GEMSBOKSPRUIT TOWNSHIP ESTABLISHMENT IN THEMBISILE HANI LOCAL MUNICIPALITY MPUMALANGA PROVINCE

TRAFFIC IMPACT ASSESSMENT

REPORT *(Date: 28 April 2021)*

Report Number: 2021-006/R01 – Rev 00

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QUALITY CONTROL DOCUMENT

PROJECT	**:**	**GEMSBOKSPRUIT TOWNSHIP ESTABLISHMENT IN THEMBISILE HANI LOCAL MUNICIPALITY MPUMALANGA PROVINCE**
PROJECT No	**:**	**2021-006**
REFERENCE No	**:**	**N/A**

Description	Details	Checked / Signed	Date
Document Prapared by	**Mongamo Jantjies** Pr Tech Eng (200870199) MTech: Civil Engineering		23 April 2021
Document Reviewed by	**Mongamo Jantjies** Pr Tech Eng (200870199) MTech: Civil Engineering		26 April 2021
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It is hereiwth certified that this Traffic Impact Assessment has been prepared according to the requirements of the South African Traffic Impact and Site Traffic Assessment Manual.

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Traffic Impact Assessment
GEMSBOKSPRUIT TOWNSHIP ESTABLISHMENT IN
THEMBISILE HANI LOCAL MUNICIPALITY IN THE MPUMALANGA PROVINCE
Report Summary

Site Location	Portions 4, 5, 13 and the Remainder of Portion 12 of the farm Gemsbokspruit 229 JR, Thembisile Hani Local Municipality, Mpumalanga Province
Municipality	Thembisile Hani Local Municipality
Type of Assessment	Traffic Impact Assessment
Proposed Land use	Mixed use development (largely residential)
Site Size	(116.66 ha)
Trip Generation Reference	South African Trip Generation Rates, TMH 17, September 2013, Version 1.01
Traffic counts date	13 April 2021
Assessment Years	Scenario 1: 2021 background traffic demand Scenario 2: 2026 background traffic demand with development trips (Design horizon year) Scenario 3: 2041 background traffic demand with development trips (Planning horizon year)
Access	Access to the Development is proposed via Somphalali Road.
Capacity of Access	The proposed access can accommodate the expected traffic demand for the proposed Development, given the proposed road upgrades.
Proposed road upgrades	Access to be constructed to the standards of the local road authority (i.e. Thembisile Hani Local Municipality and Provincial / National Roads Authority).
Cost of Accesses upgrades	R 7 000 000.00 based on schematic drawings with no detailed information available, which excludes professional fees, contingencies, the relocation of major services and VAT.
Recommendations	The proposed development should be considered favorably from a traffic engineering point of view by the relevant authorities, given the proposed road upgrades in this document. The detailed designs of the upgrades should be designed by a professional engineer / technologist with suitable road design experience.
Report prepared for	Nkanivo Development Consultants Unit 79, Block 5 Lombardy Business Park 66 Graham Road, Pretoria, 0084 Contact : **Samuel Chauke** Tel : (012) 807 7445 Email : info@nkanivo.co.za
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Report Date	28 April 2021

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LIST OF ACRONYMS

COTO	Committee of Transport Officials
CBD	Central Business District
ITP	Integrated Transport Plan
GLA	Gross Leasable Area
LOS	Level of Service
SARTSM	South African Road and Traffic Signs Manual
TIA	Traffic Impact Assessment
TMH	Technical Methods for Highways
v/c	Ratio of Demand Volume to Capacity ratio
Veh/h	Vehicles per hour
PTF	Public Transport Facility
Km	Kilometre
NMT	Non-Motorized Transport

GEMSBOKSPRUIT TOWNSHIP ESTABLISHMENT IN THEMBISILE HANI LOCAL MUNICIPALITY IN MPUMALANGA PROVINCE

TRAFFIC IMPACT ASSESSMENT

1. INTRODUCTION

1.1 Background

Nkanivo Development Consultants has been appointed to execute the project of the Proposed Gemsbokspruit Township Establishment to be situated on Portions 4, 5, 13 and the Remainder of Portion 12 of the farm Gemsbokspruit 229 JR. The project is located under the jurisdiction of Thembisile Hani Local Municipality in the Mpumalanga Province. The project site measures about 116.66 hectares in total.

Nkanivo Development Consultants appointed AJA Consulting to conduct a Traffic Impact Assessment for the Proposed Mixed-Use Township Development which is planned for implementation.

1.2 Objectives of the study

As part of a formalization of a development of this nature, several studies are undertaken to assess the technical aspects of the proposed rights. The assessment studies are aimed at providing technical information as part of the submission for the approval of the application for the formalization of the proposed development. Amongst the studies is a Traffic Impact Assessment that is aimed at assessing the traffic impact of the proposed rights on the adjacent road network around the subject property. The objectives of the traffic impact study are to:

- Determine the existing, pre-development traffic volumes and patterns near the development site;
- Assess road hierarchy in and around the proposed development;
- Assess the land use of the proposed development to establish the expected trips to be generated;
- Assess any Public Transport operations in and around the proposed development;
- Determine the post-development projected traffic volume and assess its impact on the existing road network;
- Provide recommendations on the suitability and safety of the proposed access arrangements;
- Recommend infrastructure improvements, if deemed necessary, to accommodate the expected development traffic.

In essence the traffic study is one of the essential feasibility studies for the planning and implementation of the project.

1.3 Site location

The site is in the Mpumalanga Province, Thembisile Hani Local Municipality, in Gemsbokspruit.

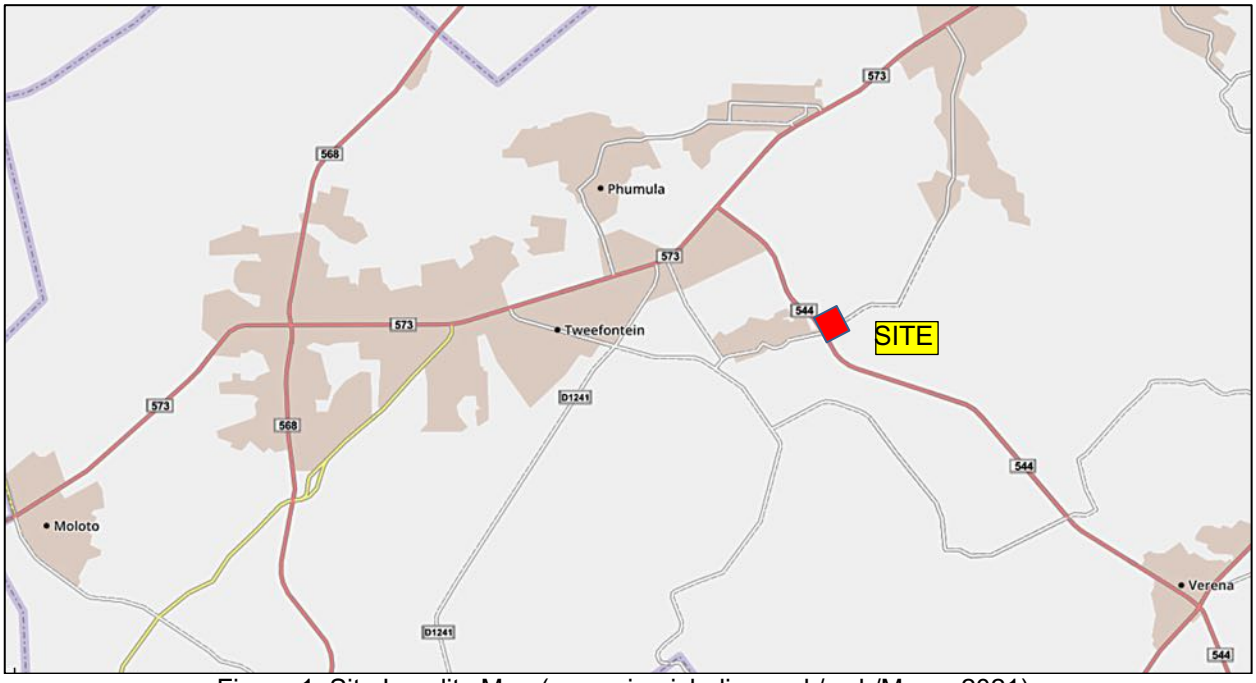


Figure 1: Site Locality Map (www.viamichelin.co.uk/web/Maps, 2021)

2. PROPOSED DEVELOPMENT

The proposed development site is on Portions 4, 5, 13 and the Remainder of Portion 12 of the farm Gemsbokspruit 229 JR, it measures about 117 hectares in total size. The proposed development and the proposed subdivision and rezoning is meant to accommodate the following land uses:

- 914 Residential 1 Dwelling Unit Sites (76.44 ha)
- 9 Business 1 Sites (2.81 ha)
- 1 Light Industrial Site (0.38 ha)
- 1 Municipal Offices Site (0.34 ha)
- 4 Educational Sites for Schools / Creches (4.44 ha)
- 1 Municipal Offices Site for Thusong Centre (0.41 ha)
- 5 Places of worship (0.84 ha)
- 6 Public Open Spaces (3.18 ha)
- Streets (27.82 ha)

The Site Development Plan (SDP) is shown under Annexure B of this report.

3. STUDY AREA

The project is located under the jurisdiction of Thembisile Hani Local Municipality in the Mpumalanga Province. Access to the proposed Township Development is proposed via Road R544.

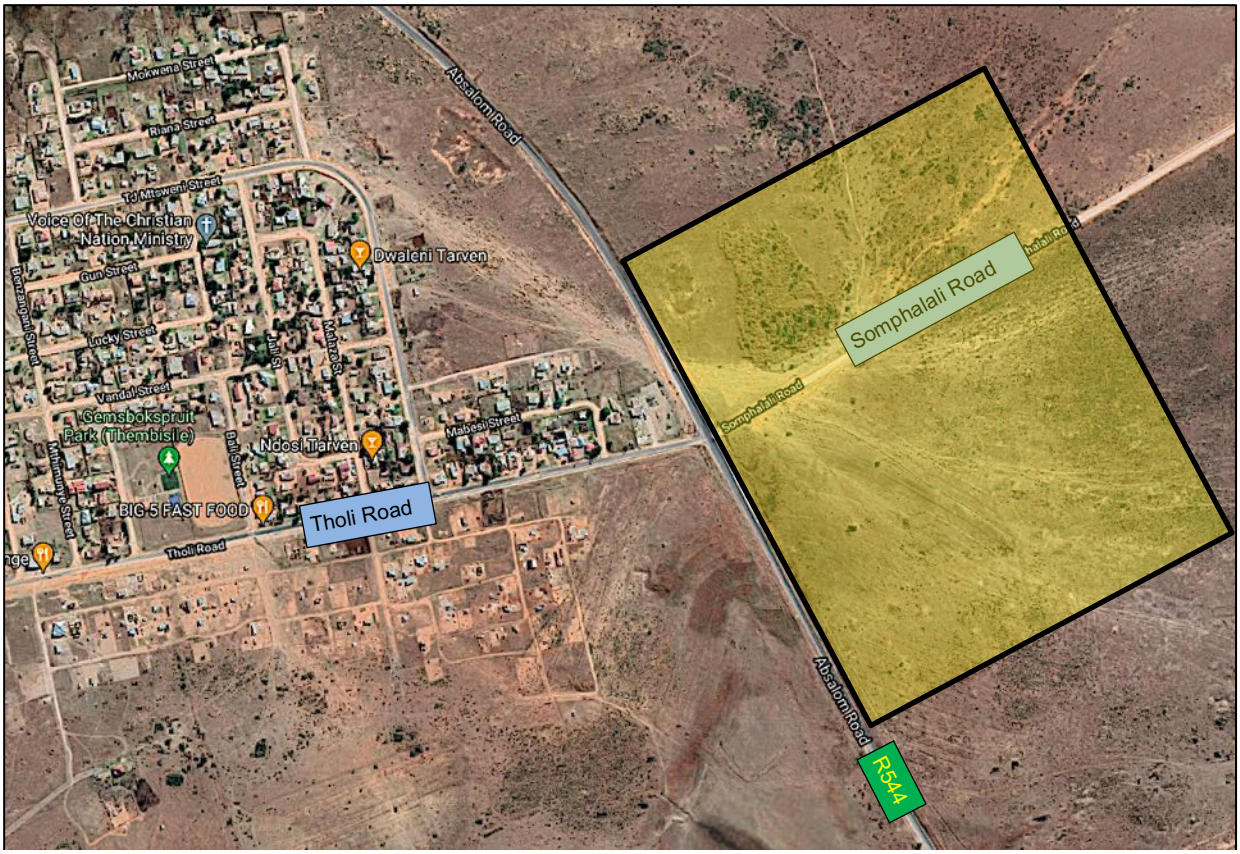


Figure 2: Study Area

3.1 Adjacent Road Network

Road R544 is Regional Route in Mpumalanga. It connects Bethal with Witbank (eMalahleni) and Verna. The road's northern terminus is reached as it ends at a junction with the R573 just south-west of Kwaggafontein. Road R544 is classified as a Class 2 major arterial road.

Somphalali Road connects Gemsbokspruit with Kwaggafontein-E and is currently a gravel road. This road will be the main access to the proposed development.

3.2 Access to the site

Access to the proposed development is proposed via Somphalali Road which in turn intersects with Road R544. Intersections along Somphalali Road will have to be positioned and designed in line with relevant road authorities (i.e. Mpumalanga Public Works Roads & Transport and Thembisile Hani Local Municipality) guidelines. The designs thereof will require approvals from the relevant road authorities. Somphalali Road will have to be classified as a Class 4 road as it will serve an accessibility function to the proposed development.

4. SITE INVESTIGATIONS

4.1 Data collected

AJA Consulting conducted traffic counts and site observations on the 13th of April 2021. The data that was collected is as follows:

- Twelve-hour turning movement traffic counts (06h00 to 18h00)
- Twelve-hour classified traffic counts (06h00 to 18h00)

4.2 The effect of the COVID-19 Pandemic Lockdown on Traffic Volumes

A National Lockdown was instituted in South Africa under The Disaster Management Act (57/2002), as per Government Gazette No. 43148, regulation No. R.398. The lockdown was implemented due to the outbreak of an epidemic, generally known as "COVID-19". The lockdown has resulted in restrictions on movements and economic activities, which in turn resulted in reduced traffic volumes.

The Tomtom traffic index of 2020 reported a reduction in congestion levels of between 0% and 9% in some of the Cities in South Africa. The reduction in congestion levels as reported by Tomtom are as follows (https://www.tomtom.com/traffic-index/ranking):

Table 1: Tomtom traffic congestion analysis (Tomtom, 2021)

	Traffic Congestion Levels between 2020 and 2019		
City	**Overall**	**Morning Peak**	**Afternoon Peak**
Cape Town	-9%	-20%	-24%
East London	0%	-8%	-7%
Johannesburg	-9%	-22%	-26%
Pretoria	-5%	-19%	-18%
Durban	-3%	-12%	-11%
Bloemfontein	-2%	-7%	-5%
Average	**-4,67%**	**-14,67%**	**-15,17%**

The average reduction in congestion levels for the six cities that were reported on is 4.7%. It is therefore assumed for the purposes of this traffic study, that the 12-hour traffic volumes that were recorded during the traffic counts are 4.7% lower than traffic volumes under normal circumstances and the peak hour traffic volumes are 14.67% and 15.17% lower than the peak traffic volumes under normal circumstances for the morning and afternoon peaks respectively.

For the purposes of the status quo traffic analysis, factors of 1.147 and 1.152 will be applied to the traffic volumes to make provision for the COVID 19 effect.

4.3 Traffic Counts

Classified / Turning movement counts were conducted at one station, Stations 1 at the intersection of Somphalali Road and Road R544 as shown in Figure 4. The turning movement counts were classified into vehicle types for modal split analysis. The raw data that was collected is attached as Annexure A to this report.

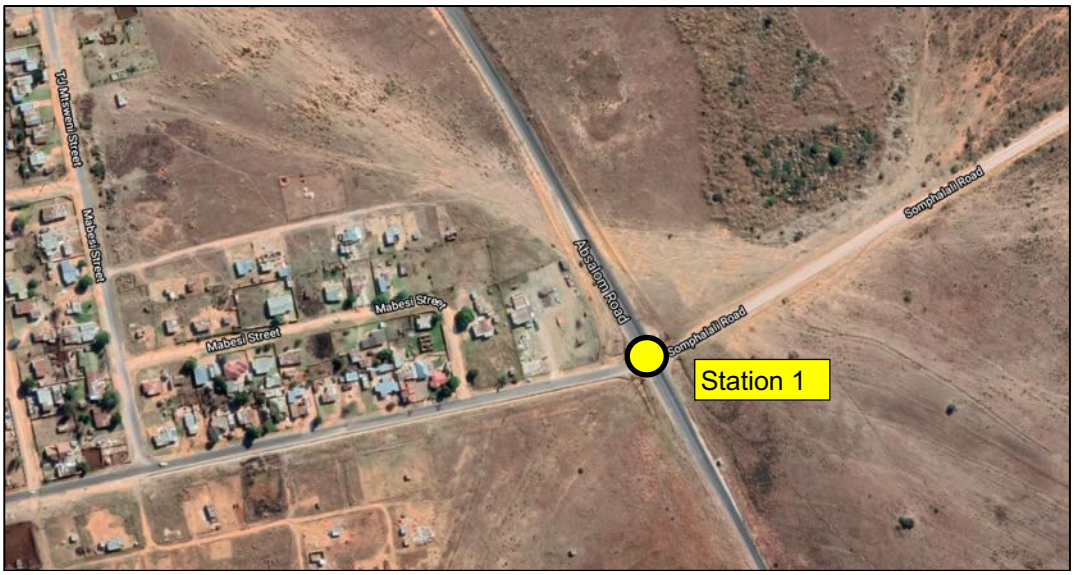


Figure 3: Traffic Counting Stations

4.4 Turning movement traffic counts

The 12-hour traffic counts data for turning movement counts is summarized in Table 2.

Table 2:Turning movement traffic volume at Road R544 and Somphalali Road (Station 1)

APPROACH	**12 Hour Volume** (2346)			
	Left	Through	Right	TOTAL
Road R544 (Northbound)	104	717	29	850
Somphalali Road (Westbound)	31	35	9	75
Road R544 (Southbound)	19	749	258	1026
Somphalali Road (Eastbound)	282	33	80	395

The peak hour volumes for the intersection were recorded as shown in Table 3. The peak hours for the intersection are indicated in the table.

Table 3:Peak hour traffic volume at Road R544 and Somphalali Road (Station 1)

APPROACH	**Morning Peak Volumes** (06h45 to 07h45)			
	Left	Through	Right	TOTAL
Road R544 (Northbound)	7	45	3	55
Somphalali Road (Westbound)	2	2	-	4
Road R544 (Southbound)	-	97	36	133
Somphalali Road (Eastbound)	29	2	9	40
APPROACH	**Afternoon Peak Volumes** (15h00 to 16h00)			
	Left	Through	Right	TOTAL
Road R544 (Northbound)	9	99	2	110
Somphalali Road (Westbound)	2	2	-	4
Road R544 (Southbound)	-	77	25	102
Somphalali Road (Eastbound)	24	2	9	35

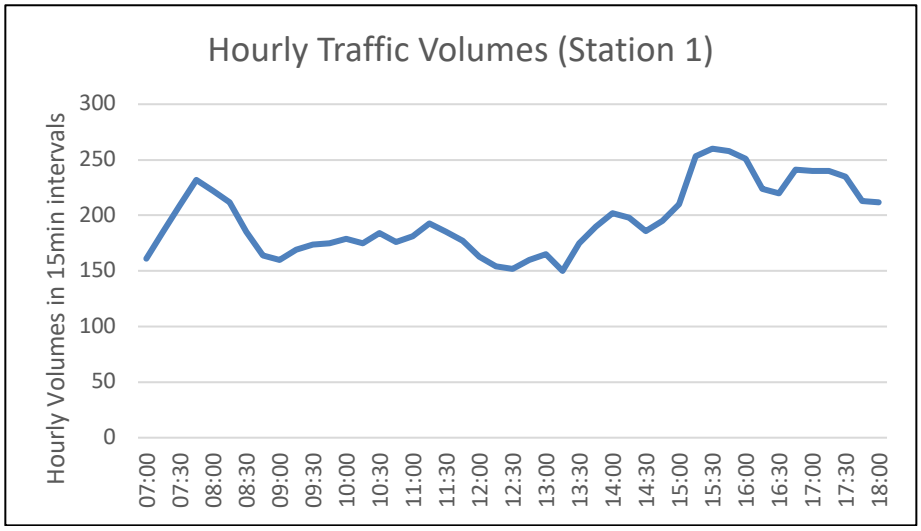


Figure 4: Hourly traffic volumes (Station 1)

It can be noted in Table 3 that for the Road R544 and Somphalali Road (Station 1) intersection, the morning peak hour is from 06h45 to 07h45 and the afternoon peak is from 15h00 to 16h00. The intersection peak hour volumes are 232 and 251 vehicles per hour for the morning and afternoon peaks respectively.

