



**REQUEST FOR PROPOSAL (TENDER): 2024/06/002**

**APPOINTMENT OF A SERVICE PROVIDER FOR SUPPLY, DELIVERY, INSTALL AND  
COMMISSIONING OF 8 MEDIUM VOLTAGE METAL-CLAD SWITCHGEAR WITH  
VACUUM CIRCUIT BREAKERS COMPLETE WITH CURRENT AND VOLTAGE  
MEASUREMENT UNIT FOR TARIFF METERING WINBURG IN MASILONYANA LOCAL  
MUNICIPALITY.**

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## 1. STATEMENT OF INVITATION

Masilonyana Local Municipality invites proposal from competent contractor to submit a comprehensive document to supply, delivery, install and commissioning of 8 medium voltage metal-clad switchgear with vacuum circuit breakers complete with current and voltage measurement unit for tariff metering at Winburg switching station.

### MINIMUM REQUIREMENTS

- Certified copy of Company registration certificate (CK), not older than 3 months
- Tax compliance status pin/Valid Tax Clearance
- Certified copy of Identity documents of directors/owners/members/shareholders, not older than 3months
- Latest and valid municipal rates and taxes that is not more than 90 days outstanding (In cases of a lease agreement must attach lease agreement accompanied by latest and valid municipal rates and taxes that is not more than 90 days outstanding).
- CIDB grading of 4 EP and potential emerging enterprise who satisfy criterial stated in the Tender Data may submit tender.
- Central Supplier Database (CSD) Registration Report or MAAA Number
- Valid BBBEE sworn affidavit, original or certified copy of BBBEE certificate.

## 2. SCOPE OF WORK

The scope of work comprises of the following:

- Supply, delivery, install and commission of 8 medium voltage metal-clad switchgear with vacuum circuit breakers complete with current and voltage measurement unit for tariff metering Winburg for Masilonyana local Municipality.
- The switchgear shall have a voltage rating of 11 kV, with Two (2) Incoming or dual incomer circuit breakers, (6) six feeder breakers and a bus sectionalizer with current and voltage measurement unit for tariff metering. There will be a total of 8 circuit breakers. The switchgear will be one high construction with indoor frame size of 36" wide x 95" high x (standard – 85", optional – 92") deep. End dress panels will be provided on each end of a lineup and can extend the width by approximately one inch on each end. The switchgear shall meet indoor standards as defined in IEC standards and Codes. The switchgear will be used in a 11 kV, 3-phase, 50 Hz system. It shall be composed of factory assembled metal clad cubicles. The circuit breakers shall be designed with vacuum interrupter technology and shall incorporate a (spring operated or magnetically actuated) mechanism.
- Disconnect and reconnect the existing four circuits.
- Install 40m,150MM<sup>2</sup> XLPE aluminum cable, terminate on the one side on the 5<sup>th</sup> Breaker and on the other side onto the sectional links. The cable will be housed in a steel pole to prevent theft.
- Refurbish the existing switching station by painting it on the inside, installation of 3 new doors, installation of lights, extending the building, if necessary, by 3.5M to accommodate the new switches.
- Contractor to propose a constructability plan to ensure that customers are not left unattended.
- Liaise with the community through ward councilors and the project CLO's for the implementation of the project from commencement to completion.
- Contractor to manage SMME expectation by allocation fair reasonable amount of work as per norms.
- Arrange outages and road crossings if necessary.
- Test and commission all works and handover to the municipality.

### 3. MEDIUM VOLTAGE ADVANCE METAL-CLAD SWITCHGEAR SPECIFICATION

#### A. INTRODUCTION

This Specification covers the design and functional requirements for medium voltage metal-clad switchgear with vacuum circuit breakers complete with current and voltage measurement unit for tariff metering. It is provided as a guide to assist in the specification of medium voltage switchgear and is intended as a supplement to Station Electric Diagram and data sheets for switchgear projects.

#### B. REFERENCES

The assemblies shall be constructed, wired, and tested in accordance with all applicable sections of the latest listed IEC standards and Codes.

- B.1. 62271-200 - High-voltage switchgear and control gear - Part 200: A.C. metal-enclosed switchgear and control gear for rated voltage above 1 kV and up to and including 52 kV.
- B.2. 62271-1 - High-voltage switchgear and control gear - Part 1: Common specifications.
- B.3. 62271-103 - High voltage switches - Part 1: switches for rated voltages above 1 kV and less or equal to 52 kV.
- B.4. 62271-105 - High-voltage switchgear and control gear - Part 105: High voltage alternating current switch-fuse combinations.
- B.5. 60255 - Electrical relays.
- B.6. 62271-100 - High-voltage switchgear and control gear - Part 100: High-voltage alternating current circuit breakers.
- B.7. 62271-102 - High-voltage switchgear and control gear - Part 102: High-voltage alternating current disconnectors and earthing switches.
- B.8. 61869-2 - Instrument Transformers - Part 1 : Current Transformers.
- B.9. 61869-3 - Instrument Transformers - Part 2 : Voltage Transformers.
- B.10. 60044-8 - Instrument transformers - Part 8: Low Power Current Transducers.
- B.11. 62271-206 - High-voltage prefabricated switchgear and control gear assemblies- Voltage presence indicating systems.
- B.12. 62271-304 High-voltage switchgear and control gear - Part 304: Design classes for indoor enclosed switchgear and control gear for rated voltages above 1 kV up to and including 52 kV to be used in severe climatic conditions.
- B.13. Design tests, to verify IEC ratings as identified in this specification, shall be documented as required by ISO9001-2000 and available for review and inspection.
- B.14. Optional - Seismic assessment shall be conducted to assure the switchgear will withstand seismic levels through UBC Zone 4. Any special design or installation considerations to assure compliance with this requirement will be thoroughly documented on project drawings.
- B.15. It shall be the Vendor and/or manufacturer's responsibility to be, or to become, knowledgeable of the requirements of these Standards and Codes. Any changes or alternations to the equipment to make it meet Standards and Codes requirements shall be at the expense of the Vendor.

#### C. GENERAL DESIGN REQUIREMENTS

The switchgear shall have a voltage rating of 11 kV, with two (2) Incoming circuit breakers , (6) six feeder breakers and a bus sectionalizer with current and voltage measurement unit for tariff metering. There will be a total of 9 circuit breakers. The switchgear will be one high construction with indoor frame size of 36" wide x 95" high x (standard – 85", optional – 92") deep. End dress panels will be provided on each end of a lineup and can extend the width by approximately one inch on each end. The switchgear shall meet indoor standards as defined in IEC standards and Codes. The switchgear will be used in a 11 kV, 3-phase, 50 Hz system. It shall be composed of factory assembled metal clad cubicles. The circuit breakers shall be designed with vacuum

interrupter technology and shall incorporate a (spring operated or magnetically actuated) mechanism.

### C.1. Ratings

C.1.1. The switchgear will have the following rating:

- C.1.1.1. Rated Maximum Voltage 12 kV.
- C.1.1.2. Operating Voltage 11 kV
- C.1.1.3. System frequency 50Hz
- C.1.1.4. Main Bus Continuous Rating 1250 A
- C.1.1.5. Control bus DC Voltage (Nom.) 48 VDC
- C.1.1.6. Circuit Breaker Interrupting 25 kA.
- C.1.1.7. Close and Latch 65 kA Peak
- C.1.1.8. Breaker Interrupting Time 3 cycles
- C.1.1.9. The temperature rise of the switchgear will be in accordance with the latest revision of IEC standards and Codes for metal clad switchgear. The equipment shall be completely factory assembled and tested prior to shipment.

