Traffic Engineering & Transport Planning
STURGEON CONSULTING

Traffic Impact Assessment

for the

PROPOSED RESIDENTIAL DEVELOPMENT, ON PORTION 4 OF FARM NO. 560 YZERFONTEIN, WESTERN CAPE

Project No: STUR0341

September 2025
Final Report (Rev 3)

PREPARED BY:

STURGEON CONSULTING (PTY) LTD
7 Waterberg Crescent
Clara Anna Fontein
Durbanville
7550

CONTACT PERSON:

Annebet Krige
Tel no: +27 (84) 610 0233

PREPARED FOR:

JOS DE VILLIERS BELEGGINGS TRUST
P O Box 214
Yzerfontein
7351

CONTACT PERSON:

Mr Manuel de Villiers
Tel no: +27 (82) 880 2525

DOCUMENT CONTROL SHEET

DATE	REPORT STATUS	AUTHORED BY:	APPROVED BY:
14 April 2022	Draft for comment	**NAME** Sarah Larratt, Pr. Tech Eng	**NAME** Annebet Krige, Pr. Eng
		SIGNATURE 	**SIGNATURE** 
10 May 2022	Final	**NAME** Sarah Larratt, Pr. Tech Eng	**NAME** Annebet Krige, Pr. Eng
		SIGNATURE 	**SIGNATURE** 
26 October 2023	Final Rev 1	**NAME** Sarah Larratt, Pr. Tech Eng	**NAME** Annebet Krige, Pr. Eng
		SIGNATURE 	**SIGNATURE** 
10 April 2024	Final Rev 2	**NAME** Sarah Larratt, Pr. Tech Eng	**NAME** Annebet Krige, Pr. Eng
		SIGNATURE 	**SIGNATURE** 
12 September 2025	Final Rev 3	**NAME** Annebet Krige, Pr. Eng	**NAME** Annebet Krige, Pr. Eng
			

TITLE:
TRAFFIC IMPACT ASSESSMENT FOR THE PROPOSED RESIDENTIAL DEVELOPMENT ON PORTION 4 OF FARM 560, YZERFONTEIN

CARRIED OUT BY:
STURGEON CONSULTING
7 Waterberg Crescent
Clara Anna Fontein
Durbanville
7550

Ms A Krige

Tel: +27 84 610 0233
Email: annebet@sturgeonsa.co.za

COMMISSIONED BY:
CK RUMBOLL & PARTNERS
PO Box 211
Malmesbury
7299

Ms Zanelle Nortje

Tel: +27 22 482 1845
Email: zanelle@rumboll.co.za

SYNOPSIS:
This report assesses the key transportation issues pertaining to the residential development on Portion 4 of Farm 560 in Yzerfontein.

SUMMARY SHEET

Report Type	Traffic Impact Assessment
Title	Residential Development on Portion 4 of Farm 560
Location	Yzerfontein, Western Cape
Client	Jos De Villiers Beleggings Trust
Reference Number	STUR0341
Project Team	Annebet Krige
Contact Details	084 610 0233 | annebet@sturgeonsa.co.za
Date	September 2025
Report Status	Final (Rev 3)

This transport impact assessment has been prepared by a suitable qualified and registered professional traffic engineer. Details of any of the calculations on which the results of this report are based will be made available on request.

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Acronyms

TIA – Traffic Impact Assessment

PGWC – Provincial Government Western Cape

WGC – Western Cape Government

RNIS – Road Network Information System

SDP – Site Development Plan

NMT – Non-Motorised Transport

LOS – Level of Service

PHF – Peak Hour Factor

AM – Morning

PM – Afternoon

SAT - Saturday

d – Average delay in seconds

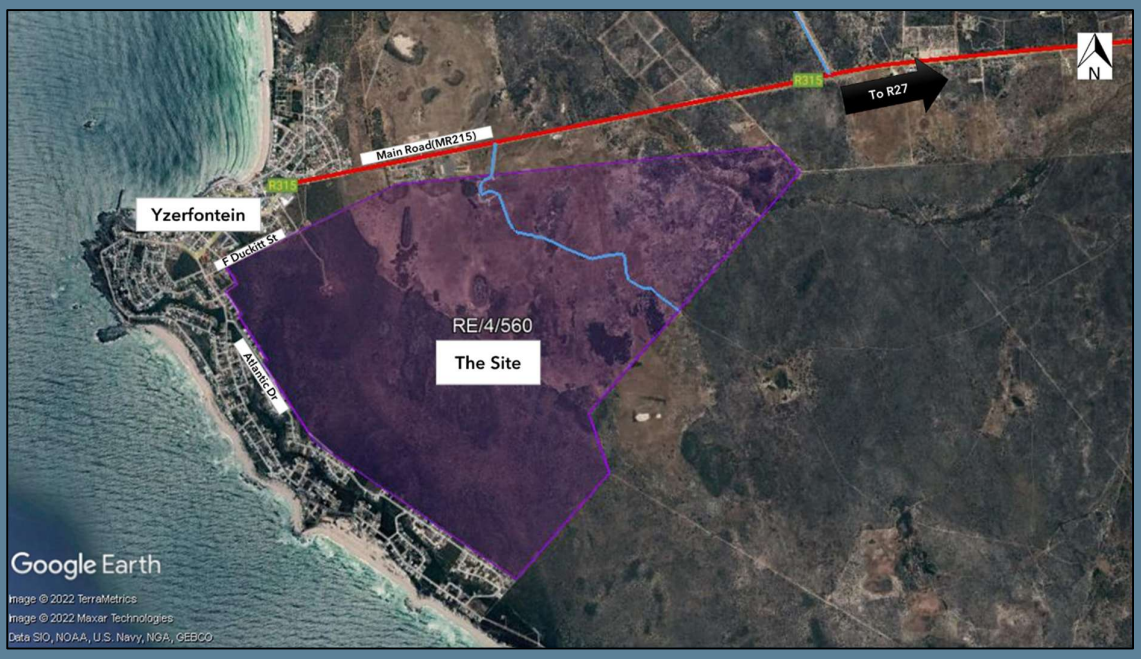
v/c – Volume/capacity ratio

vph – vehicles per hour

Traffic Impact Assessment (TIA)

Proposed Residential Development on Portion 4 of Farm 560, Yzerfontein

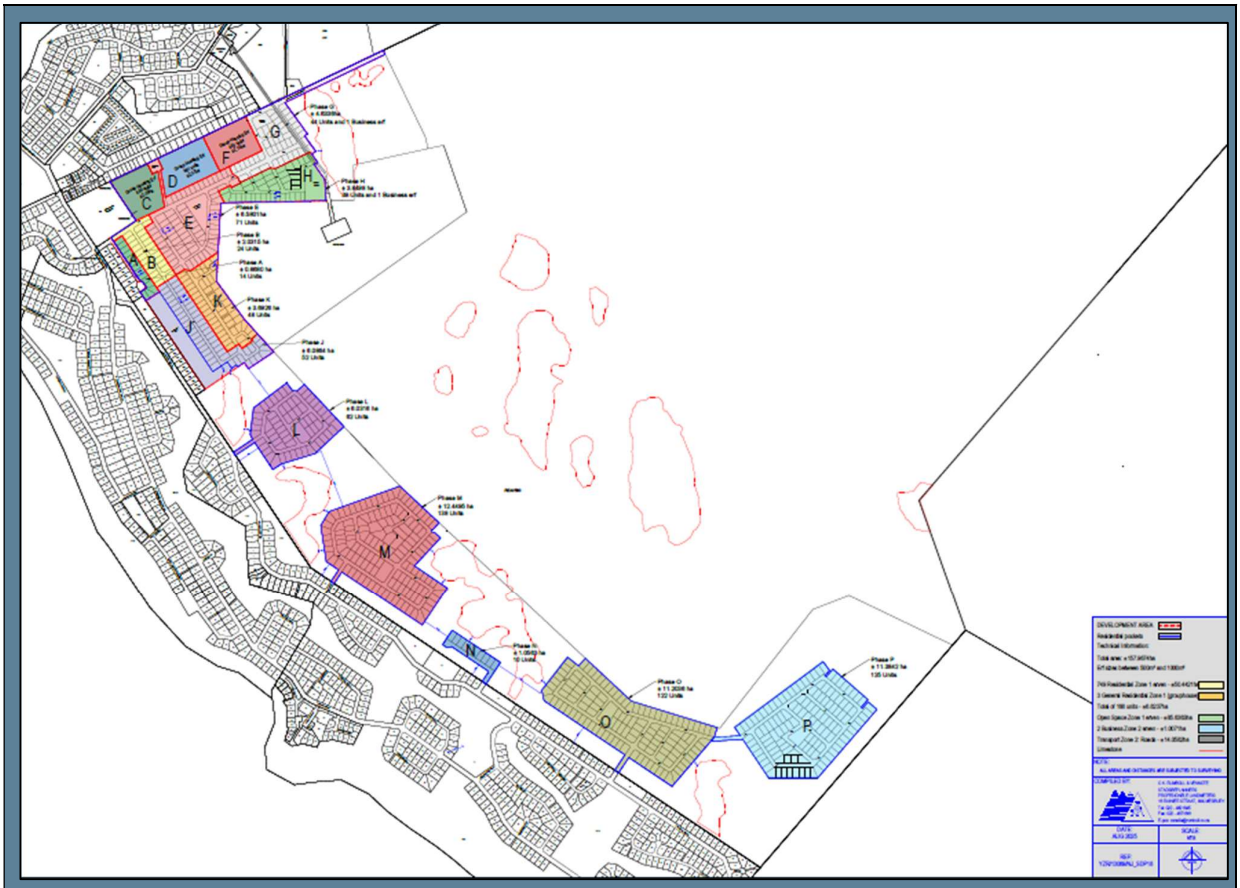
1. Purpose of Report	Sturgeon Consulting was appointed by Jos De Villiers Beleggings Trust to determine the expected transport related impacts of the proposed residential development on Portion 4 of Farm 560, Yzerfontein, on the surrounding road network. This report provides an update to the previously submitted versions, reflecting a minor change in the developable area and land use. The traffic counts used in the analysis have also been updated, as the previous counts were more than two years old.
2. Locality *Reference: Figure 1*	Yzerfontein, Western Cape. **Description:** The site is located to the southeast of the seaside town of Yzerfontein. The site that will be developed is bordered by Atlantic Drive to the west and south of F Duckitt Street and Main Road (R315). Refer to **Figure 1** in **Appendix A** for the Locality Plan.



