APPENDIX F

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.

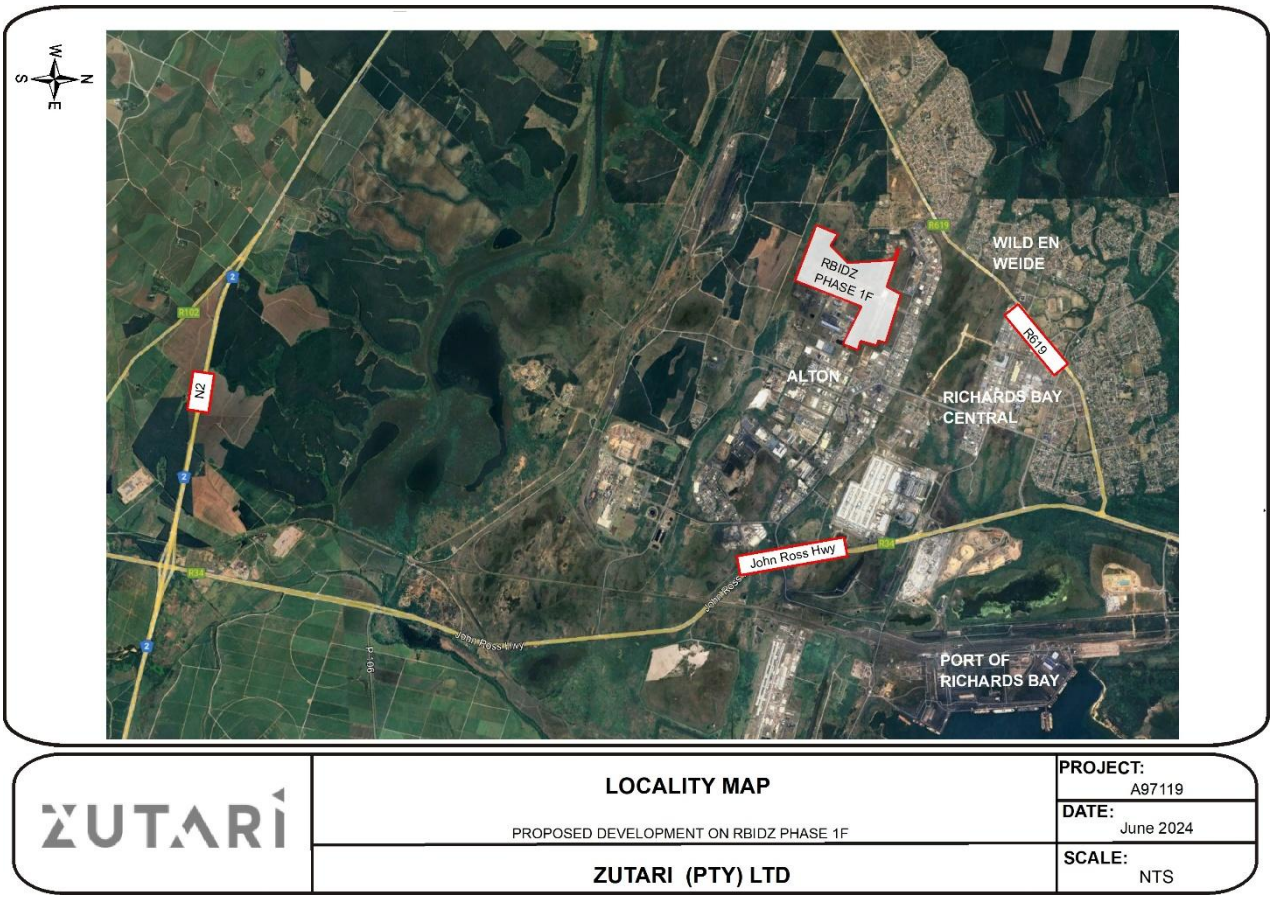


Figure 1: Locality Plan

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 Alley 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 Alley 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 Alley also needed to be counted and it was therefore counted by Bala Survey and Research on Tuesday, 19 March 2024:

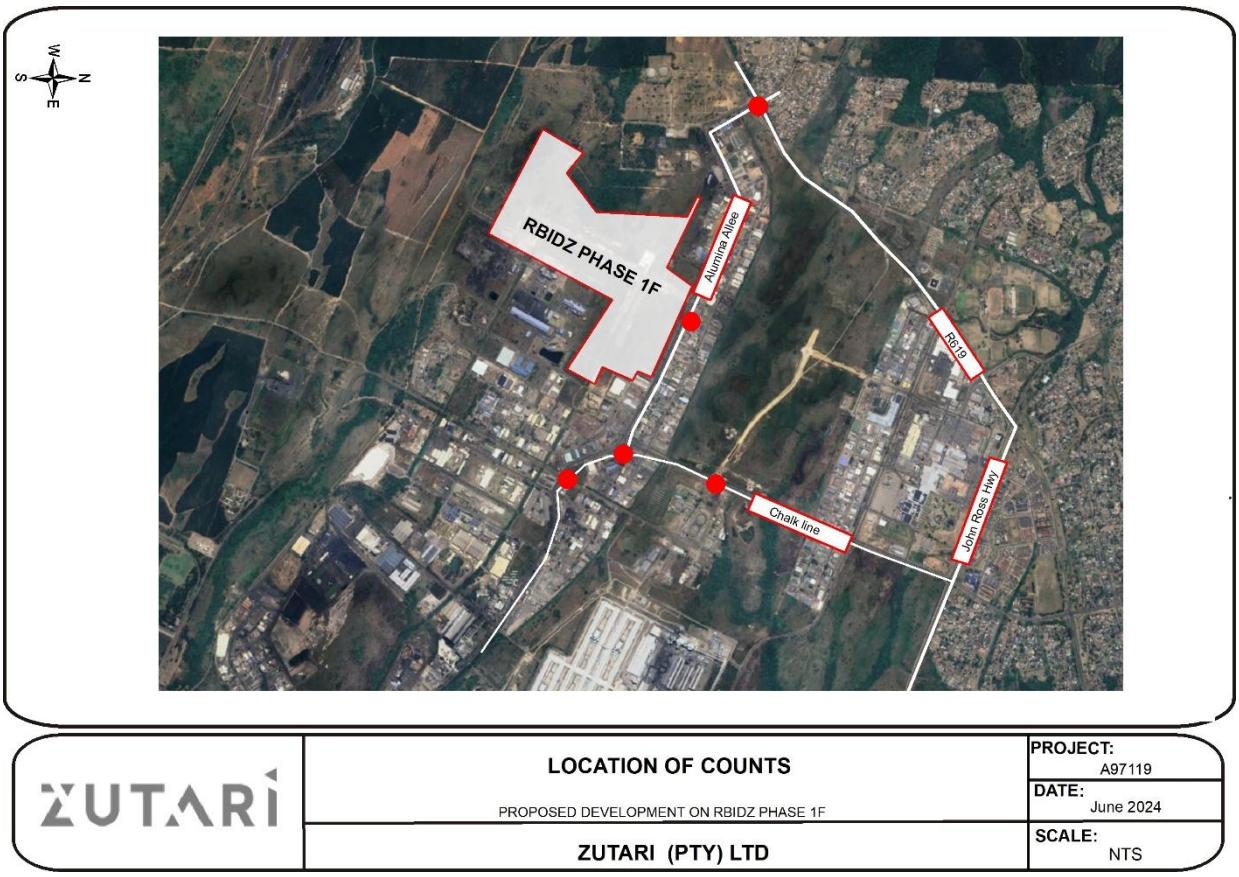


Figure 7: Location of Counts

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.

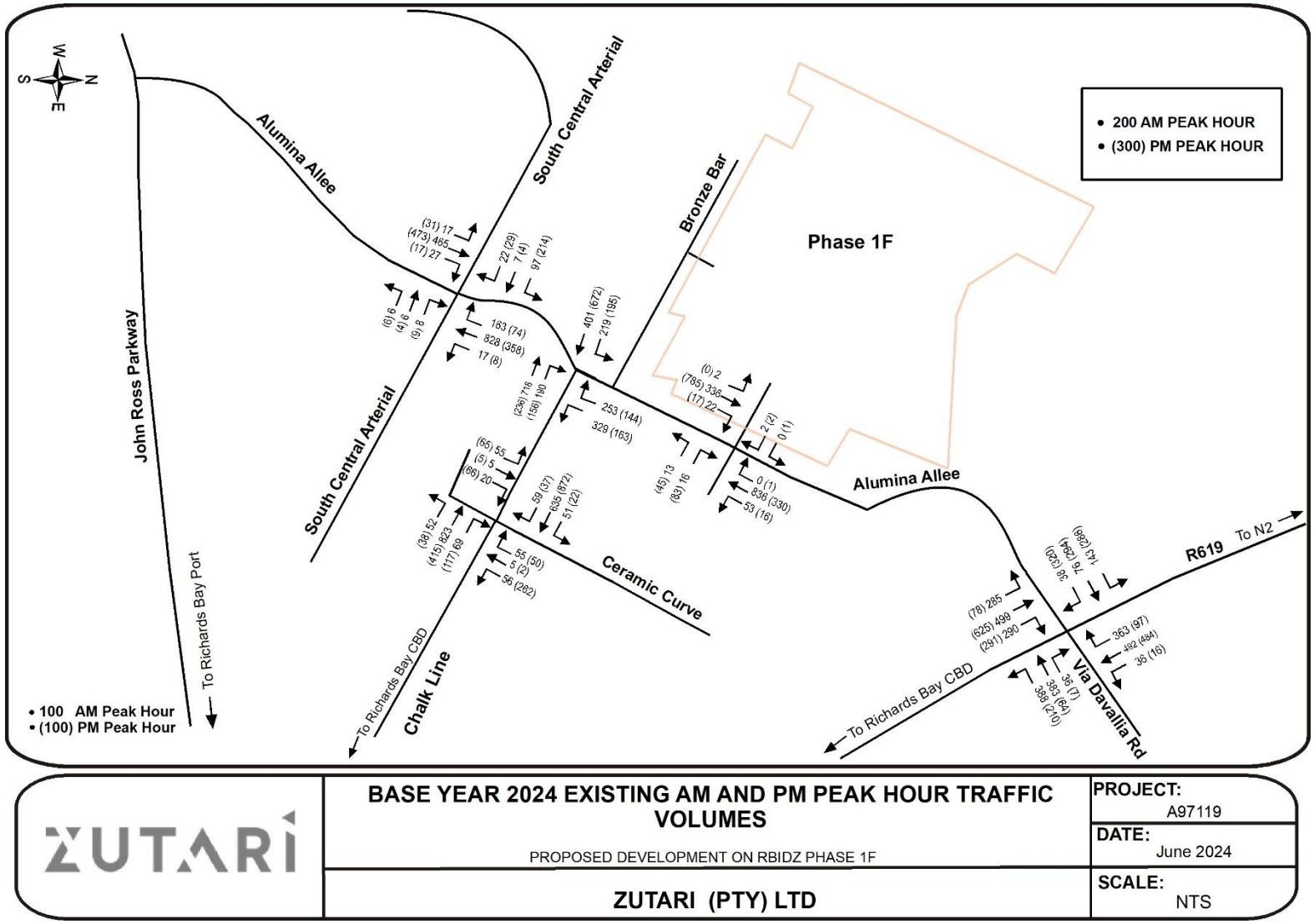


Figure 8: 2024 Weekday AM & PM Peak Hour Traffic Volumes

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.

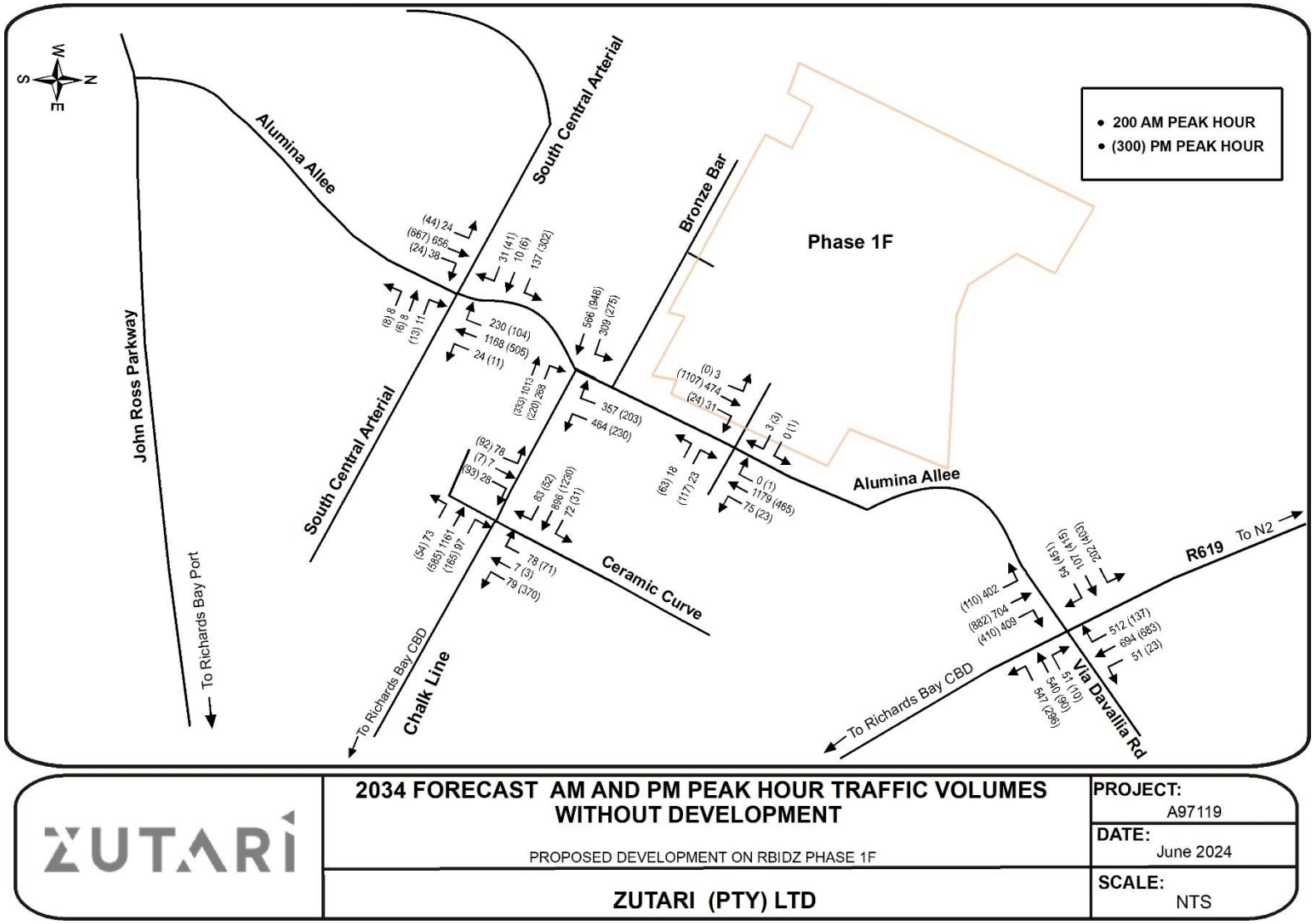


Figure 9: 2034 Design Year AM and PM Peak Hour Volumes

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.

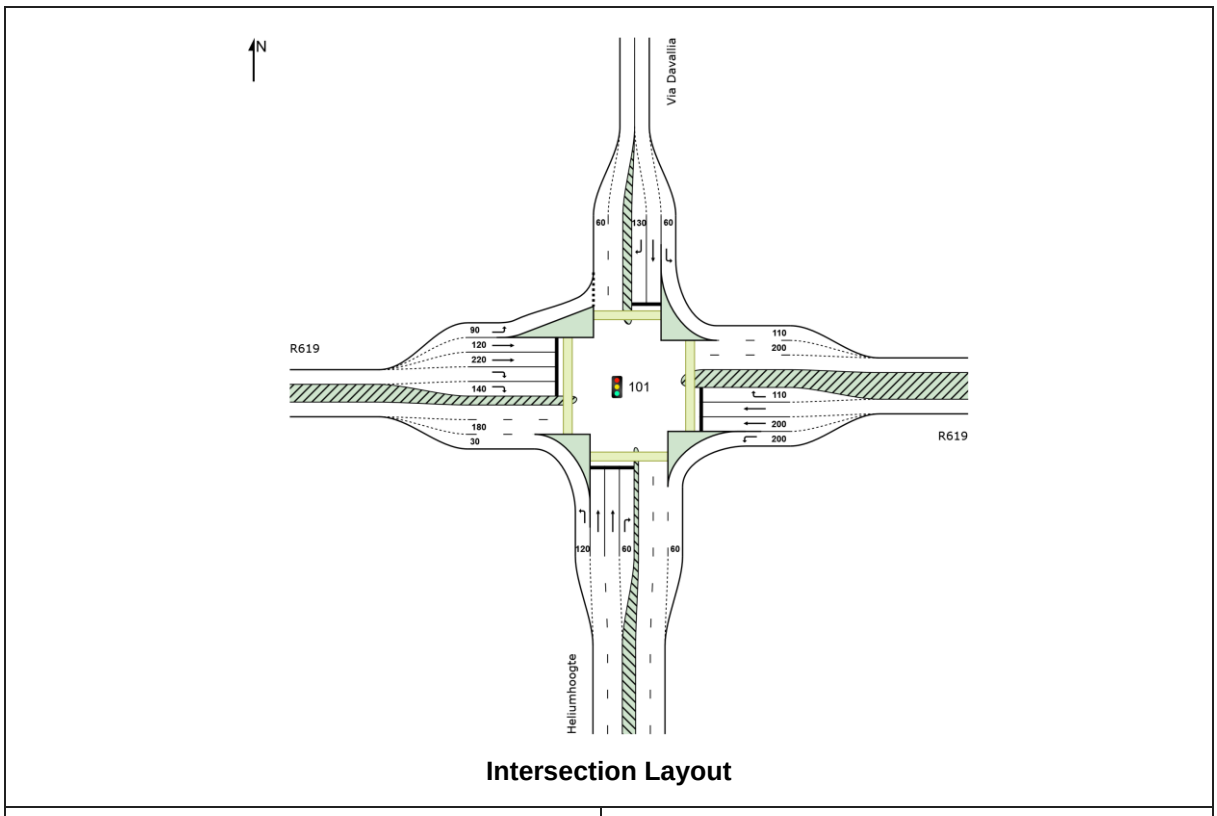
The legend hereafter is used to depict the LOS of each movement at the intersections.



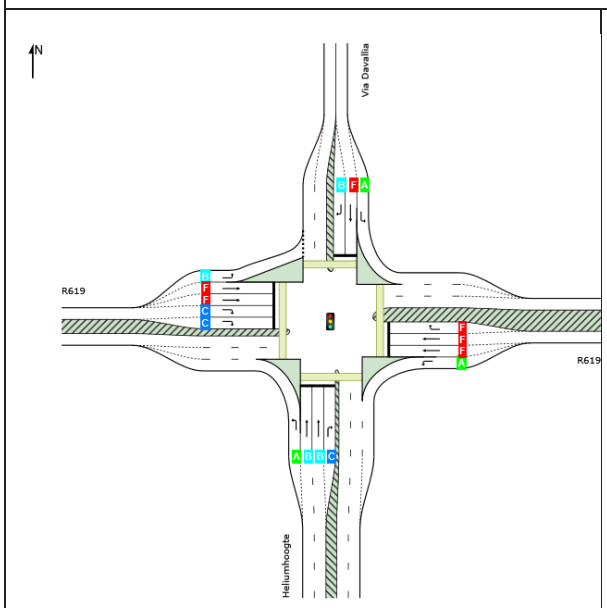
The 2034 10-year design horizon background traffic without development generated traffic analysis results are presented below with the details contained in Appendix C to this report.

6.4.1 Heliumhoogte, Via Davallia and R619 Intersection

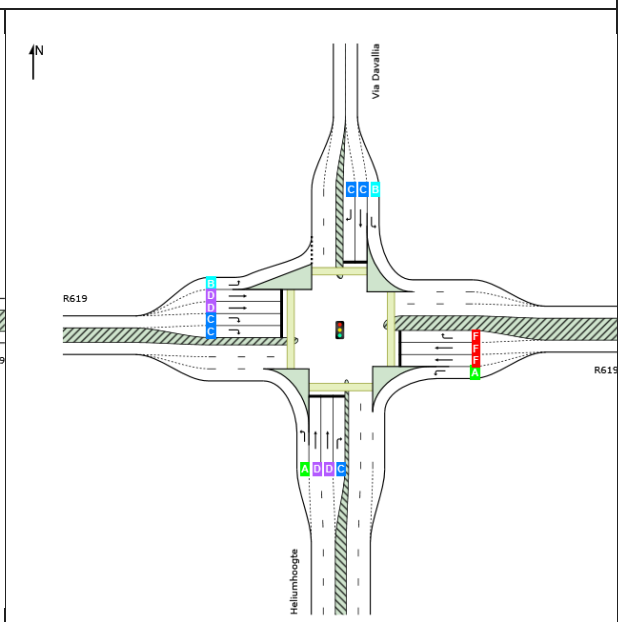
The following intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year without development generated traffic at this intersection are shown in Table 1 hereafter:



Intersection Layout



AM Peak Hour



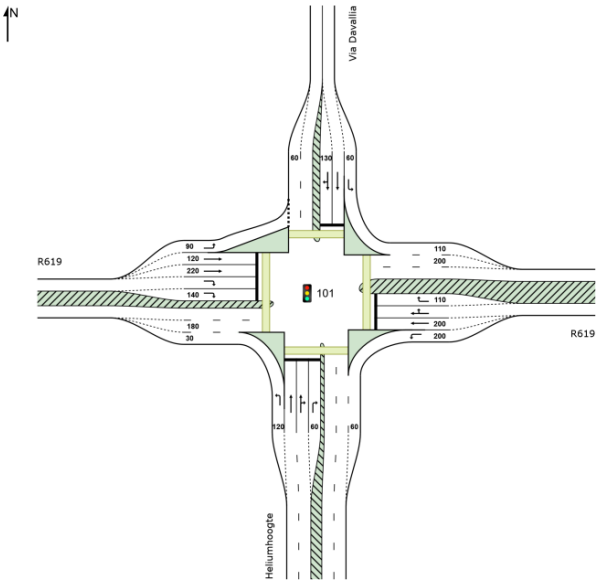
PM Peak Hour

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

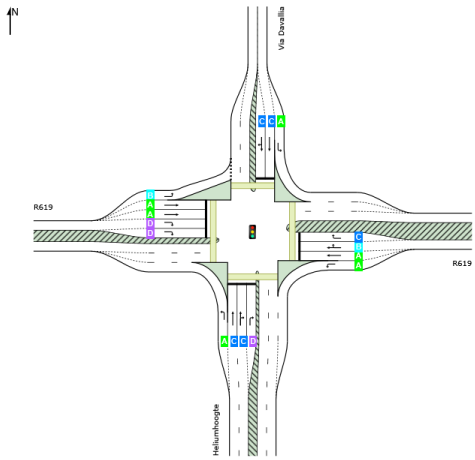
From the SIDRA results, it is evident that this intersection will experience congestion during the weekday AM and PM peak hours. The average delays will be 74.1 seconds and 80.8 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 350.7 metres and 365.9 metres during 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

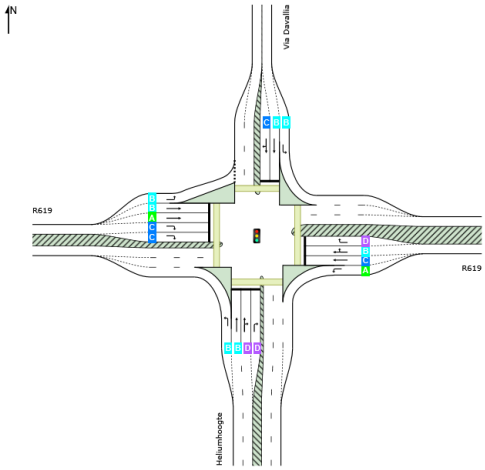
The following intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year without development generated traffic at this intersection are shown in Table 2 hereafter:



Intersection Layout



AM Peak Hour



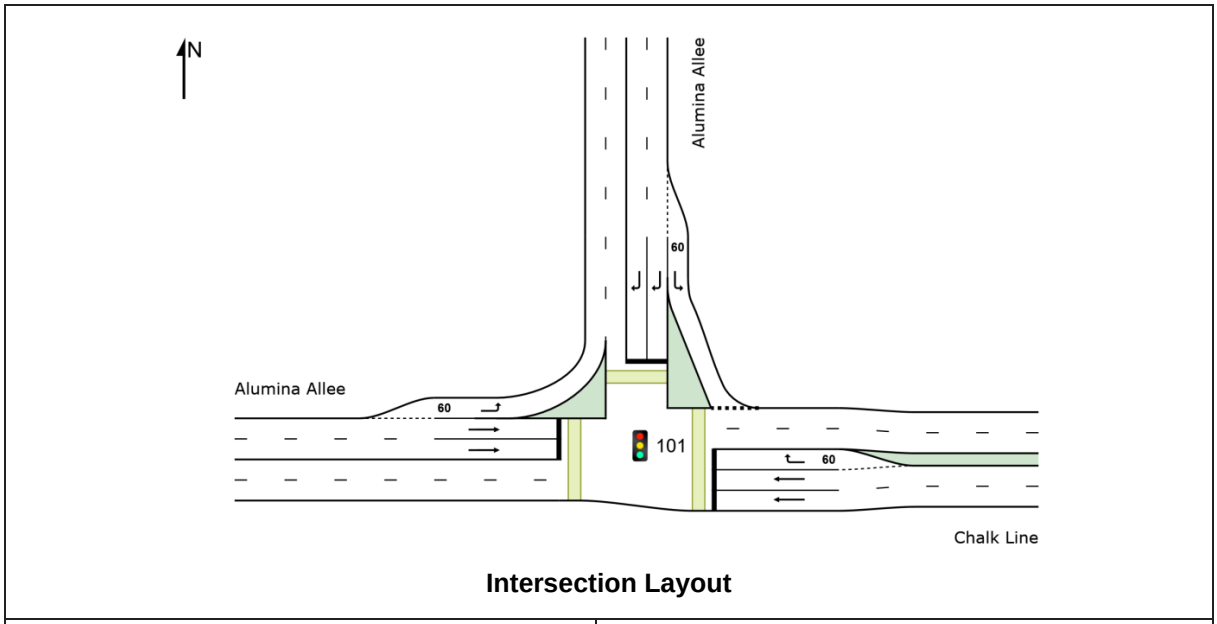
PM Peak Hour

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

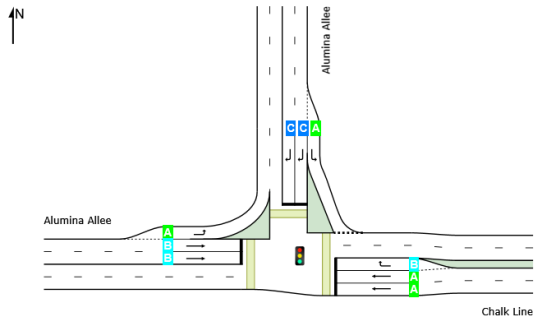
From the SIDRA results, it is evident that this upgraded intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 16.9 seconds and 21.7 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 94.3 metres and 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

