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# ***ELECTRICAL INFRASTRUCTURE***

***KLAPMUTS NO 717***

***ESKOM SUPPLY AUTHORITY***

***ENGINEERING SERVICES REPORT***

***31/01/2019***

*DIRECTORS: DEREK MÜLLER Pr Eng MSAIEE \* PIERRE TERBLANCHÉ Pr PMSA, GCC (ELECTRICAL)*

# 1) Introduction

## 1.1) General

- DMCE has been commissioned by **VIRDUS** to report on the Electrical Infrastructure for **GROENFONTEIN FARM** at **KLAPMUTS**.



Figure 1: Location of site.

- Terms of Reference (T.O.R) was collected from VIRDUS.  
(Proposed Layout drawing)

## 1.2) Comments on Terms of Reference (T.O.R)

The T.O.R refers specifically for a report on the electrical infrastructure for developing Groenfontein farm at Klapmuts.

- Bulk Incoming Electrical Supply-, the point of supply.
- CT/VT metering unit.
- Electrical Distribution Systems.

## 1.3) Project Team

- Mr. Derek Muller
- Mr. CP Labuschagne

## 2) Project Appreciation

### 2.1) Bulk Services-:

#### - Incoming Electrical Supply- Authority: Eskom

A 11kV bulk connection consisting of a radial underground/overhead 11kV MV feed from Eskom is required. The connection will enter the area from the northern side. Details of the exact scope of work will follow after the formal application is submitted to Eskom.

This bulk connection will be metered by a CT/VT unit at 11kV on the site boundary.

The take-off point will be positioned at the location indicated with a X in figure 2.



Figure 2: Location of take-off point.

## 2.2) Internal Services:-

### - Electrical Distribution Systems

#### - Proposed Method

Cabling from the take-off point will be done by means of underground cables to the different units within the designated area / subdivided sections. An electrical centre of mass will be determined after the preliminary design stage.

### - Low Voltage Electrical Distribution System

#### - Proposed Method

The low voltage network will comprise of low voltage cables installed in trenches to sub distribution boards throughout the proposed development. The sub-distribution boards will supply the user with the required loads as well as metering for each user. The meters that will be installed will enable the landlord to grant his users the choice of having a prepaid option.

## 2.3) Financial Analysis:-

The load is estimated to be 600kVA for phase 1 with a possibility of increasing to 1.5MVA for phase 2.

An estimate of the system costs are as follows:

	<b>High Voltage DX Network</b>	<b>High Voltage DX Substation</b>	<b>MV line</b>	<b>CT/VT Unit</b>
<b>Cost (R/kVA)</b>	R 605.00	R 758.00	-	-
<b>Total Cost (R)</b>	R 363 000.00	R 454 800.00	R 300 000.00	R 280 000.00

The total capital cost for incoming supply up to Eskom metering point is R1 397 000 (VAT excluded) for Phase 1.

The DX Network and DX Substation cost was confirmed by Pieter du Preez of Eskom. This will increase after July 2019 by approximately 10%.

The MV line and CT/VT unit costs are high level estimates.

### 3) Conclusion

The following can be concluded from the report:

- The total final capacity required from Eskom is 1.5MVA. This capacity was confirmed by Mzwa Monakali from Eskom.
- The bulk incoming supply from Eskom will be metered by means of a CT/VT meter on the stand boundary. The internal medium voltage distribution will be done and owned by the development.
- The detailed MV and LV distribution system will be designed after the designated area details have been determined and confirmed by means of a subdivision layout.
- An estimation of the total cost for the incoming supply is **R1 397 000.00** excl. VAT, for phase 1.

**COMPILED BY:**

**RUAN HORAK**

**B. ENG ELECTRICAL & ELECTRONIC**

**PROJECT ENGINEER**

**CHECKED BY:**

**DEREK MULLER**

**PR. ENG**

**MANAGING DIRECTOR**

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The logo consists of the letters 'D' and 'M' in a stylized, cursive font. The 'D' is purple and the 'M' is green.