As discussed under Chapter 4.2, factors of 1.147 and 1.152 will be applied to the traffic volumes to make provision for the COVID 19 effect. The adjusted peak hour volumes at Station 1 are 266 and 289 for the morning and afternoon peaks respectively.

4.5 Classified traffic counts

The motorized traffic was classified into Light vehicles (LV), Taxis, Buses and Heavy vehicles (HV). The vehicle modal split is summarized in Table 4.

Table 4: Modal Split summary

JUNCTION	12 Hour Volume	% MODAL SPLIT			
		Light Vehicles (LV)	Taxi	Buses	Heavy Vehicles (HV)
Road R544 and Somphalali Road (Station 1)	2346	85.55%	8.14%	0.21%	6.10%

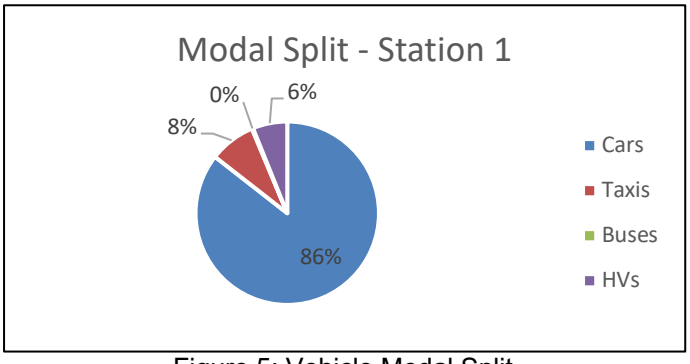


Figure 5: Vehicle Modal Split

It can be noted from the classified traffic counts that Light Vehicles (private cars) form most vehicles near the site. At Station P1 Light Vehicles make up about 86% of the vehicles, followed by Taxis at about 8%, then Heavy Vehicles (HV) at about 6% and Buses at 0.21%.

4.6 Intersection Capacity Analysis

The intersection was analysed using Sidra Intersection to understand current levels of service. The analysis was for the morning and afternoon peaks. The criteria for LOS are based on the Highway Capacity Manual as summarized in Table 5. The turning movement volumes and corresponding Levels of Service at the said intersection for the morning and afternoon peaks are shown on Table 6.

Table 5: Level of Service Criteria

UNSIGNALIZED INTERSECTION		
Reserve Capacity (PCPH)	**Level of Service (LOS)**	**Expected Delay to Minor Street Traffic**
≥ 400	A	Little or no delay
300 - 399	B	Short traffic delays
200 - 299	C	Average traffic delays
100 - 199	D	Long traffic delays
0 - 99	E	Very long traffic delays
*	F	*
SIGNALIZED INTERSECTION		
Average Control Delay (sec/veh)	**Level of Service (LOS)**	**Expected Delay**
≤ 10	A	Free Flow
>10 - 20	B	Stable Flow (slight delays)
>20 - 35	C	Stable Flow (acceptable delays)
>35 - 55	D	Approaching unstable flow (tolerate delay, occasionally wait
>55 - 80	E	Very long traffic delays
>80	F	*

Table 6: Level of Service (Road R544 and Somphalali Road (Station 1) - Base Traffic)

Peak Hour (Weekday)	**Northbound**			**Westbound**			**Southbound**			**Eastbound**			**Intersection**
Movement	L	T	R	L	T	R	L	T	R	L	T	R	All
AM Peak Hour Volumes	8	52	3	2	2	1	1	111	41	33	2	10	266
Level of Service	A	A	A	A	A	B	A	A	A	A	B	B	N/A*
PM Peak Hour Volumes	10	114	2	2	2	1	1	89	29	28	2	10	290
Level of Service	A	A	A	A	B	B	A	A	A	A	B	B	N/A*

* N/A: Intersection LOS and Major Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes

It can be noted from Table 6 that the Road R544 and Somphalali Road (Station 1) Intersection operates at acceptable Levels of Service (LOS) for both the morning and afternoon peaks under the prevailing traffic conditions. The Average Delays for all vehicles are 2.9 and 2.4 seconds for the morning and afternoon peaks respectively. The ratio of Demand Volume to Capacity (v/c) ratio for the intersection is 0.096 and 0.076 for the morning and afternoon peaks respectively.

5. TRAFFIC DEMAND

The traffic demand for the development will take into consideration two horizon years. The design and the planning horizon years. The design horizon year is the year selected for determining transportation improvements that are required to accommodate the development or prevailing traffic conditions. The transportation / road improvements must be designed for a horizon year of 5 years. The planning horizon year, though not used for determining the transportation improvements that are required for the development, is the year selected for determining whether it is physically possible to accommodate the proposed development together with future traffic growth. The planning horizon year to be used for the development is 20 years.

5.1 Trip Generation

The proposed development will generate trips to the proposed access / exit point and will generate additional traffic on the road network based on the proposed Site Development Plan. The proposed development is as discussed in Chapter 2 of this report.

The trips to be generated by the proposed development are as detailed in Table 11.

Table 7: Development Trip Generation

Description	Units	Size	Trips Generated			
			Daily	AM	PM	W/end
Residential Single Dwelling Units	No.	914	1097	274	274	137
Business (Retail)	m^2	28100	843	67	67	506
Light Industrial	m^2	2660	48	7	7	1
Municipal Offices	m^2	3400	202	50	50	50
Educational (Schools)	Student	965	386	145	48	0
Educational (Creches)	Student	241	145	48	39	0
Government (Thusong Centre)	m^2	4100	244	61	61	61
Places of Worship	Seats	5000	200	50	50	200
Public Open Space	ha	3,18	37,5	20	20	20
			3202	**723**	**617**	**975**

The proposed development will generate 3202 daily trips, 723 morning peak trips, 617 afternoon peak trips and 975 weekend peak trips. The traffic to be generated by the proposed development will gain access mainly via the existing intersection of Road R544 (Absalom Road) and Somphalali Road.

5.2 Traffic growth

Traffic growth rates are used for the estimation of future background traffic. These growth rates are normally only applied to background traffic counts. The growth rate depends on the expected growth in the area in which the development is located as well as the degree to which approved

but not yet exercised developments as well as latent rights in the area are taken into account in a traffic impact assessment (South African Trip Data Manual, 2013).

Population grew by 1.6% per annum between 2011 and 2016 in the Thembisile Hani Local Municipality area. The historic economic growth rate was relatively low at 2.4% per annum in the period 1996-2013 and the Municipality expected to record a Gross Domestic Product (GDP) growth of 3.3% per annum over the period 2013-2018 (Thembisile Hani Local Municipality 2019/2020 IDP for 2019 to 2022). The traffic growth rate to be adopted for this report will be aligned to the GDP rate that was expected for the period 2013 to 2018 of 3.3% per annum.

5.3 Trip Distribution

Trip distribution is based on current trip patterns. The trips for both design and planning horizon years were distributed based on existing traffic patterns for analysis purposes.

The Traffic Impact Assessment of the intersection in question is discussed in Chapter 6, whereby the traffic volumes and corresponding LOS of the design and planning horizons are discussed in detail.

5.4 Road Classification and Access Management

The road that will be providing access to the site via an existing intersection with Somphalali Road is a Regional Route in Mpumalanga.

All the streets adjacent to the site including Somphalali Road will be classified as residential Class 4, 5 and 6 urban roads. The function of these streets is mainly to provide access. The four main roads in the proposed layout of the new development will be classified as Class 4 roads and the rest of the streets as Class 5 streets (refer to Figure 6). The TRH 26 (South African Road Classification and Access Management Manual) proposes road reserve widths of between 16m and 40m for Class 4 roads, and 10m to 25m for Class 5 urban roads. It is proposed that the road reserve widths for the new proposed development adhere to the guidelines of TRH 26.

It is recommended that the minimum intersection spacing for Class 4 roads be greater than 150m as per the TRH 26 guidelines.

Direct access to individual properties should be limited only to larger properties for Class 4a roads (Commercial Collector streets). Access to properties should be planned off Class 4b roads (Residential Collector streets) and Class 5 streets (Local streets).

Figure 6: Proposed Development Road classification

6. TRAFFIC IMPACT ASSESSMENT

Traffic impact assessment was undertaken for the following scenarios:

- Status quo
- Design horizon year (5 year assessment)
- Planning horizon year (20 year assessment)

The status quo assessment is undertaken to understand what the current Levels of Service is at the intersection near the proposed development. The status quo traffic assessment was discussed in Chapter 4.6 for the counting station 1. The design horizon year assessment was undertaken with the purpose of establishing mitigation measures that are required to accommodate the development where required.

6.1 Designs Horizon Year Assessment

Table 8 gives a summary of Levels of Service for the different scenarios for morning and afternoon peaks for the Design Horizon.

Table 8: LOS (Road R544 and Somphalali Road (Station 1) – Design Horizon)

Intersection (Weekday)	**Northbound**			**Westbound**			**Southbound**			**Eastbound**			**Intersection**
Movement	L	T	R	L	T	R	L	T	R	L	T	R	All
AM Peak Hour Volumes	10	63	154	171	171	86	51	135	50	40	102	12	1045
Level of Service	A	A	A	B	C	C	A	A	A	A	B	C	N/A*
PM Peak Hour Volumes	12	139	148	102	103	51	74	108	35	34	148	12	966
Level of Service	A	A	A	A	C	C	A	A	A	B	C	C	N/A*

* N/A: Intersection LOS and Major Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes

The intersection requires upgrades on the minor road legs of the intersection. The upgrades entail introduction of protected right turn lanes as shown on Figure 7.

It can be noted from Table 8 that the upgraded Road R544 and Somphalali Road (Station 1) Intersection operates at acceptable Levels of Service (LOS) for both the morning and afternoon peaks under the Design Horizon traffic conditions. The Average Delays for all vehicles are 10.4 and 9.2 seconds for the morning and afternoon peaks respectively. The ratio of Demand Volume to Capacity (v/c) ratio for the intersection is 0.555 and 0.409 for the morning and afternoon peaks respectively.

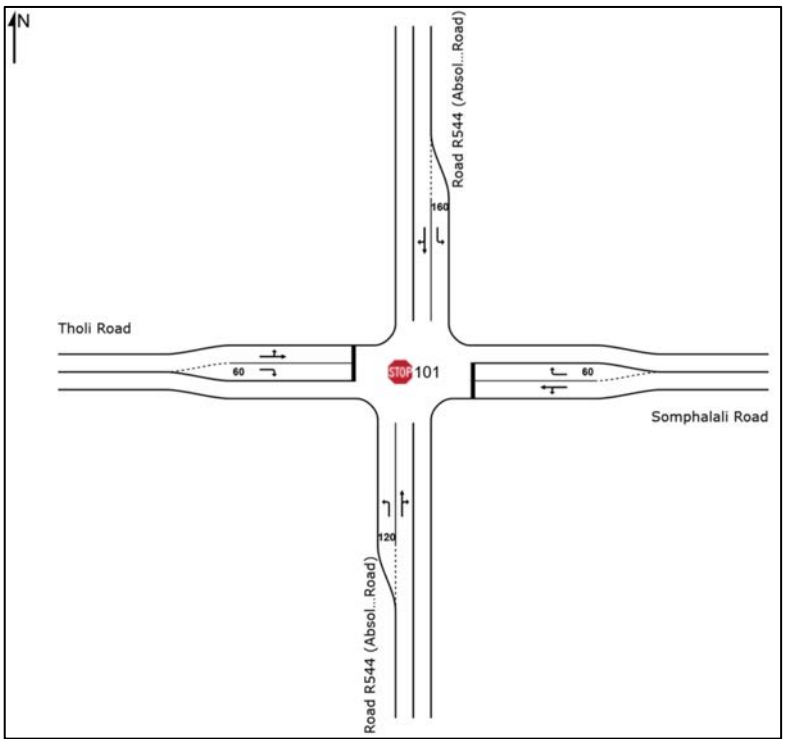


Figure 7: Proposed intersection upgrades

6.2 Planning Horizon Year Assessment

The planning horizon year (20 years) assessment was carried out to ascertain whether it was physically possible to accommodate the proposed and future developments in the spatial development framework of the study area. Table 9 gives a summary of the outcomes of the 20 year assessment for the different scenarios for morning and afternoon peaks.

Table 9: Summary of the Planning Horizon Traffic Analysis

Intersection	Peak	Intersection Traffic Volume	Intersection Average Delays (seconds)	Intersection v/c ratio
Road R544 and Somphalali Road Intersection	AM	1740	95.3	1.452
(Station 1)	PM	1606	60.7	1.345

It can be noted from Table 9 that the all the intersection will not be able to cope with the future developments in the spatial development framework of the study area. The Intersection's Average Delays are 95.3 and 60.7 seconds for the morning and afternoon peaks respectively. The v/c ration for the intersection in question is 1.452 and 1.345 for the morning and afternoon peaks respectively, indicating severe delays.

7. ROAD UPGRADES / IMPROVEMENTS

7.1 Road R544 and Somphalali Road Intersection

As discussed in Chapter 6.1 of this report, the intersection requires upgrades on the minor road legs of the intersection. The upgrades entail introduction of protected right turn lanes as shown on Figure 7.

In addition to the proposed road upgrades, public transport facilities such as bus stops (lay-byes) are proposed along Somphalali Road and Tholi Road, similar to the existing bus stops along Road R544.

7.2 Cost of Proposed Upgrades

The cost for the proposed road upgrades as discussed under Chapters 7.1 is as detailed in Table 10. The cost for the road improvements was calculated from a very high-level point of view. The first order estimates for the road upgrades exclude professional fees, contingencies, the relocation of major services and VAT. The first order construction cost estimate is **R 7 000 000.00**, it should be noted that the estimate is based on schematic layouts which were completed without detailed services information.

Table 10: High order cost estimate for proposed road upgrades

Location	Upgrade Description	Party responsible	Amount
Road R544 and Somphalali Road	Upgrade of intersection to introduce protected right turn lanes	Local Authority / Developer	R 3 500 000,00
Tholi and Somphalali Road	Intruduction of bus-stops	Local Authority / Developer	R 2 000 000.00
Tholi and Somphalali Road	NMT facilities (sidewalks and cycling lanes)	Local Authority / Developer	R 1 500 000,00
TOTAL (Excluding VAT, Contingencies and Professional Fees)			**R 7 000 000,00**

8. PUBLIC TRANSPORT

Public transport plays an important role due to some public transport vehicles and pedestrians observed in the surrounding area. The classified traffic counts revealed an average of about 8% of vehicles being public transport vehicles (mainly taxis), especially along Road R544. There are existing public transport facilities in the form of lay byes and bus shelters along Road R544. Similar facilities should be provided along Tholi and Somphalali Road. Public Transport facilities should also be provided along the Class 4 roads of the proposed development.

The Local Authority should provide guidance in this regard, based on the Transport Masterplan of the area and the Municipality.

9. NON-MOTORISED TRANSPORT

Site investigations and traffic counts that were conducted on the 13th of April 2021 observed about 100 pedestrians in and around the intersection of Road R544 and Somphalali Road. The presence of pedestrians in the study area suggests the need for the provision of Non-Motorised Transport infrastructure.

Non-Motorised Transport (NMT) includes inter alia walking, bicycling and animal driven carts. Sustainability of a transport system requires integration of all modes of transport inclusive of NMT. NMT plays a leading role in previously disadvantaged communities, and it is an affordable mode of transport.

It is important to provide safe NMT infrastructure, such as pedestrian walkways and/or cycling lanes. There are many benefits to NMT, which include environmental benefits, increased liveability, improved health, economic gains and transport benefits. Some of the benefits can even lead to further advantages such as reduction in accidents and travelling time savings. It is therefore recommended that NMT and universal access facilities be provided by the Local Authority especially on the roads that will be used by Public Transport and where the social facilities are located.

The proposed development should make provision for safe sidewalks and/or walkways for pedestrians and cyclists within the road reserve.

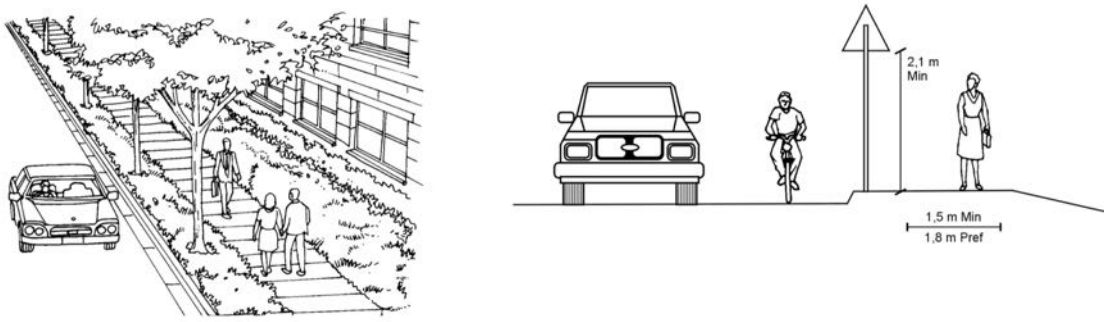


Figure 8: Pedestrian and Bicycle Facility Guide (DoT, 2003)

10. CONCLUSIONS

Given the findings in the report, the following conclusions are drawn:

1. Nkanivo Development Consultants has been appointed to execute the project of the Proposed Gemsbokspruit Township Establishment.
2. The proposed development is situated on Portions 4, 5, 13 and the Remainder of Portion 12 of the farm Gemsbokspruit 229 JR
3. The project is located under the jurisdiction of Thembisile Hani Local Municipality in the Mpumalanga Province.
4. The project site measures about 116.66 hectares in total.
5. Nkanivo Development Consultants appointed AJA Consulting to conduct a Traffic Impact Assessment for the Proposed Development.
6. The proposed development is meant to accommodate 914 Residential 1 sites, 9 Business sites, 1 Light industrial site, 2 Municipal sites, 4 Educational sites, 5 sites for Places of worship, 6 sites for Public Open Spaces and Streets.
7. Access to the proposed Development is proposed via the existing intersection of Road R544 and Somphalali Road.
8. Traffic counts and site observations were conducted on the 13th of April 2021.
9. Tomtom traffic index of 2020 reported a reduction in congestion levels due to the national lockdown that was instituted due to the COVID-19 pandemic.
10. The effect of the lockdown and reduced traffic volumes was factored into the traffic analysis.
11. The proposed development will generate 3202 daily trips, 723 morning peak trips, 617 afternoon peak trips and 975 weekend peak trips
12. The traffic growth that was adopted for this report was aligned to the GDP rate that was expected for the period 2013 to 2018 of 3.3% per annum.
13. Design and Planning Horizon analysis was undertaken for the intersection in question.
14. The intersection performs at acceptable Levels of Service (LOS) under the prevailing traffic conditions.
15. The intersection will require upgrades to be able to perform at acceptable LOS under the Planning Horizon Traffic Conditions (refer to chapter 6.1).
16. All the streets adjacent to the site including Somphalali Road will be classified as residential Class 4, 5 and 6 urban roads.
17. The proposes road reserve widths are 16m to 40m for Class 4 roads, and 10m to 25m for Class 5 urban roads..
18. Public Transport constitutes about 8% of traffic in the study area.
19. Public Transport facilities such as bus-stops must be provided along all major access roads (refer to chapter 8).

20. NMT and Universal Access infrastructure needs to be provided for within the road reserve (refer to chapter 9).
21. The first order construction cost estimate is R 7 000 000.00 (refer to chapter 7.2).
22. It should be noted that the estimate is based on schematic layouts which were completed without detailed services information.

