

DEVELOPMENT OF ERF 745, OLYVENHOUTSDRIFT

JOOSTE EILAND, UPINGTON

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



Compiled for:

Albé van der Merwe
PO Box 2895
Upington
8800

Contact Person: Albé van der Merwe
Tel: 082 452 0360
E-mail: albe@fitit.biz

Complied by:

BVi Consulting Engineers
55 Bult Street
Upington
8801

Contact Person: Pieter Schlechter
Tel: 072 626 7125
E-mail: pieters@bvinc.co.za

25 February 2016

Disclaimer

This report has been prepared on behalf of and for the exclusive use by Mr Albé van der Merwe, and is subject to and issued in accordance with the agreement between BVi Consulting Engineers and Mr Albé van der Merwe. BVi Consulting Engineers accepts no liability or responsibility whatsoever for it in respect of any use of or reliance upon this report by any third party. Copying this report without the permission of Mr Albé van der Merwe and BVi Consulting Engineers is not permitted.

Contents

Executive Summary.....	1
Introduction	1
Location.....	1
Available information.....	2
Topography	3
Zoning	4
Access.....	4
Roads.....	4
Water	5
Sewer	5
Storm Water.....	5
Solid Waste	5
Electrical Reticulation and Bulk Electrical Supply	6
Summary	6
Annexure A.....	7
Annexure B.....	8

Executive Summary

1. The purpose of this investigation is to compile a due diligence report on the availability of existing civil and electrical services for the development of erven 745, Olyvenhoutsdrift, Jooste Eiland, Upington, Northern Cape.
2. Water provision to the property will be from the existing municipal water pipeline running adjacent to the eastern boundary of the erven, along the N10.
3. No municipal sanitation infrastructure exists in the immediate vicinity. Sewage would be pumped to the nearest municipal sewerage infrastructure, which will be Rosepark pump station.
4. Access to the site will be from the existing tar road (Jooste Eiland Road) running along the northern boundary of the property.
5. Electrical Reticulation and bulk supply will be provided by the //Khara Hais Municipality.

Introduction

Mr Albé van der Merwe appointed BVi Consulting Engineers to investigate the existing services and compile a due diligence report for the services available on erf 745, Olyvenhoutsdrift, Upington, Northern Cape.

The site falls under the jurisdiction of the //Khara Hais Municipality within the ZF Mgcawu District Municipality, which is located in the central part of the Northern Cape Province at Upington. 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.

//Khara Hais 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°28'20.64", E 21°14'58.05" (Refer to Figure 1)

The site is situated approximately 2km from the central business area of Upington.

