

SCOPE AND SPECIFICATION

PNG POWER LTD



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SOURCING SPECIFICATION

1. Supply Materials and Installation

Materials:

- 2 x 200uc, 12m Steel Poles
- Pole members for Transition Poles; Cross-arm brackets, cross-arms, step bolts, base plates, stay attachments, stay wire, etc. and pole dressing/painting
- Line accessories for Transition Poles; HV insulators, HV insulator pins, PG clamps, 5/8 bolts/nuts, epoxy, dead-ends, clevis, thimbles, arrestors, etc.
- XLP 150mm² 3 Cores Insulated Copper Cable Standard and Termination kits with Copper Silver Sleeve Plate
- Cement Bags, Reinforcement/Deform Bars, Gravels and Stores, etc. for transformer base concreting
- Parameter Steel Fencing

Installation:

- Erecting 12 meters 200uc Transition Poles
- Concreting Transformer base/pad and prepare for mounting
- Fencing transformer yard/parameter
- Mount 5MVA step-up transformer
- Digging underground cable trench and laying unground cable
- Terminating underground cable on transformer end and transition poles
- Replace all the 22kV/415V step-down transformers with 11kV/415V step-down transformers
- Erect poles, install stay-wires, pole dressing, conductor stringing, and sag tie on HV Line missing link at Tuna-Bay.

Equipment, tools and manpower will also be required.

PURPOSE AND BACKGROUND

2. Purpose

PNG Power Limited's has limited resources in terms of manpower and equipment as well as material constraints required to smoothly relocate the 11/22kV step-up transformer from 6-Mile Saraga to Dogura purposely to have a 11kV ring feed between Boroko Feeder 6, 8 and Kilkila Feeder 7.

The objective is to improve reliability around NCD and if the Line disturbed after the step-up transformer cannot affect the ring feed areas.

3. Background

Distribution System in Port Moresby Grid is mostly 11kV System. One of the Distribution feeder is a 33kV Line between Sogeri Auto-Sub and Bomana Substation, another 22kV Line out of Rauna 2 Substation feeding Sogeri area and Boroko Feeder 8 from 6-Mile Saraga 11kV/22kV Step-up transformer feeding part of NCD and Central Province. From the step-up transformer, Boroko Feeder 8 is the longest feeder running along Magi highway, a distance of more than 100 kilometres to Kwikila and Gabagaba-Hula from the substation.

The people of Central Province along the Magi highway feeds on Boroko Feeder 8. Because of the long distance, this feeder alone has two groups maintaining the line. One group from POM Distribution Maintenance Boroko Office and another group from Kwikila Office.

Because of the growing demand in NCD and possibility of a ring feed around 6 Mile, Tuna-Bay, Taurama Barracks, Vadavada, Pari main village and Sabama area, the step-up transformer is recommended for relocation pass the Dogura roundabout so that 11kV ring feed is possible.

DETAILED DESCRIPTION OF SCOPE

4. Overview

Almost all the trip count on Boroko Feeder 8 are due to faults outside of NCD. Many of the unplanned outages are through tree branches and Line down as a result of vandalism. In many cases, wooden poles are deliberately burnt by locals along the road and while hunting for bush kangaroo.

The Step-up Transformer at 6-Mile Saraga needs relocation to have a ring feed around Dogura and Tuna-Bay through Boroko 6 and Kilakila 7 isolating fault areas downstream. This will also improve power supply to the customers living around East Boroko, Manu, Vadavada, Taurama, Tuna-Bay, Pari Village and Dogura because of the ring feed between Boroko 6, 8 and Kilakila 7.

The following materials are required;

- Steel Poles
- Cross-arm brackets, cross-arms, step bolts, base plates, stay attachments, stay wire, etc. and pole dressing/painting
- HV insulators, HV insulator pins, PG clamps, 5/8 bolts/nuts, epoxy, dead-ends, clevis, thimbles, arrestors, etc.
- XLP 150mm² 3 Cores Insulated Copper Cable Standard and Termination kits with Copper Silver Sleeve Plate
- Cement Bags, Reinforcement/Deform Bars, Gravels and Stores
- Steel Fencing

5. Mandatory requirements

Apart from materials, equipment, tools and manpower for installation will also be required. 11kV/415V Step-down to replace 22kV/415V Step-down transformers will be supplied by PPL.

