   | 149           | 0     | 157          | 0.0  | 0.084      | 6.0         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 5                   | T1   | 882           | 0     | 928          | 0.0  | *<br>1.358 | 284.0       | LOS F            | 106.5             | 745.4  | 0.98      | 2.56                | 3.73             | 10.6        |
| 6                   | R2   | 410           | 0     | 432          | 0.0  | *<br>1.358 | 343.2       | LOS F            | 57.7              | 404.2  | 1.00      | 2.15                | 4.54             | 8.6         |
| Approach            |      | 1441          | 0     | 1517         | 0.0  | 1.358      | 272.1       | LOS F            | 106.5             | 745.4  | 0.88      | 2.23                | 3.58             | 10.8        |
| North: Via Davallia |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                   | L2   | 296           | 0     | 312          | 0.0  | 0.168      | 14.0        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 8                   | T1   | 122           | 0     | 128          | 0.0  | 0.156      | 23.3        | LOS C            | 2.3               | 15.8   | 0.81      | 0.65                | 0.81             | 43.4        |
| 9                   | R2   | 10            | 0     | 11           | 0.0  | 0.156      | 33.7        | LOS C            | 1.6               | 11.2   | 0.87      | 0.71                | 0.87             | 40.4        |
| Approach            |      | 428           | 0     | 451          | 0.0  | 0.168      | 17.1        | LOS B            | 2.3               | 15.8   | 0.25      | 0.57                | 0.25             | 50.6        |
| West: R619          |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                  | L2   | 23            | 0     | 24           | 0.0  | 0.042      | 17.7        | LOS B            | 0.3               | 2.3    | 0.75      | 0.67                | 0.75             | 47.1        |
| 11                  | T1   | 683           | 0     | 719          | 0.0  | 0.689      | 30.1        | LOS C            | 11.7              | 81.9   | 0.95      | 0.84                | 0.99             | 42.0        |
| 12                  | R2   | 184           | 0     | 194          | 0.0  | 0.361      | 24.1        | LOS C            | 2.2               | 15.5   | 0.95      | 0.75                | 0.95             | 42.7        |
| Approach            |      | 890           | 0     | 937          | 0.0  | 0.689      | 28.5        | LOS C            | 11.7              | 81.9   | 0.95      | 0.82                | 0.98             | 42.2        |
| All Vehicles        |      | 4879          | 0     | 5136         | 0.0  | 1.384      | 177.4       | LOS F            | 106.5             | 745.4  | 0.75      | 1.51                | 2.43             | 15.1        |

# MOVEMENT SUMMARY

## Site: 101 [R619 -Via Davallia - AM PEAK upgrade (Site Folder: Scenario B)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 45 seconds (Site Optimum Cycle Time - Minimum Delay)

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

### Vehicle Movement Performance

| Mov ID              | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|---------------------|------|---------------|------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                     |      | [ Total       | HV ] | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                     |      | veh/h         | %    | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                   | L2   | 266           | 0.0  | 266          | 0.0  | 0.143      | 6.4         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 2                   | T1   | 142           | 0.0  | 142          | 0.0  | 0.191      | 14.3        | LOS B            | 1.8               | 12.3   | 0.80      | 0.62                | 0.80             | 48.9        |
| 3                   | R2   | 72            | 0.0  | 72           | 0.0  | 0.221      | 30.0        | LOS C            | 0.8               | 5.8    | 0.99      | 0.69                | 0.99             | 40.1        |
| Approach            |      | 480           | 0.0  | 480          | 0.0  | 0.221      | 12.3        | LOS B            | 1.8               | 12.3   | 0.39      | 0.58                | 0.39             | 50.3        |
| East: R619          |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                   | L2   | 621           | 0.0  | 621          | 0.0  | 0.334      | 11.0        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 5                   | T1   | 704           | 0.0  | 704          | 0.0  | *<br>0.812 | 22.9        | LOS C            | 8.8               | 61.5   | 1.00      | 1.00                | 1.34             | 43.8        |
| 6                   | R2   | 409           | 0.0  | 409          | 0.0  | 0.646      | 20.9        | LOS C            | 5.5               | 38.7   | 0.92      | 0.83                | 0.97             | 44.2        |
| Approach            |      | 1734          | 0.0  | 1734         | 0.0  | 0.812      | 18.2        | LOS B            | 8.8               | 61.5   | 0.62      | 0.79                | 0.77             | 47.3        |
| North: Via Davallia |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                   | L2   | 547           | 0.0  | 547          | 0.0  | 0.295      | 6.9         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 8                   | T1   | 829           | 0.0  | 829          | 0.0  | 0.880      | 26.8        | LOS C            | 12.8              | 89.7   | 1.00      | 1.13                | 1.56             | 41.7        |
| 9                   | R2   | 51            | 0.0  | 51           | 0.0  | *<br>0.880 | 32.7        | LOS C            | 12.0              | 83.9   | 1.00      | 1.14                | 1.57             | 41.0        |
| Approach            |      | 1427          | 0.0  | 1427         | 0.0  | 0.880      | 19.4        | LOS B            | 12.8              | 89.7   | 0.62      | 0.90                | 0.96             | 45.9        |
| West: R619          |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                  | L2   | 51            | 0.0  | 51           | 0.0  | 0.046      | 8.3         | LOS A            | 0.2               | 1.6    | 0.40      | 0.63                | 0.40             | 52.8        |
| 11                  | T1   | 694           | 0.0  | 694          | 0.0  | 0.801      | 22.4        | LOS C            | 8.5               | 59.7   | 1.00      | 0.99                | 1.32             | 44.0        |
| 12                  | R2   | 785           | 0.0  | 785          | 0.0  | *<br>0.863 | 29.7        | LOS C            | 9.0               | 62.7   | 1.00      | 1.11                | 1.50             | 40.2        |
| Approach            |      | 1530          | 0.0  | 1530         | 0.0  | 0.863      | 25.7        | LOS C            | 9.0               | 62.7   | 0.98      | 1.04                | 1.38             | 42.2        |
| All Vehicles        |      | 5171          | 0.0  | 5171         | 0.0  | 0.880      | 20.2        | LOS C            | 12.8              | 89.7   | 0.70      | 0.88                | 0.97             | 45.5        |

## MOVEMENT SUMMARY

### Site: 101 [R619 -Via Davallia - PM PEAK - upgrade (Site Folder: Scenario B)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site Optimum Cycle Time - Minimum Delay)

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

| Vehicle Movement Performance |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
|------------------------------|------|---------------|------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total       | HV ] | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | %    | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte          |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 675           | 0.0  | 675          | 0.0  | 0.363     | 7.6         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 2                            | T1   | 696           | 0.0  | 696          | 0.0  | 0.625     | 17.0        | LOS B            | 12.6              | 87.9   | 0.81      | 0.70                | 0.81             | 47.5        |
| 3                            | R2   | 749           | 0.0  | 749          | 0.0  | 0.875*    | 41.6        | LOS D            | 14.9              | 104.1  | 1.00      | 1.09                | 1.46             | 35.6        |
| Approach                     |      | 2120          | 0.0  | 2120         | 0.0  | 0.875     | 22.7        | LOS C            | 14.9              | 104.1  | 0.62      | 0.78                | 0.78             | 44.2        |
| East: R619                   |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 149           | 0.0  | 149          | 0.0  | 0.080     | 5.9         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 5                            | T1   | 882           | 0.0  | 882          | 0.0  | 0.865*    | 33.5        | LOS C            | 16.4              | 114.5  | 1.00      | 1.07                | 1.35             | 38.9        |
| 6                            | R2   | 410           | 0.0  | 410          | 0.0  | 0.889*    | 40.2        | LOS D            | 10.8              | 75.6   | 0.97      | 1.04                | 1.38             | 36.1        |
| Approach                     |      | 1441          | 0.0  | 1441         | 0.0  | 0.889     | 32.6        | LOS C            | 16.4              | 114.5  | 0.89      | 1.00                | 1.22             | 39.2        |
| North: Via Davallia          |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 296           | 0.0  | 296          | 0.0  | 0.159     | 7.8         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 8                            | T1   | 122           | 0.0  | 122          | 0.0  | 0.103     | 14.7        | LOS B            | 1.6               | 11.2   | 0.69      | 0.54                | 0.69             | 48.3        |
| 9                            | R2   | 10            | 0.0  | 10           | 0.0  | 0.103     | 23.2        | LOS C            | 1.2               | 8.3    | 0.75      | 0.60                | 0.75             | 45.6        |
| Approach                     |      | 428           | 0.0  | 428          | 0.0  | 0.159     | 10.1        | LOS B            | 1.6               | 11.2   | 0.21      | 0.53                | 0.21             | 52.6        |
| West: R619                   |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 23            | 0.0  | 23           | 0.0  | 0.030     | 13.8        | LOS B            | 0.3               | 1.8    | 0.55      | 0.65                | 0.55             | 50.3        |
| 11                           | T1   | 683           | 0.0  | 683          | 0.0  | 0.670     | 24.4        | LOS C            | 10.2              | 71.2   | 0.95      | 0.83                | 0.99             | 43.0        |
| 12                           | R2   | 184           | 0.0  | 184          | 0.0  | 0.314     | 30.6        | LOS C            | 2.6               | 18.4   | 0.93      | 0.73                | 0.93             | 39.8        |
| Approach                     |      | 890           | 0.0  | 890          | 0.0  | 0.670     | 25.4        | LOS C            | 10.2              | 71.2   | 0.94      | 0.80                | 0.96             | 42.5        |
| All Vehicles                 |      | 4879          | 0.0  | 4879         | 0.0  | 0.889     | 25.0        | LOS C            | 16.4              | 114.5  | 0.72      | 0.83                | 0.89             | 42.9        |

## MOVEMENT SUMMARY

 **Site: 101 [Alumina Allee-Chalk Line-AM PEAK (Site Folder: Scenario B)]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |        | DEMAND FLOWS  |        | Deg. Satn                    | Aver. Delay | Level of Service | 95% BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|--------|---------------|--------|------------------------------|-------------|------------------|-------------------|----------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total veh/h | HV ] % | [ Total veh/h | HV ] % |                              |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
| East: Chalk Line     |      |               |        |               |        |                              |             |                  |                   |          |           |                     |                  |             |
| 5                    | T1   | 1013          | 0.0    | 1066          | 0.0    | 0.471                        | 6.6         | LOS A            | 7.6               | 53.2     | 0.62      | 0.54                | 0.62             | 54.2        |
| 6                    | R2   | 415           | 0.0    | 437           | 0.0    | <div><div>*</div>0.685</div> | 15.3        | LOS B            | 6.5               | 45.2     | 0.91      | 0.84                | 0.97             | 47.1        |
| Approach             |      | 1428          | 0.0    | 1503          | 0.0    | 0.685                        | 9.1         | LOS A            | 7.6               | 53.2     | 0.70      | 0.63                | 0.72             | 51.9        |
| North: Alumina Allee |      |               |        |               |        |                              |             |                  |                   |          |           |                     |                  |             |
| 7                    | L2   | 626           | 0.0    | 659           | 0.0    | 0.542                        | 9.4         | LOS A            | 5.8               | 40.8     | 0.57      | 0.75                | 0.57             | 51.3        |
| 9                    | R2   | 480           | 0.0    | 505           | 0.0    | <div><div>*</div>0.756</div> | 30.2        | LOS C            | 6.7               | 46.7     | 1.00      | 0.93                | 1.24             | 39.6        |
| Approach             |      | 1106          | 0.0    | 1164          | 0.0    | 0.756                        | 18.4        | LOS B            | 6.7               | 46.7     | 0.76      | 0.82                | 0.86             | 45.5        |
| West: Alumina Allee  |      |               |        |               |        |                              |             |                  |                   |          |           |                     |                  |             |
| 10                   | L2   | 481           | 0.0    | 506           | 0.0    | 0.273                        | 5.7         | LOS A            | 0.0               | 0.0      | 0.00      | 0.53                | 0.00             | 54.8        |
| 11                   | T1   | 566           | 0.0    | 596           | 0.0    | <div><div>*</div>0.764</div> | 23.9        | LOS C            | 7.8               | 54.7     | 1.00      | 0.94                | 1.22             | 43.1        |
| Approach             |      | 1047          | 0.0    | 1102          | 0.0    | 0.764                        | 15.5        | LOS B            | 7.8               | 54.7     | 0.54      | 0.75                | 0.66             | 47.9        |
| All Vehicles         |      | 3581          | 0.0    | 3769          | 0.0    | 0.764                        | 13.9        | LOS B            | 7.8               | 54.7     | 0.67      | 0.73                | 0.75             | 48.6        |

