



## **PROPOSED KHALINKOMO DEVELOPMENT TRAFFIC IMPACT ASSESSMENT**

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<b>SYNOPSIS</b>  Conduct a Traffic Impact Assessment pertaining to all relevant traffic and transportation engineering aspects for the proposed Khalinkomo development, located in the Free State.
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<b>KEY WORDS:</b>  Traffic Impact Assessment
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<b>QUALITY VERIFICATION</b>  This report has been prepared under the controls established by a quality management system that meets the requirements of ISO 9001: 2015 which has been independently certified by DEKRA Certification.	
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Verification	Capacity	Name	Signature	Date
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## PROPOSED KHALINKOMO DEVELOPMENT TRAFFIC IMPACT ASSESSMENT

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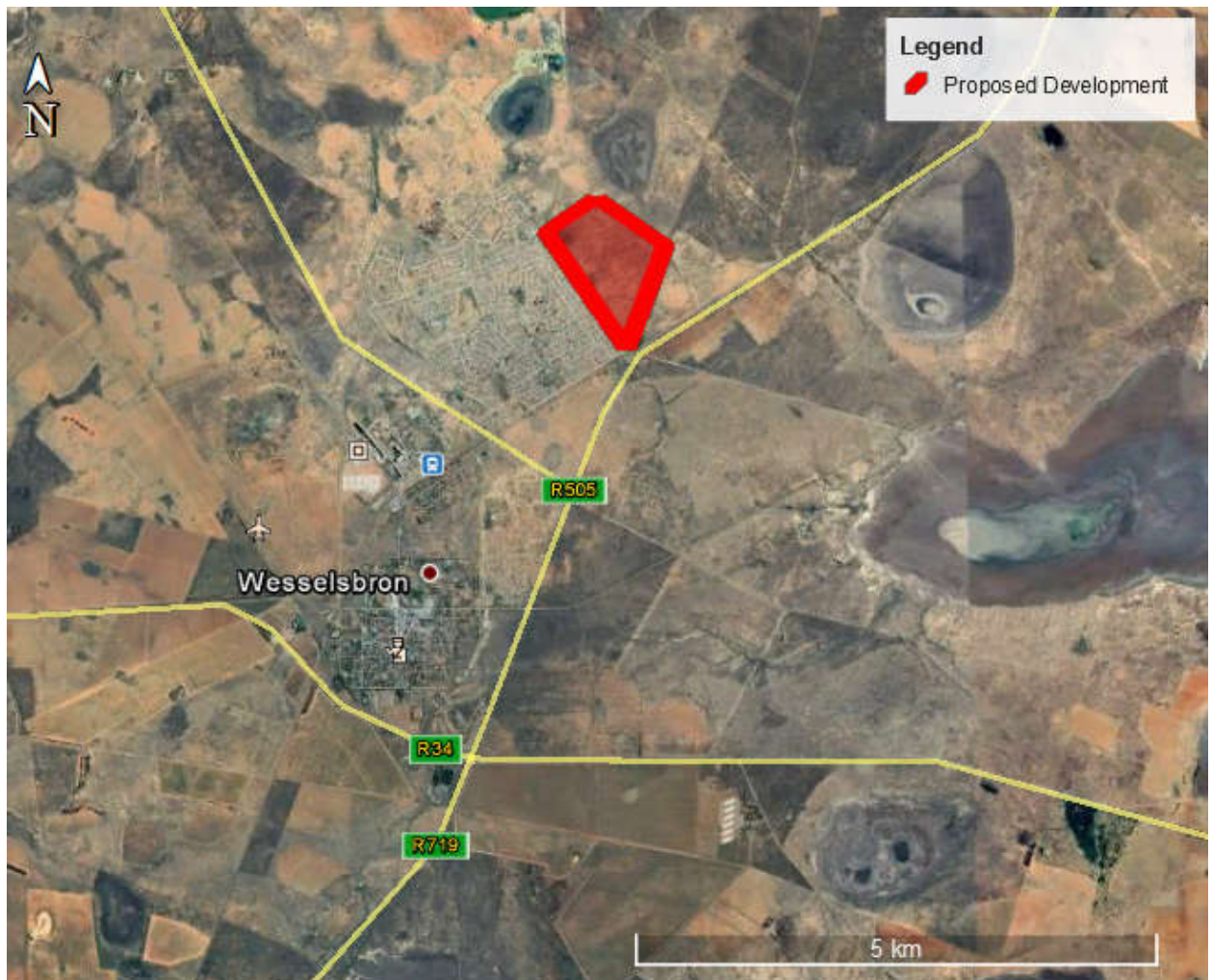
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## 1 INTRODUCTION