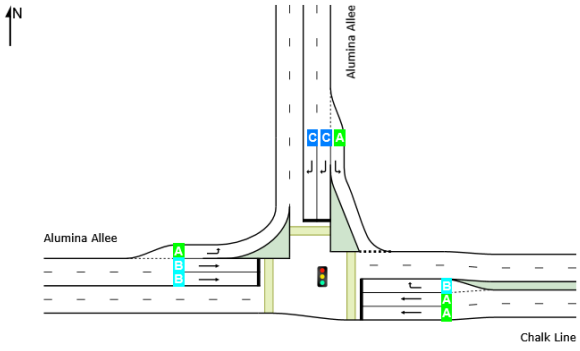
The following intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year without development generated traffic at this intersection are shown in Table 3 hereafter:



Intersection Layout



AM Peak Hour



PM Peak Hour

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:

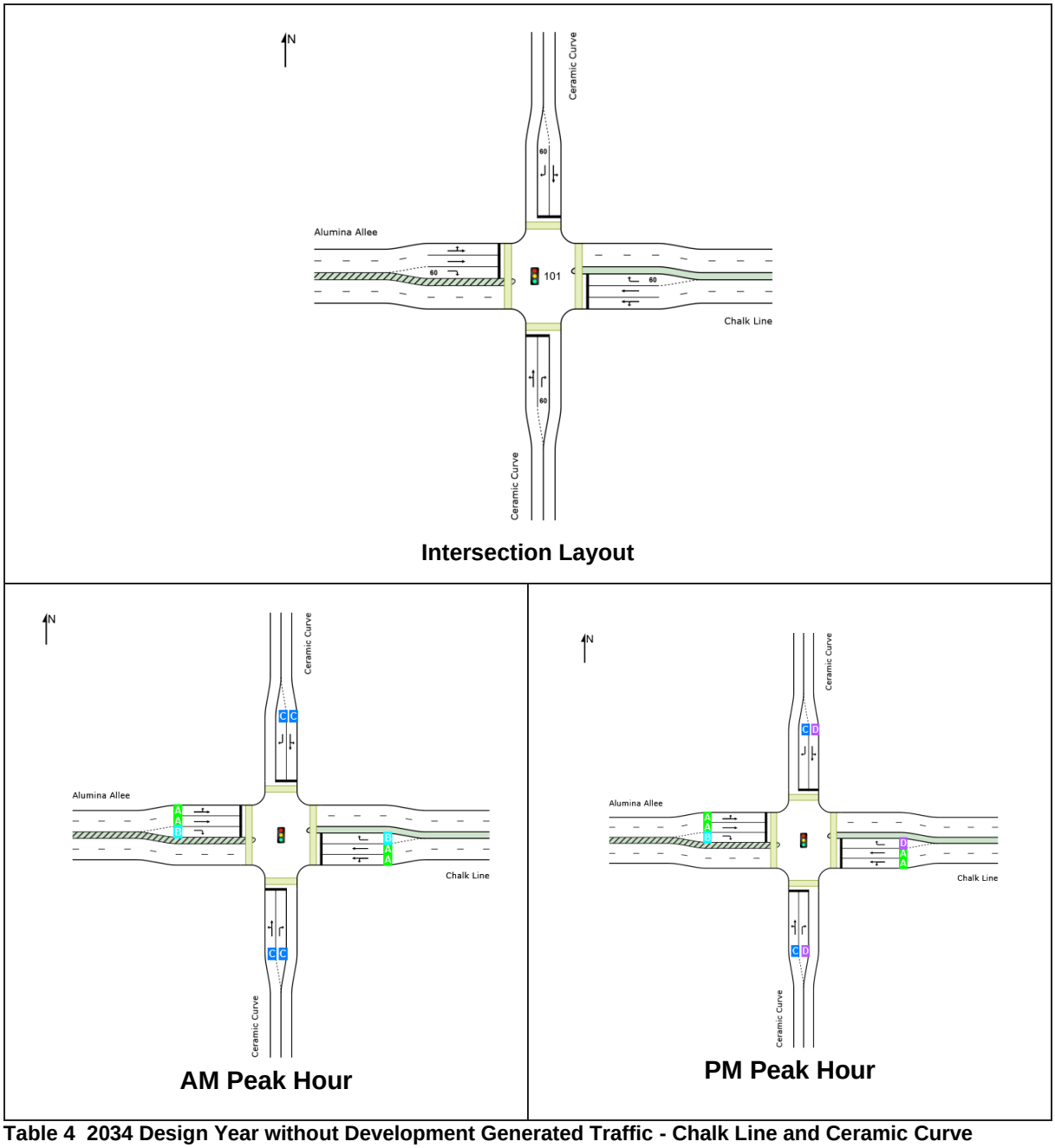


Table 4 2034 Design Year without Development Generated Traffic - Chalk Line and Ceramic Curve

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:

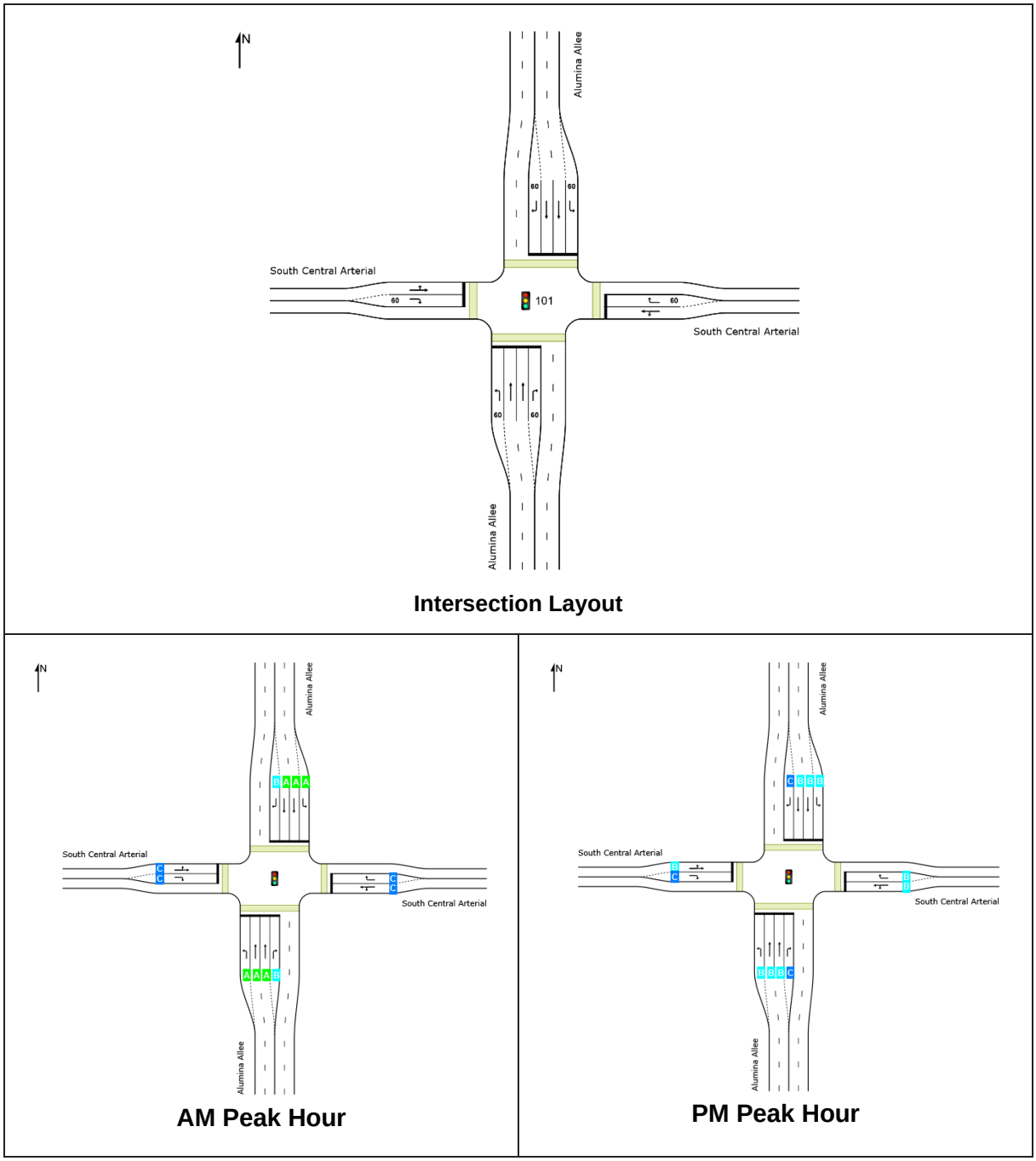
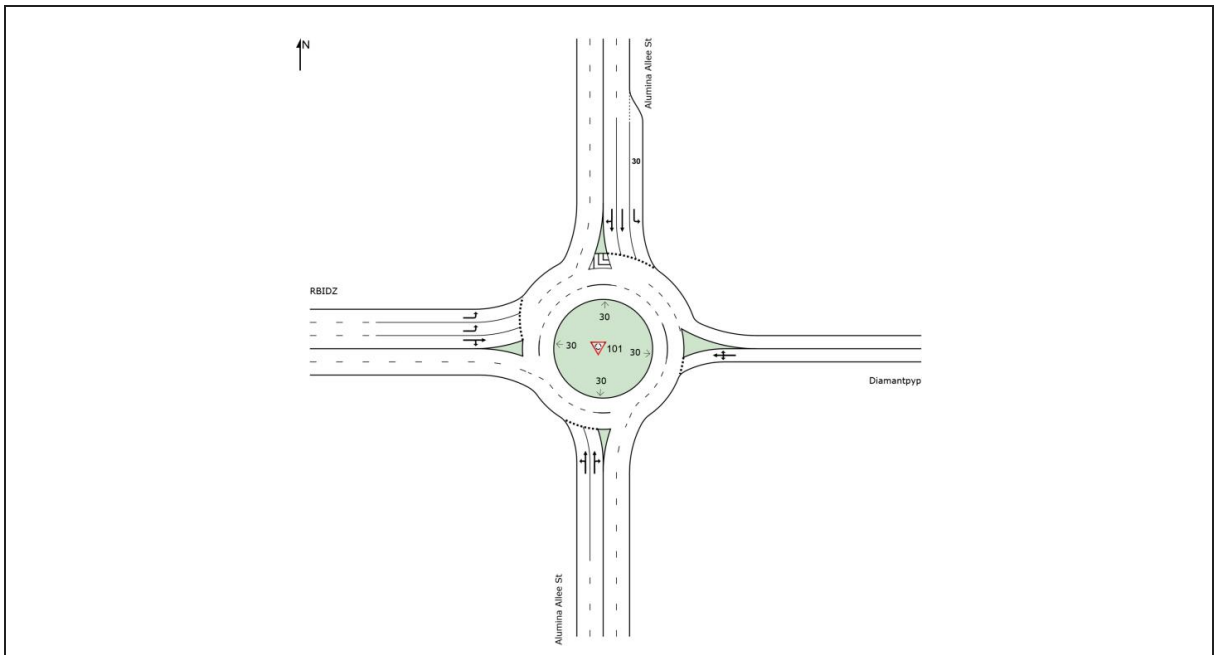


Table 5 2034 Design Year without Development Generated Traffic - Alumina Allee and South Central Arterial

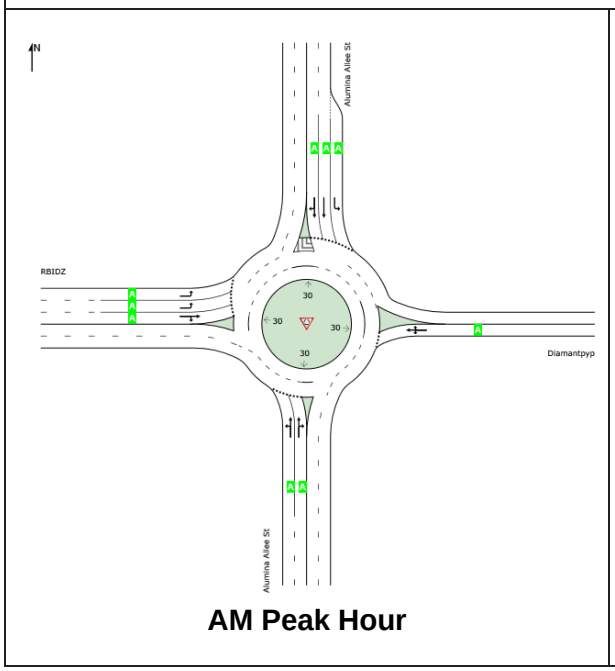
From the SIDRA results, it is evident that this intersection will operate at good levels of service during the weekday AM and PM peak hours. The average delays will be 8.2 seconds and 15.3 seconds during the AM and PM peak hours respectively. The maximum queue lengths will be 61.3 metres and 51.9 metres 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)

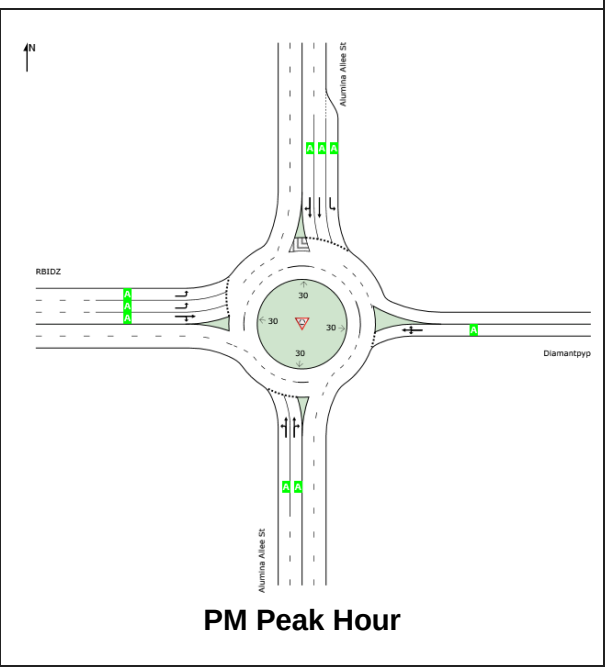
The following intersection configuration and the resulting Levels of Service (LOS) for the analysis of the 2034 Design year without development generated traffic at this intersection are shown in Table 6 hereafter:



Intersection Layout



AM Peak Hour



PM Peak Hour

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 m² 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 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^2 GLA with a 75:25 directional split.
- Weekday PM peak hour – 0.7 veh/h two-way per 100m^2 GLA with a 25:75 directional split

Industrial Area (Park) (code 130)

- Weekday AM Peak Hour – 0.8 veh/h two-way per 100m^2 GLA with a 70:30 directional split.
- Weekday PM Peak Hour – 0.8 veh/h two-way per 100m^2 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 m². 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^2 (GLA) / Units**	**Trip Gen Rate**	**Total 2-way Trips**	**AM Peak Hour**		**PM Peak Hour**	
					In	**Out**	**In**	**Out**
General Industry	16786	31125	AM: 0.5 trips/100m^2	156	117	39	54	163
			PM: 0.7 trips/100m^2	218				
	16787	35463	AM: 0.5 trips/100m^2	177	133	44	62	186
			PM: 0.7 trips/100m^2	248				
	16788	66483	AM: 0.5 trips/100m^2	332	249	83	116	349
			PM: 0.7 trips/100m^2	465				
	16789	81858	AM: 0.5 trips/100m^2	409	307	102	143	430
			PM: 0.7 trips/100m^2	573				
	16672	42161	AM: 0.5 trips/100m^2	211	158	53	74	221
			PM: 0.7 trips/100m^2	295				
	17456	16982	AM: 0.8 trips/100m^2	136	95	41	34	102
			PM: 0.8 trips/100m^2	136				

	17455	19474	AM: 0.8 trips/100m^2	156	109	47	39	117
			PM: 0.8 trips/100m^2	156				
	17443	16366	AM: 0.8 trips/100m^2	131	92	39	33	98
			PM: 0.8 trips/100m^2	131				
	17442	16366	AM: 0.8 trips/100m^2	13	92	39	33	98
			PM: 0.8 trips/100m^2	131				
	16820	16359	AM: 0.8 trips/100m^2	131	92	39	33	98
			PM: 0.8 trips/100m^2	131				
	16819	16926	AM: 0.8 trips/100m^2	135	95	41	34	102
			PM: 0.8 trips/100m^2	135				
	16674	24905	AM: 0.5 trips/100m^2	125	93	31	44	131
			PM: 0.7 trips/100m^2	174				
	16674	20920	AM: 0.5 trips/100m^2	105	78	26	37	110
			PM: 0.7 trips/100m^2	146				
	16817	39907	AM: 0.5 trips/100m^2	200	150	50	70	210
			PM: 0.7 trips/100m^2	279				
	16818 Lease 1	14161	AM: 0.5 trips/100m^2	71	53	18	25	74
			PM: 0.7 trips/100m^2	99				
	16818 Lease 2	17416	AM: 0.5 trips/100m^2	87	65	22	30	91
			PM: 0.7 trips/100m^2	122				
	16673 Lease 1	71890	AM: 0.5 trips/100m^2	359	270	90	126	377
			PM: 0.7 trips/100m^2	503				
	16673 Lease 2	17675	AM: 0.5 trips/100m^2	88	66	22	31	93
			PM: 0.7 trips/100m^2	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 planed 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^2	156	41	14	19	57
			PM: 0.7 trips/100m^2	218				
	16787		AM: 0.5 trips/100m^2	177	47	16	22	65
			PM: 0.7 trips/100m^2	248				
	16788		AM: 0.5 trips/100m^2	332	87	29	41	122
			PM: 0.7 trips/100m^2	465				
	16789		AM: 0.5 trips/100m^2	409	107	36	50	150
			PM: 0.7 trips/100m^2	573				
	16672		AM: 0.5 trips/100m^2	211	158	53	74	221
			PM: 0.7 trips/100m^2	295				
	17456		AM: 0.8 trips/100m^2	136	95	41	34	102
			PM: 0.8 trips/100m^2	136				
	17455		AM: 0.8 trips/100m^2	156	109	47	39	117
			PM: 0.8 trips/100m^2	156				
	17443		AM: 0.8 trips/100m^2	131	92	39	33	98
			PM: 0.8 trips/100m^2	131				
	17442		AM: 0.8 trips/100m^2	131	92	39	33	98
			PM: 0.8 trips/100m^2	131				
	16820		AM: 0.8 trips/100m^2	131	92	39	33	98
			PM: 0.8 trips/100m^2	131				
	16819		AM: 0.8 trips/100m^2	135	95	41	34	102
			PM: 0.8 trips/100m^2	135				
	16674		AM: 0.5 trips/100m^2	125	93	31	44	131
			PM: 0.7 trips/100m^2	174				
	16674		AM: 0.5 trips/100m^2	105	78	26	37	110
			PM: 0.7 trips/100m^2	146				
	16817		AM: 0.5 trips/100m^2	200	150	50	70	210
			PM: 0.7 trips/100m^2	279				
	16818 Lease 1		AM: 0.5 trips/100m^2	71	53	18	25	74
			PM: 0.7 trips/100m^2	99				

	16818 Lease 2		AM: 0.5 trips/100m^2	87	65	22	30	91
			PM: 0.7 trips/100m^2	122				
	16673 Lease 1		AM: 0.5 trips/100m^2	359	270	90	126	377
			PM: 0.7 trips/100m^2	503				
	16673 Lease 2		AM: 0.5 trips/100m^2	88	66	22	31	93
			PM: 0.7 trips/100m^2	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.

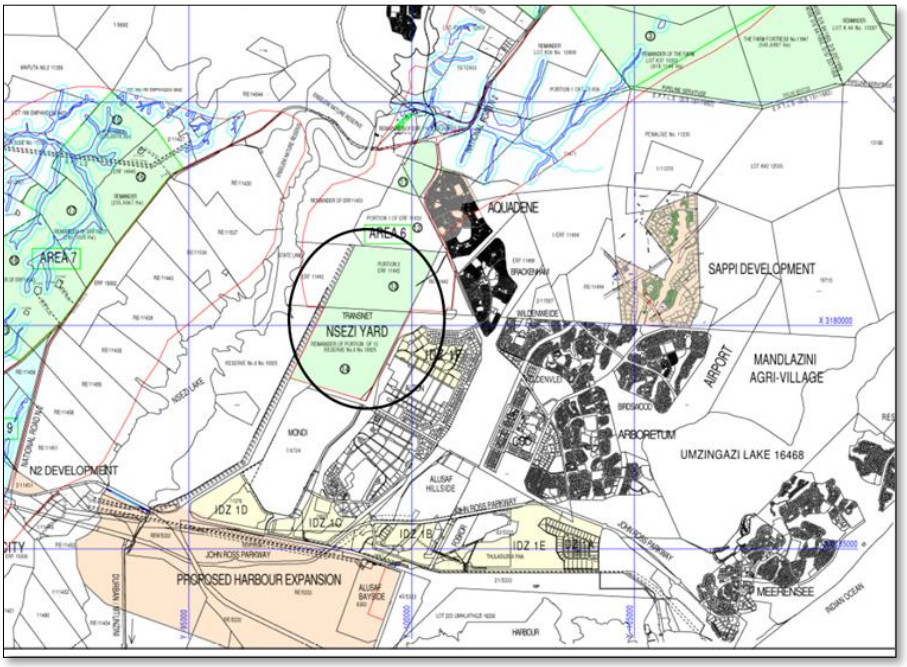


Figure 11 Nsezi Yard

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.

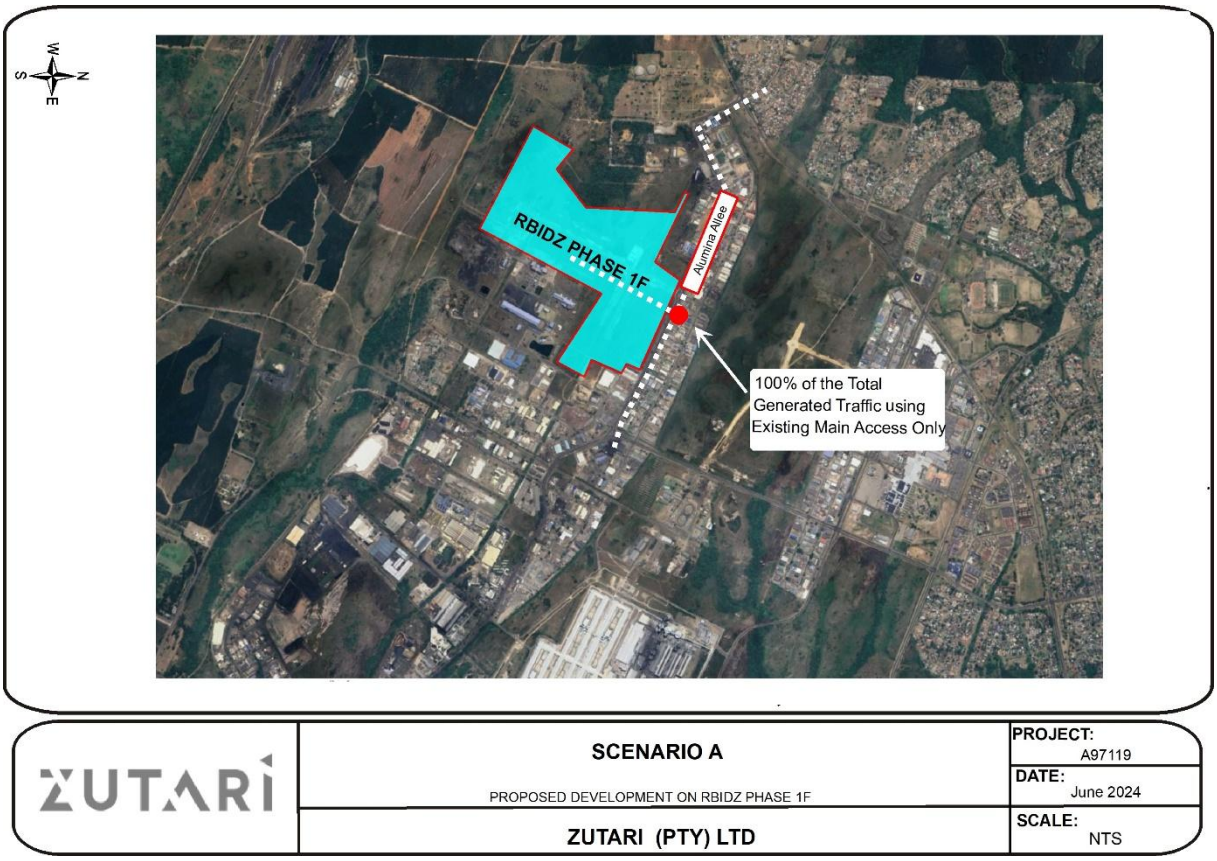


Figure 12: Existing Site Access to RBIDZ Phase 1F.

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.

