TRAFFIC IMPACT ASSESSMENT

EXTENSION OF WILDEBOSCH STREET IN PARADYSKLOOF

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1 GENERAL

1.1 Introduction

The Stellenbosch Municipality plans the implementation of the extension of Wildebosch Street in an effort to reduce traffic congestion in the Paradyskloof area and to simultaneously create more capacity on the street network to allow for more developments in the area to take place. Zutari has been appointed to do an Environmental Impact Assessment (EIA) for the implementation of a section of the link road. This Traffic Impact Assessment forms part of the EIA. The location of the section of the road to be implemented and which is covered in this TIA is shown in Figure 1.1.

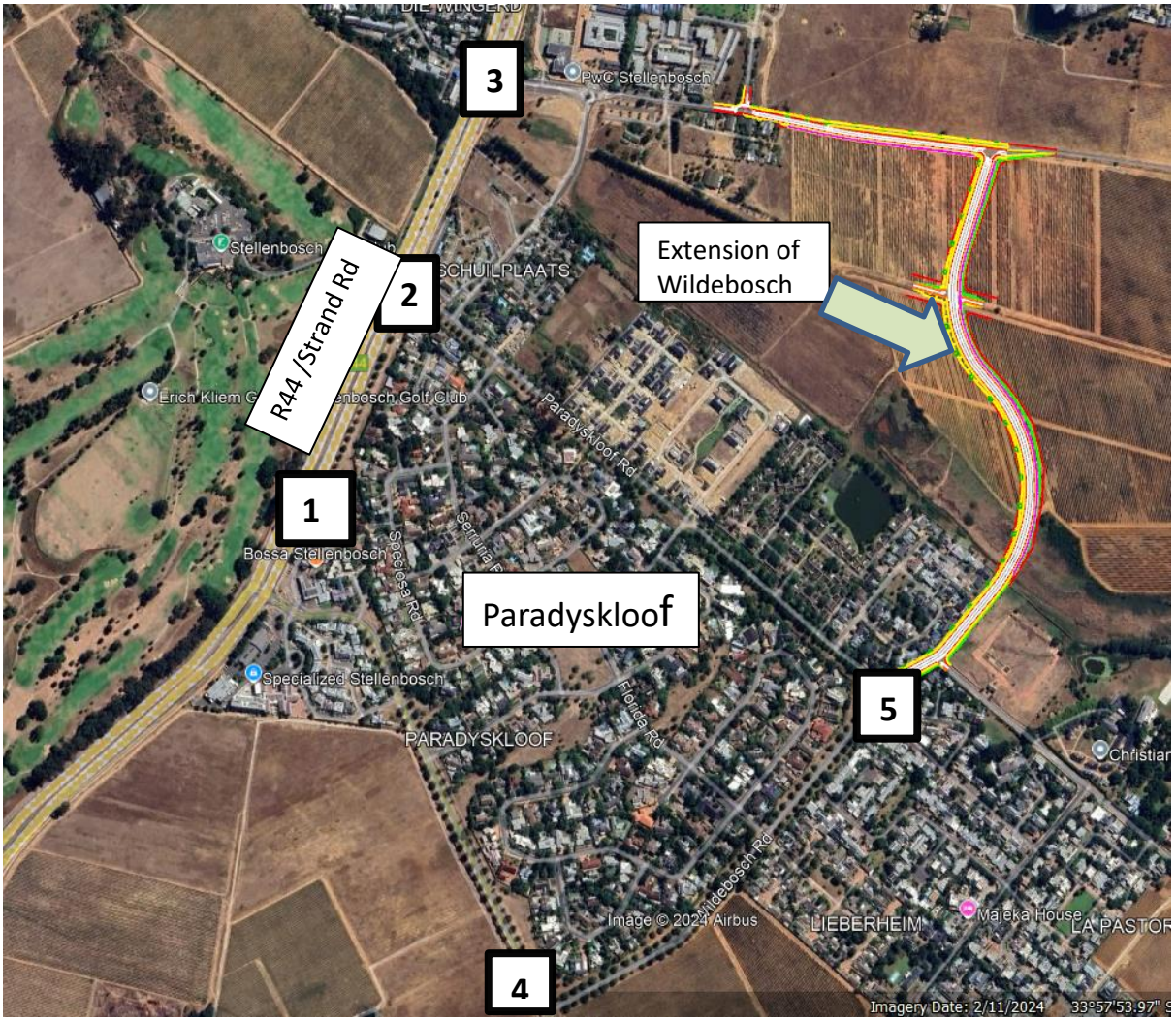

Figure 1.1: Location of the extension of Wildebosch Street

Imodie Projects was appointed by Zutari to do a traffic impact study.

1.2 Goals and Objectives

The goal of this Traffic Impact Study is to assess the traffic impact of the implementation of the extension of Wildebosch Road. The specific objectives are:

- To assess the current traffic operating conditions
- To assess the change in the traffic flow patterns after the implementation of the Wildebosch Road extension
- To assess the traffic impact as a result of the extension of Wildebosch Street.

2 STATUS QUO

2.1 Current Land Use

The area where the Wildebosch Road is planned to be extended is currently surrounded by mostly residential areas. To the south of the extension is Paradyskloof which is primarily a residential suburb. Some business sites are located on the edge of Paradyskloof along the R44. The extension will extend into vacant land towards the north of Paradyskloof. This land is currently zoned agriculture.

It need be mentioned that the extension serves a long-term vision of not only providing access for the property owners in its immediate vicinity, but also areas further away which will eventually be linked to the road.

2.2 Existing Road Network

The following roads are in the immediate vicinity of the proposed new link road:

- Existing Wildebosch Road

  The existing Wildebosch Road is a single carriage two lane road, which can be classified as a Class 4 Collector Road. With the long-term function of the completed link road having a mobility function, this road may become a Class 3 arterial road on the further extension thereof to the north.

Figure 2.1: Existing Wildebosch Road

- Trumali Road

  Trumali Road is for most of its length an undivided two-lane single carriageway which runs in an eastern western direction. The section closer to the R44 is a divided four lane road. This road can be classified as a Class 3 Minor arterial.

Figure 2.2: Existing Trumali Road for easter section

Figure 2.3: Existing Trumali Road for western section

- R44 Somerset West Road

  The R44 provincial road is a divided four lane dual carriage-way. The road can be classified as a Class 2 arterial.

Figure 2.4: Existing R44

- Blaauwklippen Road

  Blaauwklippen Road is an undivided two-lane road which can be classified as a Class 3 Arterial Road.

Figure 2.5: Existing Blaauwklippen Road

- Paradyskloof Road

  Paradyskloof Road is a two-way undivided two-lane road running south-eastern to north-western direction. The road can be classified as a Class 4 Collector Road.

Figure 2.6: Paradyskloof Road

2.3 Existing Traffic Operating Conditions

The current traffic operating conditions were assessed through analysing the current operating conditions. Traffic counts were performed on 30 and 31 October 2023. The current traffic volumes for these counts are shown in Figures 2.7 and 2.8.

