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PROPOSED NEW DEVELOPMENT:

REZONING AND SUBDIVISION: PORTION 88 OF THE FARM KRAAIBOSCH 195

ELECTRO TECHNICAL REPORT

Submitted by:
BDE Consulting Engineers

November 2017
Reference: GRG 179, Revision 0

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1. INTRODUCTION

This electrical engineering services report covers the external bulk electricity supply as well as the internal electrical distribution network to the proposed developments on Portion 88 of the Farm 195, George, Western Cape.

The proposed development consists of following, electrical units:

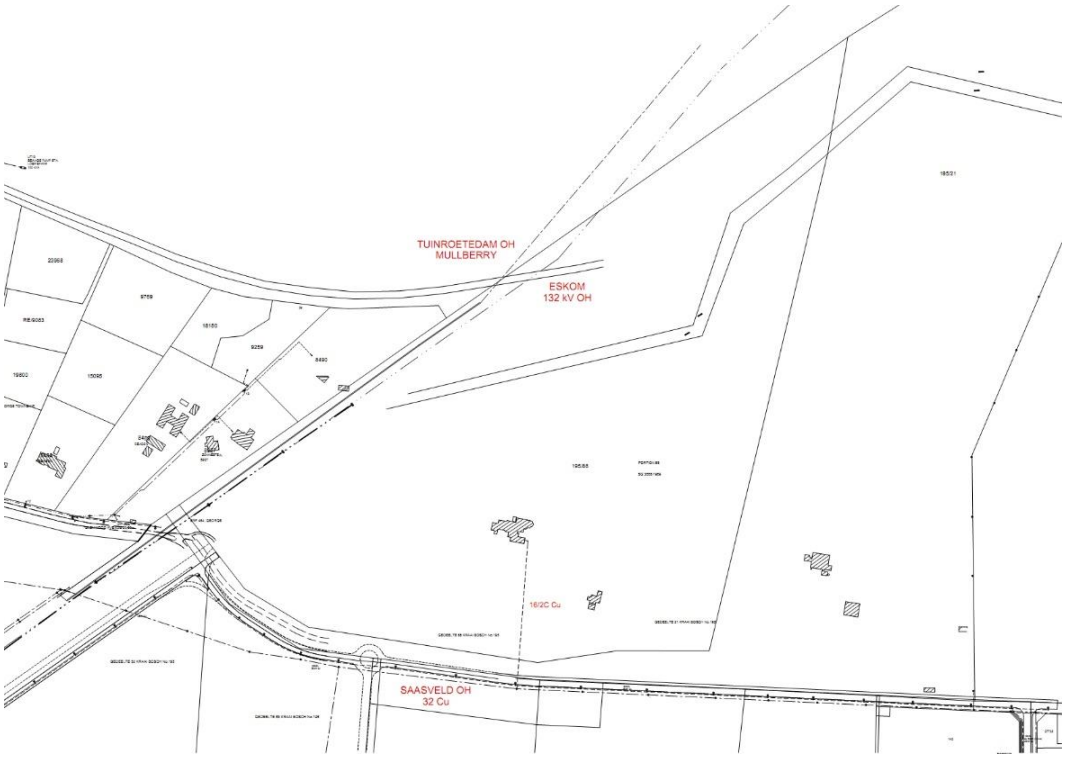
- Single residential units;
- Pump station.

2. EXISTING INFRASTRUCTURE

The development is within the licensed electricity distribution area of George Municipality.

The existing residential unit on the farm is supplied with a 16mm² 2 core Cu cable from the adjacent Saasveld 11kV overhead power line transformer.

The existing infrastructure in the area consists of 11kV overhead line networks and underground cables and is indicated in the electrical layout below:



The existing supply does not have adequate capacity to supply the development.

3. AVAILABLE CAPACITY

With the implementation of the electrical master plan for the area, adequate capacity will be available for the development.

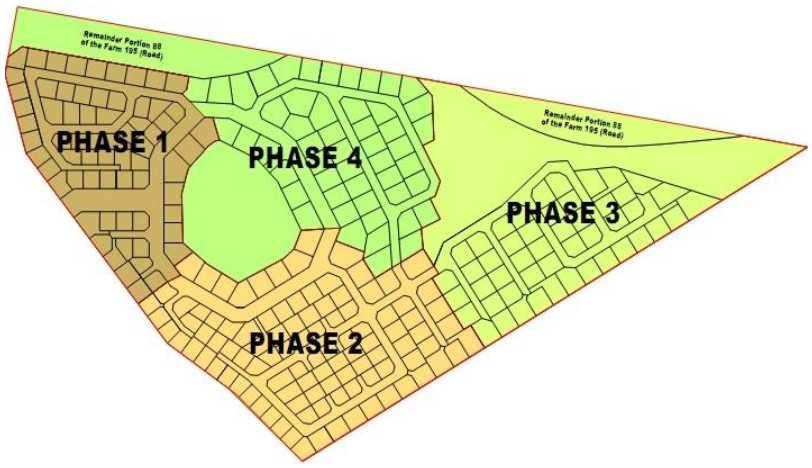
To supply the development a main 11kV cable will be installed from the existing Glenwood 66/11 kV substation to create a ring through the development. The proposed ring system will be closed by connecting to the existing adjacent 11kV network.