The below table provides the required ratings and related capabilities of circuit breakers utilized in this switchgear project:

Nominal Voltage Class kV	Rated Maximum Voltage kV	Low Frequency Withstand Voltage kV rms	Impulse Level (BIL) kV Crest	Rated Short Circuit Current kA rms	Short Time Current 2 Second kA rms	Close and Latch kA Peak	Rated Voltage Range Factor K
11	12	36	95	25	25	65	1.0

### D. BASIC CONSTRUCTION

- D.1. The switchgear assembly shall consist of metal-clad, free-standing, vertical, dead-front steel structures containing circuit breaker compartments and circuit breakers, primary bus system, ground bus system, auxiliary compartments and transformers, protection and control devices, control bus (as required) and connection provisions for primary, ground, and control circuits. The basic structure will be of modular construction and fabricated mainly of highly reflective, 14-gauge galvanic steel, which does not require painting due to superior resistance to corrosion. The switchgear enclosure will be constructed of double wall galvanic steel with an air gap between sheets and in the event of a fault condition, the first layer will burn, and the second layer will be insulated by the air gap.
- D.2. The switchgear system shall be comprised of the following discrete modules, arranged in an overall height of 2250mm for each vertical section as per Station Electric Diagrams in Appendix 1. The compact dimensions for easy installation in small rooms or prefabricated substations are:
  - 375 to 1500 mm width
  - 1600 to 2250 mm height
  - 840 to 1400 mm depth.
- D.3. Cables shall be connected via the front AND switchboard positioned against the wall.
- D.4. All control functions are centralized on a front plate, thus simplifying operation. The circuit breaker enclosure shall include stationary support bushings and primary contacts for engagement with the circuit breaker or ground and test (G&T) device. Standard bushings shall be made of glass-reinforced polyester (or optional porcelain) capable of supporting the weight of the current transformers. Primary contacts will be made of copper and designed to accept round, tulip style connectors.
- D.5. The switchgear shall be designed so that future units can be added to each end (unless coupled to other equipment). A removable plate will cover any unused openings in the side of the gear.
- D.6. Hem-bends (rigid overlap bending) will be consistently used when building the switchgear compartments to enhance strength and to minimize potential exposure of working personnel to sharp steel edges during installation and maintenance.
- D.7. A 6 x 50mm tin plated copper ground bus shall be provided for the entire length of the switchgear. It shall be equipped with a solderless connector for #2/0 AWG copper cable at each end. The ground bus shall

be accessible in the cable compartment and shall have connection points in each switchgear section for workmen's grounds. The ground bus will be connected to the breaker frames and will ground the draw-out circuit breaker in and when traveling in between the connected and test positions. Bare, un-plated copper ground bus is unacceptable.

#### **D.8. Busbars**

- D.8.1. The main bus compartment shall be separated from the other compartments by an 11-gauge steel barrier (or equivalent) and shall fully enclose the main bus. The main bus compartment shall be accessible from the rear through the cable compartment. Main bus ratings shall match the highest rated circuit breaker continuous current ratings and comply with IEC standards and Codes temperature rise requirements.
- D.8.2. Busbars shall be copper and shall be completely isolated and coated with an epoxy insulation that is flame retardant, non-hygroscopic and high dielectric, except at bolted joints. The bus shall be mechanically braced for the close and latch rating of the breaker having the highest interrupting rating within each assembly. All bolted bus joints shall be (Standard – silver-plated) (Optional – tin-plated). The bus connections to the circuit breakers shall match the breaker rating. Bus supports shall be flame retardant, track resistant GPO-3 glass polyester (Optional – porcelain).
- D.8.3. Bus joint cover boots shall be manufactured from molded PVC and shall be removable and reusable for field inspection and maintenance. Taping of bus joints is not acceptable.
- D.8.4. The shape of the bus bar shall be full round edge. The main bus shall not be tapered.
- D.8.5. Bus bar connections shall be mechanically secured with reusable fastening devices that shall maintain adequate pressures at the joints within the operating temperature range of the switchgear.
- D.8.6. The bus bars and support systems shall be designed to withstand the forces created during short circuit conditions at the rated momentary and short-time (2-second) conditions of the highest rated circuit breaker. Supports shall be made of (Standard - glass polyester) (Optional - porcelain).
- D.8.7. An insulated, rigid, copper riser bus shall be provided from the circuit breaker / switchgear primary disconnects to a cable compartment location to allow cable termination lug connections. Riser bus connections to bus duct shall be rigid. Cable termination bus arrangement shall allow at least 36 inches for primary cable stress cones or potheads. Connections to roof entrance bushings shall include flexible straps from the rigid bus to the roof bushings.
- D.8.8. Standard termination bus shall meet the bolt hole requirements of NEMA CC1-4.05 and shall typically be the NEMA 4-hole pattern. (Optional - Vendor will supply - crimp type cable lugs, compression type cable lugs, - as shown on project data sheets.)
- D.8.9. The design shall be adaptable for top or bottom primary entrance arrangements. In 2-high breaker arrangements, each set of primary connections and zero-sequence current transformers, if applicable, shall be isolated into separate compartments by a grounded steel partition in accordance with IEC standards.
- D.9. Bar type / zero-sequence current transformers, lighting arresters, surge capacitors, stationary control power transformers, ground sensors, or other auxiliary equipment shall be mounted in the cable compartments. An optional 7" rear extension shall be provided to accommodate additional equipment and power cable if required.
- D.10. Control switches, instruments, meters, position indicating lights, protective relays, etc. shall be in a separate compartment from the circuit breaker. All other monitoring devices such as CT's and limit switches may be located within other compartments. Low voltage compartment door mounted devices shall be mounted on the front of the switchgear panels and arranged in an approved, logical, symmetrical manner. In those cases where there is not enough space on the door of the instrument compartment, a 10" front extension shall be installed to mount metering, protection, and control devices.
- D.11. The breaker cubicles and circuit breaker units shall be constructed so that each unit of the same rating is interchangeable.

- D.12. Solidly grounded metal (Optional – non-metallic poly carbonate) shutters shall automatically open when the breaker or G&T device is racked into the connected position and close (covering the primary contacts and current transformers) when racked to the test or disconnected positions or withdrawn from the cell. Shutter grounding shall be by dedicated ground wires and shall not be dependent on grounding through hinges or moving contact surfaces. The actuation of the shutters must be by the movement of the circuit breaker. Gravity and spring-operated shutters are not acceptable.
- D.13. Switches
- D.13.1. Breaker control switches shall not be mounted adjacent to meter switches and shall have "pistol grip" handles. Switches to be Electro switch Series 24 or equivalent.
- D.13.2. Meter switches shall have "knurled knob" handles. Switches to be Electro switch Series 24 or equivalent.
- D.13.3. Control and instrument switches will be provided and wired in accordance with specified single line diagrams and data sheets and will be mounted only on low voltage compartment doors and panels.
- D.14. Externally-visible, permanent nameplates shall be provided to identify each instrument, instrument switch, meter, relay, control switch, indicating light, circuit breaker compartment, potential transformer compartment, and auxiliary compartment. Equipment and terminal blocks within the compartments shall be suitably identified. Relays shall be designated as to use and as to the phase to which they are connected. Nameplates shall be laminated plastic. Characters shall be black letters on a white background.
- D.15. Auxiliary switches shall be wired out to terminal blocks for customer convenience.
- D.16. The compartment door shall be securely held with tamper-resistant hinges and sealed with (standard - multiple, tamper-resistant, captive manual fasteners) (optional - a single handle, multi-point latching mechanism in available ratings). (Optional -Compartment doors will include provisions for padlocking. Others to supply locks).

