

Report No. 119/1

George Municipality
Traffic Impact Assessment

Proposed Development of Portion
278 of the Farm Kraaibosch 195
George

Date: October 2017

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Project Name: Traffic Impact Assessment
Proposed Development of Portion 278 of the Farm Kraaibosch 195 George

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Certification Letter

25 October 2017
George Municipality
PO Box 19
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To whom it may concern

Dear Sir/Madam

RE: TRAFFIC IMPACT ASSESSMENT: PROPOSED DEVELOPMENT OF
PORTION 278 OF THE FARM KRAAIBOSCH 195 GEORGE

It is hereby certified that this Traffic Impact Assessment has been prepared in accordance with the requirements of the *South African Traffic Impact and Site Traffic Assessment Manual (TMH 16)*.

Yours faithfully

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1. Introduction

1.1 Introduction

Presently, portions 278 and 282 of the Farm Kraaibosch 195 are owned by one owner, namely Garden Route Gateway Plaza (Pty) Ltd. The owners are presently in the process of consolidating these portions.¹ Portion 278 is currently zoned Agricultural Zone I and portion 282 is zoned Business Zone VI.² A Sasol Filling Station has been developed on the latter portion.³ There is no proposed change in the current land use for portion 282 and therefore will not be further discussed in this report.

The owners of portion 278 propose to make application to the George Municipality for various consent uses, as detailed in this report, to be established on the property.

The purpose of this traffic impact assessment (TIA), prepared in terms of section 38(2)(b) of the National Land Transport Act, 2009, is to determine the impact, if any, of the proposed change in land use on the existing transportation infrastructure in the vicinity thereof.

The study area is shown in figure 2 below and the only intersection affected by the proposed development is the roundabout on the N2 highway abutting the site.

1.2 Locality

Portion 278 is situated approximately 7 kilometres south-east of the George central business district (CBD) (see figure 1).

The property is situated adjacent to the N2 highway⁴ and abuts the access road to Welgelegen Estate (see figure 2).

Portion 278 is situated on the fringe of the urban area and beyond it is rural farmlands.

¹ *Vrolijk Motivation Report 1.*

² *Vrolijk Motivation Report 5.*

³ *Vrolijk Motivation Report 5.*

⁴ COTA TRH 26, iv.

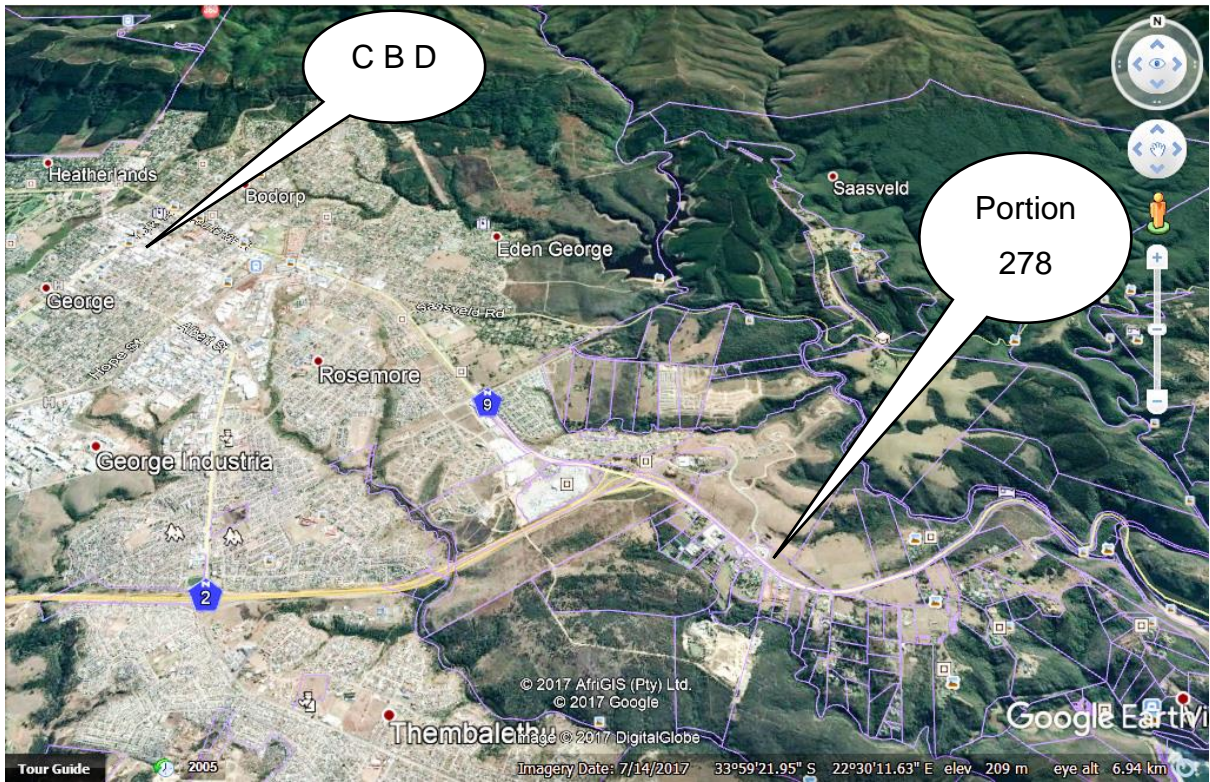


Figure 1 Locality Plan Macro

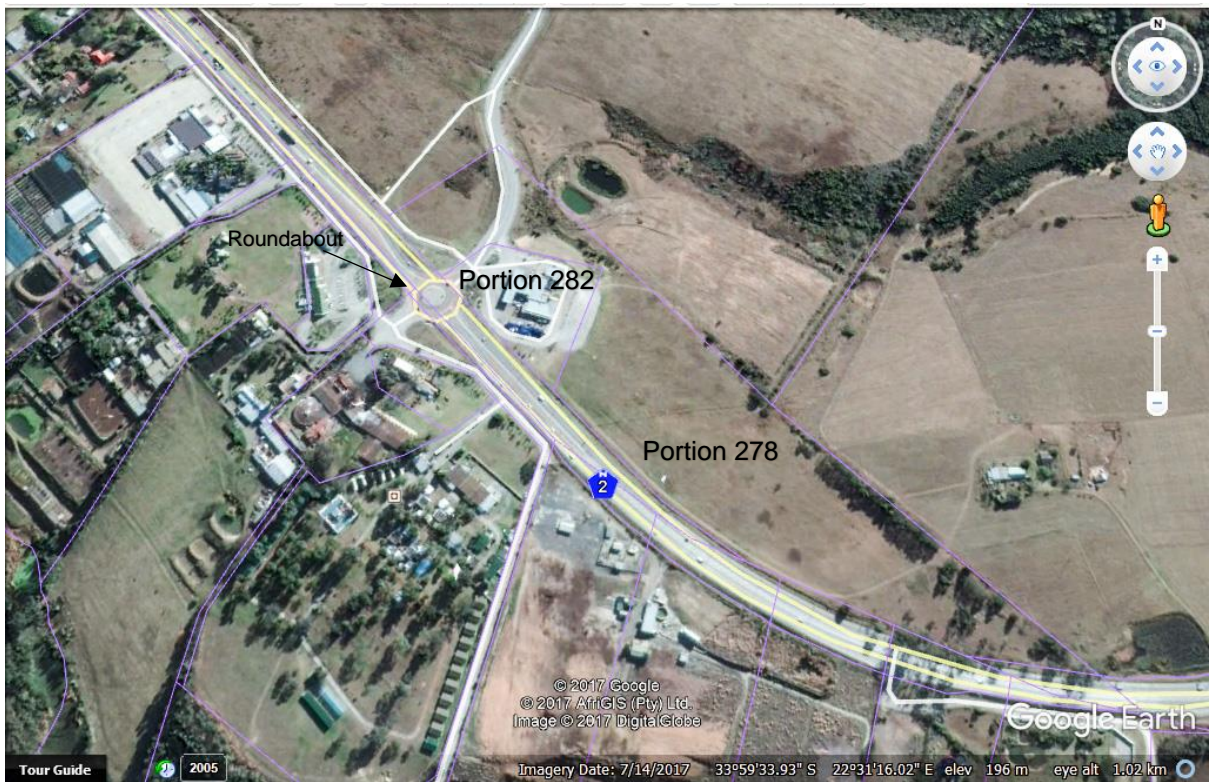


Figure 2 Locality Plan Micro

2. Functional classification of roads⁵

The proposed development can be accessed from the N2 highway via the access road to Welgelegen Estate.

The N2 highway adjacent to the site can be classified as a Class R1 principal arterial.⁶ SANRAL is the road authority for the N2 and the road abutting the site consists of a dual carriageway road with two traffic lanes in each direction.

The access road to Welgegelen estate is a single carriageway road with one traffic lane in each direction. This road could, *presently, only* be classified as a Class U5b and the road authority is George Municipality.⁷

3. Proposed land uses and trip generation

3.1 Introduction

The proposed consent uses to be applied for,⁸ which could be regarded as traffic generators, are:

- A nursery
- A family restaurant
- A deli, a bakery, a farm stall etc.
- A facility for conferences which will consist of two small conference rooms each of which will accommodate 15 persons
- A hall for social purposes which could be used for a reception area for weddings that could be held in the chapel and other social functions.
- In terms of the current zoning for Portion 278, Agricultural Zone 1, the existing riding school is a primary right and therefore will not be regarded as a change in land use for the purposes of this report.

Although the proposed consent uses to be applied for are aimed predominantly at the tourist industry, it is anticipated that most of the trips that will be generated by the

⁵ COTA TRH 26, 1; COTA TMH 16 Vol 2, 4; the functional classification of the roads is to be determined by the Municipality. To date it is unknown if the George municipality have classified their roads (there being no evidence thereof on their website) and therefore the functional classification of roads herein is my own using my engineering judgment.

⁶ COTA TRH 26, 24.

⁷ COTA TRH 26, 30.

⁸ Vrolijk Motivation Report 6ff.

proposed development will be those made by local inhabitants, especially outside of the tourist season.

Most of the proposed consent uses will only generate trips to and from the development during the weekends and or public holidays. These trips will not coincide with the morning and evening peak hours⁹ on the adjacent N2 highway which is the primary access road to the proposed development.

There are however, some proposed consent uses that will generate trips which will impact on the morning and evening peak hours. It is the impact of these trips on the adjacent N2 roundabout that will have to be assessed in this report.

3.2 Basic additional peak hour vehicular trips

The trips generated by the consent uses mentioned above that would affect the average weekly morning and evening peak hours will be discussed *seriatim* below.