4. EXPECTED DEMAND

The expected load at main substation level is summarised as follows:

Description	#	KVA/unit	KVA
Residential Zone 1	123	2.5	308
Residential Zone 11	144	2.5	360
Existing stand 268	1	3	3
Future additional stand 268	12	2.5	30
Pump station	1		5
Total expected kVA			706

The development will be completed in phases as follows:



The number of residential stands is summarised as follows:

Phase 1	66
Phase 2	102
Phase 3	48
Phase 4	52
Future Stand 268	12

5. PROPOSED ELECTRICITY DISTRIBUTION NETWORK

The complete electrical distribution network shall comply with the Municipality's standard requirements, and technical specifications.

On completion, the electrical distribution network will be handed over to the Municipality, which will then be responsible for the network.

Detail of the proposed electrical distribution network is summarised as follows:

5.1. Point of supply

The point of supply will be Glenwood 66/11 kV substation:

5.2. Consumption metering

Individual metering of the residential units will be done with the Municipal prepayment metering system. The general supply and pump station will be metered separately.

5.3. Medium voltage network

The development will be supplied from a main 11kV feeder cable between the existing Glenwood 66/11 kV substation and future Groenkloof substation.

Prior to the establishment of Groenkloof substation, the ring system through the development will be closed by connecting to the existing 11kV overhead power line that follows the main road adjacent to the proposed development

The medium voltage network will consist of an 11kV ring cable system through the development that supplies a mini-substation.

The miniature substation will be strategically positioned within the development to optimise electrical distribution and to eliminate possible damage due to truck and other vehicles.

5.4. Low voltage network

The low voltage distribution system will be supplied from the 11/0.42 kV miniature substation via underground low voltage cables supplying strategically positioned distribution kiosks.

The supply cables to the distribution kiosks will be protected with optimally designed feeder circuit breakers housed inside the mini-substation.

Single phase service connections to individual stands will be done with underground cable from the mentioned distribution kiosks ending 1-meter x 1 meter inside each stand and at a connection box on an external wall for existing buildings, where applicable.

5.5. Street lighting

Public road streetlights shall meet Municipal requirements and will after completion be taken over by the Municipality for operation and maintenance.

The electricity consumption, maintenance and operation of street light inside gated communities and along private road shall be the responsibility of the homeowner’s association or body corporate. The Developer has the option to install custom streetlights. If this is done, the consumption, maintenance and operation of the streetlight network will stay the responsibility of the home owner’s association

Luminaires will be of the low level, low glare type.

Mercury vapour, high pressure sodium or incandescent lights shall not be considered. Energy efficient LED type luminaires will be utilised.

6. ENVIRONMENTAL IMPACT

6.1. Impact on existing electricity consumers

The development will have a minimal effect on the quality of supply to the existing customers due to the fact that the development will be supplied directly from an 11kV network, which will have adequate capacity.

6.2. Impact on the operating costs

The development will have no negative effect on the electrical operating costs of the Municipality, due to the fact that the complete electrical infrastructure required for the development will be supplied and installed by the Developer. Maintenance on the proposed electrical network will be minimal due to the proposed underground distribution network that will be provided. Electricity sales to the development will in actual fact contribute to the profits made by the electricity service of the Municipality.

The entire internal electrical distribution network will be carefully designed to blend in with the development as well as the natural environment as a whole. All structures, equipment and switchgear will be low profile following natural contours.

The colours and shapes of all structures, equipment and switchgear, will be selected carefully to blend in with the environment.

Services will generally be located within the road reserves to prevent additional disturbance of vegetation.

The environmental management plan for the development will form an integral part of the specification and requirements for the electrical construction work.

7. ENERGY EFFICIENCY AND RENEWABLE ENERGY

The use of cost effective alternative energy sources, such as gas and solar will be considered as well as the installation of energy efficient installations as required by the National Building regulations.

8. CONCLUSION

Adequate capacity exists at the point of supply to accommodate the development.

The development will be included into the proposed masterplan extension of the distribution network in the area.