



08 FEBRUARY 2012

**PROPOSED NEW TOWNSHIP DEVELOPMENT:
KLERKSOORD EXTENSION 26**

ELECTRICAL ENGINEERING SERVICES REPORT

1. INTRODUCTION

This report is an electrical engineering services report and entails the current information available to this office for the provision of electrical engineering services for the abovementioned proposed development.

2. LOCATION

The proposed development is situated on portion Re/145 and parts of portions 146, Re/160 and Re/164 of the farm Witfontein 301-JR.

The proposed development is within the jurisdiction of the City of Tshwane Metropolitan. The proposed development is within the electricity supply area of City of Tshwane Energy and Electricity.

3. LAND USE

The proposed development shall comprise of the following land use rights:

- 589 x Residential 1 Erven;
- 4 x Residential 3 Erven;
- 1 x Business Erf.

4. BULK SUPPLY

The after diversity maximum demand (ADMD) for the phased development, based on the proposed land uses as indicated is summarized in Table 1 below:

Number of Units	ADMD	Total Load
589 x Residential 1 Erven	5kVA / Unit	2945.00kVA
4 x Residential 3 Erven (409 Units)	3.5kVA / Unit	1431.5kVA
1 x Business Erf (6740m ²)	8kVA/100m ² @ FSR(0.4)	215.68kVA
Total		4592.18kVA

Table 1

The City of Tshwane Metropolitan Municipality has informed us that the necessary capacity can only be made available once Rietvlei In-Feed station and Wolmer 132kV/11kV Sub-Station have been upgraded and commissioned. The upgrade of Wolmer 132kV/11kV is in process but the commissioning date has not been confirmed by Tshwane Energy and Electricity.

5. ESTIMATED BULK SERVICE CONTRIBUTIONS

Total Load:	4 592.18kVA
4 592.18kVA @ R1 600.00/kVA	R 7 347 488.00
Plus: 14% VAT	<u>R 1 028 648.32</u>
Total:	<u>R 8 376 136.32</u>

6. EXISTING INFRASTRUCTURE

There are no existing electrical services on the property.

7. PROPOSED INFRASTRUCTURE

The external electrical network of the proposed development shall be handed over to the City of Tshwane Metropolitan Municipality. The electrical network shall be designed and installed in accordance with the standards of the City of Tshwane Metropolitan Municipality.

Supply cables shall be installed from Wolmer 132kV/11kV Sub-Station to Klerksoord satellite Sub-Station. The internal medium voltage (MV) reticulation will be done by means of 11kV underground cables feeding from the Klerksoord satellite substation.

Miniature substations will be installed to transfer the voltage from 11000 V to 400/240V to make a Low Voltage Bulk supply available to each applicable stand. The miniature substations will be installed in the road reserve.

The low voltage distribution shall be done by means of an underground low voltage cable network.

Streetlights will be installed in all road reserves along all new and existing roads bordering the proposed development.

8. DESIGN STANDARDS AND SPECIFICATIONS

The network design shall comply with the standards of the City of Tshwane Metropolitan Municipality.

The following was used for design purposes:

a)	Residential:	60A 1 phase 3.5kVA - 5kVA/Unit ADMD
b)	Commercial:	8kVA/100m ² of applicable FSR
c)	Maximum Voltage Variation:	380/230 V ± 10%

9. ENERGY EFFICIENCY AND SUSTAINABILITY

The following energy savings methods shall be investigated for possible implementation for the proposed development:

- Use of energy efficient lighting,
- Use of day light wherever possible in lieu of artificial lighting,
- Use of renewable solar powered lighting for external lighting,
- Switching off of all electrical appliances at night and times not in use,
- Use of high-efficient HVAC systems,
- Possibility of co-generation in co-operation with the supply authority,

- Use of solar water heating,
- Setting thermostats of water heaters at the most efficient level,
- Insulation of hot water pipes and hot water storage tanks,
- Use of low-flow shower heads,
- Use of high-efficient electric motors,
- Use of variable speed drives on electric motors,
- Use of appropriate conductor size to reduce distribution losses,
- Optimisation to achieve a power factor of 0.9 lagging or better,
- Use of control methods to reduce maximum demand and exploit off peak electricity tariffs,
- Insulation of windows, walls, ceilings and roofs.

We are available should you require any more information.

Regards


DJJ CONRADIE & PARTNERS CC