### 1.1 Background

JG Afrika (Pty) Ltd was appointed by Vexocom (Pty) Ltd to undertake a Traffic Impact Assessment for the proposed Khalinkomo development located in the Free State. The proposed mixed land use development will comprise residential units, offices, schools, church as well as retail space.

The site is located north of Wesselsbron in the Nala Local Municipality, as shown in **Figure 1** below.



*Figure 1: Locality Plan*

### 1.2 Scope of Work

The report will deal with the items listed below and focuses on the surrounding road network in the vicinity of the site:

- Extent of the traffic study and study area,
- The proposed development;
- The existing road network;

- Trip generation for the proposed development;
- Traffic impact of the proposed development;
- Access and parking requirements; and
- Public Transport and Non-motorised Transport.

The following guidelines have been used to determine the extent of the traffic study:

- Manual for Traffic Impact Studies, Department of Transport, 1995
- TMH 16 South African Traffic Impact and Site Traffic Assessment Manual (Vol 1), COTO, August 2016
- TMH 26, South African Road Classification and Access Management Manual, COTO, August 2012.
- Department of Transport - NMT Facility Guideline
- Google Earth Pro

For this study, more than 150 peak hour trips are expected to be generated by the development hence a Traffic Impact Assessment is required.

## 2 DEVELOPMENT LOCATION

The proposed site is bounded by the R719 to the east and the Monyakeng to the west, as shown in **Figure 2**. The R719 connects the proposed development site to Bothaville in the north and Bultfontein in the south. The R505, located to the south of the proposed development, connects to Wolmaransstad in the north-west. The R34, located to the south of the proposed development, connects Wesselbron to Hoopstad in the west and Welkom in the east.

The area surrounding the proposed development can be classified as a semi-rural development environment. The site is currently occupied by informal residential structures.





Figure 2: Site location and surrounding road network

### 3 EXISTING ROAD NETWORK

The road network immediately surrounding the proposed development is described below.

- The R505 is a two-lane undivided road and is classified as a Class R3 rural minor arterial.
- The R719 is a two-lane undivided road and is classified as a Class R2 rural major arterial.

### 4 ACCESS TO THE SITE

Access to the site will be via two potential access points located on R505, as shown in Figure 3 below.

The detail design of the access road will need to provide suitable lane widths to accommodate light as well as larger (delivery) vehicle traffic.