11. RECOMMENDATIONS

Given the findings in the report, the following recommendations are made:

1. The proposed development should be considered favourably from a traffic engineering point of view by the relevant authorities given the proposed road, public transport and NMT upgrades.
2. Detailed designs for the proposed road improvements should be undertaken by a professional engineer / technologist with suitable road design experience.

12. REFERENCES

1. Technical Methods for Highways (TMH 17), South African Trip Data Manual, Version 1.01, 2013.
2. Technical Methods for Highways (TMH 16), Volume 1 and 2, South African Traffic Impact and Site Traffic Assessment Manual, Version 1.0, 2012.
3. Committee of Transport Officials, 2013. TRH 26 South African Road Classification and Access Management Manual, Pretoria: SANRAL.
4. NMT Facility Guidelines, Department of Transport, 2014.
5. Thembisile Hani Local Municipality Integrated Development Plan (IDP: 2019/2020).
6. Transport Research Board : National Research Council Washington DC. Highway Capacity Manual. 2010.

Annexure A : Traffic counting data

LOCATION:	GEMSBOKSPRUIT	PROJECT TITLE:	GEMSBOKSPRUIT-TRAFFIC COUNT				
PROJECT NR:	UT2021-937	INTERSECTION:	ROAD TO GEMSBOKSPRUIT & UNKNOWN RD				
SURVEY DATE:	Tuesday, 13 April 2021						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

OVERVIEW MAP & VIDEO FRAME

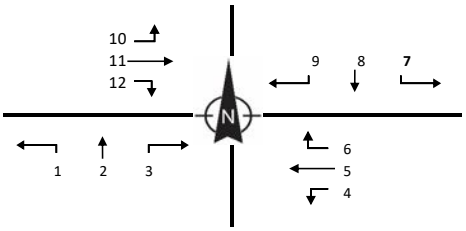
JUNCTION DIAGRAM

WESTERN APPROACH / EASTBOUND
ROAD TO GEMSBOKSPRUIT

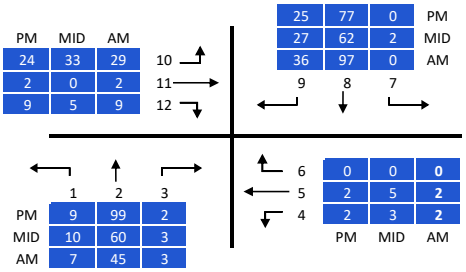
NORTHERN APPROACH / SOUTHBOUND
UNKNOWN RD

SOUTHERN APPROACH / NORTHBOUND
UNKNOWN RD

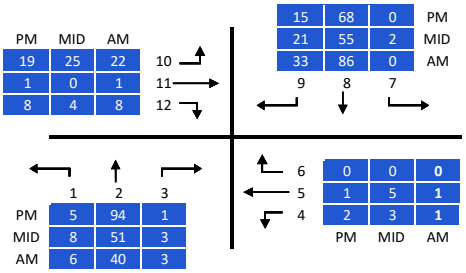
EASTERN APPROACH / WESTBOUND
UNKNOWN RD



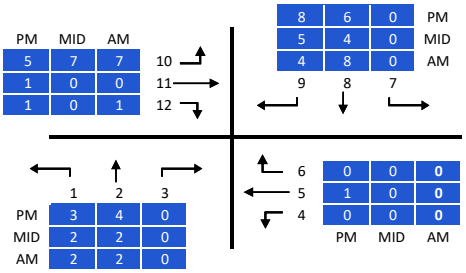
TOTAL VEHICLES SUMMARY



LIGHT VEHICLES



MINI BUS TAXI



BUSSES

HEAVY VEHICLES

LOCATION:	GEMSBOKSPRUIT	PROJECT TITLE:	GEMSBOKSPRUIT-TRAFFIC COUNT				
PROJECT NR:	UT2021-937	INTERSECTION:	ROAD TO GEMSBOKSPRUIT & UNKNOWN RD				
SURVEY DATE:	Tuesday, 13 April 2021						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	1	2	-	1	-	1	-	15	3	1	-	3	**27**	
06:15	06:30	-	5	-	-	1	-	-	20	2	8	-	3	**39**	
06:30	06:45	1	6	-	1	-	-	1	20	5	3	-	4	**41**	
06:45	07:00	2	9	-	1	-	-	-	25	7	8	-	2	**54**	161
07:00	07:15	-	15	1	-	1	-	-	22	4	7	-	1	**51**	185
07:15	07:30	5	6	1	-	-	-	-	28	11	6	2	4	**63**	209
07:30	07:45	-	15	1	1	1	-	-	22	14	8	-	2	**64**	232
07:45	08:00	2	16	-	1	-	-	-	11	5	8	1	-	**44**	222
08:00	08:15	2	9	1	-	-	-	-	19	2	7	-	1	**41**	212
08:15	08:30	1	8	-	-	1	-	-	16	3	2	2	3	**36**	185
08:30	08:45	4	13	-	-	-	-	-	15	3	4	1	3	**43**	164
08:45	09:00	1	17	1	-	-	-	-	12	2	6	-	1	**40**	160
09:00	09:15	-	18	-	-	-	-	-	16	6	8	-	2	**50**	169
09:15	09:30	3	11	-	1	-	-	-	13	2	6	1	4	**41**	174
09:30	09:45	2	12	-	1	-	-	-	18	3	8	-	-	**44**	175
09:45	10:00	2	15	2	-	1	-	2	12	2	6	1	1	**44**	179
10:00	10:15	3	19	2	1	-	1	-	11	4	4	1	-	**46**	175
10:15	10:30	2	13	-	1	-	-	-	17	7	7	2	1	**50**	184
10:30	10:45	3	12	-	-	1	-	-	9	3	3	2	3	**36**	176
10:45	11:00	2	15	-	-	-	-	1	14	4	10	2	1	**49**	181
11:00	11:15	3	18	1	1	1	1	2	20	4	4	-	3	**58**	193
11:15	11:30	2	11	1	1	-	-	-	14	5	4	2	2	**42**	185
11:30	11:45	7	7	1	-	-	-	-	11	-	1	1	-	**28**	177
11:45	12:00	-	15	-	-	3	-	1	9	4	2	-	1	**35**	163
12:00	12:15	1	18	-	1	2	-	2	12	5	4	3	1	**49**	154
12:15	12:30	2	15	-	1	2	-	2	10	3	3	1	1	**40**	152
12:30	12:45	1	11	-	-	1	-	1	12	6	3	-	1	**36**	160
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13:15	13:30	3	19	1	1	1	-	1	19	12	6	1	1	**65**	175
13:30	13:45	1	15	1	3	-	3	-	10	6	11	-	1	**51**	190
13:45	14:00	1	13	1	-	1	-	-	18	6	9	1	2	**52**	202
14:00	14:15	1	11	-	-	2	-	1	10	3	2	-	-	**30**	198
14:15	14:30	2	17	1	2	2	-	-	17	6	5	-	1	**53**	186
14:30	14:45	5	15	1	-	1	-	-	20	10	6	-	2	**60**	195
14:45	15:00	2	17	1	1	-	-	1	15	8	20	-	2	**67**	210
15:00	15:15	1	30	-	1	1	-	-	18	6	12	-	4	**73**	253
15:15	15:30	3	26	-	-	1	-	-	15	6	6	1	2	**60**	260
15:30	15:45	2	20	1	-	-	-	-	25	4	3	1	2	**58**	258
15:45	16:00	3	23	1	1	-	-	-	19	9	3	-	1	**60**	251
16:00	16:15	3	24	-	1	-	-	-	5	3	9	-	1	**46**	224
16:15	16:30	-	18	-	-	2	-	1	19	3	9	2	2	**56**	220
16:30	16:45	4	25	1	1	1	1	1	25	11	7	-	2	**79**	241
16:45	17:00	4	25	3	3	-	-	1	5	10	6	-	2	**59**	240
17:00	17:15	5	16	-	1	1	-	-	13	6	2	1	1	**46**	240
17:15	17:30	3	19	-	1	2	1	-	13	4	5	1	2	**51**	235
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17:45	18:00	4	11	2	1	2	1	-	25	8	2	1	1	**58**	212
TOTAL		**104**	**717**	**29**	**31**	**35**	**9**	**19**	**749**	**258**	**282**	**33**	**80**	**2 346**	
				850			**75**			**1026**			**395**	**2346**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	7	45	3	2	2	-	-	97	36	29	2	9	**232**	**AM PEAK**
06:45	07:45	0,35	0,75	0,75	0,50	0,50	-	-	0,87	0,64	0,91	0,25	0,56	**0,61**	**AM PHF**
14:00	15:00	10	60	3	3	5	-	2	62	27	33	-	5	**210**	**MID PEAK**
14:00	15:00	0,50	0,88	0,75	0,38	0,62	-	0,50	0,78	0,68	0,41	-	0,62	**0,61**	**MID PHF**
15:00	16:00	9	99	2	2	2	-	-	77	25	24	2	9	**251**	**PM PEAK**
15:00	16:00	0,75	0,82	0,50	0,50	0,50	-	-	0,77	0,69	0,50	0,50	0,56	**0,61**	**PM PHF**
	AM			55			4			133			40	**232**	

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	19	121	5	5	4	1	1	225	61	68	6	27	**543**	**AM TOTAL**
09:00	15:00	50	339	15	15	19	5	14	331	119	142	20	31	**1 100**	**MID TOTAL**
15:00	18:00	35	257	9	11	12	3	4	193	78	72	7	22	**703**	**PM TOTAL**

LOCATION:	GEMSBOKSPRUIT	PROJECT TITLE:	GEMSBOKSPRUIT-TRAFFIC COUNT				
PROJECT NR:	UT2021-937	INTERSECTION:	ROAD TO GEMSBOKSPRUIT & UNKNOWN RD				
SURVEY DATE:	Tuesday, 13 April 2021						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

LIGHT VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
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06:15	06:30	-	4	-	-	1	-	-	16	2	4	-	1	**28**	
06:30	06:45	-	6	-	1	-	-	1	17	3	2	-	2	**32**	
06:45	07:00	2	7	-	1	-	-	-	23	5	6	-	2	**46**	127
07:00	07:15	-	14	1	-	1	-	-	19	4	6	-	1	**46**	152
07:15	07:30	4	5	1	-	-	-	-	26	10	2	1	3	**52**	176
07:30	07:45	-	14	1	-	-	-	-	18	14	8	-	2	**57**	201
07:45	08:00	1	14	-	1	-	-	-	10	4	7	1	-	**38**	193
08:00	08:15	1	6	1	-	-	-	-	15	2	5	-	-	**30**	177
08:15	08:30	1	6	-	-	1	-	-	12	3	1	2	3	**29**	154
08:30	08:45	2	11	-	-	-	-	-	14	3	4	1	3	**38**	135
08:45	09:00	1	16	1	-	-	-	-	11	2	5	-	1	**37**	134
09:00	09:15	-	17	-	-	-	-	-	16	4	7	-	1	**45**	
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09:30	09:45	1	9	-	1	-	-	-	16	1	5	-	-	**33**	
09:45	10:00	1	14	2	-	1	-	2	12	2	4	-	1	**39**	153
10:00	10:15	3	18	2	1	-	-	-	11	3	3	1	-	**42**	150
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11:15	11:30	2	10	1	1	-	-	-	12	4	3	1	2	**36**	161
11:30	11:45	7	6	1	-	-	-	-	8	-	1	1	-	**24**	156
11:45	12:00	-	12	-	-	3	-	1	8	3	1	-	1	**29**	142
12:00	12:15	1	17	-	1	2	-	1	9	4	2	3	1	**41**	130
12:15	12:30	2	14	-	1	1	-	2	9	2	3	1	1	**36**	130
12:30	12:45	1	8	-	-	1	-	1	9	6	1	-	-	**27**	133
12:45	13:00	1	14	1	-	-	-	-	7	5	7	-	-	**35**	139
13:00	13:15	1	7	1	-	1	-	-	12	2	2	1	1	**28**	126
13:15	13:30	2	19	1	1	1	-	1	17	10	6	1	-	**59**	149
13:30	13:45	1	13	1	3	-	2	-	9	3	9	-	1	**42**	164
13:45	14:00	1	10	1	-	1	-	-	15	6	7	-	2	**43**	172
14:00	14:15	1	9	-	-	2	-	1	10	1	2	-	-	**26**	170
14:15	14:30	1	15	1	2	2	-	-	13	5	4	-	-	**43**	154
14:30	14:45	4	13	1	-	1	-	-	19	8	4	-	2	**52**	164
14:45	15:00	2	14	1	1	-	-	1	13	7	15	-	2	**56**	177
15:00	15:15	-	28	-	1	-	-	-	15	3	10	-	4	**61**	
15:15	15:30	1	26	-	-	1	-	-	14	4	5	1	1	**53**	
15:30	15:45	1	18	1	-	-	-	-	22	4	2	-	2	**50**	
15:45	16:00	3	22	-	1	-	-	-	17	4	2	-	1	**50**	214
16:00	16:15	2	20	-	1	-	-	-	5	2	7	-	1	**38**	191
16:15	16:30	-	18	-	-	1	-	1	17	2	6	2	2	**49**	187
16:30	16:45	3	23	1	1	1	1	1	21	8	5	-	2	**67**	204
16:45	17:00	4	23	3	3	-	-	1	5	8	6	-	2	**55**	209
17:00	17:15	3	13	-	1	1	-	-	12	6	2	1	1	**40**	211
17:15	17:30	3	15	-	1	2	1	-	13	3	4	-	2	**44**	206
17:30	17:45	2	19	1	-	2	-	1	10	7	5	-	2	**49**	188
17:45	18:00	4	10	2	1	2	1	-	24	7	2	1	1	**55**	188
TOTAL		**81**	**639**	**28**	**29**	**30**	**7**	**17**	**663**	**201**	**218**	**25**	**69**	**2 007**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:45	07:45	6	40	3	1	1	-	-	86	33	22	1	8	**201**	**AM PEAK**
06:45	07:45	0,38	0,71	0,75	0,25	0,25	-	-	0,83	0,59	0,69	0,25	0,67	**0,54**	**AM PHF**
14:00	15:00	8	51	3	3	5	-	2	55	21	25	-	4	**177**	**MID PEAK**
14:00	15:00	0,50	0,85	0,75	0,38	0,62	-	0,50	0,72	0,66	0,42	-	0,50	**0,59**	**MID PHF**
15:00	16:00	5	94	1	2	1	-	-	68	15	19	1	8	**214**	**PM PEAK**
15:00	16:00	0,42	0,84	0,25	0,50	0,25	-	-	0,77	0,94	0,48	0,25	0,50	**0,52**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	13	105	5	4	3	1	1	193	52	51	5	21	**454**	**AM TOTAL**
09:00	15:00	42	299	15	15	17	3	12	295	91	111	15	27	**942**	**MID TOTAL**
15:00	18:00	26	235	8	10	10	3	4	175	58	56	5	21	**611**	**PM TOTAL**

LOCATION:	GEMSBOKSPRUIT	PROJECT TITLE:	GEMSBOKSPRUIT-TRAFFIC COUNT				
PROJECT NR:	UT2021-937	INTERSECTION:	ROAD TO GEMSBOKSPRUIT & UNKNOWN RD				
SURVEY DATE:	Tuesday, 13 April 2021						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

TAXI SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	2	-	-	-	**2**	
06:15	06:30	-	-	-	-	-	-	-	-	-	4	-	2	**6**	
06:30	06:45	1	-	-	-	-	-	-	1	2	-	-	1	**5**	
06:45	07:00	-	1	-	-	-	-	-	2	2	2	-	-	**7**	20
07:00	07:15	-	1	-	-	-	-	-	3	-	1	-	-	**5**	23
07:15	07:30	1	-	-	-	-	-	-	2	-	4	-	-	**7**	24
07:30	07:45	-	-	-	-	1	-	-	1	-	-	-	-	**2**	21
07:45	08:00	-	1	-	-	-	-	-	-	-	-	-	-	**1**	15
08:00	08:15	1	-	-	-	-	-	-	4	-	1	-	-	**6**	16
08:15	08:30	-	-	-	-	-	-	-	2	-	1	-	-	**3**	12
08:30	08:45	-	1	-	-	-	-	-	-	-	-	-	-	**1**	11
08:45	09:00	-	-	-	-	-	-	-	-	-	1	-	-	**1**	11
09:00	09:15	-	1	-	-	-	-	-	-	1	1	-	-	**3**	
09:15	09:30	-	-	-	-	-	-	-	-	1	-	1	-	**2**	
09:30	09:45	1	1	-	-	-	-	-	1	1	3	-	-	**7**	
09:45	10:00	1	-	-	-	-	-	-	-	-	1	-	-	**2**	14
10:00	10:15	-	-	-	-	-	-	-	-	1	1	-	-	**2**	13
10:15	10:30	-	1	-	-	-	-	-	-	2	-	-	-	**3**	14
10:30	10:45	1	1	-	-	-	-	-	-	-	1	-	-	**3**	10
10:45	11:00	-	-	-	-	-	-	-	-	-	2	-	-	**2**	10
11:00	11:15	-	2	-	-	-	-	-	-	-	-	-	-	**2**	10
11:15	11:30	-	1	-	-	-	-	-	-	1	1	-	-	**3**	10
11:30	11:45	-	-	-	-	-	-	-	2	-	-	-	-	**2**	9
11:45	12:00	-	1	-	-	-	-	-	-	1	1	-	-	**3**	10
12:00	12:15	-	-	-	-	-	-	-	1	1	1	-	-	**3**	11
12:15	12:30	-	-	-	-	-	-	-	-	1	-	-	-	**1**	9
12:30	12:45	-	1	-	-	-	-	-	2	-	2	-	-	**5**	12
12:45	13:00	-	1	-	-	-	-	-	1	1	-	-	-	**3**	12
13:00	13:15	-	-	-	-	-	-	-	1	1	1	-	-	**3**	12
13:15	13:30	1	-	-	-	-	-	-	-	-	-	-	-	**1**	12
13:30	13:45	-	-	-	-	-	-	-	-	2	2	-	-	**4**	11
13:45	14:00	-	1	-	-	-	-	-	1	-	2	-	-	**4**	12
14:00	14:15	-	1	-	-	-	-	-	-	2	-	-	-	**3**	12
14:15	14:30	1	1	-	-	-	-	-	3	-	1	-	-	**6**	17
14:30	14:45	1	-	-	-	-	-	-	1	2	2	-	-	**6**	19
14:45	15:00	-	-	-	-	-	-	-	-	1	4	-	-	**5**	20
15:00	15:15	1	2	-	-	1	-	-	2	2	2	-	-	**10**	
15:15	15:30	1	-	-	-	-	-	-	-	2	1	-	1	**5**	
15:30	15:45	1	1	-	-	-	-	-	3	-	1	1	-	**7**	
15:45	16:00	-	1	-	-	-	-	-	1	4	1	-	-	**7**	29
16:00	16:15	1	1	-	-	-	-	-	-	1	2	-	-	**5**	24
16:15	16:30	-	-	-	-	-	-	-	-	1	3	-	-	**4**	23
16:30	16:45	1	2	-	-	-	-	-	3	3	2	-	-	**11**	27
16:45	17:00	-	-	-	-	-	-	-	-	2	-	-	-	**2**	22
17:00	17:15	1	2	-	-	-	-	-	1	-	-	-	-	**4**	21
17:15	17:30	-	2	-	-	-	-	-	-	1	1	-	-	**4**	21
17:30	17:45	1	1	-	-	-	-	-	1	1	2	-	-	**6**	16
17:45	18:00	-	-	-	-	-	-	-	1	1	-	-	-	**2**	16
TOTAL		**16**	**29**	**-**	**-**	**2**	**-**	**-**	**40**	**43**	**55**	**2**	**4**	**191**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:30	07:30	2	2	-	-	-	-	-	8	4	7	-	1	**24**	**AM PEAK**
06:30	07:30	0,50	0,50	-	-	-	-	-	0,67	0,50	0,44	-	0,25	**0,48**	**AM PHF**
14:00	15:00	2	2	-	-	-	-	-	4	5	7	-	-	**20**	**MID PEAK**
14:00	15:00	0,50	0,50	-	-	-	-	-	0,33	0,62	0,44	-	-	**0,48**	**MID PHF**
15:00	16:00	3	4	-	-	1	-	-	6	8	5	1	1	**29**	**PM PEAK**
15:00	16:00	0,75	0,50	-	-	0,25	-	-	0,50	0,50	0,62	0,25	0,25	**0,45**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	3	4	-	-	1	-	-	15	6	14	-	3	**46**	**AM TOTAL**
09:00	15:00	6	13	-	-	-	-	-	13	19	26	1	-	**78**	**MID TOTAL**
15:00	18:00	7	12	-	-	1	-	-	12	18	15	1	1	**67**	**PM TOTAL**