3. Scope of Work	The scope of work included in this TIA covers the following traffic engineering aspects: • Site observations; • Existing and proposed development; • Access arrangements; • Existing and future road network planning;

	• Existing traffic flows in the vicinity of the development; • Trip generation of the proposed development; • Traffic flow analysis; • Recommended road upgrades if necessary; • Non-motorised transport (NMT); • Public transport; and • Parking requirements.
4. Proposed Development *Reference: Figure 2*	The subject property is approximately 770ha in extent and is currently vacant. **The proposed development comprises of 917 residential units and 2 business erven with an approximate GLA of 5 000m² as follows:** • Single Residential: 749 Units • Group Housing/Townhouses: 168 Units • Offices: ±1 500m² GLA • Shopping Centre: ±2 000m² GLA • Line Shops/Speciality Retail: 1 500m² GLA It is estimated that 50% (459 units) of the residential units will be used as recreational (holiday) homes. The remaining 50% (458 units) is foreseen to be used by commuters mainly working in Saldanha Bay and Vredenburg. Refer to **Figure 1** in **Appendix A** for the Locality Plan.

5. Proposed Development Phasing	The proposed phasing of the development is depicted below and **Figure 17** at the back of this report for Portions A to P.
	It is not yet known when each phase will start however it has been assumed that Portions A – L will be completed within the first 5-years (2030) and the remaining Portions L – P in the following 5-years (2035).
	• **Phase 1 (2030): Portions A – K**
	  ○ 291 residential zone 1 (single dwellings) units
	  ○ 168 general residential zone 1 (group housing) units
	  ○ ±5 000m² GLA business zone 2
	• **Phase 2 (2035 onwards): Portions L – P**
	  ○ 458 residential zone 1 (single dwelling) units
	For the purposes of this TIA, a 5-year and 10-year horizon will be assessed and is seen as a more conservative, worse-case scenario approach. The scenarios analysed will be discussed in **Section 11**.



6. Land Use / Zoning *Reference: Figure 2*	**<u>Current Zoning / Use:</u>** Agriculture Zone 1 **<u>Proposed Zoning / Use:</u>** General Residential Zone 1 Residential Zone 1 Business Zone 2 **Figure 2** in **Appendix A** provides a copy of the proposed Site Development Plan (SDP).
7. Existing Access	The portion of the subject property is currently vacant, covered in natural vegetation and has no formal access.
***8.* Existing Roadways**	**<u>Main Road R315 (MR215)</u>** The R315 is a Class 3 minor arterial (U3f). It is a two-lane undivided road (6.8m wide) with gravel shoulders and a posted speed limit of 60km/h in the vicinity of the site. The statutory road width is 25m. MR215 is a proclaimed provincial road which the Western Cape Government (WCG) is the controlling road authority. It links to Yzerfontein to the west and Darling to the east.



Buitekant Street can be classified as a Class 4 collector road. It is a two-lane undivided road (one lane in each direction) between Main Road (MR215) and 5de Street and a four-lane divided road between 5de Street and Dassen Island Drive with ad-hoc on-street parking. A combination of gravel and paved sidewalks exists in the business area and a paved sidewalk exists on the south-eastern side along the four-lane divided section. The speed limit is 60km/h.

Two-Lane Undivided



Four-Lane Divided



Dassen Island Drive can be classified as a Class 4 residential collector. It is a two-lane undivided (one lane in each direction) surfaced road with gravel/grass verges and no paved sidewalks. The speed limit is 60km/h. Dassen Island Drive serves Pearl Bay and the Yzerfontein area.



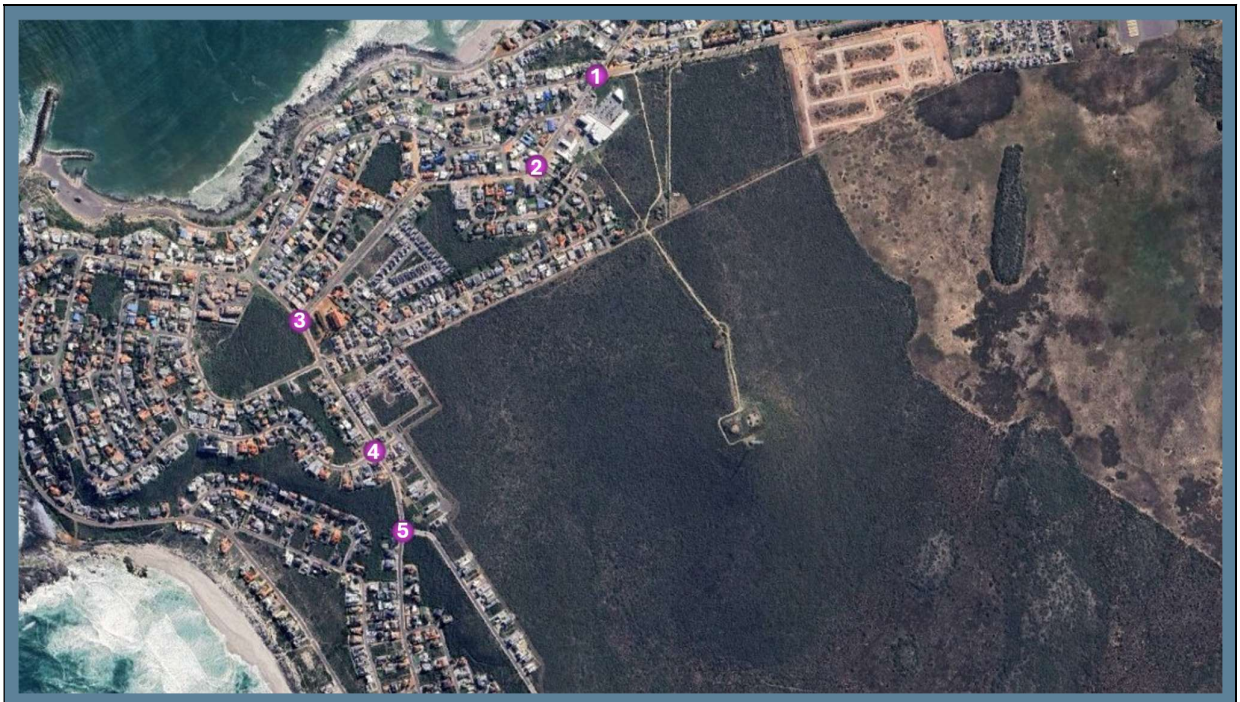
Atlantic Drive can be classified as a Class 4 residential collector road. It is a two-lane undivided (one lane in each direction) surfaced road with gravel/grass verges and no paved sidewalks. There are streetlights on the western side of the road. The speed limit is 60km/h. It links to Dassen Island Drive to the north and towards the south.



9. Future Road Network

The long-term planning is for the implementation of a grade-separated interchange at the R27/R315 intersection. Other than that, no major future road network changes are foreseen in the vicinity of

	the proposed development. Swartland Municipality however requested that as part of this proposed development, the section of Buitekant Street between 6th Street and Main Road be upgraded to a four-lane divided dual carriageway. This will be discussed in more detail in **Section 21.**
10.Analyses Hours	Peak period traffic counts were undertaken on Tuesday, 2 September 2025, between 07:00 and 10:00 (3 hours) and 15:00 and 18:00 (3 hours) to determine the AM and PM peak hours. The peak hours were determined as follows: • AM peak hour: 09:00 to 10:00 • PM peak hour: 16:30 to 17:30 Please note that for analysis purposes, 2025 was used as the base year.
11.Scenarios Analysed	• 2025 Present Traffic Demand • 2030 Background Traffic Demand (2030 traffic volumes escalated with a growth rate, as discussed in **Section 14** of this report) • Phase 1: 2030 Background Traffic Demand plus **Portions A – K** • Phase 2: 2035 Background Traffic Demand (2035 traffic volumes escalated with a growth rate) plus **remaining Portions L – P** on the road network. Intersection analyses were done using SIDRA Intersection software (version 10).
12. Study Intersections References: Figure 3	Based on our experience with similar traffic studies, the anticipated traffic impact on the surrounding road network and its location within the wider road network, the following intersections were included in the scope of the study: 1. Main Road (R315) (MR 215) / Buitekant Street – All way stop-controlled 2. Buitekant Street / Gey Van Pittius Street – Stop-controlled 3. Buitekant Street / Dassen Island Drive – All way stop-controlled 4. Dassen Island Drive /Versveld Street – Stop-controlled 5. Dassen Island Drive /Atlantic Drive – Stop-controlled Refer to **Figure 3** for the Existing Lane Configurations and Control.



13. Existing Operations

References: Figure 4, 5 and Table 1

The present traffic demand on the surrounding road network can generally be described as low to medium. Refer to **Figure 4** and **Figure 5** for a summary of the existing counted traffic volumes at each of the study intersections.

The following comments are made in relation to the traffic volumes (total two-way) on the surrounding road network:

- Main Road (R315) carries low to medium volumes of traffic (two-way) with approximately **300 vph** during the AM peak hour and **320 vph** during the PM peak hour east of Buitekant Street and **<100 vph** during both peak hours west of Buitekant Street.
- Buitekant Street (between Main Road and Dassen Island Drive) also carries low to medium volumes of traffic (two-way) with approximately **300 vph** during both the AM and PM peak hours.
- Gey Van Pittius Street carries very low volumes of traffic (two-way) with **<50 vph** during the AM peak hour and PM peak hour.
- Dassen Island Drive carries low volumes of traffic (two-way) with approximately **200 vph** during the AM peak hour and **200 vph** during the PM peak hour.
- Atlantic Drive carries low volumes of traffic (two-way) with approximately **100 vph** during the AM peak hour and during the PM peak hour.

	The Sidra results indicate that the study intersections are all currently operating at acceptable levels of service. See **Table 1** for the existing capacity analysis. Full details of the SIDRA analysis can be provided if required.
14.Background Traffic *References: Figure 6 & 7 and Table 1*	The TMH 17: South African Trip Data Manual recommends the following growth rate factors for different development areas: **Table 1.1: Typical Traffic Growth Rates** **Development Area** — **Growth rate** Low growth areas — 0 - 3% Average growth areas — 3 - 4% Above average growth areas — 4 - 6% Fast growing areas — 6 - 8% Exceptionally high growth areas — > 8% Source: City Council of Pretoria (1998) To determine the background traffic volumes for 2030, an average annual growth rate of **3.5%** was applied. This rate reflects traffic growth typically experienced in areas with average growth characteristics. The same rate was used in previous versions of the report, and to ensure consistency, it has been retained for the current assessment. It is acknowledged that this represents a conservative approach. The estimated 2030 AM and PM peak hour background traffic volumes are indicated in **Figure 6** and **Figure 7**. From the background analysis it is clear that the study intersections are expected to continue to operate at acceptable levels of service during the background (2030) conditions for both peak hours. No upgrades are required in this scenario for any of the study intersections. Refer to **Table 1** for a summary of the SIDRA results. Full details of the SIDRA analysis can be provided if required.
15.Trip Generation Rates *References: Table 2 and 3*	The additional vehicle trips that will be generated by the proposed development were calculated using the trip generation rates as provided in the *TMH17 South African Trip Data Manual (Committee Draft 2.2, August 2020)* published by the Committee of Transport Officials (COTO) and the *Trip Generation Manual (9th Edition)* published by the Institute of Transportation Engineers (ITE). It was assumed under **Section 4** that 50% of the residential units will be used as Recreational Homes (COTO260) and the remaining 50% will be Single Dwelling Units (COTO210) and Townhouses (COTO231) (Group Housing). The land use for the business erven

was assumed to be approximately 30% Offices (COTO710), 40% Shopping Centre (COTO820) and 30% Speciality Retail (ITE826).