## E. POWER CIRCUIT BREAKERS

- E.1. The power circuit breakers shall be electrically operated, 3-pole, draw-out type, with vacuum interrupters and manual charging of a spring type stored energy operating mechanism. The power circuit breaker shall be provided with self-aligning line-side and load-side disconnecting devices. Circuit breakers to be Schneider-Electric DMV-A Single-isolation circuit breaker unit or similar.  
OR
- E.2. The power circuit breakers shall be electrically operated, 3-pole, draw-out type, with vacuum interrupters and a magnetic actuator operating mechanism with capacitor stored energy. The power circuit breaker shall be provided with self-aligning line-side and load-side disconnecting devices. Circuit breakers to be Schneider-Electric DMV-A Single-isolation circuit breaker unit or similar. . The circuit breaker mechanism shall have a life of 100,000 no-load operations.
- E.3. The breakers shall be capable of making and breaking the short time current in accordance with the requirement of IEC 62271-100 / IS 13118 (1991) and latest amendment thereof and shall have three phase rupturing capacity of 25KA for 3 second at 11 KV. The continuous current rating of all current carrying parts of breaker shall be 1250 Amps for all items. The total break / make time shall be not more than 4 cycles for break and 6 cycles for make time for all breakers.
- E.4. The breaker racking system shall allow smooth, consistent breaker movement with the door closed and shall have three positions in addition to the fully withdrawn position; disconnect, test and connected. The circuit breaker shall stop and lock in all three positions, requiring operator action to move from one position to another. The circuit breaker door must be provided with impact resistant poly carbonate viewing window of at least 86 square inches and ½" thick to determine breaker position, open/closed indicator, spring charge status, and operations counter.
- E.5. The circuit breaker will be provided with an integral racking mechanism. Circuit breakers utilizing switchgear mounted racking mechanisms separate from the circuit breaker are not acceptable.



- E.6. The draw-out mechanism shall hold the breakers rigidly in the CONNECTED (primaries and secondaries engaged), TEST (primary contacts disconnected and shutter closed, but control contacts engaged) and DISCONNECTED (both primary and secondary contacts disengaged) positions, with the door closed. The secondary contact plug shall automatically disconnect when the breaker is moved from the TEST to the DISCONNECTED position. A single (25 pin) fully automatic, self-aligning, secondary disconnecting device shall be provided to act as a disconnect for the secondary connections between the circuit breaker and the switchgear. The disconnecting device shall be positioned and constructed as to not expose the operator to live parts. The secondary disconnect shall connect automatically when the circuit breaker is racked into the test and connected positions. A double (50 pin) disconnect arrangement shall be available as an option and provided as shown on project data sheets. The female portion of the disconnect system shall reside in the breaker compartment, so that energized contacts are recessed and remain "touch safe". To guarantee the integrity of operating personnel, it shall not be required to open or keep opened the door of the circuit breaker compartment after the breaker has been locked in the disconnected position to be able to rack the breaker or connect the secondary contacts, Circuit breakers that require manual connecting or disconnecting of the secondary contacts are unacceptable.
- E.7. The breakers in the lower compartment shall be held captive in the cubicle by means of a latching mechanism, even in the disconnected position. Removal of the circuit breaker shall be by means of unlatching the mechanism and pulling the circuit breaker onto a lift truck. Cell must have a minimum of a 1" lip for proper sealing of the door and to prevent ingress of dirt and other contaminants. Circuit breakers that require rail extensions for circuit breaker removal are not acceptable.
- E.8. Wheels shall be provided on the bottom of the circuit breaker for easy floor rolling after the breaker is removed from the frame. Circuit breakers that require a separately purchased floor rolling truck assembly are not acceptable.
- E.9. Interlocks shall be provided which will prevent connecting the breaker to, or disconnecting it from the bus stabs unless the breaker is OPEN (tripped), assuring proper sequencing and safe operation. The close springs of the circuit breaker will automatically discharge when the breaker is released from the cell by pulling in on the truck latch assembly. Provisions shall be made for the addition of optional KIRK KEY interlocks, as shown on project data sheets and the single line diagram.
- E.10. Control voltage and trip voltage shall be as follows:
- E.10.1. The breaker motor charging range shall be suitable for 240V, 50 Hz, single phase AC and 110 V DC Supply.
- E.10.2. Close and trip circuits for each breaker shall be separately fused. Fuse blocks shall be dead front, pull-out type, which provides the control power disconnecting means.
- E.11. The circuit breaker shall be provided with a toroidal spring mechanism, which allows for the easiest manual charging. The mechanism shall rotate the main horizontal shaft in only one direction, in order to reduce wear and maintenance costs and eliminating mechanism binding. The breaker shall be equipped with the "stored energy operation" type, anti-pump-operating mechanism. It shall be possible to open and close the breakers manually. The circuit breaker shall be capable of operating in three cycles which means smaller power cables, lower construction costs, and improved system quality. The mechanism shall be completely front accessible and maintainable by removing the faceplate. Breakers that require lifting to access the mechanism under the carriage are unacceptable.
- Or
- The circuit breaker shall be provided with a magnetically actuated mechanism which shall use a flux-shifting device with integral permanent magnets. It also shall incorporate an electronic controller and a capacitor for energy storage. The circuit breaker mechanism shall be capable of 100,000 no-load operations. The breaker shall be virtually maintenance free, except for minor lubrication. The circuit breaker shall be capable of operating in three cycles which means smaller power cables, lower construction costs, and improved system quality. The mechanism shall be completely front accessible and maintainable by removing the faceplate. Breakers that require lifting to access the mechanism under the carriage are unacceptable. It shall be possible to program the electronic controller to react in three different ways upon loss of control power: 1) trip the circuit breaker immediately, 2) trip the circuit breaker with a delay, or 3) remain in the closed position.
- E.12. A single (25 pin) fully automatic, self-aligning, secondary disconnecting device shall be provided to act as a disconnect for the secondary connections between the circuit breaker and the switchgear. The



disconnecting device shall be positioned and constructed as to not expose the operator to live parts. The secondary disconnect shall connect automatically when the circuit breaker is racked into the test and connected positions. A double (50 pin) disconnect arrangement shall be available as an option and provided as shown on project data sheets. The female portion of the disconnect system shall reside in the breaker compartment, so that energized contacts are recessed and remain "touch safe". To guarantee the integrity of operating personnel, it shall not be required to open or keep opened the door of the circuit breaker compartment after the breaker has been locked in the disconnected position to be able to rack the breaker or connect the secondary contacts; Circuit breakers that require a manual secondary contact connecting plug are not acceptable.

