



Nortjé & Associates cc
Consulting Electrical Engineers
Raadgewende Elektriese Ingenieurs
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KUTALO STATION & ROBERT STRACHAN HOSTEL

Electrical Engineering – Preliminary Services Report

Introduction

We at Nortje & Associates Consulting Electrical Engineers were appointed to do an investigation and report on the availability of electrical supply capacity and standards for the above mentioned proposed development. The site is situated in the Germiston SDC (Service Delivery Centre), of the Ekurhuleni Metropolitan Municipality.

The Kutalo Station portion of the proposed development provides for $\pm 1,000$ residential units, while the Robert Strachan Hostel portion provides for ± 400 residential units. The proposed zoning is a mix between Res 2 to Res 4 units. Based on existing requirements of 3kVA per unit and other requirements like schools and community facilities, the total capacity required will vary between 4.2MVA and 5MVA. This will be determined by the final Township Establishment Conditions.

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Bulk Supply

After investigation and communication with the Department of Electricity, Germiston SDC, it was found that the primary distribution voltage in the area is 33kV and the secondary distribution voltage is 6.6kV. The required capacity cannot be made available at this stage. There are two possible points of supply for the required capacity (Germiston South Ext. 8 Substation and Johnson Matthey Substation). Germiston South Ext. 8 Substation is supplied at 33kV on the Germiston 2nd Input substation network and Johnson Matthey Substation is supplied at 33kV on the Germiston North Input substation network.

Either one of these substations (Germiston South Ext. 8 Substation and/or Johnson Matthey Substation) needs to be upgraded to be able to provide the required capacity. At this stage it is not clear whether only the 33/6.6kV transformers and associated switchgear needs to be upgraded or whether the 33kV supply to either of these substations (Germiston South Ext. 8 Substation and/or Johnson Matthey Substation) will also require upgrading.

The area is known for illegal electrical connections and cable theft is also a high risk, therefore any upgrading, especially on the 33kV cable network will have to be handled with care and proper protective measures instituted to prevent loss or damage to the cable network.

Although the Germiston SDC, Electricity Department realises that upgrading is required, it was not listed previously as a high priority project. The need for upgrading to be done due to the proposed project, has changed the priority. Unfortunately, the in depth investigation first has to be finalised to determine the actual requirements and the associated cost. Only thereafter can it be submitted for evaluation and put on program for the Capital Budget (This will take at least 12 months under normal circumstances).

Based on the Bulk Contribution Policy, the contributions for the proposed development would be between R6.3million and R7.5million (Based on R1,500/kVA). Depending on the 33kV capacity, it might just be necessary to upgrade one of the 6,6kV supply substations, as mentioned. Should this be the case, it might be possible to finance the upgrading from the "to be paid", Bulk Contributions. As this process falls outside the scope of the EMM Bulk Supply Policy, a deviation report will have to be prepared by the department in this regard. The basis of the deviation report is to allow the developer to install the Bulk supply at their own cost and no Bulk contributions be levied for electrical bulk services to the proposed development, provided that the installed services are handed over (donated) to EMM at no cost to EMM. (Should the total cost be less than the required bulk contributions, the difference has to be paid over to EMM, but should the actual cost be more, this will be for the developer's account). Due to the fact that this is an "internal" development, driven by the Housing Department of Ekurhuleni, it might be possible to fast-track the Deviation process, which normally takes at least 8 months to complete

The proposed bulk supply configuration and estimated cost can be provided once the detailed investigation (with the so far much appreciated assistance from EMM personnel), has been completed.

In summary, the required capacity is not available immediately, but there are possibilities which are being investigated (Upgrading, phasing, etc.).

Internal Reticulation


Internal MV reticulation will most probably be done with 70 or 95 mm², 3-core, Cu, PILC cable rated at 11 KV (although the supply voltage will only be at 6.6kV). All internal MV rings will be supplied from one of the mentioned 33/6.6kV supply substations. All transformers and miniature substations to be installed must be 6 600/420 V. Internal networks will be taken over by EMM as the township is completed and section 82 certificates are issued.

Depending on stand sizes, the individual connections on high density stands will either be a LV connection at 420V, 3-phase or a MV supply at 6.6kV. Then a private substation or private miniature substation can be build/installed to provide sufficient capacity for the individual consumer needs. Individual full title stands will each be provided with a 242V, single phase supply via a 10 mm² Airdac cable with communication cores for pre-paid meter installation.

Trust the above meets with all requirements.

Should there be any queries or uncertainties, please contact the undersigned.

Regards,



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