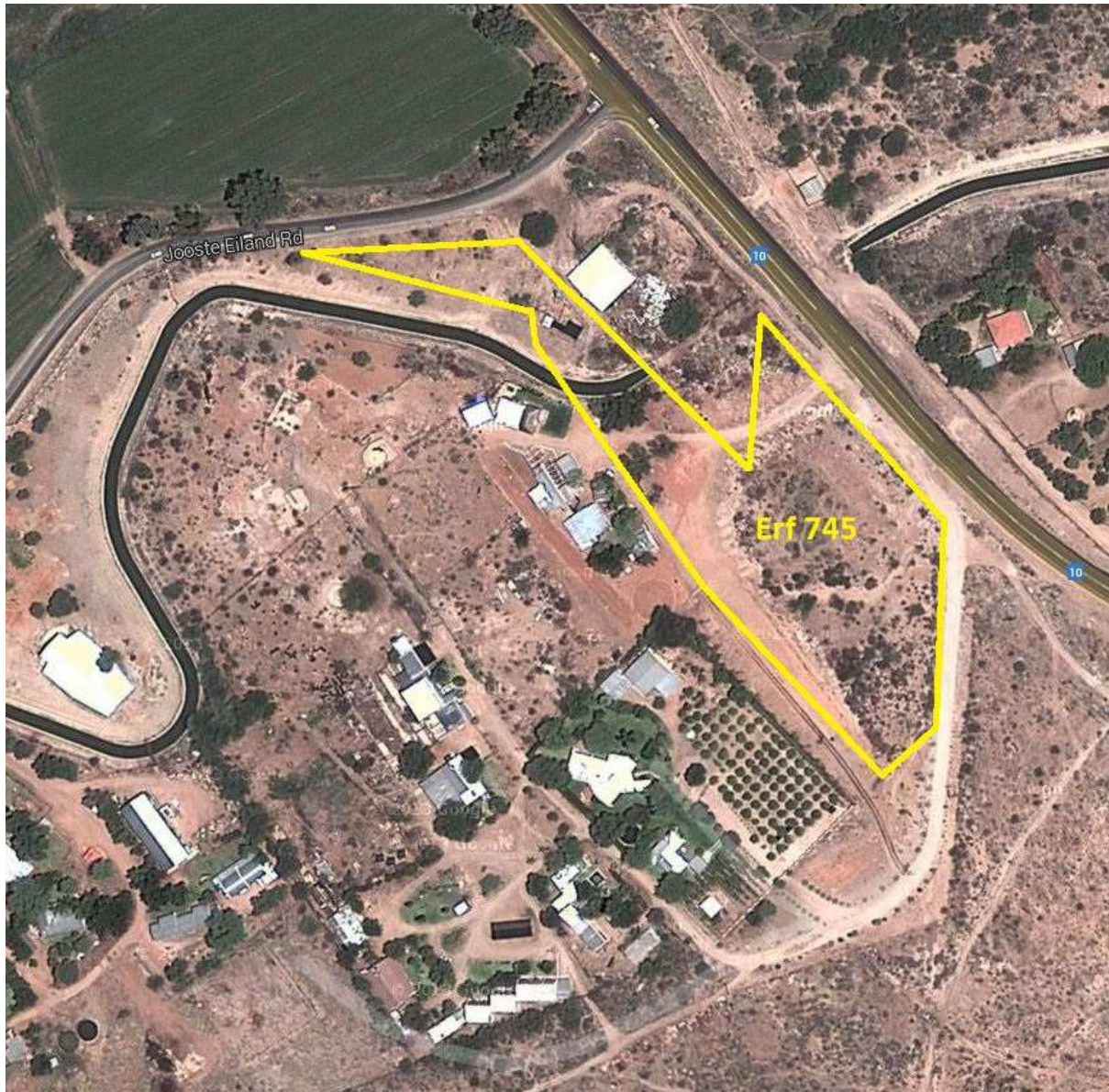


Figure 1: Google Earth locality map indicating the site

Available information

The following information was available for compiling this report:

- The existing water and sanitation services from the //Khara Hais Municipality. This information was supplied by Mr P.W. Du Plessis of the Technical Department of the //Khara Hais Municipality.
- The existing electrical reticulation network of the //Khara Hais 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.
- The proposed site development plan was obtained from De Kock & Associates.

Topography

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

The site topography was found to be fairly uneven with rocky outcrops. Imported fill over large areas of the site greatly contributes to the inconsistent topographical nature of the terrain. The underlying drainage profile of the site can generally be expected to slope downwards to the north.

Surface conditions consist of fine sand and calcrete gravel, which can typically be classified as soft to intermediate material. Indications of hard dolerite and dense calcrete are visible on the ground surface and it can therefore be expected that shallow excavation into the natural ground profile will encounter hard rocky conditions. Dolerite and calcrete outcrops are also visible on the property along with large dolerite boulders.

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



Figure 2: Typical terrain on property



Figure 3: Rocky, uneven conditions on property

Zoning

The current zoning on the property is Agricultural I (Erf 745). The newly proposed zoning will be Special (internal roads) and Residential I (townhouses). ***Refer to Annexure A.***

Access

The N10 runs along the eastern boundary of the site. Due to limited sight distances however, access to the development directly from the N10 is not advisable. Approvals from SANRAL for access from the N10 will therefore also be highly unlikely.

Access will however be obtained from the existing Jooste Eiland Road approximately 100m from an existing intersection with the N10, thereby complying with SANRAL regulation.

Roads

Internal roads shall be 6m in width for internal collector roads and 5.5m in width for 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 Ø 63mm and Ø 75mm uPVC Class 9, connected to the existing (2x) Ø 300mm municipal bulk mains running along the N10.

Connection to the municipal bulk water supply can be via an existing Ø 100mm water connection crossing the N10 or a new Ø 110mm connection installed through the N10 to allow for future capacity, depending on the preference of the municipality.

Water pressure in the municipal bulk supply network within the vicinity was found to vary between a minimum of 2.8 bar (peak) and a maximum of 4.8 bar (off-peak). **Refer to Annexure B.**

The development is expected to generate an average flow of 0.37 l/s with an instantaneous peak flow of 2.22 l/s.

A peak flow of 2.22 l/s will result in an approximate 0.03 m/s increase to peak flow velocity within the specific Ø 300mm municipal bulk water mains. 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

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

The development is expected to discharge an estimated peak sewage flow of 1.21 l/s that will be pumped to the Rosepark sewage pump station approximately 700m away via a Ø 90mm uPVC Class 6 pipe.

Rosepark sewage pump station services the Eiland Resort with an estimated occupied peak sewage generation of 3.3 l/s. Rosepark pump station is equipped with 3.3 kW Flyght submersible pumps which can be expected to have an estimated pump capacity in excess of 10 l/s. It can therefore be concluded that an additional peak flow of 1.21 l/s should not present any problems in terms of pump station capacity.

Storm Water

Storm water run-off will be handled overland and accommodated within roads where required, within the boundaries of the development. Existing surface drainage routes to the Orange River will be used to maintain the current storm water run-off scenario.

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 Reticulation and Bulk Electrical Supply

The proposed development will be executed in two phases and for the purpose of this report we accept that the development will be done in roughly two equal portions.

