

5.2 ANNEXURES

5.2.1 ANNEXURE D

Case Scenario: Infrastructure Design

The City of Johannesburg through the department of Housing has identified two informal settlements for upgrade under the Upgrade of Informal Settlement Program (UISP). In between the informal settlements, is a recently proclaimed township which comprises of industrial and commercial loads. The above require basic electrical services, thus City Power is required to provide electrical infrastructure to the developments based on the details as shown on table 1 & 2 below.

Table 1: Informal Settlement details

Township	No of Res 1 ervens	Educational institutions	Community Centre
Settlement A	2,200	2	1
Settlement B	800	1	1

Table 2: Proclaimed Township details

Customer Type	No of ervens	Load per customer	Total Load
Industrial	2	6MVA	12MVA
Commercial	6	2MVA	12MVA

Currently there is no primary substation in the vicinity, as such City Power will be required to construct a new electrical network covering the following scope;

- Extension of the 88kV overhead lines, the closest network is 6km away
- Construction of outdoor 88kV high voltage yard and associated equipment
- Installation of 88/11kV transformer/s and associated auxiliaries
- Installation of medium voltage switchgear
- Installation of secondary plant, monitoring and control equipment
- Installation of medium and low voltage reticulation networks (townships are approximately 3km from the proposed substation site)
- Construction of substation/switching station buildings and associated earth works

The bidder is required to provide a full functional design report taking into consideration the following;

- GA layout for the substation
- Civil and electrical designs to be used
- Typical overhead lines and underground cable design (route, stringing chart, conductor/cable selection)
- Firm capacity (N-1), volt drop and fault levels calculations
- SCADA, Fire and Security, Metering, Telecommunications and Protection
- Assume load calculations for Residential, Educational and Community centre
- All land acquisition tasks including Geotechnical and environmental studies have been concluded

The design shall take into consideration time and cost to construct, safety and security of infrastructure, load growth over a 20 year period at an average load growth of 3% per annum and the impact of mixed use customers on the grid.