

**Date:** 21 August 2024

**Our Reference:** 702/Report/TIA/Rev01

WEC Consult  
Unit 24, Oewerpark  
Rokewood Road  
Stellenbosch  
7613

**ATTENTION:** Mr Jurie Brand

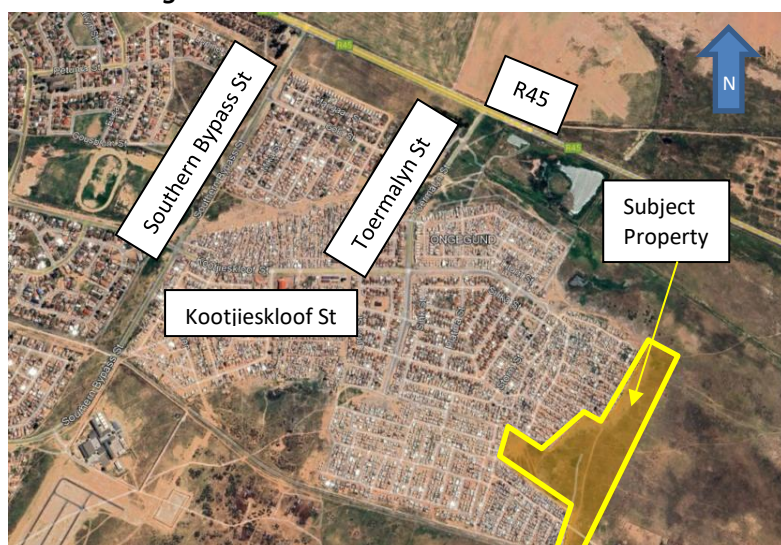
Dear Sir,

**RE: TRAFFIC IMPACT ASSESSMENT FOR A LOW-COST HOUSING DEVELOPMENT IN VREDENBURG, SALDANHA**

This company was appointed to prepare a Traffic Impact Assessment (TIA) for the subdivision and rezoning of Erven 8270 and Portion 4 of Farm 132 in Vredenburg, Saldanha.

**1. LOCALITY AND BACKGROUND**

The subject properties (further referred to as “subject property”) is located on the southern side of the R45 and the eastern side of Southern Bypass Street. See the attached **Locality Plan** and **Diagram 1** below.



**Diagram 1:** Location of Subject Property

## 2. PROPOSED DEVELOPMENT

The proposed development consists of 324 residential units, a church of 1092 m<sup>2</sup> (bulk), and a creche of 1015 m<sup>2</sup> (bulk). It should be noted that it is a low-cost housing development. It is anticipated that a majority of the units built will be shelters and will eventually be upgraded to formal, low-cost housing.

The development will be accessed via the existing road network. This will be further discussed in **Section 4**.

Please see the attached **Layout Plan** as prepared by *C.K. Rumboll & Vennote*.

## 3. TRAFFIC IMPACT

### 3.1 Existing Traffic

Following discussions with the municipality, it was agreed to analyse the following intersections during the peak periods (06:00 – 09:00 and 15:30 – 18:30) on Wednesday, 06 March 2024:

- Southern Bypass Street / Kootjieskloof Street
- R45 / Toermalyn Street
- Kootjieskloof Street / Toermalyn Street

The existing 2024 peak hour volumes are as indicated in the attached **Figure 1**.

### 3.2 Traffic Generated

The South African Trip Data Manual TMH17 was used to estimate the trips expected to be generated by the proposed development. However, it should be noted that a trip reduction factor was applied as per the TMH17 which allows a trip reduction for mixed-use developments. A 5% reduction was allowed for the creche, while TMH17 allows a 10% reduction for single residential units. TMH17 also allows for a trip reduction based on vehicle ownership and since the above development is for low-cost housing, the low vehicle ownership trip reduction rate of 50% is recommended for the residential units and the creche. It should be noted that at this stage, the capacity of the creche is an estimate based on the sizes of creches previously worked on. The capacity of the church is also unknown, however the trip generation for the church was exempt from the calculation as it is expected that not only would the church be frequented by the community, but the trip generation rate during the weekday AM and PM peak hour, including the trip reduction factors, will have an insignificant effect.

