

**DEVELOPMENT OF ERF 1612,
KAKAMAS**

**DUE DILIGENCE REPORT FOR CIVIL AND ELECTRICAL
ENGINEERING SERVICES**



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18 June 2015

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Executive Summary

The purpose of this investigation is to compile a due diligence report on the availability of the existing civil and electrical services for the development of erf 1612, Kakamas, Northern Cape.

1. A 150mm main running from the existing reservoir, north of the development, provides water to the communities south of this development via a 100mm supply line.
2. No municipal sanitation infrastructure exists in the immediate vicinity. Sewage would be treated by a Bio Filter Rotating Biological Contactor Sewage Purification Plant, to be maintained by the corporate body/home users association.
3. Access to the site will be from the existing road (Diamond Road), north of the property. The entrance will be controlled by a Security Entrance Gate on Diamond Street running from east to west of the property.
4. Electrical distribution for the development can be facilitated through the extension of the municipal medium voltage network, the installation of a dedicated miniature substation and internal low voltage reticulation. The cost for the provision of the electrical services will be for the account of the developer
5. Refer to Annexure A for the contour and rezoning plan received from Macroplan

Introduction

Mr Jan Du Plessis appointed BVi Consulting Engineers to investigate the existing services and compile a due diligence report for the services available on erf 1612, Kakamas, Northern Cape.

The site falls under the jurisdiction of the Kai !Garib Municipality within the ZF Mgcawu District Municipality, which is located in the central part of the Northern Cape Province. This report will mainly focus on the availability of existing civil and electrical infrastructure at the site or in the near vicinity of the site.

Kai !Gaib Municipality will act as the primary service provider for both the electrical and civil engineering services.

Location

The site under investigation is located at the following coordinates, S 28°46'45.00", E 20°36'41.46" (Refer to Figure 1)

The site is situated approximately 1.2km from the central business area of Kakamas, via 4th street.

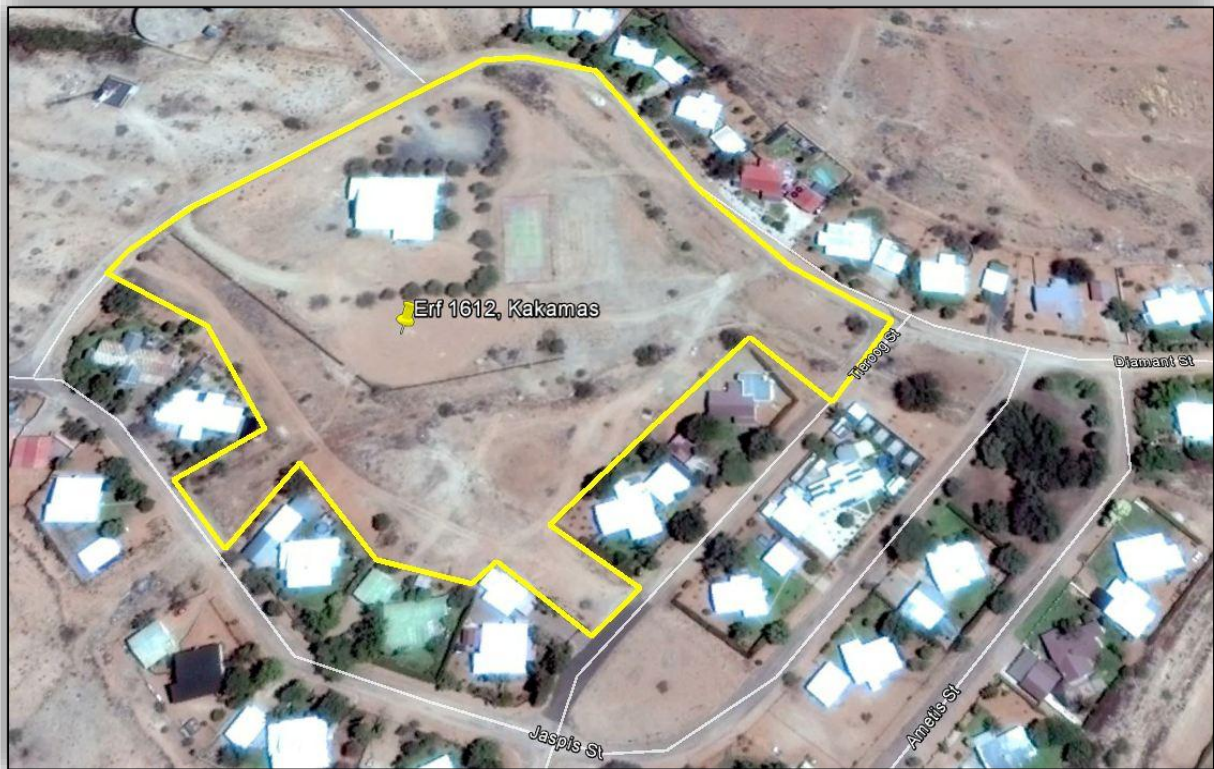


Figure 1: Google Earth Locality Map Indicating the Site

Available information

The following information was available for compiling this report:

- The existing water and sanitation services from the Kai !Garib Municipality. This information was supplied by Mr M Clark and Mr J Mackay of the Technical Department of the Kai !Garib Municipality.
- The existing electrical distribution network of the Kai !Garib Municipality indicating the medium voltage overhead lines and transformers as obtained from the electrical department of BVi Consulting Engineers.
- The layout and position of the site was obtained from Macroplan, Upington.
- Refer to Annexure A for the contour and rezoning plan received from Macroplan
- The proposed site development plan was obtained from Inline Architects.

