

TRANSPORT IMPACT STATEMENT

NOVEMBER 2021

**PROPOSED RESIDENTIAL DEVELOPMENT
ERF 1772, STANFORD**

PREPARED FOR:

SEBUMO TUDE GUEST SERVICES & MORE CC

EFG Engineers (Pty) Ltd

Transport, Infrastructure, Municipal Services & Development

Reg. No. 2005/024246/07

3A Queen Street, Durbanville 7550

P O Box 3800, Durbanville 7551

Tel: 021-975 3880

Fax: 021-975 3850

e-mail: info@efgeng.co.za

web: www.efgeng.co.za



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Prepared For:	Sebumo Tude Guest Services & More CC			
Representative:	Richard Kotze (WRAP)			
Email:	admin@wrapgroup.co.za			
Tel:	+27 (28) 313 1411			
Cell:	-			
EFG Director:	Eric Foster			
EFG Manager:	Andri de Bruin			
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1. INTRODUCTION

1.1 Terms of Reference

EFG Engineers (Pty) was appointed to prepare a Traffic Impact Statement in support of a proposed residential development of 91 Town Housing erven on Erf 1772, Stanford. A locality plan is shown as **Figure 1.1**.

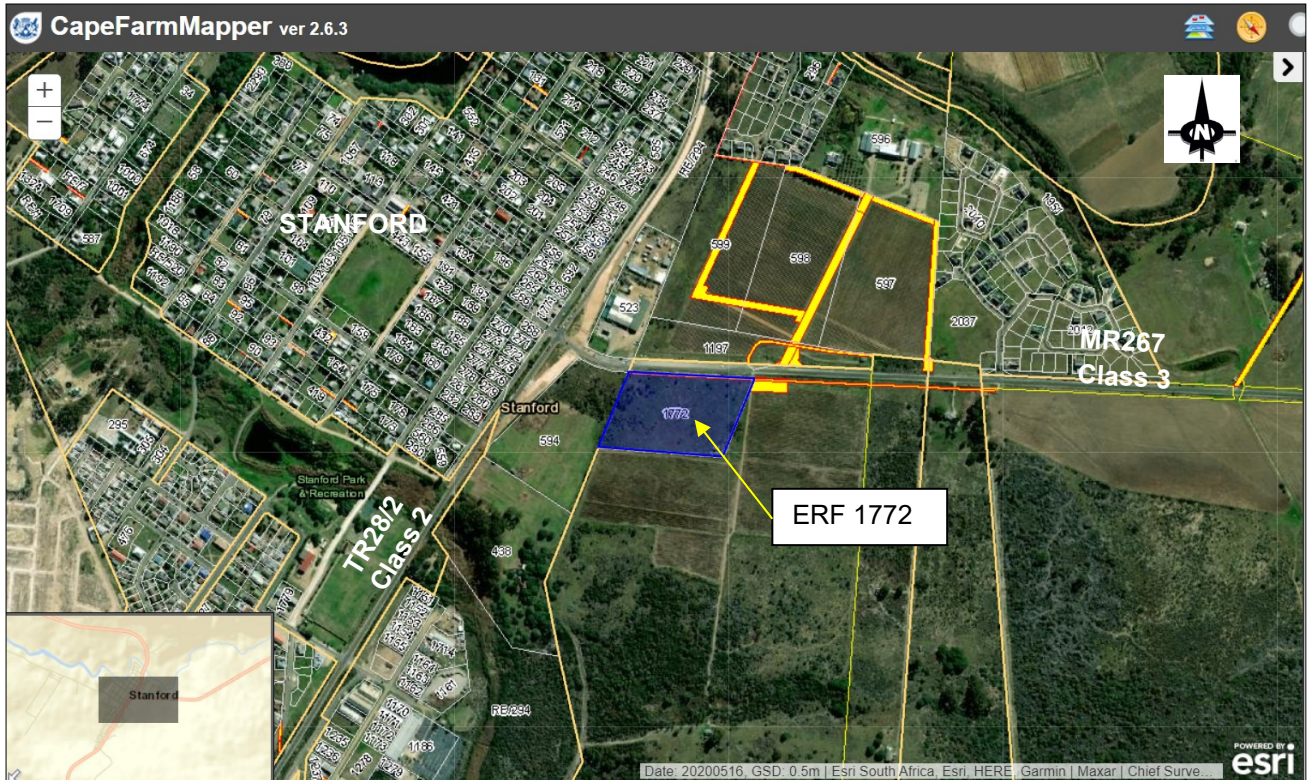


Figure 1.1: Locality Plan

1.2 Background Information

During 2001, approval was granted to subdivide Erf 1772, Stanford from Portion 13 of the Farm Riverside No. 644 and to rezone Erf 1772 from Agricultural Zone 1 to Industrial Zone 1 to allow for the operation of a brick making plant. An access servitude was registered over the adjacent property to provide for access to Erf 1772 opposite the Birkenhead Brewery off the R326. The proposed brick making plant did not become operational, Erf 1772 was not rezoned and its zoning remained Agricultural 1. Erf 1772 was also not included in the urban edge of Stanford when the Overstrand Spatial Development Framework was compiled.