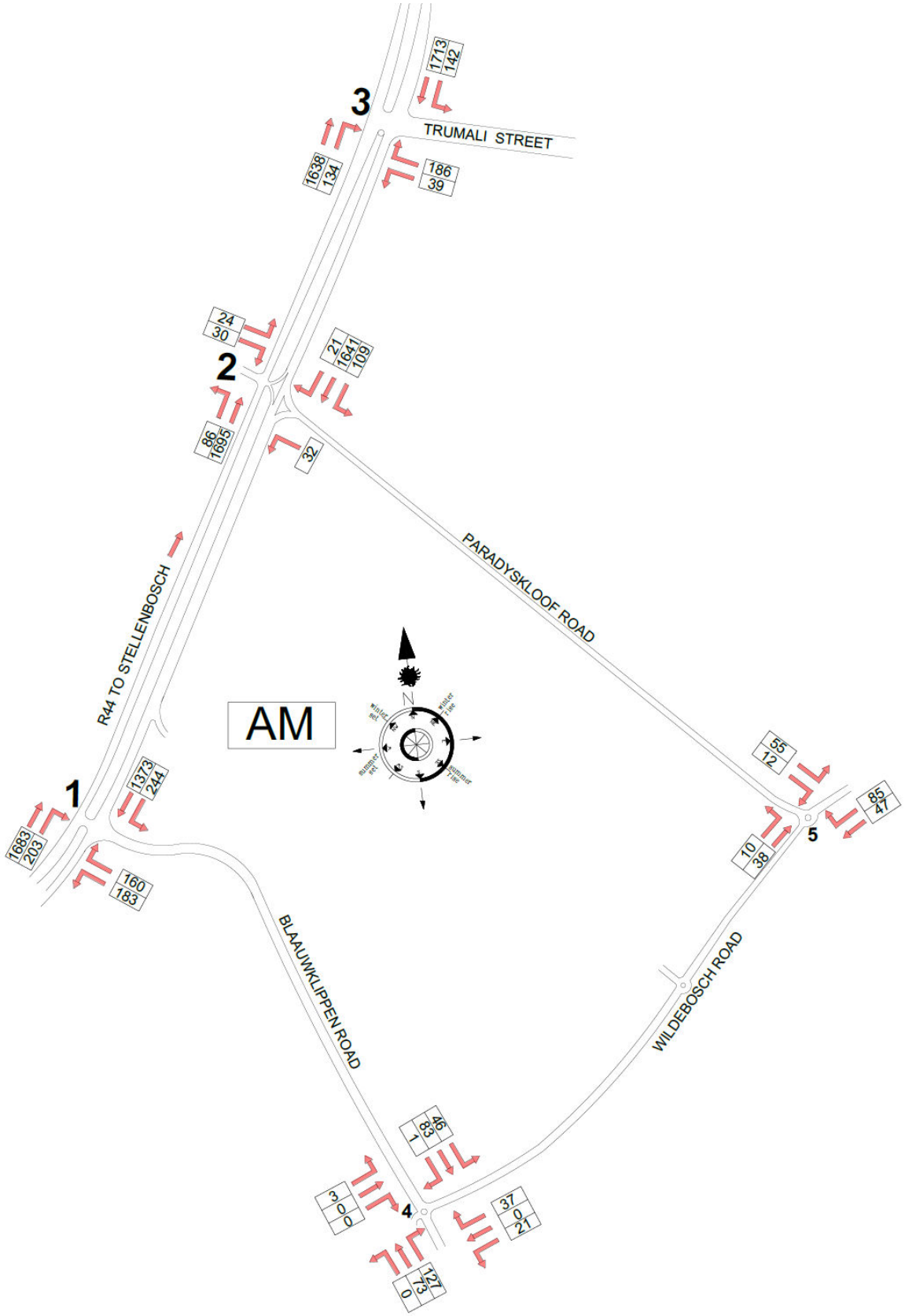

Figure 2.7: Current Morning Peak Hour Traffic

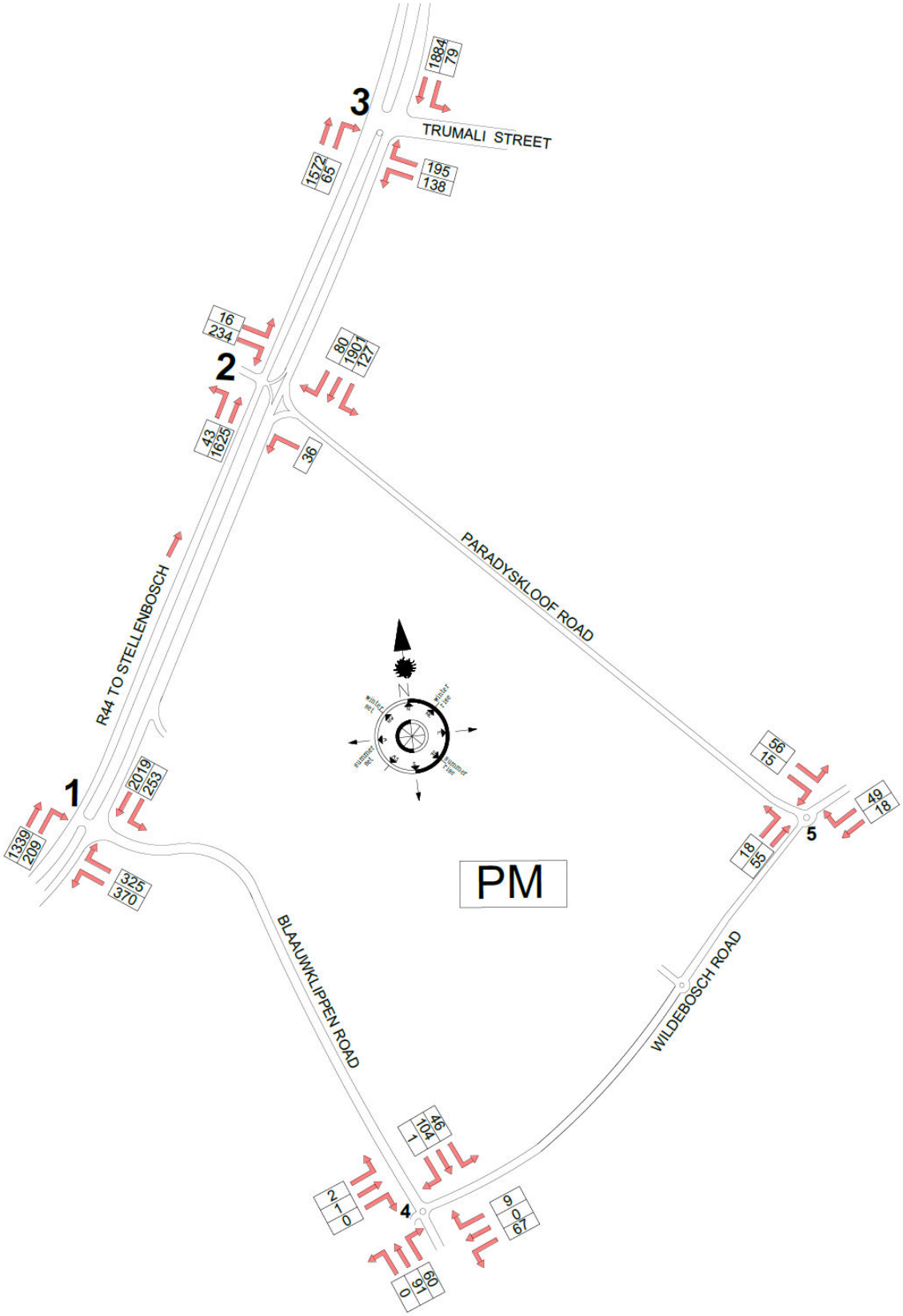

Figure 2.8: Current Afternoon Peak Hour Traffic

The current LOS for the intersections have been determined using the SIDRA intersection analysis software. The result s of the analysis is shown in Table 2.1. From the results it is clear that only intersection1 (R44/Blaauwklippen Rd) is currently performing over capacity.