Topography

No topographical survey or geotechnical investigation was available at the time of this report. A site investigation was carried out to establish the surface as well as expected soil conditions on site.

The area forms part of the Namaqua and Natal Metamorphic Group and lies within the Kakamas terrain of the Gordonia sub –province. The underlying drainage profile of the site can generally be expected to slope towards the eastern corner of the property. Two minor sewer runoff paths are visible across the property, generally draining to the east.

Groundwater is not expected to be a problem on the site.

Zoning

The current zoning on the property is Institutional zone II (Erf 1612). The newly proposed zonings will be Residential II (townhouses) and Special zone (wellness centre).

Access

Access to the site will be from the existing road (Diamond Road), north of the property. The entrance will be controlled by a Security Entrance Gate on Diamond Street.

Roads

Internal roads shall be 6m in width consisting mainly of access roads to residential units. Roads will be black top (typically Cape or double seal) with the required base, sub base and selected layer works.

Water

Internal water pipes shall be \varnothing 75mm and \varnothing 90mm uPVC Class 9, connected to the existing \varnothing 100mm municipal bulk water supply line running along the western and eastern boundary. A 110mm connection will be made on the existing supply line.

The development is expected to generate an average flow of 0.44 l/s with an instantaneous peak flow of 3.88 l/s.

A Instantaneous peak flow of 3.88 l/s will result in an approximate 0.22 m/s increase to peak flow velocity within the specific \varnothing 150mm municipal bulk water supply from the reservoir. The additional peak flow required is expected to have only a minor effect on the capacity of the bulk mains, which should be able to accommodate the required demand.

Sewer

There is currently no sewage reticulation system. The development will require a sewage reticulation network, including house connections and a local sewage purification system.

The internal sewer system will consist of \varnothing 160mm uPVC Class 34 sewer pipes for general reticulation with \varnothing 110mm uPVC Class 34 house connections.

The development is expected to discharge an estimated peak sewage flow of 1.53 l/s that will be treated by the Bio- Filter Rotating Biological Contactor Sewage Purification Plant.

Municipal services will be required for the disposal of the sludge as required once the plant is operational.

Storm Water

The storm water peak run-off as shown in Table 1 below, was determined by considering the average rainfall over the drainage area for the indicated storm events. Drainage through the site mainly consists of two minor run-off collection routes occurring naturally from the north and west of the property. The catchment areas contributing to these storm water run-offs are however relatively small and result in easily manageable flows across the site, as indicated in Table 1.

Storm water run-off will be handled overland and accommodated within the proposed roads while complimenting the existing natural drainage scenario within and around the property. Storm water will therefore generally still follow current drainage paths to existing infrastructure. Areas at risk of erosion due to storm water run-off within the site will be suitably stabilised to prevent any erosion damage that might occur.

PRECIPITATION							
Return period (T, years)	2	5	10	20	50	100	200
Peak flow (QT, m ³ /s)	0.261	0.363	0.470	0.592	0.785	0.985	1.194

Table 1: Storm Water Runoff for various return periods.

Solid Waste

Solid waste will be collected and handled by the municipality as this development falls within the urban edge and the general area of service by the municipality.

Electrical Distribution

Stand 1612 in Kakamas is an undivided stand and thus was not included in the electrical reticulation master planning.

The existing municipal miniature substation in Diamond is theoretical loaded to 65% of its capacity and thus cannot accommodate the expected additional loading due to the development.

Electrical distribution for the development can be facilitated through the extension of the municipal medium voltage network in Diamond Street and the installation of a dedicated miniature substation in the centre of the development. The internal low voltage reticulation and service connections will be connected to the proposed miniature substation. The cost for the provision of the electrical services will be for the account of the developer.

The expected maximum demand of the proposed development should have no significant effect on the Notified Maximum Demand of Kakamas and thus no further financial contribution is expected from the developer.

Summary

Municipal services directly to the site of the development is limited, but connection to bulk municipal infrastructure is plausible in terms of water and electrical distribution. The scope of the development is of such scale that it is expected to have a limited impact on the bulk municipal services. The sewerage disposal systems, will consist of internal sewage reticulation systems as well as Purification plant. On site treatment of sewage will eliminate typical sewage runoff, therefore not impacting the municipal sewerage reticulation system.

The electrical services for the development will have to be provided in total and the cost for the provision of the services will be for the account of the developer.

ANNEXURE A