The proposed development is thus expected to generate:

<b>Residential Units</b>				
Number of Units	324			
Trip Generation Rate / Unit (including trip reduction factor for mixed use and very low vehicle ownership = 46% )	<b>Weekday AM</b>		<b>Weekday PM</b>	
	0.54		0.54	
Trips Generated	175		175	
Directional Split & Vehicular Trips	<b>Weekday AM</b>		<b>Weekday PM</b>	
	<b>IN</b>	<b>OUT</b>	<b>IN</b>	<b>OUT</b>
	25%	75%	70%	30%
	44	131	123	52
<b>Creche</b>				
Number of learners (estimate)	74			
Trip Generation Rate / Learner (including trip reduction factor for mixed use and very low vehicle ownership = 52.5%)	<b>Weekday AM</b>		<b>Weekday PM</b>	
	0.475		0.38	
Trips Generated	35		28	
Directional Split & Vehicular Trips	<b>Weekday AM</b>		<b>Weekday PM</b>	
	<b>IN</b>	<b>OUT</b>	<b>IN</b>	<b>OUT</b>
	25%	75%	70%	30%
	9	26	20	8
<b>TOTAL</b>	<b>53</b>	<b>157</b>	<b>143</b>	<b>60</b>

Therefore, 210 additional trips are expected during the AM peak hour with 53 IN / 157 OUT and 203 trips in the PM peak hour with 143 IN / 60 OUT.

### 3.3 Traffic Growth and Distribution

The South African Trip Data Manual (TMH17) suggests an annual growth rate of 0 – 3% for low growth areas. To accommodate the growth in undeveloped portions of land, an annual growth rate of 3% was used. The traffic was therefore projected, using the annual growth rate, to 2029 in order to evaluate a 5-year future scenario of the projected traffic with and without the proposed development. The projected 2029 AM/PM peak hour traffic volumes are as indicated in the attached **Figure 2**.

The expected trip distribution is as indicated in the attached **Figure 3**. The background traffic was used to model the trip distribution. **Figure 4** shows the estimated 2029 AM/PM peak hour traffic volumes, including the traffic generated by the proposed development as well as the annual growth rates.

### 3.4 Traffic Impact

The existing traffic was analysed using SIDRA Intersection Analysis 9.1. Service levels A to D are considered acceptable, where a level of service (LOS) below D is considered unacceptable.

## Southern Bypass Street / Kootjieskloof Steet Intersection

The Southern Bypass Street / Kootjieskloof Street intersection is a four-way stop-controlled intersection with one lane per direction as shown in **Diagram 2** below.



**Diagram 2:** Southern Bypass Street / Kootjieskloof Street intersection

The existing 2024 traffic volumes along with the existing lane layout was analysed and the intersection is experiencing an overall average delay of approximately 20.4 seconds in the AM peak hour and 20.1 seconds in the PM peak hour. The worst delay in the AM peak hour is experienced on the left-turning movement along the northern approach of Southern Bypass Street which experiences a LOS C with a delay of 21.9 seconds in the AM peak hour and 27.7 seconds in the PM peak hour.

In 2029, after applying the aforementioned growth rates p.a., the intersection is expected to experience an overall average delay of approximately 22.9 seconds in the AM peak hour and 23.0 seconds in the PM peak hour. The worst delay in the AM peak hour is experienced on the left-turning movement along the northern approach of Southern Bypass Street which experiences a LOS C with a delay of 24.7 seconds in the AM peak hour and a LOS D with an average delay of 33.7 seconds in the PM peak hour.

After the subject development's traffic is added to the network in 2029, the intersection is expected to experience an overall average delay of approximately 26.4 seconds in the AM peak hour and 32.4 seconds in the PM peak hour. The worst delay in the AM peak hour is experienced on the left-turning movement along the northern approach of Southern Bypass Street which experiences a LOS D with a delay of 30.1 seconds in the AM peak hour and a LOS F and worst delay of 59.9 seconds in the PM peak hour, on the said movement.