Table 2.1: Current LOS at intersections 1 to 5

Intersection	Peak Period	North LOS			East LOS			South LOS			West LOS			Overall LOS
		L	T	R	L	T	R	L	T	R	L	T	R	
Intersection 1	AM	A	A	-	F	-	F	-	C	F	-	-	-	F
	PM	A	B		F	-	F	-	A	F	-	-	-	F
Intersection 2	AM	A	B	A	C	-	-	D	D	-	A	-	A	D
	PM	A	D	B	A	-	-	D	D	-	D	-	D	D
Intersection 3	AM	A	D	-	A	-	A	-	D	A	-	-	-	D
	PM	A	D	-	A	-	A	-	B	A	-	-	-	D
Intersection 4	AM	A	A	A	A	A	A	A	A	A	A	A	A	A
	PM	A	A	A	A	A	A	A	A	A	A	A	A	A
Intersection 5	AM	A	A	-	-	-	-	A	A	-	A	-	A	A
	PM	A	A	-	-	-	-	A	A	-	A	-	A	A

The specific movements that are operating above capacity are shown in Figurers 2.9

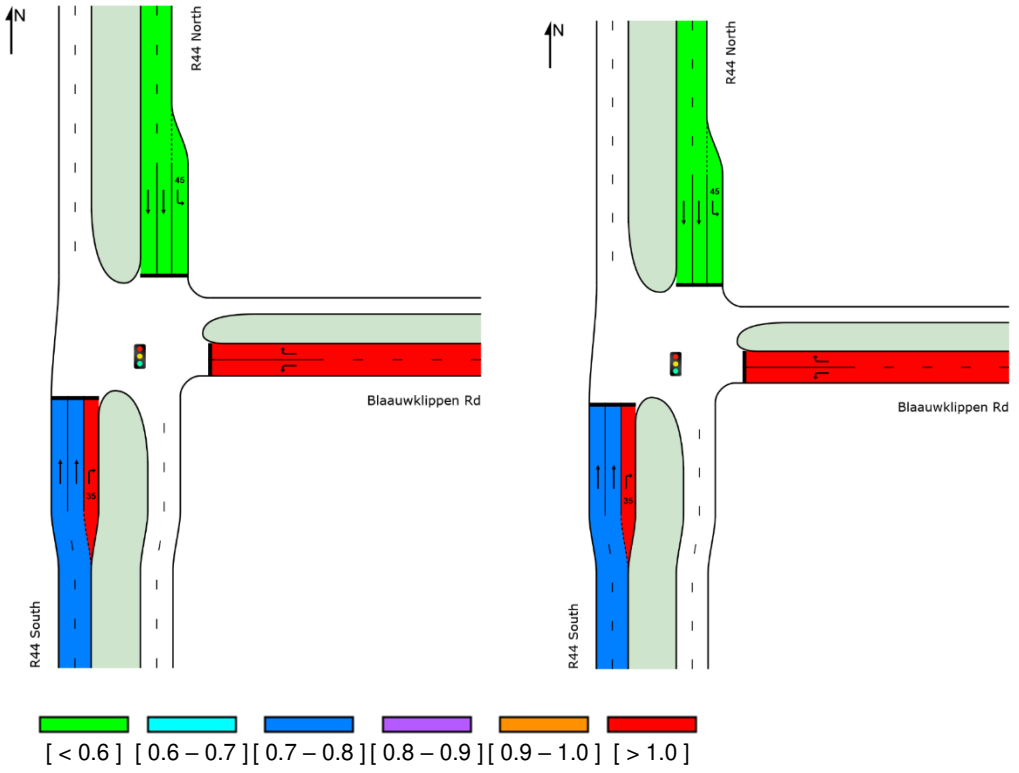

Figure 2.9: Movements LOS

3 FUTURE CHANGES

3.1 Land Use changes

The Spatial Development Framework of the Stellenbosch municipality have been consulted as a guide for future land use changes in the area. Apart from a possible business site that has been included into the urban edge, no other vacant land is available for future development within the urban edge of the proposed SDF.