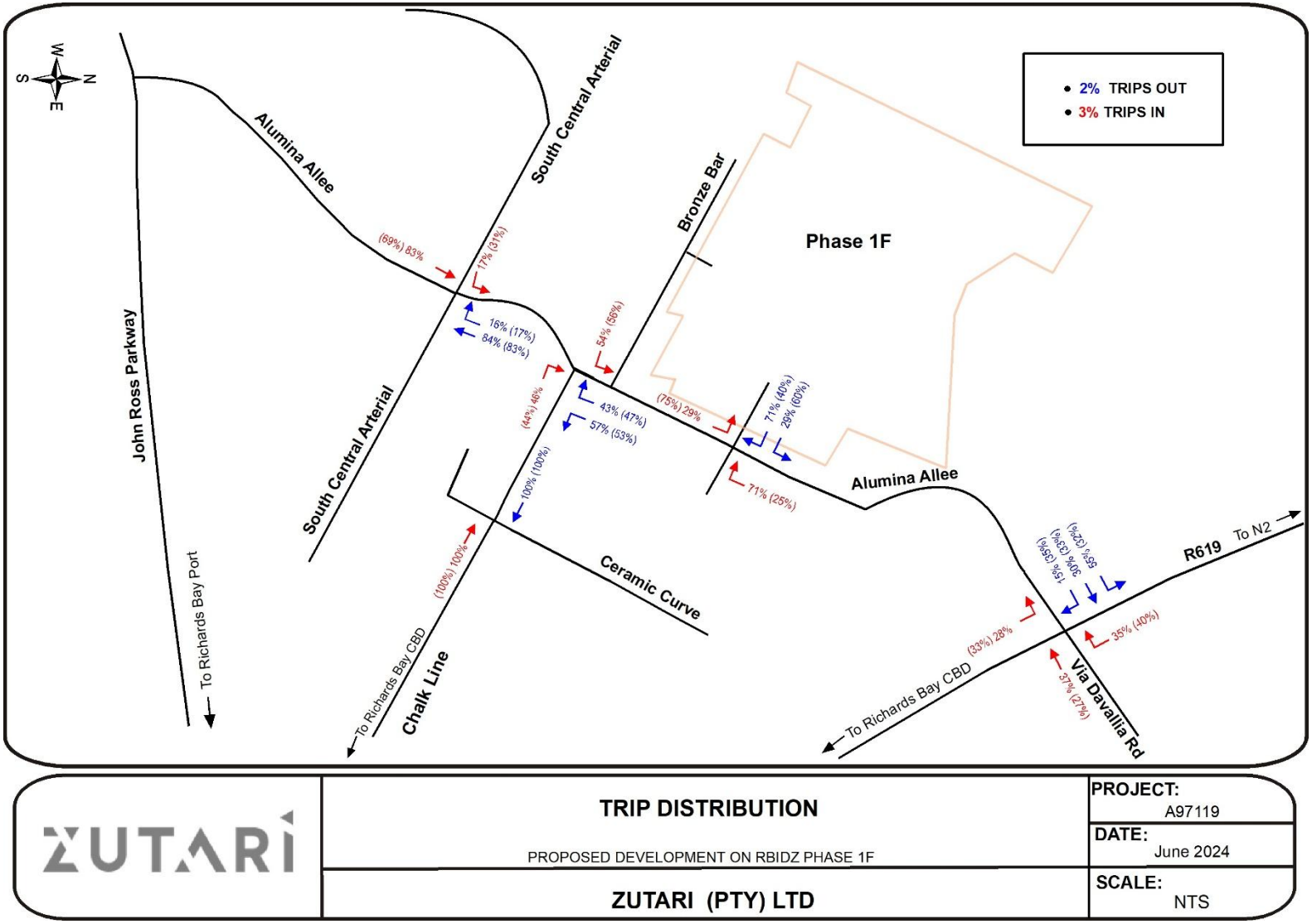


Figure 13: Trip Distribution Scenario A

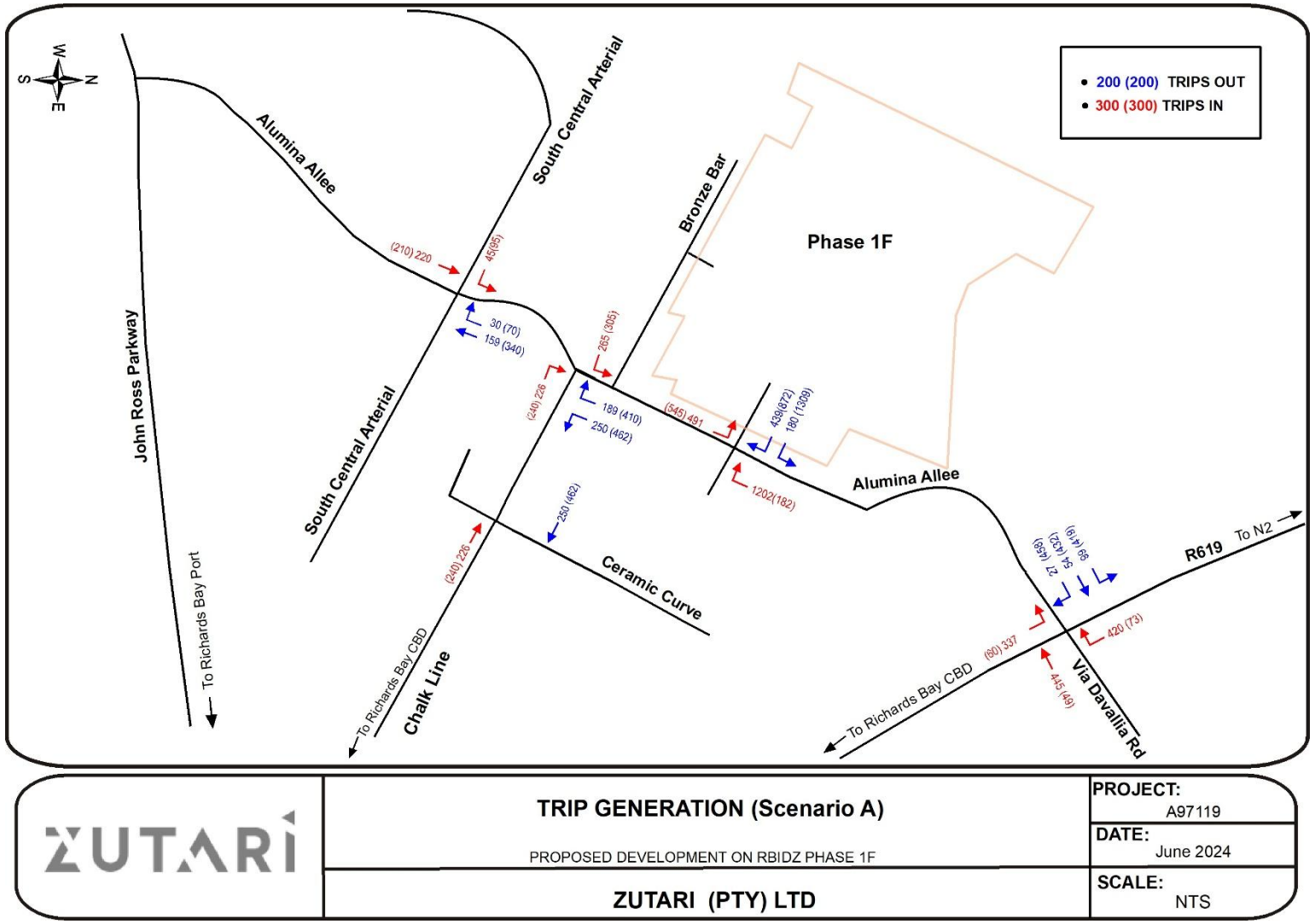
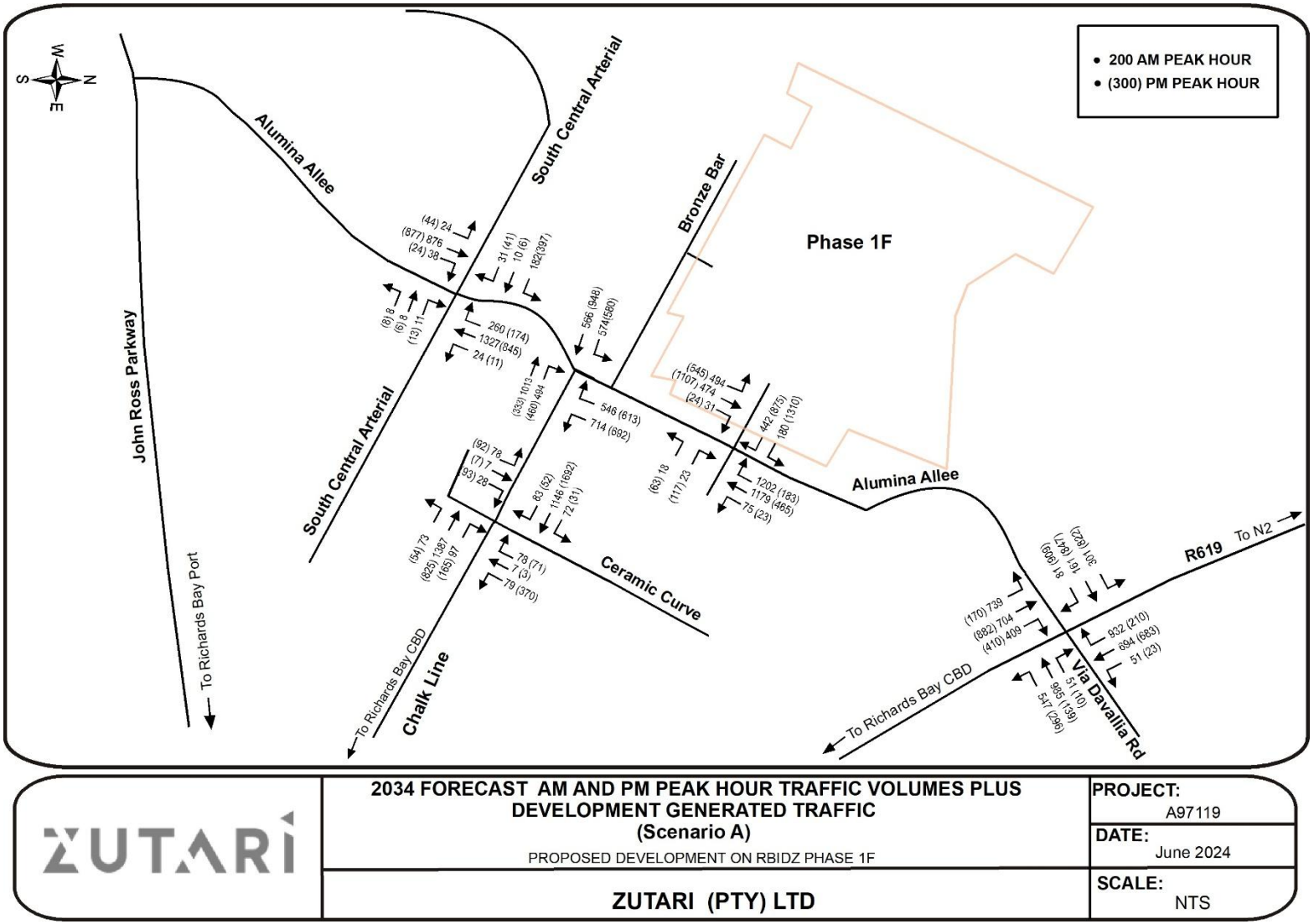


Figure 14: Trip Generation Scenario A



ZUTARI	**2034 FORECAST AM AND PM PEAK HOUR TRAFFIC VOLUMES PLUS DEVELOPMENT GENERATED TRAFFIC (Scenario A)** PROPOSED DEVELOPMENT ON RBIDZ PHASE 1F	**PROJECT:** A97119 **DATE:** June 2024
	ZUTARI (PTY) LTD	**SCALE:** NTS

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:

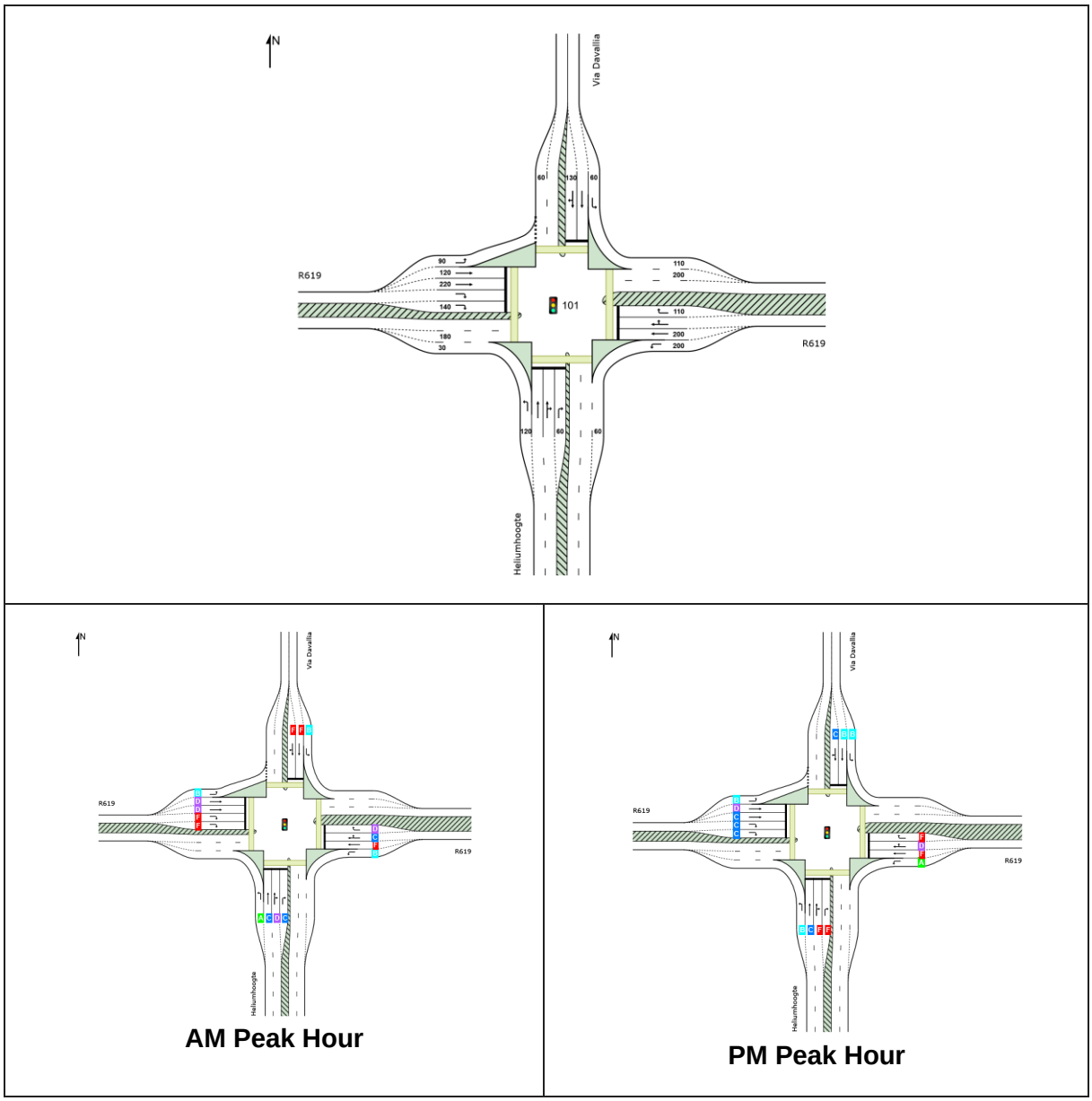


Table 10 2034 Design Year with Development Generated Traffic - Heliumhoogte, Via Davallia and R619

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:

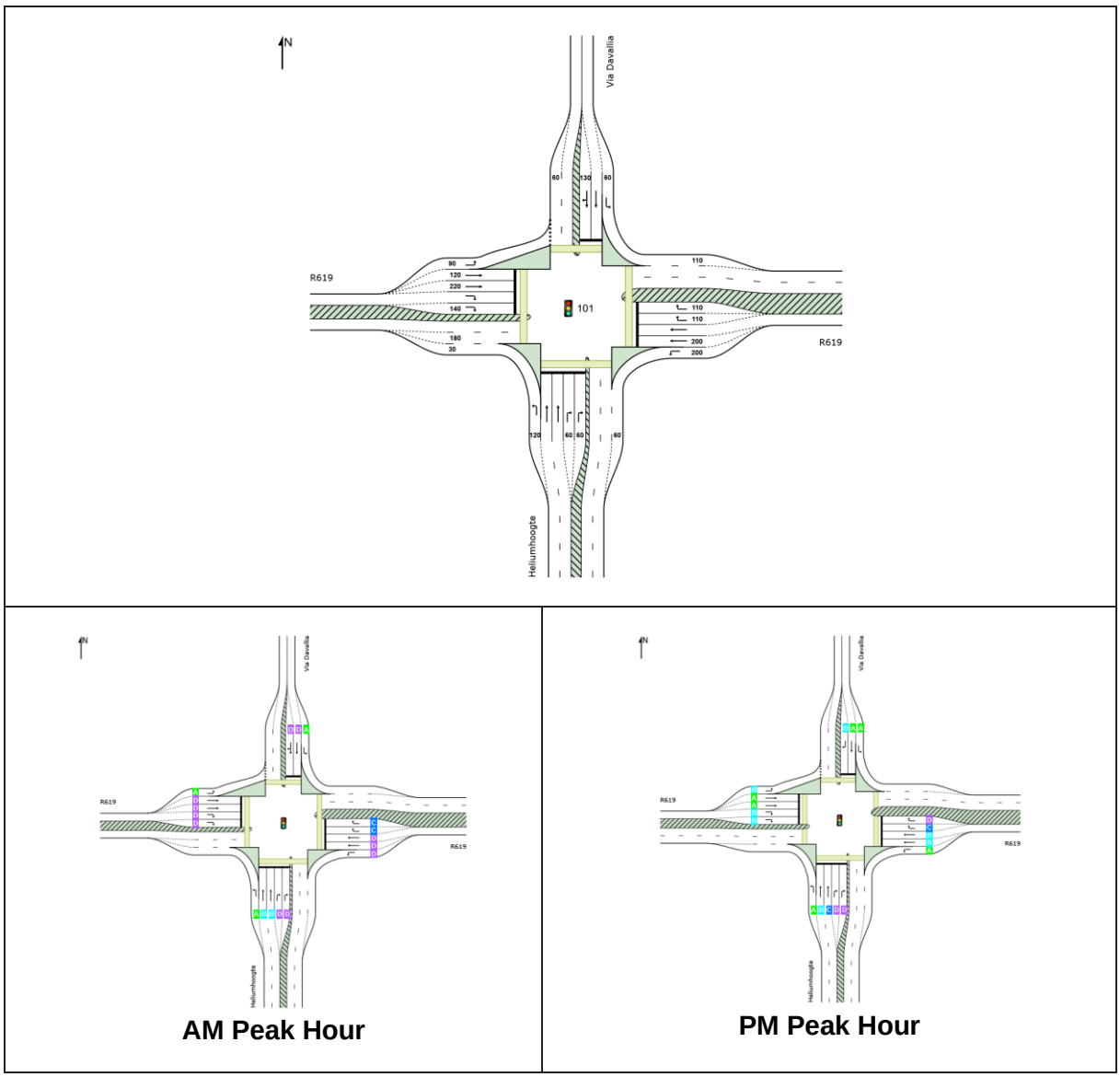


Table 11 2034 Design Year with Development Generated Traffic - Heliumhoogte, Via Davallia and R619 Upgrade

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:

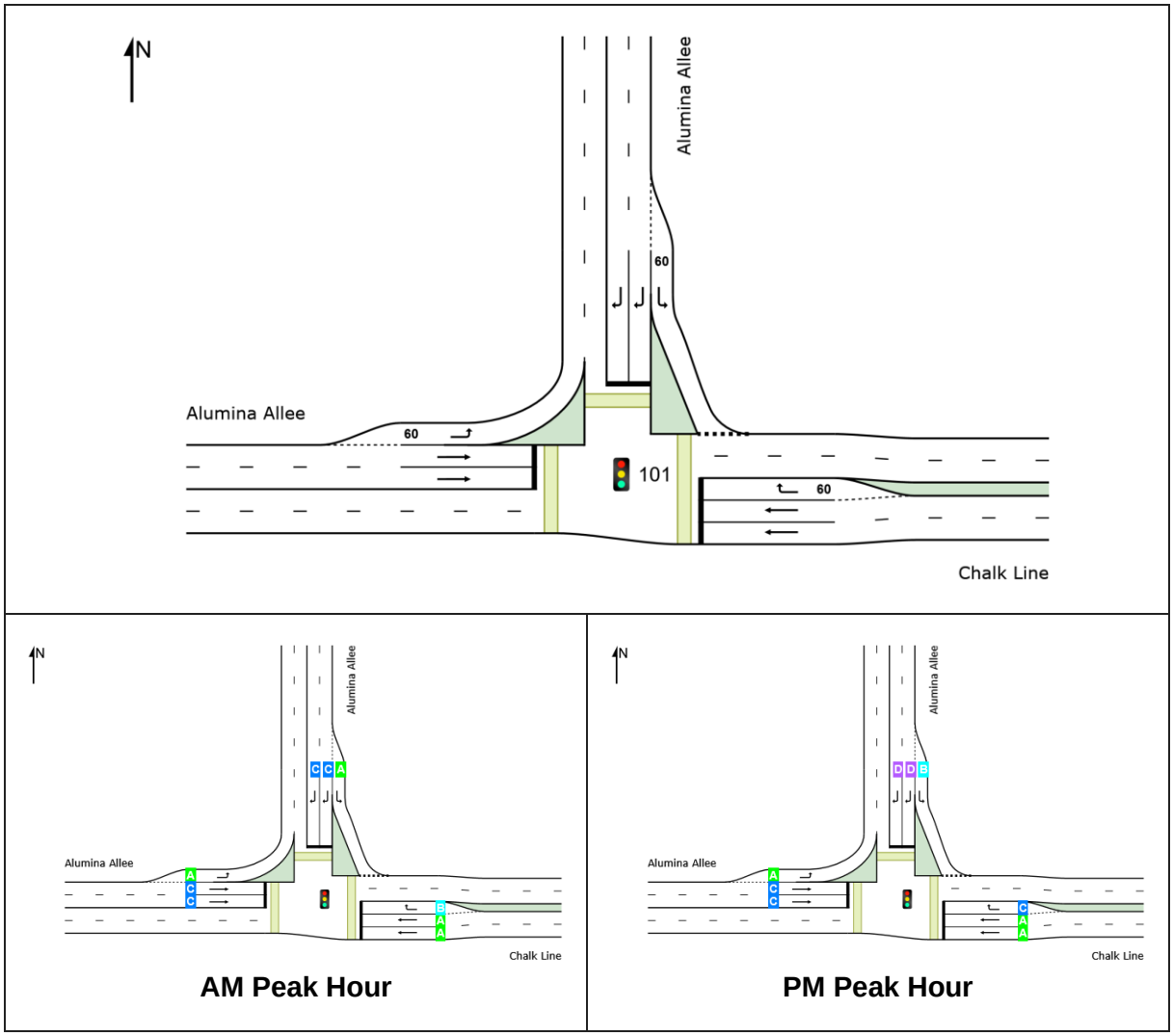


Table 12 2034 Design Year with Development Generated Traffic - Alumina Allee and Chalk Line

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:

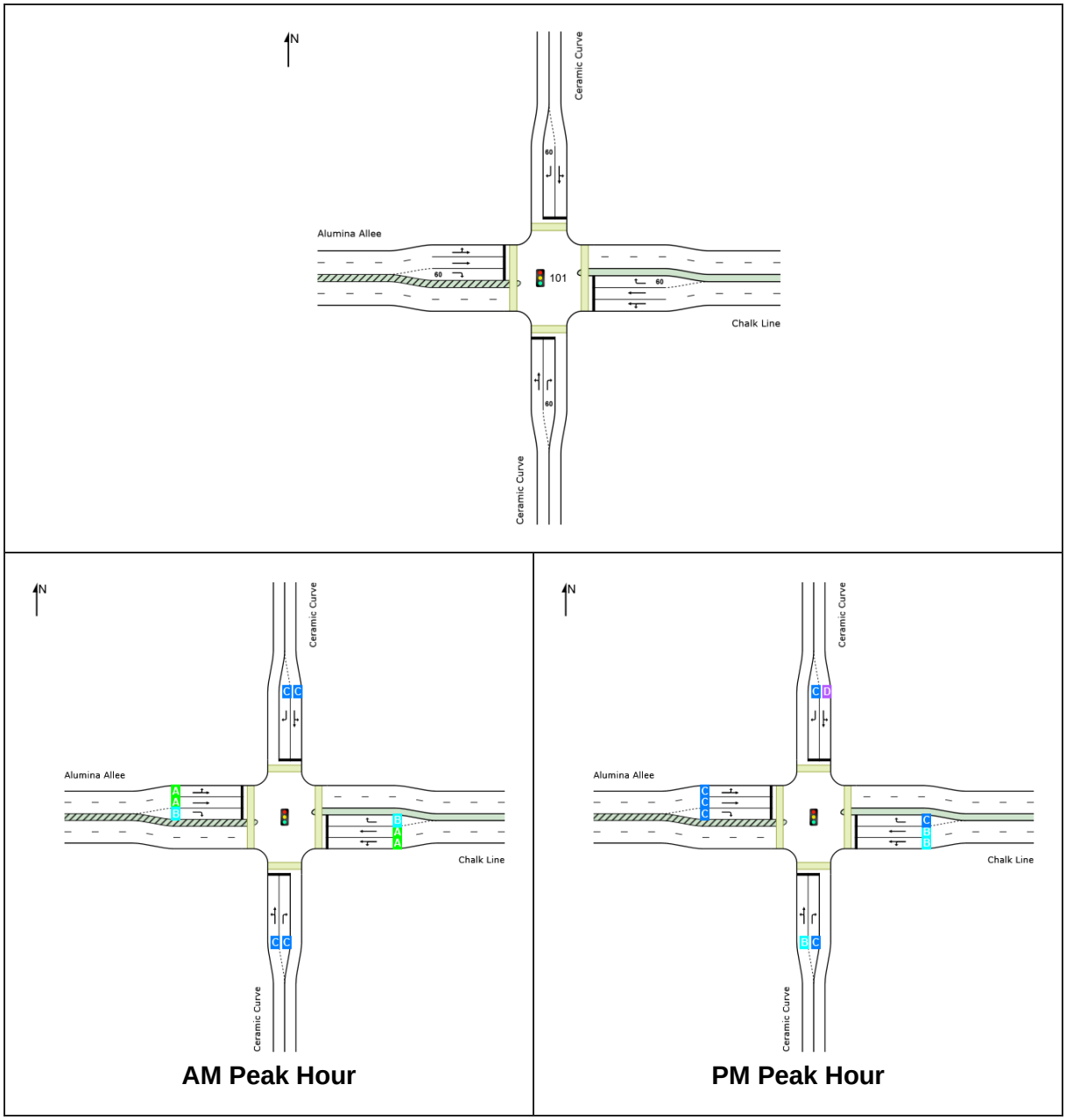
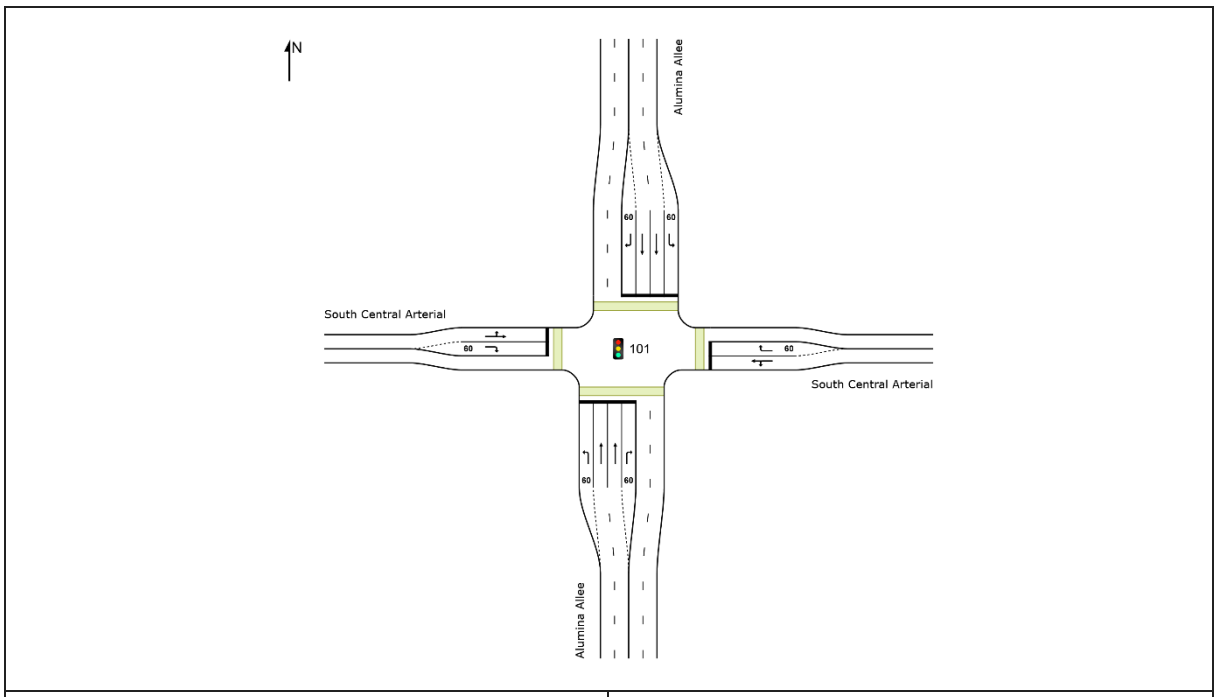