3.2.1 The Nursery

This proposed land use generates most of the morning and evening peak hour trips. The unit of measurement is per 100 m² of gross leasable area (GLA).¹⁰ The GLA of the proposed nursery is 3570 m² and the morning peak hour trip generation rate is 1.40 trips with a 65:35 in: out split.¹¹ The evening peak hour trip generation rate is 3.00 with a 30:70 in: out split.¹² The trips generated by this proposed land use are summarised in Table 1 below.

3.2.2 The Restaurant

The land use which most closely simulates the proposed restaurant is that of a family “sit down restaurant”.¹³ The proposed GLA of the restaurant is 423 m² and therefore the morning peak hour trips generated will be zero.¹⁴ The evening peak hour trips generation rate is 8.00 with a 65:35 in: out split.¹⁵

The trips generated are summarized in the table below.

⁹ COTA *TMH 17* 13.

¹⁰ COTA *TMH 17* 19.

¹¹ See *Vrolijk Motivation Report* 8ff and Annexure R; COTA *TMH 17* Table 3.3 Land use code 817.

¹² COTA *TMH 17* Table 3.3 Land use code 817.

¹³ COTA *TMH 17*, 19 and Table 3.3 Land use code 932.

¹⁴ *Vrolijk Motivation Report* 14 and Annexure R; COTA *TMH 17* Table 3.3 Land use code 932.

¹⁵ COTA *TMH 17* Table 3.3 Land use code 932.

3.2.3 Conference Rooms

The proposed development has two smallish conference rooms each of which will accommodate up to 15 persons.¹⁶ The unit of measurement for the trip generation rates are per seat. The morning peak hour generation rate is 0.5 trips per seat.¹⁷ There are no evening peak hour trips generated by the proposed conference facilities.¹⁸

3.2.4 Deli Sales and related Areas

This proposed land use can be likened to that of a shopping centre and therefore the trip generation rate for the latter will be used in this instance. The unit of measurement is again per 100m² of GLA. The proposed GLA of the Deli and the Bakery and cooking areas is 600m².¹⁹ The morning peak hour trip generation rate is 0.6 with a 65:35 in: out split and the evening peak hour trip generation rate is 3.40 with a 50:50 in: out split.²⁰ The trips generated are summarized in Table 1 below.

3.2.5 Other Proposed Land Uses

The trips generated by all the other proposed land uses (consent uses) such as the chapel, the venues area, the stables and the horse riding area²¹ are all related to weekend activities and therefore do not affect the weekday morning and evening peak hour traffic using the roundabout on the N2.

3.3 Public transport

Portion 278 cannot be accessed nor influenced by existing public transport corridors.²²

3.4 Non-motorised transport

There are no pedestrian and cyclist facilities near the proposed development and in any event, there are no trip generation rates for non-motorised transport.²³

¹⁶ *Vrolijk Motivation Report* 18.

¹⁷ COTA *TMH 17* Table 3.3 Land use code 780.

¹⁸ COTA *TMH 17* Table 3.3 Land use code 780.

¹⁹ *Vrolijk Motivation Report* 15 and Annexure R.

²⁰ COTA *TMH 17* Table 3.3 Land use code 820.

²¹ *Vrolijk Motivation Report* 16ff.

²² COTA *TMH 17* 15.

²³ COTA *TMH 16 Vol 1*, B16.

3.5 Mixed-use developments

Portion 278 is not situated within a mixed-use development area.²⁴

3.6 Application of reduction factors to vehicular trips.

In terms of 3.4 and 3.5 above no trip reduction factors are applicable to the estimated trips generated by the proposed change in land use.²⁵ All the traffic generated by the proposed development are primary trips; in other words, new trips.²⁶

Table 1

Land Use	Unit of measurement	Unit	AM peak factor	AM Trips	In	Out	PM factor	PM trips	In	Out
Nursery	100 m ² GLA	35,70	1,4	50	32	17	3	107	32	75
Restaurant	100 m ² GLA	4,23	0	0	0	0	8	34	22	12
Conference	seats	30,00	0,5	15	14	2	0	0		
Shopping	100 m ² GLA	6,00	0,6	4	2	2	3,4	20	10	10
Trips				69	48	21		161	64	97

4 Existing Traffic volumes

As mentioned the only intersection affected by the proposed development of Portion 278 is the roundabout on the N2 highway adjacent to the site.

Manual traffic counts were undertaken at this intersection during the evening peak from 16h00 till 18h00 on the 26th September 2017 and during the morning peak from 06h00 till 08h00 on the 27th of September 2017.²⁷ Although there was a public holiday on 25 September 2014 these counting days are not considered abnormal.²⁸

The traffic movements are given in figure 3 below and the results of the traffic counts are given in Tables 2 and 3 below.

²⁴ See COTA *TMH 17 15*.

²⁵ COTA *TMH 17 16*.

²⁶ See COTA *TMH 16 Vol 1, B10ff* for a description of trips.

²⁷ COTA *TMH 17 13*.

²⁸ COTA *TMH 17 Table 1.5*.

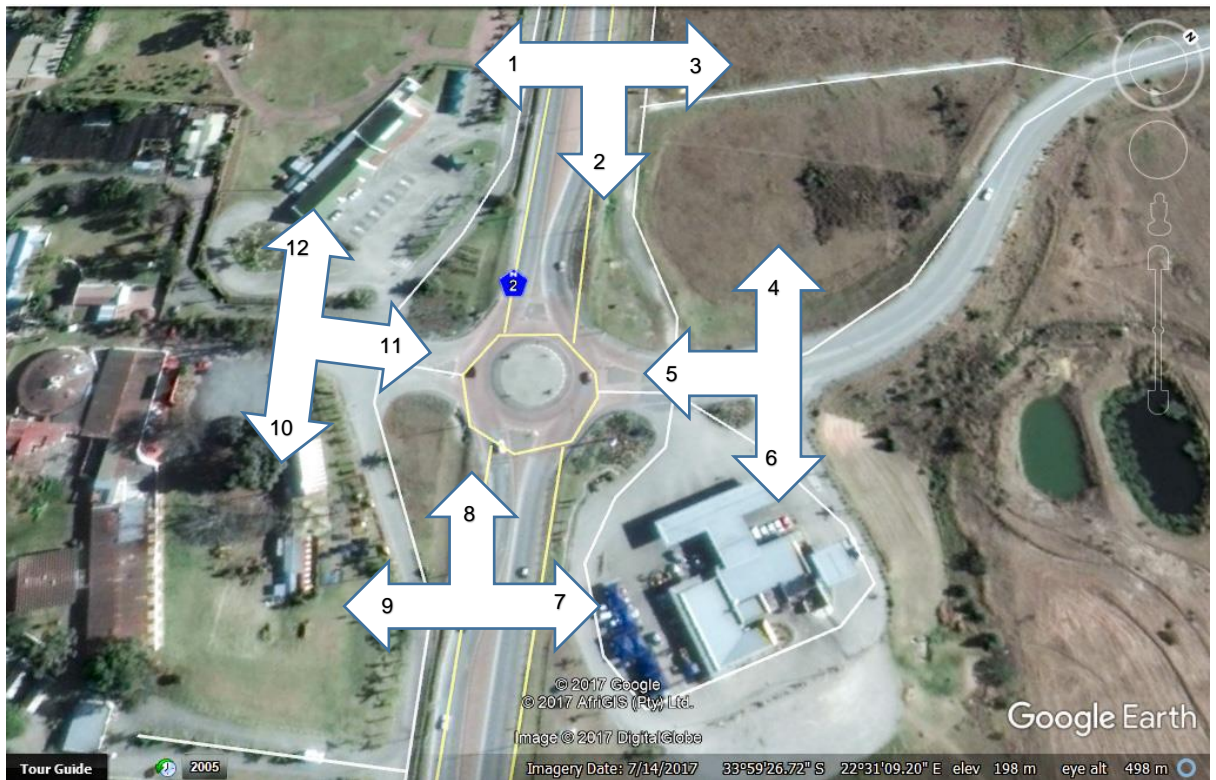


Figure 3 Traffic movements at roundabout

Table 2 Morning Peak Hour

Movement No.	Total	Percent Heavies	PHF
1	30	33	0.71
2	449	18	0.89
3	91	9	0.77
4	32	3	0.86
5	5	20	0.50
6	36	3	0.73
7	4	0	0.5
8	680	6	0.95
9	1	0	0.25
10	5	20	0.33
11	8	13	0.44
12	46	11	0.79
Total	1387		

Table 3 Evening Peak hour

Mvt No.		Total	H		Total		MVT Total			Total
1	39		0				39			
2	665		19				684			
3	57	761	3	22			60			783
4	57		1				58			
5	1		0				1			
6	43	101	1	2			44			103
7	17		4				21			
8	441		61				502			
9	6	464	0	65			6			529
10	6		0				6			
11	1		0				1			
12	46	53	0	0			46			53

5 Traffic analyses

5.1 Methodology

The proposed traffic analyses will be done in accordance with TMH 16 Volume 1. Firstly, the existing background traffic will be analysed using the SIDRA traffic simulation suite of programmes (version 7.0) using the volumes given in Tables 2 and 3 above to ascertain existing levels of service (LOS) and other parameters for the morning and evening peak hours. This will be the design horizon year namely 2017.²⁹

Secondly, the development traffic given in table 1 above will be assigned to the existing network and the roundabout reanalysed to see what effect the proposed development will have on the LOS and capacity of the roundabout.

²⁹ COTA TMH 16 Vol 1 B2.

Finally, an analysis of the roundabout will be done for a 5-year planning horizon (2022) by increasing the existing background traffic volumes by a growth factor of 2.85 percent per annum.³⁰

5.2 Trip assignment

The trips generated were assigned to the network in accordance with the figure below.



Figure 4 Trip assignment

The results of the trip assignments are given in the tables below:

³⁰ https://mnis.pgwc.gov.za/mnis/misx_growth_rate_rep.growth_rate?p_node=2843a (last visited on 18/10/2017). The Provincial Government Western Cape have carried out historical traffic counts on Knysna Road (TR2/10) and the results of these counts have indicated a 2.85% growth rate for the period 06/07/2000 to 12/02/2016. In terms of COTA *TMH 17* Table 1.1 this equates to a low growth rate.

Table 4 Background traffic plus development traffic morning peak hour

Movement No.	Total	Dev Trips	Total
1	30	0	30
2	449	0	449
3	91	36	127
4	32	16	48
5	5	0	5
6	36	5	41
7	4	12	16
8	680	0	680
9	1	0	1
10	5	0	5
11	8	0	8
12	46	0	46
Totals	1387	69	1456

Table 5 Background traffic plus development traffic evening peak hour

Movement No.	Total	Development Trips	Total
1	39	0	39
2	684	0	684
3	60	48	108
4	58	73	131
5	1	0	1
6	44	24	68
7	21	16	37
8	502	0	502
9	6	0	6
10	6	0	6
11	1	0	1
12	46	0	46
	1468	161	1629

5.3 5-year Horizon

As mentioned the background traffic was escalated by 2.85% per annum to predict a future 5-year hence scenario. The results of the traffic volumes for the 5-year horizon are given in the tables below.