The recommended peak hour trip generation rates and directional split for the proposed development are shown below:

Land Use	Units	Extent	Peak Hour	TGR	Split	
					In	Out
Single Dwelling Units	Dwelling Unit	375	AM	1,00	25%	75%
			PM	1,00	70%	30%
Recreation Homes	Dwelling Unit	374	AM	0,15	65%	35%
			PM	0,25	40%	60%
Group Housing/Townhouses (simplexes & duplexes)	Dwelling Unit	168	AM	0,85	25%	75%
			PM	0,85	70%	30%

Land Use	Units	Extent	Peak Hour	TGR	Split	
					In	Out
Offices	GLA (m^2)	1500	AM	2,10	85%	15%
			PM	2,10	20%	80%
Line Shops/Speciality Retail[1] (ITE826)	GLA (m^2)	1500	AM	0,68	48%	52%
			PM	2,71	44%	56%
Shopping Centre	GLA (m^2)	2000	AM	0,60	65%	35%
			PM	3,40	50%	50%

Notes 1: Trip Generation Manual, Institute of Transportation Engineers, 9th Edition

Please note, to account for the worst-case scenario the Friday PM peak Hour trip generation rates provided in the TMH17 manual for Shopping Centres were used.

The estimated additional peak hour trips are summarised in **Table 2** and the peak hour trips per phase in **Table 3**.

16.Development Trips

References: Figures 8, 9, 12 & 13, Table 2 & 3

The total expected peak hour trips likely to be generated by the development during the AM and PM peak hours by both Phases is as follow (refer to **Table 3** and **Table 4**):

Phase 1: 2030 (Portions A – K)

- 294 total AM trips (149 inbound 145 outbound)
- 522 total PM trips (297 inbound 225 outbound)

Refer to **Figures 8** and **9** for the development trips associated with Phase 1 of the proposed development.

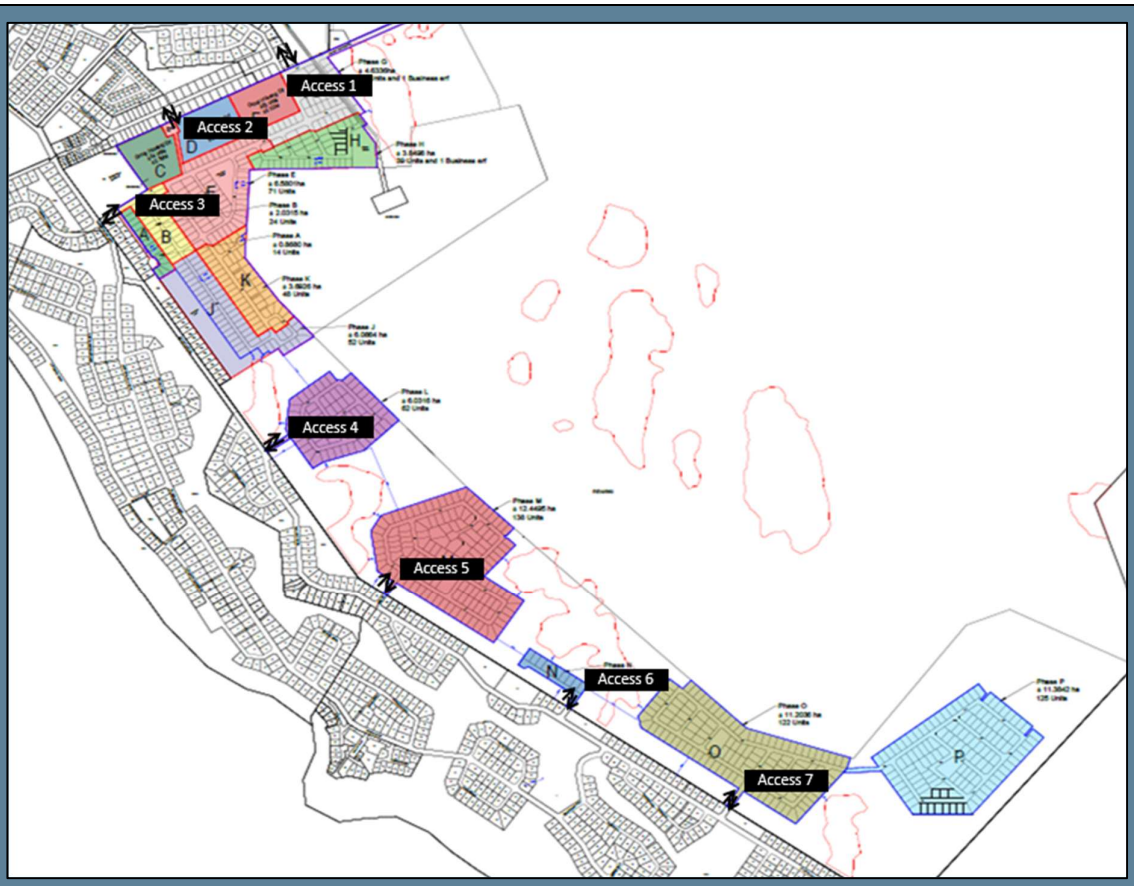
Phase 2: 2035 (100% of development)

- 523 total AM trips (206 inbound 316 outbound)

	• 750 total PM trips (457 inbound 293 outbound) Refer to **Figures 12** and **13** for the development trips associated with Phase 2 of the proposed development.
17.Trip Distribution *References: Figures 10, 11, 14 & 15*	The generated traffic associated with the proposed development has been distributed onto the surrounding road network taking the following into account: • Present traffic conditions; • The nature of the development; and • Trip attractions within the area. Based on the above, the following distribution was used to assign the development traffic to the surrounding network for all peak hours: • 30% to/from the east along Main Road (R315) • 15% to/from the north along Buitekant Street • 30% to/from the west along Main Road (R315) • 10% to/from the northwest along Buitekant Street • 15% to/from the south along Dassen Island Drive The resulting development trips for each stage were added to the expected 2030 and 2035 background traffic volumes. The resulting total traffic volumes are shown in **Figure 10** and **Figure 11** for Phase 1 (2030) and **Figure 14** and **Figure 15** for Phase 2 (2035). It should be noted that no reductions for internal trips have been applied. All generated trips have been assigned through the study intersections. This represents a conservative approach, ensuring that the analyses reflect a worst-case scenario, even though a portion of trips will in reality occur internally between the residential units and business erven.



18.Approved Developments	There are no known developments in the area that will have a significant impact on the existing and future traffic operations at such time.
19.Site Access	Number of Accesses: Seven The proposed **Access 1** is located to the north of the site at the extension of Gey Van Pittius Street via the Buitekant Street/Gey Van Pittius Street intersection. **Access 2** provides exclusive access to Portion D at the extension of Short Street. **Access 3** is located to the west of the site at the extension of Versveld Street (east of Dassen Island Drive). The five pockets of residential units to the south of the site will gain access via four proposed accesses off Atlantic drive, **Access 4, 5, 6 and 7**. All proposed site accesses will have a two-lane cross section i.e. one lane in and one lane out.



Please note that a future connector road was planned to extend from the development, eastwards and provide direct access to Main Road 215. The picture below indicates this link road, based on the previous layout of the development.



Environmental constraints identified in this area, have however reduced the development footprint in this vicinity and the link road will also need to be realigned and could possibly run along the boundary of the property as shown in the picture below.



For the purposes of this TIA, the link was not taken into account for analyses purposes, 202to account for the worst-case scenario, but this link could alleviate traffic congestion and provide a more direct route to Main Road 215 in future. This road link will also link future development in this area.

Other Considerations: According to the TRH 26 South African Road Classification and Access Management Manual, Atlantic Drive can be classified as a Class 4b Residential Collector Street. The link capacity of a Class 4 road is in the order of 1250 vehicles per hour (two-way). It is noted that the capacity will however be lower, due to the geometric alignment of the road. There are many small horizontal curves along the road that will provide traffic calming measures and in essence reduce speeds along the road as well as reduce the capacity. For analysis purposes, a capacity of 60% of the theoretical link capacity of a Class 4 Road was assumed, i.e. 750 vehicles per hour (two-way), to account for the geometric alignment of the road.

The two-way counted 2025 volumes along Atlantic Drive is in the order of 100 veh/h during the AM and PM peak hours. Based on the theoretical link capacity, Atlantic Drive operates well below capacity.

Pockets L, M, N, O and P will access onto Atlantic Drive and it was requested that we confirm that link roads between the pockets will not be necessary.

From the Trip Generation calculations (**Section 15**) the following peak hour traffic volumes can be expected from each pocket:

Phase	Total Trips	
	AM	PM
L	31	31
M	69	69
N	5	5
O	61	61
P	63	62
Total	**229**	**228**

If the totals listed above are added to the existing link volumes along Atlantic Drive, this would equate to 329 veh/h during the AM peak hour and 328 veh/h during the PM peak hour, which is still well below the capacity of the road.

In addition, the TMH 16 Volume 2 South African Traffic Impact and Site Impact Assessment Standards and Requirements Manual addresses Traffic Intrusion in Paragraph 12.5 Traffic Intrusion Control Measures. Although the proposed development of Pockets L – P would not in essence constitute traffic intrusion, as it will be residential traffic only, the environmental capacity was tested. Based on the table below, the maximum 15-minute flow rate along an Urban Class 4 Road must preferably not exceed 500 veh/hr.

Table 43 Environmental capacity of roads

Road class	Maximum 15-minute flow rate	
	Preferred (veh/hr)	Maximum (veh/hr)
Urban Class 4b	500	1 000
Urban Class 5b	200	500

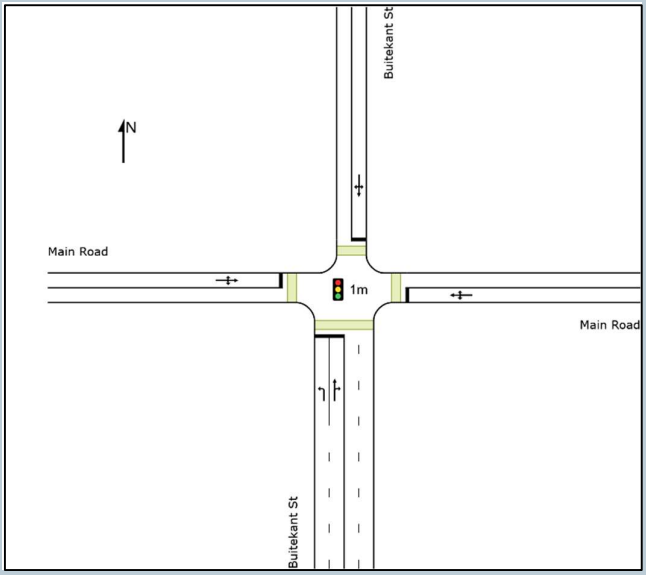
From the above, it is clear that Atlantic Drive can easily accommodate the additional residential traffic that will be generated by Pockets N-P, without having these pockets internally linked.