A Consent Use application was subsequently submitted in November 2016 to propose an Agri-Tourism development that would include a Guest House (5 rooms to let), Conference Facility (60 seats), Farm Store, Restaurant, and other related minor uses. This application was rejected by Western Cape Government as a Traffic Study was not conducted and submitted with the application i.e., WCG Letter dated 3 April 2017, Ref. 16/9/6/1-21/121, Job 24795 included as **Appendix A**.

Subsequent to the WCG letter dated 3 April 2017, a traffic study was conducted by DECA Consulting Engineers in May 2017 to address the comments of WCG in terms of the Consent Use application for the Agri-Tourism development as described above. This study was favourably considered and the outcome was summarised in further correspondence by WCG dated 4 October 2017, Ref. 16/9/6/1-21/121, Job 24795 (also included in **Appendix A**). The DECA study proposed a formalised access opposite the Birkenhead Brewery, which was approved. A further approval condition entailed the permanent closure of all other access points to/from Erf 1772.

Erf 1772 was eventually included in the urban edge of Stanford when the Overstrand Spatial Development Framework was revised in 2020.

1.3 Proposed Land Use

The application now entails the Rezoning of Erf 1772 to General Residential 1 and Subdivision to allow for 91 Town Housing erven. The proposed Site Development Plan is included as **Appendix B**. This application and new proposed SDP supersedes the previous applications and SDPs.

2. OVERSTRAND SPATIAL DEVELOPMENT FRAMEWORK (DRAFT 2020)

Figure 2.1 shows the Overstrand SDF for Stanford.

The purple zones represent future industrial land uses, while the orange area represent a new urban infill area of 34.39ha for future residential development, mixed-use development and community facilities.

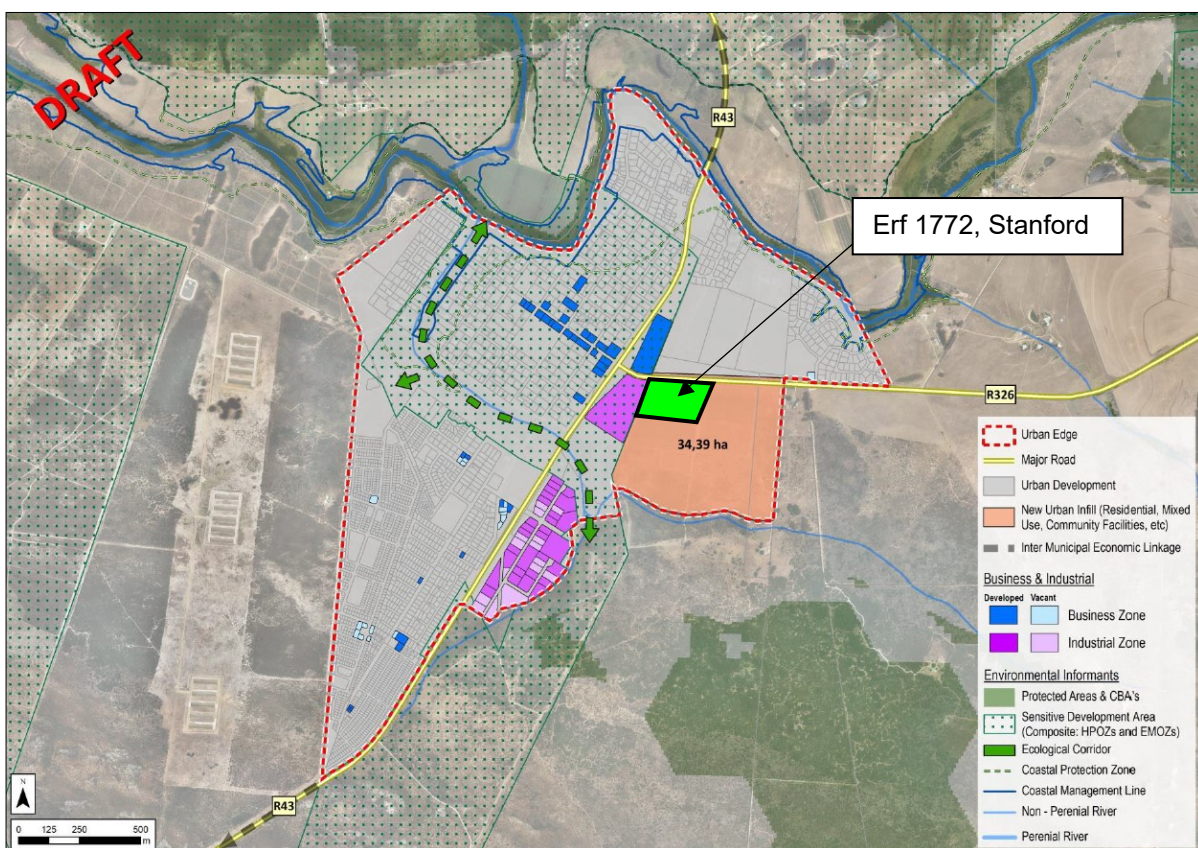


Figure 2.1: Overstrand Spatial Development Framework (DRAFT 2020)