Table 6 5-year horizon traffic volumes morning peak hour

Mvt No.	Existing Volumes	5- year horizon volumes	Plus Dev traffic	Total
1	30	35	0	35
2	449	517	0	517
3	91	105	36	141
4	32	37	16	53
5	5	6	0	6
6	36	41	5	46
7	4	5	12	17
8	680	783	0	783
9	1	1	0	1
10	5	6	0	6
11	8	9	0	9
12	46	53	0	53
Totals	1387	1596	69	1665

Table 7 5-year horizon traffic volumes evening peak hour

Mvt No.	Existing Volumes	5 year horizon volumes	Dev trips	Total
1	39	45	0	45
2	684	787	0	787
3	60	69	48	117
4	58	67	73	140
5	1	1	0	1
6	44	51	24	75
7	21	24	16	40
8	502	578	0	578
9	6	7	0	7
10	6	7	0	7
11	1	1	0	1
12	46	53	0	53
	1468	1690	161	1851

6 Results of traffic analyses

The traffic analyses have been done by EFG Engineers (Pty) Ltd using the SIDRA traffic simulation suite of programmes (version 7.0). The results of the traffic analyses are given in Annexure A and are summarised in the table below.

Table 8 Summary of SIDRA Analyses

Approach / Movements		2017 AM - No Dev				2017 AM + Dev				2022 AM - No Dev				2022 AM + Dev			
		v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)
SouthEast: N2 (Wilderness)	Left	0.26	4.2	A	12.4	0.27	4.3	A	13.4	0.30	4.3	A	15.4	0.32	4.4	A	16.5
	Through	0.26	4.3	A	12.4	0.27	4.4	A	13.4	0.30	4.4	A	15.4	0.32	4.6	A	16.5
	Right	0.26	9.6	A	12.3	0.27	9.7	A	13.2	0.30	9.7	A	15.2	0.32	9.9	A	16.2
	Approach	0.26	4.4	A	12.4	0.27	4.6	A	13.4	0.30	4.5	A	15.4	0.32	4.8	A	16.5
NorthEast: Side Road (Sasol)	Left	0.10	4.8	A	1.9	0.12	4.9	A	2.6	0.12	5.0	A	2.5	0.14	5.1	A	3.2
	Through	0.10	5.1	A	1.9	0.12	5.2	A	2.6	0.12	5.4	A	2.5	0.14	5.5	A	3.2
	Right	0.10	10.2	B	1.9	0.12	10.2	B	2.6	0.12	10.4	B	2.5	0.14	10.5	B	3.2
	Approach	0.10	6.9	A	1.9	0.12	7.4	A	2.6	0.12	7.1	A	2.5	0.14	7.5	A	3.2
NorthWest: N2 (George)	Left	0.23	4.0	A	12.2	0.25	4.1	A	13.2	0.27	4.0	A	15.0	0.29	4.1	A	16.0
	Through	0.23	4.0	A	12.2	0.25	4.2	A	13.2	0.27	4.1	A	15.0	0.29	4.2	A	16.0
	Right	0.23	9.6	A	12.5	0.25	9.8	A	13.7	0.27	9.6	A	15.3	0.29	9.8	A	16.5
	Approach	0.23	4.4	A	12.5	0.25	4.5	A	13.7	0.27	4.4	A	15.3	0.29	4.6	A	16.5
SouthWest: Side Road (Engen)	Left	0.09	5.3	A	2.1	0.09	5.4	A	2.1	0.11	5.6	A	2.7	0.11	5.7	A	2.8
	Through	0.09	5.3	A	2.1	0.09	5.4	A	2.1	0.11	5.6	A	2.7	0.11	5.7	A	2.8
	Right	0.09	10.9	B	2.1	0.09	10.9	B	2.1	0.11	11.2	B	2.7	0.11	11.3	B	2.8
	Approach	0.09	5.9	A	2.1	0.09	5.9	A	2.1	0.11	6.2	A	2.7	0.11	6.3	A	2.8
All Vehicles		0.26	4.6	A	12.5	0.27	4.8	A	13.7	0.30	4.7	A	15.4	0.32	4.9	A	16.5

Approach / Movements		2017 PM - No Dev				2017 PM + Dev				2022 PM - No Dev				2022 PM + Dev			
		v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)
SouthEast: N2 (Wilderness)	Left	0.28	4.5	A	14.9	0.33	5.1	A	18.2	0.33	4.7	A	18.6	0.39	5.4	A	22.7
	Through	0.28	4.7	A	14.9	0.33	5.5	A	18.2	0.33	4.9	A	18.6	0.39	5.7	A	22.7
	Right	0.28	10.3	B	14.7	0.33	11.2	B	17.7	0.33	10.6	B	18.3	0.39	11.6	B	21.9
	Approach	0.28	5.0	A	14.9	0.33	5.9	A	18.2	0.33	5.2	A	18.6	0.39	6.1	A	22.7
NorthEast: Side Road (Sasol)	Left	0.15	5.5	A	3.5	0.31	5.8	A	8.1	0.19	5.9	A	4.6	0.36	6.5	A	10.5
	Through	0.15	5.5	A	3.5	0.31	5.9	A	8.1	0.19	5.9	A	4.6	0.36	6.5	A	10.5
	Right	0.15	10.9	B	3.5	0.31	11.2	B	8.1	0.19	11.2	B	4.6	0.36	11.8	B	10.5
	Approach	0.15	8.8	A	3.5	0.31	9.6	A	8.1	0.19	9.2	A	4.6	0.36	10.2	B	10.5
NorthWest: N2 (George)	Left	0.32	4.0	A	17.5	0.36	4.1	A	20.8	0.38	4.1	A	21.9	0.41	4.2	A	25.9
	Through	0.32	4.0	A	17.5	0.36	4.2	A	20.8	0.38	4.0	A	21.9	0.41	4.2	A	25.9
	Right	0.32	9.3	A	17.2	0.36	9.5	A	20.3	0.38	9.4	A	21.6	0.41	9.6	A	25.3
	Approach	0.32	4.3	A	17.5	0.36	4.5	A	20.8	0.38	4.4	A	21.9	0.41	4.6	A	25.9
SouthWest: Side Road (Engen)	Left	0.10	5.2	A	2.2	0.11	5.6	A	2.7	0.12	5.5	A	2.9	0.13	6.0	A	3.6
	Through	0.10	5.3	A	2.2	0.11	5.7	A	2.7	0.12	5.6	A	2.9	0.13	6.0	A	3.6
	Right	0.10	10.6	B	2.2	0.11	11.0	B	2.7	0.12	10.9	B	2.9	0.13	11.3	B	3.6
	Approach	0.10	5.8	A	2.2	0.11	6.2	A	2.7	0.12	6.2	A	2.9	0.13	6.6	A	3.6
All Vehicles		0.32	4.9	A	17.5	0.36	5.7	A	20.8	0.38	5.1	A	21.9	0.41	5.9	A	25.9

From these results, it can be stated with authority that the proposed development will have a minimal impact on the LOS and capacity of the roundabout on the N2.³¹

The only important aspects that can be noted from the results are

- That at present there are only three movements that have a LOS of B namely, the right turn from the Sasol approach, the right turn from the old Engen approach and the right turn on the N2 from Wilderness. The two former

³¹ See COTA TMH 16 Vol 2 9f for minimum capacity analysis standards.

movements occur in the morning and evening peak hours and the latter only in the evening peak hour.

- The maximum existing delay is 10.9 seconds.
- The movement with the maximum increase in delay is the right turn movement from Wilderness. This movement's delay increased from 10.3 seconds (existing without development) to 11.6 seconds (2022 traffic plus development).³² This is an increase of only ±13%.
- The maximum degree of saturation (volume to capacity ratio) is estimated to be 41%.

7 Access to development

The access to the proposed development will be via the existing access to the Sasol Filling station which is an existing approved access. *The existing access to portion 278 has been in existence for ±16 years and was redesigned and reconstructed by the Municipality road authority, circa 2010/2011, when the access road to Welgelegen was expropriated and extended over portion 282 (the Sasol Filling Station site). At present there is no feasible alternative access to portion 278.*³³

*The spacing of the existing access from the N2 is ±80 metres which is more than the minimum spacing required for a class U5b residential access street (the present functional classification for the Welgelegen access road-see paragraph 2 above).*³⁴

It must be noted that the present access spacing would still be acceptable even if, in the future, the functionality of the Welgelegen access road is upgraded to a class U4b; this is possibly the highest functional classification of the road because it already provides direct access to adjacent erven which is not desirable for a class U3 road.

³² Page 48.

³³ See COTA TRH 26 43 to determine how existing accesses which are historical rights have to be handled.

³⁴ COTA TMH 16 Vol 2, 23.

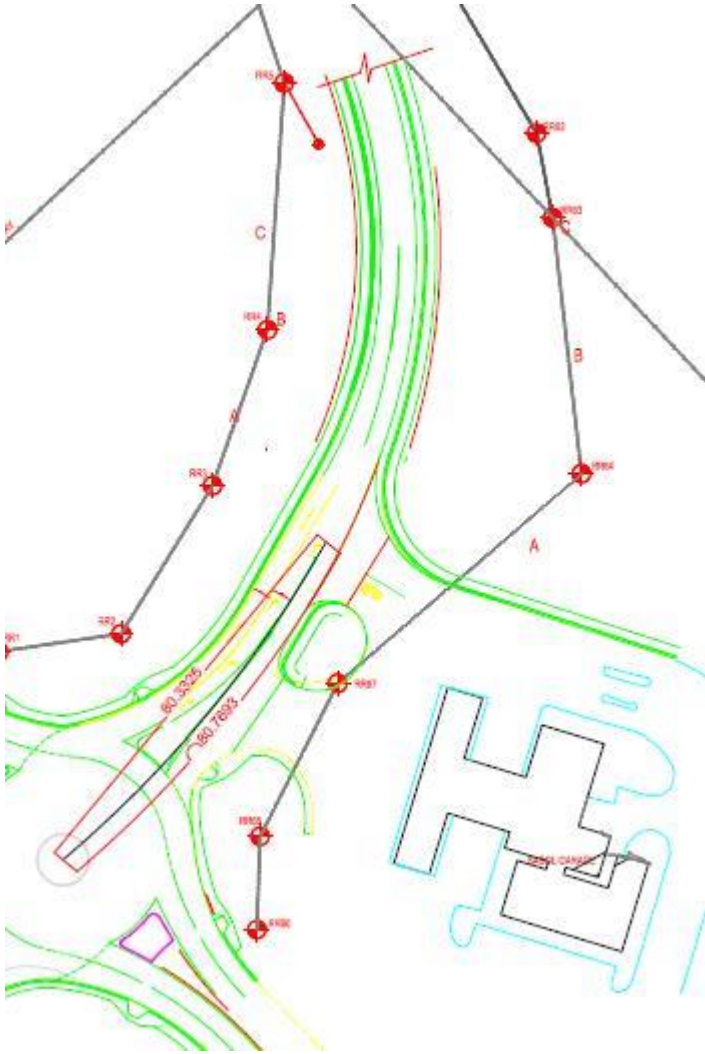


Figure 5 Present access spacing

8 Summary and conclusions

When comparing the results of the traffic impact analyses with the national standards³⁵ it can be stated with confidence that the proposed developments (consent uses) for portion 278 will have an insignificant impact on the capacity and LOS of the existing roundabout situated on the N2 adjacent to the site.