SIDRA analyses suggest that converting the intersection control to a two-way stop in favour of Southern Bypass Street will result in improved levels of service, however after discussions with the municipality, it appears the intersection was converted to a four-way stop-controlled intersection due to a number of factors, including speeding and dangerous movements at the intersection. It is therefore not recommended that the intersection be converted back to a priority-controlled intersection. It is therefore suggested that the municipality considers upgrading the intersection to a roundabout in order to address the traffic flow and safety concerns. It should be noted that electrical cables are located on the western side of the intersection and therefore, the size of the roundabout will need to be investigated during conceptual design stages. Alternatively, upgrading the intersection to a signalised intersection will also improve the levels of service.

### R45 / Toermalyn Street Intersection

The R45 / Toermalyn Street intersection is a T-intersection that is priority-controlled in favour of the R45. Please see **Diagram 3** below. A dedicated right-turning lane exists on the western approach of the R45 and two lanes are provided on the eastern side of the R45.



**Diagram 3:** R45 / Toermalyn Street intersection

The existing 2024 traffic volumes along with the existing lane layout was analysed and the intersection is experiencing an overall average delay of approximately 4.3 seconds in the AM peak hour and 3.2 seconds in the PM peak hour. In the AM and PM peak hour, all approaches are experiencing levels of service A or B.

In 2029, after applying the aforementioned growth rates p.a., the intersection is expected to experience an average delay of approximately 5.1 seconds in the AM peak hour and 3.4 seconds in the PM peak hour. The worst movement is expected on the right-turning movement along Toermalyn Street with a LOS C and an average delay of 10.0 seconds in the AM peak hour and 16.0 seconds in the PM peak hour.

After the subject development's traffic is added to the network in 2029, the intersection is expected to experience an average delay of approximately 7.6 seconds in the AM peak hour and 4.3 seconds in the PM peak hour. The worst movement is expected on the right-turning movement along Toermalyn Street with a LOS C and an average delay of 23.5 seconds in the AM peak hour and 17.1 seconds in the PM peak hour.

No upgrades are anticipated.

### Toermalyn Street / Kootjieskloof Street Intersection

The Toermalyn Street / Kootjieskloof Street intersection is a four-way stop-controlled intersection with one lane per direction. See **Diagram 5** below.



**Diagram 5:** Toermalyn Street / Kootjieskloof Street intersection

The existing 2024 traffic volumes along with the existing lane layout was analysed and the intersection is experiencing an overall average delay of approximately 14.7 seconds in the AM peak hour and 16.9 seconds in the PM peak hour. The worst delay in the AM peak hour is experienced on the left-turning movement along the southern approach of Toermalyn Street which experiences a LOS C with a delay of 21.9 seconds in the AM peak hour and 23.5 seconds in the PM peak hour.

In 2029, after applying the aforementioned growth rates p.a., the intersection is expected to experience an overall average delay of approximately 22.9 seconds in the AM peak hour and 23.0 seconds in the PM peak hour. The worst delay in the AM peak hour is experienced on the left-turning movement along the southern approach of Toermalyn Street which experiences a LOS C with a delay of 21.9 seconds in the AM peak hour and 23.5 seconds in the PM peak hour.

After the subject development's traffic is added to the network in 2029, the intersection is expected to experience an overall average delay of approximately 16.6 seconds in the AM peak hour and 20.0 seconds in the PM peak hour. The worst delay in the AM peak hour is experienced on the left-turning movement along the southern approach of Toermalyn Street which experiences a LOS D with a delay of 26.6 seconds in the AM peak hour and LOS D in the PM peak hour with a delay of 28.6 seconds.

No upgrades are required due to the increase in traffic caused by the development, however after discussions with the municipality, it is recommended the intersection be upgraded to a raised intersection to increase the overall safety. This will be further discussed in *Section 5*.