- E.13. The circuit breaker enclosure shall have interference blocking to prevent the insertion of improperly rated breakers. Note: Circuit breakers with a single secondary disconnect are not interchangeable with a dual secondary disconnect.
- E.14. The breaker shall include 8 available mechanism operated contacts (MOC) consisting of 4a and 4b contacts, wired through the secondary disconnect. Up to 9 additional MOC contacts (5a, 4b) can be installed on the breaker and wired through the secondary disconnect, for a total of 17 available MOC contacts. All breaker-mounted contacts shall operate in both connected and test positions. Mechanism operated contacts that are installed external to the circuit breaker requiring complex linkages and alignment procedures to the breaker are not acceptable.
- E.15. Provisions for padlocking breakers in any of the positions shall be included.
- E.16. Circuit breaker power draw-out contacts shall be silver-plated.
- E.17. The breaker shall have an mechanism device to indicate open or closed position, and spring charge status. Only the correct status flag for any single function shall be visible. Additionally, the breaker shall have a 5-digit, non-resettable operations counter.

## **F. INSTRUMENT AND CONTROL POWER TRANSFORMERS**

GBC- A Current and voltage measurement unit Schneider electric type (SM6-24: 750 mm) or similar shall be supplied together with the switchgear as per Station Electric Diagrams in Appendix 1, with the following specifications.

### **F.1. Current Transformers**

- F.1.1. CT nameplates shall be located on the CT housing and information provided shall be in accordance with IEC standard. The CT winding shall terminate on a screw type terminal on the CT housing and shall be wired to shorting terminal blocks.
- F.1.2. Each current transformer shall have a 5-ampere secondary and a primary rating as shown on the Data Sheets and One-Line diagram.
- F.1.3. Ratings and accuracies shall be in accordance with IEC for the metering and relay applications shown on the Data Sheets.
- F.1.4. Each current transformer shall have a short-circuiting device (shorting type terminal blocks). The first termination of each current transformer shall be at the short-circuiting device terminal blocks where the ground connection is also made.
- F.1.5. Low voltage ring type CT's will be bushing-mounted, located behind the shutters and accessible from the front. Bushing design will accommodate up to four standard accuracy CT's per phase (two on the bus side and two on the load side) for all ratings

Current Transformers (CT) To Be Included In Switchgear		Yes
CT Orientation	Unit	P1 Towards the Busbar
Core 1		11kV INCOMER- OC/EF Protection
a) Ratio	A	600/300/5
b) Secondary Rating	A	5
c) Burden	VA	20
d) Class		5P20
Core 2		11kV INCOMER- OC/EF Protection
a) Ratio	A	600/300/5
b) Secondary Rating	A	5
c) Burden	VA	20
d) Class		5P20

Current Transformers (CT) To Be Included In Switchgear		Yes
CT Orientation	Unit	P1 Towards the Busbar
Core 1		11kV Feeder - OC/EF Protection
a) Ratio	A	200/5
b) Secondary Rating	A	5
c) Burden	VA	20
d) Class		5P20
Core 2		11kV Feeder - Metering
a) Ratio	A	200/5
b) Secondary Rating	A	5
c) Burden	VA	20
d) Class		0.2FS5
Core 3		11kV Feeder Spare
a) Ratio	A	800/400/5
b) Secondary Rating	A	5
c) Burden	VA	20
d) Class	Class 0.1	5P20

TARRIF METERING Current Transformers (CT) To Be Included In Switchgear		Yes
CT Orientation	Unit	P1 Towards the Busbar
Core 1		11kV - Metering

TARRIF METERING Current Transformers (CT) To Be Included In Switchgear		Yes
a) Ratio	A	600/300/5
b) Secondary Rating	A	5
c) Burden	VA	20
d) Class		0.2FS5
Core 2		11kV - Metering
a) Ratio	A	600/300/5
b) Secondary Rating	A	5
c) Burden	VA	20
d) Class		0.2FS5

## F.2. Potential Transformers

- F.2.1. Potential transformer shall be designed to withstand the Basic Impulse Level (BIL) of the switchgear. Potential transformers shall always be fused. Potential transformers shall be mounted on a draw-out unit in an auxiliary enclosure, which disconnects them from the primary circuit safely. The Voltage transformers shall be supplied in accordance with project data sheets and the single line diagram.
- F.2.2. Voltage transformers shall be mounted in a separate draw-out compartment (truck assembly) and so arranged that the unit can be withdrawn from the operating position via a racking device with the door closed. In the withdrawn position, the fuses shall be completely disconnected from service and all exposed parts shall be visibly grounded.
- F.2.3. The Voltage transformers compartment shall incorporate extension rails to allow changing fuses and general maintenance without the need to take the truck assembly completely out of its compartment.
- F.2.4. Voltage transformers shall be connected to the line or load via solid copper rod, bus or shielded cable.
- F.2.5. Each transformer shall be protected with current-limiting primary fuses, and shall be designed to withstand the basic impulse level of the switchgear.
- F.2.6. Each transformer shall have a 110-volt phase to phase secondary and in accordance IEC accuracy classification meeting the requirements of the application.

INCOMER Cable Connected Voltage Transformers (VT)		
a) Cable Connected VT required		Yes
b) Construction		3 x Single Phase
c) Voltage Factor	p.u.	1.2 (Continuous)
	p.u.	1.9 (30s)
d) Primary Earthing		Neutral
3 Phase Winding		Yes
a) Connection Topology		Star / Star
b) Type		Metering

INCOMER Cable Connected Voltage Transformers (VT)		
c) Accuracy Class		0.2
d) Primary Rated Voltage	kV	11/√3
e) Secondary Rated Voltage	V	110/√3
f) VA Rating (@ 0.8 lagging Power Factor)	VA	100
g) Secondary Earthing		Neutral Earthing in LV Compartment
Open Delta Winding		Yes

Two sets of 11 kV/110 V PTs shall be provided.

### F.3. Control Power Transformers

F.3.1. Control power transformers shall be dry type with disconnecting type current limiting primary fuses and fused 120/240 volt secondary. Transformers up to 15kVA single phase (or fuses for above 15kVA) shall be mounted on a truck assembly, which is moved between the connected and disconnected position via closed door racking and utilizing the same racking device as the circuit breaker.

## G. RELAYING

G.1. All protective relays, auxiliary relays, indicating instruments, recording instruments, indicating lights, transducers, etc. shall be housed in the low voltage compartment unless specifically allowed by the project data sheets. The low voltage compartment shall isolate the above equipment so that additional arc flash protection is available. Relays and instruments shall be provided and wired as specified on the project single line diagram and data sheets. A multi-function, 3-phase microprocessor based relay and control package shall be used in 2-high breaker arrangements. Alternative relay types may be used in 1-high configurations to the extent allowed by mounting space in the low voltage compartments. Door-mounted protective relays will be draw-out type whenever practical.

G.2. Protective relays and test devices shall be semi-flush mounted. The relays shall be so arranged that they can be tested in position on the panel and readily withdrawn from the panel for inspection or replacement.

G.3. The relays shall be provided with targets with an external reset feature.

G.4. Switchgear device function numbers shall be in accordance with IEC standard.