9 Recommendations.

As the proposed consent uses (change in land use) on portion 278 will have an insignificant impact on the existing transportation infrastructure in the area it is recommended that:

³⁵ COTA TMH 16 Vol 2 9f.

1. The proposed consent uses be approved without any mitigating measures.

Bibliography

Books, journals and articles

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Annexure A

Results of Sidra Analyses

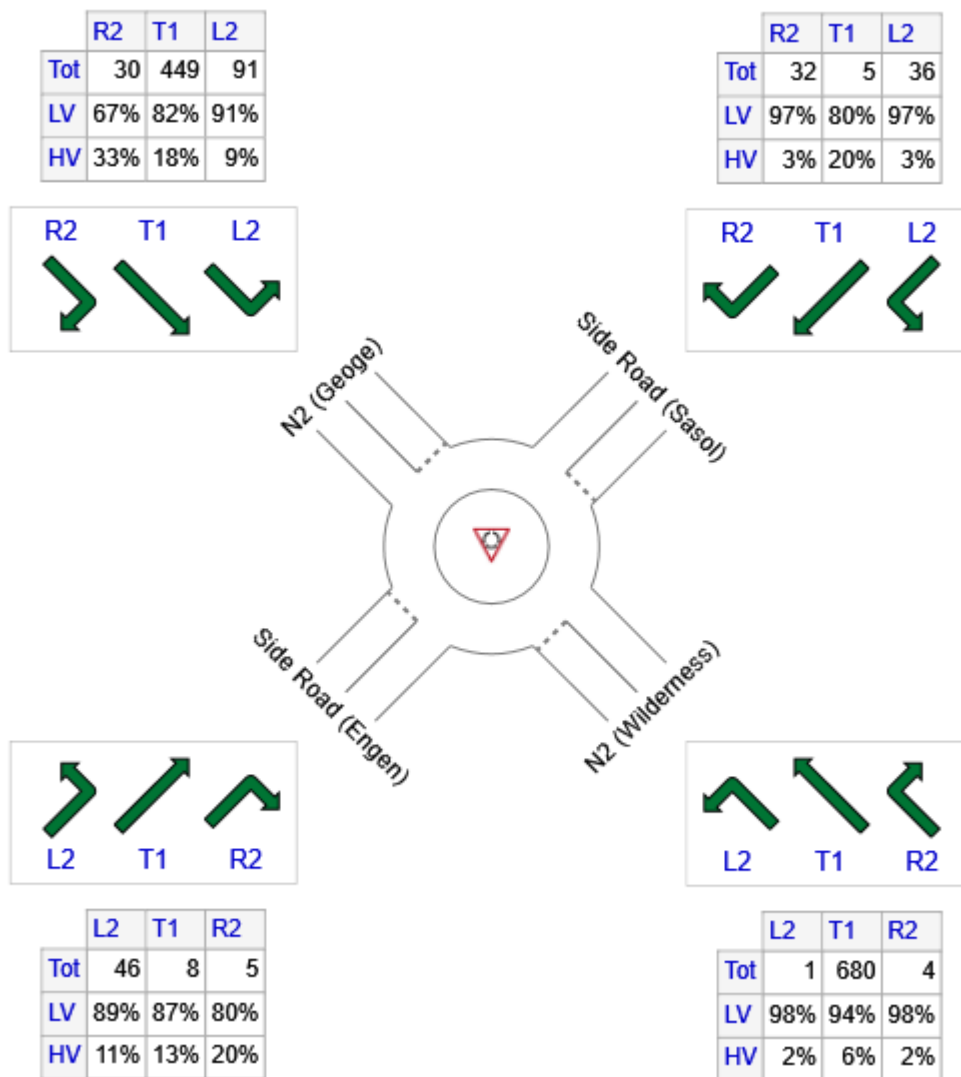
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 Site: [N2 Circle George 2017 AM Existing]

Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: N2 (Wilderness)	685	644	41
NE: Side Road (Sasol)	73	70	3

NW: N2 (Geoge)	570	471	99
SW: Side Road (Engen)	59	52	7
Total	1387	1237	150

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Project: C:\Users\DaveF\Documents\EFG Data\Projects\George\George.sip7

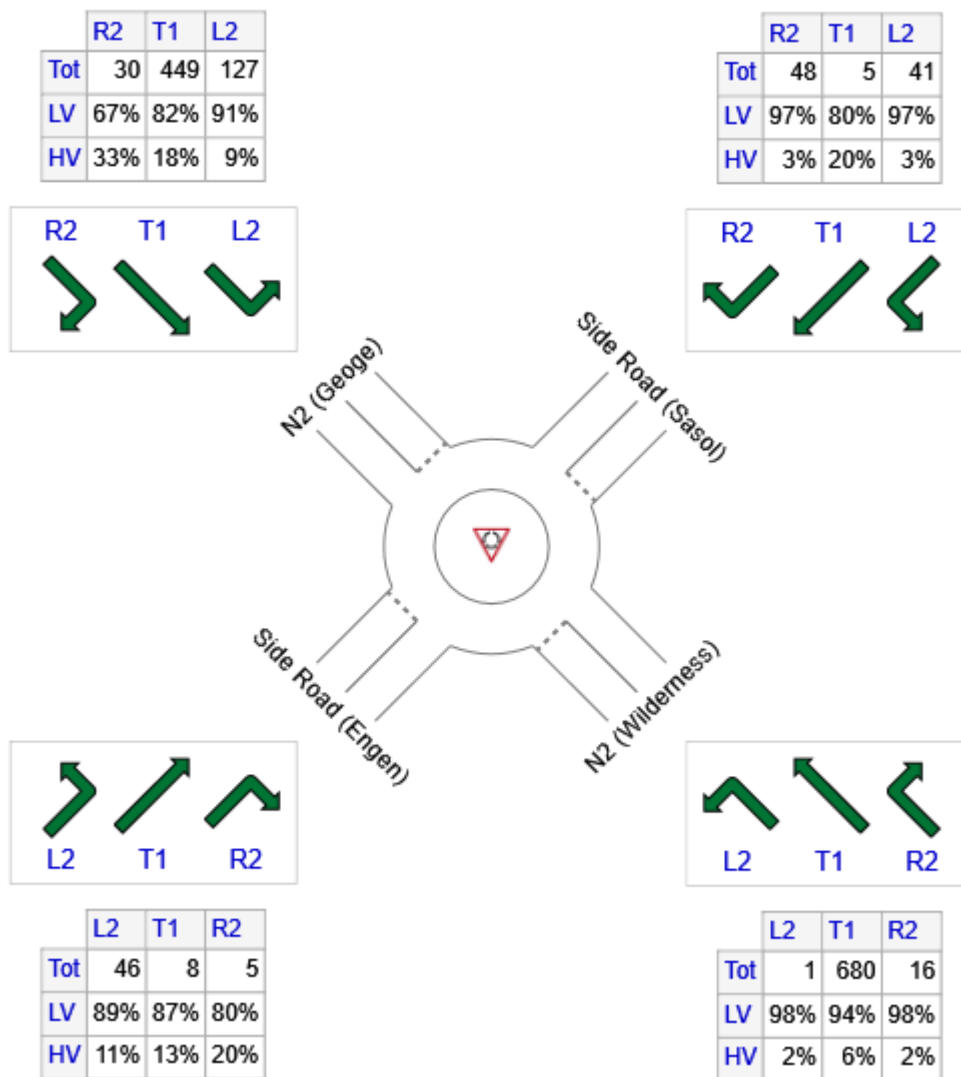
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 Site: [N2 Circle George 2017 AM Existing + Dev]

Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: N2 (Wilderness)	697	656	41
NE: Side Road (Sasol)	94	90	4

NW: N2 (Geoge)	606	504	102
SW: Side Road (Engen)	59	52	7
Total	1456	1302	154

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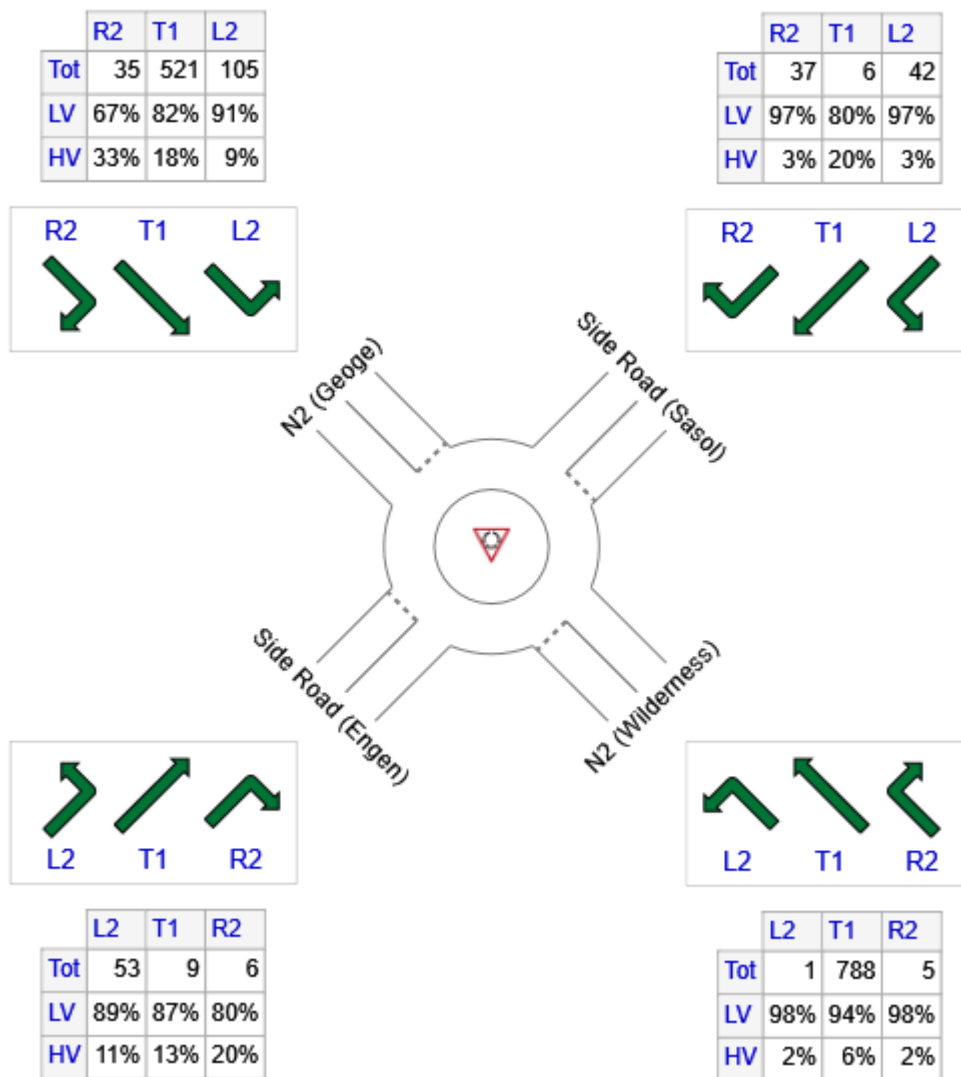
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 Site: [N2 Circle George 2022 AM No Dev]

Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: N2 (Wilderness)	794	747	47
NE: Side Road (Sasol)	85	81	4

NW: N2 (Geoge)	661	546	115
SW: Side Road (Engen)	68	60	8
Total	1608	1434	174

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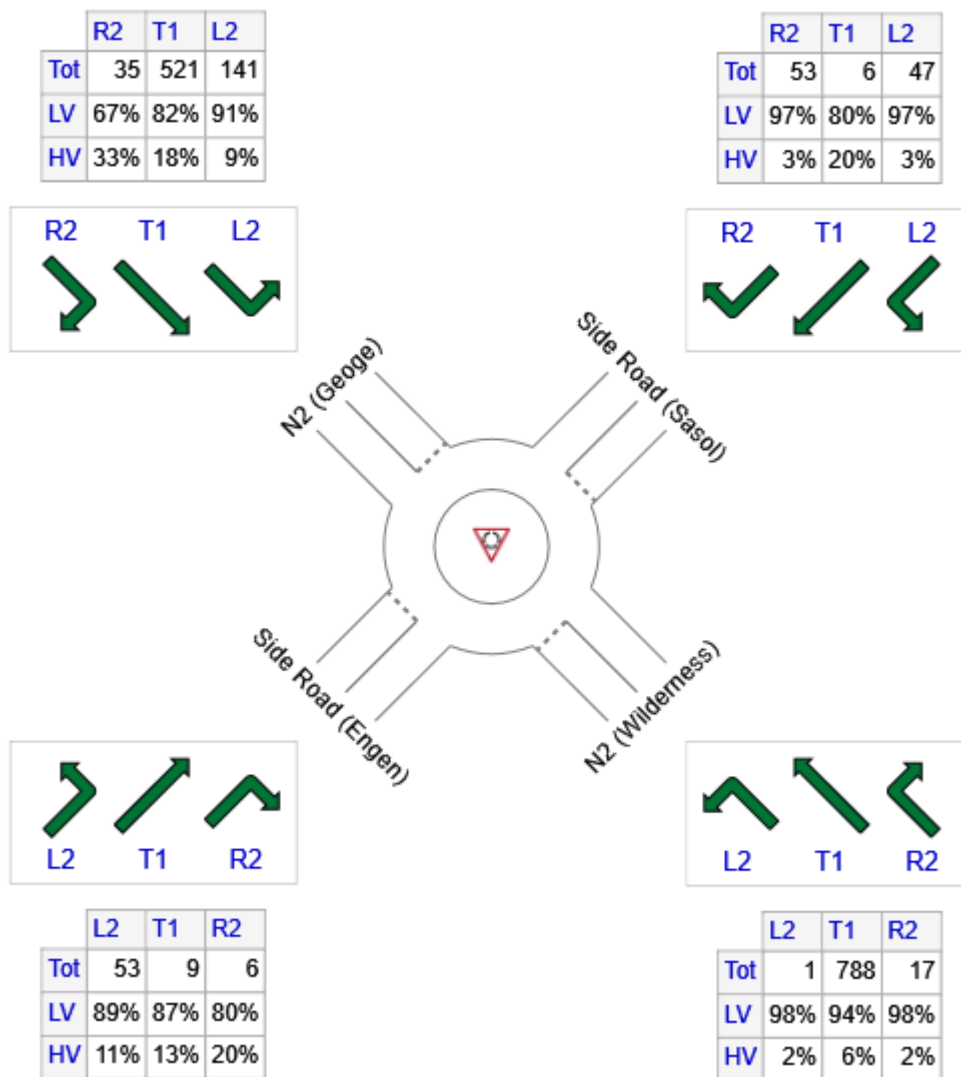
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 Site: [N2 Circle George 2022 AM + Dev]

Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: N2 (Wilderness)	806	758	48
NE: Side Road (Sasol)	106	102	4

NW: N2 (Geoge)	697	579	118
SW: Side Road (Engen)	68	60	8
Total	1677	1499	178

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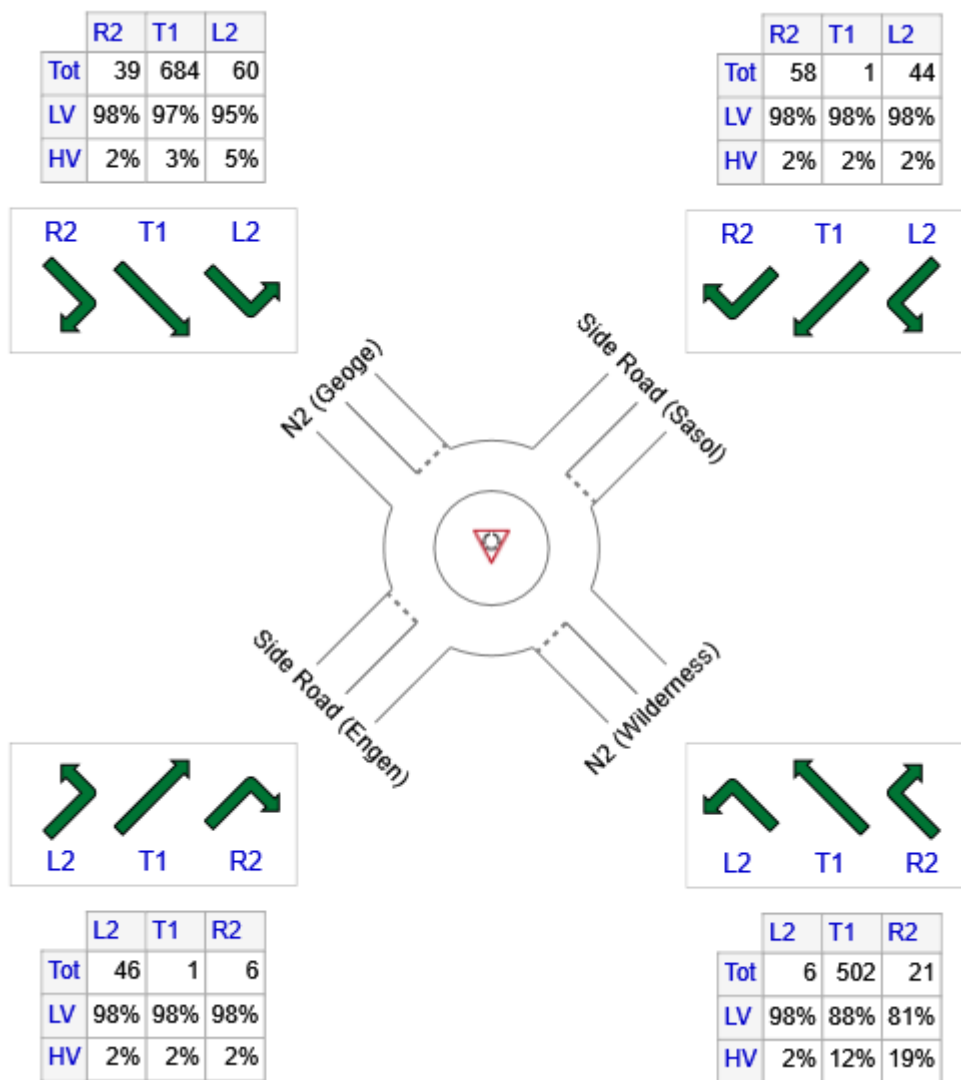
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 Site: [N2 Circle George 2017 PM Existing]

Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: N2 (Wilderness)	529	465	64
NE: Side Road (Sasol)	103	101	2
NW: N2 (George)	783	759	24

SW: Side Road (Engen)	53	52	1
Total	1468	1376	92

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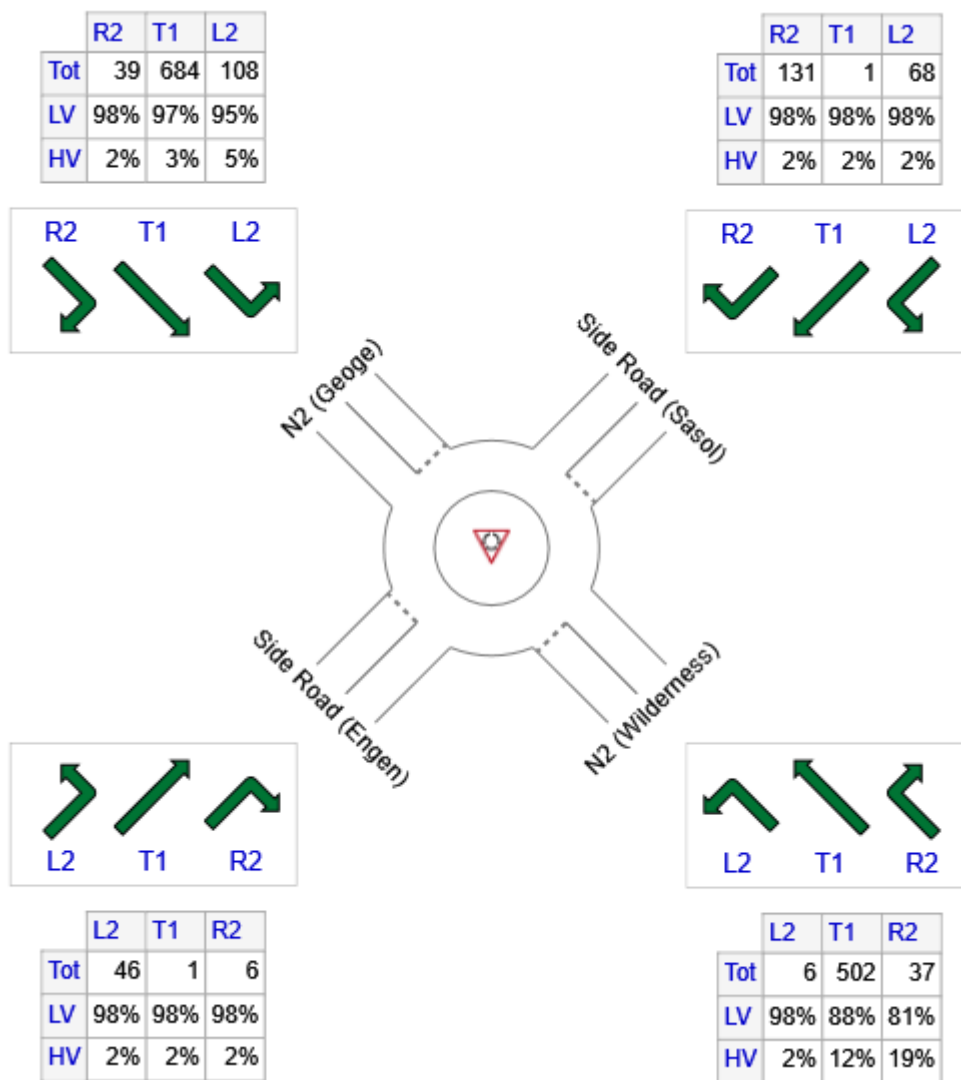
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 Site: [N2 Circle George 2017 PM Existing + Dev]

Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: N2 (Wilderness)	545	478	67
NE: Side Road (Sasol)	200	196	4
NW: N2 (George)	831	804	27

SW: Side Road (Engen)	53	52	1
Total	1629	1530	99

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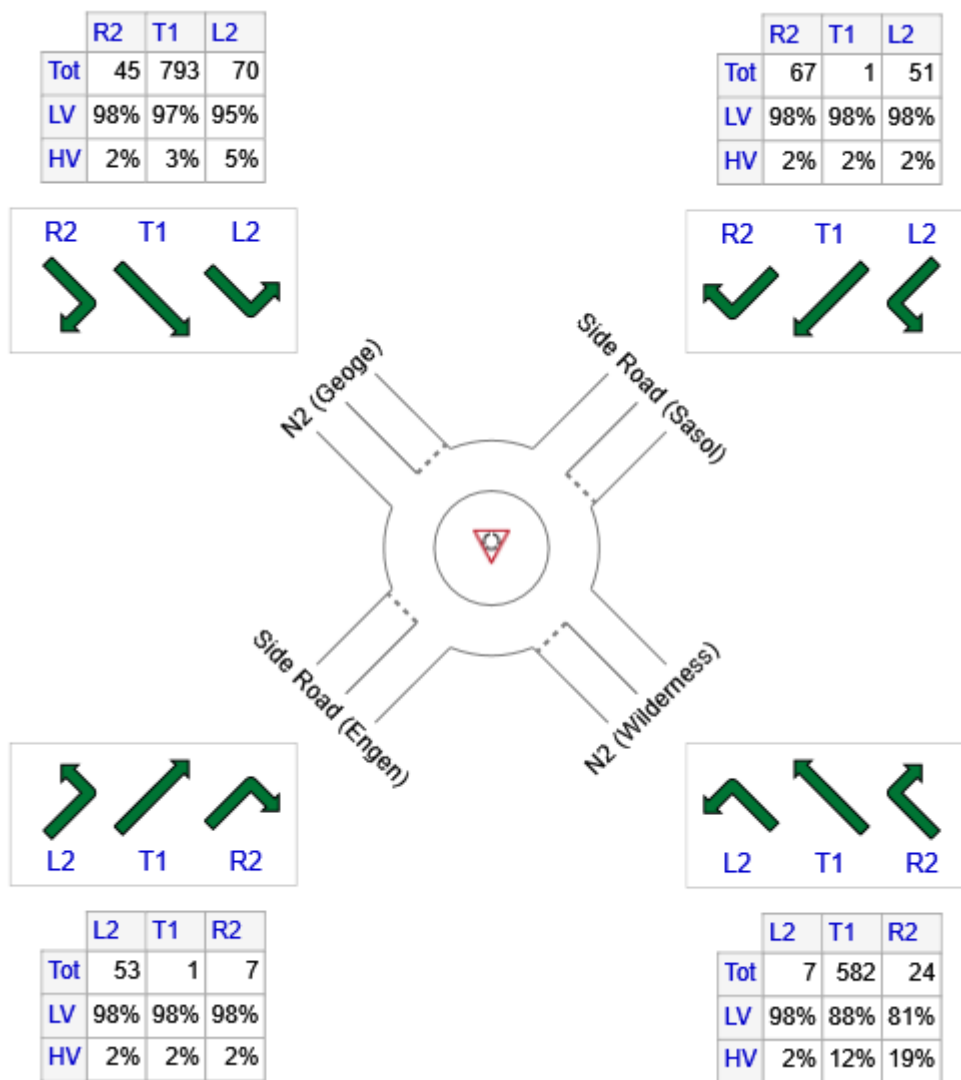
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 Site: [N2 Circle George 2022 PM No Dev]

Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: N2 (Wilderness)	613	538	75
NE: Side Road (Sasol)	119	117	2
NW: N2 (George)	908	880	28

SW: Side Road (Engen)	61	60	1
Total	1701	1595	106

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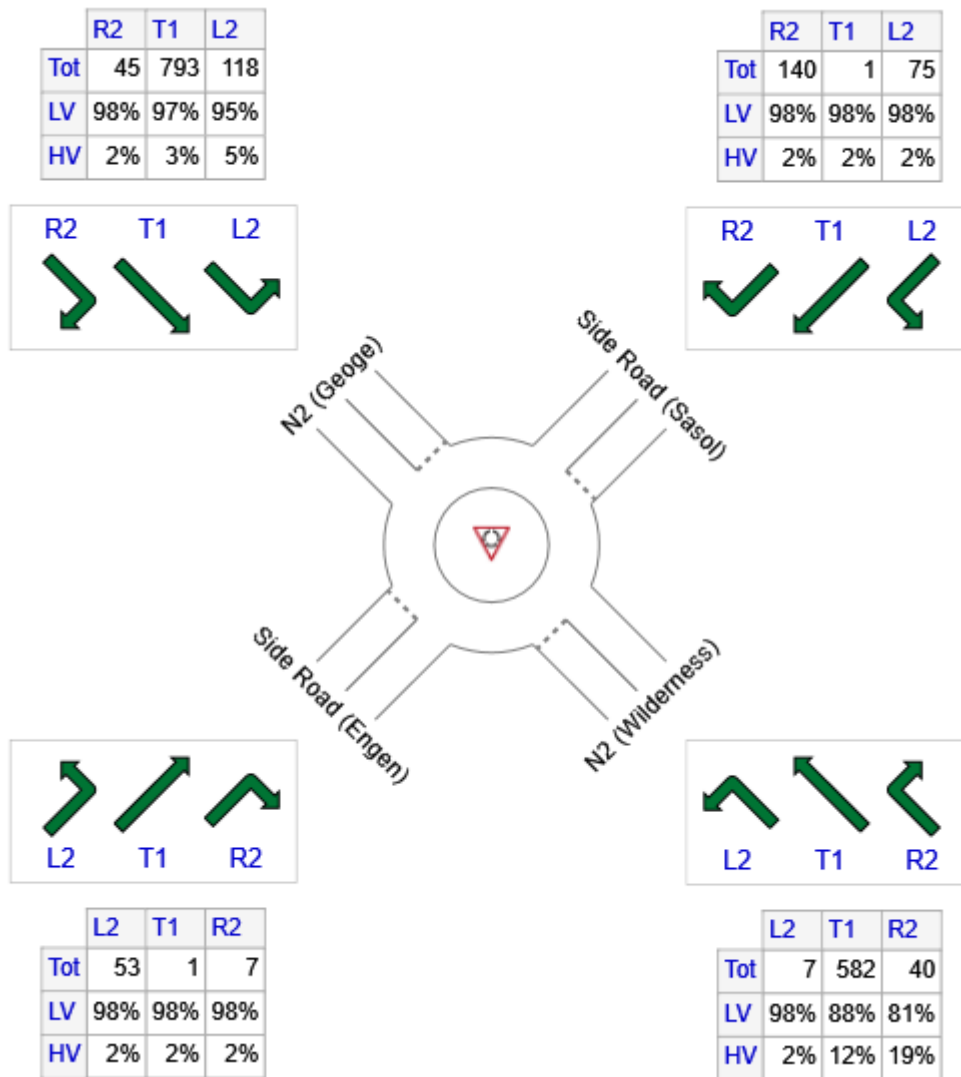
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 Site: [N2 Circle George 2022 PM + Dev]

Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: N2 (Wilderness)	629	551	78
NE: Side Road (Sasol)	216	212	4
NW: N2 (George)	956	925	31

SW: Side Road (Engen)	61	60	1
Total	1862	1748	114

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MOVEMENT SUMMARY

 Site: [N2 Circle George 2017 AM Existing]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h	
SouthEast: N2 (Wilderness)												
21	L2	2	2,0	0,255	4,2	LOS A	1,7	12,4	0,30	0,40	54,5	
22	T1	716	6,0	0,255	4,3	LOS A	1,7	12,4	0,30	0,40	56,0	
23	R2	8	2,0	0,255	9,6	LOS A	1,7	12,3	0,32	0,41	56,1	
Approach		725	5,9	0,255	4,4	LOS A	1,7	12,4	0,30	0,40	56,0	
NorthEast: Side Road (Sasol)												
24	L2	49	3,0	0,095	4,8	LOS A	0,3	1,9	0,35	0,64	53,4	
25	T1	10	20,0	0,095	5,1	LOS A	0,3	1,9	0,35	0,64	54,4	
26	R2	37	3,0	0,095	10,2	LOS B	0,3	1,9	0,35	0,64	55,0	
Approach		97	4,8	0,095	6,9	LOS A	0,3	1,9	0,35	0,64	54,1	
NorthWest: N2 (Geoge)												
27	L2	118	9,0	0,227	4,0	LOS A	1,5	12,2	0,16	0,38	55,0	
28	T1	504	18,0	0,227	4,0	LOS A	1,5	12,2	0,17	0,39	56,4	
29	R2	42	33,0	0,227	9,6	LOS A	1,5	12,5	0,18	0,40	55,2	
Approach		665	17,4	0,227	4,4	LOS A	1,5	12,5	0,17	0,39	56,0	
SouthWest: Side Road (Engen)												
30	L2	58	11,0	0,090	5,3	LOS A	0,3	2,1	0,43	0,63	53,9	
31	T1	13	13,0	0,090	5,3	LOS A	0,3	2,1	0,43	0,63	55,4	
32	R2	8	20,0	0,090	10,9	LOS B	0,3	2,1	0,43	0,63	55,1	
Approach		80	12,3	0,090	5,9	LOS A	0,3	2,1	0,43	0,63	54,3	
All Vehicles		1567	11,0	0,255	4,6	LOS A	1,7	12,5	0,26	0,42	55,8	