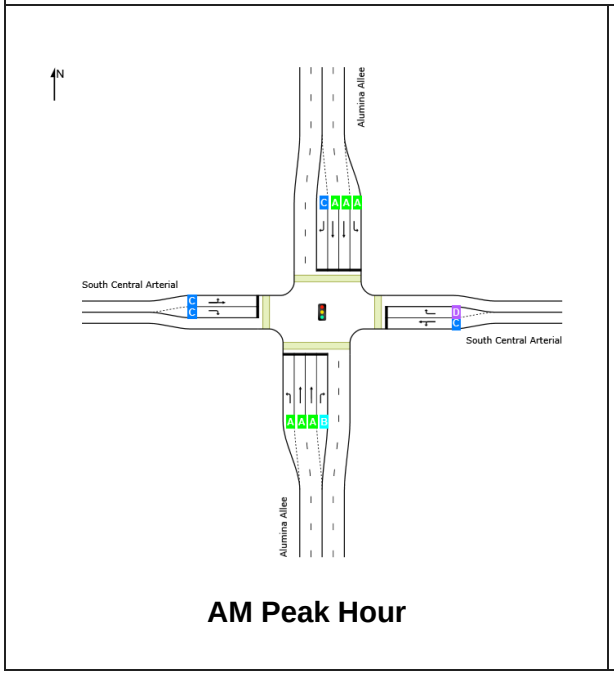
Table 13 2034 Design Year with Development Generated Traffic - Chalk Line and Ceramic Curve

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.

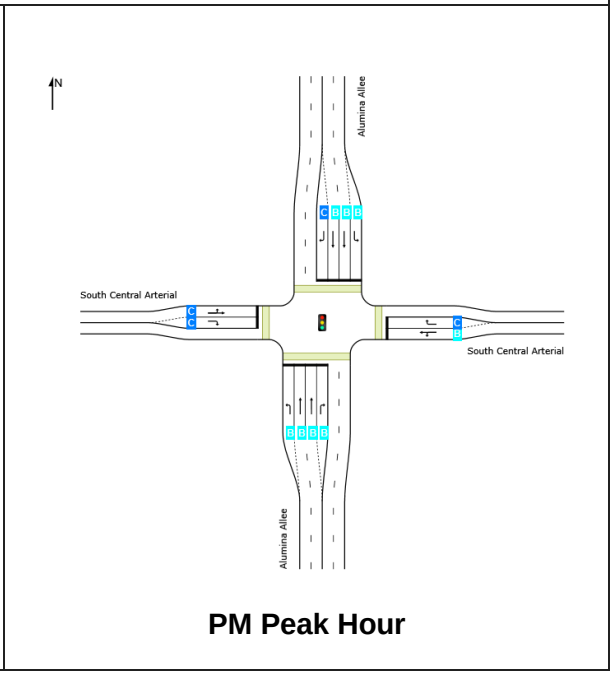
7.3.4 Alumina Allee and South-Central Arterial Intersection

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:





AM Peak Hour



PM Peak Hour

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:

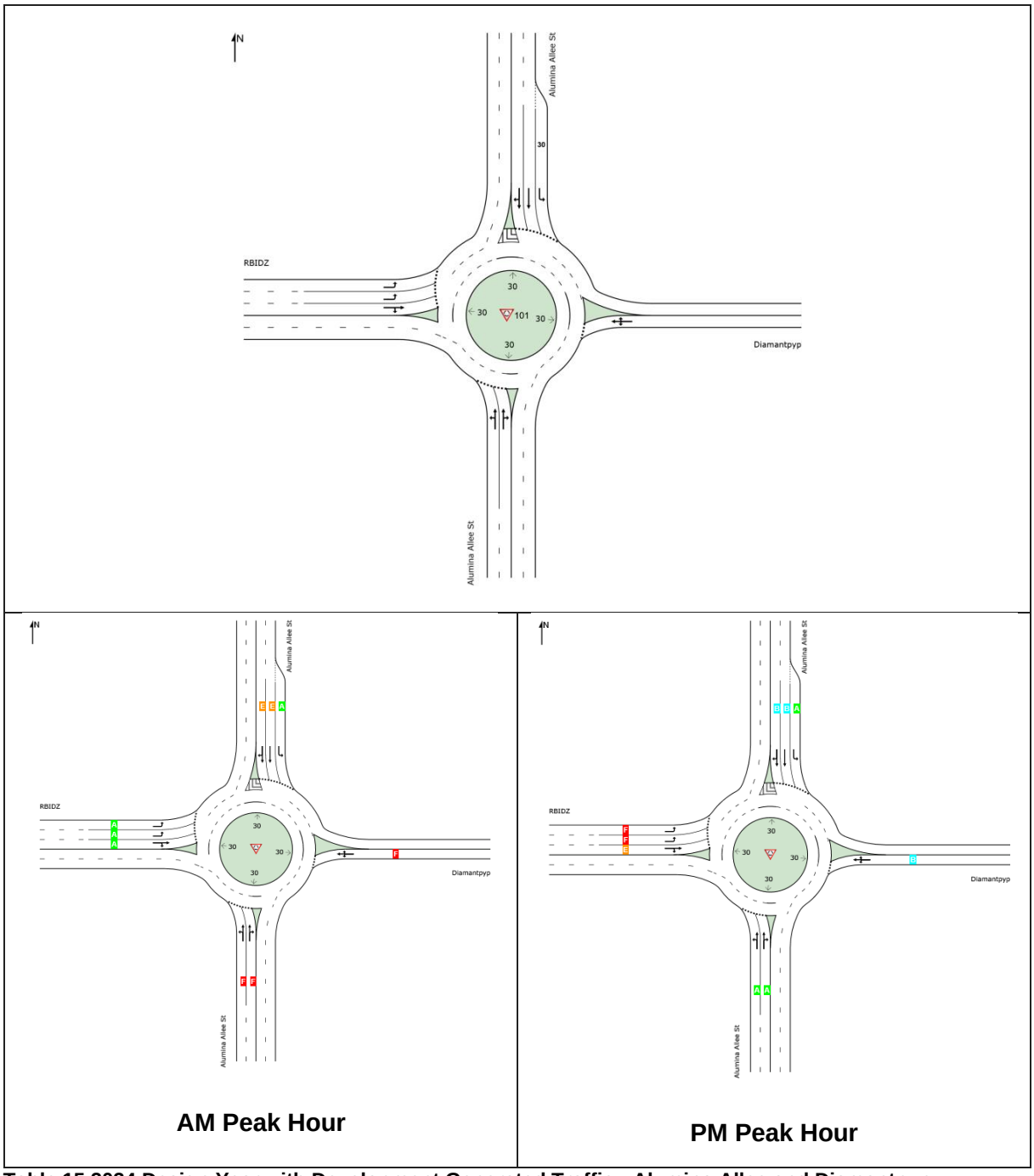


Table 15 2034 Design Year with Development Generated Traffic - Alumina Allee and Diamantpyp

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:

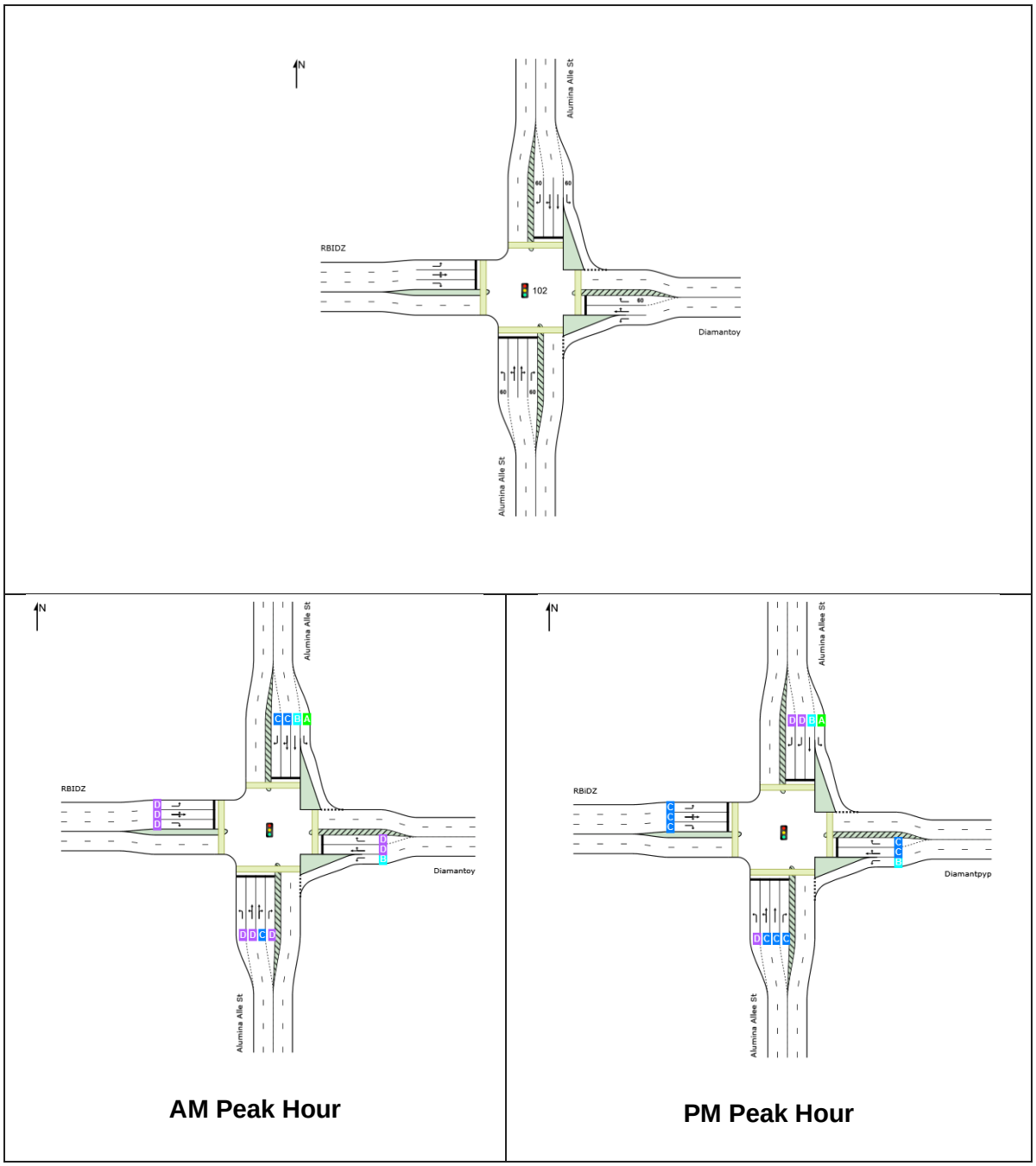


Table 16 2034 Design Year with Development Generated Traffic - Alumina Allee and Diamantpyp Upgrade

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

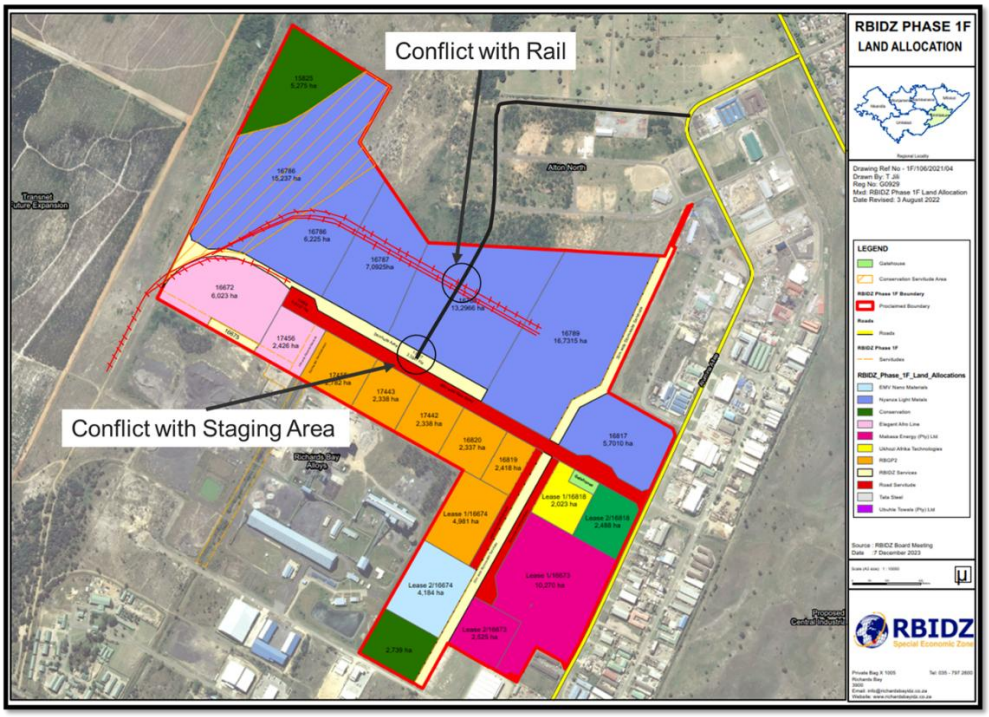


Figure 16: Proposed Secondary Access Option 1A.

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.

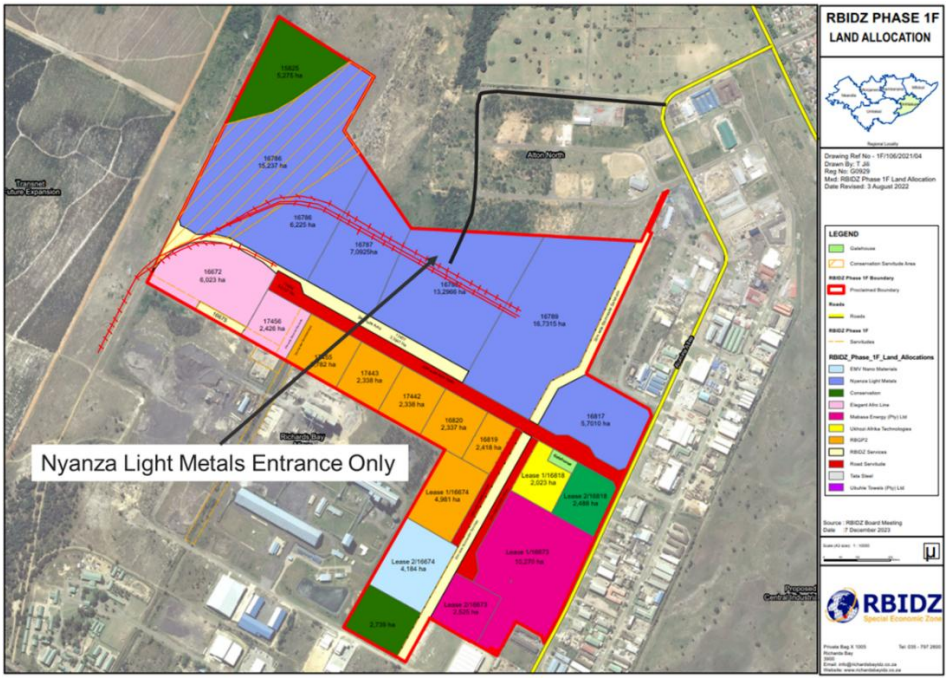


Figure 17: Proposed Secondary Access Option 1B.

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.

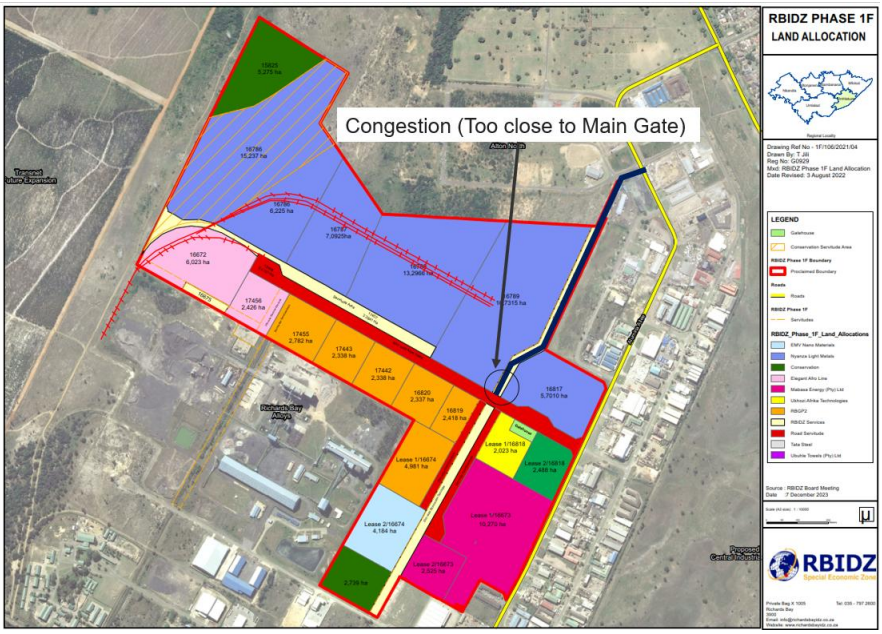


Figure 18: Proposed Secondary Access Option 2

8.4 Option 3

The proposed Option 3 secondary access is aligned directly off Bronze Bar Road to the south of RBIDZ Phase 1F. The road would also need to be constructed partially 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.

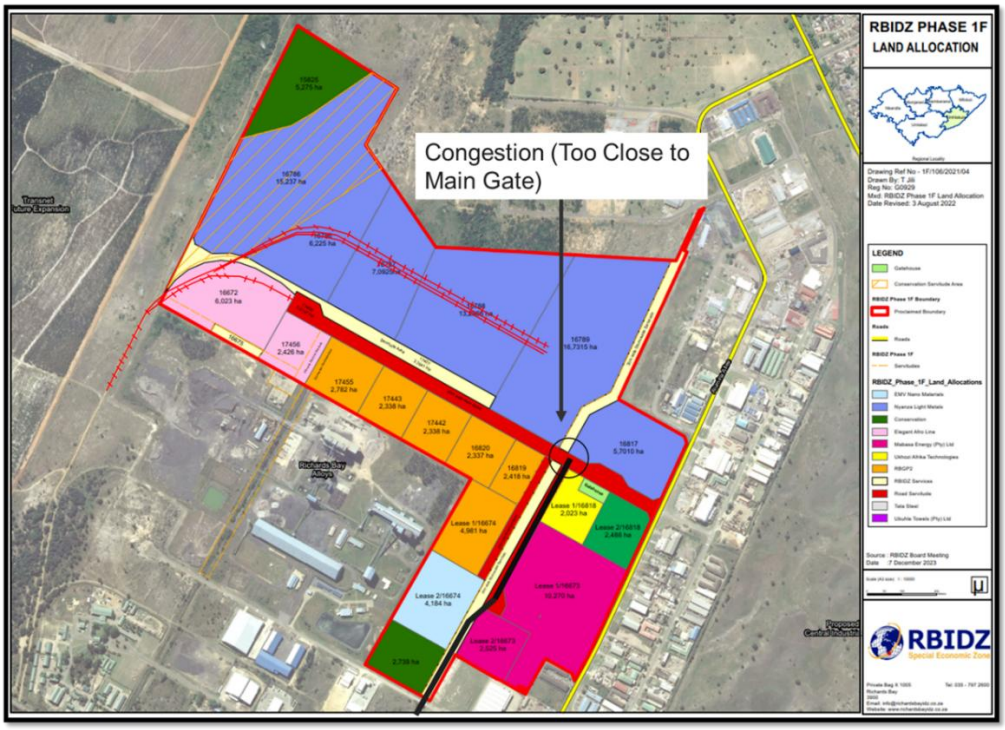


Figure 19: Proposed Secondary Access Option 3

8.5 Option 4

The proposed Option 4 secondary access is aligned directly off the Western Arterial to the south-western side of RBIDZ Phase 1F. The alignment is consistent with the future planning of the municipal road network as the Western Arterial is planned to extend to the north along the western boundary of RBIDZ Phase 1F.

This option was favoured by most of the RBIDZ role players for the following reasons.

- It aligns with future road planning. See Appendix D.
- It aligns with the future rail planning. See Appendix D.
- It distributes the RBIDZ Phase 1 traffic away from the road network that the traffic using the existing main access currently uses, thus significantly reducing potential future congestion along this existing road network.
- It is more convenient to RBIDZ Phase 1F traffic travelling to and from the port of Richards Bay and the N2 to and from the south.

- 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.

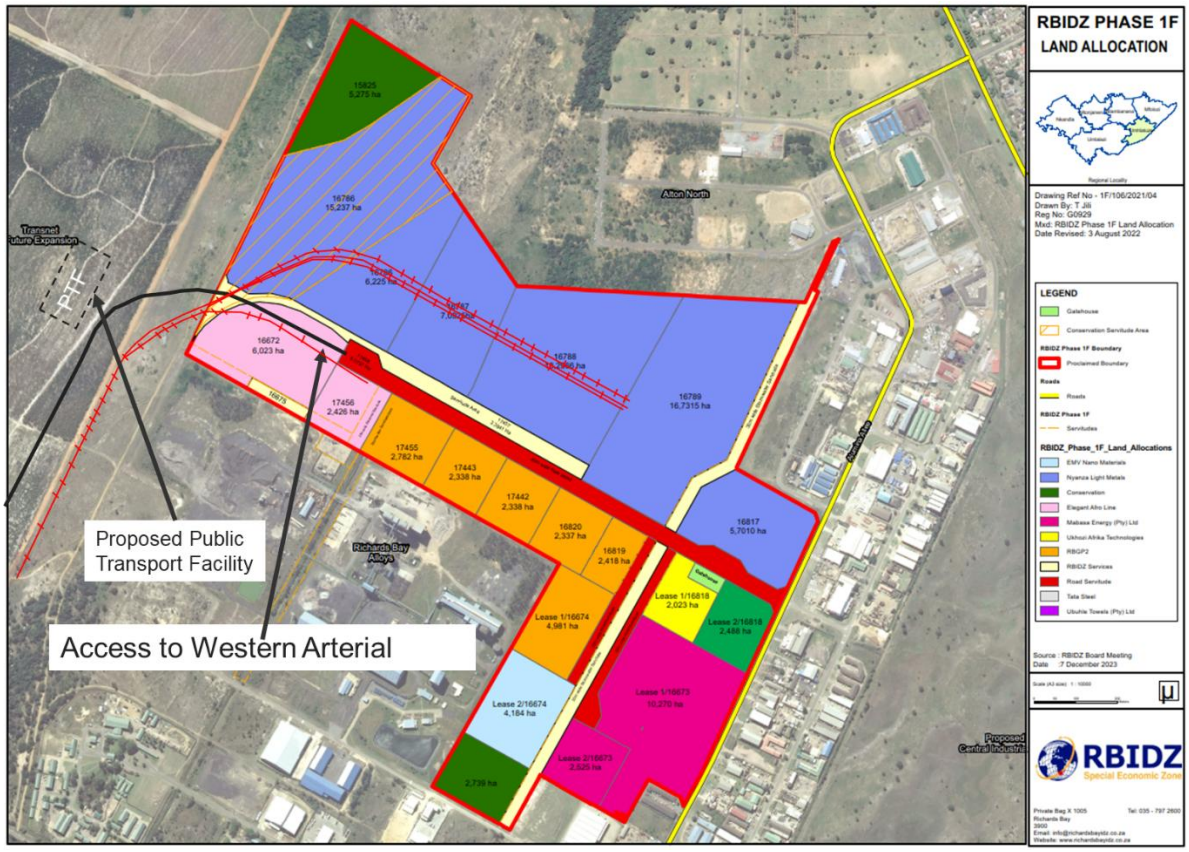


Figure 20: Proposed Secondary Access Option 4

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.