LOCATION:	GEMSBOKSPRUIT	PROJECT TITLE:	GEMSBOKSPRUIT-TRAFFIC COUNT				
PROJECT NR:	UT2021-937	INTERSECTION:	ROAD TO GEMSBOKSPRUIT & UNKNOWN RD				
SURVEY DATE:	Tuesday, 13 April 2021						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	4W-12H-6-18-C

BUS SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	-	1	-	-	-	**1**	
06:15	06:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
06:30	06:45	-	-	-	-	-	-	-	-	-	1	-	-	**1**	
06:45	07:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	2
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
07:15	07:30	-	-	-	-	-	-	-	-	-	-	1	-	**1**	2
07:30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
07:45	08:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
08:00	08:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
08:15	08:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
08:30	08:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
08:45	09:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
09:00	09:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
09:15	09:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
09:30	09:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
09:45	10:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
10:00	10:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
10:15	10:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
10:30	10:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
10:45	11:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
11:00	11:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
11:15	11:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
11:30	11:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
11:45	12:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:00	12:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:15	12:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:30	12:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
12:45	13:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
13:00	13:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
13:15	13:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
13:30	13:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
13:45	14:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
14:00	14:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
14:15	14:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
14:30	14:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
14:45	15:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
15:00	15:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
15:15	15:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
15:30	15:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	
15:45	16:00	-	-	-	-	-	-	-	-	1	-	-	-	**1**	1
16:00	16:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
16:15	16:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
16:30	16:45	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
16:45	17:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
17:00	17:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
17:15	17:30	-	-	-	-	-	-	-	-	-	-	-	-	**-**	0
17:30	17:45	-	-	-	-	-	-	-	-	-	1	-	-	**1**	1
17:45	18:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	1
TOTAL		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**1**	**-**	**5**	

PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	07:00	-	-	-	-	-	-	-	-	1	1	-	-	**2**	**AM PEAK**
06:00	07:00	-	-	-	-	-	-	-	-	0,25	0,25	-	-	**0,25**	**AM PHF**
09:00	10:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**MID PEAK**
09:00	10:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**MID PHF**
15:00	16:00	-	-	-	-	-	-	-	-	1	-	-	-	**1**	**PM PEAK**
15:00	16:00	-	-	-	-	-	-	-	-	0,25	-	-	-	**0,25**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	-	-	-	-	-	-	-	-	1	1	1	-	**3**	**AM TOTAL**
09:00	15:00	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**MID TOTAL**
15:00	18:00	-	-	-	-	-	-	-	-	1	1	-	-	**2**	**PM TOTAL**

LOCATION:	GEMSBOKSPRUIT	PROJECT TITLE:	GEMSBOKSPRUIT-TRAFFIC COUNT		
PROJECT NR:	UT2021-937	INTERSECTION:	ROAD TO GEMSBOKSPRUIT & UNKNOWN RD		
SURVEY DATE:	Tuesday, 13 April 2021				
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA: J.A.V	TYPE: 4W-12H-6-18-C

HEAVY VEHICLE SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	
06:00	06:15	-	-	-	-	-	-	-	3	-	-	-	-	**3**	
06:15	06:30	-	1	-	-	-	-	-	4	-	-	-	-	**5**	
06:30	06:45	-	-	-	-	-	-	-	2	-	-	-	1	**3**	
06:45	07:00	-	1	-	-	-	-	-	-	-	-	-	-	**1**	12
07:00	07:15	-	-	-	-	-	-	-	-	-	-	-	-	**-**	9
07:15	07:30	-	1	-	-	-	-	-	-	1	-	-	1	**3**	7
07:30	07:45	-	1	-	1	-	-	-	3	-	-	-	-	**5**	9
07:45	08:00	1	1	-	-	-	-	-	1	1	1	-	-	**5**	13
08:00	08:15	-	3	-	-	-	-	-	-	-	1	-	1	**5**	18
08:15	08:30	-	2	-	-	-	-	-	2	-	-	-	-	**4**	19
08:30	08:45	2	1	-	-	-	-	-	1	-	-	-	-	**4**	18
08:45	09:00	-	1	-	-	-	-	-	1	-	-	-	-	**2**	15
09:00	09:15	-	-	-	-	-	-	-	-	1	-	-	1	**2**	
09:15	09:30	1	-	-	-	-	-	-	1	-	1	-	-	**3**	
09:30	09:45	-	2	-	-	-	-	-	1	1	-	-	-	**4**	
09:45	10:00	-	1	-	-	-	-	-	-	-	1	1	-	**3**	12
10:00	10:15	-	1	-	-	-	1	-	-	-	-	-	-	**2**	12
10:15	10:30	-	-	-	-	-	-	-	1	1	-	-	-	**2**	11
10:30	10:45	-	3	-	-	-	-	-	1	-	-	-	-	**4**	11
10:45	11:00	1	1	-	-	-	-	1	-	1	-	-	-	**4**	12
11:00	11:15	-	1	-	-	1	-	-	-	-	1	-	-	**3**	13
11:15	11:30	-	-	-	-	-	-	-	2	-	-	1	-	**3**	14
11:30	11:45	-	1	-	-	-	-	-	1	-	-	-	-	**2**	12
11:45	12:00	-	2	-	-	-	-	-	1	-	-	-	-	**3**	11
12:00	12:15	-	1	-	-	-	-	1	2	-	1	-	-	**5**	13
12:15	12:30	-	1	-	-	1	-	-	1	-	-	-	-	**3**	13
12:30	12:45	-	2	-	-	-	-	-	1	-	-	-	1	**4**	15
12:45	13:00	-	-	-	-	-	-	-	2	-	-	-	-	**2**	14
13:00	13:15	-	-	-	-	-	-	-	1	1	-	1	-	**3**	12
13:15	13:30	-	-	-	-	-	-	-	2	2	-	-	1	**5**	14
13:30	13:45	-	2	-	-	-	1	-	1	1	-	-	-	**5**	15
13:45	14:00	-	2	-	-	-	-	-	2	-	-	1	-	**5**	18
14:00	14:15	-	1	-	-	-	-	-	-	-	-	-	-	**1**	16
14:15	14:30	-	1	-	-	-	-	-	1	1	-	-	1	**4**	15
14:30	14:45	-	2	-	-	-	-	-	-	-	-	-	-	**2**	12
14:45	15:00	-	3	-	-	-	-	-	2	-	1	-	-	**6**	13
15:00	15:15	-	-	-	-	-	-	-	1	1	-	-	-	**2**	
15:15	15:30	1	-	-	-	-	-	-	1	-	-	-	-	**2**	
15:30	15:45	-	1	-	-	-	-	-	-	-	-	-	-	**1**	
15:45	16:00	-	-	1	-	-	-	-	1	-	-	-	-	**2**	7
16:00	16:15	-	3	-	-	-	-	-	-	-	-	-	-	**3**	8
16:15	16:30	-	-	-	-	1	-	-	2	-	-	-	-	**3**	9
16:30	16:45	-	-	-	-	-	-	-	1	-	-	-	-	**1**	9
16:45	17:00	-	2	-	-	-	-	-	-	-	-	-	-	**2**	9
17:00	17:15	1	1	-	-	-	-	-	-	-	-	-	-	**2**	8
17:15	17:30	-	2	-	-	-	-	-	-	-	-	1	-	**3**	8
17:30	17:45	-	-	-	1	-	-	-	-	-	-	-	-	**1**	8
17:45	18:00	-	1	-	-	-	-	-	-	-	-	-	-	**1**	7
TOTAL		**7**	**49**	**1**	**2**	**3**	**2**	**2**	**46**	**12**	**7**	**5**	**7**	**143**	

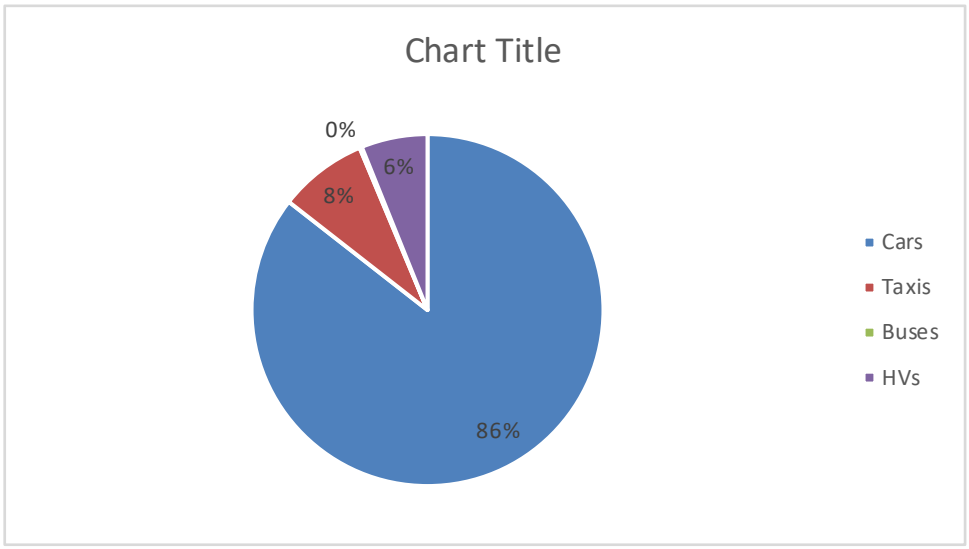
PEAK HOUR SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
07:30	08:30	1	7	-	1	-	-	-	6	1	2	-	1	**19**	**AM PEAK**
07:30	08:30	0,25	0,58	-	0,25	-	-	-	0,50	0,25	0,50	-	0,25	**0,37**	**AM PHF**
13:00	14:00	-	4	-	-	-	1	-	6	4	-	2	1	**18**	**MID PEAK**
13:00	14:00	-	0,50	-	-	-	0,25	-	0,75	0,50	-	0,50	0,25	**0,46**	**MID PHF**
15:30	16:30	-	4	1	-	1	-	-	3	-	-	-	-	**9**	**PM PEAK**
15:30	16:30	-	0,33	0,25	-	0,25	-	-	0,38	-	-	-	-	**0,30**	**PM PHF**

PEAK TOTAL SUMMARY

TIME		NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			VOLUME SUMMARY	
START	END	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PEAK
06:00	09:00	3	12	-	1	-	-	-	17	2	2	-	3	**40**	**AM TOTAL**
09:00	15:00	2	27	-	-	2	2	2	23	9	5	4	4	**80**	**MID TOTAL**
15:00	18:00	2	10	1	1	1	-	-	6	1	-	1	-	**23**	**PM TOTAL**

Cars	2007	85,55%
Taxis	191	8,14%
Buses	5	0,21%
HVs	143	6,10%
Total	2346	100,0%

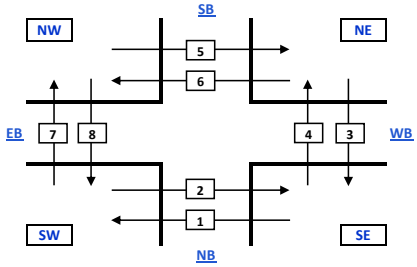


SITE LOCATION:	GEMSBOKSPRUIT	PROJECT TITLE:	GEMSBOKSPRUIT-TRAFFIC COUNT				
PROJECT NR:	UT2021-937	INTERSECTION:	ROAD TO GEMSBOKSPRUIT & UNKNOWN RD				
SURVEY DATE:	Tuesday, 13 April 2021						
SURVEY TIMES:	06H00-18H00	KMZ FILE NR:	P1	DATA:	J.A.V	TYPE:	PED-12H-6-18-U

OVERVIEW MAP & VIDEO FRAME

JUNCTION DIAGRAM

NORTHBOUND (NB)
UNKNOWN RD
EASTBOUND (EB)
ROAD TO GEMSBOKSPRUIT
SOUTHBOUND (SB)
UNKNOWN RD
WESTBOUND (WB)
UNKNOWN RD



TOTAL SUMMARY

	AM	MID	PM
1	1	0	4
2	10	3	2
3	2	3	0
4	1	2	0
5	2	0	0
6	0	0	1
7	1	3	3
8	1	1	1
TOTAL	18	12	11

LOCATION:	GEMSBOKSPRUIT	PROJECT TITLE:	GEMSBOKSPRUIT-TRAFFIC COUNT		
PROJECT NR:	UT2021-937	INTERSECTION:	ROAD TO GEMSBOKSPRUIT & UNKNOWN RD		
SURVEY DATE:	Tuesday, 13 April 2021	KMZ FILE NR:	P1		
SURVEY TIMES:	06H00-18H00	TYPE:	PED-12H-6-18-U	DATA:	J.A.V

TOTAL SUMMARY

DIRECTION	ORIGIN:	SE	SW	NE	SE	NW	NE	SW	NW	VOLUME SUMMARY	
	DESTINATION:	SW	SE	SE	NE	NE	NW	NW	SW		
START	END	1	2	3	4	5	6	7	8	TOTAL	
06:00	06:15	1	2	-	1	-	-	1	-	**5**	
06:15	06:30	-	3	1	-	1	-	-	-	**5**	
06:30	06:45	-	3	-	-	-	-	-	-	**3**	
06:45	07:00	-	2	1	-	1	-	-	1	**5**	18
07:00	07:15	1	1	1	-	-	-	-	-	**3**	16
07:15	07:30	-	-	-	-	-	-	-	2	**2**	13
07:30	07:45	-	-	1	-	-	-	-	-	**1**	11
07:45	08:00	2	-	-	-	1	-	-	-	**3**	9
08:00	08:15	-	1	-	-	-	1	-	-	**2**	8
08:15	08:30	-	2	-	-	-	1	-	-	**3**	9
08:30	08:45	-	2	-	-	-	-	-	2	**4**	12
08:45	09:00	-	1	-	1	-	-	-	-	**2**	11
09:00	09:15	-	1	-	-	-	-	-	2	**3**	
09:15	09:30	-	-	-	-	-	-	-	-	**-**	
09:30	09:45	-	2	1	-	-	-	-	-	**3**	
09:45	10:00	1	-	-	-	-	-	-	-	**1**	7
10:00	10:15	-	-	-	-	-	-	-	1	**1**	5
10:15	10:30	1	-	-	-	-	-	-	-	**1**	6
10:30	10:45	-	2	-	-	-	-	-	-	**2**	5
10:45	11:00	-	-	-	-	-	-	-	-	**-**	4
11:00	11:15	-	2	-	-	-	-	-	-	**2**	5
11:15	11:30	-	-	-	-	-	-	-	-	**-**	4
11:30	11:45	-	-	3	-	3	-	-	-	**6**	8
11:45	12:00	-	1	-	-	-	-	-	-	**1**	9
12:00	12:15	-	-	-	-	-	-	-	1	**1**	8
12:15	12:30	-	-	-	-	-	-	-	-	**-**	8
12:30	12:45	-	-	-	-	-	-	-	1	**1**	3
12:45	13:00	-	-	-	-	-	-	-	-	**-**	2
13:00	13:15	-	-	3	-	-	-	-	-	**3**	4
13:15	13:30	-	1	-	2	-	-	2	-	**5**	9
13:30	13:45	-	2	-	-	-	-	1	-	**3**	11
13:45	14:00	-	-	-	-	-	-	-	1	**1**	12
14:00	14:15	-	-	-	-	-	-	-	-	**-**	9
14:15	14:30	-	-	-	-	-	-	-	-	**-**	4
14:30	14:45	3	1	-	-	-	-	-	-	**4**	5
14:45	15:00	-	-	-	-	-	-	-	-	**-**	4
15:00	15:15	-	-	-	-	-	-	-	2	**2**	
15:15	15:30	-	3	-	-	-	-	-	1	**4**	
15:30	15:45	-	-	-	-	1	-	-	-	**1**	
15:45	16:00	-	3	-	-	-	-	-	-	**3**	10
16:00	16:15	-	1	-	-	-	-	-	-	**1**	9
16:15	16:30	2	-	-	-	-	-	-	-	**2**	7
16:30	16:45	1	-	-	-	-	1	-	-	**2**	8
16:45	17:00	1	-	-	-	-	-	2	1	**4**	9
17:00	17:15	-	2	-	-	-	-	1	-	**3**	11
17:15	17:30	-	-	-	-	-	-	-	1	**1**	10
17:30	17:45	-	-	-	-	-	-	-	-	**-**	8
17:45	18:00	-	-	-	-	-	-	-	-	**-**	4
TOTAL		**13**	**38**	**11**	**4**	**7**	**3**	**7**	**16**	**99**	

PEAK HOUR SUMMARY

DIRECTION	ORIGIN:	SE	SW	NE	SE	NW	NE	SW	NW	VOLUME SUMMARY	
	DESTINATION:	SW	SE	SE	NE	NE	NW	NW	SW		
START	END	1	2	3	4	5	6	7	8	TOTAL	PEAK
06:00	07:00	1	10	2	1	2	-	1	1	**18**	**AM PEAK**
06:00	07:00	0,25	0,83	0,50	0,25	0,50	-	0,25	0,25	**0,40**	**AM PHF**
13:00	14:00	-	3	3	2	-	-	3	1	**12**	**MID PEAK**
13:00	14:00	-	0,38	0,25	0,25	-	-	0,38	0,25	**0,30**	**MID PHF**
16:15	17:15	4	2	-	-	-	1	3	1	**11**	**PM PEAK**
16:15	17:15	0,50	0,25	-	-	-	0,25	0,38	0,25	**0,33**	**PM PHF**

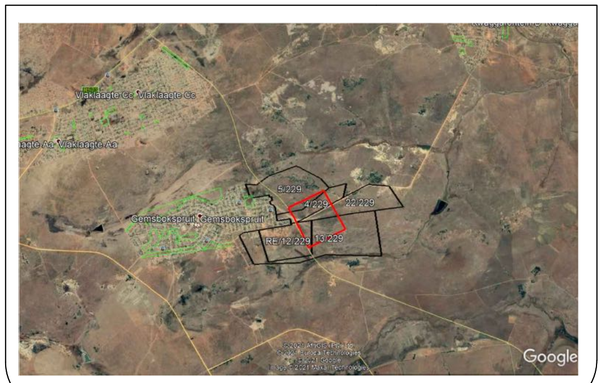
PEAK TOTAL SUMMARY

DIRECTION	ORIGIN:	SE	SW	NE	SE	NW	NE	SW	NW	VOLUME SUMMARY	
	DESTINATION:	SW	SE	SE	NE	NE	NW	NW	SW		
START	END	1	2	3	4	5	6	7	8	TOTAL	PEAK
06:00	09:00	4	17	4	2	3	2	1	5	**38**	**AM TOTAL**
09:00	15:00	5	12	7	2	3	-	3	6	**38**	**MID TOTAL**
15:00	18:00	4	9	-	-	1	1	3	5	**23**	**PM TOTAL**

Annexure B : Site Development Plan

GEMSBOKSPRUIT TOWNSHIP ESTABLISHMENT
SITUATED PORTION 4, 5, 13, REMAINDER OF PORTION 12 OF THE FARM GEMSBOKSPRUIT 229 JR

LOCALITY MAP



ZONING	LAND USES	NO. OF ERF	AREA (HA)	AREA (%)	NOTATION
RESIDENTIAL 1	RESIDENTIAL 1	914	76.44	65.54	
BUSINESS 1	BUSINESS 1	9	2.81	2.41	
LIGHT INDUSTRIAL	LIGHT INDUSTRIAL	1	0.38	0.33	
MUNICIPAL	MULTI-PURPOSE CENTRE	1	0.34	0.27	
EDUCATIONAL	SCHOOL/CRECHE	4	4.44	3.81	
MUNICIPAL	THUSONG CENTRE	1	0.41	0.35	
PLACE OF WORSHIP	PLACE OF WORSHIP	5	0.84	0.72	
PUBLIC OPEN SPACE	PUBLIC OPEN SPACE	6	3.18	2.72	
ROAD PURPOSES	STREETS		27.82	23.85	
TOTAL DEVELOPABLE AREA		941	116.66	100%	