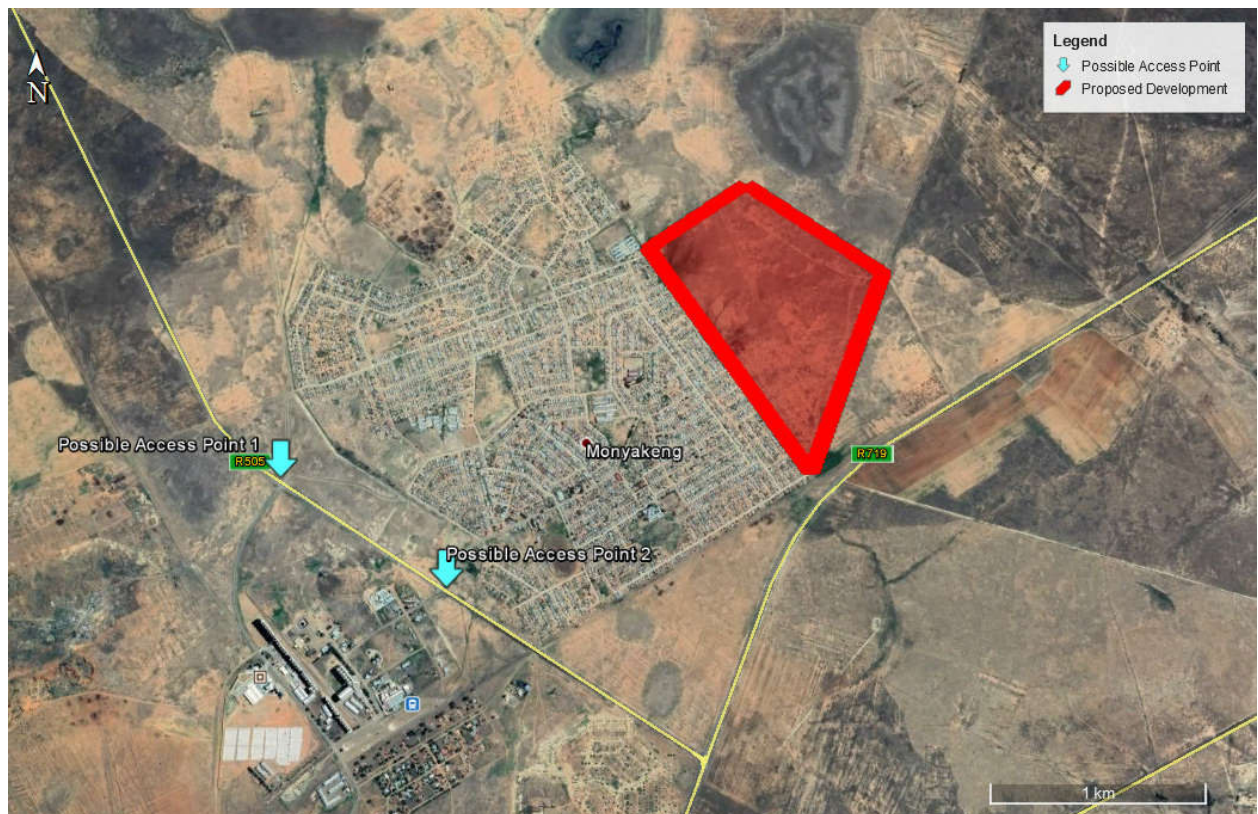


Figure 3: Potential access points to the site

## 5 PARKING

A parking ratio of 1 bay per 10 units was used to determine the parking requirement for the proposed development. This parking ratio has been adopted at similar projects where income and car ownership were deemed very low.

Based on the 514 single dwelling and 2 storey units, 52 off-street parking bays are to be provided. The number of bays might sound excessive given the low car ownership rate, however, it should be noted that with time, vehicle ownership will increase with an increase in household income.

## 6 PUBLIC TRANSPORT AND NON-MOTORISED TRANSPORT

In terms of the National Land Transport Act (NLTA) (Act No.5 of 2009), it is a requirement that an assessment of the available public transport services be included in Traffic Impact Assessments. The following comments are relevant in respect to the public transport availability for the proposed development.

### 6.1 Public Transport

It is assumed that public transport services operate within Monyakeng and along the main roads in the vicinity of the site. It is recommended to provide formal public transport embayments, within 500m walking distance, with sidewalks that link seamless to the internal NMT network.



## 6.2 Non-motorised Transport (NMT)

It is recommended that sidewalks be provided along the frontage of the development, linking seamlessly to the internal pedestrian networks. Sidewalks are to be constructed according to the Department of Transport's NMT Facility Guideline, with barrier kerbs protecting pedestrians from through traffic and preventing motor vehicles from parking on sidewalks.

Suitable dropped kerbs are to be provided where necessary to allow for wheelchair access.