It is not considered ideal to include industrial/commercial land uses with residential land uses in terms of mixing industrial/commercial/residential traffic and having an increase in pedestrian traffic between the four quadrants of the TR28/2 and MR267 intersection.

3. LOCAL ACCESS MANAGEMENT

3.1 WCG Access Management Guidelines (2020)

As Erf 1772 is now included in the urban edge of Stanford and given the residential development being planned (including the approved Stanhaven residential development further east also included in the urban edge), the

roadside development environment (RDE) can be considered to be suburban when fully developed, although the area currently still has a semi-rural character.

The WCG Access Management Guidelines (2020) access spacings for a Suburban RDE should therefore be acceptable in terms of future planning for the area.

Assuming only one access to/from MR267 (in the short term), it is anticipated that the access would be classified as an “Equivalent Collector (Class 4)” for a Suburban RDE (as well as Semi-Rural). The trip generation of the proposed development is detailed elsewhere.

The minimum spacing requirement between two unsignalized full intersections along Class 3 roads is 225m for Suburban and 260m for Semi-Rural RDEs.

By including the second future access point to/from the eastern boundary of the site, the future development trips will redistribute and a “High-volume (Class 5)” driveway category will apply for at least one of the two future accesses. Refer to Table 11-1 of the WCG Access Management Guidelines (2020).

The minimum spacing requirement between an unsignalized full intersection and high-volume driveway is 80m for Suburban and 105m for Semi-Rural RDEs along a Class 3 road. The same minimum spacing requirements apply between two high-volume driveways.

High-volume driveways are permissible along Class 3 through routes within Suburban and Semi-Rural RDEs, but not along Class 2 through routes (Table 11.3, WCG Access Management Guidelines, 2020). A High-volume driveway (full access) is therefore permissible along MR267 while MR267 remains undivided. It will be motivated elsewhere that MR267 has sufficient spare capacity given low traffic volumes. Based on this, it is therefore unlikely that MR267 will become a divided/dual-carriageway road in the short term.

3.2 Proposed Access to Erf 1772

The Site Development Plan (**Appendix B**) shows one access point off MR267 with a second future access point to/from the east of the site that can become operational in the longer term if and when the adjacent land to the east is developed.

Figure 3.1 shows a proposed conceptual local access management plan for the south-eastern quadrant of the TR28/2 and MR267 and possible future internal road links that also link with TR28/2 to the west. The proposed spacings along MR267 are as follow:

- First access to Erf 1772 at $\pm 130\text{m}$ from the western erf boundary; and
- Second access located opposite the Birkenhead Brewery access at $\pm 130\text{m}$ to the east of the first access position.

In the short term, only the first access point will be in place and will operate as an Equivalent Collector (Class 4) and a full intersection with MR267. This is until the wider area to the east has been developed in the future.

In the longer term future, the first access point can be converted to a left-in left-out access point with the proposed main access to the wider area opposite Birkenhead Brewery to be established as a full intersection with MR267. Alternatively, the first access point could be closed entirely and two to three additional Town Housing erven could be created.

An access point to/from TR28/2 is proposed at $\pm 240\text{m}$ from the traffic circle and on the boundary between Erf 438 and Erf 594. This position is preferred in order to create the opportunity for these erven to be developed independent of one another, while also serving as a possible additional access for future development on Portion 13 of Farm 644.

Figure 3.1 was discussed with the WCG prior to this report being prepared.



Figure 3.1: Proposed Local Access Management Concept

Figure 3.2 (extract of SG diagram) shows the existing right-of-way servitude that was previously registered over Portion 13 of Farm 644 in favour of Erf 1772. This is not a practical access as the servitude is running adjacent to MR267 and would require acute traffic manoeuvres when leaving or entering the main road.