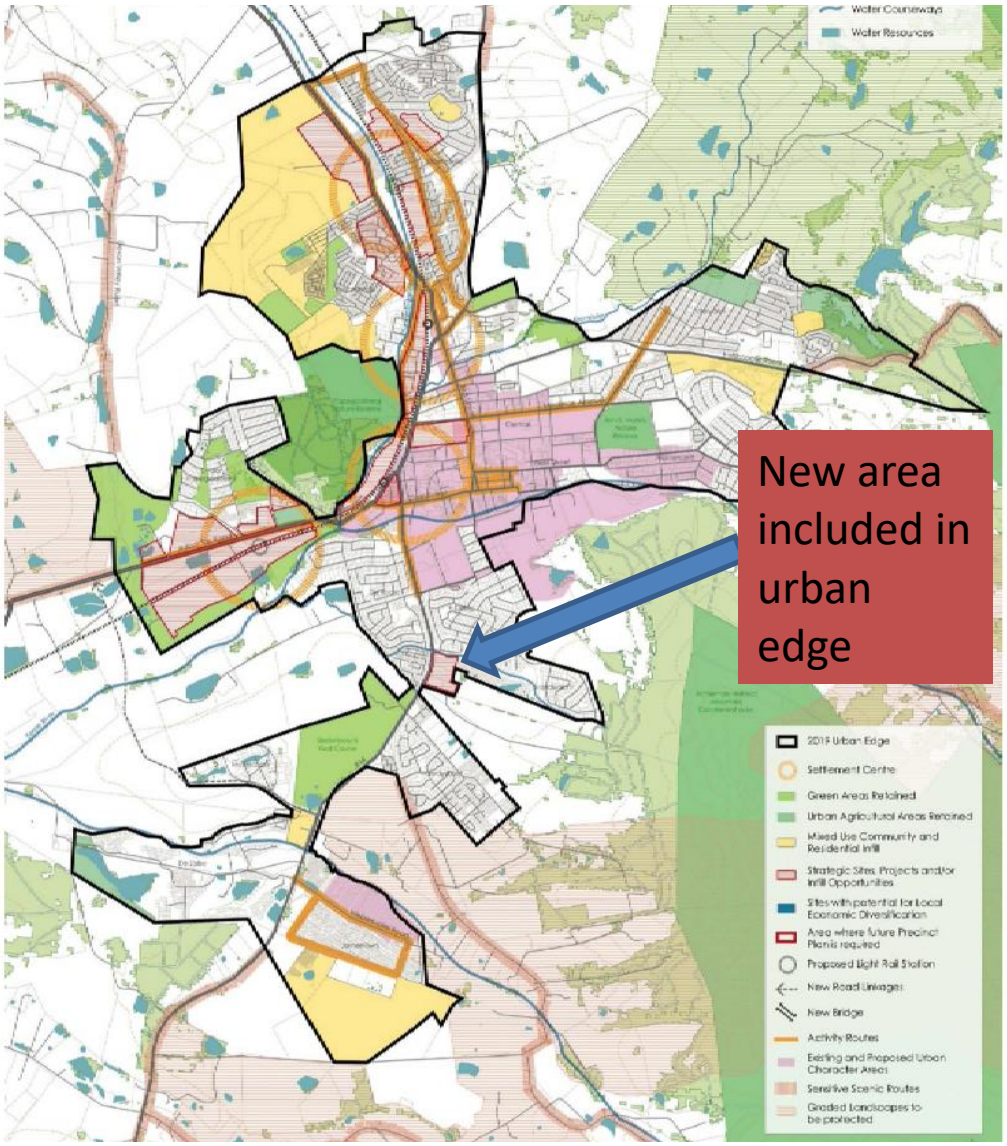

Figure 3.1: Stellenbosch Urban Framework indicating the urban edge

3.2 Road network and Transport Operations

The Stellenbosch Roads Master Plan suggests the long-term implementation of higher order roads for Stellenbosch. The location of these roads is shown in Figure 3.2 below:

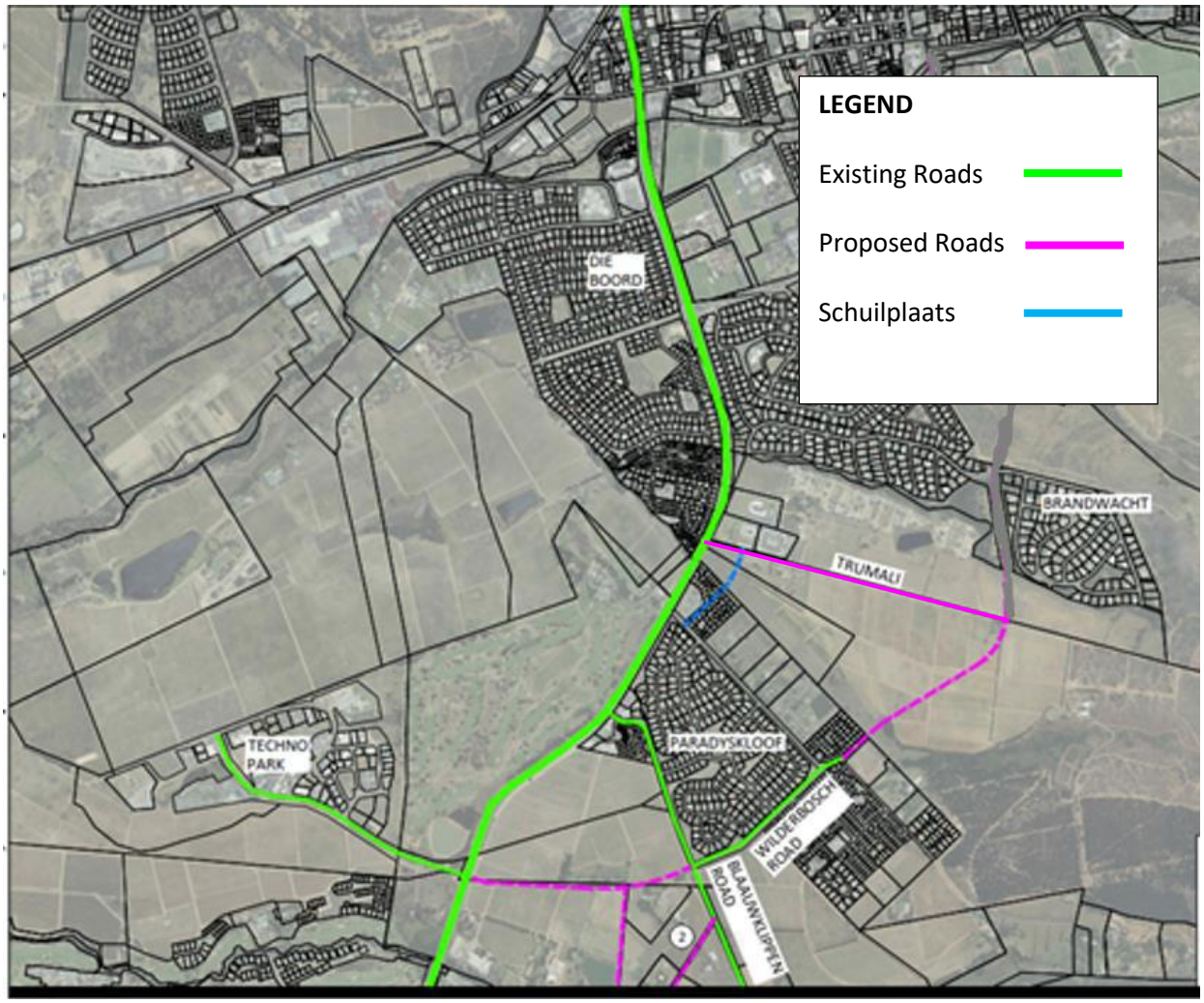

Figure 3.2: Portions of the proposed Eastern Link Road allowed for in the 10-year budget

From Figure 3.2 it is clear that the completed link road will have a significant impact on the traffic operations especially along the R44. The incremental implementation of the link road will however not result in such noticeable improvements. The implementation of the section between Trumali Street and Paradyskloof Road will result in some motorists in Paradyskloof travelling along the new link road section and joining the R44 at the intersection with Trumali Road. The portion of the extension of Wildebosch Street was previously planned as part of the extension of what was called the Eastern Bypass. The Stellenbosch Council has decided against the implementation of the Eastern Bypass and will only implement the certain sections of the link road as shown in Figure 3.2 above.