NOTES:

1. ▬▬ Represents the Township Boundary
2. All areas and distances are approximate and subject to final survey
3. Street width 24m, 20m, 16m, and 13m
4. Average stand size is 800m²

SURVEY NOTES:

CONTOUR INTERVALS 1 M IN ACCORDANCE TO REG.
.....ORDINANCE .....
SURVEYOR GENERAL
S Y S T E M WGS 84

CLIENT:

THEMBISILE HANI LOCAL MUNICIPALITY

CONSULTANTS	NAME	SIGNATURE
TOWN PLANNER (NKANIVO DEVELOPMENT CONSULTANTS)	SAMUEL CHAUKE	
LAND SURVEYOR (WINDUS M & ASSOCIATES SURVEYS)	WINDUS MADUBANYA	

DESIGNED: SAMUEL CHAUKE
CHECKED: Tech.Pln (-)
SAMUEL CHAUKE
DRAWING No: 202010-001
DATE: 02/10/2020

COMPILED BY:

Nkanivo Development Consultants

CELL : 083 277 7347
TELL : 012 807 7445

Nkanivo House
Unit 79, Block 5, Lombardy Business Park
66 Graham Road
Pretoria 0084

Annexure C : Sidra analysis output files

MOVEMENT SUMMARY

Site: 101 [R544 and Somphalali_AM_Base]

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

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Road R544 (Absolom Road)												
1	L2	8	6.2	0.005	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
2	T1	55	6.2	0.032	0.0	LOS A	0.0	0.2	0.03	0.03	0.03	59.6
3	R2	3	6.2	0.032	6.0	LOS A	0.0	0.2	0.03	0.03	0.03	57.0
Approach		66	6.2	0.032	1.0	NA	0.0	0.2	0.03	0.10	0.03	58.6
East: Somphalali Road												
4	L2	2	6.2	0.007	8.8	LOS A	0.0	0.2	0.31	0.85	0.31	51.0
5	T1	2	6.2	0.007	10.0	LOS A	0.0	0.2	0.31	0.85	0.31	50.8
6	R2	1	6.2	0.007	10.7	LOS B	0.0	0.2	0.31	0.85	0.31	50.7
Approach		5	6.2	0.007	9.7	LOS A	0.0	0.2	0.31	0.85	0.31	50.9
North: Road R544 (Absolom Road)												
7	L2	1	6.2	0.001	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
8	T1	117	6.2	0.096	0.1	LOS A	0.3	2.2	0.10	0.16	0.10	58.2
9	R2	43	6.2	0.096	5.8	LOS A	0.3	2.2	0.10	0.16	0.10	55.8
Approach		161	6.2	0.096	1.7	NA	0.3	2.2	0.09	0.16	0.09	57.5
West: Tholi Road												
10	L2	35	6.2	0.052	8.5	LOS A	0.2	1.4	0.16	0.92	0.16	51.2
11	T1	2	6.2	0.052	10.1	LOS B	0.2	1.4	0.16	0.92	0.16	51.0
12	R2	11	6.2	0.052	10.6	LOS B	0.2	1.4	0.16	0.92	0.16	50.9
Approach		47	6.2	0.052	9.1	LOS A	0.2	1.4	0.16	0.92	0.16	51.1
All Vehicles		280	6.2	0.096	2.9	NA	0.3	2.2	0.09	0.29	0.09	56.4

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

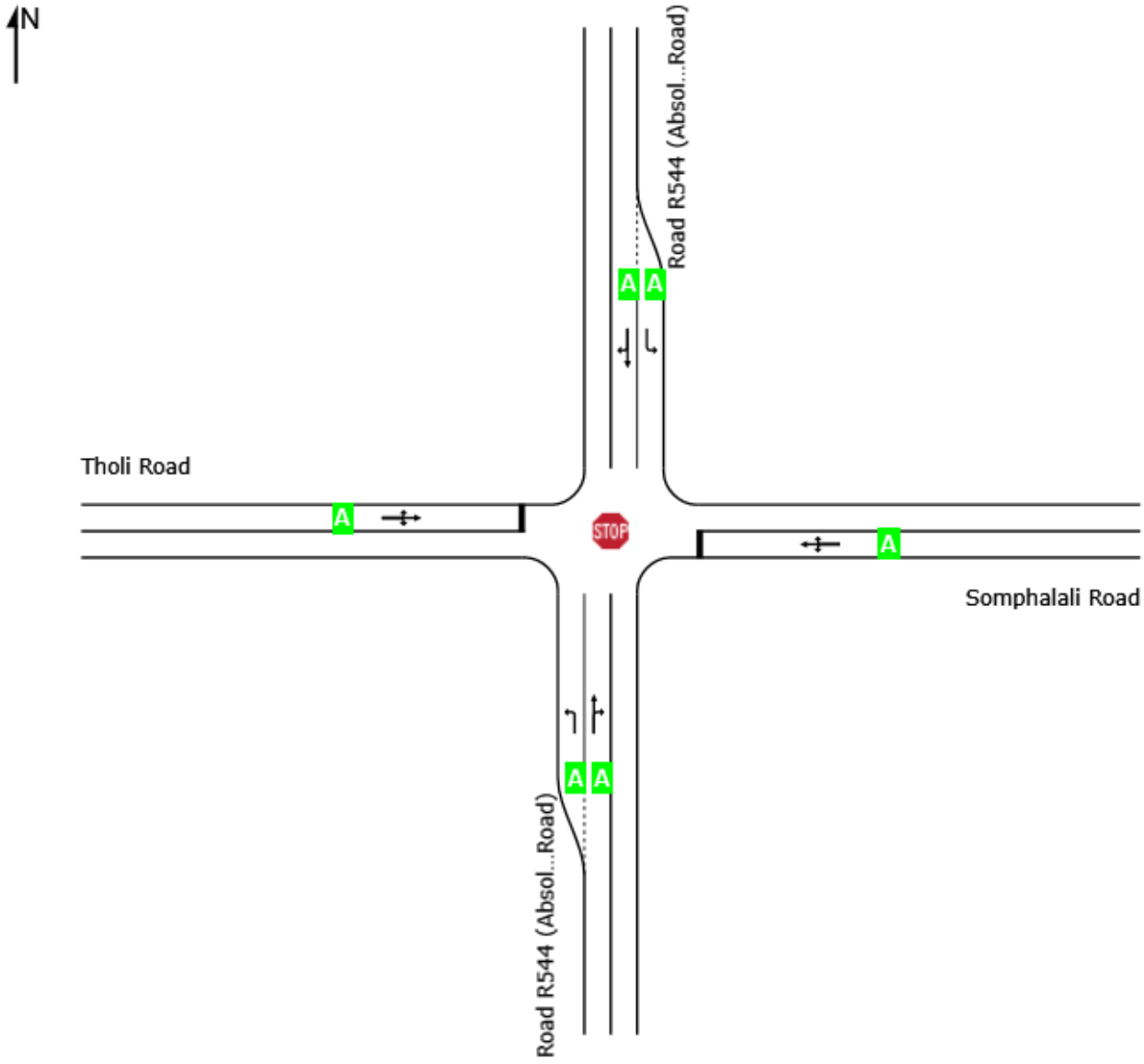
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [R544 and Somphalali_AM_Base]

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

	Approaches				Intersection
	South	East	North	West	
LOS	NA	A	NA	A	NA



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

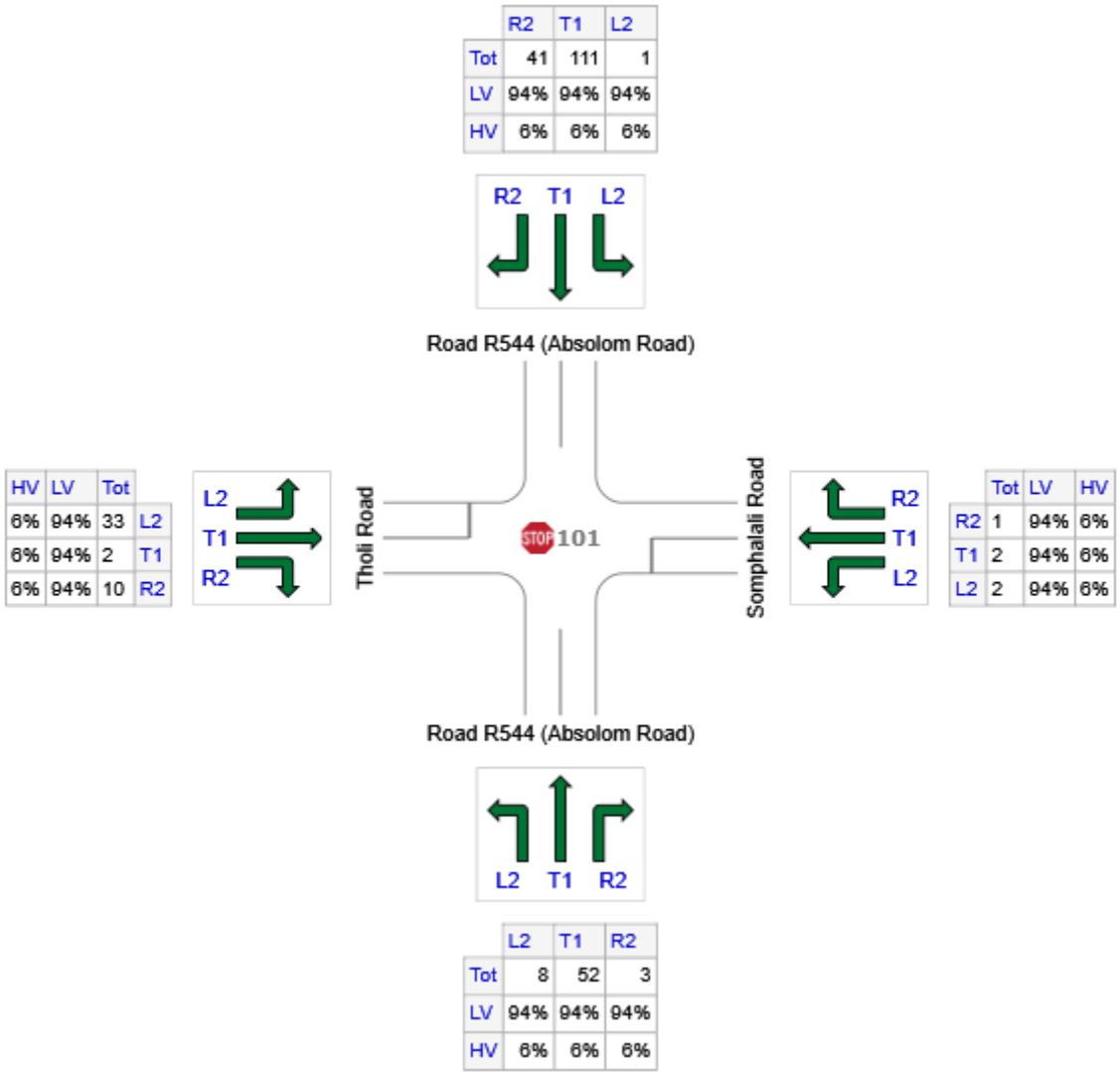
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [R544 and Somphalali_AM_Base]

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

Volume Display Method: Total and %

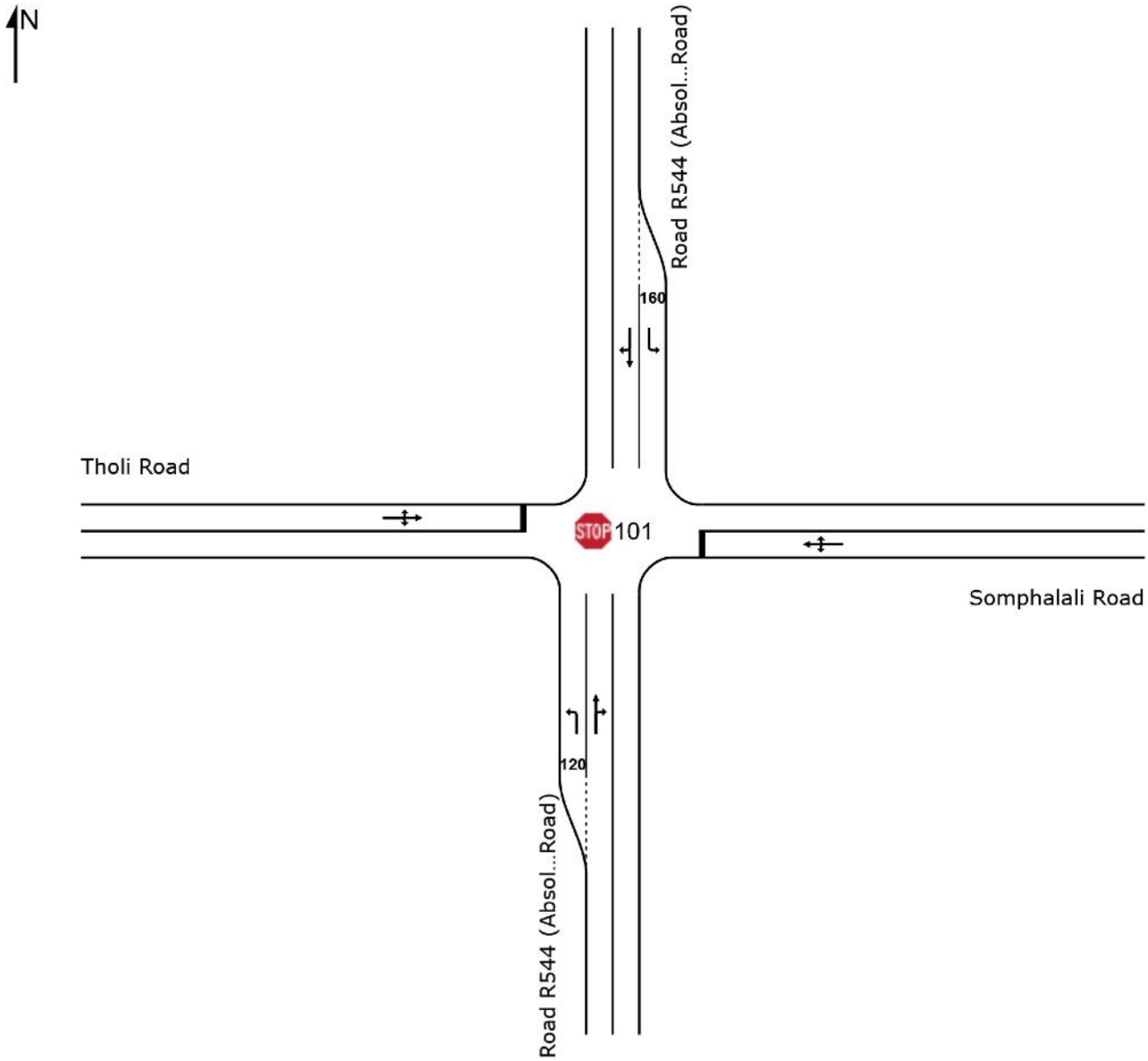


	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Road R544 (Absolom Road)	63	59	4
E: Somphalali Road	5	5	0
N: Road R544 (Absolom Road)	153	143	10
W: Tholi Road	45	42	3
Total	266	249	17

SITE LAYOUT

Site: 101 [R544 and Somphalali_AM_Base]

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



MOVEMENT SUMMARY

Site: 101 [R544 and Somphalali_PM_Base]

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

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Road R544 (Absolom Road)												
1	L2	11	6.2	0.006	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
2	T1	120	6.2	0.066	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
3	R2	2	6.2	0.066	5.9	LOS A	0.0	0.1	0.01	0.01	0.01	57.3
Approach		133	6.2	0.066	0.5	NA	0.0	0.1	0.01	0.06	0.01	59.2
East: Somphalali Road												
4	L2	2	6.2	0.007	8.7	LOS A	0.0	0.2	0.29	0.86	0.29	50.8
5	T1	2	6.2	0.007	10.3	LOS B	0.0	0.2	0.29	0.86	0.29	50.7
6	R2	1	6.2	0.007	11.0	LOS B	0.0	0.2	0.29	0.86	0.29	50.6
Approach		5	6.2	0.007	9.8	LOS A	0.0	0.2	0.29	0.86	0.29	50.7
North: Road R544 (Absolom Road)												
7	L2	1	6.2	0.001	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
8	T1	94	6.2	0.076	0.2	LOS A	0.2	1.6	0.13	0.15	0.13	58.2
9	R2	31	6.2	0.076	6.1	LOS A	0.2	1.6	0.13	0.15	0.13	55.7
Approach		125	6.2	0.076	1.7	NA	0.2	1.6	0.13	0.15	0.13	57.5
West: Tholi Road												
10	L2	29	6.2	0.050	8.9	LOS A	0.2	1.4	0.28	0.89	0.28	51.0
11	T1	2	6.2	0.050	10.4	LOS B	0.2	1.4	0.28	0.89	0.28	50.9
12	R2	11	6.2	0.050	10.9	LOS B	0.2	1.4	0.28	0.89	0.28	50.8
Approach		42	6.2	0.050	9.5	LOS A	0.2	1.4	0.28	0.89	0.28	51.0
All Vehicles		305	6.2	0.076	2.4	NA	0.2	1.6	0.10	0.22	0.10	57.1

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

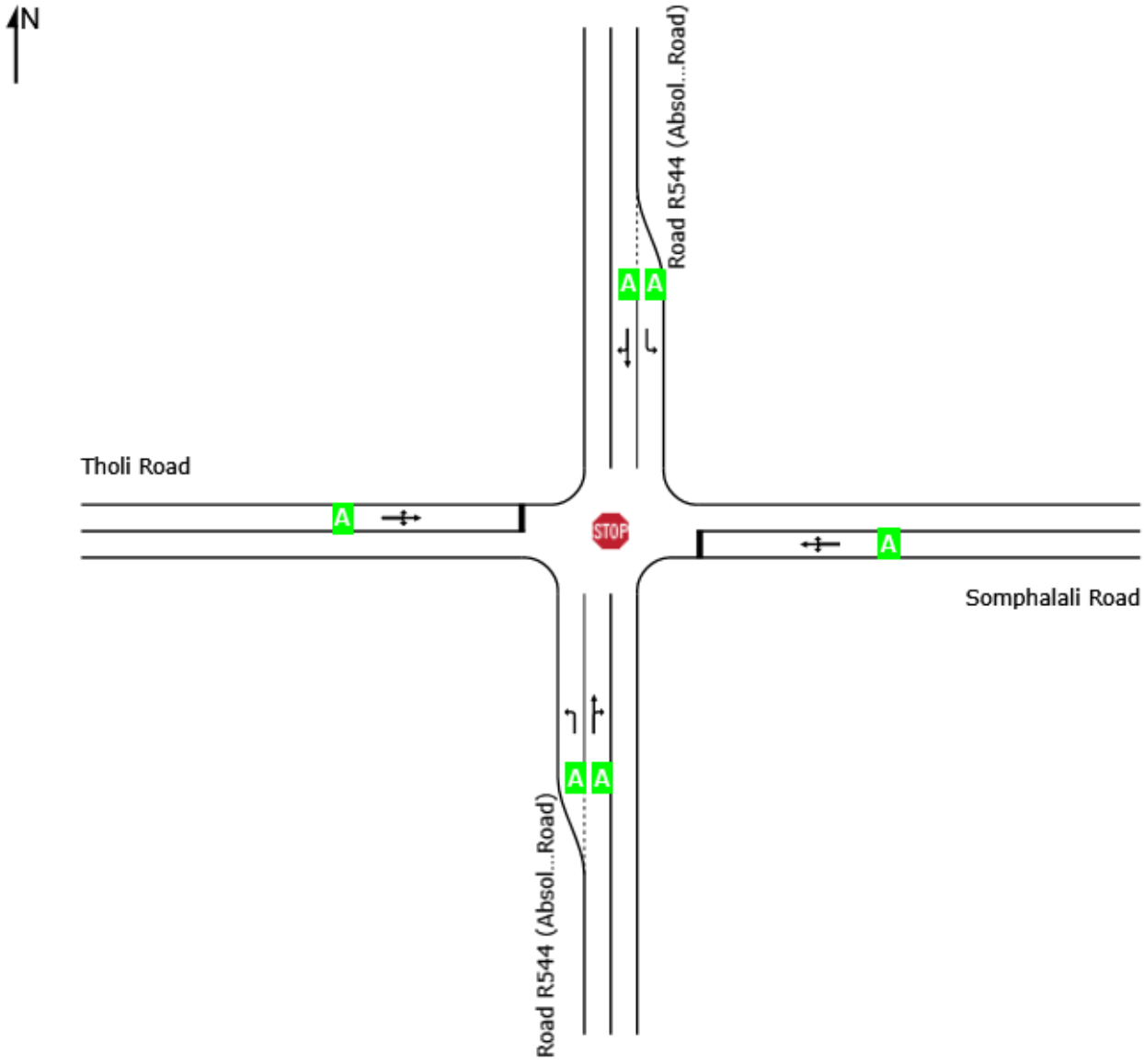
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [R544 and Somphalali_PM_Base]