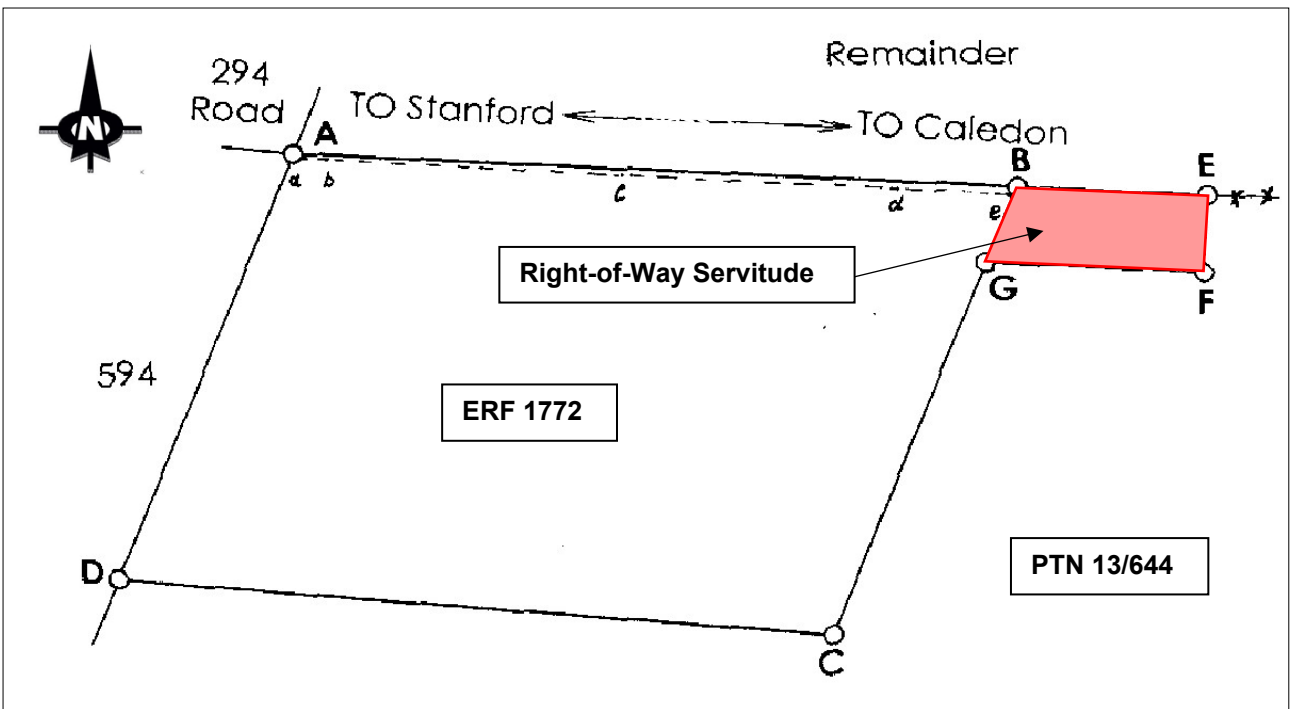


Figure 3.2: (Extract of) SG Diagram for Erf 1772, Stanford

4. TRAFFIC DATA

The latest traffic data on the Road Network Information System for MR267 dates 2015 for a typical weekday. The daily distribution is shown in **Figure 4.1**. Detail RNIS output is included in **Appendix C**.