## MOVEMENT SUMMARY

 **Site: 101 [Alumina Allee-Chalk Line - PM PEAK (Site Folder: Scenario B)]**

New Site

Site Category: (None)

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

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn             | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|-------|--------------|------|-----------------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total       | HV ]  | [ Total      | HV ] |                       |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                      |      | veh/h         | veh/h | veh/h        | %    | v/c                   | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| East: Chalk Line     |      |               |       |              |      |                       |             |                  |                   |        |           |                     |                  |             |
| 5                    | T1   | 333           | 0     | 351          | 0.0  | 0.150                 | 4.7         | LOS A            | 1.9               | 13.2   | 0.46      | 0.38                | 0.46             | 55.7        |
| 6                    | R2   | 376           | 0     | 396          | 0.0  | <sup>*</sup><br>0.804 | 20.3        | LOS C            | 6.6               | 46.2   | 0.99      | 0.94                | 1.25             | 44.3        |
| Approach             |      | 709           | 0     | 746          | 0.0  | 0.804                 | 13.0        | LOS B            | 6.6               | 46.2   | 0.74      | 0.68                | 0.88             | 49.0        |
| North: Alumina Allee |      |               |       |              |      |                       |             |                  |                   |        |           |                     |                  |             |
| 7                    | L2   | 531           | 0     | 559          | 0.0  | 0.541                 | 12.0        | LOS B            | 6.5               | 45.2   | 0.67      | 0.79                | 0.67             | 49.6        |
| 9                    | R2   | 469           | 0     | 494          | 0.0  | <sup>*</sup><br>0.831 | 33.6        | LOS C            | 7.0               | 49.2   | 1.00      | 1.00                | 1.43             | 38.1        |
| Approach             |      | 1000          | 0     | 1053         | 0.0  | 0.831                 | 22.1        | LOS C            | 7.0               | 49.2   | 0.83      | 0.89                | 1.03             | 43.5        |
| West: Alumina Allee  |      |               |       |              |      |                       |             |                  |                   |        |           |                     |                  |             |
| 10                   | L2   | 474           | 0     | 499          | 0.0  | 0.269                 | 5.7         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 11                   | T1   | 948           | 0     | 998          | 0.0  | <sup>*</sup><br>0.853 | 25.1        | LOS C            | 14.3              | 100.1  | 1.00      | 1.06                | 1.35             | 42.6        |
| Approach             |      | 1422          | 0     | 1497         | 0.0  | 0.853                 | 18.6        | LOS B            | 14.3              | 100.1  | 0.67      | 0.88                | 0.90             | 46.0        |
| All Vehicles         |      | 3131          | 0     | 3296         | 0.0  | 0.853                 | 18.5        | LOS B            | 14.3              | 100.1  | 0.73      | 0.84                | 0.94             | 45.8        |

## MOVEMENT SUMMARY

### Site: 101 [Alumina Allee- South Central-AM PEAK (Site Folder: Scenario B)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

#### Vehicle Movement Performance

| Mov ID                       | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|------------------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                              |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee         |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 24            | 0     | 25           | 0.0  | 0.020     | 9.1         | LOS A            | 0.2               | 1.7    | 0.35      | 0.63                | 0.35             | 51.0        |
| 2                            | T1   | 799           | 0     | 841          | 0.0  | 0.323     | 4.6         | LOS A            | 5.2               | 36.5   | 0.45      | 0.40                | 0.45             | 55.8        |
| 3                            | R2   | 38            | 0     | 40           | 0.0  | 0.163     | 15.0        | LOS B            | 0.7               | 4.8    | 0.57      | 0.70                | 0.57             | 47.1        |
| Approach                     |      | 861           | 0     | 906          | 0.0  | 0.323     | 5.1         | LOS A            | 5.2               | 36.5   | 0.46      | 0.42                | 0.46             | 55.2        |
| East: South Central Arterial |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 8             | 0     | 8            | 0.0  | 0.053     | 28.8        | LOS C            | 0.4               | 3.0    | 0.87      | 0.65                | 0.87             | 41.3        |
| 5                            | T1   | 8             | 0     | 8            | 0.0  | 0.053     | 23.3        | LOS C            | 0.4               | 3.0    | 0.87      | 0.65                | 0.87             | 42.1        |
| 6                            | R2   | 11            | 0     | 12           | 0.0  | 0.072     | 34.7        | LOS C            | 0.3               | 2.3    | 0.95      | 0.67                | 0.95             | 37.8        |
| Approach                     |      | 27            | 0     | 28           | 0.0  | 0.072     | 29.6        | LOS C            | 0.4               | 3.0    | 0.90      | 0.66                | 0.90             | 40.0        |
| North: Alumina Allee         |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 24            | 0     | 25           | 0.0  | 0.020     | 9.1         | LOS A            | 0.2               | 1.7    | 0.35      | 0.63                | 0.35             | 51.0        |
| 8                            | T1   | 1271          | 0     | 1338         | 0.0  | 0.515     | 5.5         | LOS A            | 9.9               | 69.6   | 0.55      | 0.49                | 0.55             | 55.1        |
| 9                            | R2   | 250           | 0     | 263          | 0.0  | 0.634     | 15.9        | LOS B            | 5.6               | 39.4   | 0.71      | 0.81                | 0.75             | 46.6        |
| Approach                     |      | 1545          | 0     | 1626         | 0.0  | 0.634     | 7.2         | LOS A            | 9.9               | 69.6   | 0.57      | 0.54                | 0.58             | 53.4        |
| West: South Central Arterial |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 166           | 0     | 175          | 0.0  | 0.597     | 32.1        | LOS C            | 5.4               | 37.5   | 0.97      | 0.82                | 1.01             | 38.7        |
| 11                           | T1   | 10            | 0     | 11           | 0.0  | 0.597     | 26.6        | LOS C            | 5.4               | 37.5   | 0.97      | 0.82                | 1.01             | 39.4        |
| 12                           | R2   | 31            | 0     | 33           | 0.0  | 0.116     | 29.5        | LOS C            | 0.8               | 5.9    | 0.88      | 0.71                | 0.88             | 39.9        |
| Approach                     |      | 207           | 0     | 218          | 0.0  | 0.597     | 31.5        | LOS C            | 5.4               | 37.5   | 0.96      | 0.80                | 0.99             | 38.9        |
| All Vehicles                 |      | 2640          | 0     | 2779         | 0.0  | 0.634     | 8.7         | LOS A            | 9.9               | 69.6   | 0.57      | 0.52                | 0.57             | 52.3        |

## MOVEMENT SUMMARY

### Site: 101 [Alumina Allee- South Central - PM PEAK (Site Folder: Scenario B)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

#### Vehicle Movement Performance

| Mov ID                       | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|------------------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                              |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee         |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 44            | 0     | 46           | 0.0  | 0.053     | 14.9        | LOS B            | 0.7               | 5.2    | 0.57      | 0.68                | 0.57             | 47.1        |
| 2                            | T1   | 804           | 0     | 846          | 0.0  | 0.465     | 11.9        | LOS B            | 8.5               | 59.7   | 0.73      | 0.63                | 0.73             | 50.2        |
| 3                            | R2   | 24            | 0     | 25           | 0.0  | 0.083     | 20.2        | LOS C            | 0.5               | 3.6    | 0.70      | 0.70                | 0.70             | 44.1        |
| Approach                     |      | 872           | 0     | 918          | 0.0  | 0.465     | 12.2        | LOS B            | 8.5               | 59.7   | 0.72      | 0.64                | 0.72             | 49.9        |
| East: South Central Arterial |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 8             | 0     | 8            | 0.0  | 0.021     | 18.5        | LOS B            | 0.3               | 1.9    | 0.66      | 0.58                | 0.66             | 46.4        |
| 5                            | T1   | 6             | 0     | 6            | 0.0  | 0.021     | 13.0        | LOS B            | 0.3               | 1.9    | 0.66      | 0.58                | 0.66             | 47.4        |
| 6                            | R2   | 13            | 0     | 14           | 0.0  | 0.051     | 27.3        | LOS C            | 0.3               | 2.4    | 0.83      | 0.68                | 0.83             | 40.9        |
| Approach                     |      | 27            | 0     | 28           | 0.0  | 0.051     | 21.5        | LOS C            | 0.3               | 2.4    | 0.74      | 0.63                | 0.74             | 43.8        |
| North: Alumina Allee         |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 11            | 0     | 12           | 0.0  | 0.013     | 14.7        | LOS B            | 0.2               | 1.3    | 0.55      | 0.64                | 0.55             | 47.3        |
| 8                            | T1   | 726           | 0     | 764          | 0.0  | 0.420     | 11.5        | LOS B            | 7.5               | 52.5   | 0.71      | 0.61                | 0.71             | 50.4        |
| 9                            | R2   | 149           | 0     | 157          | 0.0  | 0.576     | 25.0        | LOS C            | 4.1               | 28.9   | 0.87      | 0.82                | 0.91             | 41.7        |
| Approach                     |      | 886           | 0     | 933          | 0.0  | 0.576     | 13.8        | LOS B            | 7.5               | 52.5   | 0.73      | 0.65                | 0.74             | 48.7        |
| West: South Central Arterial |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 364           | 0     | 383          | 0.0  | 0.572     | 22.3        | LOS C            | 9.3               | 65.4   | 0.85      | 0.82                | 0.85             | 43.1        |
| 11                           | T1   | 6             | 0     | 6            | 0.0  | 0.572     | 16.8        | LOS B            | 9.3               | 65.4   | 0.85      | 0.82                | 0.85             | 44.0        |
| 12                           | R2   | 41            | 0     | 43           | 0.0  | 0.077     | 19.1        | LOS B            | 0.8               | 5.8    | 0.68      | 0.70                | 0.68             | 45.0        |
| Approach                     |      | 411           | 0     | 433          | 0.0  | 0.572     | 21.9        | LOS C            | 9.3               | 65.4   | 0.84      | 0.81                | 0.84             | 43.3        |
| All Vehicles                 |      | 2196          | 0     | 2312         | 0.0  | 0.576     | 14.8        | LOS B            | 9.3               | 65.4   | 0.75      | 0.67                | 0.75             | 47.9        |