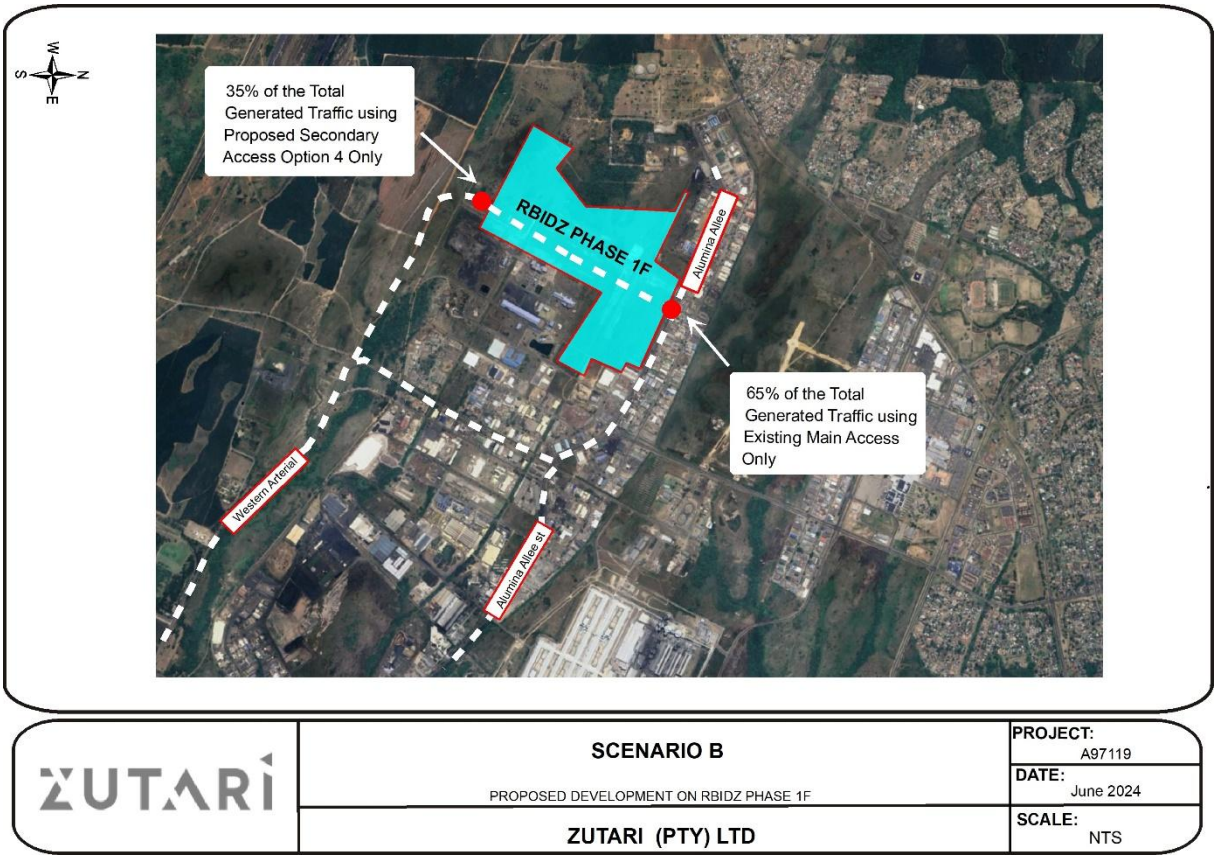


Figure 21: Proposed Secondary Access Option 4

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.

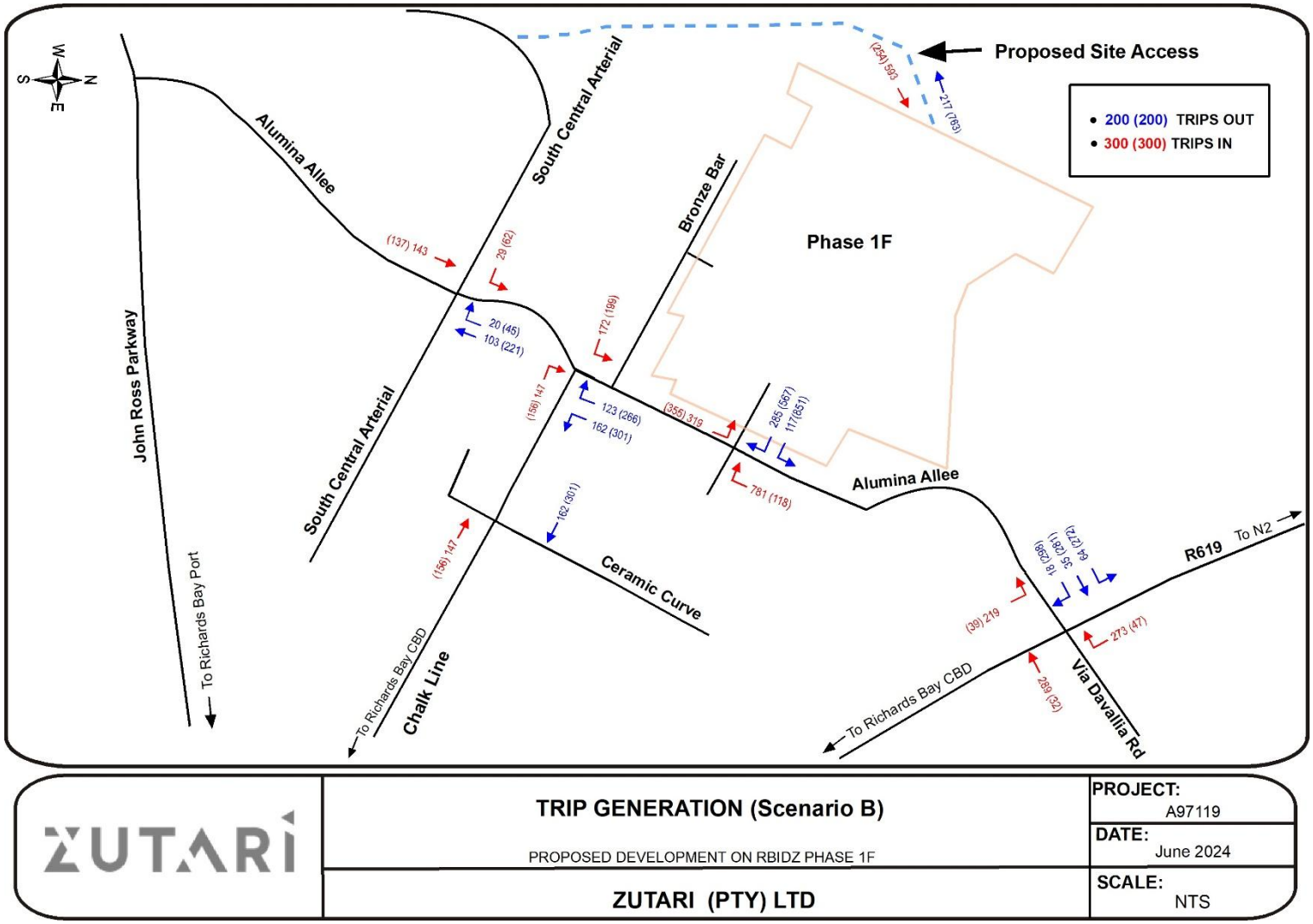
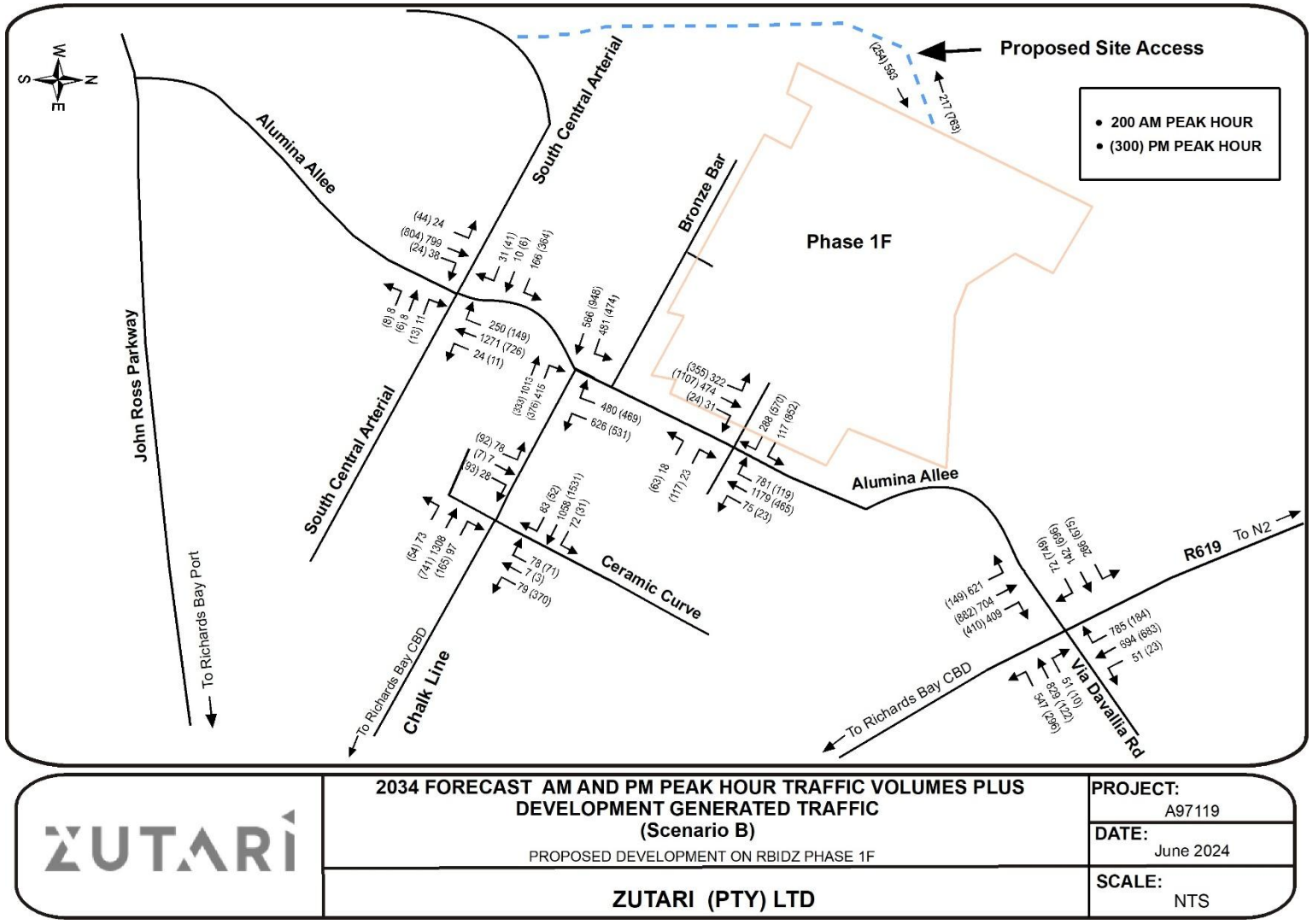


Figure 22: Trip Generation Scenario B



ZUTARI	2034 FORECAST AM AND PM PEAK HOUR TRAFFIC VOLUMES PLUS DEVELOPMENT GENERATED TRAFFIC (Scenario B) PROPOSED DEVELOPMENT ON RBIDZ PHASE 1F	PROJECT: A97119 DATE: June 2024
	ZUTARI (PTY) LTD	SCALE: NTS

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:

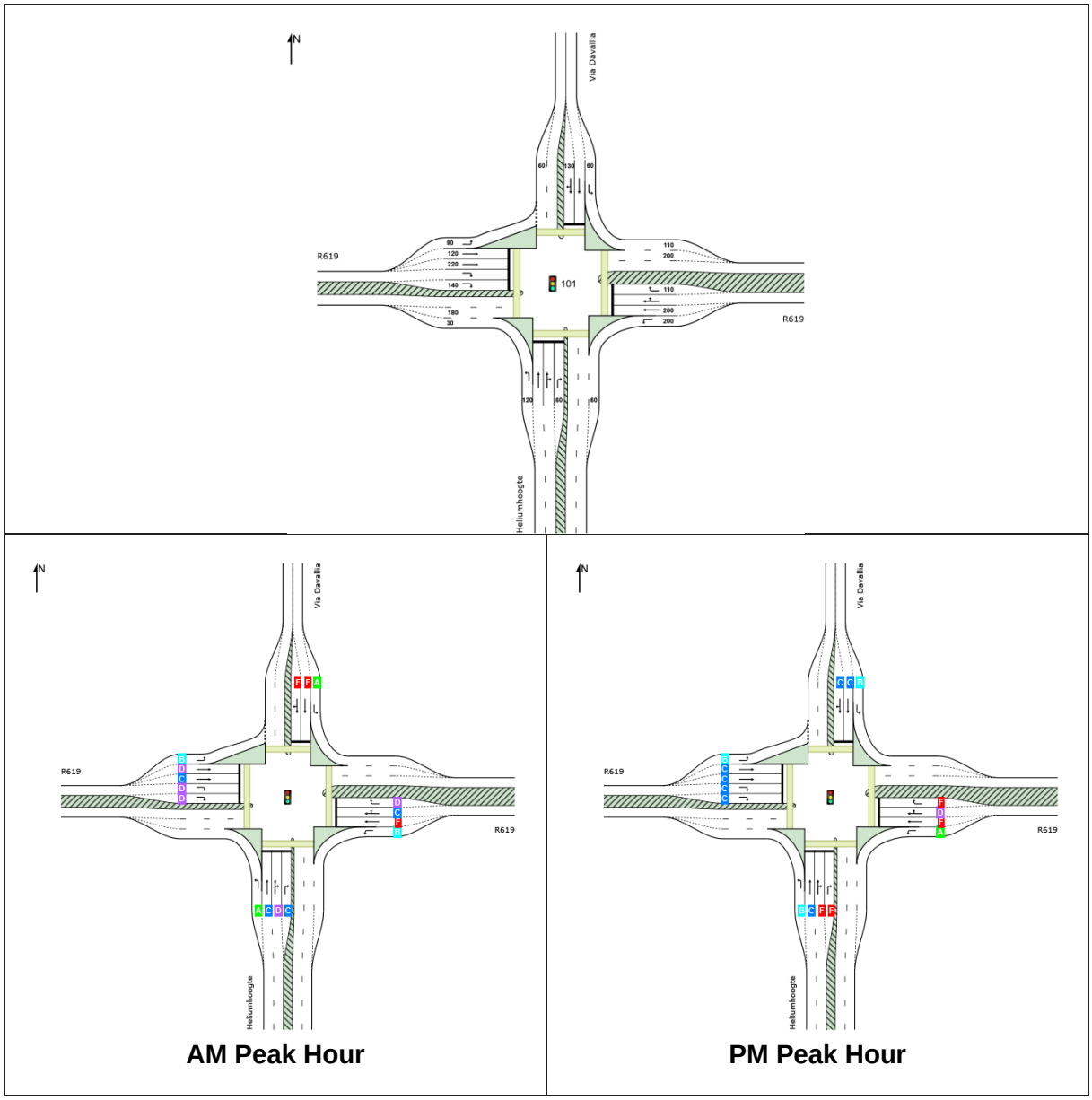


Table 17 2034 Design Year with Development Generated Traffic - Heliumhoogte, Via Davallia and R619 Scenario B

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:

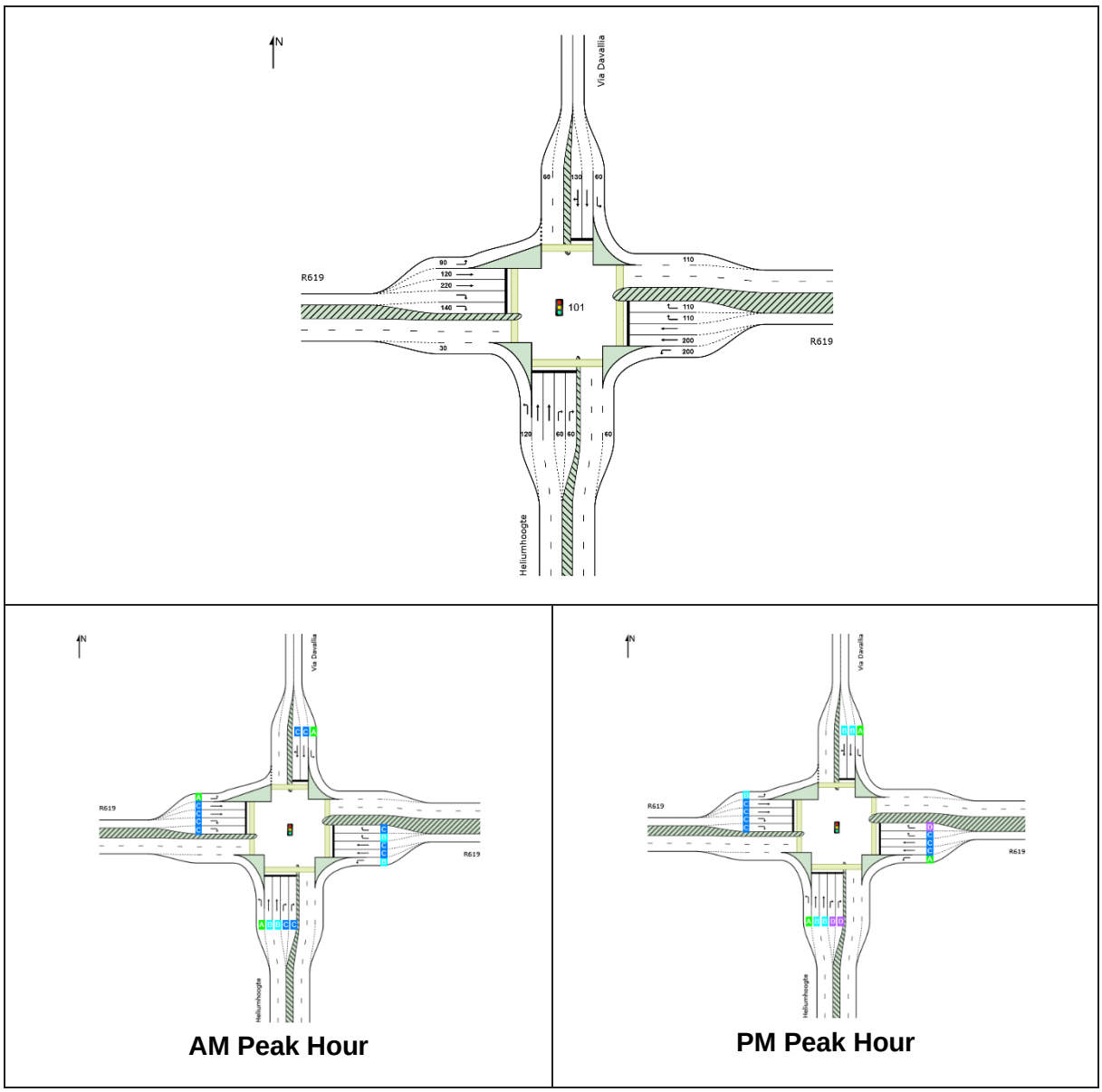


Table 18 Design Year with Development Generated Traffic - Heliumhoogte, Via Davallia and R619 Upgrade Scenario B

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:

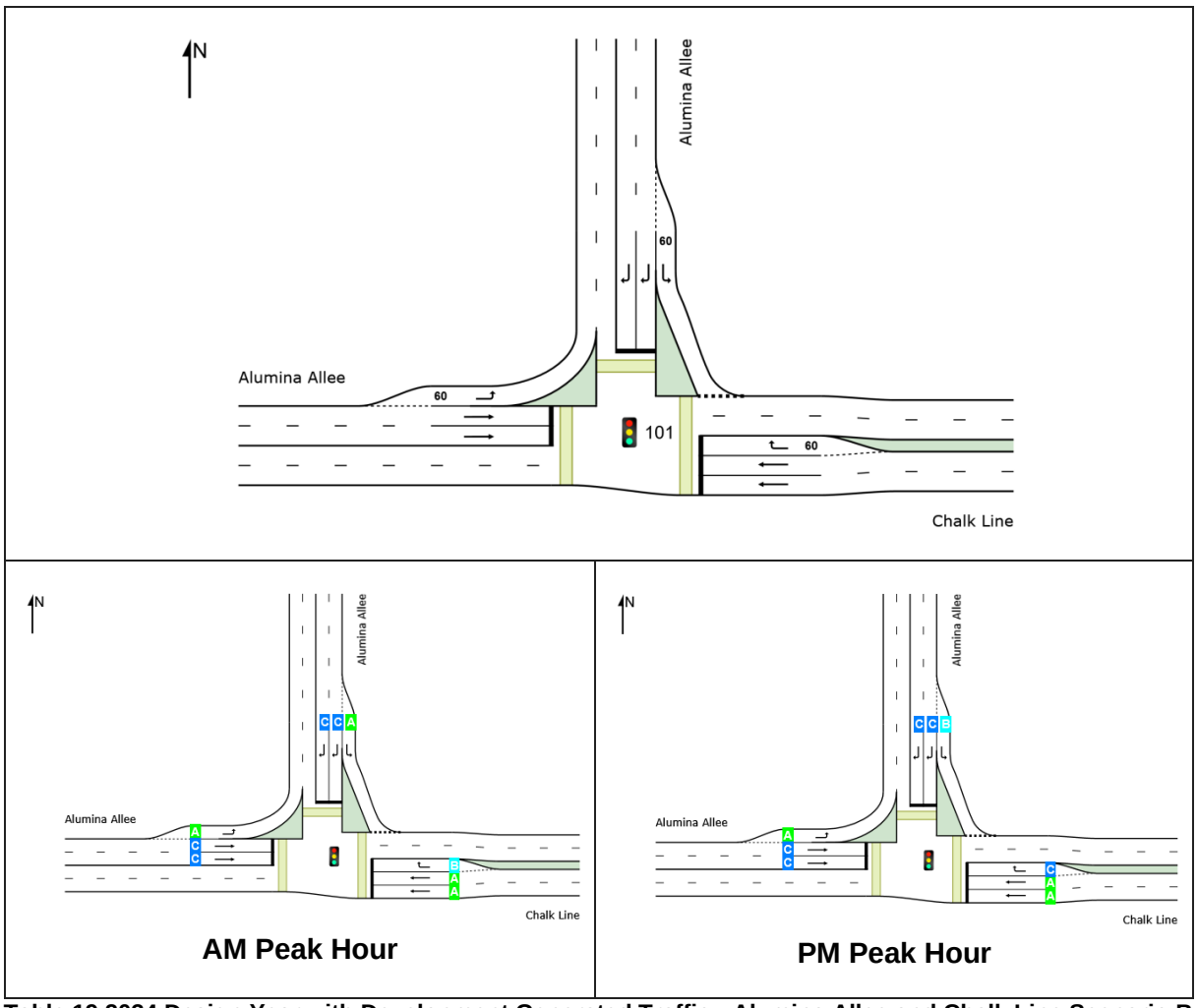


Table 19 2034 Design Year with Development Generated Traffic - Alumina Allee and Chalk Line Scenario B

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:

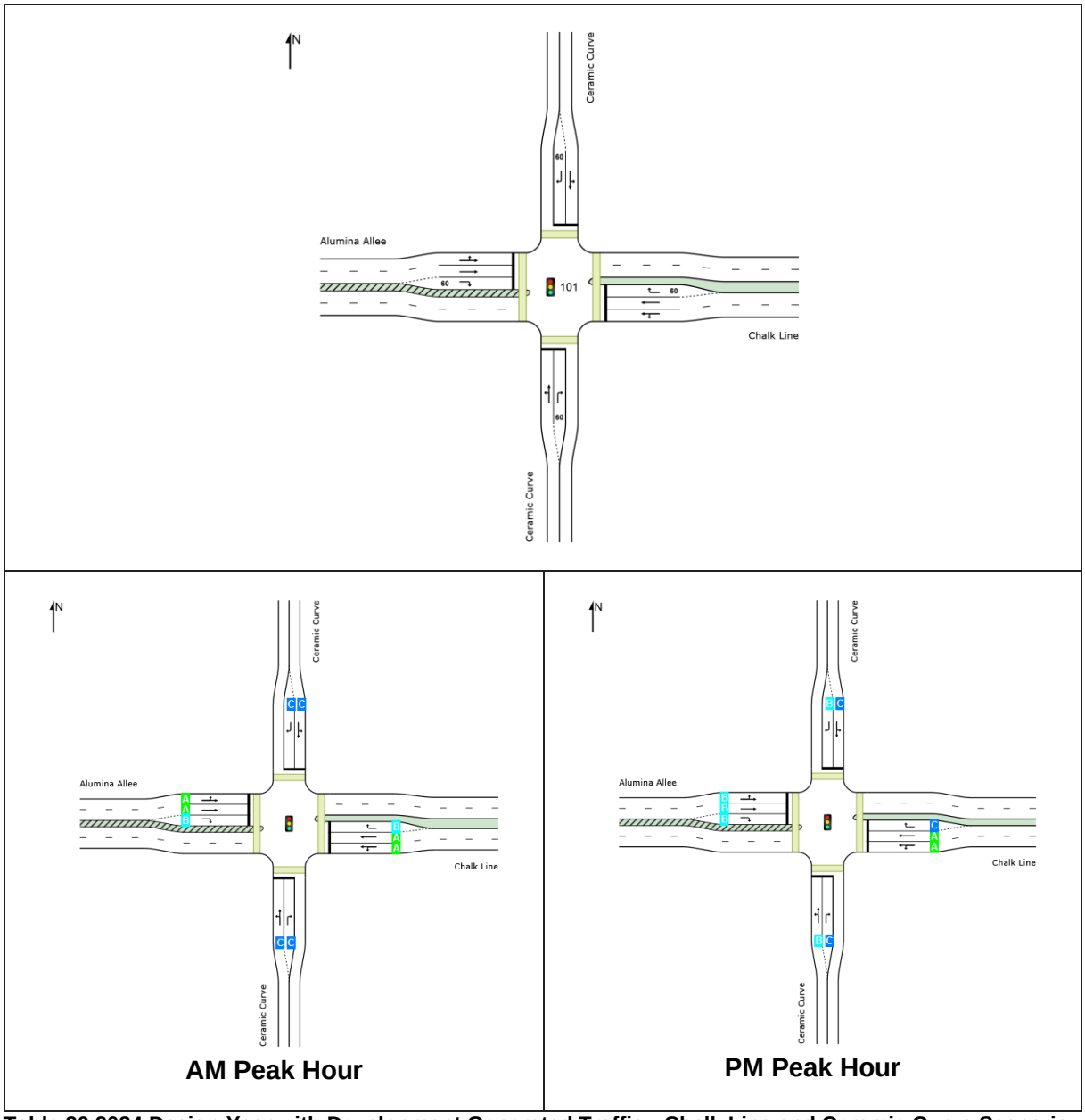


Table 20 2034 Design Year with Development Generated Traffic - Chalk Line and Ceramic Curve Scenario B