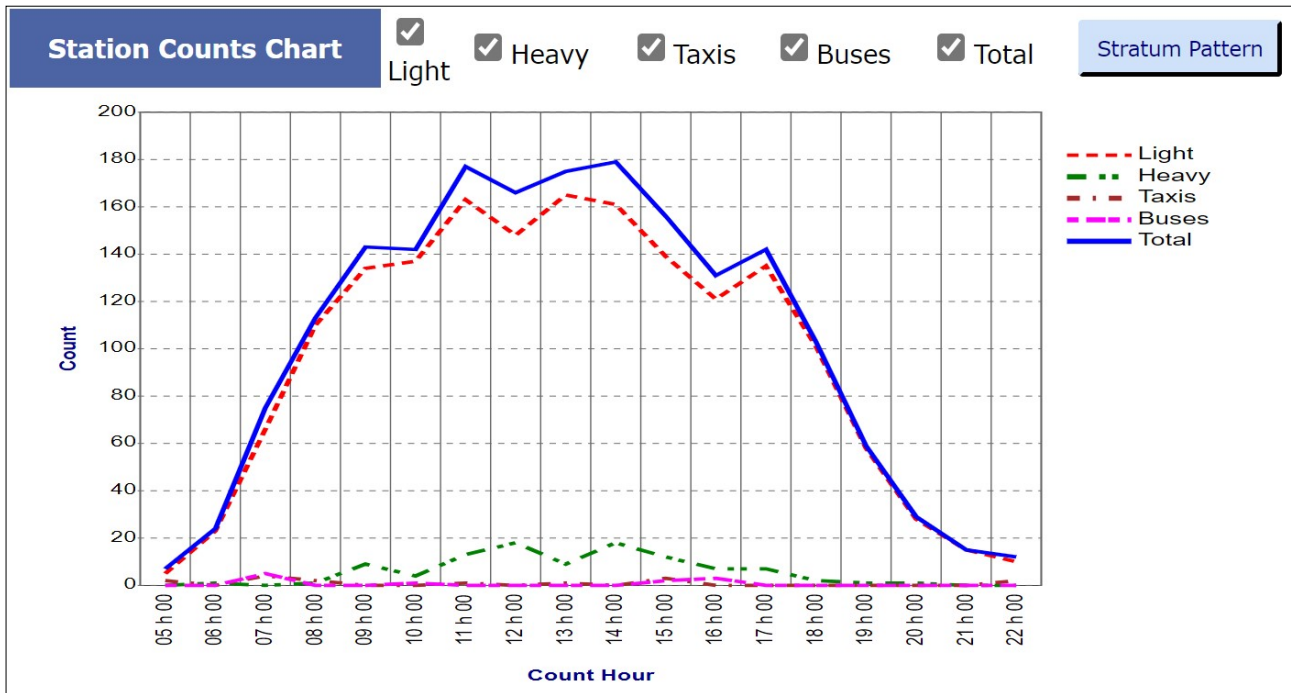


Figure 4.1: Daily Traffic Distribution (RNIS; MR267)

The daily traffic along MR267 at the intersection with TR28/2 does not follow a commuter traffic pattern with defined peaks in the AM and PM periods. The critical peak hour is observed to be the midday peak hour of 13:00-14:00. Its two-way traffic volume along MR267 is in the order of 180 vehicles per hour, which is low for this class of road.

The AADT traffic growth is $\pm 2.5\%$ per annum along MR267 based on the RNIS AADT data between 1999 and 2015. The 2015 peak hour traffic was escalated to 2021 peak hour traffic by applying the growth of 2.5% per annum. The estimated 2021 peak hour traffic calculates to ± 210 vehicles (two-way volume), which is still considered to be low for the class of road.

Based on the above, the proposed development peak hours and external road network peak hour are not anticipated to overlap, which is beneficial in terms of the proposed development’s anticipated traffic impact.

5. TRIP GENERATION

Table 5.1 summarises the trip generation for the proposed development in terms of 91 Town Housing even. It is anticipated that some of the units could be retirement units as well as recreational homes, for which lower trip rates are typical.

The trip rate for a Town Housing unit is 0.85 trips per unit as per TMH17. The base trip rate was reduced by $\pm 15\%$ (i.e. in line with the TMH17 mixed-use reduction factor) to allow for the reduced trip rates associated with retirement units and recreational homes. A trip rate of 0.7 trips per unit is therefore proposed.

Table 5.1: Trip Generation - Erf 1772, Stanford

Erf 1772, Stanford	No. of Units	Trip Rate	IN	OUT	TOTAL
AM Peak Hour	91 Townhouses (incl. some recreational and retirement units)	0.7 trips per unit	25%	75%	-
			16	48	64
PM Peak Hour		0.7 trips per unit	70%	30%	-
			44	20	64

Table 5.1 shows that the proposed development is anticipated to generate 64 trips during the AM and PM peak hours respectively.

6. TRIP DISTRIBUTION

The Site Development Plan (**Appendix B**) shows one access point off MR267 with a second future access point to/from the east of the site that can become operational in the longer term when the area to the east is developed. In the shorter term, the one access off MR267 will carry all the trips to and from the site. The trip distribution will be assessed on this basis as part of this TIS.

The following trip distribution was assumed:

- 35% towards Hermanus;
- 25% towards Gansbaai;
- 20% towards Stanford; and
- 20% towards the east along MR267.

The above implies that 80% of trips will turn left out of the proposed development while 20% will turn right from the proposed access point.

Figure 6.1 shows the future 2021 total traffic.



Figure 6.1: Future 2021 Traffic

The maximum number of vehicles to be generated for any turning movement is 38 vehicles during the AM peak hour (i.e., the left-turn from the site). The 2021 background traffic was taken as 60 vehicles in each direction along MR267 during the AM and PM peak hours respectively (i.e., 50 vehicles in each direction based on 2015 data escalated to 2021 traffic based on 2.5% growth per annum – also see **Figure 4.1**).

The existing traffic on MR267 is low for the class of road therefore the road has sufficient spare capacity to absorb the additional trips to/from the proposed development. Further detail capacity analysis is therefore not deemed necessary.

7. TURNING LANE WARRANT EVALUATION

The right-turn lane warrants as per the WCG Access Management Guidelines (dated 2020) were investigated at the proposed access off MR267 based on the estimated traffic volumes as per **Figure 6.1**.

Table 7.1 summarises the traffic data to inform the right-turn lane warrant evaluation.