G.4.1. Three 3-phase overcurrent protection (time and instantaneous)

G.4.2. Ground overcurrent (time and instantaneous)

G.4.3. Multi-shot reclosing

G.4.4. High set instantaneous

G.4.5. Ammeter, demand and peak demand ammeters

G.4.6. Event recording

G.4.7. Accumulation of breaker interrupting duty

G.4.8. Continuous self-checking

G.4.9. RS-232 and RS-485 communications ports for remote terminal connection.

## H. GENERAL CONTROL AND METERING

H.1. Instruments and meters shall be rectangular and anti-fungi, black finish, dust proof and semi-flush mounted digital switchboard type.

- H.2. Tariff Current transformers shall be Class 0.1 20VA 150/5Ampere.
- H.3. The equipment panel shall be arranged symmetrically and when possible, shall allow for possible future additions.
- H.4. Instrument switches shall have black knurled non-removable handles. The circuit breaker controls shall have non-removable pistol grip handles.

## I. CONTROL DEVICES AND WIRING

- I.1. Control devices, control buses, local control, instrument cables and wiring on the equipment shall be installed at the factory. Low voltage cables shall be enclosed in grounded metal flexible conduit when routed through a high voltage compartment. Control wiring shall be neatly bundled and tie wrapped where applicable. Wiring shall be protected from rubbing against door flanges or other parts of the enclosure.
- I.2. Control relays, auxiliary contacts and small mechanisms shall be enclosed, protected and accessible for maintenance.
- I.3. Fuses shall be provided in each closing circuit of each circuit breaker. These fuses shall be respectively located in the low voltage compartment of the circuit breaker frame. Only the closing circuit shall be fused; there shall be no fuses in the tripping circuit.
- I.4. Control wire shall be fourteen (14) gauge SIS stranded, extra-flexible, 600V flame retardant, gray color and UL-listed wire except where larger sizes are needed for current carrying requirements. Current transformers shall be provided with a minimum of twelve (12) gauge. The conductors shall be stranded copper for fixed wiring and extra flexible stranded copper for hinge wiring. The conductors shall be 90 degrees Celsius normal operating temperature, flameproof 600-volt switchboard cable and shall meet ICEA S-66-524 NEMA publication No. WC-7 Standards for cross-linked thermosetting polyethylene insulated wire and cable. Flexible connections between stationary and hinged panels or doors shall be made between terminal blocks or clamped in such a manner as to afford flexibility without damage to the wires. The wires shall be neatly bundled, and tie wrapped.
- I.5. The assembled control equipment and wiring connections shall be insulated for 600-volts and shall be subjected to a one (1) minute test of 1500-volts AC at the factory after fabrication and assembly is complete.
- I.6. Terminal blocks shall be provided for terminating all power and control wiring. Terminal blocks shall be rated at 600-volts, strap screw terminals with white marking strips showing terminal numbers.
- I.7. Terminal blocks shall be conveniently located for external connection without accessing the high voltage compartments and shall be marked appropriately. A wire label at both ends will identify each internal connecting wire. (Optional - Marked wires or wire markers shall be provided on both ends of every conductor.)

## J. NAMEPLATES

- J.1. Nameplates shall be laminated white plastic with black lettering.
- J.2. Nameplates shall be provided on all relaying, metering, and control devices.
- J.3. Circuit identification nameplates shall be placed on the front and back of each switchgear frame.

## K. FINISH

- K.1. All non-galvanic steel within the switchgear and metal-enclosed bus enclosures shall be cleaned, iron phosphated and painted in accordance with the manufacturer's standard practice for the environmental conditions specified. The enclosure final exterior color paint coat shall be ANSI No. 61 gray.
- K.2. The interior shall utilize galvanic steel for internal construction. The galvanic steel shall provide inherent reflective properties to its surface and shall not peel, scratch, rust or corrode. Painted interiors are subject

to scratching during racking of the circuit breakers and normal maintenance of the switchgear and are therefore unacceptable.

- K.3. Manufacturer shall supply paint, matching each color used, for field "touch up" after installation of the equipment.

## L. TESTING

- L.1. The control circuits shall be operated at the normal voltage and current for proper operation of circuit breakers, circuit breaker simulators, switches, contactors, interlocks, etc.
- L.2. Instruments shall be energized from the low voltage winding of the potential transformers and the low current winding of current transformers. Where practical, each instrument shall be operated through its range of voltage, current and/or phase angle and frequency to produce deflections over the entire scale.
- L.3. The ratio and interconnections of all potential transformers shall be functionally checked to verify conformance to the electrical drawings and electrical bills of material.
- L.4. Relays shall be tested by applying rated current and/or voltage as required to determine proper performance characteristics. Each relay shall be tested to determine its proper operation in itself and also in the total overall circuit performance.
- L.5. A static circuit check shall be performed for auxiliary switches, external circuit connections and parts of circuitry that have not been checked or cannot be checked functionally. The devices shall be checked for mechanical function and for conformance to the schematic and wiring diagrams.
- L.6. After all electrical tests and mechanical checks have been completed and corrections have been signed off, the following dielectric tests shall be performed:
- L.6.1. Each power bus shall be given a high voltage withstand test from phase to phase and phase to ground at the specified voltage, frequency and time duration indicated in the IEC Standard.
- L.6.2. Control wire shall be given a high voltage withstand test from wire to ground at the specified voltage, frequency and time duration with reference to the proper standard.

## M. ENGINEERING DATA REQUIREMENTS

- M.1. Standard Class I drawings shall consist of a system single line drawing; front view; floor plan and section view drawing. Standard Class II drawings shall consist of Class I drawings plus 3-phase elementary and schematic diagrams, nameplate drawing, instrument layout and bills of material.
- M.2. Drawings shall indicate all equipment, but only such equipment, as is actually in the switchgear scope of supply. All user connection and interface points shall be clearly marked, including primary and secondary cable entrances and connection points, installation details, generic interframe assembly and generic connection details for shipping splits.
- M.3. Drawing Requirements
- M.3.1. AutoCAD Version 2000 or greater supplied for all drawings.
- M.3.2. Electronic drawing PDF format files for approval shall be supplied with Bid. Where possible, typical drawings shall be supplied as PDF files for class 1 and either PDF files
- M.3.2.1. Structural Drawings, with critical dimensions, showing:
- M.3.2.1.1. Arrangement.
  - M.3.2.1.2. Plan, front view, and elevation section views.
  - M.3.2.1.3. Required clearances for opening doors and for removing breakers.

- M.3.2.1.4. Conduit or cable trays entrance locations and dimensions for both top and bottom entrance.
- M.3.2.1.5. Bus bar locations and configurations.
- M.3.2.1.6. Incoming and outgoing power cable terminator positions.
- M.3.2.1.7. Anchor bolt locations.
- M.3.2.1.8. Grounding connections.
- M.3.2.1.9. Weight of equipment.

#### M.3.2.2. Elementary Three-Line Diagrams

- M.3.2.2.1. Three-line diagrams, with IEC device function numbers used throughout, shall show all:
- M.3.2.2.2. Instrument transformers.
- M.3.2.2.3. Relays.
- M.3.2.2.4. Meters and meter switches.
- M.3.2.2.5. Breakers and other pertinent devices.

#### M.3.2.3. Schematic Diagrams

- M.3.2.3.1. Schematic diagrams shall be furnished for the electrically-operated breaker / relay control scheme.
- M.3.2.3.2. Each schematic diagram shall show all control devices and device contact, each of which shall be labeled with its proper IEC device function number.
- M.3.2.3.3. Each schematic diagram shall show device and terminal block terminal numbers for customer connections.
- M.3.2.3.4. Provide control switch development tables.