4 ANALYSIS AFTER IMPLEMENTATION OF LINK ROAD

Based on the gravity analogy it can be assumed that approximately 50% of the right turning movement on the eastern approach of Intersection 1 will now make use of intersection 3 and the right turning movement on the eastern approach of Intersection 3 will increase. The same principle can be applied for the left turn movement on the northern approaches where 50% of the left turning movement on the northern approach of Intersection 1 will now turn left at intersection 3. The traffic distribution after the implementation of the link road is shown in Figures 4.1 and 4.2

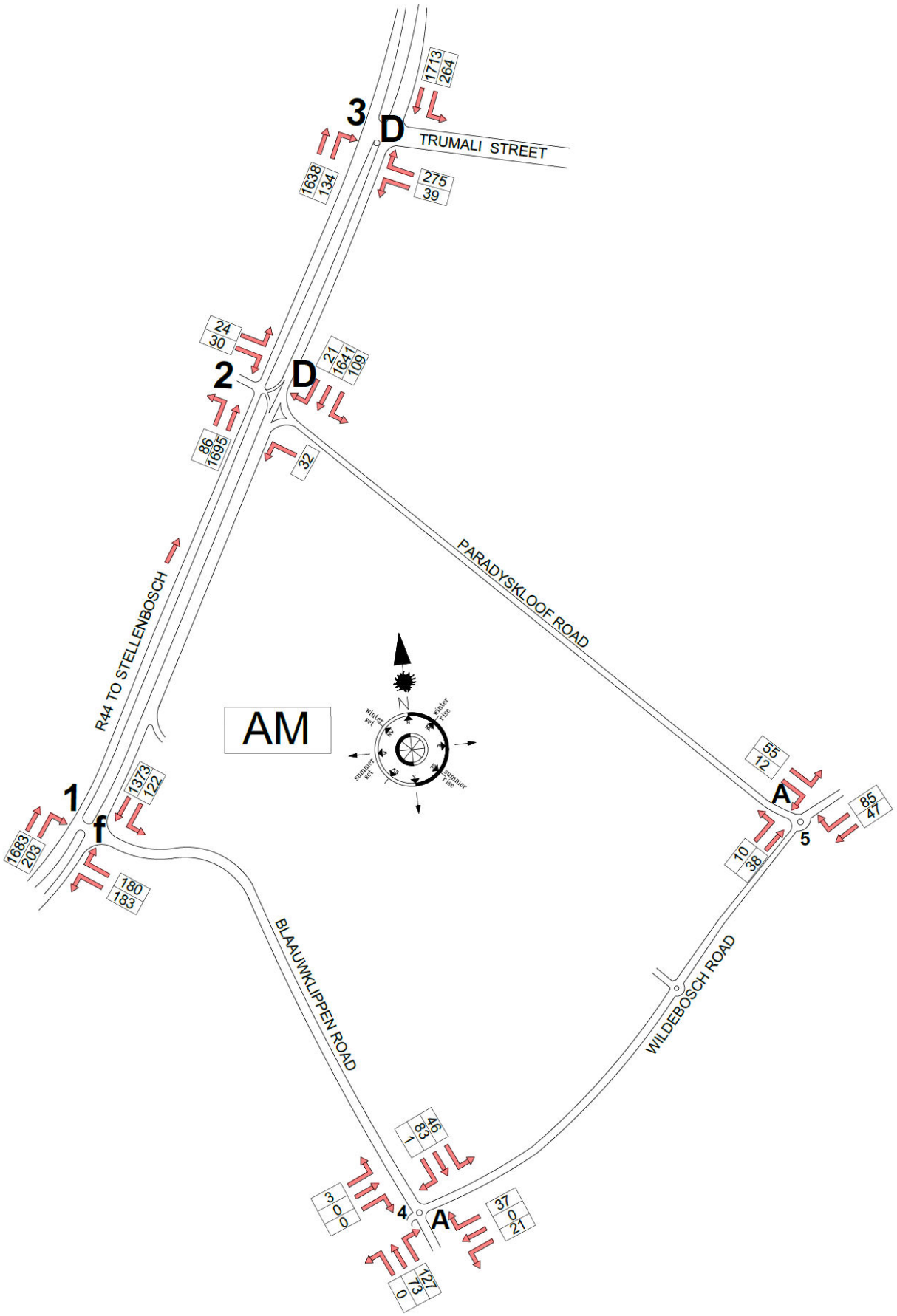

Figure 4.1: Morning Peak hour traffic volume after implementation of link road

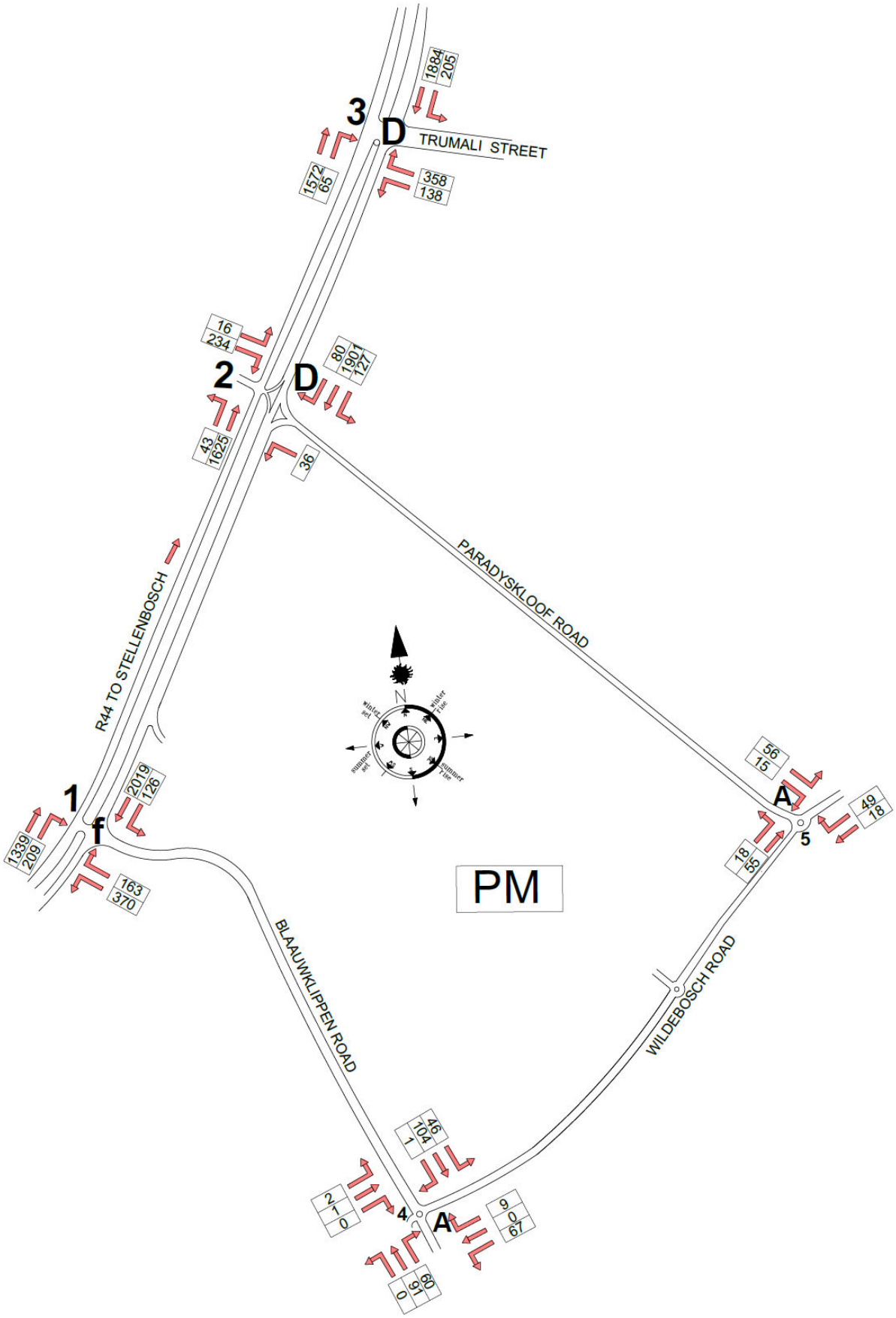

Figure 4.2: Afternoon Peak hour traffic volume after implementation of link road

The SIDRA analysis of Intersections 1 and 3 after the implementation of the link road is shown in Table 4.1.