Table 7.1: Traffic Data for Right-Turn Lane Warrant Evaluation (MR267)

Parameter	AM Peak Hour	PM Peak Hour
V_o (Opposing Volume)	63	69
V_a (Advancing Volume)	73	95
V_r (right-turn % of V_a)	13 (18%)	35 (37%)

(Based on Figure 14-2, WCG Access Management Guidelines, 2020)

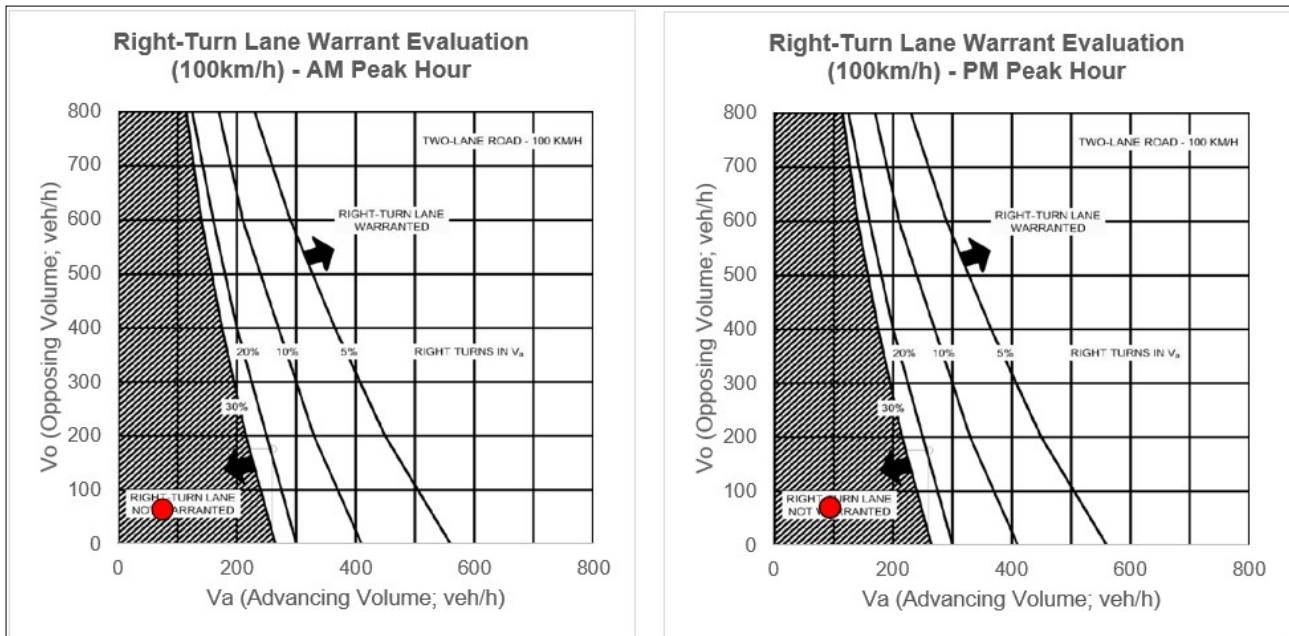


Figure 7.1: Right-Turn Lane Warrant Evaluation (2021 Future Traffic)

Figure 7.1 shows that the data points that are plotted based on the AM and PM advancing and opposing traffic volumes are to the left of the 30% reference line (i.e. the line used as reference for right-turn volumes in the order of 30% of the advancing volume).

Based on the right-turn lane warrant evaluation in **Figure 7.1**, a right-turn lane would not be warranted along MR267 based on the relatively low AM and PM peak hour traffic volumes along MR267.

8. STACKING AND PARKING

The matter of access provision was discussed in the previous section.

8.1 Available Stacking

Based on the Site Development Plan included in **Appendix B**, the on-site circulation is anticipated to be adequate. The plan shows that at both the initial and the future access points, the available on-site stacking space upon entering the site is roughly three passenger cars and upon exiting the development the available on-site stacking is roughly two passenger cars. There is one approach lane for entering and one approach lane for exiting at each access point.

A queuing analysis was conducted to check the available stacking for the entering vehicles as the entering movements are more of significance in terms of the impact on MR267. All types of access control methods that could typically apply at a residential development were included. A spreadsheet developed by City of Cape Town's Willie Liebenberg was used to conduct the analysis. The results are summarised in **Table 8.1**.

Table 8.1: Queuing Analysis Results

Access Control Method	Entering On-Site Stacking (Probability of <4 vehicles,%)	
	AM 18 vehicles	PM 49 vehicles
Swipe magnetic card	100%	100%
Remote control (Boom)	100%	100%
Remote control (Swing/Sliding gates)	100%	100%
Manual control	100%	96%
Coded card reader	100%	100%
Proximity card reader (1-2m)	100%	100%
Pin number operated gates	100%	99%
Cell-phone operates gates (gate opens when call is received)	100%	96%
Manual recording (visitor completes form)	100%	94%
Intercom operated gates (visitor contacts resident by intercom)	99%	Na*

*Na = not achievable in terms of one approach lane.

The results in **Table 8.1** indicate that apart from manual recording access control the probability of less than 4 vehicles stacking on-site upon entering is 96% or more. There are also two parallel parking bays for visitors upon entering where some administration can be conducted. The exiting movements are less critical and lower probabilities can be accepted. It is concluded that the stacking space provided upon entering and exiting the site is acceptable.