Access Control: There will be no access control at the proposed accesses.

Refuse: It is proposed that refuse collection take place within the development at strategic locations agreed by the municipality. This

	can be done by either the municipality or by a service delivery contractor.

20. Impact of Development Traffic (2030 plus Phase 1)
 	
References: Figures 10 & 11 and Table 1
	To assess the traffic impact of **Phase 1** of the proposed development on the road network, the intersections were analysed with ±40% of residential units and 100% of the business zone added to the background 2030 scenario (using the 3.5% average growth rate per annum as mentioned in **Section 14**).
	
	Most of the study intersections are expected to operate at acceptable levels of service during both peak hours. The intersection of Main Road (R315) / Buitekant Street operates at a level of service D during the AM peak hour and a level of service E during the PM peak hour, with capacity constraints experienced along the southern and western approaches. To improve the overall operations at this intersection, the following improvements are considered:
	
	Main Road (R315) / Buitekant Street – All Way Stop-controlled
	
	• Mitigation Proposed:
	  o Single Lane Roundabout
	  o Traffic Signal
	• Operations with Proposed Mitigations:
	  o Single Lane Roundabout: LOS A
	  o Traffic Signal: LOS B
	
	Both a traffic signal and a single-lane roundabout are considered viable upgrade options for this intersection, as each would improve operational capacity. However, a roundabout is generally recommended where no geometric constraints exist, as it offers several advantages over traffic signals. In addition to lower maintenance and operational costs, a roundabout allows for continuous vehicle movement, thereby avoiding the unnecessary delays often associated with red-light phases at traffic signals when no opposing traffic is present. This characteristic is particularly beneficial given that traffic volumes at this location are expected to remain low for most of the year, reducing the need for signalisation. Furthermore, a roundabout provides added value by serving as a traffic-calming measure and giving motorists a clear indication that they are entering the town environment. From an urban design perspective, it can also complement the character of Yzerfontein more effectively than traffic signals. It should be noted that a single-lane roundabout was schematically tested in an earlier version of the report and showed potential feasibility (refer to **Annexure C**), although further detailed assessment would be required should this

	option be pursued. Refer to **Table 1** for a summary of the SIDRA results. Full details of the SIDRA analysis can be provided if required.
21. Impact of Development Traffic (2035 plus Phase 2) *References: Figures 14 & 15 and Table 1*	To assess the impact of the full proposed development (Phase 2) on the road network, the intersections were analysed with development traffic for the expected 2035 scenario. All intersections will continue to operate at acceptable levels of service, provided the upgrades presented in **Section 20** are implemented. As noted in **Section 9**, the dualling of Buitekant Street between 6th Street and Main Road was requested by the municipality as part of the proposed development. Should this section of road be dualled, it is unlikely that a single lane roundabout will geometrically be feasible at the Main Road / Buitekant Street intersection, and this scenario was also tested with only traffic signals as schematically shown below.  Refer to **Table 1** for a summary of the SIDRA results. Full details of the SIDRA analysis can be provided if required.
22. Parking Requirements	The parking provision for the proposed development should satisfy the requirements as suggested in the *Swartland Municipality: Municipal Land Use Planning By-Law (25 March 2020)*. It is recommended that the parking requirement be addressed at detailed SDP Stage. A summary of the standard parking requirements is as follow: • Dwelling house = 2 bays per dwelling unit (1 498 bays) • Group dwelling = 2 bays per dwelling unit (336 bays)

	• Single shops = 1 bay per 25m^2 GLA (60 bays) • Shopping Centre = 6 bays per 100m^2 GLA (120 bays) • Offices = 1 bay per 25m^2 GLA (60 bays) Taking this into account, a total of **2 074** parking bays are required to be provided on site. The parking layout will be addressed at the detailed precinct development planning and detailed design stage. An adequate number of parking bays must be provided at the site, to ensure both access and mobility within the development for other vehicles.
23. Non-Motorised Transport (NMT) & Public Transport	The *Swartland Municipality Spatial Development Framework Amendment, May 2019* indicated that a cycle route to be developed from Yzerfontein along the R315 to Darling, with a proposed bridge or underpass crossing of the R27. This will reinforce the tourism route of the R315 and act as a spatial gateway to the R315 route. There are no formal non-motorised (NMT) facilities in the vicinity of the proposed development. Pedestrians tend to use the gravel verges alongside the road where relevant. NMT activity in the vicinity of the development is deemed low, however there may be a portion of the staff/employees attracted to the proposed development that will access the site by non-motorised transport modes (i.e. on foot or by bicycle). Bicycle facilities such as adequate lock up and end user facilities at the business nodes is recommended in order to safely accommodate the NMT movements to/from the proposed development site. No other NMT improvements are necessary. Currently, there are no noticeable public transport facilities along the R315 within the Yzerfontein town in the vicinity of the development. Very few minibus taxis and buses were observed during the AM and PM peak hours in the vicinity of the development. It is anticipated that the development will generate very few public transport passengers and if so, they will be dropped off and picked up at various locations along the major routes within the town (Main Road (R315), Buitekant Street, Dassen Island Drive etc.). No public transport improvements are required.

24. Conclusions

This Traffic Impact Assessment (TIA) evaluates the transport implications of the proposed residential development on Portion 4 of Farm 560, Yzerfontein. The study considered existing conditions, background traffic growth, trip generation, and phased development scenarios. The key findings are:

- The development is proposed in two phases:
  - Phase 1 (2030): 291 single dwellings, 168 townhouses, and ±5 000 m² business GLA.
  - Phase 2 (2035): 458 single dwellings.
- Approximately 50% of residential units are anticipated to function as recreational homes, while the remaining units will accommodate permanent residents commuting to nearby towns.
- The full development is expected to generate approximately 523 trips in the AM peak hour and 750 trips in the PM peak hour.
- Seven accesses are proposed: two via Gey van Pittius Street, one via Short Street, one via Dassen Island Drive, and four via Atlantic Drive. All are planned as two-lane accesses (one in, one out).
- The 2025 baseline traffic counts confirm that current intersection operations are acceptable, with low to medium volumes. A 3.5% annual growth rate was applied to project 2030 and 2035 background traffic, which remains manageable without geometric upgrades.
- Under Phase 1 (2030), the Main Road (R315) / Buitekant Street intersection becomes capacity-constrained if retained as an all-way stop. Both a single-lane roundabout and traffic signals significantly improve operations. A roundabout offers advantages in terms of cost, maintenance, traffic calming, and urban character, though feasibility must be confirmed through detailed design.
- Under Phase 2 (2035), most study intersections continue to operate acceptably if upgrades at Main Road / Buitekant Street are implemented.
  - If Buitekant Street between 6th Street and Main Road is upgraded to a four-lane divided dual carriageway, traffic signals will be the preferred option, as a roundabout is unlikely to be geometrically feasible.

	• Parking demand is estimated at approximately 2 074 bays (1 834 residential and 240 business), to be finalised at SDP stage in line with the Swartland Municipal By-Law (2020). • The surrounding road network, including Atlantic Drive and Dassen Island Drive, has sufficient capacity to accommodate the development traffic, even under conservative assumptions with no internal trip reductions. • No additional public transport or non-motorised transport (NMT) upgrades are required, although provision of bicycle parking and pedestrian-friendly design at business nodes is encouraged.
25.Recommendations	From the report, the following recommendations are made: **Intersection Upgrades:** • The Main Road (R315) / Buitekant Street intersection should be upgraded to either a single-lane roundabout (preferred where geometrically feasible) or a traffic signalised intersection. • Should Buitekant Street be widened to a four-lane divided dual carriageway, a roundabout will not be feasible, and traffic signals must be implemented. **Site Access:** • All proposed site accesses should be constructed as two-lane intersections (one lane in, one lane out). • No access control is required, but refuse collection areas must be provided within the development at locations agreed with the municipality. **Parking Provision:** • Parking must comply with the Swartland Municipality: Municipal Land Use Planning By-Law (2020). A total of approximately 2 074 bays should be provided on-site, subject to refinement at detailed SDP stage. **Non-Motorised Transport (NMT) and Public Transport:** • While no major upgrades are required, provision should be made for bicycle storage and end-user facilities at business erven to accommodate NMT demand. • The development is not expected to generate significant public transport demand; therefore, no dedicated facilities are necessary.

	Approval Process: • The detailed design of all proposed road and access upgrades must be submitted to and approved by the relevant road authority before construction commences. **Overall Support:** • From a traffic engineering perspective, the proposed development can be accommodated by the surrounding road network, provided the above recommendations are implemented. The application is therefore supported.

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1. Provincial Administration: Western Cape, Department of Economic Affairs, Agriculture and Tourism: Transport Branch, Road Access Guidelines and Policies, Sept 2002.
2. Western Cape Government: Access Management Guidelines, Final, 2020.
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4. Department of Transport, South African Trip Generation Rates, Report No. RR92/228, Pretoria, 1995.
5. Committee of Transport Officials (COTO), South African Trip Data Manual, TMH 17, Committee Draft 2.2, August 2020.
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7. Committee of Transport Officials (COTO), South African Traffic Impact and Site Traffic Assessment Manual, Volume 1 TMH 16, September 2012.
8. Institute of Transportation Engineers, Trip Generation Manual, 9th Edition.
9. Swartland Municipality, Municipal Land Use Planning By-Law, 2020.