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

	Approaches				Intersection
	South	East	North	West	
LOS	NA	A	NA	A	NA



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

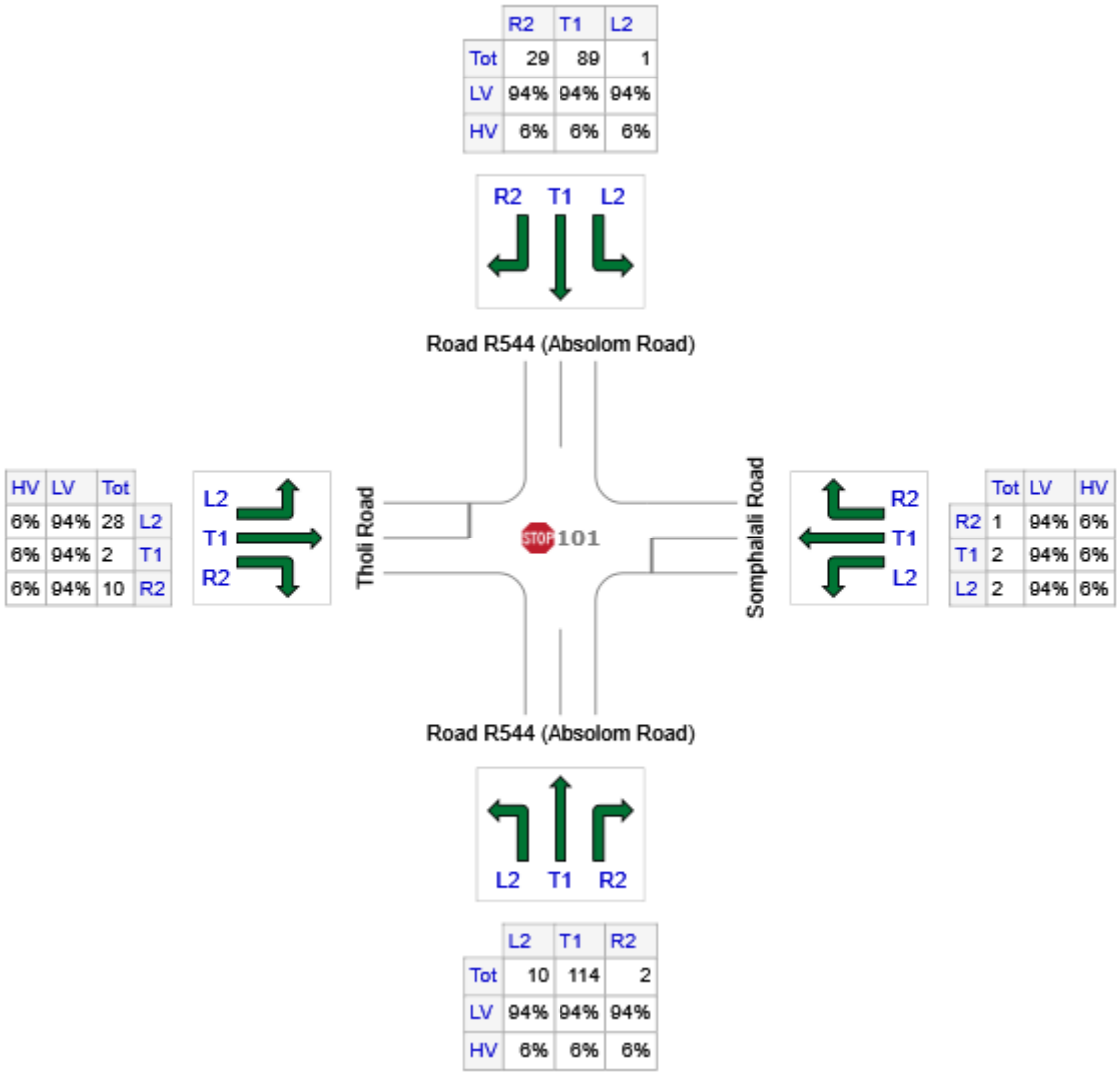
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [R544 and Somphalali_PM_Base]

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

Volume Display Method: Total and %

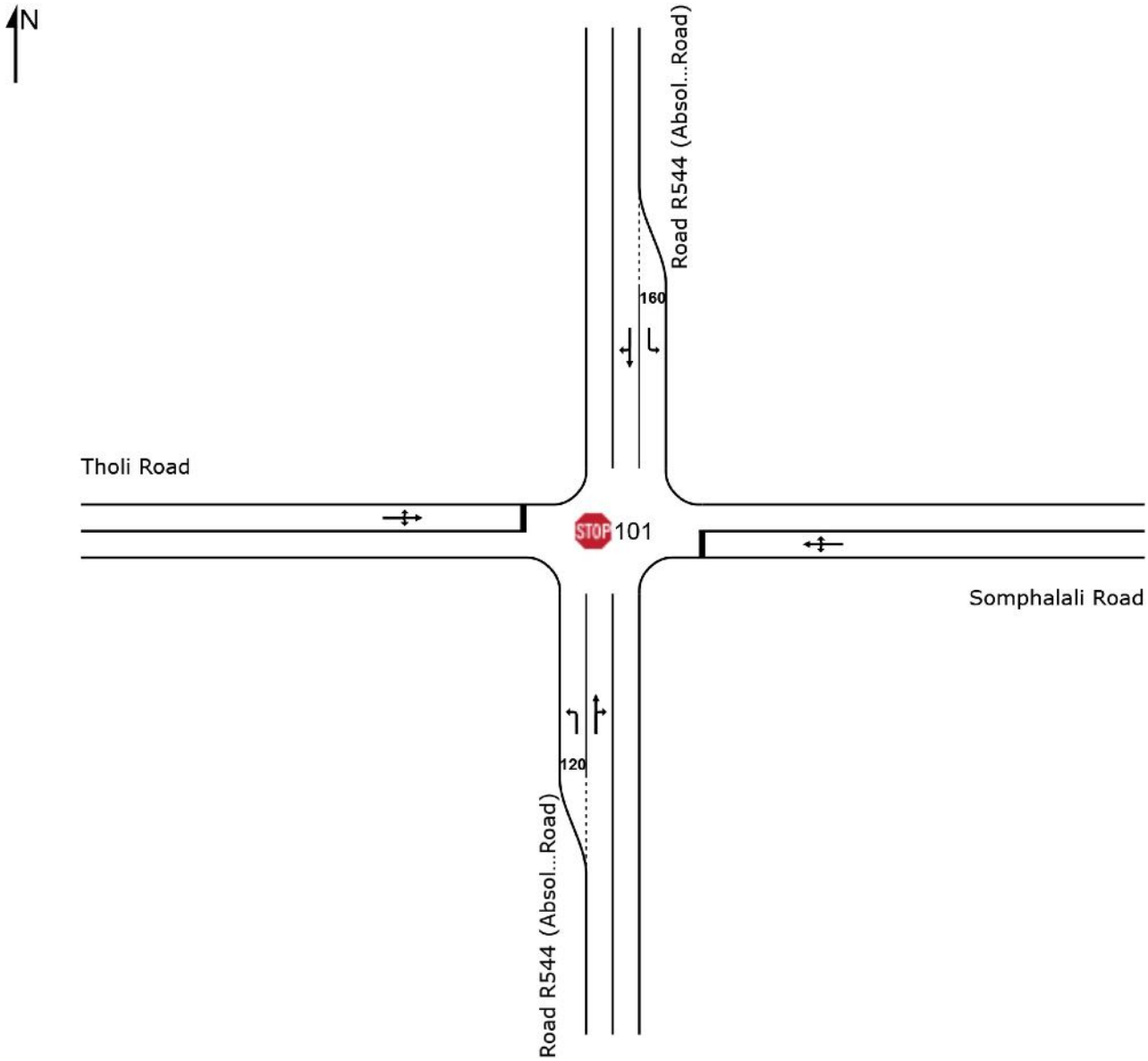


	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Road R544 (Absolom Road)	126	118	8
E: Somphalali Road	5	5	0
N: Road R544 (Absolom Road)	119	112	7
W: Tholi Road	40	38	2
Total	290	272	18

SITE LAYOUT

Site: 101 [R544 and Somphalali_PM_Base]

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



MOVEMENT SUMMARY

Site: 101 [R544 and Somphalali_AM_5 Years]

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

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Road R544 (Absolom Road)												
1	L2	11	6.2	0.006	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
2	T1	66	6.2	0.178	0.9	LOS A	0.9	6.4	0.34	0.43	0.34	55.2
3	R2	162	6.2	0.178	6.6	LOS A	0.9	6.4	0.34	0.43	0.34	53.3
Approach		239	6.2	0.178	5.0	NA	0.9	6.4	0.32	0.44	0.32	53.8
East: Somphalali Road												
4	L2	180	6.2	0.555	11.8	LOS B	4.7	34.7	0.53	1.03	0.83	47.5
5	T1	180	6.2	0.555	18.9	LOS C	4.7	34.7	0.53	1.03	0.83	47.4
6	R2	91	6.2	0.288	19.7	LOS C	1.2	8.9	0.71	1.04	0.83	44.9
Approach		451	6.2	0.555	16.2	LOS C	4.7	34.7	0.57	1.03	0.83	46.9
North: Road R544 (Absolom Road)												
7	L2	54	6.2	0.030	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
8	T1	142	6.2	0.118	0.1	LOS A	0.4	2.7	0.11	0.16	0.11	58.1
9	R2	53	6.2	0.118	5.9	LOS A	0.4	2.7	0.11	0.16	0.11	56.0
Approach		248	6.2	0.118	2.5	NA	0.4	2.7	0.09	0.25	0.09	56.6
West: Tholi Road												
10	L2	42	6.2	0.270	8.7	LOS A	1.2	8.6	0.38	0.96	0.38	48.7
11	T1	107	6.2	0.270	14.9	LOS B	1.2	8.6	0.38	0.96	0.38	48.6
12	R2	13	6.2	0.060	23.6	LOS C	0.2	1.5	0.77	1.00	0.77	42.9
Approach		162	6.2	0.270	13.9	LOS B	1.2	8.6	0.41	0.96	0.41	48.1
All Vehicles		1100	6.2	0.555	10.4	NA	4.7	34.7	0.38	0.72	0.49	50.5

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

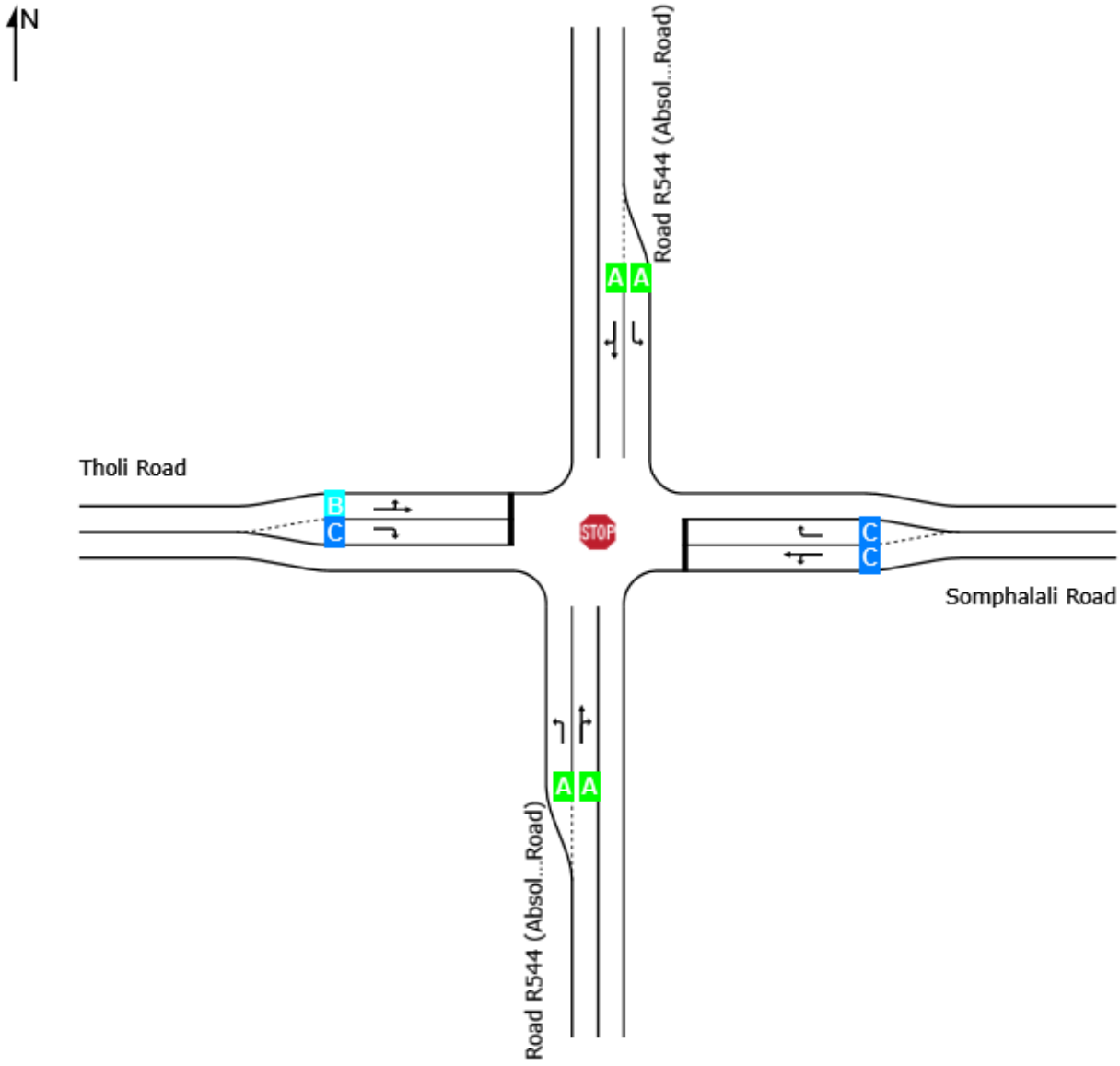
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [R544 and Somphalali_AM_5 Years]

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

	Approaches				Intersection
	South	East	North	West	
LOS	NA	C	NA	B	NA



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

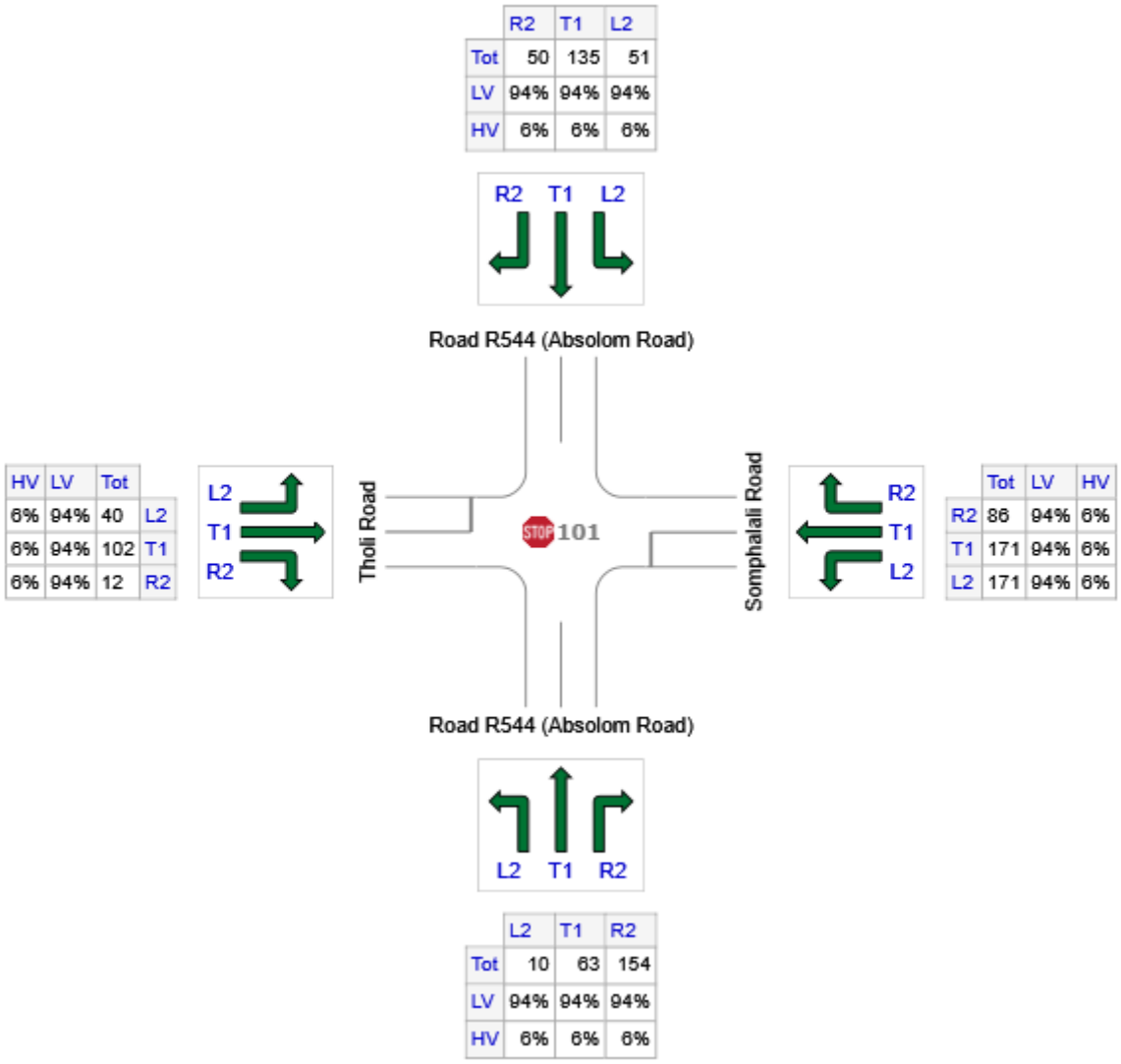
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [R544 and Somphalali_AM_5 Years]