Table 4.1: Current LOS at intersections 1 to 5

Intersection	Peak Period	North LOS			East LOS			South LOS			West LOS			Overall LOS
		L	T	R	L	T	R	L	T	R	L	T	R	
Intersection 1	AM	A	A	-	F	-	E	-	B	F	-	-	-	F
	PM	A	A		F	-	F	-	C	F	-	-	-	F
Intersection 3	AM	B	C	-	C	-	C	-	B	C	-	-	-	C
	PM	B	B	-	C	-	C	-	A	C	-	-	-	C

The results in the LOS did not change significantly from prior to the implementation of the link road. This is due to the fact that the implementation of this section of the link road on its own does not have a significant impact on the current intersection performance. The implementation of the full link road where the municipality is moving towards, will however result in improved LOS along the R44.

5 CONCLUSIONS

The following conclusions can be made from the study.

- The implementation of the extension of the Wildebosch Road to Trumali Street is a step in the implementation of the long-term higher order roads.
- The proposed extension of Wildebosch Road to Trumali Road does not negatively impact on the traffic condition in the vicinity.
- It does also not have a significant improvement on the traffic performance in the area.
- The eventual implementation of the further sections of the link road will have incremental improvement in the operational traffic conditions along the R44.

6 RECOMMENDATIONS

Based on the findings of this Traffic Impact Study, it is recommended that the implementation of the section of link road between Paradyskloof Road and Trumali Street be implemented, as it does not have any negative impact on the traffic conditions in the area and in fact has a long-term benefit of improving the traffic conditions once the long-term higher order roads have been implemented.

ANNEXURE A
SIDRA ANALYSIS RESULTS

MOVEMENT SUMMARY

Site: 101 [Inter1 AM (Site Folder: 2023 AM Traffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Intersection 1 AM
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: R44 South																
2	T1	All MCs	1772	3.0	1772	3.0		0.716	9.4	LOS A	30.5	219.2	0.40	0.38	0.40	50.9
3	R2	All MCs	214	3.0	214	3.0	*	1.465	503.2	LOS F	42.7	306.6	1.00	2.01	3.06	3.0
Approach			1985	3.0	1985	3.0		1.465	62.5	LOS E	42.7	306.6	0.46	0.56	0.68	17.2
East: Blaauwklippen Rd																
4	L2	All MCs	193	3.0	193	3.0	*	1.445	489.8	LOS F	34.9	250.3	1.00	1.64	2.96	2.9
6	R2	All MCs	168	3.0	168	3.0		1.263	328.9	LOS F	25.2	180.7	1.00	1.53	2.44	3.9
Approach			361	3.0	361	3.0		1.445	414.7	LOS F	34.9	250.3	1.00	1.59	2.72	3.3
North: R44 North																
7	L2	All MCs	257	3.0	257	3.0		0.164	7.5	LOS A	3.0	21.3	0.17	0.63	0.17	40.8
8	T1	All MCs	1445	3.0	1445	3.0		0.448	2.6	LOS A	11.9	85.6	0.25	0.23	0.25	53.9
Approach			1702	3.0	1702	3.0		0.448	3.3	LOS A	11.9	85.6	0.24	0.29	0.24	51.4
All Vehicles			4048	3.0	4048	3.0		1.465	69.0	LOS E	42.7	306.6	0.41	0.54	0.68	15.2

MOVEMENT SUMMARY

Site: 101 [Inter2 AM (Site Folder: 2023 AM Traffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Intersection 2 AM
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 30 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: R44 South																
1	L2	All MCs	1	3.0	1	3.0		0.002	15.2	LOS B	0.0	0.1	0.78	0.58	0.78	46.6
2	T1	All MCs	1	0.0	1	0.0		0.002	10.6	LOS B	0.0	0.1	0.81	0.48	0.81	50.8
Approach			2	1.5	2	1.5		0.002	12.9	LOS B	0.0	0.1	0.80	0.53	0.80	48.6
East: Paradyskloof Rd																
4	L2	All MCs	34	3.0	34	3.0		0.043	11.0	LOS B	0.3	2.1	0.60	0.67	0.60	45.4
Approach			34	3.0	34	3.0		0.043	11.0	LOS B	0.3	2.1	0.60	0.67	0.60	45.4
North: R44 North																
7	L2	All MCs	115	0.0	115	0.0	*	0.309	17.5	LOS B	1.6	10.9	0.89	0.76	0.89	40.8
8	T1	All MCs	1	0.0	1	0.0		0.001	10.5	LOS B	0.0	0.0	0.81	0.46	0.81	51.1
9	R2	All MCs	1	0.0	1	0.0		0.003	16.2	LOS B	0.0	0.1	0.81	0.58	0.81	46.1
Approach			117	0.0	117	0.0		0.309	17.5	LOS B	1.6	10.9	0.89	0.75	0.89	41.0
West: Golf Course																
10	L2	All MCs	1	0.0	1	0.0		0.323	12.7	LOS B	2.3	16.3	0.70	0.74	0.70	48.5
12	R2	All MCs	221	3.0	221	3.0	*	0.323	12.0	LOS B	2.3	16.3	0.70	0.74	0.70	48.6
Approach			222	3.0	222	3.0		0.323	12.0	LOS B	2.3	16.3	0.70	0.74	0.70	48.6
All Vehicles			375	2.0	375	2.0		0.323	13.6	LOS B	2.3	16.3	0.75	0.74	0.75	46.2

MOVEMENT SUMMARY

Site: 105 [Inter3 AM (Site Folder: 2023 AM Traffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Intersection 5 AM
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 40 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: R44 South																
2	T1	All MCs	1724	3.0	1724	3.0		0.790	10.5	LOS B	15.8	113.6	0.84	0.85	0.98	42.1
3	R2	All MCs	141	3.0	141	3.0		0.348	23.0	LOS C	1.3	9.7	0.92	0.75	0.92	27.7
Approach			1865	3.0	1865	3.0		0.790	11.5	LOS B	15.8	113.6	0.84	0.84	0.97	40.6
East: Trumali Str																
4	L2	All MCs	41	3.0	41	3.0		0.129	21.5	LOS C	0.7	5.2	0.88	0.72	0.88	27.9
6	R2	All MCs	196	3.0	196	3.0	*	0.308	22.3	LOS C	1.8	12.9	0.91	0.75	0.91	24.3
Approach			237	3.0	237	3.0		0.308	22.2	LOS C	1.8	12.9	0.90	0.75	0.90	25.0
North: R44 North																
7	L2	All MCs	149	3.0	149	3.0		0.143	13.0	LOS B	1.4	9.8	0.49	0.69	0.49	33.6
8	T1	All MCs	1803	3.0	1803	3.0	*	0.854	16.6	LOS B	20.6	148.1	0.90	0.99	1.17	37.2
Approach			1953	3.0	1953	3.0		0.854	16.3	LOS B	20.6	148.1	0.87	0.97	1.12	37.0
All Vehicles			4055	3.0	4055	3.0		0.854	14.4	LOS B	20.6	148.1	0.86	0.90	1.04	37.8