#### M.3.2.4. Detailed Connection (Wiring) Diagrams showing, submitted for record only:

- M.3.2.4.1. Approximate physical location of all items in each unit.
- M.3.2.4.2. All wiring within each unit.
- M.3.2.4.3. All interconnecting wiring between units.
- M.3.2.4.4. Identification of all terminals, terminal blocks, and wires.

#### M.3.2.5. Provide one set of drawings shipped with the switchgear for start-up use.

#### M.4. Material List

- M.4.1. An electrical bill of material list shall be furnished listing the quantity, rating, type, and manufacturer's catalog number of all equipment on each unit.

#### M.5. Installation, Operating, and Maintenance Instructions

- M.5.1. Installation, operating, and maintenance instructions shall cover switchgear, breakers, relays, meters and devices requiring installation, programming and / or maintenance.
- M.5.2. The breaker operating mechanism shall be front-accessible, and all routine maintenance shall be performed with the breaker in an upright position. The interrupters shall be completely sealed requiring no interphase barriers. Breakers shall be designed for easy insertion, removal and transport on flat indoor surfaces. A breaker lift truck shall be furnished with each switchgear assembly.

## N. PREPARATION FOR SHIPMENT

- N.1. Preparation for Shipment shall be in accordance with manufacturer's standards. The Bidder shall be solely responsible for the adequacy of the Preparation for Shipment provision employed in respect of materials and application, to provide materials and their destination in ex-works condition when handled by commercial carrier systems.



## O. SHIPPING

- O.1. Instructions for receiving, handling, and storage shall be provided with the switchgear shipment.
- O.2. Circuit breakers shall not be shipped installed in the switchgear assembly to avoid damage.
- O.3. Each "shipping section" of stationary structures shall be provided with a permanently-attached, readily-visible identification tag bearing the equipment number of the assembly of which it is a part.
- O.4. The switchgear shall be split in the most efficient manner for shipping.
- O.5. If shipped in sections the wiring between the units shall be terminated on terminal blocks on each side of the shipping split. Jumpers shall be provided and marked for convenient connection in the field.
- O.6. All accessory items shall be shipped with the switchgear. Boxes and crates containing accessories shall be clearly marked with the contents.  
Accessories include:
  - O.7. A breaker lifting truck device to allow a circuit breaker, or auxiliary draw-out unit to be elevated and then inserted or withdrawn from upper or lower compartments.
  - O.8. Circuit breaker accessories, including a hand crank for manually operating the breaker, PT/CPT/draw-out fuse racking system and/or a handle for manually charging the stored energy system on circuit breakers.
  - O.9. An electrical test jumper for connecting the breaker to the switchgear control circuit while the breaker is completely out of the cell.
    - Optional - An electrical test cabinet with door-mounted open and close pushbuttons for testing the circuit breaker away from the switchgear.
    - Optional - Vendor's standard, manually operated Ground & Test device – 3-terminal or 6-terminal.
    - Optional - Relay/test plug for each type of device, as applicable.

## P. PROVISIONS FOR HANDLING AND FIELD ERECTION

- P.1. Each assembly order shall be furnished with one set of channel base extensions suitable for crane hooks or slings.
- P.2. Each shipping split shall be furnished with removable steel shipping channels that permit the use of pipe rollers or dollies without damaging the frame steel of the equipment.

## 4. EXPECTED DELIVERABLES / OUTCOMES

- Supply, delivery, install and commission of 9 medium voltage metal-clad switchgear with vacuum circuit breakers complete with current and voltage measurement unit for tariff metering windurg for masilo masilonyana local municipality.
- Contractor to propose a constructability plan to ensure that customers are not left unattended.
- Liaise with the community through ward councilors and the project CLO's for the implementation of the project from commencement to completion.
- Contractor to manage SMME expectation by allocation fair reasonable amount of work as per norms.
- Arrange outages and road crossings if necessary.
- Test and commission all works and handover to the municipality.
- Project to be completed within five (6) calendar months from the date of the site hand-over
- The task must be done in line with SABS, SANS or IEC.
- Overall, the cost of the project must not affect the quality of work.

## 5. HEALTH AND SAFETY REQUIREMENTS

The Principal Contractor (PC) carries prime accountability and responsibility for the health, safety, and welfare of all his/her employees and his/her subcontractors within his/her working area, as contemplated by section

37(2) of the OHS Act. Nothing in the specification, or proposals made reduce the Contractors accountability and responsibility. The contractor takes full responsibility for the management of environmentally sustainable practices and legal compliance. The Municipality shall not be liable for any civil claim because of anything contained in or omitted from this health and safety specification. This specification does not intend to supersede the OHSA. The Municipality and the contractor will sign a Section 37 agreement that confirms the principal contractor roles and responsibilities to implement good health, safety and environmental management systems. The contractors shall sign similar section 37(2) agreements with any sub or labour only contractor they may employ. Management of sub-contractors or labour only contractors falls strictly under the liability of the contractor(s) and Municipality must be informed of such appointments. The contractor is expected to carry out all legal expectation in accordance to the OHSA act.

## 6. SPECIAL CONDITIONS

- Prices must be valid for at least ninety (90) days from the closing date.
- Prices quoted must be firm and must, where applicable, be inclusive of VAT.
- Masilonyana Local Municipality does not bind itself to accept the lowest bid or any other bid and reserves the right to accept the whole or part of the bid.
- Bids that are late will not be considered, whilst the lowest or only tender will not necessarily be accepted.
- Faxed or E-mailed bids will not be considered.
- An original tax clearance certificate issued by SARS must accompany all tenders or a tax.
- Tax status will also be verified against the Central Supplier Database (CSD)
- Bidders must be registered on the National Treasury Centralized Suppliers Database and must submit their registration summary report.
- All supplementary / compulsory forms (MBD Forms) must be completed and signed in full.
- Bidders who wish to claim for preferential points in terms of the Preferential Procurement Regulations, 2017, must submit a certified copy of the proof of B-BBEE status level of contribution as follows:
  - In the case of an Affidavit, both the Commissioner of Oaths stamp for the Affidavit itself (the "commissioning") AND a "true copy" stamp (which certifies the document as being a true copy of the original) are required i.e. TWO stamps are required.
  - In the case of a B-BBEE Certificate, only a "true copy" stamp and signature (which certifies the document as being an accurate copy) is required i.e. ONE stamp is required.
- It should be noted that the 80/20 points system will be applied, 80 being for price and 20 for the B-BBEE status level as defined in the Preferential Procurement Regulations, 2017.
- A Municipal Billing Clearance Certificate, which covers, both the company and its directors, must accompany all bids.
- Bidders are required to submit:
  - Audited Annual Financial Statements for the past three years; or since establishment, if established during the past three years.
  - Particulars of any contracts awarded to the bidder by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution must be declared of such contracts.
  - A statement indicating whether or not any portion of the goods or services required by the municipality are expected to be sourced from outside the Republic, and, if so, what portion and also whether or not any portion of the payment to be made by the municipality is expected to be transferred out of the Republic.
  - The award will be made in terms of the Municipality's Supply Chain Management Policy.
  - To ensure that tenders are not exposed to invalidation, documents are to be completed in full and in accordance with the conditions and bid rules contained in the bid documents.