APPENDIX A: FIGURES

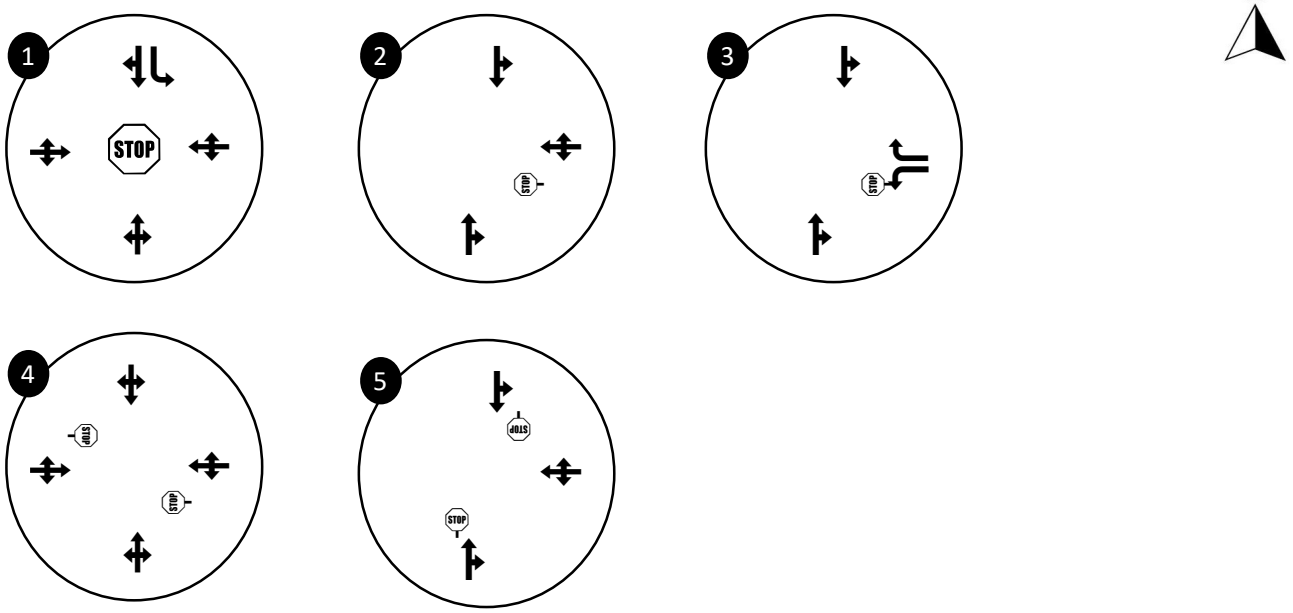


Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: PORTION 4 OF FARM 560, YZERFONTEIN TIA	Job No: STUR0341
	LOCALITY PLAN	Figure: 1



Traffic Engineering & Transport Planning
STURGEON CONSULTING

Project: PORTION 4 OF FARM 560, YZERFONTEIN TIA	Job No: STUR0341
SITE DEVELOPMENT PLAN (NTS)	Figure: 2



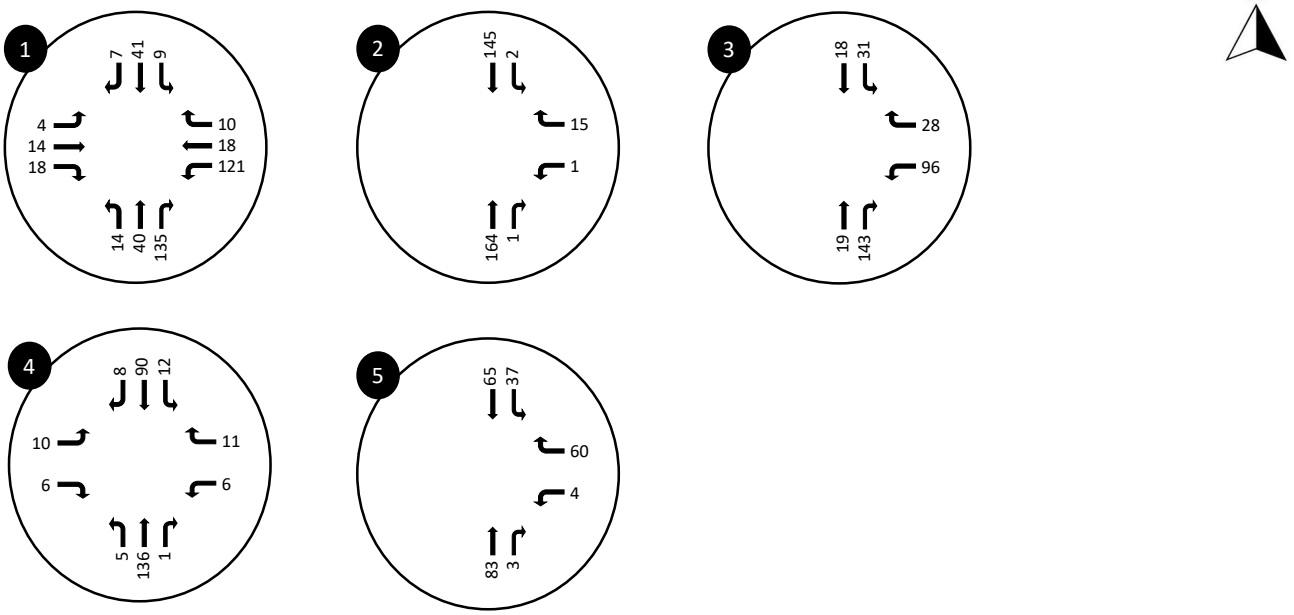
N

Legend:
- Turning lanes and turning movements
- Stop Control
- Traffic Signal Control
- Roundabout (Yield Control)



Diagramtic / Not to Scale

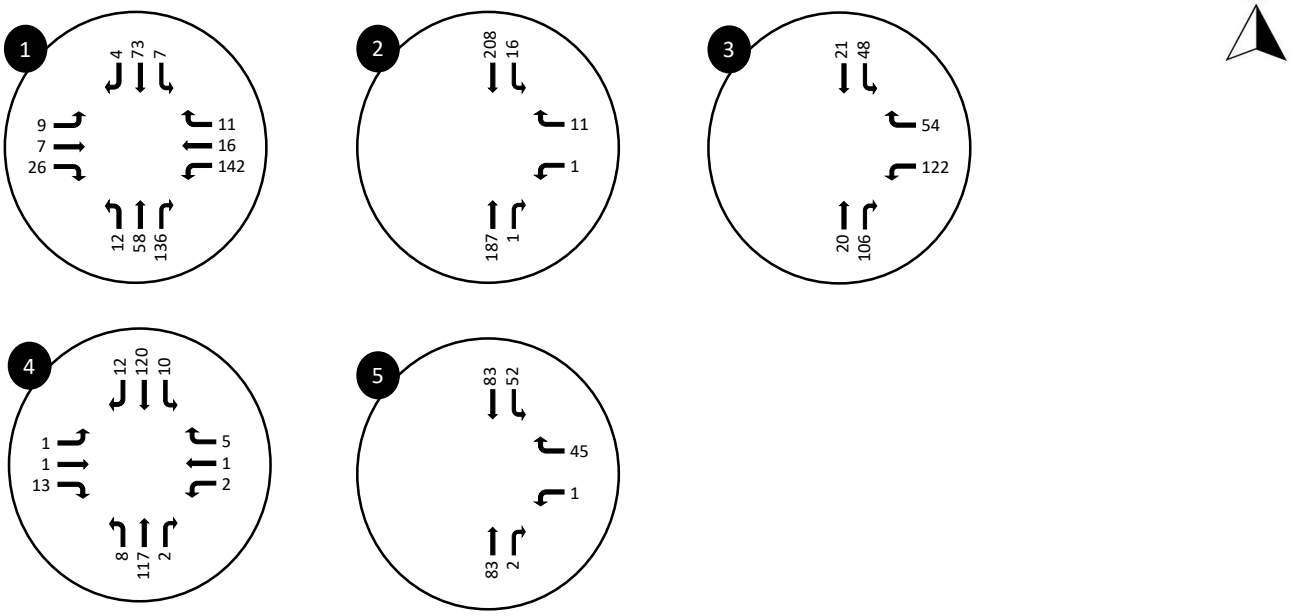
STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA 2025 Present Lane Configurations and Control	Job No: STUR0341	Figure: 3





Diagramtic / Not to Scale

Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA 2025 Present Traffic Demand AM Peak Hour	Job No: STUR0341	Figure: 4





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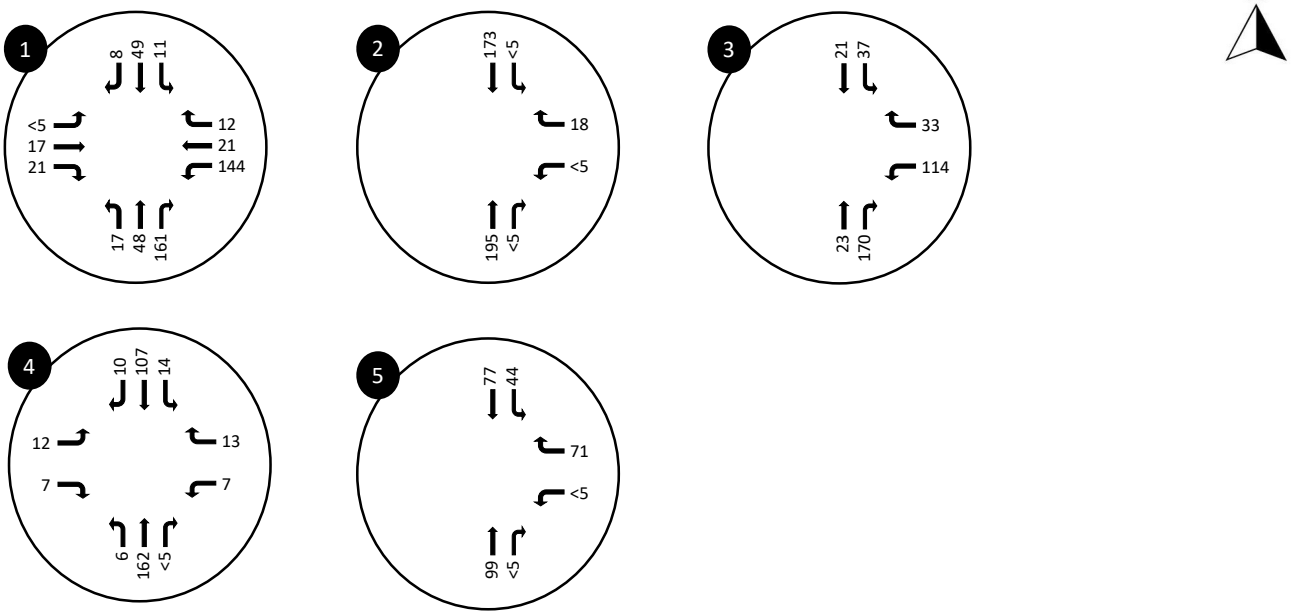
Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA 2025 Present Traffic Demand PM Peak Hour	Job No: STUR0341	Figure: 5





