

Croc River Substation

Development Overview

1. Background

Croc River Substation is necessary for the development growth in Riverside area especially for the Fresh Produce and the proposed development of Halls Properties to the western side of the existing Riverside Industrial Park and X10 & X24 developments.

The substation is centrally placed to accommodate both the mentioned developments with possible other supply areas in close proximity.

2. Croc River Substation

This will be a 132 to 11 kV firm 40 MVA substation with the following design parameters;

2.1 Substation 132 kV yard

The substation yard will be 100 x 100 m square, this is to accommodate 4 x 20 MVA transformers (2 to start off with and the other 2 as the load growth necessitate). Two future incomer lines from the Eskom Marathon substation and 2 feeder lines. One line to Matsafeni Substation (located close to Mbombela Stadium) and a future line to Nelsriver Substation positioned at the intersection of the University Road with the R40. The Matsafeni Line will be the supply until the other lines are constructed in the future.

This will all be open bus bar and conductor configuration with equipment mounted on steel structures so that the required safety clearances are complied with. The main 11 kV cables form the transformer to the indoor switch panel and control cables shall be in build trenches from the outside equipment to the building. The trenches shall be covered with concrete slabs to minimize cable theft. The yard will be fenced in by palisade fence. The yard inside the palisade will be covered with plastic and a layer of concrete stones.

The yard base will be as far as possible be on a flat plane with minimum civil ground cut and fill work. Access will be by a constructed tarred road to accommodate heavy loaded trucks from the R37 / Link Road roundabout complete with access to the position of the four transformers and building.

2.2 Overhead 132 kV Line

The line from Matsafeni substation will following the existing tar roads as far as possible until it deviates from the roads to this substation.

Mostly round self-supporting steel poles will be used but if height or distance of the line are required like crossing the Crocodile River will lattice type structure be used. Both of this structure will be bolted to a concrete foundation.

The conductors will be mounted in a staggered configuration to the inline poles and directly to strain or turn poles. Jumpers from the one side of the pole to the other side with supporting insulators will complete the installation.

2.3 Substation Building

The building will be constructed with a semi face brick outside and plaster and paint in the inside. The roof will be a pitched with grey Chroma deck sheeting. The building will be positioned in the yard for easy access from the road.

The building will house the 132 kV control equipment and the 11 kV switchgear. The building size will be approximately 20 x 30 m. No potable water is in close proximity thus will no facilities be provided.

2.4 Area Lighting

Area Lighting will be provided on the lightning mast that will be positioned to contain direct lightning strikes to the open 132 kV equipment. Further perimeter lighting at the fence will also be provided on 10 m poles.

2.5 Feeder 11 kV Cables

High Voltage 11 kV cables will be from the substation building (switchgear) following the access road and other existing roads to the proposed developments in which it shall follow the internal roads of the development.

The cables will be laid & covered in trenches with bedding before it's closed with excavated material at a depth of 1, 2 meter,

3. Construction Period

The construction period will be over a year as the lead times of the 132 kV equipment and transformers are close to 12 months. All work, concrete bases / building etc, shall be completed ready for installation of the equipment when it arrives on site.