## 7. BILL OF QUANTITIES

BILL 1 - PRELIMINARY & GENERAL			BID No:		
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL PRICE (SA RANDS)
	<b><u>Fixed Charges</u></b>				
<b><u>1</u></b>	<b><u>Compliance with all the contractual requirements of the contract</u></b>				
1.1.1	Compliance with all the contractual requirements of the contract, including project programming, outage management, weekly progress reporting, materials management, meetings and quality & environmental management.	Sum	1		
1.1.2	The Contractor shall provide a fenced space with fence at least 1.8m high with a lockable gate for a temporary Site Office and Stores where all drawings and Specifications will be kept, as well as the provision of safe	Sum	1		
<b><u>1.2</u></b>	<b><u>Facilities for Contractor :</u></b>				
1.2.1	a) Offices & storage sheds	Sum	1		
1.2.2	b) Establishment of staff accommodation, office accommodation on site for site meetings and a Clerk of Works including office furniture and telephone / telefax as specified and facilities.	Sum	1		
1.2.3	c) Ablution & latrine facilities	Sum	1		
1.2.4	d) Tools & equipment	Sum	1		
1.2.5	e) Water supplies, electric power & communications	Sum	1		
1.2.6	Removal of all items indicated above upon completion of construction and making good and restoring of the Site to the satisfaction of the Project Manager.	Sum	1		
1.2.7	Provision of "As Built" drawings on completion	Sum	1		
1.2.8	Construction Name Board - The Contractor shall place an order and collect and maintain one project signboard bearing the name of the project, the name and logo of Masilonyane municipality, consultant name and the Contractor.	Sum	1		
1.2.9	Provision for the compilation of the Construction Programme, to be done in MS Project and updated on a fortnight basis and Quality Assurance Programme for the works.	Sum	1		
<b><u>1.3</u></b>	<b><u>Occupational Health &amp; Safety Requirements</u></b>				
1.3.1	Provision for Legal and Contractual Compliance including Compliance with OH&S Act & Construction Regulations.	Sum	1		
1.3.2	Provision of personal protective equipment and clothing for all the contractor's staff, including sub-contractors.	Sum	1		
1.3.3	Provision of safety measures, e.g.. Fall arrest systems, shoring for safety purposes etc.	Sum	1		
<b>SUB TOTAL (BILL 1) PAGE 1 C/F</b>					

BILL 1 - PRELIMINARY & GENERAL					
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL PRICE (SA RANDS)
	<b>Carried fwd from SUB TOTAL (BILL 1) PAGE 1 C/F</b>				
	<b>Time Related Items</b>				
<b>1.4</b>	<b>To maintain site for the duration of the project</b>				
1.4.1	Operate and Maintain Facilities on Site				
	Facilities for Contractor:				
	a) Offices & storage sheds	Months	5		
	b) Ablution & latrine facilities	Months	5		
	c) Tools & equipment	Months	5		
	d) Water supplies, electric power & communications	Months	5		
	e) Safety related items	Months	5		
1.4.2	Provision of office accommodation on site for site meetings and a Clerk of Works including office furniture and telephone / telefax as specified.	Months	5		
1.4.3	Contract management and full time supervision of the works	Months	5		
1.4.4	Community Liaison Officer conversant in Sotho and local cultural norms	Months	5	R6 000.00	R30 000.00
	<b>Handling</b>	%			
1.4.5	Contractor shall provide two security guard/s to ensure the site including offices, storage sheds and all Masilonyane Municipality material are protected from theft or any damage. The Contractor needs to ensure that the above mentioned is guarded 24hrs a day.				
	<b>Handling</b>	%			
	<b>STUDENT</b>				
1.4.6	Training for selected student by munic	Months	5	R7 000.00	R35 000.00
	<b>Handling</b>	%			
	<b>PSC</b>				
1.4.7	Monthly meeting seating allowance(R300 per person) & Virtual meeting transport, maximum 6 members @	Months	5	R1 800.00	R9 000.00
	<b>Handling</b>	%			
<b>TOTAL (BILL 1) PAGE 2 Carried to Summary</b>					

Winburg Switchgear								
Schedule 1: Equipment								
Item	Discription	Unit	Qty	Material Rate	Material Amount	Labour Rate	Labour Amount	Total
<b>2</b>	<b>11 kV Switchgear with onboard Protection &amp; Metering</b>							
2.1	Incomers (2500A, 25kA)	set	2					
2.2	Bus Section (1250A, 25kA)	set	1					
2.3	Feeders Outgoing (1250A, 25kA)	set	6					
2.4	Transport of material to site	each	1		n/a			
Sub Total Section 2 Carried to Summary								

Winburg Switchgear								
Schedule 2: Terminations								
Item	Discription	Unit	Qty	Material Rate	Material Amount	Labour Rate	Labour Amount	Total
<b>3</b>	<b>Cable</b>							
3.1	Feeder terminations (Indoor)	set	9					
3.2	Outdoor terminations	lot	1					
3.3	Cable Seal Ends	lot	9					
Sub Total Section 3 Carried to Summary								

Winburg Switchgear								
Schedule 3:Terminal Structure								
Item	Discription	Unit	Qty	Material Rate	Material Amount	Labour Rate	Labour Amount	Total
4	Line							
	Install new H-Pole Structure with Cross Bracing ( 12m pole (200-219)							
4.1	H -pole Terminal Assembly complete ( With 3* 3.5m cross arms)	ea	1					
4.2	H-Pole Barb Wire complete	ea	1					
4.3	H- Pole - 11kv Stays complete	ea	4					
4.4	2.2m Excavation per H Pole complete (LIA)	ea	2					
4.5	1.5m Excavation per H-Pole Stay complete(LIA)	ea	4					
4.8	150 MM <sup>2</sup> Cable termination	Set	1					
4.9	Steel Pipe for 150MM <sup>2</sup> cable	Meters	10					
4.10	Solid link	Set	1					
4.11	150MM <sup>2</sup> XLPE aluminum Cable	Meters	30					
							Sub Total Section 5 Carried to Summary	

Winburg Switchgear								
Schedule 4: Other								
Item	Discription	Unit	Qty	Material Rate	Material Amount	Labour Rate	Labour Amount	Total
5	Other							
5.1	Refurbishment of control Room fix all craks and paint	ea	1					
5.2	Test electrical wiring in building & Fix Problems	ea	1					
5.3	Replace all bulbs not working	ea	4					
5.4	Replace all switches not working	ea	2					
5.5	Install a new Airconditioning	ea	1					
5.6	Extend control building	Meter	3.5					
5.7	Replace all doors	ea	3					
5.8	Make provision for tempoary supply if required	Unit	1					
5.9	Issue COC	Unit	1					
5.10	Decommission old equipment	ea	6					
5.11	Trasport decommissioned equipment back to strores	Km	80					
5.12	Test and commission	Unit	1					
5.13	Maintanace Equipment	ea	1					R 800 000.00
							Sub Total Section 5 Carried to Summary	

## WINBURG SWITCHGEAR (INFRASTRUCTURE PROJECTS)

### Summary Bill of Quantities

Item		Sum	Total
1	P'S & G's		
	<b>Fixed Charges</b>	Sum	
	<b>Time Related</b>	Sum	
2	Schedule 1: Switchgear Equipment	sum	
3	Schedule 2: Switchgear Terminations	sum	
4	Schedule 3: Terminal Structure	sum	
5	Schedule 4: Miscellaneous&Other	Sum	
6	<b>SubTotal (Excl. VAT)</b>	Sum	
7	Contingency @10%:	Sum	
8	<b>Total Net Price for The All Works (Excl. VAT):</b>	Sum	
9	VAT @15%:	Sum	
10	<b>Total Value of All Works (Incl. VAT):</b>	Sum	

I the undersigned, the authorised designated signatory, undertake to carry out the works in accordance with the conditions of contract, the specifications and drawings, and within the time for completion as specified.