An in loco inspection in the presence of the Electrical Engineer of the Municipality was conducted on the existing medium voltage network and transformer installation on Pole LV3, which is situated on the southerly boundary of the property.

It was then discussed that the initial phase of the development will be accommodated on the low voltage reticulation network provided by the existing transformer and, if necessary, this transformer will be upgraded as the current unit shows severe signs of oil leakage.

It was further discussed that the balance of the development can also be accommodated on the low voltage reticulation network provided by an upgraded transformer.

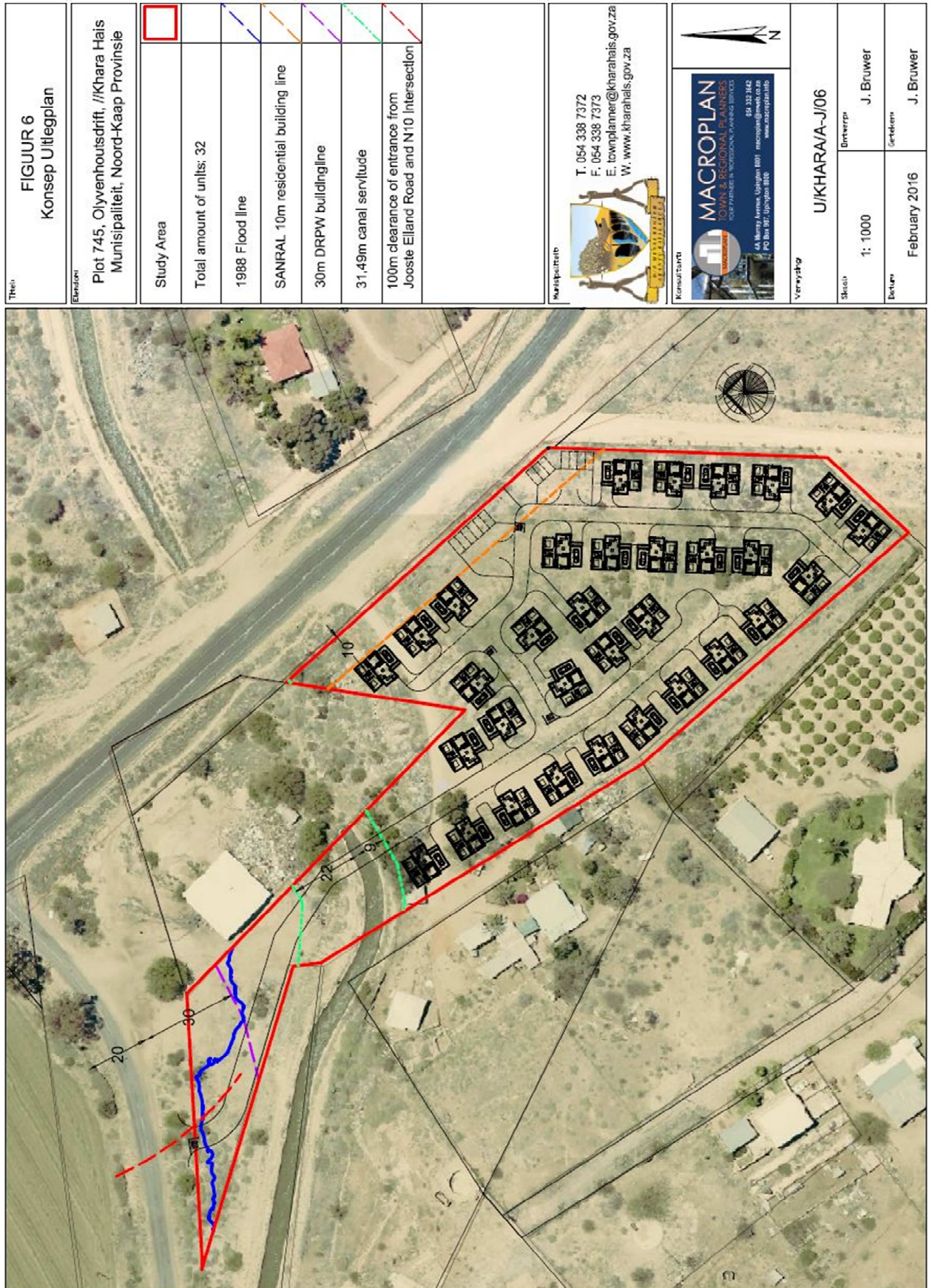
The financial contribution by the developer for this upgrading exercise was not finalised but it is normal practise to request a contribution based on the pro rata loading on the distribution transformer.

The expected after diversity maximum demand for this development amounts to 125kVA.

Summary

Municipal services directly to the site of the development is limited, but connection to bulk municipal infrastructure is plausible in terms of water, sanitation and electrical reticulation. The scope of the development is of such scale that it is expected to have a limited impact on the bulk municipal services.

Annexure A



Annexure B