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:

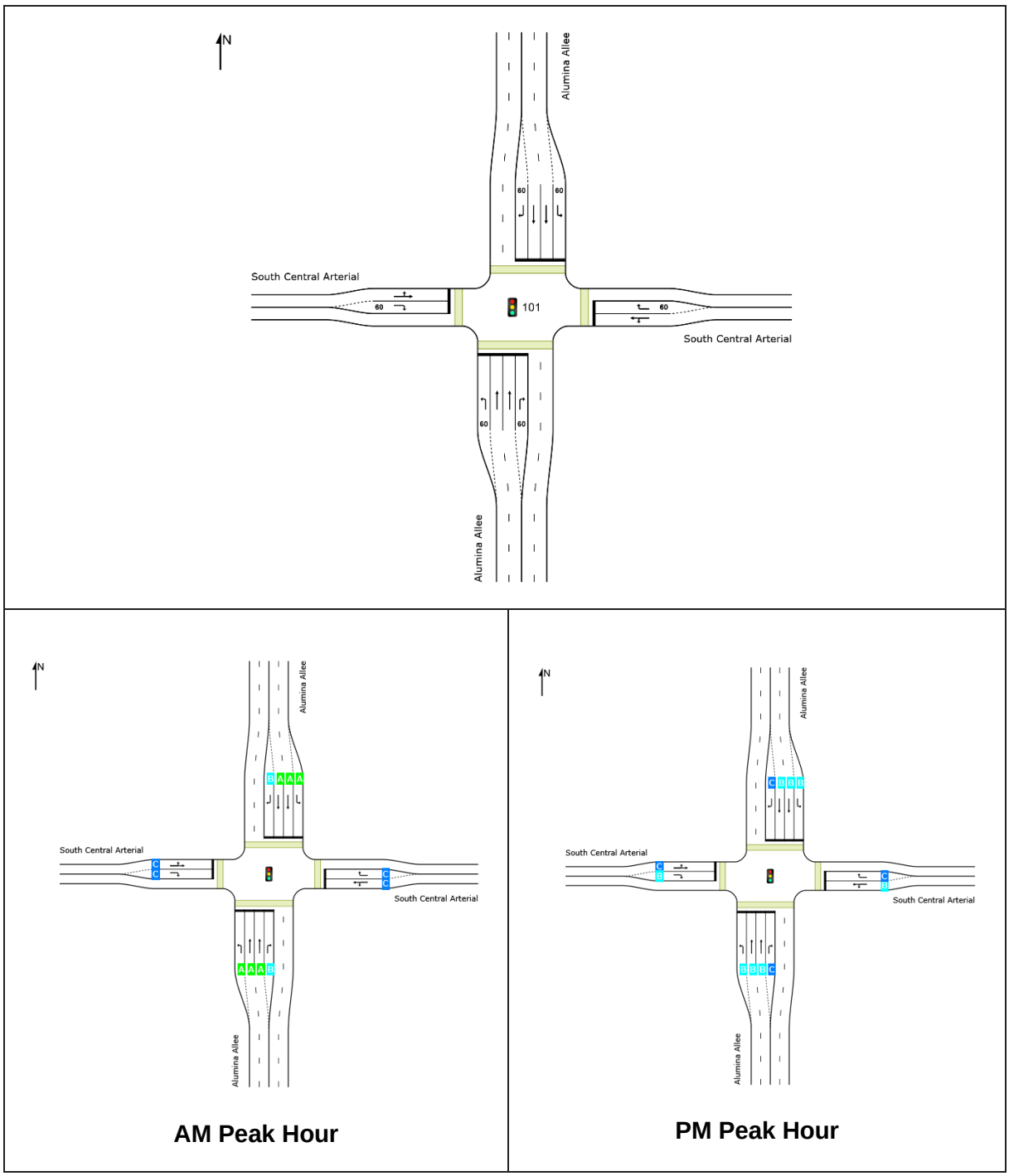


Table 21 2034 Design Year with Development Generated Traffic - Alumina Allee and South-Central Arterial Scenario B

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:

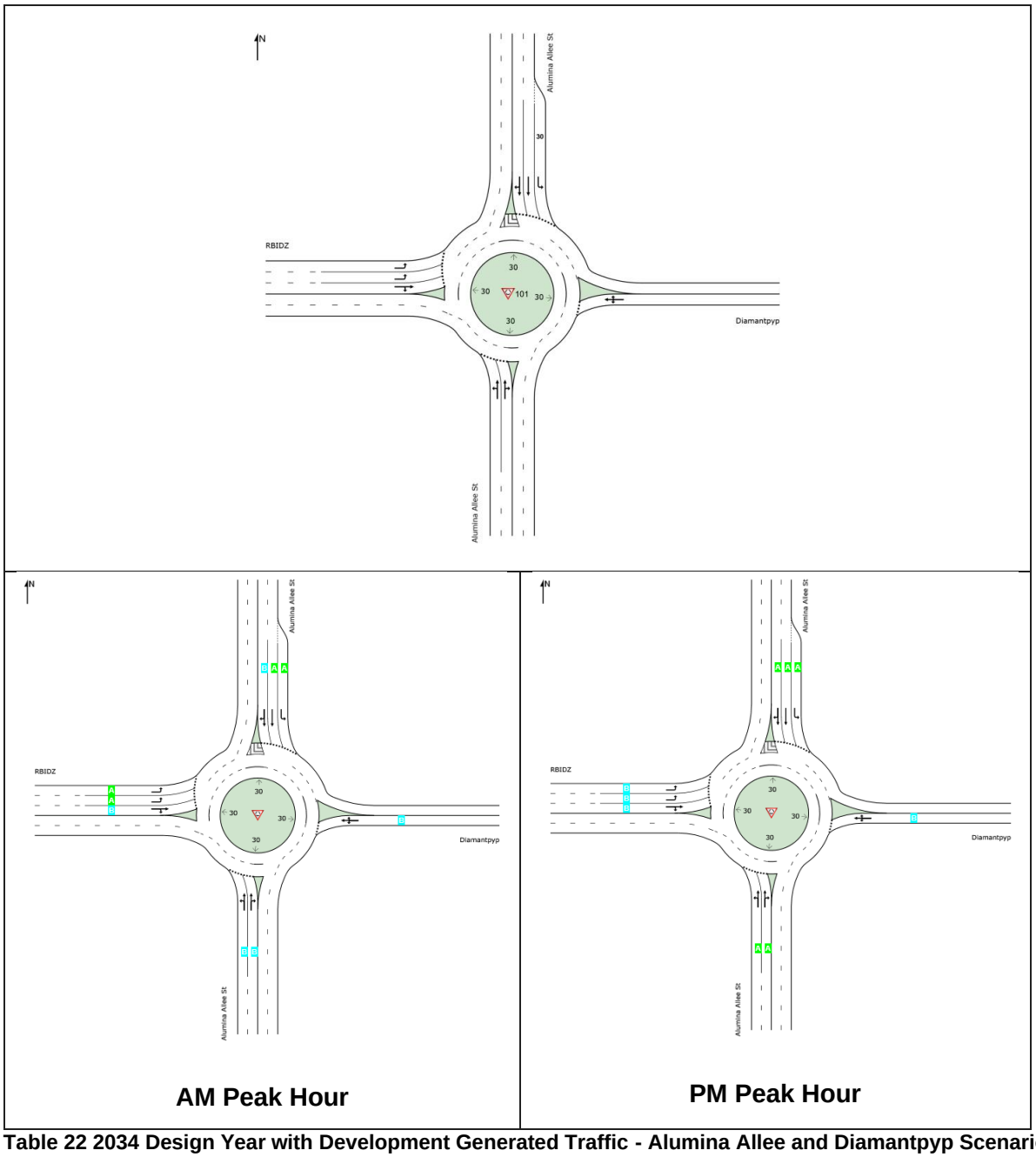


Table 22 2034 Design Year with Development Generated Traffic - Alumina Allee and Diamantpyp Scenario B

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) Nque = 8 8*20m (truck length) = 3 Lanes ,160m long

Out: (1418/480) *100 = 295 (4 Channels Required) Nque = 5 5*20m (truck length) = 4 Lanes, 100m long

Proposed Western Arterial Access 2 (Option 4):

In: (593/480) *100 = 124 (2 Channels Required) Nque = 4 4*20m (truck length) = 2 Lanes, 80m long

Out: (763/480) *100 = 159 (3 Channels Required) Nque = 3 3*20m (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

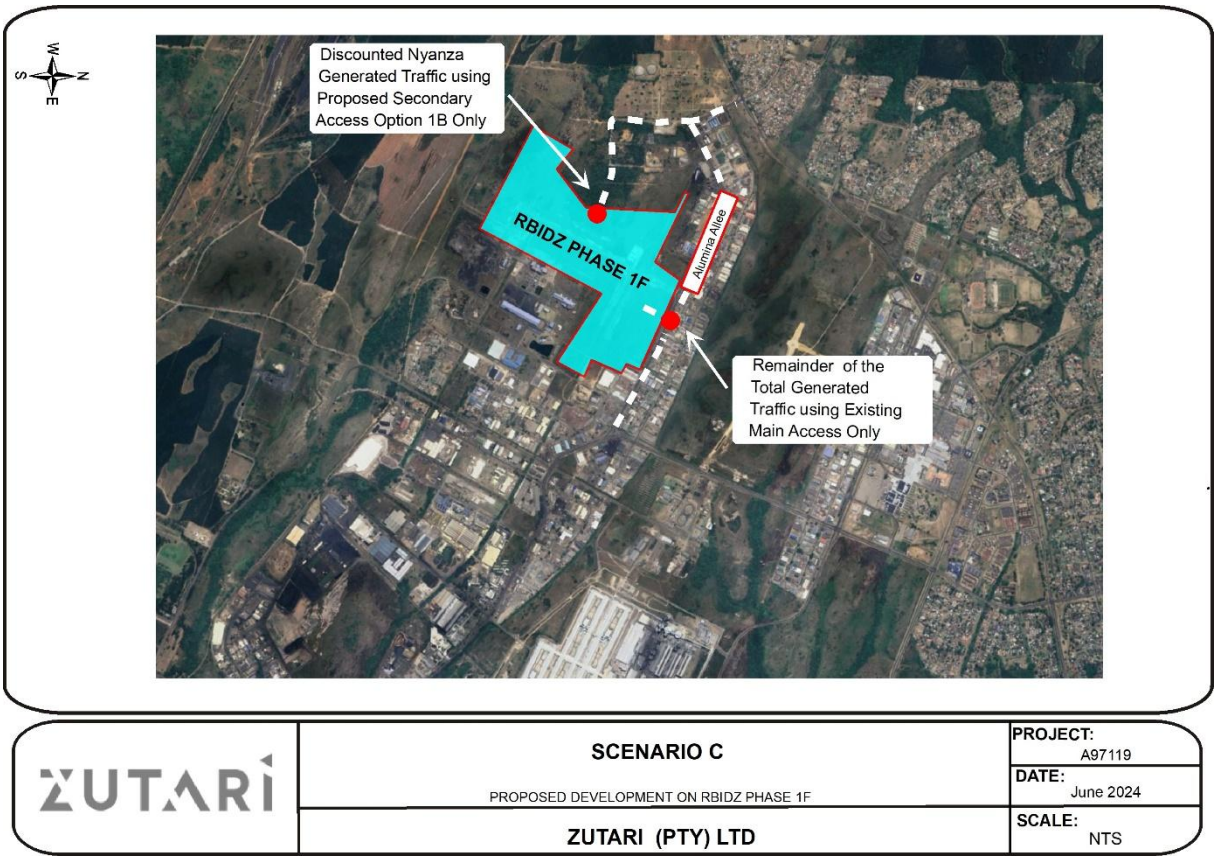


Figure 24: Scenario C

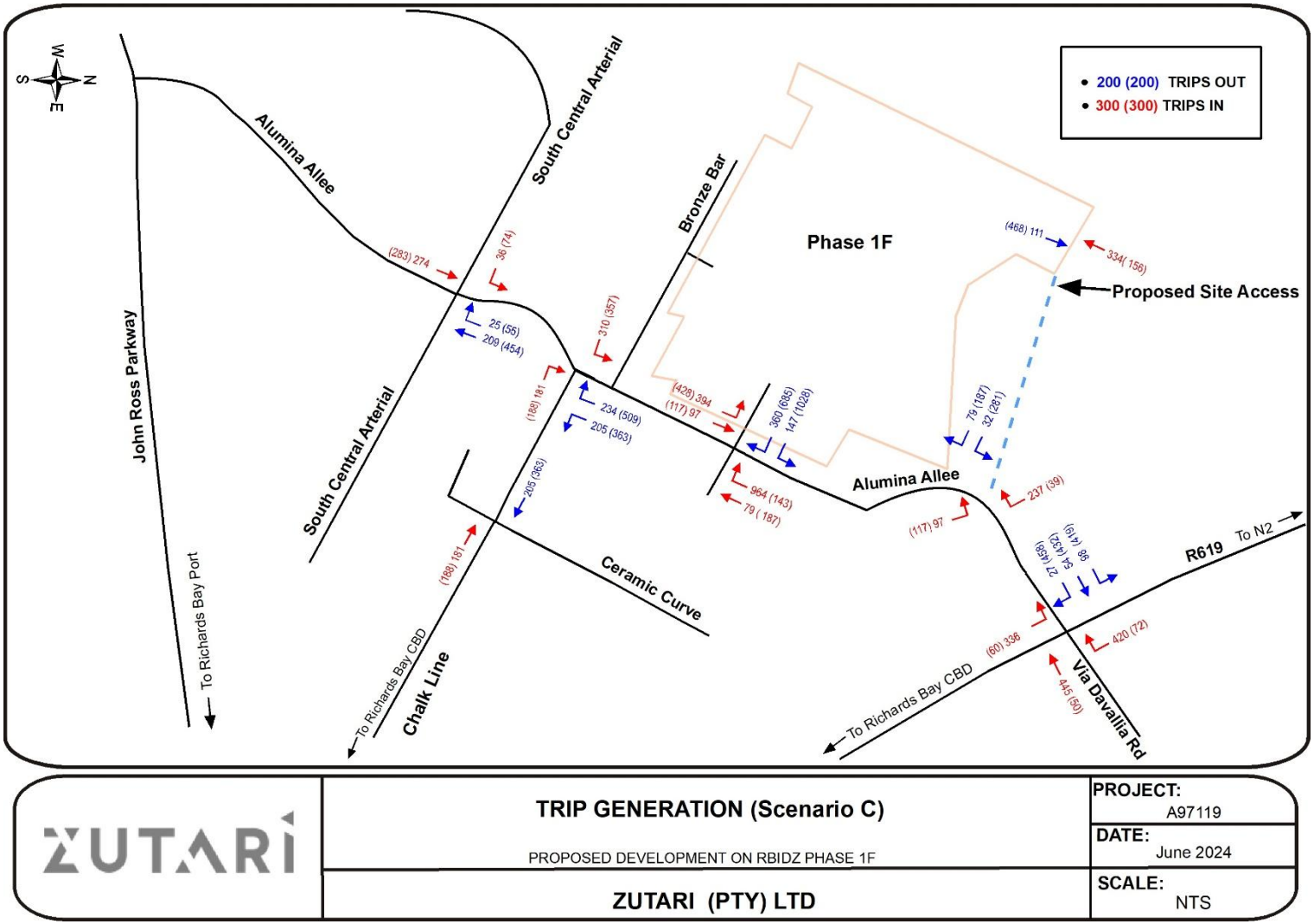
10.1 Trip Distribution

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.



ZUTARI	**TRIP GENERATION (Scenario C)** PROPOSED DEVELOPMENT ON RBIDZ PHASE 1F	**PROJECT:** A97119 **DATE:** June 2024
	ZUTARI (PTY) LTD	**SCALE:** NTS

Figure 25: Trip Generation Scenario C

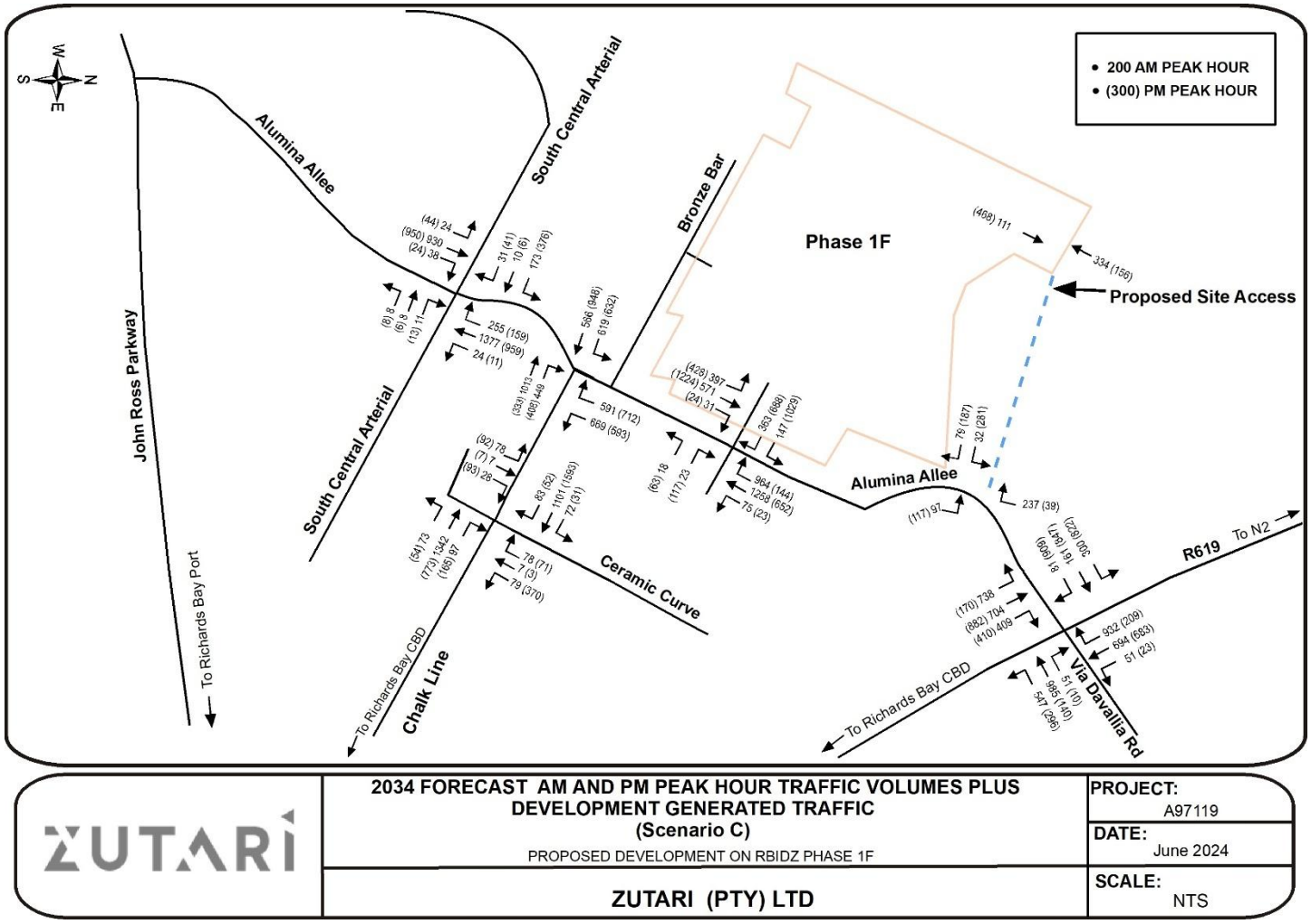


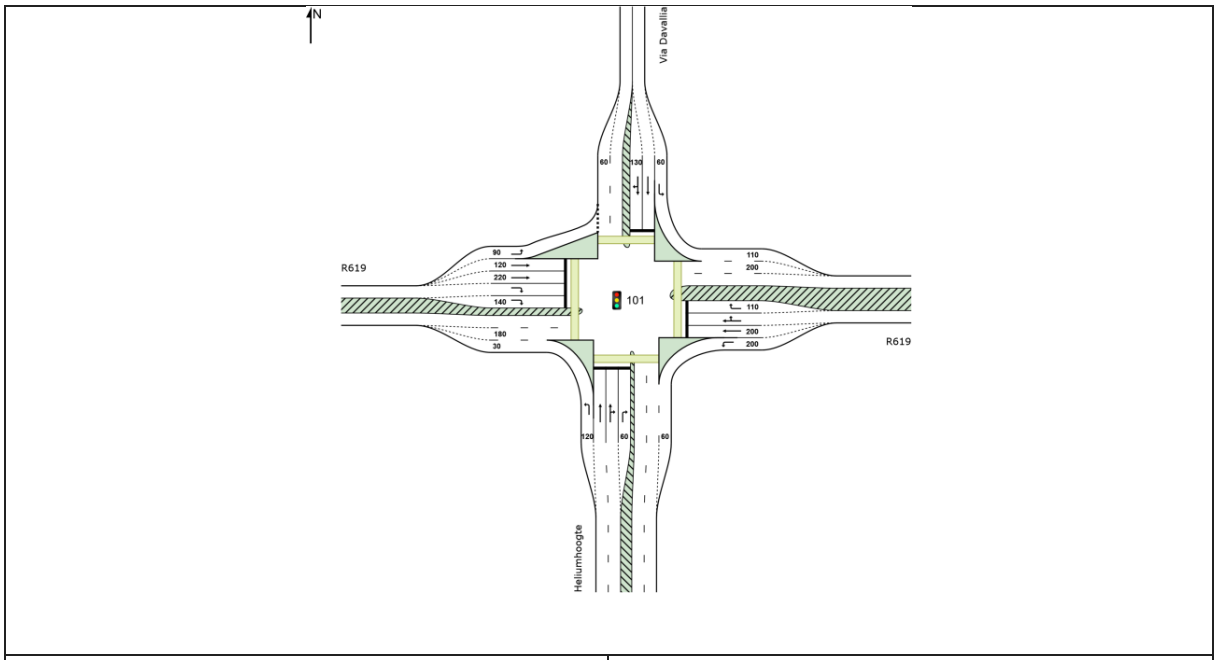
Figure 26: 2034 Design Year Peak Hour Volumes with Development Generated Volumes - Scenario C

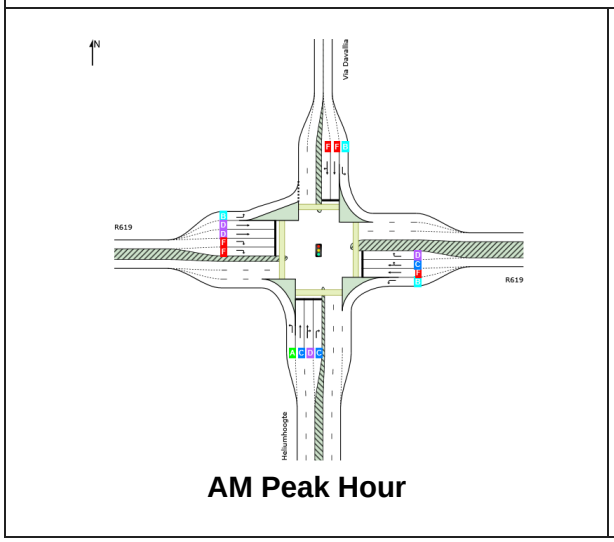
10.3 Traffic Impact Assessment – Scenario C

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.