# MOVEMENT SUMMARY

## Site: 101 [Ceramic Curve-Chalk Line AM PEAK (Site Folder: Scenario B)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total       | HV ] | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                      |      | veh/h         | %    | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                    | L2   | 78            | 0.0  | 82           | 0.0  | 0.288      | 30.3        | LOS C            | 2.4               | 16.8   | 0.91      | 0.75                | 0.91             | 39.6        |
| 2                    | T1   | 7             | 0.0  | 7            | 0.0  | 0.288      | 24.7        | LOS C            | 2.4               | 16.8   | 0.91      | 0.75                | 0.91             | 40.3        |
| 3                    | R2   | 28            | 0.0  | 29           | 0.0  | 0.130      | 31.6        | LOS C            | 0.8               | 5.6    | 0.91      | 0.71                | 0.91             | 38.8        |
| Approach             |      | 113           | 0.0  | 119          | 0.0  | 0.288      | 30.3        | LOS C            | 2.4               | 16.8   | 0.91      | 0.74                | 0.91             | 39.4        |
| East: Chalk Line     |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                    | L2   | 73            | 0.0  | 77           | 0.0  | 0.561      | 11.3        | LOS B            | 11.3              | 79.2   | 0.57      | 0.54                | 0.57             | 53.0        |
| 5                    | T1   | 1308          | 0.0  | 1377         | 0.0  | *<br>0.561 | 5.7         | LOS A            | 11.4              | 79.6   | 0.57      | 0.53                | 0.57             | 54.6        |
| 6                    | R2   | 97            | 0.0  | 102          | 0.0  | 0.362      | 14.9        | LOS B            | 1.9               | 13.0   | 0.61      | 0.74                | 0.61             | 47.1        |
| Approach             |      | 1478          | 0.0  | 1556         | 0.0  | 0.561      | 6.6         | LOS A            | 11.4              | 79.6   | 0.58      | 0.54                | 0.58             | 54.0        |
| North: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                    | L2   | 79            | 0.0  | 83           | 0.0  | 0.291      | 30.3        | LOS C            | 2.4               | 17.1   | 0.92      | 0.76                | 0.92             | 39.5        |
| 8                    | T1   | 7             | 0.0  | 7            | 0.0  | *<br>0.291 | 24.7        | LOS C            | 2.4               | 17.1   | 0.92      | 0.76                | 0.92             | 40.3        |
| 9                    | R2   | 78            | 0.0  | 82           | 0.0  | 0.361      | 32.8        | LOS C            | 2.3               | 16.4   | 0.95      | 0.76                | 0.95             | 38.3        |
| Approach             |      | 164           | 0.0  | 173          | 0.0  | 0.361      | 31.3        | LOS C            | 2.4               | 17.1   | 0.93      | 0.76                | 0.93             | 39.0        |
| West: Alumina Allee  |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                   | L2   | 72            | 0.0  | 76           | 0.0  | 0.459      | 10.7        | LOS B            | 8.3               | 58.4   | 0.52      | 0.50                | 0.52             | 53.4        |
| 11                   | T1   | 1058          | 0.0  | 1114         | 0.0  | 0.459      | 5.2         | LOS A            | 8.4               | 58.7   | 0.52      | 0.48                | 0.52             | 55.0        |
| 12                   | R2   | 83            | 0.0  | 87           | 0.0  | 0.408      | 17.3        | LOS B            | 1.8               | 12.6   | 0.68      | 0.75                | 0.68             | 45.7        |
| Approach             |      | 1213          | 0.0  | 1277         | 0.0  | 0.459      | 6.3         | LOS A            | 8.4               | 58.7   | 0.53      | 0.50                | 0.53             | 54.2        |
| All Vehicles         |      | 2968          | 0.0  | 3124         | 0.0  | 0.561      | 8.8         | LOS A            | 11.4              | 79.6   | 0.59      | 0.54                | 0.59             | 52.2        |

## MOVEMENT SUMMARY

### Site: 101 [Ceramic Curve-Chalk Line - PM PEAK (Site Folder: Scenario B)]

New Site

Site Category: (None)

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

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

#### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total       | HV ] | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                      |      | veh/h         | %    | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                    | L2   | 92            | 0.0  | 97           | 0.0  | 0.224      | 19.0        | LOS B            | 1.7               | 11.9   | 0.83      | 0.74                | 0.83             | 45.0        |
| 2                    | T1   | 7             | 0.0  | 7            | 0.0  | 0.224      | 13.5        | LOS B            | 1.7               | 11.9   | 0.83      | 0.74                | 0.83             | 46.0        |
| 3                    | R2   | 93            | 0.0  | 98           | 0.0  | 0.562      | 28.0        | LOS C            | 2.1               | 14.7   | 1.00      | 0.77                | 1.10             | 40.4        |
| Approach             |      | 192           | 0.0  | 202          | 0.0  | 0.562      | 23.2        | LOS C            | 2.1               | 14.7   | 0.91      | 0.75                | 0.96             | 42.7        |
| East: Chalk Line     |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                    | L2   | 54            | 0.0  | 57           | 0.0  | 0.431      | 12.6        | LOS B            | 5.3               | 37.3   | 0.68      | 0.61                | 0.68             | 51.9        |
| 5                    | T1   | 741           | 0.0  | 780          | 0.0  | 0.431      | 7.0         | LOS A            | 5.4               | 37.5   | 0.68      | 0.60                | 0.68             | 53.5        |
| 6                    | R2   | 165           | 0.0  | 174          | 0.0  | *<br>0.843 | 30.8        | LOS C            | 4.3               | 29.9   | 1.00      | 1.03                | 1.69             | 39.1        |
| Approach             |      | 960           | 0.0  | 1011         | 0.0  | 0.843      | 11.4        | LOS B            | 5.4               | 37.5   | 0.73      | 0.67                | 0.85             | 50.2        |
| North: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                    | L2   | 370           | 0.0  | 389          | 0.0  | 0.845      | 27.5        | LOS C            | 9.3               | 64.9   | 1.00      | 1.03                | 1.46             | 40.6        |
| 8                    | T1   | 3             | 0.0  | 3            | 0.0  | *<br>0.845 | 22.0        | LOS C            | 9.3               | 64.9   | 1.00      | 1.03                | 1.46             | 41.4        |
| 9                    | R2   | 71            | 0.0  | 75           | 0.0  | 0.206      | 20.0        | LOS B            | 1.3               | 8.8    | 0.85      | 0.74                | 0.85             | 44.3        |
| Approach             |      | 444           | 0.0  | 467          | 0.0  | 0.845      | 26.3        | LOS C            | 9.3               | 64.9   | 0.98      | 0.99                | 1.36             | 41.1        |
| West: Alumina Allee  |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                   | L2   | 31            | 0.0  | 33           | 0.0  | 0.844      | 21.4        | LOS C            | 18.2              | 127.5  | 0.93      | 1.01                | 1.21             | 46.4        |
| 11                   | T1   | 1531          | 0.0  | 1612         | 0.0  | 0.844      | 15.9        | LOS B            | 18.2              | 127.7  | 0.93      | 1.01                | 1.21             | 47.5        |
| 12                   | R2   | 52            | 0.0  | 55           | 0.0  | 0.154      | 15.1        | LOS B            | 0.8               | 5.3    | 0.69      | 0.72                | 0.69             | 47.0        |
| Approach             |      | 1614          | 0.0  | 1699         | 0.0  | 0.844      | 16.0        | LOS B            | 18.2              | 127.7  | 0.92      | 1.00                | 1.19             | 47.5        |
| All Vehicles         |      | 3210          | 0.0  | 3379         | 0.0  | 0.845      | 16.5        | LOS B            | 18.2              | 127.7  | 0.87      | 0.88                | 1.10             | 46.9        |

## MOVEMENT SUMMARY

Site: 101 [Alumina Allee St AM PEAK (Site Folder: Scenario B)]

New Site

Site Category: (None)

Roundabout

### Vehicle Movement Performance

| Mov ID                  | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|-------------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                         |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                         |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                       | L2   | 322           | 0     | 339          | 0.0  | 0.672     | 13.9        | LOS B            | 7.8               | 54.3   | 1.00      | 1.12                | 1.36             | 48.8        |
| 2                       | T1   | 474           | 0     | 499          | 0.0  | 0.672     | 14.9        | LOS B            | 7.8               | 54.3   | 1.00      | 1.14                | 1.38             | 49.5        |
| 3                       | R2   | 31            | 0     | 33           | 0.0  | 0.672     | 21.0        | LOS C            | 7.0               | 49.0   | 1.00      | 1.14                | 1.38             | 49.5        |
| Approach                |      | 827           | 0     | 871          | 0.0  | 0.672     | 14.7        | LOS B            | 7.8               | 54.3   | 1.00      | 1.13                | 1.37             | 49.3        |
| East: Diamantpyp        |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                       | L2   | 18            | 0     | 19           | 0.0  | 0.139     | 12.7        | LOS B            | 0.7               | 5.0    | 0.88      | 0.95                | 0.88             | 47.9        |
| 5                       | T1   | 1             | 0     | 1            | 0.0  | 0.139     | 12.8        | LOS B            | 0.7               | 5.0    | 0.88      | 0.95                | 0.88             | 49.2        |
| 6                       | R2   | 23            | 0     | 24           | 0.0  | 0.139     | 18.5        | LOS B            | 0.7               | 5.0    | 0.88      | 0.95                | 0.88             | 49.5        |
| Approach                |      | 42            | 0     | 44           | 0.0  | 0.139     | 15.9        | LOS B            | 0.7               | 5.0    | 0.88      | 0.95                | 0.88             | 48.8        |
| North: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                       | L2   | 75            | 0     | 79           | 0.0  | 0.075     | 5.1         | LOS A            | 0.4               | 2.5    | 0.44      | 0.54                | 0.44             | 54.4        |
| 8                       | T1   | 1179          | 0     | 1241         | 0.0  | 0.767     | 6.8         | LOS A            | 9.9               | 69.3   | 0.77      | 0.72                | 0.88             | 54.1        |
| 9                       | R2   | 781           | 0     | 822          | 0.0  | 0.767     | 13.6        | LOS B            | 9.9               | 69.1   | 0.82      | 0.85                | 0.98             | 51.5        |
| Approach                |      | 2035          | 0     | 2142         | 0.0  | 0.767     | 9.3         | LOS A            | 9.9               | 69.3   | 0.78      | 0.76                | 0.90             | 53.0        |
| West: RBIDZ             |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                      | L2   | 117           | 0     | 123          | 0.0  | 0.065     | 5.4         | LOS A            | 0.3               | 2.2    | 0.55      | 0.62                | 0.55             | 54.0        |
| 11                      | T1   | 1             | 0     | 1            | 0.0  | 0.231     | 4.7         | LOS A            | 1.4               | 9.6    | 0.58      | 0.73                | 0.58             | 51.9        |
| 12                      | R2   | 288           | 0     | 303          | 0.0  | 0.231     | 10.3        | LOS B            | 1.4               | 9.6    | 0.58      | 0.73                | 0.58             | 52.2        |
| Approach                |      | 406           | 0     | 427          | 0.0  | 0.231     | 8.9         | LOS A            | 1.4               | 9.6    | 0.57      | 0.69                | 0.57             | 52.7        |
| All Vehicles            |      | 3310          | 0     | 3484         | 0.0  | 0.767     | 10.7        | LOS B            | 9.9               | 69.3   | 0.81      | 0.85                | 0.98             | 52.0        |

## MOVEMENT SUMMARY

Site: 101 [Alumina Allee St PM PEAK (Site Folder: Scenario B)]