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MOVEMENT SUMMARY

Site: 104v [Inter4 AM - Conversion (Site Folder: 2023 AM Traffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Access Road															
1	L2	All MCs	3	0.0	3	0.0	0.007	7.5	LOS A	0.0	0.3	0.48	0.56	0.48	51.0
2	T1	All MCs	1	3.0	1	3.0	0.007	6.9	LOS A	0.0	0.3	0.48	0.56	0.48	51.3
3	R2	All MCs	1	3.0	1	3.0	0.007	9.6	LOS A	0.0	0.3	0.48	0.56	0.48	50.7
Approach			5	1.2	5	1.2	0.007	7.8	LOS A	0.0	0.3	0.48	0.56	0.48	51.0
East: Blaauwklippen Rd															
4	L2	All MCs	1	3.0	1	3.0	0.180	5.7	LOS A	1.2	8.5	0.22	0.58	0.22	51.4
5	T1	All MCs	77	0.0	77	0.0	0.180	5.1	LOS A	1.2	8.5	0.22	0.58	0.22	52.0
6	R2	All MCs	127	3.0	127	3.0	0.180	7.8	LOS A	1.2	8.5	0.22	0.58	0.22	51.2
Approach			205	1.9	205	1.9	0.180	6.8	LOS A	1.2	8.5	0.22	0.58	0.22	51.5
North: Wildebosch Rd															
7	L2	All MCs	22	3.0	22	3.0	0.056	6.0	LOS A	0.3	2.3	0.30	0.59	0.30	51.1
8	T1	All MCs	1	3.0	1	3.0	0.056	5.4	LOS A	0.3	2.3	0.30	0.59	0.30	51.5
9	R2	All MCs	39	0.0	39	0.0	0.056	8.0	LOS A	0.3	2.3	0.30	0.59	0.30	51.0
Approach			62	1.1	62	1.1	0.056	7.3	LOS A	0.3	2.3	0.30	0.59	0.30	51.0
West: Blaauwklippen Rd															
10	L2	All MCs	48	0.0	48	0.0	0.126	6.2	LOS A	0.6	4.5	0.32	0.54	0.32	52.1
11	T1	All MCs	87	0.0	87	0.0	0.126	5.5	LOS A	0.6	4.5	0.32	0.54	0.32	52.6
12	R2	All MCs	1	0.0	1	0.0	0.126	8.2	LOS A	0.6	4.5	0.32	0.54	0.32	52.0
Approach			137	0.0	137	0.0	0.126	5.8	LOS A	0.6	4.5	0.32	0.54	0.32	52.4
All Vehicles			409	1.1	409	1.1	0.180	6.5	LOS A	1.2	8.5	0.27	0.57	0.27	51.7

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

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MOVEMENT SUMMARY

Site: 103vv [Inter 5 AM - Conversion (Site Folder: 2023 AM Traffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Wildebosch Rd															
1	L2	All MCs	456	3.0	456	3.0	0.572	6.0	LOS A	6.3	44.9	0.43	0.49	0.43	51.7
2	T1	All MCs	300	3.0	300	3.0	0.572	5.6	LOS A	6.3	44.9	0.43	0.49	0.43	52.2
Approach			756	3.0	756	3.0	0.572	5.8	LOS A	6.3	44.9	0.43	0.49	0.43	51.9
North: Wildebosch Rd															
8	T1	All MCs	113	3.0	113	3.0	0.168	5.8	LOS A	1.1	8.0	0.39	0.56	0.39	51.8
9	R2	All MCs	67	3.0	67	3.0	0.168	8.6	LOS A	1.1	8.0	0.39	0.56	0.39	51.1
Approach			180	3.0	180	3.0	0.168	6.9	LOS A	1.1	8.0	0.39	0.56	0.39	51.5
West: Paradyskloof Rd															
10	L2	All MCs	6	3.0	6	3.0	0.148	7.6	LOS A	0.9	6.5	0.56	0.67	0.56	49.6
12	R2	All MCs	122	3.0	122	3.0	0.148	10.0	LOS A	0.9	6.5	0.56	0.67	0.56	49.4
Approach			128	3.0	128	3.0	0.148	9.9	LOS A	0.9	6.5	0.56	0.67	0.56	49.4
All Vehicles			1064	3.0	1064	3.0	0.572	6.5	LOS A	6.3	44.9	0.44	0.52	0.44	51.5

MOVEMENT SUMMARY

Site: 101 [Inter1 PM (Site Folder: 2023 PM Traffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Intersection 1 AM
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: R44 South																
2	T1	All MCs	1409	3.0	1409	3.0		0.452	13.0	LOS B	11.6	83.6	0.23	0.21	0.23	54.6
3	R2	All MCs	220	3.0	220	3.0	*	3.243	2106.3	LOS F	68.8	493.8	1.00	2.47	5.18	0.7
Approach			1629	3.0	1629	3.0		3.243	295.6	LOS F	68.8	493.8	0.33	0.52	0.90	4.4
East: Blaauwklippen Rd																
4	L2	All MCs	389	3.0	389	3.0	*	3.213	2079.2	LOS F	119.0	854.2	1.00	2.52	5.15	0.7
6	R2	All MCs	342	3.0	342	3.0		2.822	1727.7	LOS F	99.7	715.5	1.00	2.63	4.89	0.8
Approach			732	3.0	732	3.0		3.213	1914.8	LOS F	119.0	854.2	1.00	2.57	5.03	0.7
North: R44 North																
7	L2	All MCs	266	3.0	266	3.0		0.169	8.7	LOS A	2.9	21.1	0.17	0.63	0.17	41.0
8	T1	All MCs	2125	3.0	2125	3.0		0.691	4.2	LOS A	27.1	194.5	0.36	0.33	0.36	51.9
Approach			2392	3.0	2392	3.0		0.691	4.7	LOS A	27.1	194.5	0.34	0.37	0.34	50.4
All Vehicles			4753	3.0	4753	3.0		3.243	398.5	LOS F	119.0	854.2	0.44	0.76	1.25	3.2