## 8. EVALUATION CRITERIA

No	Item Description	Minimum Requirements	Source of Evidence	Proof Attached Y/N	Maximum Points	SCORE
<b>1</b>	<b>Mandatory</b>					
1.1	CIDB GRADE (4EP)	1	Attach Certificate <b>(Mandatory)</b>		N/A	Qualifier
1.2	Fire fighter	1	Fire Fighting Certificate + Appointment letter <b>(Mandatory)</b>		N/A	Qualifier
1.3	First Aider (Level 2)	1	First Aid Certificate + Appointment letter <b>(Mandatory)</b>		N/A	Qualifier
1.4	Safety Officer	1	Occupational Health and Safety certificate (SAQA registered) letter <b>(Mandatory)</b>		N/A	Qualifier
1.5	Substation Authorized person Substation	1	Valid Certificates <b>(Mandatory)</b>		N/A	Qualifier
1.6	Live Line Authorized person	1	Valid Certificates <b>(Mandatory)</b>		N/A	Qualifier
No	Item Description	Minimum Requirements	Source of Evidence	Proof Attached Y/N	Maximum Points	SCORE
<b>2</b>	<b>Tools</b>					
2.1	Cable Joiner kit	1	Proof of availability		5	
2.2	Toque Shield Kit	1	Proof of availability		5	
2.3	Gas Torch/Blower Unit	1	Proof of availability		5	
2.4	Fire Extinguishers	3	Proof of Availability & Valid certificate		5	
2.5	Hydraulic Crimper	1	Proof of Availability & Calibration certificate		5	
2.6	Test Instruments	3	Proof of Availability & Calibration certificate(Megger-5, Multimeter-3 and CT-Tester-2)		10	
No	Item Description	Minimum Requirements	Source of Evidence	Proof Attached Y/N	Maximum Points	SCORE
<b>3</b>	<b>Resources</b>					
3.1	Project Manager	EXP [≥8]yrs=10Points EXP [5≤8]yrs=7Points EXP [<5]yrs=5Points	NQF 7 Qualification (B-Tech: Electrical Engineering)& ECSA Professional Body Registration(Pr Tech)		10	
3.2	Technician	EXP [≥5]yrs=5Points EXP [<5]yrs=3Points	National Diploma: Electrical Engineering		5	
3.3	Electrician	EXP [≥5]yrs=7.5Points EXP [<5]yrs=4Points	Trade test		7.5	
3.4	Substation Authorized person Substation	EXP [≥5]yrs=7.5Points EXP [<5]yrs=4Points	Valid ORHVS Certificate		7.5	

No+AA24 :G46	Item Description	Minimum Requirements	Source of Evidence	Proof Attached Y/N	Maximum Points	SCORE
4	Experience					
Methodology						
4.1	Methodology of doing the Windburg Existing Switching Station	Satisfactory	Attach high Level Methodology		5	
		Good	Attach high Level Methodology		3	
		Poor	Attach high Level Methodology		1	
OHS						
4.2	Health and Safety Plan in executing the work at Windburg	Satisfactory	Attach Health and Safety Plan		5	
		Good	Attach Health and Safety Plan		3	
		Poor	Attach Health and Safety Plan		1	
Quality Control Systems						
4.3	Quality Control System to be put in place	Satisfactory	Attach Quality Management Plan		5	
		Good	Attach Quality Management Plan		3	
		Poor	Attach Quality Management Plan		1	
Previous Substation Experience						
4.4	Number of substation completed projects.	≤5	Attach appointment letters & completion certificates		15	
		≥3	Attach appointment letters & completion certificates		9	
		≥1	Attach appointment letters & completion certificates		4	
No	Description	Requirement		Proof Attached Y/N	Maximum Points	SCORE
5	Locality					
5.1	Locality	Within Masilonyana			5	
		Within Free State			3	
		Within SA			1	

## 8.2 TECHNICAL EVALUATION CRITERIA

A bidder who gets a minimum of 70 points and above will qualify to the next stage. Individual tenders would have to be evaluated according to the preferential point system.

The bidder must score minimum points as follows:

- Item 1 – 20 points,
- Item 2 – 20 points,
- Item 3 – 20 points,
- Item 4 – 10 points.
- Item 5 – 10 points in the Evaluation Criteria
- Item 6 – 5 points in the Evaluation Criteria
- Item 7 – 8 points in the Evaluation Criteria
- Item 8 – 7 points in the Evaluation Criteria

## 8.3 PRICE AND REFERENTIAL POINTS SCORING – STAGE 2 (Price and B-BEE status)



All Bidders that have passed the technical evaluation threshold of 70 points would also be scored based the 80/20 principle where 80 Points is for the Price and 20 points for B-BBEE as per the detail given below.

### Points awarded for price

A maximum of 80 Points is allocated for price on the following basis:

$$\text{Where } Ps = 80 \left[ 1 - \frac{Pt - P_{\min}}{P_{\min}} \right]$$

Ps = Points Scored for comparative price of bid under consideration

Pt = Comparative Price of bid under consideration

P min = Comparative Price of lowest acceptable bid

## 8.4 Points awarded for B-BBEE Status Level of Contribution

In terms of Regulation 5(2) and 6(2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below;

B-BBEE Status Level of Contributor	Number of Points (80/20 System)
1	10
2	9
3	8
4	5
5	4
6	3
7	2
8	1
Non-Compliant Contributor	0

**Table 2 : B-BBEE Status level**

## 9. COSTING/ COMPREHENSIVE BUDGET

8.5.1. The quotation price(s) shall be SEIFSA based priced

8.5.2. The quotation price(s) shall be subject to negotiated increase, if unavoidable, should the contract be extended for one or more further periods, each period not exceeding 12 months.

**Pricing should include any other unspecified expenses related to items listed under technical specifications**

Are the quoted prices firm for the full duration of the contract? Yes/No

If not, indicate CPA or SEIFSA price adjustment method: \_\_\_\_\_

CPA- Suppliers price list date: \_\_\_\_\_ or

SEIFSA indexes – Price basis month and year \_\_\_\_\_

**Note: All the necessary documentation for CPA's or CPI to prove the price increase must be submitted with the invoice clearly link to an order number be for payment will be done.**

**10. CONTACT DETAILS**

**Technical Queries**

**Name:** Thabo Ntimotse

**Telephone No., Fax:**

**Address:** Corner Le Roux and Theron Street, PO Box 8, Theunissen, 9410

**Email:** [scm@masilonyana.co.za](mailto:scm@masilonyana.co.za) or [theshtimotse@gmail.com](mailto:theshtimotse@gmail.com)