New Site

Site Category: (None)

Roundabout

### Vehicle Movement Performance

| Mov ID                  | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|-------------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                         |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                         |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                       | L2   | 355           | 0     | 374          | 0.0  | 0.618     | 5.1         | LOS A            | 5.0               | 34.7   | 0.58      | 0.54                | 0.58             | 53.8        |
| 2                       | T1   | 1107          | 0     | 1165         | 0.0  | 0.618     | 5.2         | LOS A            | 5.0               | 34.8   | 0.59      | 0.54                | 0.60             | 55.3        |
| 3                       | R2   | 24            | 0     | 25           | 0.0  | 0.618     | 11.0        | LOS B            | 5.0               | 34.8   | 0.60      | 0.54                | 0.61             | 55.4        |
| Approach                |      | 1486          | 0     | 1564         | 0.0  | 0.618     | 5.2         | LOS A            | 5.0               | 34.8   | 0.59      | 0.54                | 0.59             | 54.9        |
| East: Diamantpyp        |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                       | L2   | 63            | 0     | 66           | 0.0  | 0.309     | 8.1         | LOS A            | 1.6               | 11.0   | 0.76      | 0.90                | 0.76             | 50.5        |
| 5                       | T1   | 1             | 0     | 1            | 0.0  | 0.309     | 8.2         | LOS A            | 1.6               | 11.0   | 0.76      | 0.90                | 0.76             | 51.9        |
| 6                       | R2   | 117           | 0     | 123          | 0.0  | 0.309     | 13.9        | LOS B            | 1.6               | 11.0   | 0.76      | 0.90                | 0.76             | 52.2        |
| Approach                |      | 181           | 0     | 191          | 0.0  | 0.309     | 11.9        | LOS B            | 1.6               | 11.0   | 0.76      | 0.90                | 0.76             | 51.6        |
| North: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                       | L2   | 23            | 0     | 24           | 0.0  | 0.029     | 6.3         | LOS A            | 0.2               | 1.2    | 0.66      | 0.61                | 0.66             | 53.6        |
| 8                       | T1   | 465           | 0     | 489          | 0.0  | 0.301     | 5.9         | LOS A            | 2.4               | 16.6   | 0.76      | 0.61                | 0.76             | 54.0        |
| 9                       | R2   | 119           | 0     | 125          | 0.0  | 0.301     | 12.1        | LOS B            | 2.1               | 14.6   | 0.75      | 0.72                | 0.75             | 53.5        |
| Approach                |      | 607           | 0     | 639          | 0.0  | 0.301     | 7.2         | LOS A            | 2.4               | 16.6   | 0.75      | 0.63                | 0.75             | 53.9        |
| West: RBIDZ             |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                      | L2   | 852           | 0     | 897          | 0.0  | 0.652     | 12.0        | LOS B            | 5.1               | 35.8   | 0.89      | 1.06                | 1.25             | 49.9        |
| 11                      | T1   | 1             | 0     | 1            | 0.0  | 0.583     | 8.5         | LOS A            | 5.0               | 34.8   | 0.88      | 1.05                | 1.11             | 50.5        |
| 12                      | R2   | 570           | 0     | 600          | 0.0  | 0.583     | 14.2        | LOS B            | 5.0               | 34.8   | 0.88      | 1.05                | 1.11             | 50.8        |
| Approach                |      | 1423          | 0     | 1498         | 0.0  | 0.652     | 12.9        | LOS B            | 5.1               | 35.8   | 0.89      | 1.06                | 1.19             | 50.3        |
| All Vehicles            |      | 3697          | 0     | 3892         | 0.0  | 0.652     | 8.8         | LOS A            | 5.1               | 35.8   | 0.74      | 0.77                | 0.86             | 52.7        |

## SCENARIO C

### MOVEMENT SUMMARY

Site: 101 [R619 -Via Davallia - AM PEAK (Site Folder: Scenario C )]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 83 seconds (Site Optimum Cycle Time - Minimum Delay)

#### Vehicle Movement Performance

| Mov ID              | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|---------------------|------|---------------|-------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                     |      | [ Total       | HV ]  | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                     |      | veh/h         | veh/h | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                   | L2   | 300           | 0     | 316          | 0.0  | 0.170      | 7.7         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 2                   | T1   | 161           | 0     | 169          | 0.0  | 0.328      | 36.6        | LOS D            | 4.7               | 32.6   | 0.87      | 0.71                | 0.87             | 37.7        |
| 3                   | R2   | 81            | 0     | 85           | 0.0  | 0.328      | 31.2        | LOS C            | 4.7               | 32.6   | 0.96      | 0.75                | 0.96             | 39.8        |
| Approach            |      | 542           | 0     | 571          | 0.0  | 0.328      | 19.8        | LOS B            | 4.7               | 32.6   | 0.40      | 0.62                | 0.40             | 46.1        |
| East: R619          |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                   | L2   | 738           | 0     | 777          | 0.0  | 0.418      | 17.7        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.7        |
| 5                   | T1   | 704           | 0     | 741          | 0.0  | *<br>1.197 | 171.0       | LOS F            | 63.0              | 441.3  | 0.98      | 1.79                | 2.52             | 15.7        |
| 6                   | R2   | 409           | 0     | 431          | 0.0  | 0.887      | 38.5        | LOS D            | 16.4              | 114.8  | 1.00      | 1.01                | 1.33             | 36.4        |
| Approach            |      | 1851          | 0     | 1948         | 0.0  | 1.197      | 80.6        | LOS F            | 63.0              | 441.3  | 0.59      | 1.11                | 1.25             | 26.6        |
| North: Via Davallia |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                   | L2   | 547           | 0     | 576          | 0.0  | 0.310      | 10.0        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 8                   | T1   | 985           | 0     | 1037         | 0.0  | *<br>1.279 | 285.4       | LOS F            | 76.5              | 535.5  | 1.00      | 2.09                | 3.67             | 10.0        |
| 9                   | R2   | 51            | 0     | 54           | 0.0  | *<br>1.279 | 279.4       | LOS F            | 72.8              | 509.4  | 1.00      | 1.63                | 3.67             | 9.8         |
| Approach            |      | 1583          | 0     | 1666         | 0.0  | 1.279      | 190.1       | LOS F            | 76.5              | 535.5  | 0.65      | 1.53                | 2.40             | 13.9        |
| West: R619          |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                  | L2   | 51            | 0     | 54           | 0.0  | 0.062      | 13.6        | LOS B            | 0.8               | 5.4    | 0.56      | 0.67                | 0.56             | 49.3        |
| 11                  | T1   | 694           | 0     | 731          | 0.0  | 0.818      | 39.7        | LOS D            | 15.7              | 110.1  | 1.00      | 0.97                | 1.19             | 37.0        |
| 12                  | R2   | 932           | 0     | 981          | 0.0  | *<br>1.031 | 88.6        | LOS F            | 30.0              | 210.0  | 1.00      | 1.28                | 2.01             | 22.2        |
| Approach            |      | 1677          | 0     | 1765         | 0.0  | 1.031      | 66.1        | LOS E            | 30.0              | 210.0  | 0.99      | 1.13                | 1.62             | 27.1        |
| All Vehicles        |      | 5653          | 0     | 5951         | 0.0  | 1.279      | 101.1       | LOS F            | 76.5              | 535.5  | 0.71      | 1.19                | 1.60             | 22.0        |

## MOVEMENT SUMMARY

Site: 101 [R619 -Via Davallia - PM PEAK (Site Folder: Scenario C )]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 68 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID              | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|---------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                     |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                     |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                   | L2   | 822           | 0     | 865          | 0.0  | 0.466     | 12.3        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.7        |
| 2                   | T1   | 847           | 0     | 892          | 0.0  | 1.549*    | 295.6       | LOS F            | 124.2             | 869.7  | 0.97      | 1.78                | 3.69             | 9.9         |
| 3                   | R2   | 909           | 0     | 957          | 0.0  | 1.549*    | 525.3       | LOS F            | 127.8             | 894.7  | 1.00      | 2.81                | 5.92             | 6.1         |
| Approach            |      | 2578          | 0     | 2714         | 0.0  | 1.549     | 286.3       | LOS F            | 127.8             | 894.7  | 0.67      | 1.74                | 3.30             | 10.3        |
| East: R619          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                   | L2   | 170           | 0     | 179          | 0.0  | 0.096     | 6.0         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 5                   | T1   | 882           | 0     | 928          | 0.0  | 1.556*    | 393.6       | LOS F            | 124.0             | 867.8  | 0.99      | 2.84                | 4.55             | 8.0         |
| 6                   | R2   | 410           | 0     | 432          | 0.0  | 1.538*    | 512.1       | LOS F            | 74.3              | 520.1  | 1.00      | 2.58                | 5.89             | 6.2         |
| Approach            |      | 1462          | 0     | 1539         | 0.0  | 1.556     | 381.8       | LOS F            | 124.0             | 867.8  | 0.88      | 2.50                | 4.40             | 8.2         |
| North: Via Davallia |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                   | L2   | 296           | 0     | 312          | 0.0  | 0.168     | 15.9        | LOS B            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 8                   | T1   | 140           | 0     | 147          | 0.0  | 0.160     | 21.1        | LOS C            | 2.4               | 16.5   | 0.79      | 0.63                | 0.79             | 44.5        |
| 9                   | R2   | 10            | 0     | 11           | 0.0  | 0.160     | 31.5        | LOS C            | 1.7               | 12.2   | 0.84      | 0.70                | 0.84             | 41.5        |
| Approach            |      | 446           | 0     | 469          | 0.0  | 0.168     | 17.9        | LOS B            | 2.4               | 16.5   | 0.27      | 0.57                | 0.27             | 50.8        |
| West: R619          |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                  | L2   | 23            | 0     | 24           | 0.0  | 0.030     | 13.9        | LOS B            | 0.3               | 2.1    | 0.59      | 0.65                | 0.59             | 49.7        |
| 11                  | T1   | 683           | 0     | 719          | 0.0  | 0.836     | 38.3        | LOS D            | 13.3              | 93.0   | 1.00      | 1.00                | 1.28             | 38.7        |
| 12                  | R2   | 209           | 0     | 220          | 0.0  | 0.392     | 24.4        | LOS C            | 2.6               | 18.3   | 0.96      | 0.76                | 0.96             | 42.5        |
| Approach            |      | 915           | 0     | 963          | 0.0  | 0.836     | 34.5        | LOS C            | 13.3              | 93.0   | 0.98      | 0.94                | 1.19             | 39.8        |
| All Vehicles        |      | 5401          | 0     | 5685         | 0.0  | 1.556     | 247.3       | LOS F            | 127.8             | 894.7  | 0.74      | 1.71                | 2.99             | 11.7        |

## MOVEMENT SUMMARY

### Site: 101 [R619 -Via Davallia - AM PEAK upgrade (Site Folder: Scenario C )]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site Optimum Cycle Time - Minimum Delay)