MOVEMENT SUMMARY

Site: 101 [Inter2 PM (Site Folder: 2023 PM Traffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Intersection 2 AM
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 30 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: R44 South																
1	L2	All MCs	1	3.0	1	3.0		0.002	14.3	LOS B	0.0	0.1	0.75	0.59	0.75	47.1
2	T1	All MCs	1	0.0	1	0.0		0.002	9.7	LOS A	0.0	0.1	0.78	0.47	0.78	51.2
Approach			2	1.5	2	1.5		0.002	12.2	LOS B	0.0	0.1	0.76	0.53	0.76	49.0
East: Paradyskloof Rd																
4	L2	All MCs	38	3.0	38	3.0		0.052	11.7	LOS B	0.4	2.5	0.64	0.68	0.64	44.9
Approach			38	3.0	38	3.0		0.052	11.7	LOS B	0.4	2.5	0.64	0.68	0.64	44.9
North: R44 North																
7	L2	All MCs	134	0.0	134	0.0	*	0.309	16.6	LOS B	1.7	12.2	0.86	0.76	0.86	41.4
8	T1	All MCs	1	0.0	1	0.0		0.001	9.6	LOS A	0.0	0.0	0.78	0.44	0.78	51.8
9	R2	All MCs	1	0.0	1	0.0		0.002	15.3	LOS B	0.0	0.1	0.78	0.58	0.78	46.7
Approach			136	0.0	136	0.0		0.309	16.5	LOS B	1.7	12.2	0.86	0.76	0.86	41.6
West: Golf Course																
10	L2	All MCs	1	0.0	1	0.0		0.348	13.5	LOS B	2.4	17.3	0.74	0.75	0.74	48.0
12	R2	All MCs	221	3.0	221	3.0	*	0.348	12.8	LOS B	2.4	17.3	0.74	0.75	0.74	48.1
Approach			222	3.0	222	3.0		0.348	12.8	LOS B	2.4	17.3	0.74	0.75	0.74	48.1
All Vehicles			398	2.0	398	2.0		0.348	14.0	LOS B	2.4	17.3	0.77	0.75	0.77	45.9

MOVEMENT SUMMARY

Site: 105 [Inter3 PM (Site Folder: 2023 PM Traffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Intersection 5 AM
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: R44 South																
2	T1	All MCs	1655	3.0	1655	3.0		0.661	5.6	LOS A	12.4	89.0	0.65	0.59	0.65	48.9
3	R2	All MCs	68	3.0	68	3.0		0.203	22.1	LOS C	0.7	5.1	0.80	0.73	0.80	28.2
Approach			1723	3.0	1723	3.0		0.661	6.2	LOS A	12.4	89.0	0.66	0.60	0.66	47.7
East: Trumali Str																
4	L2	All MCs	145	3.0	145	3.0	*	0.571	29.2	LOS C	3.6	26.0	0.98	0.81	1.03	23.9
6	R2	All MCs	205	3.0	205	3.0		0.403	28.3	LOS C	2.5	17.7	0.95	0.77	0.95	21.2
Approach			351	3.0	351	3.0		0.571	28.7	LOS C	3.6	26.0	0.96	0.78	0.98	22.4
North: R44 North																
7	L2	All MCs	83	3.0	83	3.0		0.069	12.2	LOS B	0.7	5.2	0.37	0.66	0.37	34.8
8	T1	All MCs	1983	3.0	1983	3.0	*	0.805	11.8	LOS B	21.1	151.2	0.79	0.80	0.89	42.5
Approach			2066	3.0	2066	3.0		0.805	11.8	LOS B	21.1	151.2	0.77	0.79	0.86	42.2
All Vehicles			4140	3.0	4140	3.0		0.805	10.9	LOS B	21.1	151.2	0.74	0.71	0.79	41.9

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MOVEMENT SUMMARY

Site: 104v [Inter4 PM (Site Folder: 2023 PM Traffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Access Road															
1	L2	All MCs	2	0.0	2	0.0	0.005	6.7	LOS A	0.0	0.2	0.40	0.54	0.40	51.5
2	T1	All MCs	1	3.0	1	3.0	0.005	6.2	LOS A	0.0	0.2	0.40	0.54	0.40	51.8
3	R2	All MCs	1	3.0	1	3.0	0.005	8.9	LOS A	0.0	0.2	0.40	0.54	0.40	51.1
Approach			4	1.5	4	1.5	0.005	7.2	LOS A	0.0	0.2	0.40	0.54	0.40	51.5
East: Blaauwklippen Rd															
4	L2	All MCs	1	3.0	1	3.0	0.123	5.4	LOS A	0.8	5.6	0.10	0.57	0.10	52.2
5	T1	All MCs	96	0.0	96	0.0	0.123	4.7	LOS A	0.8	5.6	0.10	0.57	0.10	52.7
6	R2	All MCs	63	3.0	63	3.0	0.123	7.5	LOS A	0.8	5.6	0.10	0.57	0.10	51.9
Approach			160	1.2	160	1.2	0.123	5.8	LOS A	0.8	5.6	0.10	0.57	0.10	52.4
North: Wildebosch Rd															
7	L2	All MCs	71	3.0	71	3.0	0.076	6.1	LOS A	0.4	3.2	0.33	0.56	0.33	51.7
8	T1	All MCs	1	3.0	1	3.0	0.076	5.6	LOS A	0.4	3.2	0.33	0.56	0.33	52.1
9	R2	All MCs	9	0.0	9	0.0	0.076	8.2	LOS A	0.4	3.2	0.33	0.56	0.33	51.6
Approach			81	2.6	81	2.6	0.076	6.4	LOS A	0.4	3.2	0.33	0.56	0.33	51.7
West: Blaauwklippen Rd															
10	L2	All MCs	48	0.0	48	0.0	0.130	5.8	LOS A	0.7	4.6	0.21	0.52	0.21	52.4
11	T1	All MCs	109	0.0	109	0.0	0.130	5.0	LOS A	0.7	4.6	0.21	0.52	0.21	53.0
12	R2	All MCs	1	0.0	1	0.0	0.130	7.8	LOS A	0.7	4.6	0.21	0.52	0.21	52.3
Approach			159	0.0	159	0.0	0.130	5.3	LOS A	0.7	4.6	0.21	0.52	0.21	52.8
All Vehicles			404	1.0	404	1.0	0.130	5.7	LOS A	0.8	5.6	0.19	0.55	0.19	52.4

MOVEMENT SUMMARY

Site: 103vv [Inter 5 PM (Site Folder: 2023 PM Traffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Wildebosch Rd															
1	L2	All MCs	456	3.0	456	3.0	0.572	6.0	LOS A	6.3	44.9	0.43	0.49	0.43	51.7
2	T1	All MCs	300	3.0	300	3.0	0.572	5.6	LOS A	6.3	44.9	0.43	0.49	0.43	52.2
Approach			756	3.0	756	3.0	0.572	5.8	LOS A	6.3	44.9	0.43	0.49	0.43	51.9
North: Wildebosch Rd															
8	T1	All MCs	113	3.0	113	3.0	0.168	5.8	LOS A	1.1	8.0	0.39	0.56	0.39	51.8
9	R2	All MCs	67	3.0	67	3.0	0.168	8.6	LOS A	1.1	8.0	0.39	0.56	0.39	51.1
Approach			180	3.0	180	3.0	0.168	6.9	LOS A	1.1	8.0	0.39	0.56	0.39	51.5
West: Paradyskloof Rd															
10	L2	All MCs	6	3.0	6	3.0	0.148	7.6	LOS A	0.9	6.5	0.56	0.67	0.56	49.6
12	R2	All MCs	122	3.0	122	3.0	0.148	10.0	LOS A	0.9	6.5	0.56	0.67	0.56	49.4
Approach			128	3.0	128	3.0	0.148	9.9	LOS A	0.9	6.5	0.56	0.67	0.56	49.4
All Vehicles			1064	3.0	1064	3.0	0.572	6.5	LOS A	6.3	44.9	0.44	0.52	0.44	51.5