#### **4. GEOMETRY**

The proposed development accesses the greater road network via the R45 / Toermalyn Street intersection and the Southern Bypass Street / Kootjieskloof Street intersection. These intersections allow access to the development along seven existing roads. See the attached **Layout Plan**.

The internal roads will tie into the existing network with road reserve widths ranging between 10- and 13-metres, with the road reserve at Kootjieskloof Road proposed to be 30-metres wide.

The development will not be gated and therefore, it is anticipated that refuse collection will be kerbside. It should be ensured that the radii can accommodate refuse vehicles. Based on the layout of the road network, it appears that future development is planned to the east. In the interim, for solid waste removal and other vehicles, it should therefore be ensured that turning areas are provided.

#### **5. NON-MOTORISED AND PUBLIC TRANSPORT**

The internal layout has not been finalized but according to the project managers, unsurfaced sidewalks are planned along the internal roads. It is recommended that traffic calming be considered, especially along the longer straight routes.

As mentioned, after discussions with the municipality, it is recommended the Kootjieskloof Road / Toermalyn Street intersection be upgraded to a raised intersection to account for the high pedestrian and public transport activity in the area. The raised intersection will improve the overall safety at the intersection.

An informal taxi rank exists along Kootjieskloof Street within 1.5 kilometres from the furthest point in the development. During a discussion with the municipality, it was stated that two other residential developments will be formalised and serviced in the near future. The informal taxi rank mentioned falls within this area. It is therefore recommended a public transport study be conducted as part of future development investigations in the area.

#### **6. PARKING**

One parking bay has been proposed per unit. According to the Saldanha Bay Municipality Integrated Zoning Scheme By-Law (2021), two parking bays are required for dwelling houses and zero parking bays are required for shelters. It is therefore recommended that one parking bay per unit be considered for the low-cost housing units proposed.

Parking for the church and creche have not been determined, however the town planner has stated that for the church, 1 parking bay per 8 seats will be provided and for the creche, 1 parking bay per classroom will be provided plus an additional 10 parking bays. This should be considered sufficient based on the socio-economic status of the area and the proposed development.

## 7. CONCLUSIONS

It can therefore be concluded that:

- The subject properties (further referred to as “subject property”) is located on the southern side of the R45 and the eastern side of Southern Bypass Street.
- The proposed development is a low-cost housing development consisting of 324 residential units (most of which would be shelters initially and later be built as formal units), a creche and a church.
- Traffic counts were performed on 06 March 2024 at the following intersections:
  - Southern Bypass Street / Kootjieskloof Street
  - R45 / Toermalyn Street
  - Kootjieskloof Street / Toermalyn Street
- Using the trip rates and trip reduction rates for mixed-use developments and low vehicle ownership as described in TMH17, 210 additional trips are expected during the AM peak hour with 53 IN / 157 OUT and 203 trips in the PM peak hour with 143 IN / 60 OUT.
- A 3% annual growth per annum rate was used to project the traffic to 2029 to evaluate a 5-year future scenario.
- The intersections were analysed using SIDRA 9.1 and the results were as follows:
  - Southern Bypass Street / Kootjieskloof Street intersection: The intersection is experiencing and expected to experience acceptable levels of service and overall delays in 2024 and 2029 (without development traffic). However, in 2029 after the development traffic is added, the PM peak hour is expected to experience a LOS F on one approach.
  - R45 / Toermalyn Street intersection: The intersection is experiencing and expected to experience acceptable levels of service and overall delays in 2024 and 2029 (with and without development traffic). No additional upgrades are anticipated.
  - Toermalyn Street / Kootjieskloof Street intersection: The intersection is experiencing and expected to experience acceptable levels of service and overall delays in 2024 and 2029 (with and without development traffic). No additional upgrades are anticipated to account for the increase in vehicular traffic however it is recommended the intersection be raised to increase the overall safety for pedestrians.
- The development will be accessed via the existing road network. There appears to be seven proposed access locations. The internal roads will tie into the existing network with road reserve widths ranging between 10- and 13-metres, with the road reserve at Kootjieskloof Road proposed to be 30-metres wide.
- The development will not be gated, therefore it is anticipated that refuse collection will be kerbside.