8.2 Parking Provision

The Overstrand Municipality Land Use Scheme of 2020 stipulates an off-street parking requirement of 1 bay per dwelling unit plus 1 bay per dwelling unit for visitors. For 91 Town Housing units, the total minimum off-street parking requirement is therefore 182 bays.

9. CONCLUSIONS

Based on the findings of this report the following conclusions can be drawn:

- Erf 1772 just outside of Stanford along MR267 has been the focal point for development since at least 2001 when it was subdivided from Portion 13 of the Farm Riverside 644. At the time, Erf 1772 was not included in the urban edge of Stanford. However, it was included in the urban edge in 2020 when the Overstrand Spatial Development Framework was revised.
- The current application entails the Rezoning of Erf 1772 to General Residential 1 and Subdivision to allow for 91 Town Housing erven. This application and proposed SDP in **Appendix B** supersedes the previous applications.
- Access to/from MR267 is supported within the context of a local access management plan as illustrated in **Figure 3.1**.
- The existing traffic along MR267 does not follow a commuter traffic pattern, while the proposed residential development will have its peak trips in the AM and PM peak hours on a typical weekday. The peak periods for the development and external road network therefore does not overlap, which is beneficial from a traffic impact point of view.
- The latest available traffic data from RNIS dates 2015. The data was escalated to 2021 traffic by applying a growth factor of 2.5% per annum. The estimated 2021 AM and PM peak hour traffic along MR267 calculates to approximately 60 vehicles in each direction, which is low for the class of road.
- It is anticipated that some of the proposed residential units could be retirement units and recreational homes, for which lower trip rates apply compared to that of a typical townhouse. A trip rate of 0.7 trips per Town Housing unit is proposed in lieu of 0.85 trips per unit based on TMH17 trip rates.
- The proposed development is anticipated to generate 64 peak hour trips i.e. 16 trips IN and 48 trips OUT during the AM peak hour and 44 trips IN and 20 trips OUT during the PM peak hour. MR267 will be able to accommodate the additional trips given sufficient spare capacity during the AM and PM peak hours when the development traffic peaks.
- The proposed trip distribution implies that 80% of the trips will turn left and travel along MR267 towards Stanford, while 20% will turn right.
- A right-turn lane warrant evaluation based on the WCG Access Management Guidelines of 2020 shows that a separate right-turn lane would not be warranted along MR267 during the AM or PM peak hours at full development and assuming only one access point to/from MR267.
- It is not considered ideal to include industrial/commercial land uses with residential land uses as per the Overstrand Spatial Development Framework (DRAFT 2020). The mix of traffic will (amongst others) lead to an increase in pedestrian traffic between the quadrants of the TR28/2 and MR267 intersection and thereby result in possible increased conflicts with pedestrians.
- The available stacking at the proposed access point(s) is acceptable based on the queuing analysis conducted. Most access control methods for residential developments can be implemented with a high probability that the entering and exiting queues will not extend beyond the available stacking space.
- The parking provision is found to be acceptable in terms of the requirements for minimum off-street parking based on the Overstrand Municipality Land Use Scheme of 2020.

10. RECOMMENDATIONS

Based on the conclusions drawn it is recommended that the proposed development of 91 Town Housing units on Erf 1772 be supported on the following basis:

- The external road network (MR267) has sufficient spare capacity during commuter peak hours to accommodate the peak hour trips to/from the development.
- The access provision to/from MR267 should be implemented in the short and longer term within the context of the proposed local access management plan in **Figures 3.1**.

Eric Foster (PrEng)

EFG Engineers (Pty) Ltd

Andri de Bruin (PrEng)

EFG Engineers (Pty) Ltd

APPENDIX A



ROAD NETWORK MANAGEMENT
Email: Grace.Swanepoel@westerncape.gov.za
tel: +27 21 483 4669
Rm 335, 9 Dorp Street, Cape Town, 8001
PO Box 2603, Cape Town, 8000

REFERENCE: 16/9/6/1-21/121 (Job 24795)
ENQUIRIES: Ms GD Swanepoel
DATE: 3 April 2017

The Municipal Manager
Overstrand Municipality
PO Box 20
HERMANUS
7200

Attention: Mr P Roux

Dear Sir

ERF 1772, STANFORD, OVERSTRAND MUNICIPAL AREA: PROPOSED CONSENT USE: WRAP ON BEHALF OF SEBUMO TUDE GUEST SERVICES & MORE CC

1. Your letter 1772 SSS (3543) dated 13 March 2017 refers.
2. The subject property is located in Stanford, adjacent to Main Road 267.
3. This application is for consent use in order to accommodate the following:
 - 3.1 Guesthouse with 5 lettable rooms;
 - 3.2 Intensive horticulture;
 - 3.3 Plant nursery;
 - 3.4 Additional dwelling units;
 - 3.5 Tourist facilities including a lecture room, gift shop, restaurant, picnic area and restrooms and
 - 3.6 Farm store
4. It is noted that a Traffic Impact Statement has not been undertaken.