## 7 TRIP GENERATION

The Committee of Transport Officials' (COTO) South African Trip Data Manual TMH17 (2012) was used to estimate the number of vehicle trips generated by the proposed development during the AM and PM peak hours. The following assumptions have been taken into consideration when establishing the development traffic for the site:

- The business and community land use components are expected to support the local community and as such the trips to and from the components will be considered internal.
- The land uses that will generate the worst-case trip generation scenario is that of the residential component.
- Schools will not attract significant trips as it will only serve the immediate community.
- The trip rate for single dwelling units, as stipulated in the COTO TMH17, Vol 1 guideline document will be adopted for 550 units. The trip rate for single dwelling units is 1.00 and due to the very low vehicle ownership in the area, a reduction factor of 70% can be applied to the trip rate. The revised trip rate will therefore be 0.30 trips per unit, with a 25/75 and 70/30 in/out of the development split for the AM and PM peak respectively.
- The trip rate for apartments and flats, as stipulated in the COTO TMH17, Vol 1 guideline document will be adopted for the 264 units in 2 storey apartment blocks. The trip rate for apartments and flats is 0.65 and due to the very low vehicle ownership in the area, a reduction factor of 50% can be applied to the trip rate. The revised trip rate will therefore be 0.33 trips per unit, with a 25/75 and 70/30 in/out of the development split for the AM and PM peak respectively.

The estimated number of vehicle trips generated by the proposed development are summarised in the Table below.

*Table 1: Development Trip Generation*

Land use	Units	AM Rate	PM Rate	Primary Trips Generated					
				AM Peak			PM Peak		
				In	Out	Total	In	Out	Total
Single Dwelling	550	0.3	0.3	41	124	165	116	50	165
Apartments and flats	264	0.33	0.33	22	65	87	61	26	87

It should be noted that the trip generation is a worst-case scenario as the vehicle ownership is deemed significantly low and is likely to remain low in the foreseeable future.



## 8 TRAFFIC ANALYSIS – TRAFFIC ENGINEER'S PROFESSIONAL OPINION

Traffic counts, required to assess the current and future traffic flows and capacity constraints, could not be undertaken due to the national lockdown and historical counts could not be sourced. The lockdown has affected traffic patterns and it is not expected for traffic patterns to normalise in the immediate future. As per the guideline, traffic counts are not to be conducted when traffic patterns are abnormal such as weekends, school holidays, public holidays etc, hence traffic counts conducted during the lockdown would not be a true representation of the traffic patterns. In addition, a traffic analysis to determine capacity constraints on the surrounding road network could therefore not be undertaken.

It is not expected that the development would have a significant impact on traffic on the surrounding road network due to the development being low income households with low-vehicle ownership. However, it is recommended that a traffic counts be undertaken, as soon as traffic patterns have stabilised, to determine the future traffic impact on the surrounding road network.

## 9 CONCLUSION

### The Site

- The proposed site is bounded by the R719 to the east and the Monyakeng to the west.
- The area surrounding the proposed development can be classified as a semi-rural development environment.

### Access and Parking

- Access to the site will be via two potential access points located on R505.
- A parking ratio of 1 bay per 10 units was used to determine the parking requirement for the proposed development, equating to 52 off-street bays to be provided.

### Public Transport and Non-motorised Transport

- It is assumed that public transport services operate within Monyakeng and along the main roads in the vicinity of the site. It is recommended to provide formal public transport embayments, within 500m walking distance, with sidewalks that link seamless to the internal NMT network.
- It is recommended that sidewalks be provided along the frontage of the development, linking seamlessly to the internal pedestrian networks.

### Traffic analysis

- Traffic counts could not be undertaken due to the nationwide lockdown. No historical traffic data was available.
- It is not expected that the development would have a significant impact on the traffic on the surrounding road network due to the development being low income households with low-vehicle ownership.

- It is recommended that a traffic counts be undertaken, as soon as traffic patterns have stabilised, to determine the future traffic impact on the surrounding road network.

The proposed development is supported from a traffic engineering point of view provided that the recommendations made are adhered to.

## *Annexure A – Site Development Plan*