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

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

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MOVEMENT SUMMARY

 Site: [N2 Circle George 2017 AM Existing + Dev]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
SouthEast: N2 (Wilderness)												
21	L2	2	2,0	0,269	4,3	LOS A	1,8	13,4	0,33	0,41	54,3	
22	T1	716	6,0	0,269	4,4	LOS A	1,8	13,4	0,34	0,43	55,8	
23	R2	32	2,0	0,269	9,7	LOS A	1,8	13,2	0,35	0,45	55,7	
Approach		749	5,8	0,269	4,6	LOS A	1,8	13,4	0,34	0,43	55,7	
NorthEast: Side Road (Sasol)												
24	L2	56	3,0	0,121	4,9	LOS A	0,4	2,6	0,37	0,66	53,1	
25	T1	10	20,0	0,121	5,2	LOS A	0,4	2,6	0,37	0,66	54,1	
26	R2	56	3,0	0,121	10,2	LOS B	0,4	2,6	0,37	0,66	54,6	
Approach		122	4,4	0,121	7,4	LOS A	0,4	2,6	0,37	0,66	53,8	
NorthWest: N2 (Geoge)												
27	L2	165	9,0	0,251	4,1	LOS A	1,7	13,2	0,22	0,40	54,7	
28	T1	504	18,0	0,251	4,2	LOS A	1,7	13,2	0,23	0,41	56,1	
29	R2	42	33,0	0,251	9,8	LOS A	1,7	13,7	0,24	0,41	54,9	
Approach		712	16,8	0,251	4,5	LOS A	1,7	13,7	0,23	0,41	55,7	
SouthWest: Side Road (Engen)												
30	L2	58	11,0	0,092	5,4	LOS A	0,3	2,1	0,44	0,64	53,9	
31	T1	13	13,0	0,092	5,4	LOS A	0,3	2,1	0,44	0,64	55,3	
32	R2	8	20,0	0,092	10,9	LOS B	0,3	2,1	0,44	0,64	55,1	
Approach		80	12,3	0,092	5,9	LOS A	0,3	2,1	0,44	0,64	54,2	
All Vehicles		1663	10,7	0,269	4,8	LOS A	1,8	13,7	0,30	0,45	55,5	

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

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

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MOVEMENT SUMMARY

 Site: [N2 Circle George 2022 AM No Dev]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
SouthEast: N2 (Wilderness)												
21	L2	2	2,0	0,300	4,3	LOS A	2,1	15,4	0,34	0,41	54,2	
22	T1	829	6,0	0,300	4,4	LOS A	2,1	15,4	0,35	0,42	55,8	
23	R2	10	2,0	0,300	9,7	LOS A	2,1	15,2	0,36	0,43	55,9	
Approach		841	5,9	0,300	4,5	LOS A	2,1	15,4	0,35	0,42	55,8	
NorthEast: Side Road (Sasol)												
24	L2	58	3,0	0,115	5,0	LOS A	0,3	2,5	0,39	0,67	53,2	
25	T1	12	20,0	0,115	5,4	LOS A	0,3	2,5	0,39	0,67	54,3	
26	R2	43	3,0	0,115	10,4	LOS B	0,3	2,5	0,39	0,67	54,8	
Approach		113	4,8	0,115	7,1	LOS A	0,3	2,5	0,39	0,67	54,0	
NorthWest: N2 (Geoge)												
27	L2	136	9,0	0,265	4,0	LOS A	1,9	15,0	0,19	0,39	54,9	
28	T1	585	18,0	0,265	4,1	LOS A	1,9	15,0	0,19	0,39	56,2	
29	R2	49	33,0	0,265	9,6	LOS A	1,9	15,3	0,20	0,40	55,1	
Approach		771	17,4	0,265	4,4	LOS A	1,9	15,3	0,19	0,39	55,9	
SouthWest: Side Road (Engen)												
30	L2	67	11,0	0,110	5,6	LOS A	0,3	2,7	0,47	0,66	53,7	
31	T1	15	13,0	0,110	5,6	LOS A	0,3	2,7	0,47	0,66	55,2	
32	R2	10	20,0	0,110	11,2	LOS B	0,3	2,7	0,47	0,66	54,9	
Approach		92	12,3	0,110	6,2	LOS A	0,3	2,7	0,47	0,66	54,1	
All Vehicles		1817	11,0	0,300	4,7	LOS A	2,1	15,4	0,29	0,44	55,7	

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

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

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MOVEMENT SUMMARY

 Site: [N2 Circle George 2022 AM + Dev]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Total	Flows HV	Deg. Satn %	Average Delay sec	Level of Service	95% Back of Queue Vehicles	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
SouthEast: N2 (Wilderness)												
21	L2	2	2,0	0,315	4,4	LOS A	2,2	16,5	0,37	0,43	54,1	
22	T1	829	6,0	0,315	4,6	LOS A	2,2	16,5	0,38	0,44	55,5	
23	R2	34	2,0	0,315	9,9	LOS A	2,2	16,2	0,40	0,46	55,5	
Approach		865	5,8	0,315	4,8	LOS A	2,2	16,5	0,38	0,44	55,5	
NorthEast: Side Road (Sasol)												
24	L2	64	3,0	0,143	5,1	LOS A	0,4	3,2	0,42	0,69	53,0	
25	T1	12	20,0	0,143	5,5	LOS A	0,4	3,2	0,42	0,69	54,0	
26	R2	62	3,0	0,143	10,5	LOS B	0,4	3,2	0,42	0,69	54,5	
Approach		138	4,5	0,143	7,5	LOS A	0,4	3,2	0,42	0,69	53,7	
NorthWest: N2 (Geoge)												
27	L2	183	9,0	0,290	4,1	LOS A	2,0	16,0	0,24	0,41	54,6	
28	T1	585	18,0	0,290	4,2	LOS A	2,0	16,0	0,26	0,41	55,9	
29	R2	49	33,0	0,290	9,8	LOS A	2,0	16,5	0,27	0,42	54,8	
Approach		818	16,9	0,290	4,6	LOS A	2,0	16,5	0,25	0,41	55,6	
SouthWest: Side Road (Engen)												
30	L2	67	11,0	0,113	5,7	LOS A	0,4	2,8	0,49	0,67	53,7	
31	T1	15	13,0	0,113	5,7	LOS A	0,4	2,8	0,49	0,67	55,1	
32	R2	10	20,0	0,113	11,3	LOS B	0,4	2,8	0,49	0,67	54,9	
Approach		92	12,3	0,113	6,3	LOS A	0,4	2,8	0,49	0,67	54,0	
All Vehicles		1913	10,8	0,315	4,9	LOS A	2,2	16,5	0,34	0,46	55,3	

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

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

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MOVEMENT SUMMARY

 Site: [N2 Circle George 2017 PM Existing]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
		Total veh/h	HV %				Vehicles veh	Distance m				
SouthEast: N2 (Wilderness)												
21	L2	10	2,0	0,281	4,5	LOS A	1,9	14,9	0,39	0,44	54,0	
22	T1	688	12,0	0,281	4,7	LOS A	1,9	14,9	0,41	0,46	55,3	
23	R2	30	19,0	0,281	10,3	LOS B	1,9	14,7	0,42	0,48	54,7	
Approach		727	12,1	0,281	5,0	LOS A	1,9	14,9	0,41	0,46	55,3	
NorthEast: Side Road (Sasol)												
24	L2	53	2,0	0,153	5,5	LOS A	0,5	3,5	0,47	0,76	52,2	
25	T1	2	2,0	0,153	5,5	LOS A	0,5	3,5	0,47	0,76	53,6	
26	R2	85	2,0	0,153	10,9	LOS B	0,5	3,5	0,47	0,76	53,8	
Approach		140	2,0	0,153	8,8	LOS A	0,5	3,5	0,47	0,76	53,2	
NorthWest: N2 (Geoge)												
27	L2	80	5,0	0,321	4,0	LOS A	2,4	17,5	0,21	0,38	54,8	
28	T1	855	3,0	0,321	4,0	LOS A	2,4	17,5	0,22	0,39	56,4	
29	R2	64	2,0	0,321	9,3	LOS A	2,4	17,2	0,23	0,41	56,2	
Approach		999	3,1	0,321	4,3	LOS A	2,4	17,5	0,22	0,39	56,3	
SouthWest: Side Road (Engen)												
30	L2	77	2,0	0,097	5,2	LOS A	0,3	2,2	0,46	0,65	54,1	
31	T1	2	2,0	0,097	5,3	LOS A	0,3	2,2	0,46	0,65	55,5	
32	R2	10	2,0	0,097	10,6	LOS B	0,3	2,2	0,46	0,65	55,8	
Approach		88	2,0	0,097	5,8	LOS A	0,3	2,2	0,46	0,65	54,3	
All Vehicles		1954	6,3	0,321	4,9	LOS A	2,4	17,5	0,32	0,46	55,6	

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

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

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MOVEMENT SUMMARY

 Site: [N2 Circle George 2017 PM Existing + Dev]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Total	Flows HV	Deg. Satn %	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed	
		veh/h	%	v/c	sec		veh	m		per veh	km/h	
SouthEast: N2 (Wilderness)												
21	L2	10	2,0	0,326	5,1	LOS A	2,4	18,2	0,54	0,52	53,3	
22	T1	688	12,0	0,326	5,5	LOS A	2,4	18,2	0,55	0,55	54,5	
23	R2	52	19,0	0,326	11,2	LOS B	2,3	17,7	0,57	0,59	53,8	
Approach		750	12,4	0,326	5,9	LOS A	2,4	18,2	0,55	0,55	54,5	
NorthEast: Side Road (Sasol)												
24	L2	82	2,0	0,311	5,8	LOS A	1,1	8,1	0,54	0,80	51,7	
25	T1	2	2,0	0,311	5,9	LOS A	1,1	8,1	0,54	0,80	53,0	
26	R2	193	2,0	0,311	11,2	LOS B	1,1	8,1	0,54	0,80	53,2	
Approach		276	2,0	0,311	9,6	LOS A	1,1	8,1	0,54	0,80	52,7	
NorthWest: N2 (Geoge)												
27	L2	144	5,0	0,355	4,1	LOS A	2,9	20,8	0,29	0,40	54,5	
28	T1	855	3,0	0,355	4,2	LOS A	2,9	20,8	0,30	0,41	56,0	
29	R2	64	2,0	0,355	9,5	LOS A	2,8	20,3	0,31	0,43	55,8	
Approach		1063	3,2	0,355	4,5	LOS A	2,9	20,8	0,30	0,41	55,8	
SouthWest: Side Road (Engen)												
30	L2	77	2,0	0,107	5,6	LOS A	0,4	2,7	0,53	0,70	53,8	
31	T1	2	2,0	0,107	5,7	LOS A	0,4	2,7	0,53	0,70	55,2	
32	R2	10	2,0	0,107	11,0	LOS B	0,4	2,7	0,53	0,70	55,5	
Approach		88	2,0	0,107	6,2	LOS A	0,4	2,7	0,53	0,70	54,0	
All Vehicles		2177	6,2	0,355	5,7	LOS A	2,9	20,8	0,43	0,52	54,8	