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5. Accordingly, this Branch objects to the application in terms of the Land Use Planning Act, No 3 of 2014.

Yours faithfully

A handwritten signature in black ink, appearing to read 'ML Waters', written in a cursive style.

ML WATERS
For **CHIEF DIRECTOR: ROAD NETWORK MANAGEMENT**



ROAD NETWORK MANAGEMENT
Email: Grace.Swanepoel@westerncape.gov.za
Tel: +27 21 483 4669
Rm 335, 9 Dorp Street, Cape Town, 8001
PO Box 2603, Cape Town, 8000

REFERENCE: 16/9/6/1-21/121 (Job 24795)
ENQUIRIES: Ms GD Swanepoel
DATE: 4 October 2017

The Municipal Manager
Overstrand Municipality
PO Box 20
HERMANUS
7200

Attention: Mr P Roux

Dear Sir

**ERF 1772, STANFORD, OVERSTRAND MUNICIPAL AREA: MAIN ROAD 267: PROPOSED
CONSENT USE: WRAP ON BEHALF OF SEBUMO TUDE GUEST SERVICES & MORE CC**

1. The following refer:
 - 1.1 Your letter 1772 SSS (3543) dated 13 March 2017;
 - 1.2 This Branch's letter 16/9/6/1-21/121 (Job 24795) dated 3 April 2017 and
 - 1.3 The Traffic Impact Statement submitted by DECA Consulting Engineers dated 31 May 2017.
2. Cognisance is taken of the recommendations of the Traffic Impact Statement.
3. Accordingly, this Branch withdraws its objection to the application in terms of the Land Use Planning Act, No 3 of 2014 on condition that:
 - 3.1 The approved access is at \pm km0.42 off Main Road 267 (opposite the access to the Birkenhead Brewery);
 - 3.2 The access must be hard-surfaced and conform to the geometry of a Main Farm Access;
 - 3.3 All other accesses to the property are to be permanently closed and

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- 3.4 The new access must be hard-surfaced and the design thereof must be sent to the Design Directorate (Ms MK Hofmeyr 021 4833999) of this Branch for approval.

Yours faithfully



ML WATTERS
For CHIEF DIRECTOR: ROAD NETWORK MANAGEMENT

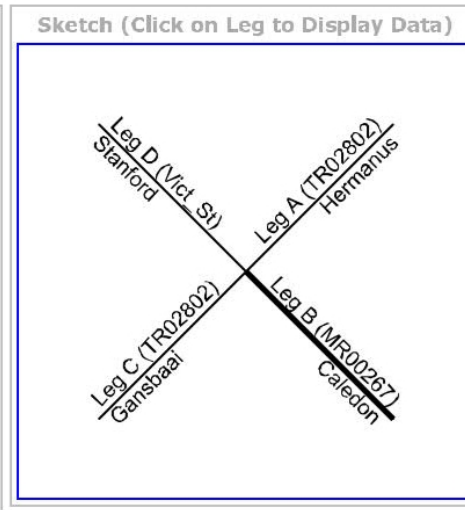
APPENDIX B



APPENDIX C

Traffic Counts				
Time	Light	Heavy	Taxis	Buses
00-01h00				
01-02h00				
02-03h00				
03-04h00				
04-05h00	5	0	2	0
05-06h00	23	1	0	0
Sub-Totals	28	1	2	0
06-07h00	66	0	4	5
07-08h00	110	1	2	0
08-09h00	134	9	0	0
09-10h00	137	4	0	1
10-11h00	163	13	1	0
11-12h00	148	18	0	0
12-13h00	165	9	1	0
13-14h00	161	18	0	0
14-15h00	139	12	3	2
15-16h00	121	7	0	3
16-17h00	135	7	0	0
17-18h00	101	2	0	0
Sub-Totals	1580	100	11	11
18-19h00	58	1	0	0
19-20h00	28	1	0	0
20-21h00	15	0	0	0
21-22h00	10	0	2	0
22-23h00				
23-24h00				
Sub-Totals	111	2	2	0
Totals	1719	103	15	11
Station AADT's				
	Light	Heavy	Taxis	Buses
	2063	124	18	13
Total	2218			

Station Data	
Station No	4106B
Road No	MR00267
Km Distance	0.00
Count Date	24/08/2015
Hours Counted	18
Day Counted	Monday
Counted by	C
Expansion Factor	1.20
Stratum	RA
Peak Hour Ratio	0.00
Total AADT	2218



Print

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Intersection

Diagram

Growth Rate

Growth Rate Chart

Historical Data 1 of 5

< 2015/08/24 >

Exit

Station Data