- The detailed internal layout has not been finalized yet, but according to the project managers, unsurfaced sidewalks are planned within the development.
- No additional infrastructure has been proposed for public transport. However it is recommended that a public transport investigation be conducted during future developments.
- As mentioned, one parking bay is proposed for each residential unit. According to the Saldanha Municipality Zoning Scheme, two parking bays are required for residential units and zero bays are required for shelters. The parking at the church and creche has not been determined, however 1 parking bay per 8 seats has been proposed and for the creche, 1 parking bay per classroom has been proposed plus an additional 10 parking bays. This should be considered sufficient based on the socio-economic status of the area and the proposed development.

## 8. RECOMMENDATIONS

The development be recommended on condition that:

- A roundabout be considered at the Southern Bypass Street / Kootjieskloof Street intersection to address the LOS F on one movement during the PM peak hour. The roundabout will also improve safety and serve as a speed reduction measure. If there are space restrictions, a signalised intersection can be investigated.
- Traffic calming be considered, especially along the longer straight routes.
- The Kootjieskloof Road / Toermalyn Street intersection be upgraded to a raised intersection to improve overall safety for pedestrians.
- Turning areas be provided at cul-de-sacs.
- A public transport investigation be conducted during future development investigations in the area.


Additional information is available upon request.

Yours faithfully,



Compiled by: Shameez Patel Papathanasiou (MScEng)

UDS AFRICA



Approved by Piet van Blerk (PrEng)



## ATTACHMENTS

Locality Plan

Layout Plan

Figure 1 - Existing AM/PM Peak Hour Traffic Volumes

Figure 2 - Projected 2029 AM/PM Peak Hour Traffic Volumes (including 3% per annum traffic growth)

Figure 3 – Distribution of Traffic Generated by the Development

Figure 4 – Estimated 2029 AM/PM Peak Hour Traffic Volumes (including growth rates (3%) per annum traffic growth and Proposed Development)