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

| Vehicle Movement Performance |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
|------------------------------|------|---------------|------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total       | HV ] | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | %    | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Heliumhoogte          |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 300           | 0.0  | 316          | 0.0  | 0.170      | 6.5         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.9        |
| 2                            | T1   | 161           | 0.0  | 169          | 0.0  | 0.120      | 18.2        | LOS B            | 2.2               | 15.4   | 0.70      | 0.55                | 0.70             | 46.3        |
| 3                            | R2   | 81            | 0.0  | 85           | 0.0  | 0.354      | 45.1        | LOS D            | 1.7               | 11.9   | 0.97      | 0.74                | 0.97             | 34.5        |
| Approach                     |      | 542           | 0.0  | 571          | 0.0  | 0.354      | 15.7        | LOS B            | 2.2               | 15.4   | 0.35      | 0.57                | 0.35             | 48.0        |
| East: R619                   |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 738           | 0.0  | 777          | 0.0  | 0.418      | 34.6        | LOS C            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.7        |
| 5                            | T1   | 704           | 0.0  | 741          | 0.0  | *<br>0.894 | 45.0        | LOS D            | 17.3              | 121.1  | 1.00      | 1.08                | 1.39             | 34.7        |
| 6                            | R2   | 409           | 0.0  | 431          | 0.0  | 0.402      | 20.4        | LOS C            | 4.7               | 33.2   | 0.85      | 0.78                | 0.85             | 44.4        |
| Approach                     |      | 1851          | 0.0  | 1948         | 0.0  | 0.894      | 35.5        | LOS D            | 17.3              | 121.1  | 0.57      | 0.79                | 0.72             | 43.1        |
| North: Via Davallia          |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 547           | 0.0  | 576          | 0.0  | 0.310      | 7.1         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 8                            | T1   | 985           | 0.0  | 1037         | 0.0  | *<br>0.912 | 42.4        | LOS D            | 29.8              | 208.3  | 0.96      | 1.10                | 1.34             | 35.5        |
| 9                            | R2   | 51            | 0.0  | 54           | 0.0  | 0.912      | 48.1        | LOS D            | 29.8              | 208.3  | 1.00      | 1.14                | 1.35             | 35.1        |
| Approach                     |      | 1583          | 0.0  | 1666         | 0.0  | 0.912      | 30.4        | LOS C            | 29.8              | 208.3  | 0.63      | 0.90                | 0.88             | 40.4        |
| West: R619                   |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 51            | 0.0  | 54           | 0.0  | 0.043      | 6.9         | LOS A            | 0.3               | 2.3    | 0.24      | 0.60                | 0.24             | 53.2        |
| 11                           | T1   | 694           | 0.0  | 731          | 0.0  | 0.881      | 43.4        | LOS D            | 16.7              | 116.7  | 1.00      | 1.06                | 1.35             | 35.2        |
| 12                           | R2   | 932           | 0.0  | 981          | 0.0  | *<br>0.919 | 44.4        | LOS D            | 20.6              | 144.4  | 1.00      | 1.08                | 1.42             | 34.7        |
| Approach                     |      | 1677          | 0.0  | 1765         | 0.0  | 0.919      | 42.8        | LOS D            | 20.6              | 144.4  | 0.98      | 1.05                | 1.36             | 35.3        |
| All Vehicles                 |      | 5653          | 0.0  | 5951         | 0.0  | 0.919      | 34.3        | LOS C            | 29.8              | 208.3  | 0.69      | 0.88                | 0.92             | 40.1        |

# MOVEMENT SUMMARY

**Site: 101 [R619 -Via Davallia - PM PEAK upgrade (Site Folder: Scenario C )]**

New Site

Site Category: (None)

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

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

| Vehicle Movement Performance |      |               |      |               |      |            |             |                  |                   |          |           |                     |                  |             |
|------------------------------|------|---------------|------|---------------|------|------------|-------------|------------------|-------------------|----------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES |      | DEMAND FLOWS  |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total veh/h | HV % | [ Total veh/h | HV % | v/c        | sec         |                  | [ Veh. veh        | Dist ] m |           |                     |                  | km/h        |
| South: Heliumhoogte          |      |               |      |               |      |            |             |                  |                   |          |           |                     |                  |             |
| 1                            | L2   | 822           | 0.0  | 865           | 0.0  | 0.466      | 8.6         | LOS A            | 0.0               | 0.0      | 0.00      | 0.53                | 0.00             | 54.7        |
| 2                            | T1   | 847           | 0.0  | 892           | 0.0  | 0.572      | 7.9         | LOS A            | 5.4               | 37.5     | 0.83      | 0.71                | 0.83             | 53.2        |
| 3                            | R2   | 909           | 0.0  | 957           | 0.0  | *<br>0.850 | 22.6        | LOS C            | 9.1               | 63.9     | 0.98      | 1.11                | 1.54             | 43.6        |
| Approach                     |      | 2578          | 0.0  | 2714          | 0.0  | 0.850      | 13.3        | LOS B            | 9.1               | 63.9     | 0.62      | 0.79                | 0.81             | 49.8        |
| East: R619                   |      |               |      |               |      |            |             |                  |                   |          |           |                     |                  |             |
| 4                            | L2   | 170           | 0.0  | 179           | 0.0  | 0.096      | 6.0         | LOS A            | 0.0               | 0.0      | 0.00      | 0.53                | 0.00             | 54.9        |
| 5                            | T1   | 882           | 0.0  | 928           | 0.0  | *<br>0.893 | 20.7        | LOS C            | 9.5               | 66.4     | 1.00      | 1.18                | 1.77             | 45.0        |
| 6                            | R2   | 410           | 0.0  | 432           | 0.0  | 0.816      | 23.7        | LOS C            | 3.8               | 26.9     | 1.00      | 0.99                | 1.60             | 42.7        |
| Approach                     |      | 1462          | 0.0  | 1539          | 0.0  | 0.893      | 19.8        | LOS B            | 9.5               | 66.4     | 0.88      | 1.05                | 1.51             | 45.2        |
| North: Via Davallia          |      |               |      |               |      |            |             |                  |                   |          |           |                     |                  |             |
| 7                            | L2   | 296           | 0.0  | 312           | 0.0  | 0.168      | 8.7         | LOS A            | 0.0               | 0.0      | 0.00      | 0.53                | 0.00             | 54.9        |
| 8                            | T1   | 140           | 0.0  | 147           | 0.0  | 0.112      | 6.6         | LOS A            | 0.8               | 5.8      | 0.67      | 0.53                | 0.67             | 53.9        |
| 9                            | R2   | 10            | 0.0  | 11            | 0.0  | 0.112      | 12.7        | LOS B            | 0.7               | 5.0      | 0.69      | 0.56                | 0.69             | 52.6        |
| Approach                     |      | 446           | 0.0  | 469           | 0.0  | 0.168      | 8.1         | LOS A            | 0.8               | 5.8      | 0.23      | 0.53                | 0.23             | 54.5        |
| West: R619                   |      |               |      |               |      |            |             |                  |                   |          |           |                     |                  |             |
| 10                           | L2   | 23            | 0.0  | 24            | 0.0  | 0.031      | 8.8         | LOS A            | 0.1               | 0.9      | 0.63      | 0.65                | 0.63             | 51.8        |
| 11                           | T1   | 683           | 0.0  | 719           | 0.0  | 0.691      | 12.5        | LOS B            | 5.4               | 37.9     | 0.95      | 0.87                | 1.12             | 49.9        |
| 12                           | R2   | 209           | 0.0  | 220           | 0.0  | 0.470      | 21.8        | LOS C            | 1.7               | 12.1     | 1.00      | 0.74                | 1.01             | 44.0        |
| Approach                     |      | 915           | 0.0  | 963           | 0.0  | 0.691      | 14.6        | LOS B            | 5.4               | 37.9     | 0.95      | 0.84                | 1.08             | 48.4        |
| All Vehicles                 |      | 5401          | 0.0  | 5685          | 0.0  | 0.893      | 14.9        | LOS B            | 9.5               | 66.4     | 0.71      | 0.85                | 1.00             | 48.6        |

## MOVEMENT SUMMARY

 Site: 101 [Alumina Allee-Chalk Line-AM PEAK (Site Folder: Scenario C )]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |      | DEMAND FLOWS  |      | Deg. Satn         | Aver. Delay | Level of Service | 95% BACK OF QUEUE |          | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|------|---------------|------|-------------------|-------------|------------------|-------------------|----------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total veh/h | HV % | [ Total veh/h | HV % |                   |             |                  | [ Veh. veh        | Dist ] m |           |                     |                  |             |
| East: Chalk Line     |      |               |      |               |      |                   |             |                  |                   |          |           |                     |                  |             |
| 5                    | T1   | 1013          | 0.0  | 1066          | 0.0  | 0.488             | 7.3         | LOS A            | 8.0               | 55.8     | 0.65      | 0.57                | 0.65             | 53.6        |
| 6                    | R2   | 449           | 0.0  | 473           | 0.0  | <div>0.786*</div> | 18.6        | LOS B            | 8.4               | 58.5     | 0.96      | 0.91                | 1.16             | 45.2        |
| Approach             |      | 1462          | 0.0  | 1539          | 0.0  | 0.786             | 10.7        | LOS B            | 8.4               | 58.5     | 0.75      | 0.68                | 0.80             | 50.7        |
| North: Alumina Allee |      |               |      |               |      |                   |             |                  |                   |          |           |                     |                  |             |
| 7                    | L2   | 669           | 0.0  | 704           | 0.0  | 0.579             | 9.7         | LOS A            | 6.2               | 43.7     | 0.59      | 0.76                | 0.59             | 51.1        |
| 9                    | R2   | 591           | 0.0  | 622           | 0.0  | <div>0.837*</div> | 32.7        | LOS C            | 8.9               | 62.1     | 1.00      | 1.01                | 1.40             | 38.5        |
| Approach             |      | 1260          | 0.0  | 1326          | 0.0  | 0.837             | 20.5        | LOS C            | 8.9               | 62.1     | 0.78      | 0.88                | 0.97             | 44.3        |
| West: Alumina Allee  |      |               |      |               |      |                   |             |                  |                   |          |           |                     |                  |             |
| 10                   | L2   | 619           | 0.0  | 652           | 0.0  | 0.351             | 5.7         | LOS A            | 0.0               | 0.0      | 0.00      | 0.53                | 0.00             | 54.8        |
| 11                   | T1   | 566           | 0.0  | 596           | 0.0  | <div>0.764*</div> | 23.9        | LOS C            | 7.8               | 54.7     | 1.00      | 0.94                | 1.22             | 43.1        |
| Approach             |      | 1185          | 0.0  | 1247          | 0.0  | 0.764             | 14.4        | LOS B            | 7.8               | 54.7     | 0.48      | 0.72                | 0.58             | 48.6        |
| All Vehicles         |      | 3907          | 0.0  | 4113          | 0.0  | 0.837             | 15.0        | LOS B            | 8.9               | 62.1     | 0.68      | 0.76                | 0.79             | 47.9        |