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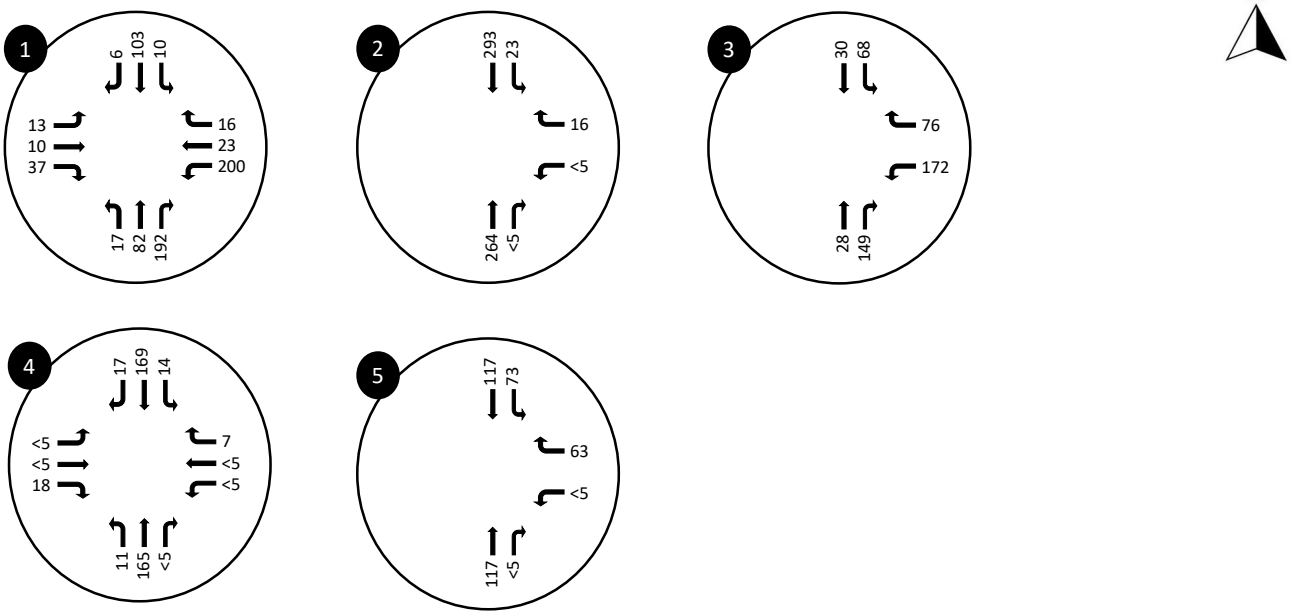
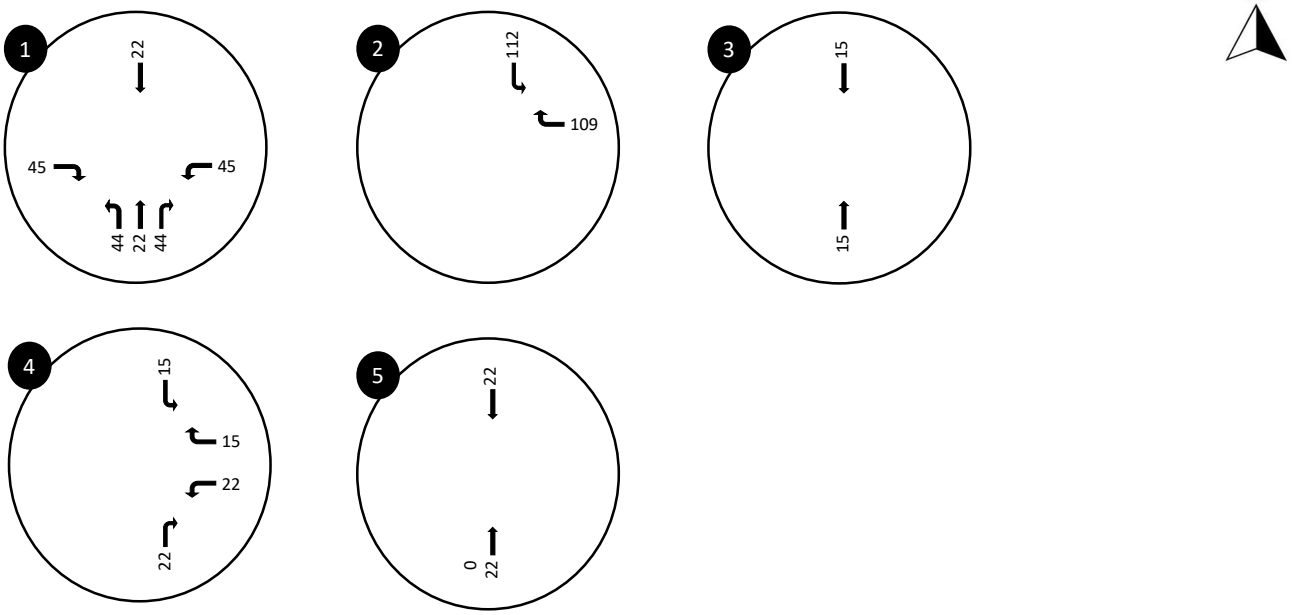
Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA 2030 Expected Traffic Demand AM Peak Hour	Job No: STUR0341	Figure: 6





Diagramtic / Not to Scale

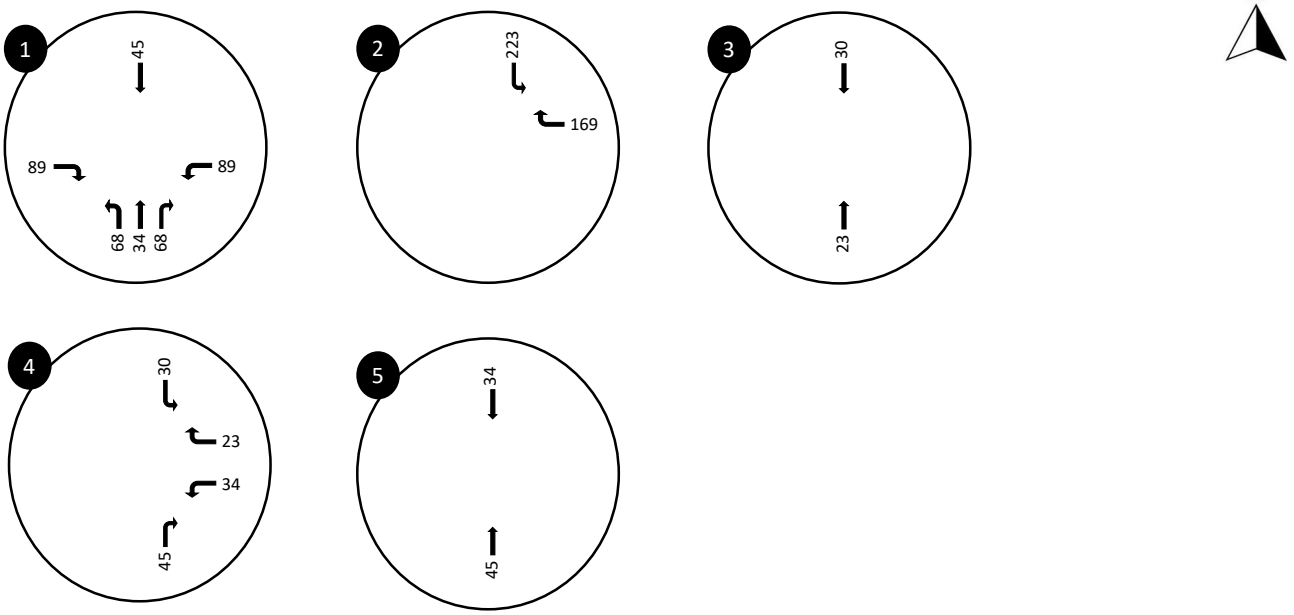
Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA 2030 Expected Traffic Demand PM Peak Hour	Job No: STUR0341	Figure: 7





Diagramtic / Not to Scale

Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA Phase 1 Development Traffic AM Peak Hour	Job No: STUR0341	Figure: 8





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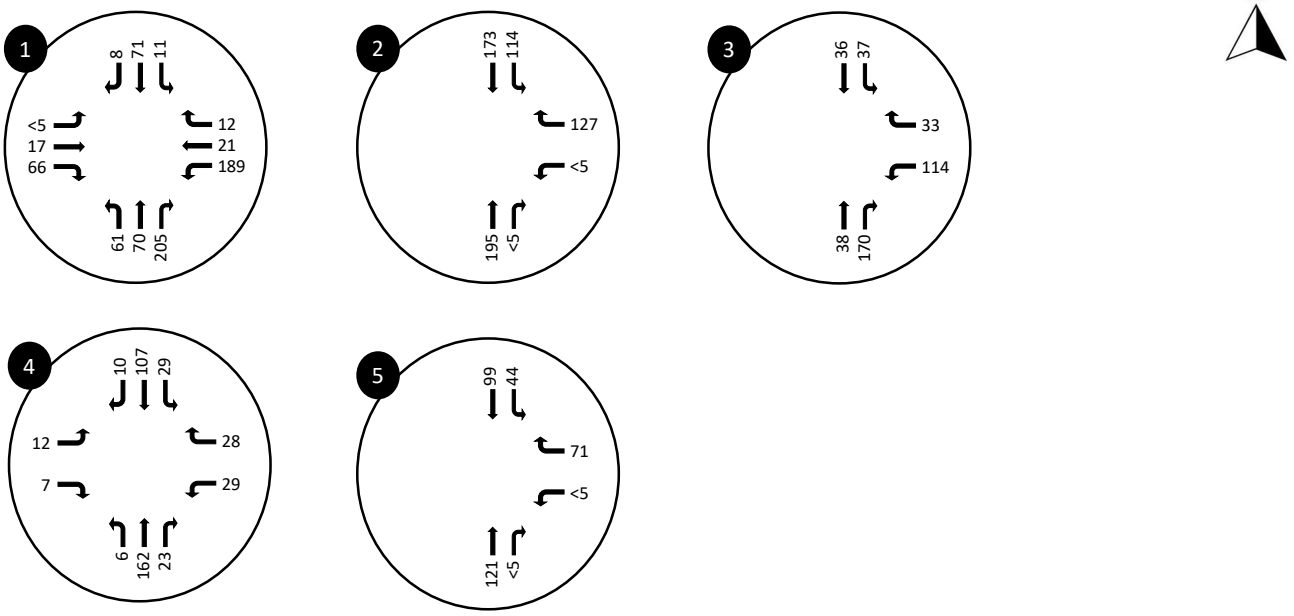
Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA Phase 1 Development Traffic PM Peak Hour	Job No: STUR0341	Figure: 9