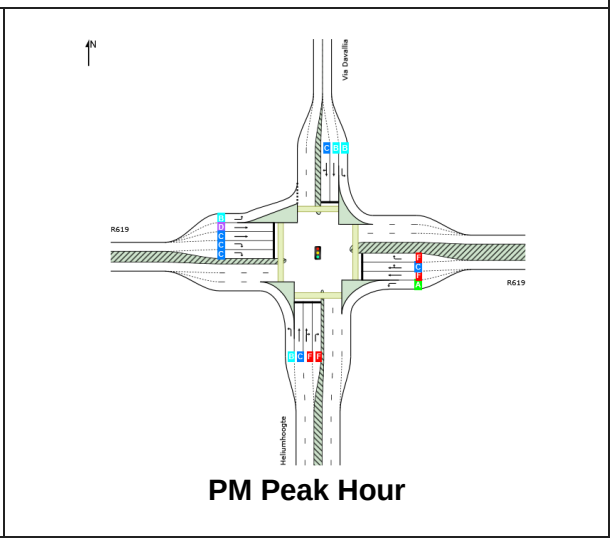
10.3.1 Heliumhoogte, Via Davallia and R619 Intersection

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:





AM Peak Hour



PM Peak Hour

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:

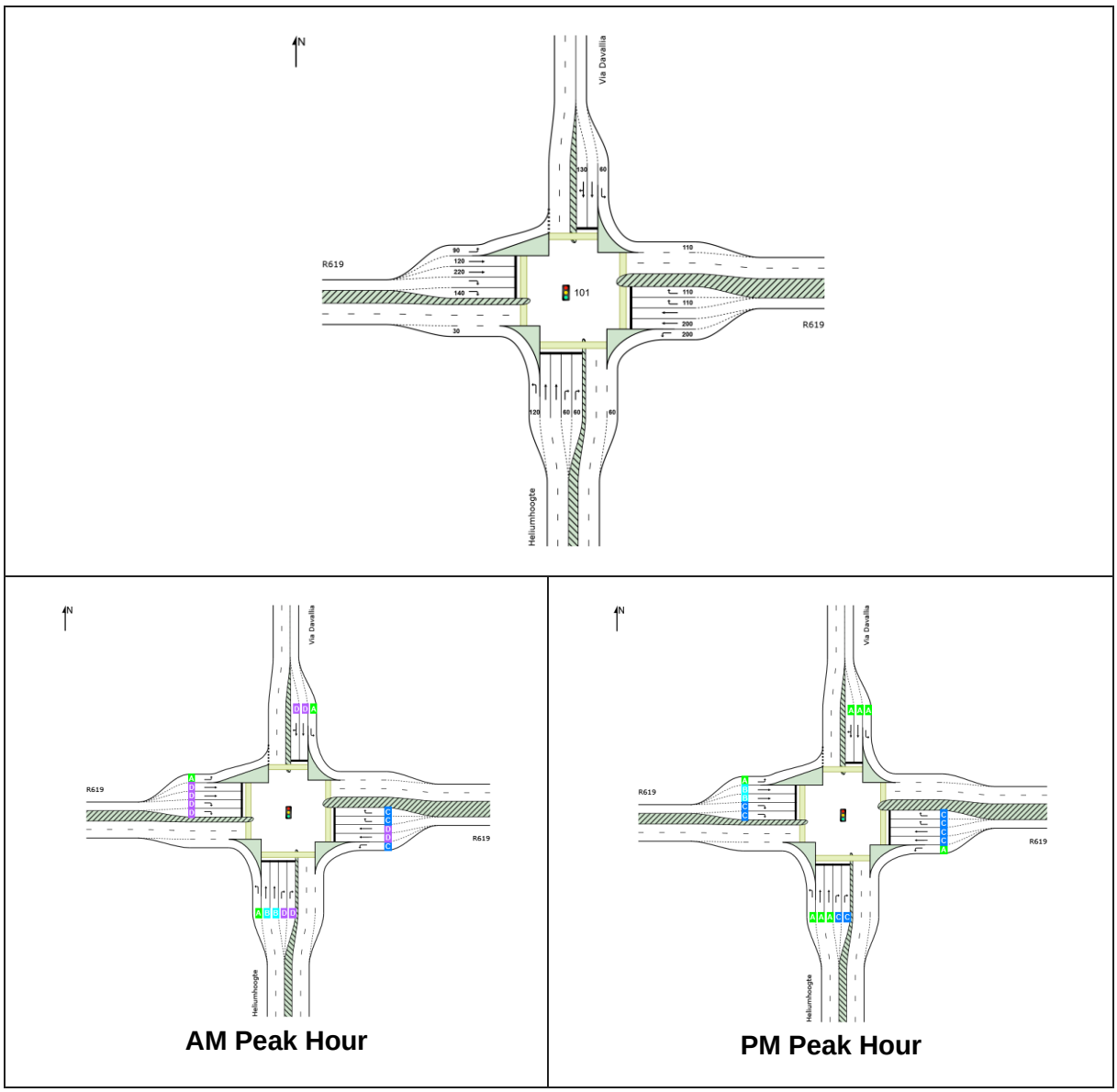


Table 24 2034 Design Year with Development Generated Traffic - Heliumhoogte, Via Davallia and R619 Upgrade Scenario C

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:

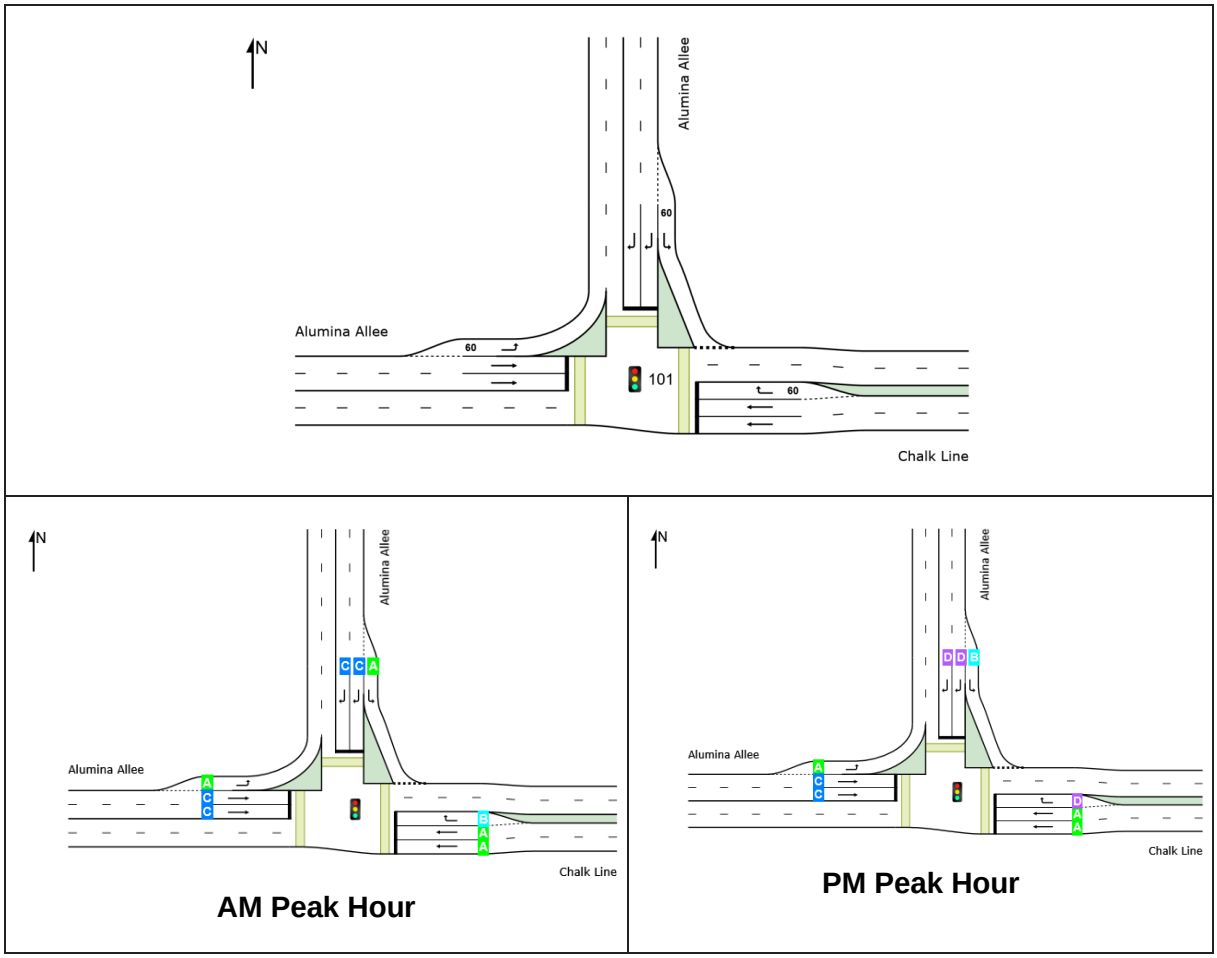


Table 25 2034 Design Year with Development Generated Traffic - Alumina Allee and Chalk Line Scenario C

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:

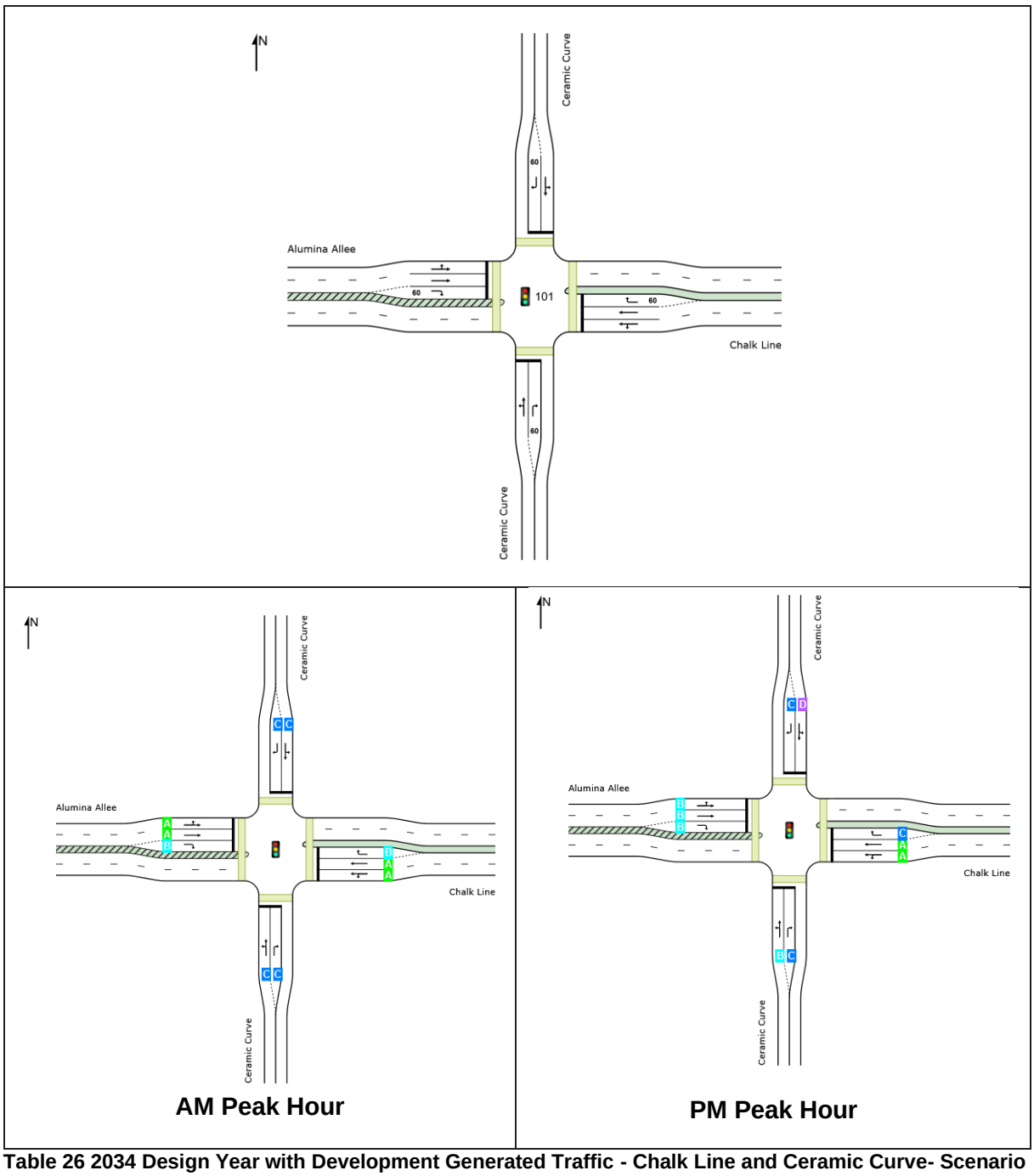


Table 26 2034 Design Year with Development Generated Traffic - Chalk Line and Ceramic Curve- Scenario C

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:

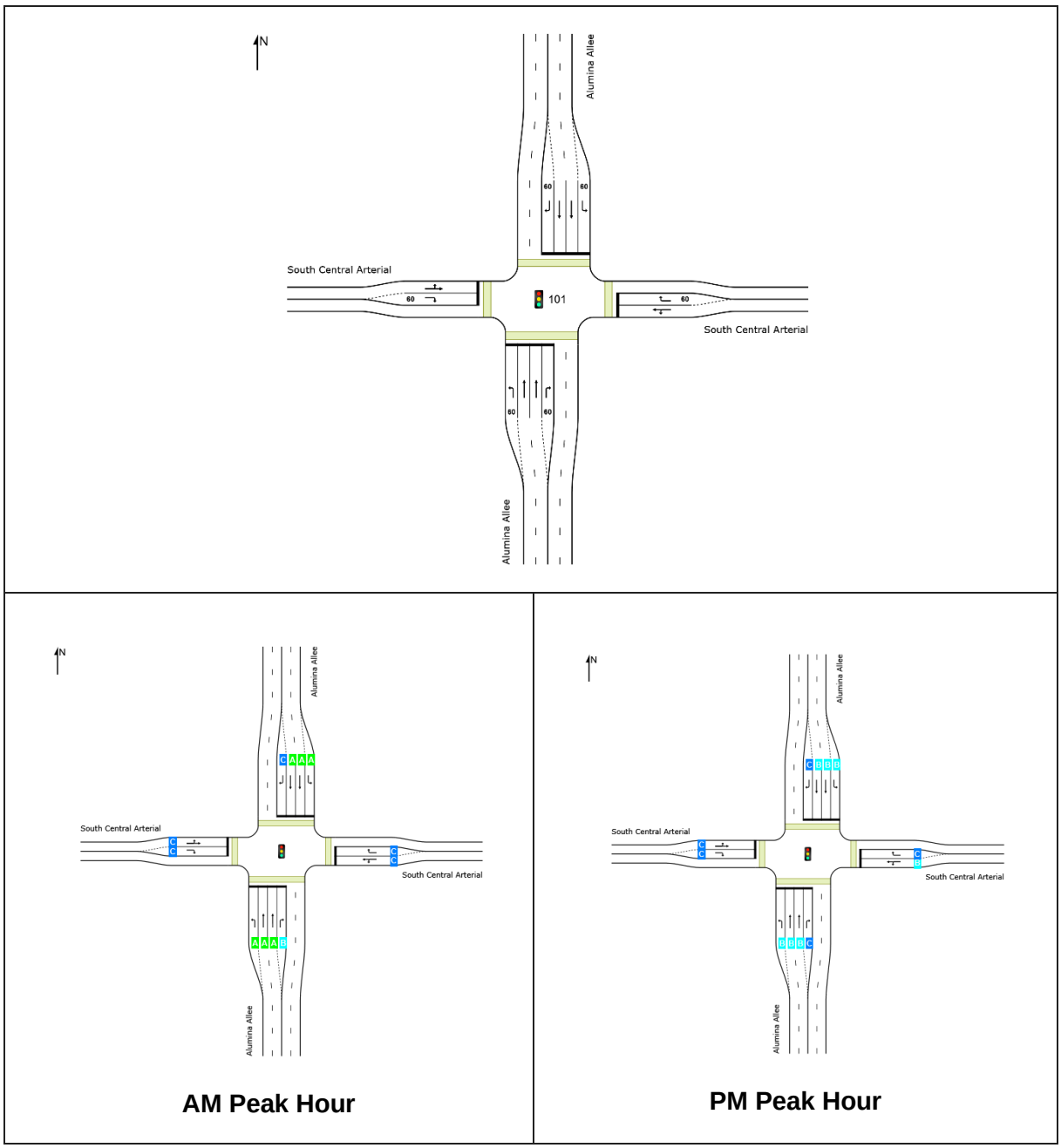


Table 27 2034 Design Year with Development Generated Traffic - Alumina Allee and South-Central Arterial Scenario C

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:

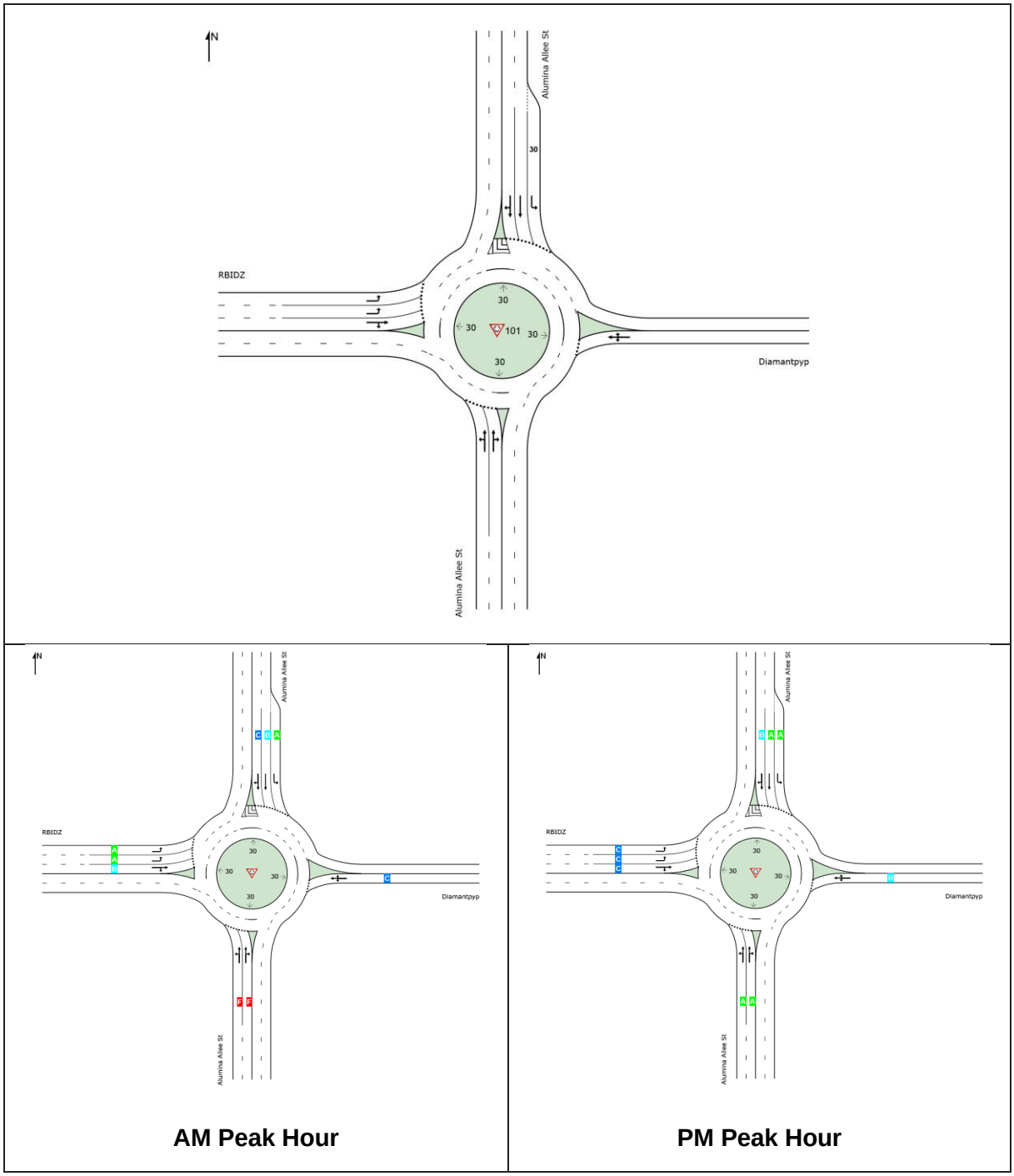


Table 28 2034 Design Year with Development Generated Traffic - Alumina Allee and Diamantpyp Scenario C

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:

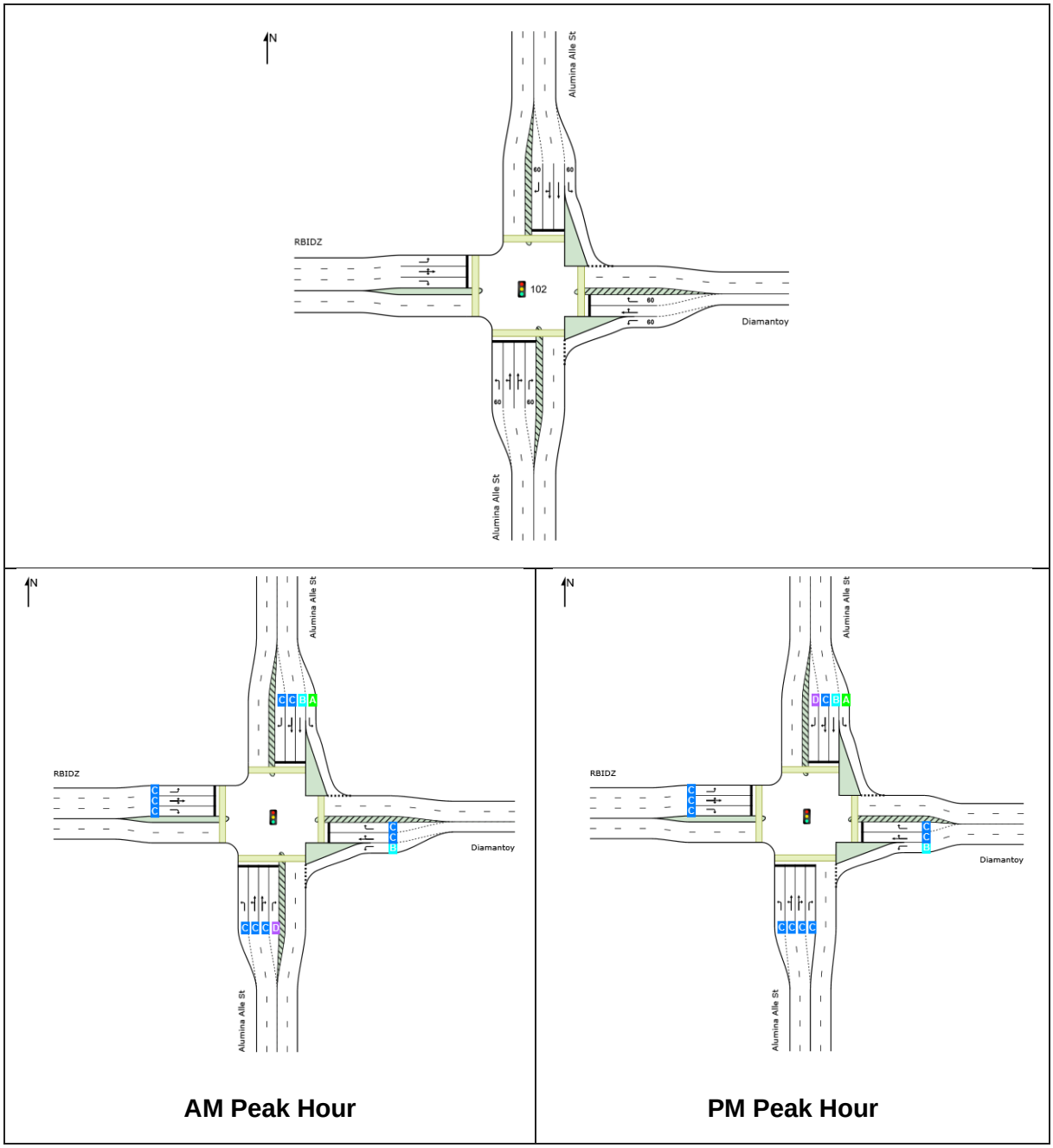


Table 29 2034 Design Year with Development Generated Traffic - Alumina Allee and Diamantpyp Upgrade Scenario C

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
• 100% Traffic Generated by Development on one Access	35% Proposed Access 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 60m² per truck.

1. Proposed usable area:
    - Total Area = 21,620 m²
2. Total area divided by the area required per truck:
    - Estimated number of Trucks = 21,62060/60 = 360 trucks

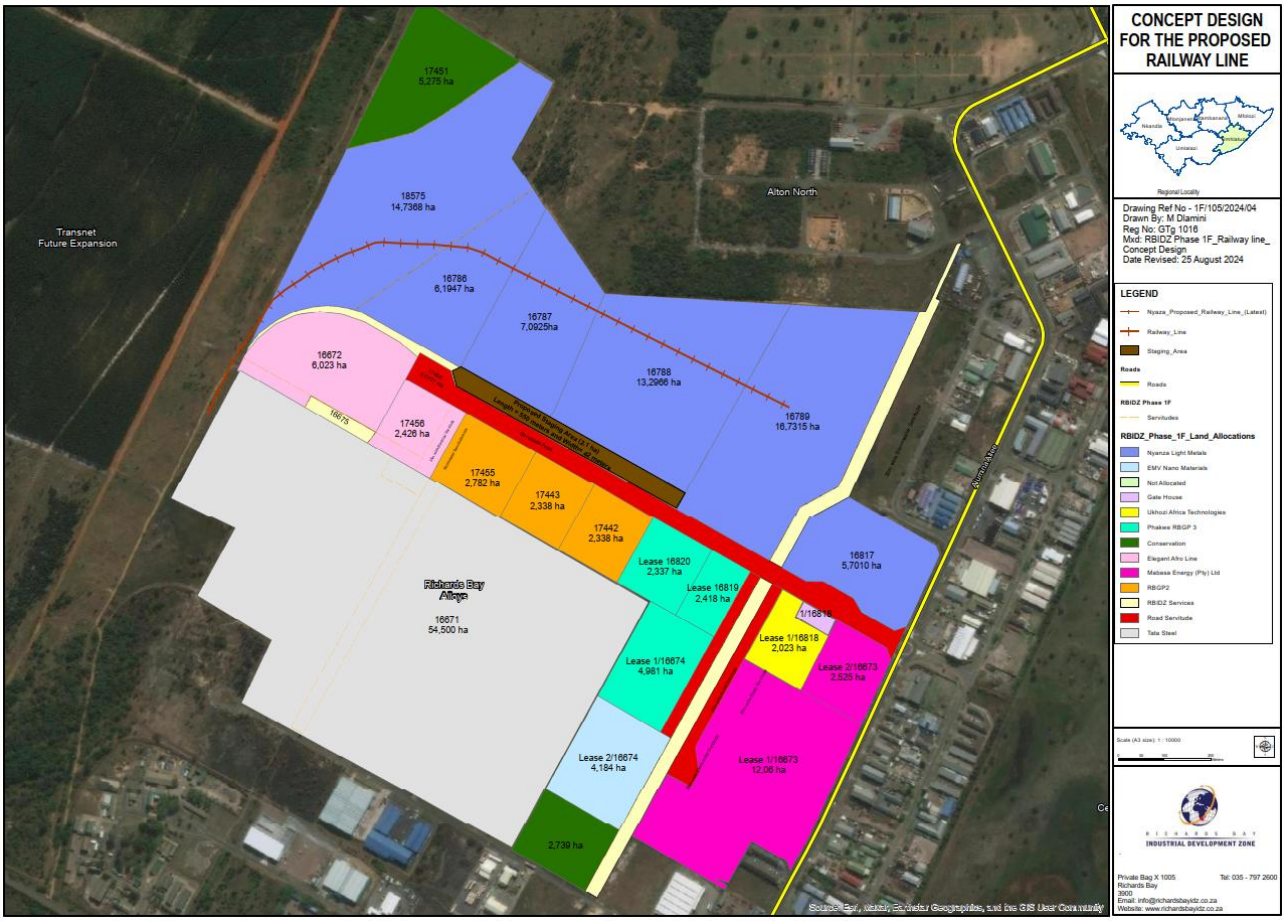


Figure 27 Proposed staging area

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.