## MOVEMENT SUMMARY

 **Site: 101 [Alumina Allee-Chalk Line - PM PEAK (Site Folder: Scenario C )]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total       | HV ] | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                      |      | veh/h         | %    | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| East: Chalk Line     |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 5                    | T1   | 333           | 0.0  | 351          | 0.0  | 0.154     | 6.6         | LOS A            | 2.5               | 17.6   | 0.48      | 0.40                | 0.48             | 54.2        |
| 6                    | R2   | 408           | 0.0  | 429          | 0.0  | 0.904*    | 36.1        | LOS D            | 13.2              | 92.6   | 1.00      | 1.07                | 1.48             | 37.2        |
| Approach             |      | 741           | 0.0  | 780          | 0.0  | 0.904     | 22.8        | LOS C            | 13.2              | 92.6   | 0.77      | 0.77                | 1.03             | 43.3        |
| North: Alumina Allee |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                    | L2   | 593           | 0.0  | 624          | 0.0  | 0.571     | 13.6        | LOS B            | 8.9               | 62.6   | 0.66      | 0.82                | 0.66             | 48.6        |
| 9                    | R2   | 712           | 0.0  | 749          | 0.0  | 0.874*    | 41.3        | LOS D            | 14.2              | 99.3   | 1.00      | 1.02                | 1.40             | 35.3        |
| Approach             |      | 1305          | 0.0  | 1374         | 0.0  | 0.874     | 28.7        | LOS C            | 14.2              | 99.3   | 0.85      | 0.93                | 1.06             | 40.3        |
| West: Alumina Allee  |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                   | L2   | 632           | 0.0  | 665          | 0.0  | 0.358     | 5.7         | LOS A            | 0.0               | 0.0    | 0.00      | 0.53                | 0.00             | 54.8        |
| 11                   | T1   | 948           | 0.0  | 998          | 0.0  | 0.832*    | 28.6        | LOS C            | 17.2              | 120.4  | 0.99      | 1.00                | 1.21             | 40.9        |
| Approach             |      | 1580          | 0.0  | 1663         | 0.0  | 0.832     | 19.4        | LOS B            | 17.2              | 120.4  | 0.60      | 0.81                | 0.73             | 45.6        |
| All Vehicles         |      | 3626          | 0.0  | 3817         | 0.0  | 0.904     | 23.5        | LOS C            | 17.2              | 120.4  | 0.72      | 0.85                | 0.91             | 43.1        |

## MOVEMENT SUMMARY

### Site: 101 [Alumina Allee- South Central-AM PEAK (Site Folder: Scenario C )]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

#### Vehicle Movement Performance

| Mov ID                       | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|------------------------------|------|---------------|------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                              |      | [ Total       | HV ] | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | %    | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 24            | 0.0  | 25           | 0.0  | 0.020     | 9.1         | LOS A            | 0.2               | 1.7    | 0.35      | 0.63                | 0.35             | 51.0        |
| 2                            | T1   | 930           | 0.0  | 979          | 0.0  | 0.377     | 4.8         | LOS A            | 6.4               | 44.6   | 0.48      | 0.42                | 0.48             | 55.6        |
| 3                            | R2   | 38            | 0.0  | 40           | 0.0  | 0.182     | 15.8        | LOS B            | 0.7               | 5.0    | 0.59      | 0.71                | 0.59             | 46.6        |
| Approach                     |      | 992           | 0.0  | 1044         | 0.0  | 0.377     | 5.3         | LOS A            | 6.4               | 44.6   | 0.48      | 0.44                | 0.48             | 55.1        |
| East: South Central Arterial |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 8             | 0.0  | 8            | 0.0  | 0.053     | 28.8        | LOS C            | 0.4               | 3.0    | 0.87      | 0.65                | 0.87             | 41.3        |
| 5                            | T1   | 8             | 0.0  | 8            | 0.0  | 0.053     | 23.3        | LOS C            | 0.4               | 3.0    | 0.87      | 0.65                | 0.87             | 42.1        |
| 6                            | R2   | 11            | 0.0  | 12           | 0.0  | 0.074     | 34.7        | LOS C            | 0.3               | 2.3    | 0.95      | 0.67                | 0.95             | 37.8        |
| Approach                     |      | 27            | 0.0  | 28           | 0.0  | 0.074     | 29.6        | LOS C            | 0.4               | 3.0    | 0.90      | 0.66                | 0.90             | 40.0        |
| North: Alumina Allee         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 24            | 0.0  | 25           | 0.0  | 0.020     | 9.1         | LOS A            | 0.2               | 1.7    | 0.35      | 0.63                | 0.35             | 51.0        |
| 8                            | T1   | 1377          | 0.0  | 1449         | 0.0  | 0.557     | 5.7         | LOS A            | 11.3              | 78.9   | 0.57      | 0.52                | 0.57             | 54.8        |
| 9                            | R2   | 255           | 0.0  | 268          | 0.0  | 0.752     | 23.2        | LOS C            | 7.7               | 53.7   | 0.81      | 0.92                | 1.04             | 42.6        |
| Approach                     |      | 1656          | 0.0  | 1743         | 0.0  | 0.752     | 8.5         | LOS A            | 11.3              | 78.9   | 0.61      | 0.58                | 0.64             | 52.5        |
| West: South Central Arterial |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 173           | 0.0  | 182          | 0.0  | 0.621     | 32.4        | LOS C            | 5.6               | 39.4   | 0.98      | 0.83                | 1.03             | 38.6        |
| 11                           | T1   | 10            | 0.0  | 11           | 0.0  | 0.621     | 26.9        | LOS C            | 5.6               | 39.4   | 0.98      | 0.83                | 1.03             | 39.3        |
| 12                           | R2   | 31            | 0.0  | 33           | 0.0  | 0.116     | 29.5        | LOS C            | 0.8               | 5.9    | 0.88      | 0.71                | 0.88             | 39.9        |
| Approach                     |      | 214           | 0.0  | 225          | 0.0  | 0.621     | 31.7        | LOS C            | 5.6               | 39.4   | 0.96      | 0.81                | 1.01             | 38.8        |
| All Vehicles                 |      | 2889          | 0.0  | 3041         | 0.0  | 0.752     | 9.3         | LOS A            | 11.3              | 78.9   | 0.59      | 0.55                | 0.61             | 51.8        |

## MOVEMENT SUMMARY

### Site: 101 [Alumina Allee- South Central - PM PEAK (Site Folder: Scenario C )]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

#### Vehicle Movement Performance

| Mov ID                       | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|------------------------------|------|---------------|------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                              |      | [ Total       | HV ] | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | %    | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 44            | 0.0  | 46           | 0.0  | 0.050     | 13.8        | LOS B            | 0.7               | 4.8    | 0.54      | 0.68                | 0.54             | 47.9        |
| 2                            | T1   | 950           | 0.0  | 1000         | 0.0  | 0.513     | 11.0        | LOS B            | 9.9               | 69.6   | 0.72      | 0.63                | 0.72             | 50.8        |
| 3                            | R2   | 24            | 0.0  | 25           | 0.0  | 0.101     | 21.3        | LOS C            | 0.5               | 3.8    | 0.72      | 0.70                | 0.72             | 43.6        |
| Approach                     |      | 1018          | 0.0  | 1072         | 0.0  | 0.513     | 11.3        | LOS B            | 9.9               | 69.6   | 0.71      | 0.63                | 0.71             | 50.5        |
| East: South Central Arterial |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 8             | 0.0  | 8            | 0.0  | 0.023     | 20.0        | LOS B            | 0.3               | 2.0    | 0.69      | 0.59                | 0.69             | 45.6        |
| 5                            | T1   | 6             | 0.0  | 6            | 0.0  | 0.023     | 14.5        | LOS B            | 0.3               | 2.0    | 0.69      | 0.59                | 0.69             | 46.6        |
| 6                            | R2   | 13            | 0.0  | 14           | 0.0  | 0.062     | 30.3        | LOS C            | 0.4               | 2.5    | 0.88      | 0.68                | 0.88             | 39.6        |
| Approach                     |      | 27            | 0.0  | 28           | 0.0  | 0.062     | 23.7        | LOS C            | 0.4               | 2.5    | 0.79      | 0.64                | 0.79             | 42.7        |
| North: Alumina Allee         |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 11            | 0.0  | 12           | 0.0  | 0.012     | 13.6        | LOS B            | 0.2               | 1.2    | 0.52      | 0.64                | 0.52             | 48.0        |
| 8                            | T1   | 959           | 0.0  | 1009         | 0.0  | 0.518     | 11.0        | LOS B            | 10.1              | 70.5   | 0.72      | 0.63                | 0.72             | 50.8        |
| 9                            | R2   | 159           | 0.0  | 167          | 0.0  | 0.672     | 27.8        | LOS C            | 4.9               | 34.1   | 0.91      | 0.89                | 1.07             | 40.4        |
| Approach                     |      | 1129          | 0.0  | 1188         | 0.0  | 0.672     | 13.4        | LOS B            | 10.1              | 70.5   | 0.75      | 0.67                | 0.77             | 49.0        |
| West: South Central Arterial |      |               |      |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 376           | 0.0  | 396          | 0.0  | 0.649     | 24.5        | LOS C            | 10.3              | 72.4   | 0.91      | 0.84                | 0.91             | 42.0        |
| 11                           | T1   | 6             | 0.0  | 6            | 0.0  | 0.649     | 19.0        | LOS B            | 10.3              | 72.4   | 0.91      | 0.84                | 0.91             | 42.8        |
| 12                           | R2   | 41            | 0.0  | 43           | 0.0  | 0.084     | 20.6        | LOS C            | 0.9               | 6.2    | 0.72      | 0.70                | 0.72             | 44.2        |
| Approach                     |      | 423           | 0.0  | 445          | 0.0  | 0.649     | 24.0        | LOS C            | 10.3              | 72.4   | 0.89      | 0.82                | 0.90             | 42.2        |
| All Vehicles                 |      | 2597          | 0.0  | 2734         | 0.0  | 0.672     | 14.4        | LOS B            | 10.3              | 72.4   | 0.76      | 0.68                | 0.77             | 48.2        |

## MOVEMENT SUMMARY

 Site: 101 [Ceramic Curve-Chalk Line AM PEAK (Site Folder: Scenario C )]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total       | HV ] | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                      |      | veh/h         | %    | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                    | L2   | 78            | 0.0  | 82           | 0.0  | 0.288      | 30.3        | LOS C            | 2.4               | 16.8   | 0.91      | 0.75                | 0.91             | 39.6        |
| 2                    | T1   | 7             | 0.0  | 7            | 0.0  | 0.288      | 24.7        | LOS C            | 2.4               | 16.8   | 0.91      | 0.75                | 0.91             | 40.3        |
| 3                    | R2   | 28            | 0.0  | 29           | 0.0  | 0.130      | 31.6        | LOS C            | 0.8               | 5.6    | 0.91      | 0.71                | 0.91             | 38.8        |
| Approach             |      | 113           | 0.0  | 119          | 0.0  | 0.288      | 30.3        | LOS C            | 2.4               | 16.8   | 0.91      | 0.74                | 0.91             | 39.4        |
| East: Chalk Line     |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                    | L2   | 73            | 0.0  | 77           | 0.0  | 0.574      | 11.4        | LOS B            | 11.8              | 82.4   | 0.58      | 0.55                | 0.58             | 52.9        |
| 5                    | T1   | 1342          | 0.0  | 1413         | 0.0  | *<br>0.574 | 5.8         | LOS A            | 11.8              | 82.8   | 0.58      | 0.54                | 0.58             | 54.5        |
| 6                    | R2   | 97            | 0.0  | 102          | 0.0  | 0.381      | 15.7        | LOS B            | 1.9               | 13.6   | 0.64      | 0.75                | 0.64             | 46.7        |
| Approach             |      | 1512          | 0.0  | 1592         | 0.0  | 0.574      | 6.7         | LOS A            | 11.8              | 82.8   | 0.59      | 0.55                | 0.59             | 53.9        |
| North: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                    | L2   | 79            | 0.0  | 83           | 0.0  | 0.291      | 30.3        | LOS C            | 2.4               | 17.1   | 0.92      | 0.76                | 0.92             | 39.5        |
| 8                    | T1   | 7             | 0.0  | 7            | 0.0  | *<br>0.291 | 24.7        | LOS C            | 2.4               | 17.1   | 0.92      | 0.76                | 0.92             | 40.3        |
| 9                    | R2   | 78            | 0.0  | 82           | 0.0  | 0.361      | 32.8        | LOS C            | 2.3               | 16.4   | 0.95      | 0.76                | 0.95             | 38.3        |
| Approach             |      | 164           | 0.0  | 173          | 0.0  | 0.361      | 31.3        | LOS C            | 2.4               | 17.1   | 0.93      | 0.76                | 0.93             | 39.0        |
| West: Alumina Allee  |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                   | L2   | 72            | 0.0  | 76           | 0.0  | 0.476      | 10.8        | LOS B            | 8.8               | 61.6   | 0.53      | 0.50                | 0.53             | 53.3        |
| 11                   | T1   | 1101          | 0.0  | 1159         | 0.0  | 0.476      | 5.3         | LOS A            | 8.9               | 62.0   | 0.53      | 0.49                | 0.53             | 55.0        |
| 12                   | R2   | 83            | 0.0  | 87           | 0.0  | 0.422      | 18.1        | LOS B            | 1.9               | 13.1   | 0.70      | 0.76                | 0.70             | 45.3        |
| Approach             |      | 1256          | 0.0  | 1322         | 0.0  | 0.476      | 6.4         | LOS A            | 8.9               | 62.0   | 0.54      | 0.50                | 0.54             | 54.1        |
| All Vehicles         |      | 3045          | 0.0  | 3205         | 0.0  | 0.574      | 8.8         | LOS A            | 11.8              | 82.8   | 0.60      | 0.55                | 0.60             | 52.2        |