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

Volume Display Method: Total and %

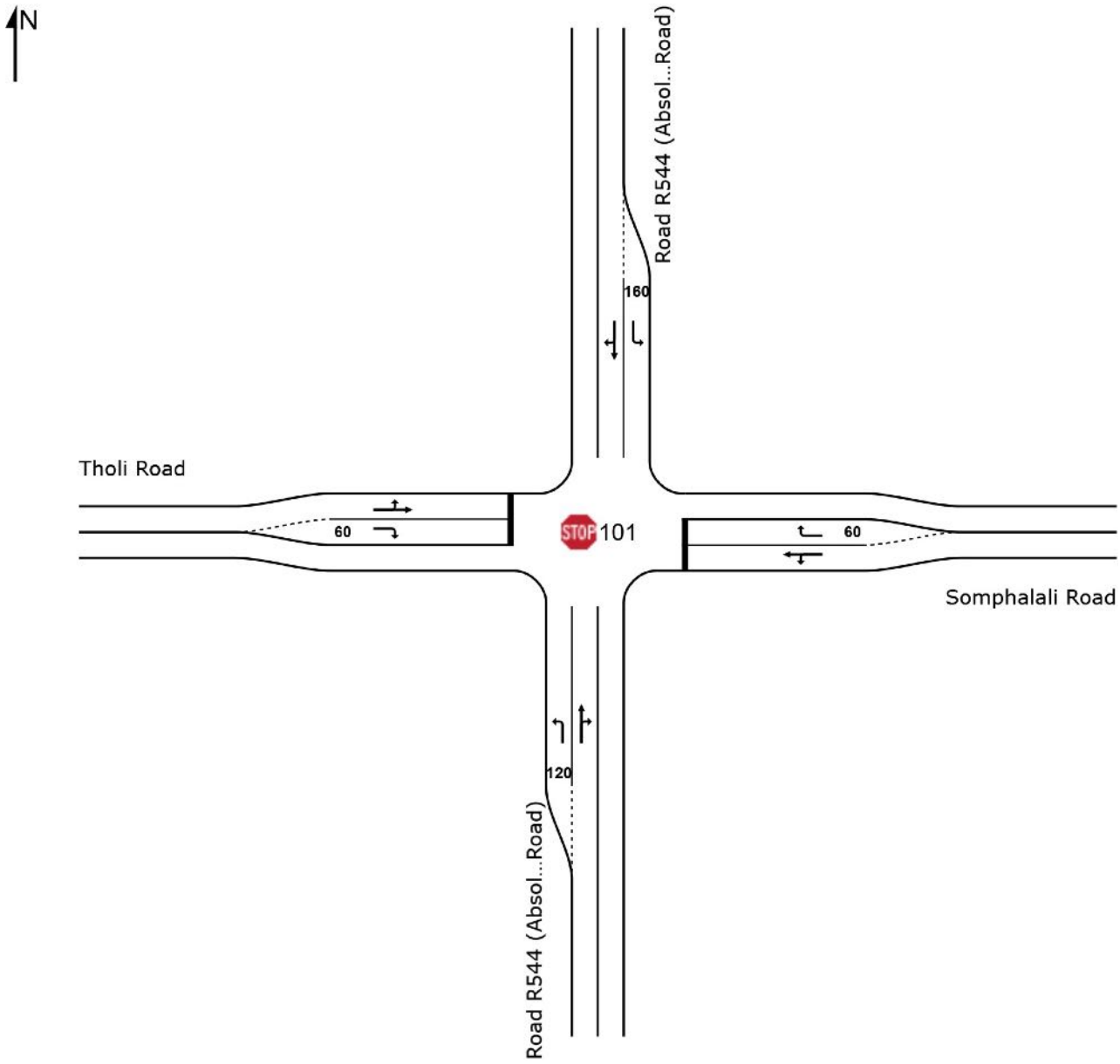


	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Road R544 (Absolom Road)	227	213	14
E: Somphalali Road	428	401	27
N: Road R544 (Absolom Road)	236	221	15
W: Tholi Road	154	144	10
Total	1045	980	65

SITE LAYOUT

Site: 101 [R544 and Somphalali_AM_5 Years]

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



MOVEMENT SUMMARY

Site: 101 [R544 and Somphalali_AM_20 Years]

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

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Road R544 (Absolom Road)												
1	L2	17	6.2	0.009	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
2	T1	108	6.2	0.334	2.0	LOS A	1.9	14.1	0.49	0.51	0.51	54.5
3	R2	272	6.2	0.334	7.7	LOS A	1.9	14.1	0.49	0.51	0.51	52.7
Approach		397	6.2	0.334	6.1	NA	1.9	14.1	0.47	0.51	0.49	53.2
East: Somphalali Road												
4	L2	303	6.2	1.452	223.9	LOS F	74.7	550.5	1.00	3.64	8.76	12.3
5	T1	303	6.2	1.452	240.3	LOS F	74.7	550.5	1.00	3.64	8.76	12.3
6	R2	152	6.2	1.101	128.8	LOS F	11.8	87.0	1.00	1.71	3.79	18.9
Approach		758	6.2	1.452	211.5	LOS F	74.7	550.5	1.00	3.25	7.76	13.2
North: Road R544 (Absolom Road)												
7	L2	91	6.2	0.051	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
8	T1	231	6.2	0.194	0.3	LOS A	0.7	5.0	0.16	0.16	0.16	57.9
9	R2	85	6.2	0.194	6.2	LOS A	0.7	5.0	0.16	0.16	0.16	55.8
Approach		406	6.2	0.194	2.7	NA	0.7	5.0	0.12	0.25	0.12	56.4
West: Tholi Road												
10	L2	68	6.2	0.775	23.7	LOS C	6.8	50.4	0.66	1.26	1.67	37.4
11	T1	181	6.2	0.775	41.1	LOS E	6.8	50.4	0.66	1.26	1.67	37.3
12	R2	21	6.2	0.356	82.6	LOS F	1.1	8.1	0.96	1.03	1.09	25.4
Approach		271	6.2	0.775	39.9	LOS E	6.8	50.4	0.68	1.24	1.62	36.0
All Vehicles		1832	6.2	1.452	95.3	NA	74.7	550.5	0.64	1.70	3.59	23.0

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

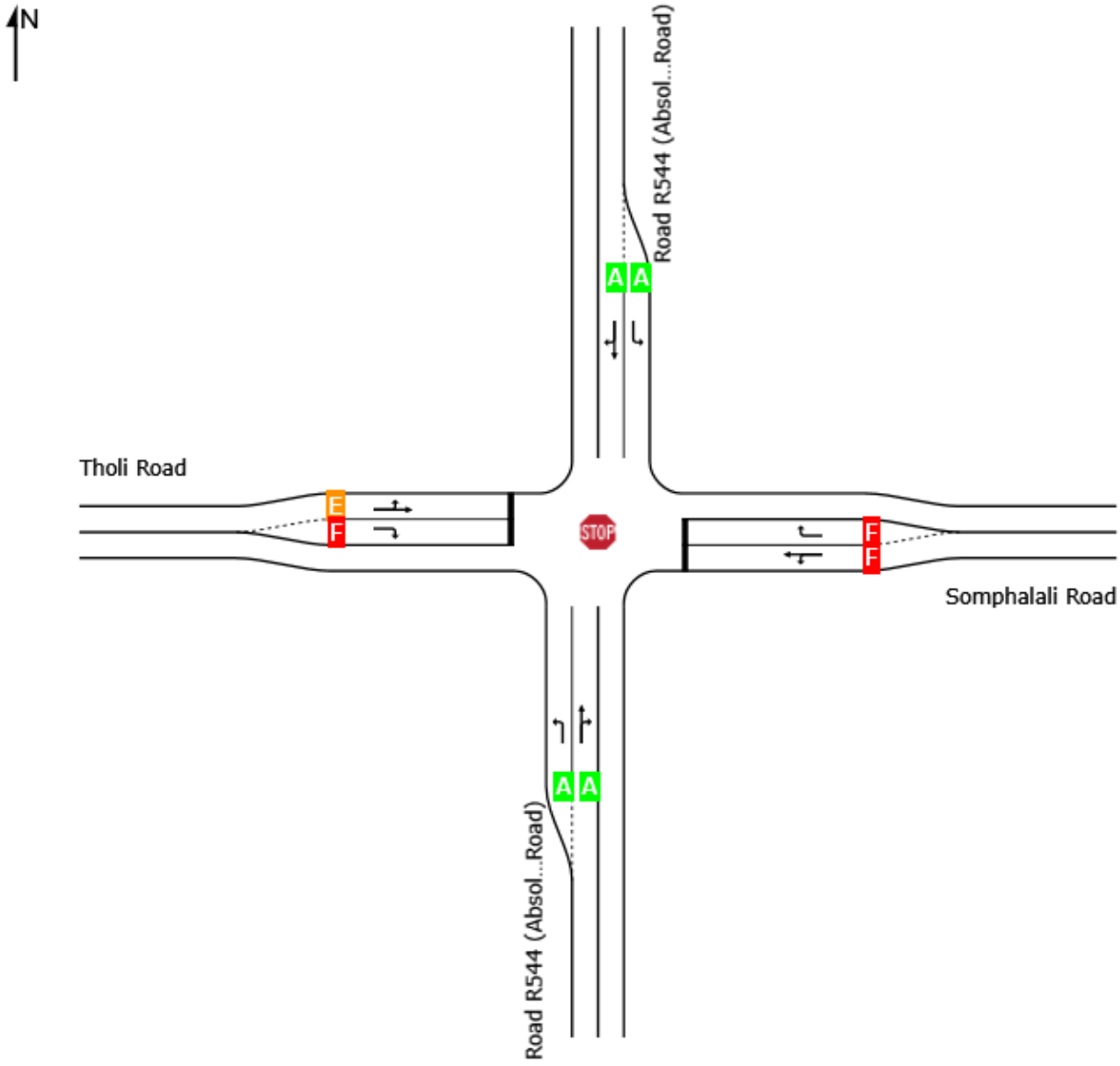
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [R544 and Somphalali_AM_20 Years]

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

	Approaches				Intersection
	South	East	North	West	
LOS	NA	F	NA	E	NA



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

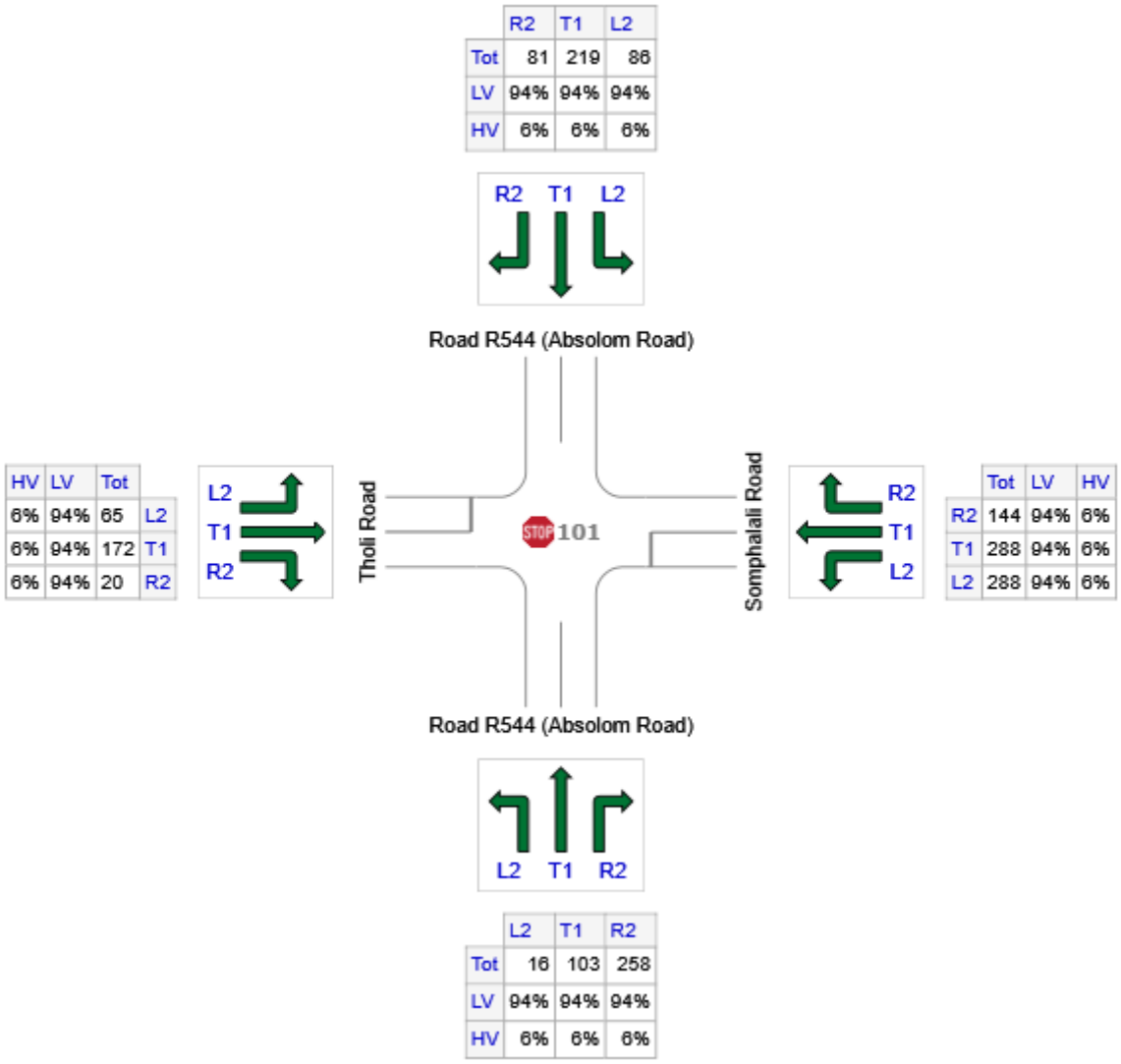
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [R544 and Somphalali_AM_20 Years]

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

Volume Display Method: Total and %

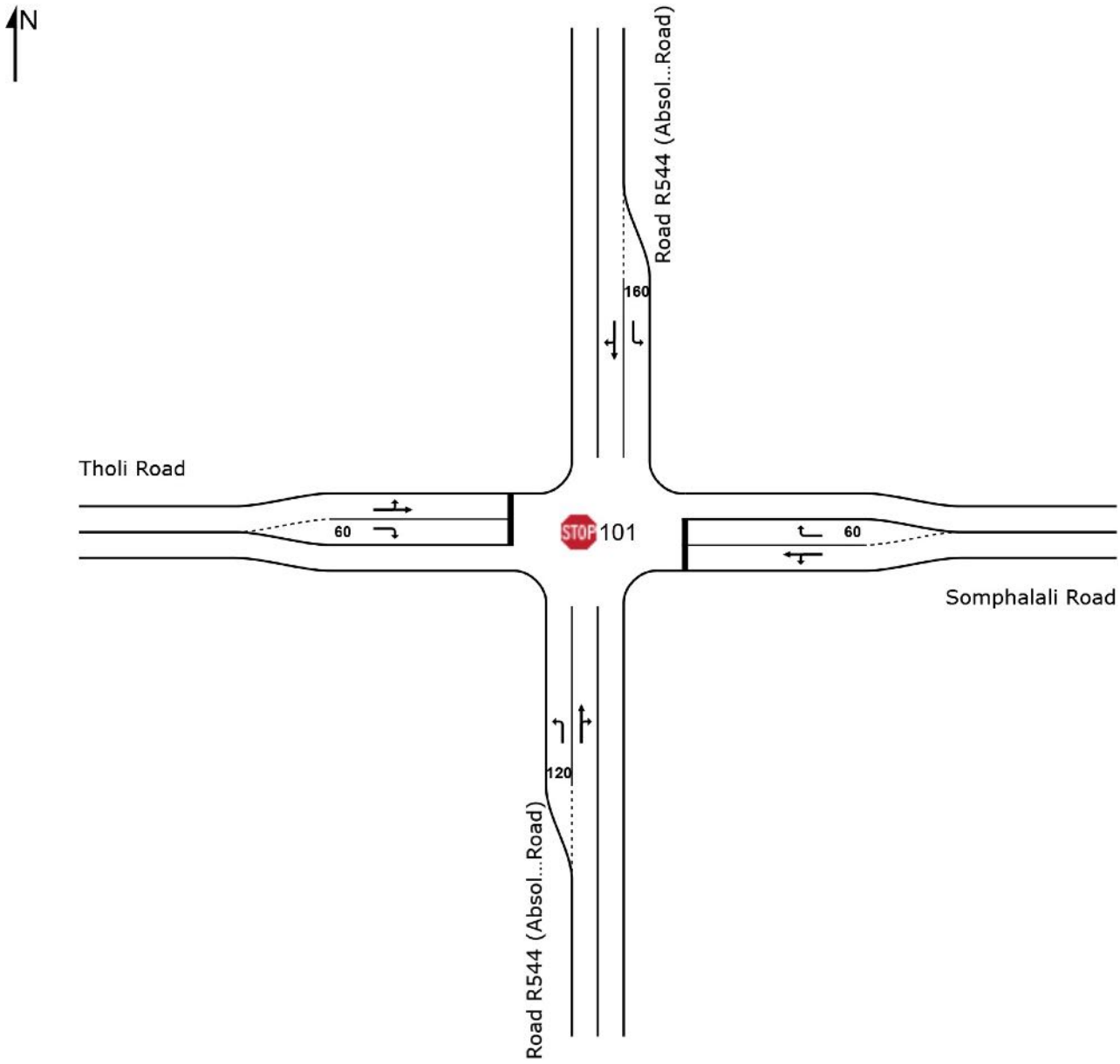


	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Road R544 (Absolom Road)	377	354	23
E: Somphalali Road	720	675	45
N: Road R544 (Absolom Road)	386	362	24
W: Tholi Road	257	241	16
Total	1740	1632	108

SITE LAYOUT

Site: 101 [R544 and Somphalali_AM_20 Years]

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



MOVEMENT SUMMARY

Site: 101 [R544 and Somphalali_PM_5 Years]

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

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Road R544 (Absolom Road)												
1	L2	13	6.2	0.007	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
2	T1	146	6.2	0.216	0.8	LOS A	1.1	8.0	0.31	0.32	0.31	56.2
3	R2	156	6.2	0.216	6.6	LOS A	1.1	8.0	0.31	0.32	0.31	54.2
Approach		315	6.2	0.216	3.9	NA	1.1	8.0	0.30	0.33	0.30	55.1
East: Somphalali Road												
4	L2	107	6.2	0.350	9.6	LOS A	1.8	13.4	0.41	0.95	0.48	48.8
5	T1	108	6.2	0.350	16.6	LOS C	1.8	13.4	0.41	0.95	0.48	48.7
6	R2	54	6.2	0.205	21.2	LOS C	0.7	5.5	0.75	1.01	0.78	44.2
Approach		269	6.2	0.350	14.7	LOS B	1.8	13.4	0.48	0.96	0.53	47.7
North: Road R544 (Absolom Road)												
7	L2	78	6.2	0.044	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
8	T1	114	6.2	0.092	0.3	LOS A	0.3	2.1	0.15	0.15	0.15	58.1
9	R2	37	6.2	0.092	6.3	LOS A	0.3	2.1	0.15	0.15	0.15	56.0
Approach		228	6.2	0.092	3.1	NA	0.3	2.1	0.10	0.29	0.10	56.0
West: Tholi Road												
10	L2	36	6.2	0.409	10.9	LOS B	2.3	17.0	0.61	1.04	0.83	46.6
11	T1	156	6.2	0.409	18.3	LOS C	2.3	17.0	0.61	1.04	0.83	46.5
12	R2	13	6.2	0.047	19.5	LOS C	0.2	1.2	0.70	1.00	0.70	45.0
Approach		204	6.2	0.409	17.1	LOS C	2.3	17.0	0.61	1.04	0.82	46.5
All Vehicles		1017	6.2	0.409	9.2	NA	2.3	17.0	0.37	0.63	0.42	51.3