Diamantpyp 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 Diamantpyp 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.

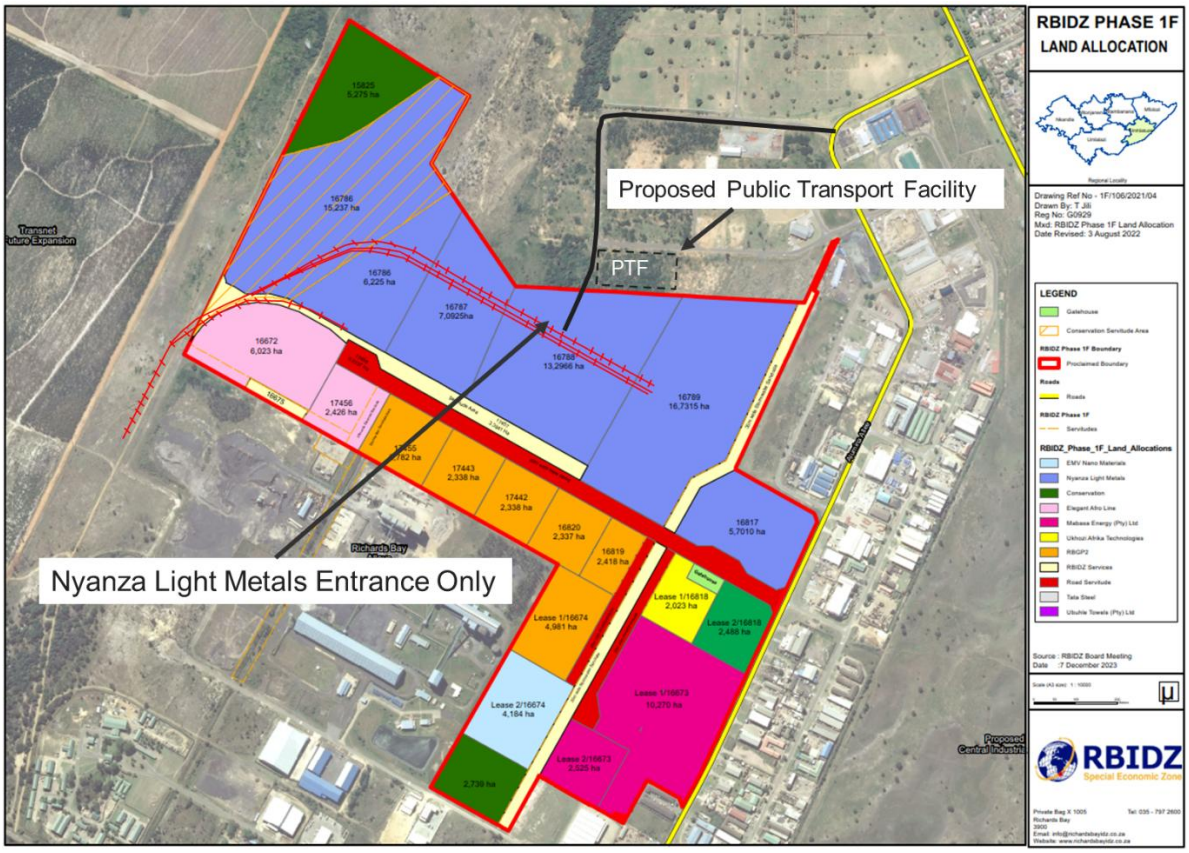


Figure 29 Proposed Public Transport Facility Option 1B

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.

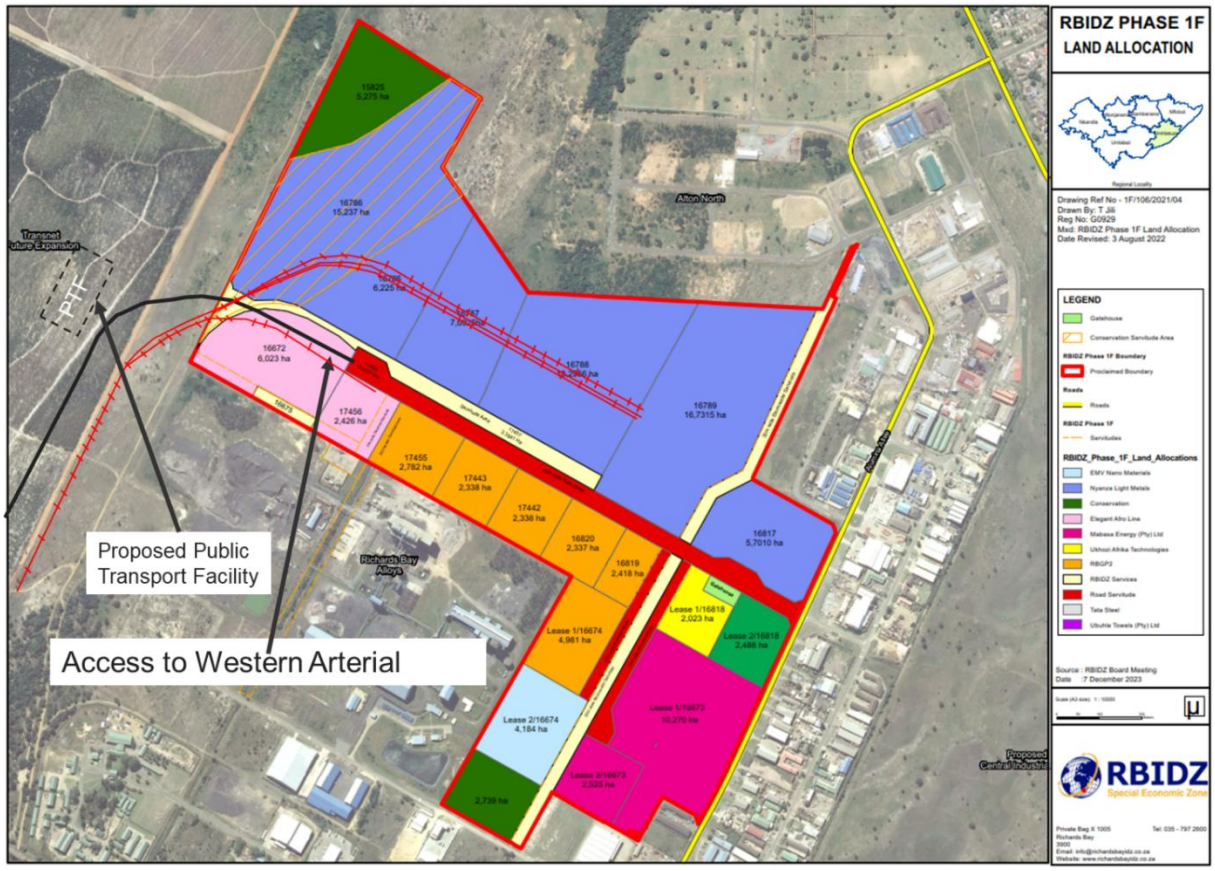


Figure 30 Proposed Public Transport Facility Option 4

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

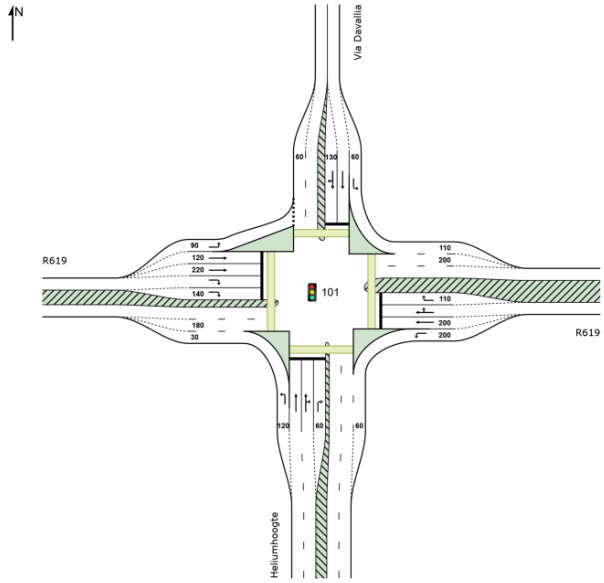
No trucks were observed parking along the verge of the RBIDZ Phase 1F during the site visit however, trucks were observed parking along other sections of Alumina Allee in the vicinity of RBIDZ Phase 1F but most of these are parking in lay-byes and those few trucks that do park on the verge along Alumina 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.

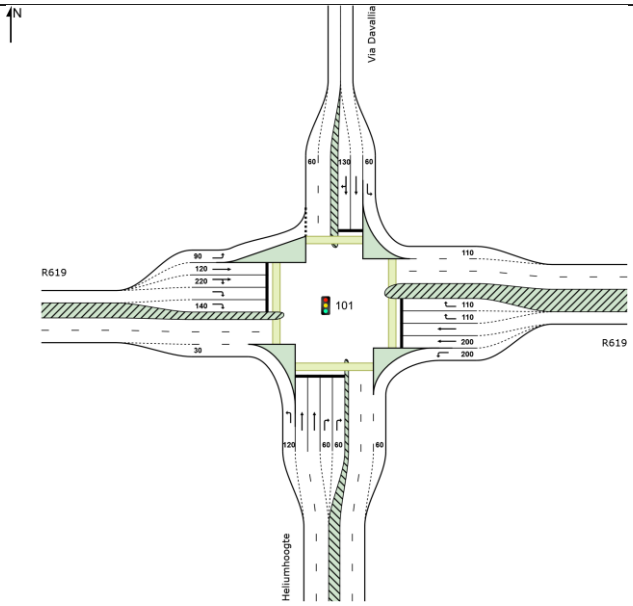
The section of road network that is impacted the most by heavy vehicles parking along the verges is at Alumina Allee before and after the South Central Arterial intersection which is some distance from RBIDZ Phase 1F.

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.

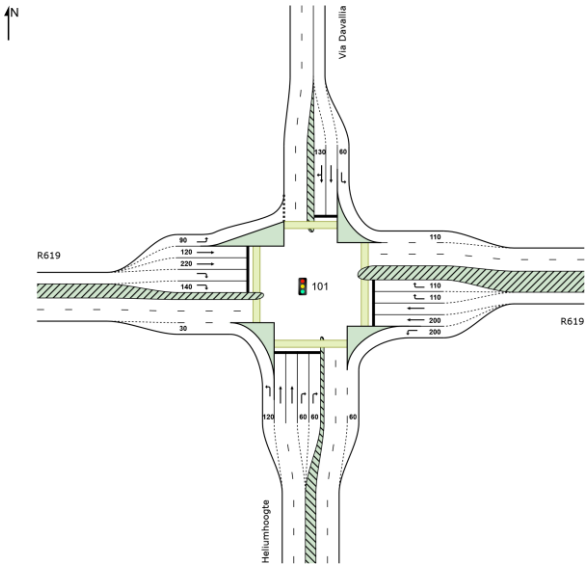
Intersection	Layout
Heliumhoogte, Via Davallia and R619 Intersection	 **Upgrades: Scenario A** The following upgrades are proposed for this intersection: • East exit: Change short lane to a full-length lane • East Approach: Additional 60m short right turn lane • South Approach: Additional 60m short right turn lane • North Approach: Change short right turn lane into a through and right turn lane



Upgrades: Scenario B

The following upgrades are proposed for this intersection:

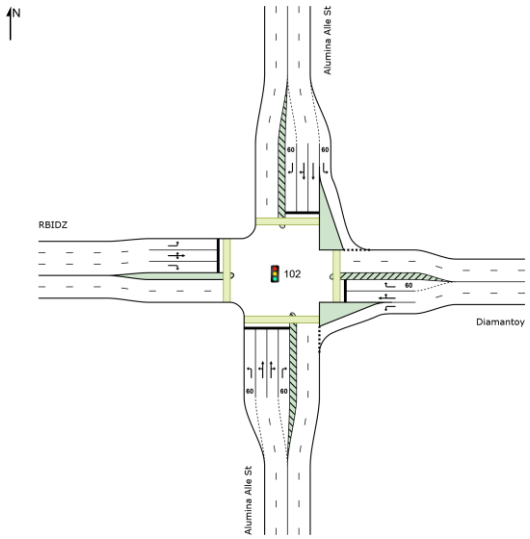
- West Approach: Change through lane into a through and right turn lane
- East Approach: Additional 60m short right turn lane
- South Approach: Additional 60m short right turn lane
- North Approach: Change short right turn lane into a short through and right turn lane



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).

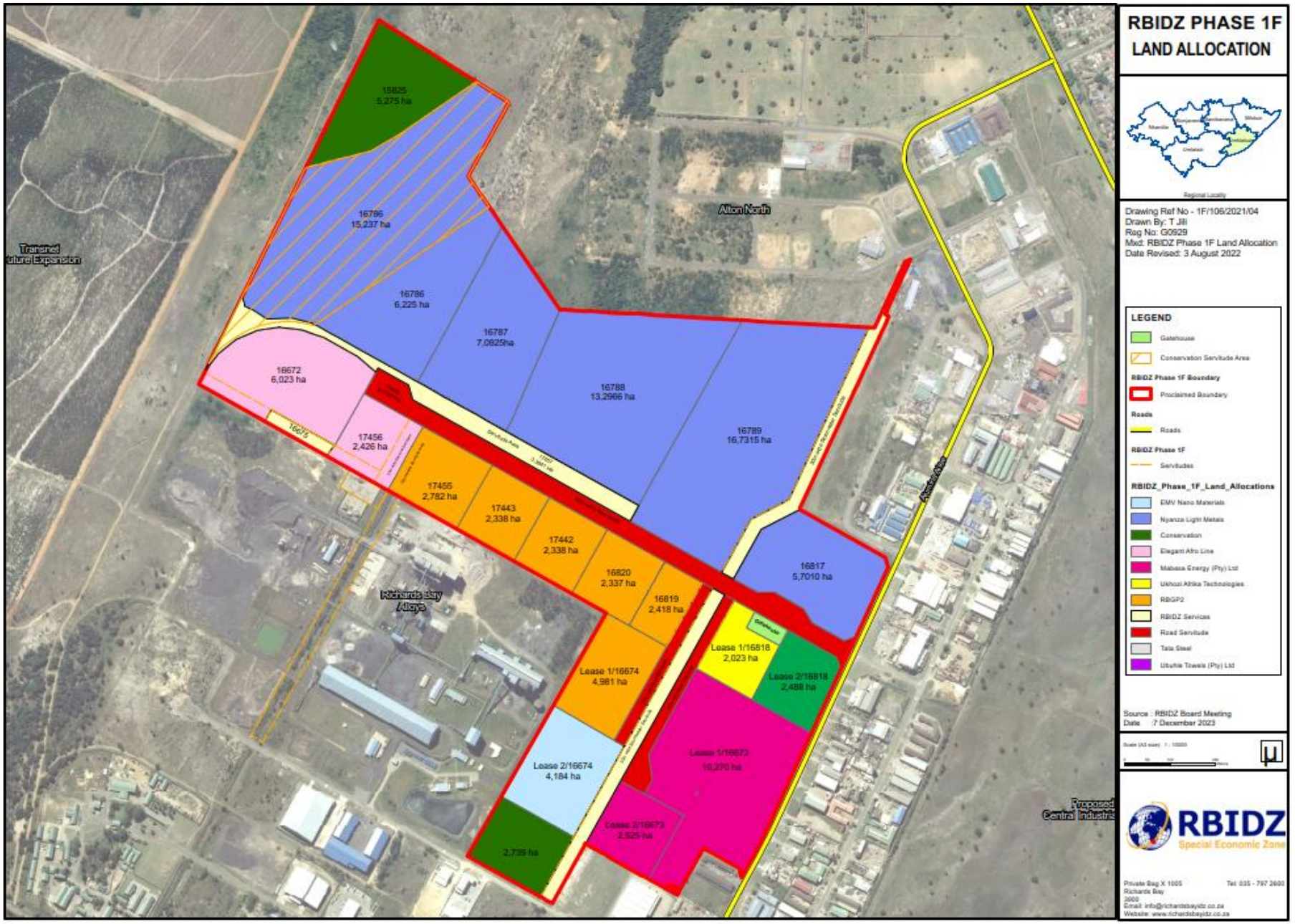
16 Recommendations

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


RBIDZ PHASE 1F
LAND ALLOCATION
Drawing Ref No - 1F/106/2021/04
Drawn By: T Jili
Reg No: G0929
Mxd: RBIDZ Phase 1F Land Allocation
Date Revised: 3 August 2022
LEGEND
Gatehouse
Conservation Servitude Area
RBIDZ Phase 1F Boundary
Proclaimed Boundary
Roads
Roads
RBIDZ Phase 1F
Servitudes
RBIDZ_Phase_1F_Land_Allocations
EMV Nano Materials
Nyanza Light Metals
Conservation
Elegant Afro Line
Mabasa Energy (Pty) Ltd
Ukhozi Afrika Technologies
RBGP2
RBIDZ Services
Road Servitude
Tata Steel
Ubuhle Towels (Pty) Ltd
Source : RBIDZ Board Meeting
Date : 7 December 2023
RBIDZ
Special Economic Zone
Private Bag X 1005
Richards Bay
3900
Tel: 035 - 797 2600
Email: info@richardsbayidz.co.za
Website: www.richardsbayidz.co.za
Alton North
Transnet
uture Expansion
Richards Bay
Alloys
Proposed
Central Industria
16825
5,275 ha
16786
15,237 ha
16786
6,225 ha
16787
7,0925ha
16788
13,2966 ha
16789
16,7315 ha
16672
6,023 ha
16672
17456
2,426 ha
17455
2,782 ha
17443
2,338 ha
17442
2,338 ha
16820
2,337 ha
16819
2,418 ha
16817
5,7010 ha
Lease 1/16818
2,023 ha
Lease 2/16818
2,488 ha
Lease 1/16674
4,981 ha
Lease 2/16674
4,184 ha
Lease 1/16673
10,270 ha
Lease 2/16673
2,525 ha
2,739 ha


RBIDZ PHASE 1F
RBIDZ PROPOSED RAIL LAYOUT
Regional Locality
Drawn By: T Jill
Mxd: RBIDZ Phase 1F : RAIL LAYOUT
LEGEND
Nyaza_Proposed_Railway_Line
Conservation Servitude Area
RBIDZ Phase 1F Boundary
Proclaimed Boundary
Roads
Roads
RBIDZ Phase 1F
Servitudes
Allocated
Allocated
Allocated
Allocated
Allocated
Allocated
Allocated
Not Allocated
Conservation
RBIDZ Services
Road Servitude
Richards Bay Alloys
Source : RBIDZ
Date : 18 Feb 2021
Conservation Servitude Area
Alton North
Proposed Staging Area
Substation Servitude
Richards Bay Alloys
RICHARDS BAY
INDUSTRIAL DEVELOPMENT ZONE
Private Bag X 1005
Richards Bay
3900
Tel: 035 - 797 2600
Email: info@richardsbayidz.co.za
Website: www.richardsbayidz.co.za

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															TOTAL
NAME	HELIUMUHOOGTE															
MOVEMENT	LEFT TURN					STRAIGHT					RIGHT TURN					ALL
TIME	C	T	H	B	TOTAL	C	T	H	B	TOTAL	C	T	H	B	TOTAL	MOVEMENTS
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															
MOVEMENT	LEFT TURN					STRAIGHT					RIGHT TURN					ALL
TIME	C	T	H	B	TOTAL	C	T	H	B	TOTAL	C	T	H	B	TOTAL	MOVEMENTS
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 THURDAY 29 FEBRUARY 2024
UNITS: CLASSIFIED

APPROACH FROM	WEST															TOTAL
NAME	CHALK LINE															
MOVEMENT	LEFT TURN					STRAIGHT					RIGHT TURN					ALL
TIME	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	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															
MOVEMENT	LEFT TURN					STRAIGHT					RIGHT TURN					ALL
TIME	C	T	H	B	TOTAL	C	T	H	B	TOTAL	C	T	H	B	TOTAL	MOVEMENTS
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
TOTAL	**990**	**3**	**79**	**8**	**1080**	**55**	**0**	**3**	**0**	**58**	**205**	**2**	**108**	**8**	**323**	**1461**

TRAFFIC SURVEY

CLIENT:

SITE: INTERSECTION OF ALUMINA ALLEE STREET AND DIAMANTPYP

DATE: 12 HOUR COUNT ON TUESDAY 19 MARCH 2024

UNITS: CLASSIFIED

APPROACH FROM	NORTH															TOTAL
NAME	ALUMINA ALLEE STREET															
MOVEMENT	LEFT TURN					STRAIGHT					RIGHT TURN					ALL
TIME	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															
MOVEMENT	LEFT TURN					STRAIGHT					RIGHT TURN					ALL
TIME	C	T	H	B	TOTAL	C	T	H	B	TOTAL	C	T	H	B	TOTAL	MOVEMENTS
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															TOTAL
NAME	DIAMANTPYP															
MOVEMENT	LEFT TURN					STRAIGHT					RIGHT TURN					ALL
TIME	C	T	H	B	TOTAL	C	T	H	B	TOTAL	C	T	H	B	TOTAL	MOVEMENTS
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	WEST															TOTAL
NAME	RBIDS PRIVATE AREA ACCESS(BOOM GATE)															
MOVEMENT	LEFT TURN					STRAIGHT					RIGHT TURN					ALL
TIME	C	T	H	B	TOTAL	C	T	H	B	TOTAL	C	T	H	B	TOTAL	MOVEMENTS
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
TOTAL	**5**	**0**	**1**	**0**	**6**	**1**	**0**	**0**	**0**	**1**	**10**	**1**	**1**	**0**	**12**	**19**

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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
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	* 0.508	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	* 0.674	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	* 0.764	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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
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	* 0.542	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	* 0.411	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	* 0.673	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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	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	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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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

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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
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	* 0.894	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	* 0.914	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	* 0.919	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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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	* 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
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	* 0.309	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	* 0.824	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	* 0.732	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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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: Diamantpyp														
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

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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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	* 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	* 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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	* 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	* 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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	* 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	415	0.0	437	0.0	* 0.685	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	* 0.756	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	* 0.764	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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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	* 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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		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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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	* 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
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	* 0.786	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	* 0.837	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	* 0.764	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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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 [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed 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	* 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	* 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	* 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

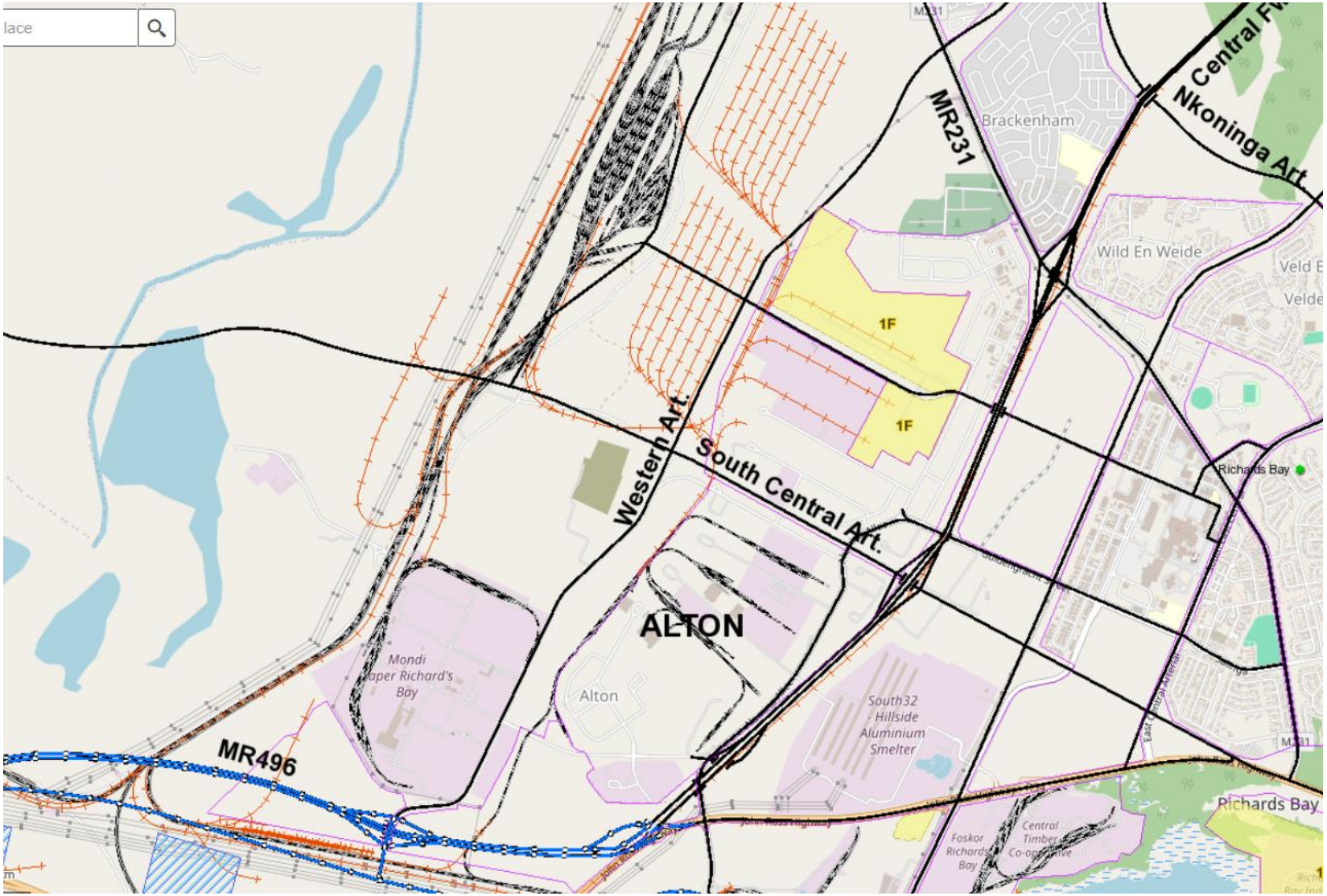
Site: 102 [Alumina Allee St PM PEAK -Upgrade (Site Folder: Scenario C)]

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 [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
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	* 0.829	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	* 0.794	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


MR231
Brackenham
Nkoninga Art.
Wild En Weide
1F
1F
Western Art.
South Central Art.
ALTON
Alton
Richards Bay
MR496
Richards Bay

In diversity there is beauty and there is strength.

MAYA ANGELOU

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