## MOVEMENT SUMMARY

### Site: 101 [Ceramic Curve-Chalk Line - PM PEAK (Site Folder: Scenario C)]

New Site

Site Category: (None)

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

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

#### Vehicle Movement Performance

| Mov ID               | Turn | INPUT VOLUMES |      | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|----------------------|------|---------------|------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                      |      | [ Total       | HV ] | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                      |      | veh/h         | %    | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                    | L2   | 92            | 0.0  | 97           | 0.0  | 0.249      | 20.0        | LOS C            | 1.8               | 12.4   | 0.86      | 0.75                | 0.86             | 44.4        |
| 2                    | T1   | 7             | 0.0  | 7            | 0.0  | 0.249      | 14.5        | LOS B            | 1.8               | 12.4   | 0.86      | 0.75                | 0.86             | 45.4        |
| 3                    | R2   | 93            | 0.0  | 98           | 0.0  | 0.494      | 26.8        | LOS C            | 2.0               | 14.3   | 1.00      | 0.76                | 1.02             | 40.9        |
| Approach             |      | 192           | 0.0  | 202          | 0.0  | 0.494      | 23.1        | LOS C            | 2.0               | 14.3   | 0.93      | 0.75                | 0.94             | 42.7        |
| East: Chalk Line     |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                    | L2   | 54            | 0.0  | 57           | 0.0  | 0.427      | 12.0        | LOS B            | 5.3               | 37.2   | 0.65      | 0.59                | 0.65             | 52.4        |
| 5                    | T1   | 773           | 0.0  | 814          | 0.0  | 0.427      | 6.4         | LOS A            | 5.3               | 37.4   | 0.65      | 0.58                | 0.65             | 54.0        |
| 6                    | R2   | 165           | 0.0  | 174          | 0.0  | *<br>0.839 | 30.7        | LOS C            | 4.3               | 30.2   | 1.00      | 1.04                | 1.69             | 39.2        |
| Approach             |      | 992           | 0.0  | 1044         | 0.0  | 0.839      | 10.8        | LOS B            | 5.3               | 37.4   | 0.71      | 0.65                | 0.82             | 50.7        |
| North: Ceramic Curve |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                    | L2   | 370           | 0.0  | 389          | 0.0  | 0.939      | 39.2        | LOS D            | 11.7              | 82.2   | 1.00      | 1.25                | 1.98             | 35.9        |
| 8                    | T1   | 3             | 0.0  | 3            | 0.0  | *<br>0.939 | 33.6        | LOS C            | 11.7              | 82.2   | 1.00      | 1.25                | 1.98             | 36.5        |
| 9                    | R2   | 71            | 0.0  | 75           | 0.0  | 0.227      | 21.0        | LOS C            | 1.3               | 9.2    | 0.87      | 0.74                | 0.87             | 43.8        |
| Approach             |      | 444           | 0.0  | 467          | 0.0  | 0.939      | 36.2        | LOS D            | 11.7              | 82.2   | 0.98      | 1.17                | 1.81             | 37.0        |
| West: Alumina Allee  |      |               |      |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                   | L2   | 31            | 0.0  | 33           | 0.0  | 0.836      | 20.2        | LOS C            | 18.3              | 128.0  | 0.91      | 0.98                | 1.16             | 47.2        |
| 11                   | T1   | 1593          | 0.0  | 1677         | 0.0  | 0.836      | 14.6        | LOS B            | 18.3              | 128.2  | 0.91      | 0.98                | 1.16             | 48.3        |
| 12                   | R2   | 52            | 0.0  | 55           | 0.0  | 0.152      | 14.4        | LOS B            | 0.7               | 5.1    | 0.67      | 0.71                | 0.67             | 47.5        |
| Approach             |      | 1676          | 0.0  | 1764         | 0.0  | 0.836      | 14.7        | LOS B            | 18.3              | 128.2  | 0.90      | 0.97                | 1.14             | 48.2        |
| All Vehicles         |      | 3304          | 0.0  | 3478         | 0.0  | 0.939      | 16.9        | LOS B            | 18.3              | 128.2  | 0.86      | 0.89                | 1.12             | 46.7        |

## MOVEMENT SUMMARY

Site: 101 [Alumina Allee St AM PEAK (Site Folder: Scenario C )]

New Site

Site Category: (None)

Roundabout

### Vehicle Movement Performance

| Mov ID                  | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|-------------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                         |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                         |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                       | L2   | 397           | 0     | 418          | 0.0  | 1.205     | 223.1       | LOS F            | 81.8              | 572.9  | 1.00      | 3.66                | 7.83             | 12.9        |
| 2                       | T1   | 571           | 0     | 601          | 0.0  | 1.205     | 224.6       | LOS F            | 81.8              | 572.9  | 1.00      | 3.42                | 7.47             | 13.1        |
| 3                       | R2   | 31            | 0     | 33           | 0.0  | 1.205     | 230.9       | LOS F            | 66.7              | 466.8  | 1.00      | 3.32                | 7.33             | 13.1        |
| Approach                |      | 999           | 0     | 1052         | 0.0  | 1.205     | 224.2       | LOS F            | 81.8              | 572.9  | 1.00      | 3.51                | 7.61             | 13.0        |
| East: Diamantpyp        |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                       | L2   | 18            | 0     | 19           | 0.0  | 0.228     | 19.3        | LOS B            | 1.3               | 8.8    | 0.95      | 0.98                | 0.95             | 44.2        |
| 5                       | T1   | 1             | 0     | 1            | 0.0  | 0.228     | 19.5        | LOS B            | 1.3               | 8.8    | 0.95      | 0.98                | 0.95             | 45.3        |
| 6                       | R2   | 23            | 0     | 24           | 0.0  | 0.228     | 25.1        | LOS C            | 1.3               | 8.8    | 0.95      | 0.98                | 0.95             | 45.5        |
| Approach                |      | 42            | 0     | 44           | 0.0  | 0.228     | 22.5        | LOS C            | 1.3               | 8.8    | 0.95      | 0.98                | 0.95             | 44.9        |
| North: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                       | L2   | 75            | 0     | 79           | 0.0  | 0.078     | 5.4         | LOS A            | 0.4               | 2.7    | 0.49      | 0.57                | 0.49             | 54.2        |
| 8                       | T1   | 1258          | 0     | 1324         | 0.0  | 0.925     | 13.8        | LOS B            | 23.5              | 164.2  | 0.98      | 1.09                | 1.57             | 50.4        |
| 9                       | R2   | 964           | 0     | 1015         | 0.0  | 0.925     | 22.6        | LOS C            | 22.6              | 158.0  | 1.00      | 1.22                | 1.74             | 45.8        |
| Approach                |      | 2297          | 0     | 2418         | 0.0  | 0.925     | 17.3        | LOS B            | 23.5              | 164.2  | 0.97      | 1.13                | 1.61             | 48.4        |
| West: RBIDZ             |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                      | L2   | 147           | 0     | 155          | 0.0  | 0.083     | 5.4         | LOS A            | 0.4               | 2.8    | 0.55      | 0.63                | 0.55             | 54.0        |
| 11                      | T1   | 1             | 0     | 1            | 0.0  | 0.292     | 4.7         | LOS A            | 1.8               | 12.5   | 0.60      | 0.74                | 0.60             | 51.9        |
| 12                      | R2   | 363           | 0     | 382          | 0.0  | 0.292     | 10.4        | LOS B            | 1.8               | 12.5   | 0.60      | 0.74                | 0.60             | 52.2        |
| Approach                |      | 511           | 0     | 538          | 0.0  | 0.292     | 8.9         | LOS A            | 1.8               | 12.5   | 0.59      | 0.70                | 0.59             | 52.7        |
| All Vehicles            |      | 3849          | 0     | 4052         | 0.0  | 1.205     | 69.9        | LOS E            | 81.8              | 572.9  | 0.93      | 1.69                | 3.02             | 28.7        |

# MOVEMENT SUMMARY

Site: 101 [Alumina Allee St PM PEAK (Site Folder: Scenario C )]

New Site

Site Category: (None)