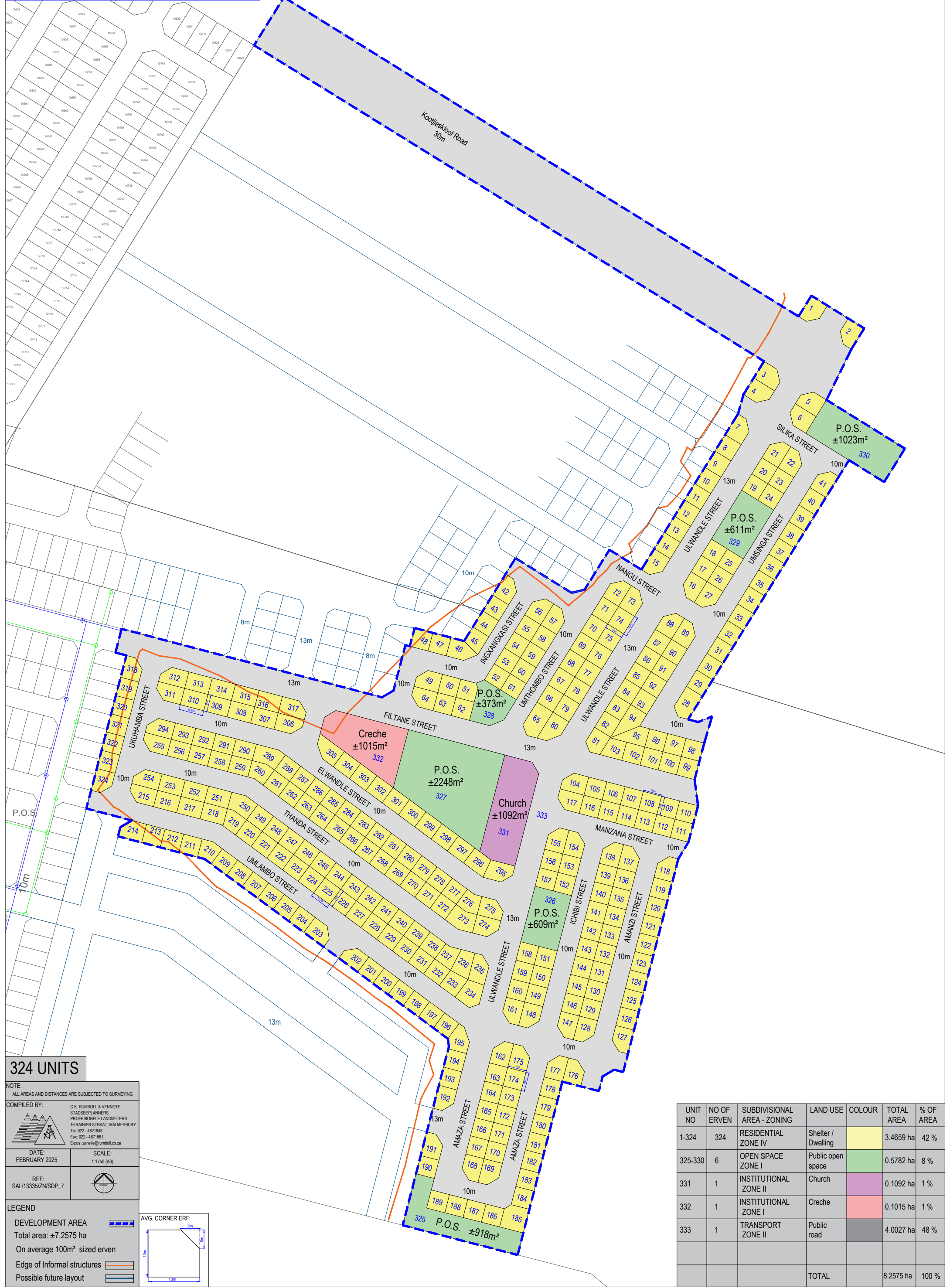


Unit 8, Time Square Building,  
 9 Electron Street, Techno Park,  
 Stellenbosch  
 PO Box 50487  
 V&A Waterfront  
 8002  
 T +27 (0)21 880 0443  
 F +27 (0)21 523 8227  
 info@udsafrika.co.za

## Locality Plan

# GEORGE KERRIDGE HOUSING DEVELOPMENT - VREDENBURG

## SUBDIVISION PLAN - DRAFT 7



**324 UNITS**

NOTE:  
ALL AREAS AND DISTANCES ARE SUBJECT TO SURVEYING

COMPILED BY:  
C.K. RUMBOLL & VENNOTE  
STADSBEPLANNERS  
PROFESIONELE LANDMETERS  
16 RAINIER STRAAT, MALMESBURY  
Tel: 022 - 4821945  
Fax: 022 - 4871851  
E-pos: zanelle@rumboll.co.za

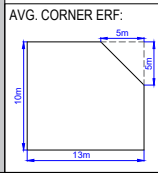
DATE:  
FEBRUARY 2025

SCALE:  
1:1750 (A3)

REF:  
SAL/13335/ZN/SDP\_7

LEGEND

- DEVELOPMENT AREA
- Total area: ±7.2575 ha
- On average 100m<sup>2</sup> sized erven
- Edge of Informal structures
- Possible future layout



UNIT NO	NO OF ERVEN	SUBDIVISIONAL AREA - ZONING	LAND USE	COLOUR	TOTAL AREA	% OF AREA
1-324	324	RESIDENTIAL ZONE IV	Shelter / Dwelling	Yellow	3.4659 ha	42 %
325-330	6	OPEN SPACE ZONE I	Public open space	Green	0.5782 ha	8 %
331	1	INSTITUTIONAL ZONE II	Church	Purple	0.1092 ha	1 %
332	1	INSTITUTIONAL ZONE I	Creche	Pink	0.1015 ha	1 %
333	1	TRANSPORT ZONE II	Public road	Grey	4.0027 ha	48 %
			TOTAL		8.2575 ha	100 %