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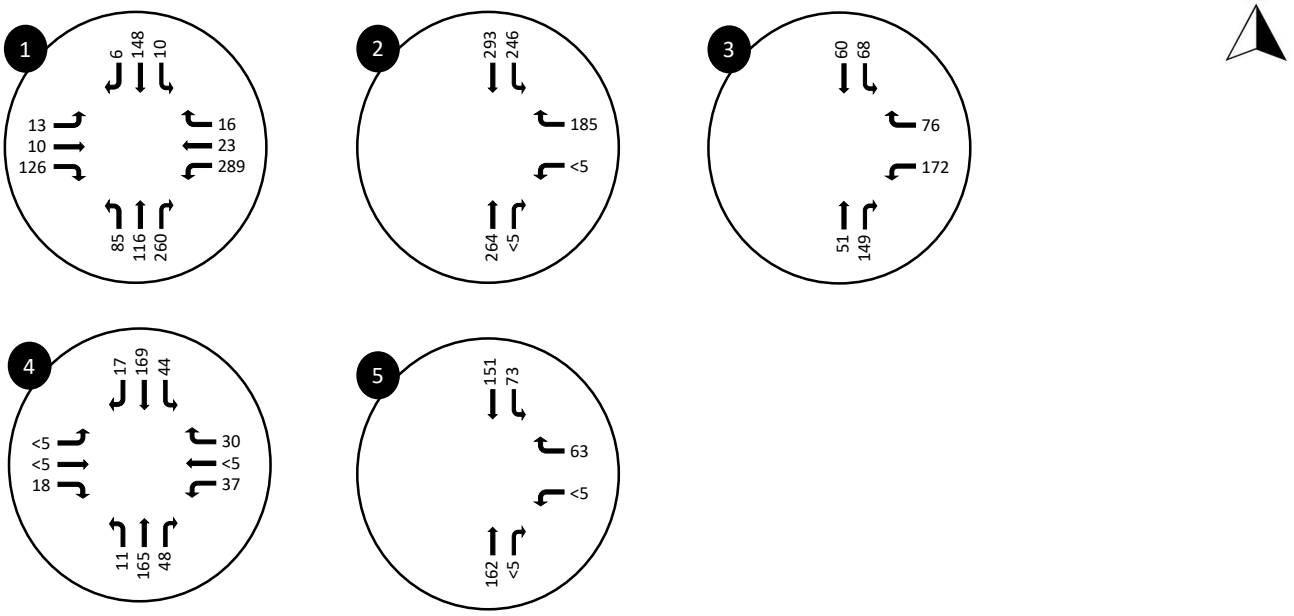
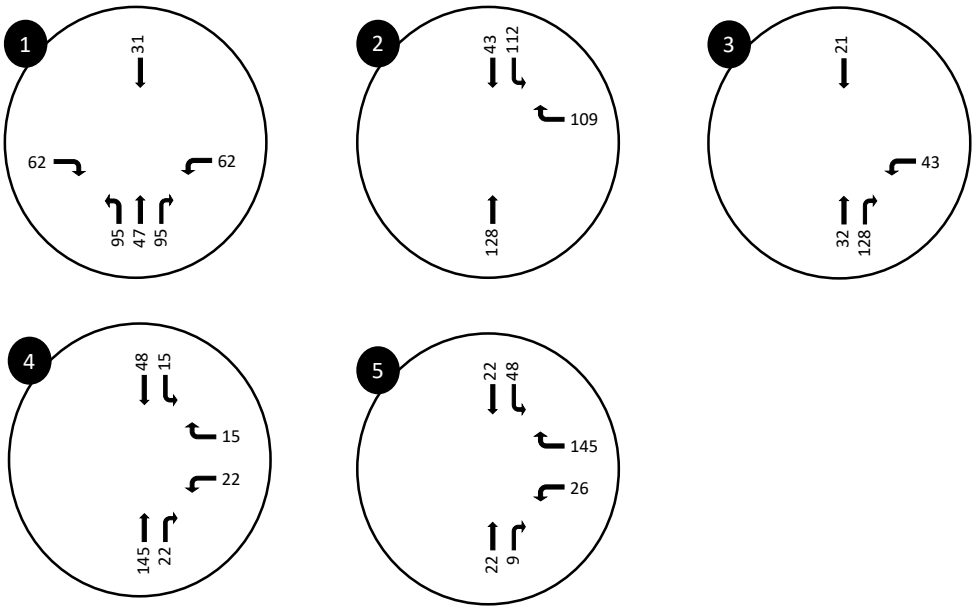
Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA 2030 Expected Traffic Demand AM Peak Hour	Job No: STUR0341	Figure: 10





Diagramtic / Not to Scale

STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA 2030 Expected Traffic Demand PM Peak Hour	Job No: STUR0341	Figure: 11





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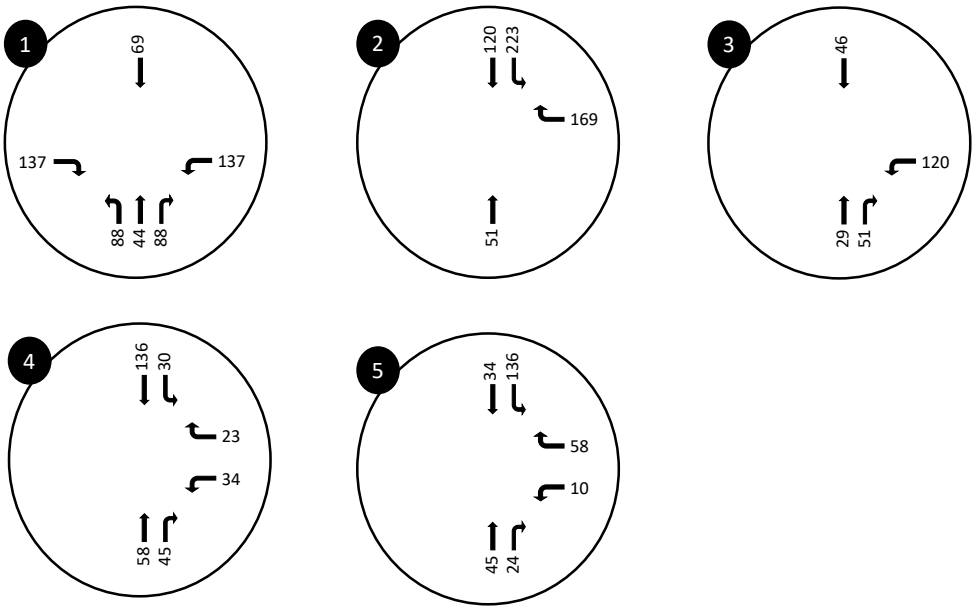
Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA Phase 2 Development Traffic AM Peak Hour	Job No: STUR0341	Figure: 12





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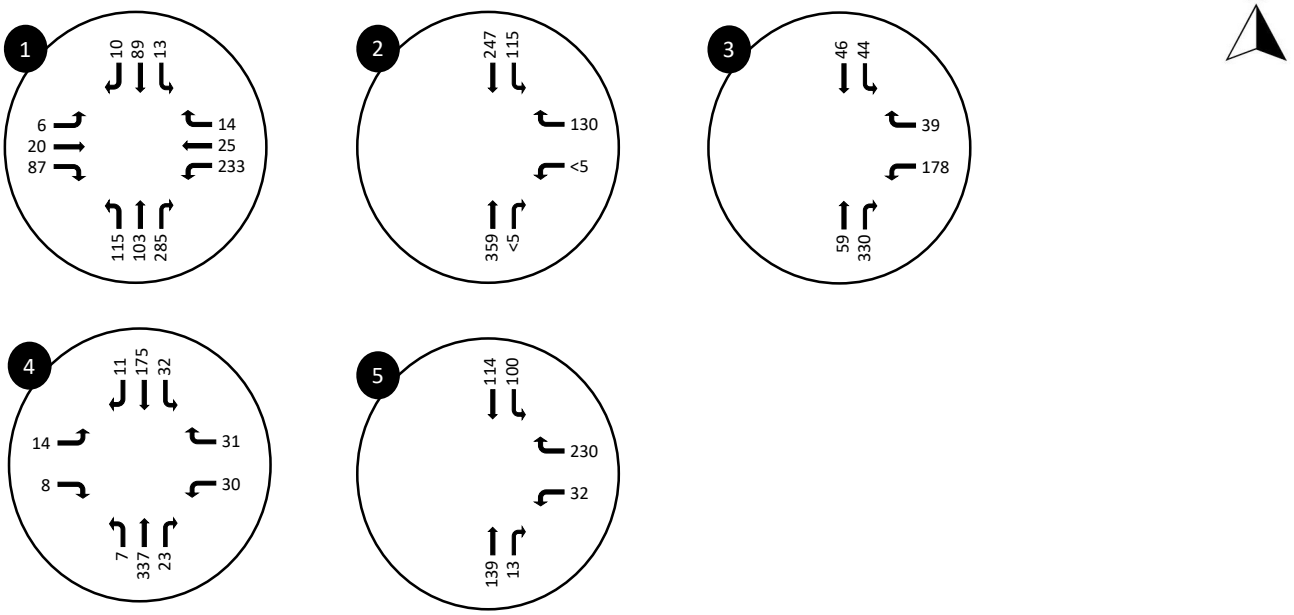
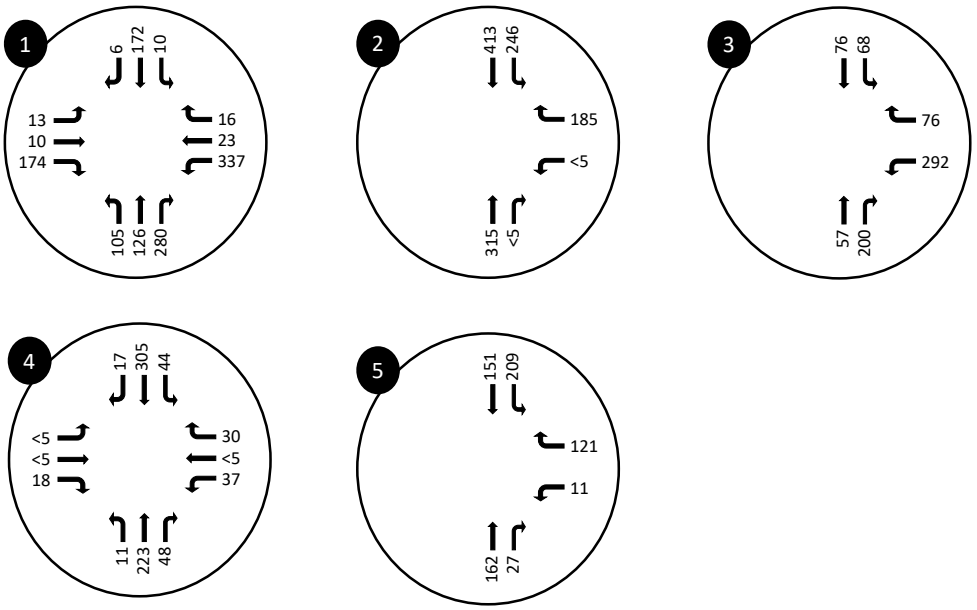
Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA Phase 2 Development Traffic PM Peak Hour	Job No: STUR0341	Figure: 13





Diagramtic / Not to Scale

Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA 2035 Expected Traffic Demand AM Peak Hour	Job No: STUR0341	Figure: 14





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Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: Portion 4 of Farm 560, Yzerfontein TIA 2035 Expected Traffic Demand PM Peak Hour	Job No: STUR0341	Figure: 15



Traffic Engineering & Transport Planning STURGEON CONSULTING	Project: PORTION 4 OF FARM 560, YZERFONTEIN TIA	Job No: STUR0341
	SITE DEVELOPMENT PLAN (NTS) WITH PHASING	Figure: 16

APPENDIX B: TABLES

Table 1: Peak Hour Traffic Conditions at Intersections

Intersection	Scenario	Intersection Control	Peak Hour	Intersection Avg Delay (s)	Intersection LOS	Intersection v/c	Critical Approach			
							Approach	Avg Delay (s)	LOS	v/c
1. Main Road (R315) / Buitekant Street	Existing (2025)	All Way Stop	AM	20.2	C	0.497	South	23.1	C	0.497
	Background (2030)	All Way Stop		22.3	C	0.595	South	26.8	D	0.595
	Expected (2030) + Phase 1	All Way Stop		25.8	D	0.653	South	30.0	D	0.653
	Expected (2030) + Phase 1	Roundabout		6.4	A	0.238	West	8.9	A	0.086
	Expected (2030) + Phase 1	Traffic Signal		13.9	B	0.560	South	15.8	B	0.560
	Total Future (2035) + Phase 2	Roundabout		6.9	A	0.357	West	10.3	B	0.128
	Total Future (2035) + Phase 2	Traffic Signal		17.9	B	0.715	West	25.6	C	0.588
	Total Future (2035) + Phase 2	Traffic Signal[1]		16.8	B	0.696	West	20.6	C	0.362
	Existing (2025)	All Way Stop	PM	21.3	C	0.560	South	25.1	D	0.560