Roundabout

## Vehicle Movement Performance

| Mov ID                  | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|-------------------------|------|---------------|-------|--------------|------|-----------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
|                         |      | [ Total       | HV ]  | [ Total      | HV ] |           |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                         |      | veh/h         | veh/h | veh/h        | %    | v/c       | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 1                       | L2   | 428           | 0     | 451          | 0.0  | 0.717     | 6.2         | LOS A            | 7.8               | 54.4   | 0.71      | 0.66                | 0.77             | 53.3        |
| 2                       | T1   | 1224          | 0     | 1288         | 0.0  | 0.717     | 6.5         | LOS A            | 7.8               | 54.6   | 0.72      | 0.69                | 0.80             | 54.6        |
| 3                       | R2   | 24            | 0     | 25           | 0.0  | 0.717     | 12.4        | LOS B            | 7.8               | 54.6   | 0.73      | 0.70                | 0.81             | 54.7        |
| Approach                |      | 1676          | 0     | 1764         | 0.0  | 0.717     | 6.5         | LOS A            | 7.8               | 54.6   | 0.72      | 0.68                | 0.79             | 54.3        |
| East: Diamantpyp        |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 4                       | L2   | 63            | 0     | 66           | 0.0  | 0.396     | 11.5        | LOS B            | 2.3               | 16.0   | 0.86      | 0.98                | 0.98             | 48.3        |
| 5                       | T1   | 1             | 0     | 1            | 0.0  | 0.396     | 11.6        | LOS B            | 2.3               | 16.0   | 0.86      | 0.98                | 0.98             | 49.6        |
| 6                       | R2   | 117           | 0     | 123          | 0.0  | 0.396     | 17.3        | LOS B            | 2.3               | 16.0   | 0.86      | 0.98                | 0.98             | 49.9        |
| Approach                |      | 181           | 0     | 191          | 0.0  | 0.396     | 15.2        | LOS B            | 2.3               | 16.0   | 0.86      | 0.98                | 0.98             | 49.4        |
| North: Alumina Allee St |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 7                       | L2   | 23            | 0     | 24           | 0.0  | 0.034     | 7.0         | LOS A            | 0.2               | 1.6    | 0.76      | 0.66                | 0.76             | 53.2        |
| 8                       | T1   | 652           | 0     | 686          | 0.0  | 0.495     | 7.7         | LOS A            | 4.8               | 33.8   | 0.94      | 0.80                | 1.00             | 53.0        |
| 9                       | R2   | 144           | 0     | 152          | 0.0  | 0.495     | 14.4        | LOS B            | 4.3               | 30.1   | 0.92      | 0.92                | 1.02             | 52.4        |
| Approach                |      | 819           | 0     | 862          | 0.0  | 0.495     | 8.9         | LOS A            | 4.8               | 33.8   | 0.93      | 0.81                | 1.00             | 52.9        |
| West: RBIDZ             |      |               |       |              |      |           |             |                  |                   |        |           |                     |                  |             |
| 10                      | L2   | 1029          | 0     | 1083         | 0.0  | 0.921     | 31.3        | LOS C            | 13.7              | 96.1   | 1.00      | 1.54                | 2.58             | 39.5        |
| 11                      | T1   | 1             | 0     | 1            | 0.0  | 0.813     | 15.6        | LOS B            | 10.6              | 74.1   | 1.00      | 1.28                | 1.75             | 46.2        |
| 12                      | R2   | 688           | 0     | 724          | 0.0  | 0.813     | 21.3        | LOS C            | 10.6              | 74.1   | 1.00      | 1.28                | 1.75             | 46.4        |
| Approach                |      | 1718          | 0     | 1808         | 0.0  | 0.921     | 27.3        | LOS C            | 13.7              | 96.1   | 1.00      | 1.43                | 2.25             | 42.1        |
| All Vehicles            |      | 4394          | 0     | 4625         | 0.0  | 0.921     | 15.4        | LOS B            | 13.7              | 96.1   | 0.88      | 1.01                | 1.41             | 48.4        |

## MOVEMENT SUMMARY

### Site: 102 [Alumina Allee St AM PEAK -Upgrade (Site Folder: Scenario C )]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site Optimum Cycle Time - Minimum Delay)

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

| Vehicle Movement Performance |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
|------------------------------|------|---------------|-------|--------------|------|------------|-------------|------------------|-------------------|--------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES |       | DEMAND FLOWS |      | Deg. Satn  | Aver. Delay | Level of Service | 95% BACK OF QUEUE |        | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total       | HV ]  | [ Total      | HV ] |            |             |                  | [ Veh.            | Dist ] |           |                     |                  |             |
|                              |      | veh/h         | veh/h | veh/h        | %    | v/c        | sec         |                  | veh               | m      |           |                     |                  | km/h        |
| South: Alumina Alle St       |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 1                            | L2   | 397           | 0     | 418          | 0.0  | 0.770      | 34.5        | LOS C            | 11.3              | 79.0   | 0.99      | 0.92                | 1.16             | 38.0        |
| 2                            | T1   | 571           | 0     | 601          | 0.0  | 0.770      | 28.8        | LOS C            | 11.4              | 79.9   | 0.99      | 0.93                | 1.16             | 40.5        |
| 3                            | R2   | 31            | 0     | 33           | 0.0  | *<br>0.268 | 40.7        | LOS D            | 1.1               | 7.6    | 1.00      | 0.70                | 1.00             | 35.5        |
| Approach                     |      | 999           | 0     | 1052         | 0.0  | 0.770      | 31.4        | LOS C            | 11.4              | 79.9   | 0.99      | 0.92                | 1.15             | 39.3        |
| East: Diamantoy              |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 4                            | L2   | 18            | 0     | 19           | 0.0  | 0.047      | 12.3        | LOS B            | 0.3               | 1.8    | 0.59      | 0.66                | 0.59             | 49.4        |
| 5                            | T1   | 1             | 0     | 1            | 0.0  | 0.063      | 27.5        | LOS C            | 0.4               | 2.6    | 0.90      | 0.68                | 0.90             | 39.1        |
| 6                            | R2   | 23            | 0     | 24           | 0.0  | 0.063      | 33.6        | LOS C            | 0.4               | 2.6    | 0.90      | 0.68                | 0.90             | 38.4        |
| Approach                     |      | 42            | 0     | 44           | 0.0  | 0.063      | 24.3        | LOS C            | 0.4               | 2.6    | 0.77      | 0.67                | 0.77             | 42.5        |
| North: Alumina Alle St       |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 7                            | L2   | 75            | 0     | 79           | 0.0  | 0.054      | 6.0         | LOS A            | 0.2               | 1.5    | 0.17      | 0.59                | 0.17             | 53.7        |
| 8                            | T1   | 1258          | 0     | 1324         | 0.0  | 0.803      | 13.0        | LOS B            | 24.5              | 171.6  | 0.79      | 0.81                | 0.86             | 49.0        |
| 9                            | R2   | 964           | 0     | 1015         | 0.0  | *<br>0.803 | 26.9        | LOS C            | 16.6              | 116.1  | 0.93      | 1.03                | 1.05             | 41.5        |
| Approach                     |      | 2297          | 0     | 2418         | 0.0  | 0.803      | 18.6        | LOS B            | 24.5              | 171.6  | 0.83      | 0.89                | 0.92             | 45.6        |
| West: RBIDZ                  |      |               |       |              |      |            |             |                  |                   |        |           |                     |                  |             |
| 10                           | L2   | 147           | 0     | 155          | 0.0  | 0.451      | 32.1        | LOS C            | 4.6               | 31.9   | 0.93      | 0.79                | 0.93             | 38.6        |
| 11                           | T1   | 1             | 0     | 1            | 0.0  | *<br>0.582 | 27.5        | LOS C            | 5.8               | 40.9   | 0.96      | 0.81                | 0.97             | 39.0        |
| 12                           | R2   | 363           | 0     | 382          | 0.0  | 0.582      | 33.1        | LOS C            | 5.8               | 40.9   | 0.96      | 0.81                | 0.97             | 38.5        |
| Approach                     |      | 511           | 0     | 538          | 0.0  | 0.582      | 32.8        | LOS C            | 5.8               | 40.9   | 0.95      | 0.80                | 0.96             | 38.6        |
| All Vehicles                 |      | 3849          | 0     | 4052         | 0.0  | 0.803      | 23.9        | LOS C            | 24.5              | 171.6  | 0.89      | 0.89                | 0.98             | 42.8        |

## MOVEMENT SUMMARY

**Site: 102 [Alumina Allee St PM PEAK -Upgrade (Site Folder: Scenario C )]**

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

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

| Vehicle Movement Performance |      |                  |             |                  |         |                    |             |                  |                   |           |           |                     |                  |             |
|------------------------------|------|------------------|-------------|------------------|---------|--------------------|-------------|------------------|-------------------|-----------|-----------|---------------------|------------------|-------------|
| Mov ID                       | Turn | INPUT VOLUMES    |             | DEMAND FLOWS     |         | Deg. Satn          | Aver. Delay | Level of Service | 95% BACK OF QUEUE |           | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed |
|                              |      | [ Total<br>veh/h | HV<br>veh/h | [ Total<br>veh/h | HV<br>% |                    |             |                  | [ Veh.<br>veh     | Dist<br>m |           |                     |                  |             |
| South: Alumina Alle St       |      |                  |             |                  |         |                    |             |                  |                   |           |           |                     |                  |             |
| 1                            | L2   | 428              | 0           | 451              | 0.0     | 0.582              | 20.3        | LOS C            | 10.4              | 72.5      | 0.82      | 0.82                | 0.82             | 44.1        |
| 2                            | T1   | 1224             | 0           | 1288             | 0.0     | <div>0.829</div> * | 22.2        | LOS C            | 20.1              | 140.9     | 0.93      | 0.96                | 1.12             | 44.0        |
| 3                            | R2   | 24               | 0           | 25               | 0.0     | 0.127              | 30.0        | LOS C            | 0.7               | 4.7       | 0.88      | 0.71                | 0.88             | 39.6        |
| Approach                     |      | 1676             | 0           | 1764             | 0.0     | 0.829              | 21.8        | LOS C            | 20.1              | 140.9     | 0.91      | 0.92                | 1.04             | 44.0        |
| East: Diamantoy              |      |                  |             |                  |         |                    |             |                  |                   |           |           |                     |                  |             |
| 4                            | L2   | 63               | 0           | 66               | 0.0     | 0.152              | 14.5        | LOS B            | 0.8               | 5.6       | 0.76      | 0.72                | 0.76             | 48.0        |
| 5                            | T1   | 1                | 0           | 1                | 0.0     | 0.385              | 27.2        | LOS C            | 1.8               | 12.7      | 0.94      | 0.76                | 0.94             | 39.1        |
| 6                            | R2   | 117              | 0           | 123              | 0.0     | 0.385              | 33.2        | LOS C            | 1.8               | 12.7      | 0.95      | 0.76                | 0.95             | 38.5        |
| Approach                     |      | 181              | 0           | 191              | 0.0     | 0.385              | 26.7        | LOS C            | 1.8               | 12.7      | 0.88      | 0.74                | 0.88             | 41.3        |
| North: Alumina Alle St       |      |                  |             |                  |         |                    |             |                  |                   |           |           |                     |                  |             |
| 7                            | L2   | 23               | 0           | 24               | 0.0     | 0.017              | 6.2         | LOS A            | 0.1               | 0.5       | 0.19      | 0.58                | 0.19             | 53.6        |
| 8                            | T1   | 652              | 0           | 686              | 0.0     | 0.655              | 17.6        | LOS B            | 12.7              | 89.1      | 0.88      | 0.77                | 0.90             | 46.4        |
| 9                            | R2   | 144              | 0           | 152              | 0.0     | 0.655              | 34.4        | LOS C            | 6.2               | 43.1      | 0.98      | 0.85                | 1.14             | 38.5        |
| Approach                     |      | 819              | 0           | 862              | 0.0     | 0.655              | 20.2        | LOS C            | 12.7              | 89.1      | 0.88      | 0.78                | 0.92             | 44.9        |
| West: RBIDZ                  |      |                  |             |                  |         |                    |             |                  |                   |           |           |                     |                  |             |
| 10                           | L2   | 1029             | 0           | 1083             | 0.0     | 0.794              | 25.8        | LOS C            | 17.8              | 124.5     | 0.93      | 0.92                | 1.07             | 41.3        |
| 11                           | T1   | 1                | 0           | 1                | 0.0     | <div>0.794</div> * | 20.4        | LOS C            | 17.4              | 121.9     | 0.93      | 0.92                | 1.07             | 42.1        |
| 12                           | R2   | 688              | 0           | 724              | 0.0     | 0.794              | 26.0        | LOS C            | 17.4              | 121.9     | 0.93      | 0.92                | 1.07             | 41.6        |
| Approach                     |      | 1718             | 0           | 1808             | 0.0     | 0.794              | 25.9        | LOS C            | 17.8              | 124.5     | 0.93      | 0.92                | 1.07             | 41.4        |
| All Vehicles                 |      | 4394             | 0           | 4625             | 0.0     | 0.829              | 23.3        | LOS C            | 20.1              | 140.9     | 0.91      | 0.89                | 1.02             | 43.0        |

# **Appendix D: Arterial Framework Plan and Future Rail Plan of the City**



# In diversity there is beauty and there is strength.

MAYA ANGELOU

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