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

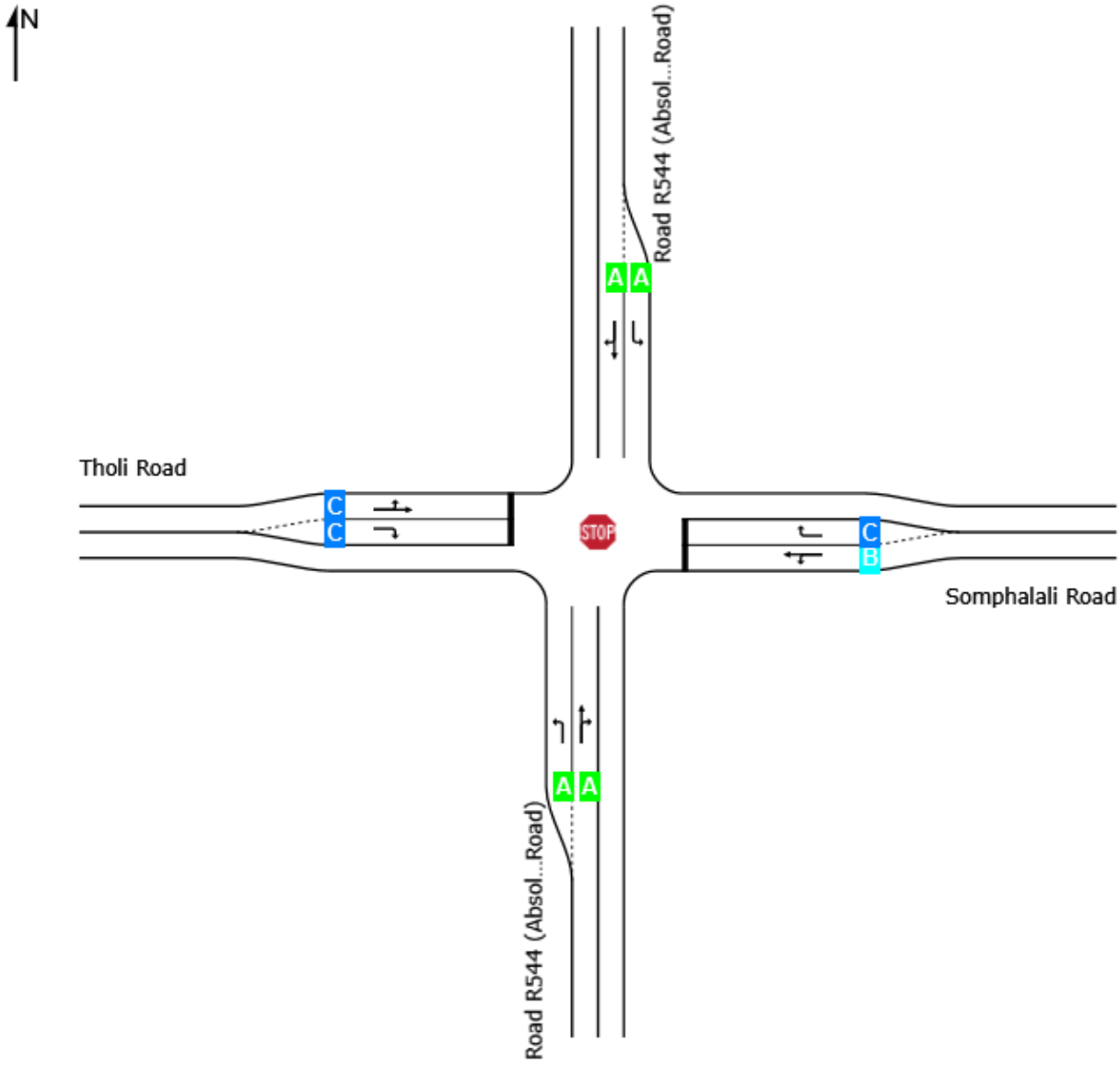
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [R544 and Somphalali_PM_5 Years]

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

	Approaches				Intersection
	South	East	North	West	
LOS	NA	B	NA	C	NA



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

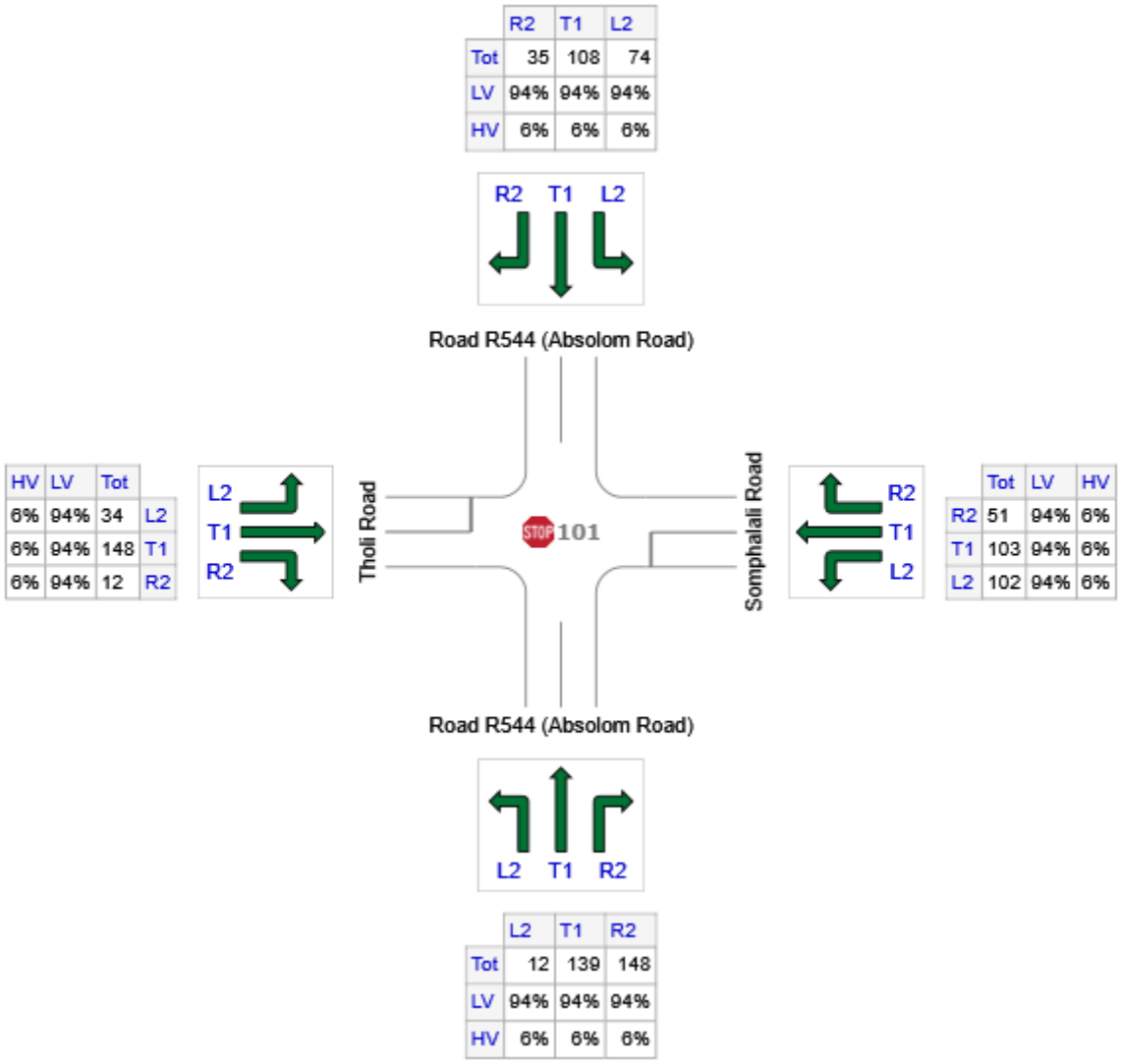
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [R544 and Somphalali_PM_5 Years]

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

Volume Display Method: Total and %

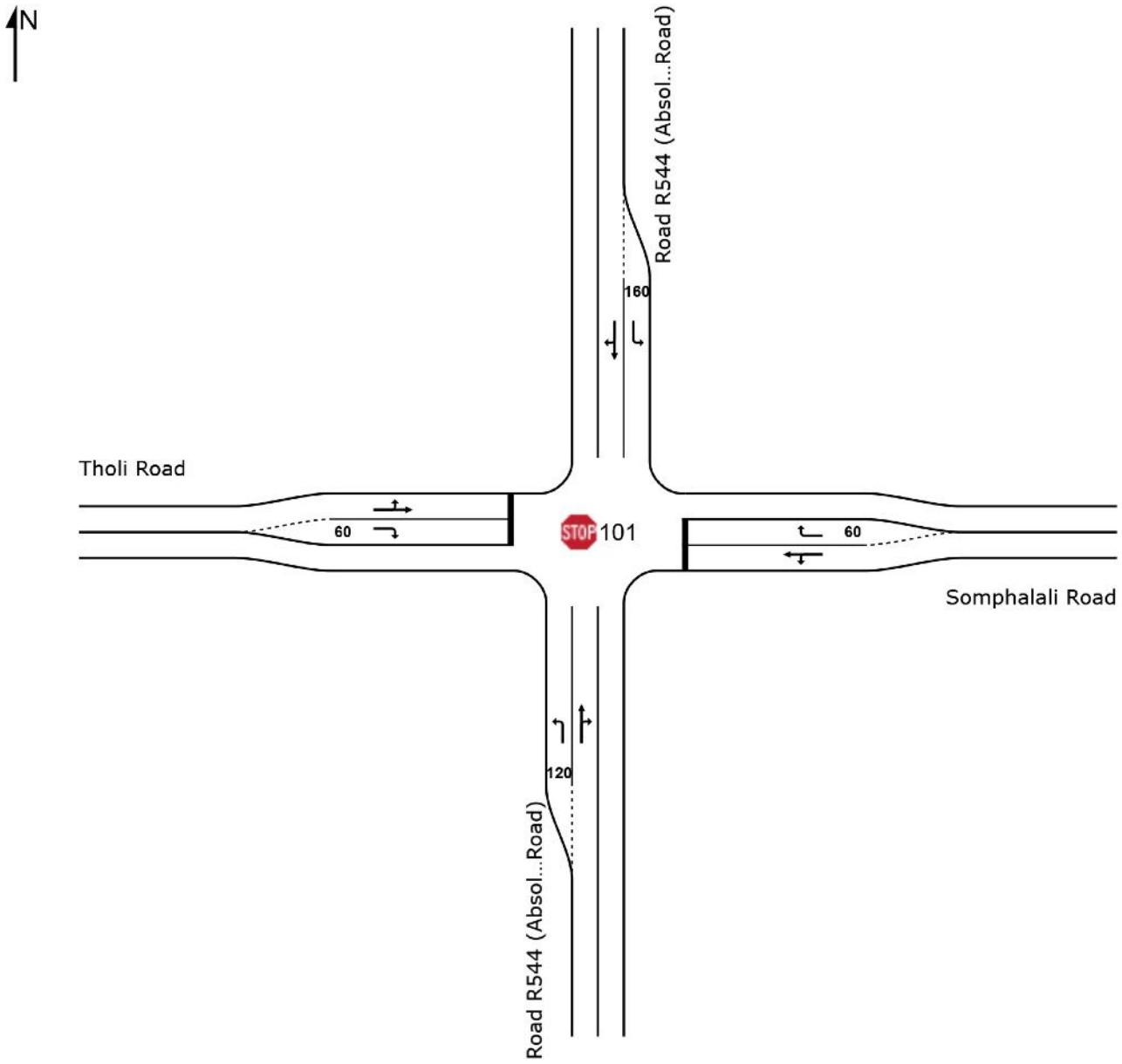


	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Road R544 (Absolom Road)	299	280	19
E: Somphalali Road	256	240	16
N: Road R544 (Absolom Road)	217	204	13
W: Tholi Road	194	182	12
Total	966	906	60

SITE LAYOUT

Site: 101 [R544 and Somphalali_PM_5 Years]

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



MOVEMENT SUMMARY

Site: 101 [R544 and Somphalali_PM_20 Years]

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

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Road R544 (Absolom Road)												
1	L2	21	6.2	0.012	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
2	T1	237	6.2	0.392	2.1	LOS A	2.8	20.6	0.49	0.39	0.55	55.3
3	R2	262	6.2	0.392	8.1	LOS A	2.8	20.6	0.49	0.39	0.55	53.4
Approach		520	6.2	0.392	5.2	NA	2.8	20.6	0.47	0.39	0.53	54.2
East: Somphalali Road												
4	L2	181	6.2	0.992	53.2	LOS F	18.1	133.5	0.74	1.81	3.33	29.0
5	T1	181	6.2	0.992	76.2	LOS F	18.1	133.5	0.74	1.81	3.33	29.0
6	R2	91	6.2	0.959	119.6	LOS F	5.9	43.8	1.00	1.36	2.47	20.2
Approach		453	6.2	0.992	75.7	LOS F	18.1	133.5	0.79	1.72	3.16	26.7
North: Road R544 (Absolom Road)												
7	L2	132	6.2	0.074	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
8	T1	185	6.2	0.157	0.6	LOS A	0.5	4.1	0.22	0.15	0.22	57.8
9	R2	60	6.2	0.157	6.9	LOS A	0.5	4.1	0.22	0.15	0.22	55.7
Approach		377	6.2	0.157	3.3	NA	0.5	4.1	0.14	0.30	0.14	55.8
West: Tholi Road												
10	L2	58	6.2	1.345	183.8	LOS F	35.4	260.8	1.00	2.72	6.90	13.8
11	T1	262	6.2	1.345	201.1	LOS F	35.4	260.8	1.00	2.72	6.90	13.8
12	R2	21	6.2	0.214	47.2	LOS E	0.7	5.0	0.91	1.01	0.97	33.7
Approach		341	6.2	1.345	188.7	LOS F	35.4	260.8	0.99	2.62	6.54	14.3
All Vehicles		1691	6.2	1.345	60.7	NA	35.4	260.8	0.59	1.18	2.36	29.6

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

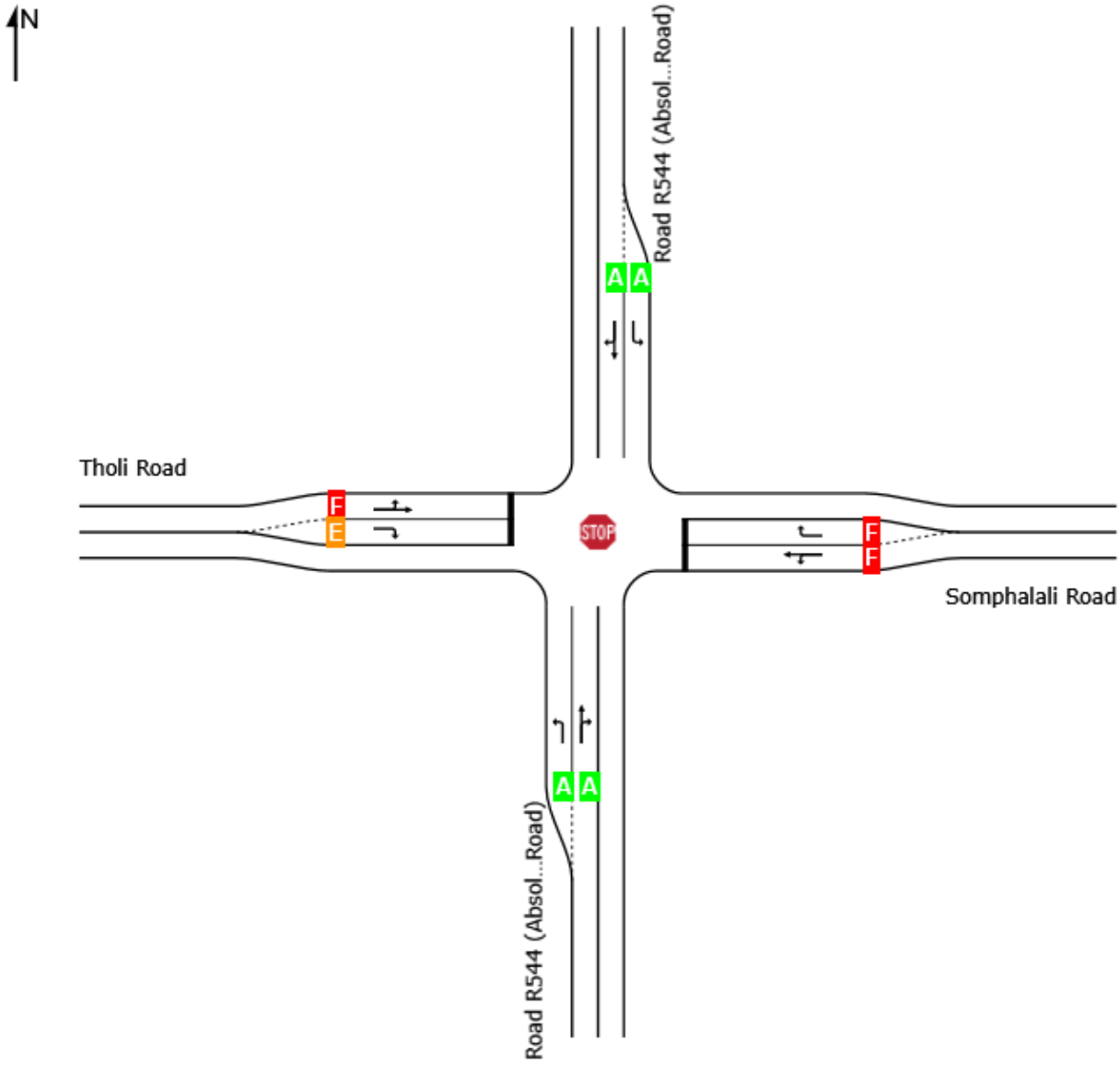
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [R544 and Somphalali_PM_20 Years]

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

	Approaches				Intersection
	South	East	North	West	
LOS	NA	F	NA	F	NA



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

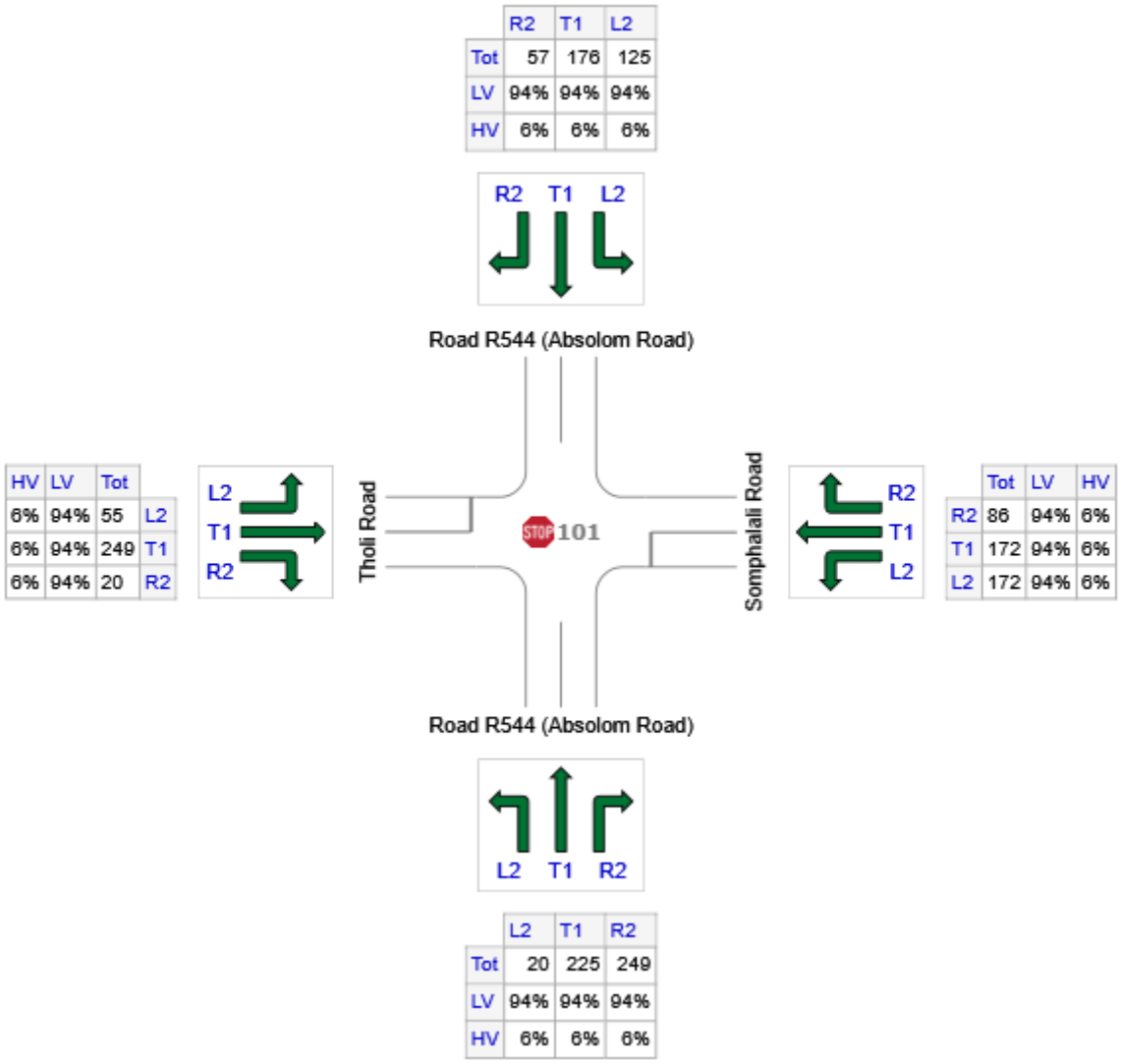
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [R544 and Somphalali_PM_20 Years]

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

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Road R544 (Absolom Road)	494	463	31
E: Somphalali Road	430	403	27
N: Road R544 (Absolom Road)	358	336	22
W: Tholi Road	324	304	20
Total	1606	1506	100

SITE LAYOUT

Site: 101 [R544 and Somphalali_PM_20 Years]

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