Detailed requirements

- 2 x 200uc, 12m Steel Poles
- Pole members for Transition Poles; Cross-arm brackets, cross-arms, step bolts, base plates, stay attachments, stay wire, etc. and pole dressing/painting
- Line accessories for Transition Poles; HV insulators, HV insulator pins, PG clamps, 5/8 bolts/nuts, epoxy, dead-ends, clevis, thimbles, arrestors, etc.
- XLP 150mm² 3 Cores Insulated Copper Cable Standard and Termination kits with Copper Silver Sleeve Plate
- Cement Bags, Reinforcement/Deform Bars, Gravels and Stores, etc. for transformer base concreting
- Steel Parameter Fencing

Statistical and technical information

The attachments of the certain areas that requires transformer replacement, HV Line overhead missing link and the Step-up Transformer relocation yard are attached here with too.

Compliance with standards

Experienced Civil Engineer for transformer pad construction, Skilled, Technical and Lines Tradesmen to fabricate poles, erect poles, install transformers, retention and sag tie HV Lines up to PNG Power Line Construction Standards.

Relevant legislative and policy requirements

Supplying of materials and installation will be required after an Open Tender based on assessment and notice served to supplier or contractor.

Term

After the tender process is completed, contract will be signed between PNG Power Limited and the Contractor to supply materials and install. Preparation can be done after signing of the contract and work to commence when payment for mobilization is made.

Delivery timetable

The supply of materials and installation will commence when mobilization payment is made. Because the work demands urgent improvement on Feeder, the work should not take more than 3 months. Supply and installation should complete within 3 months. To accommodate any unforeseen delays, 1 month can be extended.

Number and location of suppliers

The contractors must have a base in Port Moresby to prevent any delay delivering project on time. They must have all the materials required available. Contractors must have equipment like cranes, tools and have technically skilled and tradesman linesmen.

Inspection/tests required

PNG Power Engineer, Tradesmen, Senior Linesmen, Lines Inspectors and Distribution Projects Team of T&D will provide supervision during the work. A combine inspection will be required before commissioning test and commissioning of the Step-up transformer, Step-down transformers and the HVL Missing Link at Tuna-Bay.

Key performance indicators

- Y12/Y16 deform bars and mess wires must be used concrete the transformer mounting pad/foundation
- Transformer yard parameter should be steel fencing
- Getting the correct measurements of the transformer and conduits to be inset on both sides during the concreting of transformer pad for cable termination on HV bushings
- Inset conduit for Earth stud/rod
- Relocate and installing Step-up transformer
- Digging trench, laying of underground cables, terminating underground cable on both transition poles and on transformer end
- Two (2) outages will be requested for Transformer replacements in a week. Two (2) to three (3) transformer to be replaced per outages
- During the other days, digging and erecting of poles for pole relocation can be done. Conductor stringing and sag tie to follow
- 200uc 12m steel poles must be used for the transition poles. And when constructing missing link, 200uc 12m steel poles must be used in all the termination and angle poles
- Saturn conductor be used for conductor string
- The pole base should be properly cemented to prevent rust
- Stay and strut must be installed before tensioning, conductor stringing and span sagging

Reporting

The contractor and PPL employee supervising the work will provide fortnightly updates to management on the progress of the work.

Implementation and/or transition requirements

Management must be informed of any additional work required on site during the course of work. And if there is any unforeseen delay must be made aware to PPL management.

Resources provided by the principal

All the transformers that will be replaced are PPL properties and should remain PPL property. When replaced, they should be returned to PPL.

 13/01/25.
Paul KAMO
Acting General Manager T&D