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

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

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MOVEMENT SUMMARY

 Site: [N2 Circle George 2022 PM No Dev]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h	
SouthEast: N2 (Wilderness)												
21	L2	12	2,0	0,333	4,7	LOS A	2,4	18,6	0,45	0,47	53,7	
22	T1	797	12,0	0,333	4,9	LOS A	2,4	18,6	0,46	0,49	55,1	
23	R2	34	19,0	0,333	10,6	LOS B	2,4	18,3	0,47	0,51	54,5	
Approach		843	12,1	0,333	5,2	LOS A	2,4	18,6	0,46	0,49	55,0	
NorthEast: Side Road (Sasol)												
24	L2	61	2,0	0,189	5,9	LOS A	0,6	4,6	0,53	0,80	52,0	
25	T1	2	2,0	0,189	5,9	LOS A	0,6	4,6	0,53	0,80	53,3	
26	R2	99	2,0	0,189	11,2	LOS B	0,6	4,6	0,53	0,80	53,5	
Approach		162	2,0	0,189	9,2	LOS A	0,6	4,6	0,53	0,80	53,0	
NorthWest: N2 (Geoge)												
27	L2	93	5,0	0,375	4,1	LOS A	3,0	21,9	0,24	0,38	54,7	
28	T1	991	3,0	0,375	4,0	LOS A	3,0	21,9	0,25	0,40	56,2	
29	R2	74	2,0	0,375	9,4	LOS A	3,0	21,6	0,26	0,42	56,0	
Approach		1158	3,1	0,375	4,4	LOS A	3,0	21,9	0,25	0,40	56,1	
SouthWest: Side Road (Engen)												
30	L2	88	2,0	0,120	5,5	LOS A	0,4	2,9	0,51	0,69	53,9	
31	T1	2	2,0	0,120	5,6	LOS A	0,4	2,9	0,51	0,69	55,3	
32	R2	12	2,0	0,120	10,9	LOS B	0,4	2,9	0,51	0,69	55,5	
Approach		102	2,0	0,120	6,2	LOS A	0,4	2,9	0,51	0,69	54,1	
All Vehicles		2264	6,3	0,375	5,1	LOS A	3,0	21,9	0,36	0,47	55,4	

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

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

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MOVEMENT SUMMARY

 Site: [N2 Circle George 2022 PM + Dev]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed	
		Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m		per veh	km/h	
SouthEast: N2 (Wilderness)												
21	L2	12	2,0	0,385	5,4	LOS A	2,9	22,7	0,59	0,54	53,0	
22	T1	797	12,0	0,385	5,7	LOS A	2,9	22,7	0,60	0,57	54,3	
23	R2	56	19,0	0,385	11,6	LOS B	2,8	21,9	0,62	0,61	53,6	
Approach		865	12,3	0,385	6,1	LOS A	2,9	22,7	0,60	0,57	54,2	
NorthEast: Side Road (Sasol)												
24	L2	90	2,0	0,361	6,5	LOS A	1,5	10,5	0,60	0,86	51,4	
25	T1	2	2,0	0,361	6,5	LOS A	1,5	10,5	0,60	0,86	52,7	
26	R2	206	2,0	0,361	11,8	LOS B	1,5	10,5	0,60	0,86	52,9	
Approach		298	2,0	0,361	10,2	LOS B	1,5	10,5	0,60	0,86	52,4	
NorthWest: N2 (Geoge)												
27	L2	157	5,0	0,411	4,2	LOS A	3,6	25,9	0,33	0,41	54,3	
28	T1	991	3,0	0,411	4,2	LOS A	3,6	25,9	0,34	0,42	55,8	
29	R2	74	2,0	0,411	9,6	LOS A	3,5	25,3	0,35	0,44	55,6	
Approach		1222	3,2	0,411	4,6	LOS A	3,6	25,9	0,34	0,42	55,6	
SouthWest: Side Road (Engen)												
30	L2	88	2,0	0,134	6,0	LOS A	0,5	3,6	0,59	0,74	53,6	
31	T1	2	2,0	0,134	6,0	LOS A	0,5	3,6	0,59	0,74	55,0	
32	R2	12	2,0	0,134	11,3	LOS B	0,5	3,6	0,59	0,74	55,2	
Approach		102	2,0	0,134	6,6	LOS A	0,5	3,6	0,59	0,74	53,8	
All Vehicles		2487	6,2	0,411	5,9	LOS A	3,6	25,9	0,47	0,54	54,6	

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

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

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Approach / Movements		2017 AM - No Dev				2017 AM + Dev				2022 AM - No Dev				2022 AM + Dev			
		v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)
SouthEast: N2 (Wilderness)	Left	0.26	4.2	A	12.4	0.27	4.3	A	13.4	0.30	4.3	A	15.4	0.32	4.4	A	16.5
	Through	0.26	4.3	A	12.4	0.27	4.4	A	13.4	0.30	4.4	A	15.4	0.32	4.6	A	16.5
	Right	0.26	9.6	A	12.3	0.27	9.7	A	13.2	0.30	9.7	A	15.2	0.32	9.9	A	16.2
	Approach	0.26	4.4	A	12.4	0.27	4.6	A	13.4	0.30	4.5	A	15.4	0.32	4.8	A	16.5
NorthEast: Side Road (Sasol)	Left	0.10	4.8	A	1.9	0.12	4.9	A	2.6	0.12	5.0	A	2.5	0.14	5.1	A	3.2
	Through	0.10	5.1	A	1.9	0.12	5.2	A	2.6	0.12	5.4	A	2.5	0.14	5.5	A	3.2
	Right	0.10	10.2	B	1.9	0.12	10.2	B	2.6	0.12	10.4	B	2.5	0.14	10.5	B	3.2
	Approach	0.10	6.9	A	1.9	0.12	7.4	A	2.6	0.12	7.1	A	2.5	0.14	7.5	A	3.2
NorthWest: N2 (George)	Left	0.23	4.0	A	12.2	0.25	4.1	A	13.2	0.27	4.0	A	15.0	0.29	4.1	A	16.0
	Through	0.23	4.0	A	12.2	0.25	4.2	A	13.2	0.27	4.1	A	15.0	0.29	4.2	A	16.0
	Right	0.23	9.6	A	12.5	0.25	9.8	A	13.7	0.27	9.6	A	15.3	0.29	9.8	A	16.5
	Approach	0.23	4.4	A	12.5	0.25	4.5	A	13.7	0.27	4.4	A	15.3	0.29	4.6	A	16.5
SouthWest: Side Road (Engen)	Left	0.09	5.3	A	2.1	0.09	5.4	A	2.1	0.11	5.6	A	2.7	0.11	5.7	A	2.8
	Through	0.09	5.3	A	2.1	0.09	5.4	A	2.1	0.11	5.6	A	2.7	0.11	5.7	A	2.8
	Right	0.09	10.9	B	2.1	0.09	10.9	B	2.1	0.11	11.2	B	2.7	0.11	11.3	B	2.8
	Approach	0.09	5.9	A	2.1	0.09	5.9	A	2.1	0.11	6.2	A	2.7	0.11	6.3	A	2.8
All Vehicles		0.26	4.6	A	12.5	0.27	4.8	A	13.7	0.30	4.7	A	15.4	0.32	4.9	A	16.5

Approach / Movements		2017 PM - No Dev				2017 PM + Dev				2022 PM - No Dev				2022 PM + Dev			
		v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)	v/c	Delay (s)	LOS	95th % Q (m)
SouthEast: N2 (Wilderness)	Left	0.28	4.5	A	14.9	0.33	5.1	A	18.2	0.33	4.7	A	18.6	0.39	5.4	A	22.7
	Through	0.28	4.7	A	14.9	0.33	5.5	A	18.2	0.33	4.9	A	18.6	0.39	5.7	A	22.7
	Right	0.28	10.3	B	14.7	0.33	11.2	B	17.7	0.33	10.6	B	18.3	0.39	11.6	B	21.9
	Approach	0.28	5.0	A	14.9	0.33	5.9	A	18.2	0.33	5.2	A	18.6	0.39	6.1	A	22.7
NorthEast: Side Road (Sasol)	Left	0.15	5.5	A	3.5	0.31	5.8	A	8.1	0.19	5.9	A	4.6	0.36	6.5	A	10.5
	Through	0.15	5.5	A	3.5	0.31	5.9	A	8.1	0.19	5.9	A	4.6	0.36	6.5	A	10.5
	Right	0.15	10.9	B	3.5	0.31	11.2	B	8.1	0.19	11.2	B	4.6	0.36	11.8	B	10.5
	Approach	0.15	8.8	A	3.5	0.31	9.6	A	8.1	0.19	9.2	A	4.6	0.36	10.2	B	10.5
NorthWest: N2 (George)	Left	0.32	4.0	A	17.5	0.36	4.1	A	20.8	0.38	4.1	A	21.9	0.41	4.2	A	25.9
	Through	0.32	4.0	A	17.5	0.36	4.2	A	20.8	0.38	4.0	A	21.9	0.41	4.2	A	25.9
	Right	0.32	9.3	A	17.2	0.36	9.5	A	20.3	0.38	9.4	A	21.6	0.41	9.6	A	25.3
	Approach	0.32	4.3	A	17.5	0.36	4.5	A	20.8	0.38	4.4	A	21.9	0.41	4.6	A	25.9
SouthWest: Side Road (Engen)	Left	0.10	5.2	A	2.2	0.11	5.6	A	2.7	0.12	5.5	A	2.9	0.13	6.0	A	3.6
	Through	0.10	5.3	A	2.2	0.11	5.7	A	2.7	0.12	5.6	A	2.9	0.13	6.0	A	3.6
	Right	0.10	10.6	B	2.2	0.11	11.0	B	2.7	0.12	10.9	B	2.9	0.13	11.3	B	3.6
	Approach	0.10	5.8	A	2.2	0.11	6.2	A	2.7	0.12	6.2	A	2.9	0.13	6.6	A	3.6
All Vehicles		0.32	4.9	A	17.5	0.36	5.7	A	20.8	0.38	5.1	A	21.9	0.41	5.9	A	25.9

