



Scope of Work – Substation Engineering

Technology

Title: Tshwane HV yard fencing refurb project: Lomond, Pelly, Njala and Kwagga Substations

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1. INTRODUCTIONS

Tshwane CLN, Central Grid has initiated a project to upgrade the fencing around the HV Plant Yard of identified substations. These substations are more than 40 years old and have never been refurbished.

The following substations have been identified for the refurbishment of fence and gate so as to comply with the Occupational Health and Safety Act No. 85 of 1993 under section 43 schedule 6:

- Lomond Substation
- Pelly Substation
- Njala substation
- Kwagga Substation

2. REFERENCES

- [1] (240-55922824) - Substation Layout Design Guideline
- [2] (240-109644476) - Standard for Implementation of Substation Layouts for Transmission Substations
- [3] South African Grid Code
- [4] Occupational Health and Safety Act (OHS Act) 85 of 1993
- [5] (32-1205) - Eskom Maintenance Management Policy
- [6] (TST41-794) - Substation and Facility Maintenance
- [7] (32-727) - Eskom Safety, Health, Environment and Quality policy
- [8] (SANS 1200) – General Civil
- [9] (240-1001183119) - Standard for Fences in Eskom Transmission Stations
- [10] (240-108982466) - Standard for HV Yard Stone in Eskom Substations
- [11] (TST41-877) - Transmission Substations Design Earthing Standard
- [12] (240-139282493) – Security Lighting for Eskom applications
- [13] (240-75883230) – Refurbishment of Steel Power Lines Structures Standard
- [14] (240-78980848) – Non-lethal Fence Specification

3. SCOPE OF WORK

Designs and construction are in accordance with [1] – [21]. All construction is to be carried out in accordance with Eskom's Safety, Health and Environmental Specification. Construction will be done in close proximity to other electrical equipment; therefore, all necessary safety procedures must be strictly adhered to.

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Civil Scope of Work

The Civil Scope of Work involves the following design aspects:

Refurbish HV Yard fence as per specification drawing number 0.54-4963 and design drawings for each station.

1. Replace all rusted and damaged fence posts.
2. Replace all rusted and damaged HV yard access gates.
3. Replace all wire mesh on fence.
4. Earth straps required on all gates.
5. Use only galvanized bolts.
6. Keep the 45-degree fence overhang as per existing fence.
7. Dismantling, removal and adequate disposal of the old fencing and gates

3.1 LOMOND SUBSTATION

- To be read in conjunction with drawing Lom24P06-SE-E11
- Remove all strands of barbed wire on the single overhang and replace with new.
- All meshwire must be removed to spoil and replaced with new (1.35Km length).
- All the posts, stays and overhang members must be painted.
- Surface preparation, coating application procedures and guarantees must be in accordance with Eskom specification 240-75883230 pages 12 to 16.
- The post or stay must be opened until the concrete is exposed.
- Remove the rust stains with steel wool. Care must be taken not to damage the galvanising.
- If part of a post or stay is found to be rusted to more than half the original thickness, it must be replaced as detailed in drawing 0.54/4693.
- After surface preparation clean member with plascon metalcare galvanised iron cleaner.
- Apply one coat plascon metalcare galvanised iron primer. Apply two coats plascon metalcare, silvershine aluminium.
- All gates (8 off 6m, 1 off 4m and 1 off 1m) must be removed to spoil and replaced with new.
- Install additional 6m and 1m gates as shown.
- All gates require earth straps.

3.2 PELLY SUBSTATION

- To be read in conjunction with drawing PEL24P09-SE-E11
- Remove all strands of barbed wire on the single overhang and replace with new.
- All meshwire must be removed to spoil and replaced with new (1.65Km length).
- All the posts, stays and overhang members must be painted.

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Civil Scope of Work

- Surface preparation, coating application procedures and guarantees must be in accordance with Eskom specification 240-75883230 pages 12 to 16.
- The post or stay must be opened until the concrete is exposed.
- Remove the rust stains with steel wool. Care must be taken not to damage the galvanising.
- If part of a post or stay is found to be rusted to more than halve the original thickness, it must be replaced as detailed in drawing 0.54/4693.
- After surface preparation clean member with plascon metalcare galvanised iron cleaner.
- Apply one coat plascon metalcare galvanised iron primer. Apply two coats plascon metalcare, silvershine aluminium.
- All gates (16 off 6m, 3 off 12m, 3 off 1m and 8 off 6m removable panels) must be removed to spoil and replaced with new.
- All gates require earth straps.

3.3 NJALA SUBSTATION

- To be read in conjunction with drawing NJA24P02-SE-E11
- Remove all strands of barbed wire on the single overhang and replace with new.
- All meshwire must be removed to spoil and replaced with new (0.376Km length).
- All the posts, stays and overhang members must be painted.
- Surface preparation, coating application procedures and guarantees must be in accordance with Eskom specification 240-75883230 pages 12 to 16.
- The post or stay must be opened until the concrete is exposed.
- Remove the rust stains with steel wool. Care must be taken not to damage the galvanising.
- If part of a post or stay is found to be rusted to more than halve the original thickness, it must be replaced as detailed in drawing 0.54/4693.
- After surface preparation clean member with plascon metalcare galvanised iron cleaner.
- Apply one coat plascon metalcare galvanised iron primer. Apply two coats plascon metalcare, silvershine aluminium.
- All gates (2 off 1m) must be removed to spoil and replaced with new.
- Install 2 additional 6m gates as shown.
- All gates require earth straps.
- Extend the concrete road as shown.

3.4 KWAGGA SUBSTATION

- To be read in conjunction with drawing Kwa24P04-SE-E11
- Remove all strands of barbed wire on the single overhang and replace with new.

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Civil Scope of Work

- All meshwire must be removed to spoil and replaced with new (0.215Km length).
- All the posts, stays and overhang members must be painted.
- Surface preparation, coating application procedures and guarantees must be in accordance with Eskom specification 240-75883230 pages 12 to 16.
- The post or stay must be opened until the concrete is exposed.
- Remove the rust stains with steel wool. Care must be taken not to damage the galvanising.
- If part of a post or stay is found to be rusted to more than halve the original thickness, it must be replaced as detailed in drawing 0.54/4693.
- After surface preparation clean member with plascon metalcare galvanised iron cleaner.
- Apply one coat plascon metalcare galvanised iron primer. Apply two coats plascon metalcare, silvershine aluminium.
- All gates (2 off 4m and 1 off 1m) must be removed to spoil and replaced with new.
- Install additional 6m and 1m gates as shown.
- All gates require earth straps.
- Install new ramp as shown.

4. DOCUMENT LIST

The following documents are applicable to this enquiry:

| Drawing number | Document name |
|-----------------|---|
| Lom24P06-SE-E11 | Lomond Safety Fence Layout |
| PEL24P09-SE-E11 | Pelly Safety Fence Layout |
| NJA24P02-SE-E11 | Njala Safety Fence Layout |
| Kwa24P04-SE-E11 | Kwagga Safety Fence Layout |
| 0.54-4369 | HV yard safety fence, posts & gates details |
| 240-75883230 | Steel Refurbishment Specification |
| | |

5. AUTHORISATION

This document has been seen and accepted by:

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6. REVISIONS

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7. DEVELOPMENTAL TEAM

The following people were involved in the development of this document:

- Tshoanelo Sam

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