Intersection	Scenario	Intersection Control	Peak Hour	Intersection Avg Delay (s)	Intersection LOS	Intersection v/c	Critical Approach			
							Approach	Avg Delay (s)	LOS	v/c
	Background (2030)	All Way Stop		24.2	C	0.666	South	30.1	D	0.666
	Expected (2030) + Phase 1	All Way Stop		35.1	E	0.853	South	47.2	E	0.853
	Expected (2030) + Phase 1	Roundabout		6.8	A	0.288	West	9.9	A	0.142
	Expected (2030) + Phase 1	Traffic Signal		15.4	B	0.703	South	17.2	B	0.703
	Total Future (2035) + Phase 2	Roundabout		7.6	A	0.411	West	11.2	B	0.227
	Total Future (2035) + Phase 2	Traffic Signal		25.1	C	0.874	West	36.3	D	0.874
	Total Future (2035) + Phase 2	Traffic Signal[1]		20.0	C	0.819	West	28.4	C	0.819
2. BuitekantStreet / Gey Van Pittius Street	Existing (2025)	Stop Controlled	**AM**	0.5	A	0.099	South East	8.2	A	0.013
	Background (2030)	Stop Controlled		0.5	A	0.117	South East	8.3	A	0.017
	Expected (2030) + Phase 1	Stop Controlled		2.9	A	0.181	South East	8.6	A	0.119

Intersection	Scenario	Intersection Control	Peak Hour	Intersection Avg Delay (s)	Intersection LOS	Intersection v/c	Critical Approach			
							Approach	Avg Delay (s)	LOS	v/c
	Total Future (2035) + Phase 2	Stop Controlled[1]		2.3	A	0.227	South East	9.6	A	0.250
	Existing (2025)	Stop Controlled	PM	0.5	A	0.151	South East	8.6	A	0.013
	Background (2030)	Stop Controlled		0.5	A	0.178	South East	8.9	A	0.016
	Expected (2030) + Phase 1	Stop Controlled		3.6	A	0.334	South East	9.9	A	0.246
	Total Future (2035) + Phase 2	Stop Controlled[1]		4.1	A	0.447	South East	12.5	B	0.447
3. Buitekant Street / Dassen Island Drive	Existing (2025)	All Way Stop	AM	13.6	B	0.225	East	16.5	C	0.225
	Background (2030)	All Way Stop		14.1	C	0.267	East	17.4	C	0.267
	Expected (2030) + Phase 1	All Way Stop		14.1	C	0.267	East	17.4	C	0.267
	Total Future (2035) + Phase 2	All Way Stop		15.2	C	0.421	East	18.5	C	0.391
	Existing (2025)	All Way Stop	PM	15.4	C	0.285	North	17.7	C	0.188

Intersection	Scenario	Intersection Control	Peak Hour	Intersection Avg Delay (s)	Intersection LOS	Intersection v/c	Critical Approach			
							Approach	Avg Delay (s)	LOS	v/c
	Background (2030)	All Way Stop		16.0	C	0.0.339	North	18.9	C	0.339
	Expected (2030) + Phase 1	All Way Stop		15.5	C	0.339	North	17.4	C	0.259
	Total Future (2035) + Phase 2	All Way Stop		20.5	C	0.683	North	26.6	D	0.683
4. Dassen Island Drive / Versveld Street	Existing (2025)	Stop Controlled	AM	1.6	A	0.085	West	9.2	A	0.019
	Background (2030)	Stop Controlled		1.6	A	0.101	West	9.4	A	0.024
	Expected (2030) + Phase 1	Stop Controlled		6.4	A	0.171	West	9.1	A	0.022
	Total Future (2035) + Phase 2	Stop Controlled		6.2	A	0.324	West	10.8	B	0.035
	Existing (2025)	Stop Controlled	PM	8.6	A	0.144	West	8.6	A	0.003
	Background (2030)	Stop Controlled		6.3	A	0.171	West	9.5	A	0.025
	Expected (2030) + Phase 1	Stop Controlled		6.9	A	0.203	West	10.2	B	0.028

Intersection	Scenario	Intersection Control	Peak Hour	Intersection Avg Delay (s)	Intersection LOS	Intersection v/c	Critical Approach			
							Approach	Avg Delay (s)	LOS	v/c
	Total Future (2035) + Phase 2	Stop Controlled		7.2	A	0.371	West	13.6	B	0.050
5. Dassen Island Drive / Atlantic Drive	Existing (2025)	Stop Controlled	AM	6.9	A	0.093	East	8.2	A	0.058
	Background (2030)	Stop Controlled		6.9	A	0.112	East	8.2	A	0.070
	Expected (2030) + Phase 1	Stop Controlled		6.8	A	0.136	East	8.4	A	0.073
	Total Future (2035) + Phase 2	Stop Controlled		7.9	A	0.259	East	8.9	A	0.259
	Existing (2025)	Stop Controlled	PM	7.2	A	0.150	East	8.1	A	0.061
	Background (2030)	Stop Controlled		7.0	A	0.159	East	8.5	A	0.058
	Expected (2030) + Phase 1	Stop Controlled		6.9	A	0.200	East	8.8	A	0.063
	Total Future (2035) + Phase 2	Stop Controlled		7.9	A	0.353	East	9.6	A	0.166

LOS – Level of Service, Delay in seconds per vehicle, V/C – Volume to Capacity Ratio

Notes: 1 – Intersection Improvements with Dualling of Buitekant Street

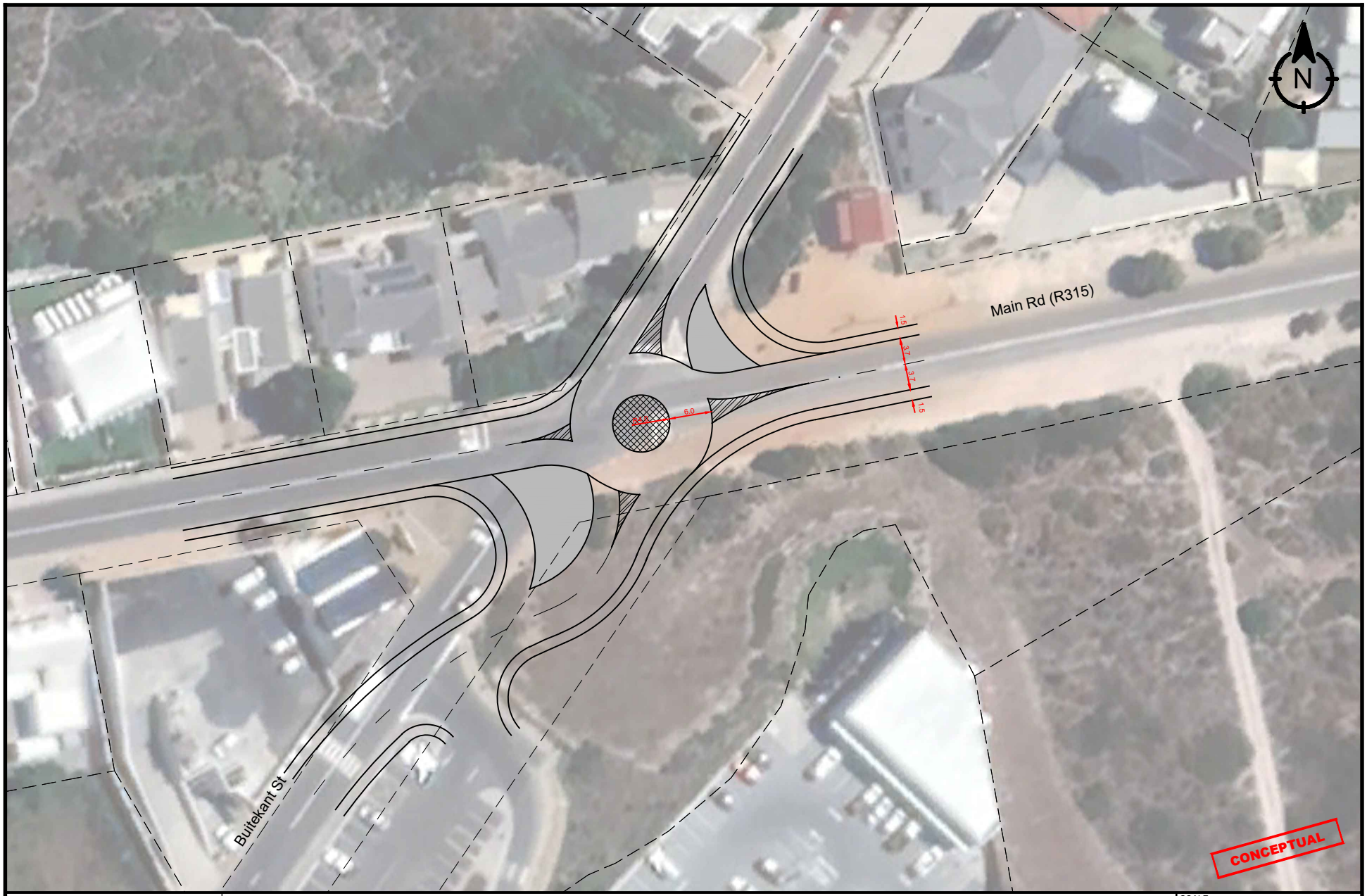
Table 2: Estimated Peak Hour Trips

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Single Dwelling Units	94	281	375	262	112	374
Recreation Homes	37	20	57	37	56	93
Group Housing/Townhouses (simplexes & duplexes)	36	1	37	100	45	149
Offices	27	5	32	6	25	32
Line Shops/Speciality Retail1 (ITE826)	5	5	10	18	23	41
Shopping Centre	8	4	12	34	34	68
GRAND TOTAL	**206**	**316**	**523**	**457**	**293**	**750**

Table 3: Estimated Peak Hour Trips per Phase

Peak Hour	Total Primary Trips	Primary Trips (vph)	
		In	Out
PHASE 1			
AM	293	149	144
PM	521	297	224
PHASE 2			
AM	+229	+57	+172
PM	+229	+160	+68

APPENDIX C: ROUNDABOUT SCHEMATIC LAYOUT



Traffic Engineering & Transport Planning
STURGEON CONSULTING

MAIN RD / BUITEKANT ST, YZERFONTEIN
CONCEPTUAL ROUNDABOUT (20m ICD)

SCALE	1:750 (A4)
DATE	May 2023
PLAN NUMBER	STUR/MBY/02