

CALL FOR BIDS

MINIMUM REQUIREMENTS

BID NUMBER	DESCRIPTION	PREFERENTIAL POINT SYSTEM	WHERE TO FIND BID DOCUMENTS	MINIMUM REQUIREMENTS			COMPULSORY SITE MEETING	CONTACT PERSON (TECHNICAL)	CLOSING DATE & TIME
				LETTER OF GOOD STANDING	CIDB GRADING	ISO CERTIFICATION			
CD49/2023	CENTLEC (SOC) Ltd (Here after referred to as CENTLEC) a Municipal Entity distributing electricity in Mangaung and other Municipalities invites suitable bidders to bid for the manufacture, supply, delivery of new 12 kV indoor metal clad switchgear, 12kV fixed pattern non-extendable (RMU) switchgear and associated equipment. The repair of existing switchgear and the retrofit of existing switchgear as per specifications detailed below for a period of thirty-six (36) months.	90/10	www.centlec.co.za www.efenders.gov.za	N/A	Level 6 EP/EB/CE and above	Proof of ISO 9001 quality accreditation from the manufacturer of the goods (a certified copy of the accreditation will suffice).	N/A	Piet.Niemann@centlec.co.za Lindiwe.Kalane@centlec.co.za	20 March 2023 at 11:00am

- Bidders must submit the TAX compliance verification pin on a SARS letterhead. **2.** In the case of the Joint venture, Tax compliance verification pins of all parties must be attached. **3.** Copy of JV agreement (in case of JV) must be attached. **4.** Supply municipal services (water, sanitation, rates and electricity) clearance certificate or Lease Agreement with a current Bill and rates clearances, or Current Bill of Account not owing more than 90 days. In a case where the services are paid by the Landlord, the signed lease agreement and statement of account must be submitted by the bidder. In an event, that the Bidder utilizes prepaid services (e.g. Water or electricity) a valid municipal clearance certificate(s) must still be provided. **5.** All supplementary / compulsory MBD forms contained in the bid document must be completed and signed in full. **6.** Failure to comply with point 5 will invalidate your bid. **7.** Bidders must attach an Original

BBBEE Verification Certificate or a Valid Copy of BBBEE Verification Certificate, in case of Joint Venture bidders must submit consolidated BBBEE certificate. **8.** Bidders must be registered on the National Treasury Centralized Suppliers Database and must submit their registration summary report. **9.** Bidders must quote on all the items required on the pricing schedule and adhere to all the requirements as stipulated in the specification (failure to quote on all items will invalidate your proposal/bid). **10. Bidders must neatly bind their bid/proposal documents. Documents must be glued in a book format, indexed and page numbered (Loose documents will be disqualified).** **11. The Bidder shall comply to all the Special Conditions as per Table 1 in Specification Document.**

PLEASE NOTE:

1. Specified Goals for Preferential Point System

Specified Goals	Points Allocation
50% Black owned	6
50% Women owned	2
50% Youth owned <35 years	2
Total Points	10

- 2 Section 217 of the constitution of the Republic of South Africa requires an organ of state to contract for goods and services in accordance with a system which is fair, equitable, transparent, competitive, and cost effective.
 - 2.1 No bid(s) will be accepted from a person in the service of the state.
 - 2.2 No telegraphic, telefax and late bids will be accepted. *(Please sign bid submission register upon submission)*
 - 2.3 The lowest bid / proposal will not necessarily be accepted, and the Municipality reserves the right to accept where applicable a part or portion of any bid or where possible accepts bids or proposals from multiple bidders.
 - 2.4 Municipal Supply Chain Management policy and Preferential Procurement Policy Framework Act No 5 of 2000 (revised 2022) and it's regulations will be applied.

Bids are to be submitted to the following address:

CENTLEC Supply Chain Offices

30 Rhodes Avenue

Oranjesig

Bloemfontein

9301

For Supply Chain related enquiries, please use the following contact details: Palesa.Makhele@centlec.co.za 051 412 2753



CD49/2023

**THE MANUFACTURE, SUPPLY, DELIVERY
OF NEW 12 kV INDOOR METAL CLAD
SWITCHGEAR, 12kV FIXED PATTERN
NON-EXTENDABLE (RMU) SWITCHGEAR
AND ASSOCIATED EQUIPMENT. THE RE-
PAIR OF EXISTING SWITCHGEAR AND
THE RETROFIT OF EXISTING SWITCH-
GEAR.**

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1. STATEMENT OF INVITATION

CENTLEC (SOC) Ltd (Here after referred to as CENTLEC) a Municipal Entity distributing electricity in Mangaung and other Municipalities invites suitable bidders to bid for the manufacture, supply, delivery of new 12 kV indoor metal clad switchgear, 12kV fixed pattern non-extendable (RMU) switchgear and associated equipment. The repair of existing switchgear and the retrofit of existing switchgear as per specifications detailed below for a period of thirty-six (36) months.

1.2 Specified Goals for Preferential Point System

Specified Goals	Points Allocation
50% Black owned	6
50% Women owned	2
50% Youth owned <35 years	2
Total Points	10

Table 1: Specified Goals

2. MINIMUM REQUIREMENTS

- 2.1. Supply unique security personal identification number (PIN) from SARS for TAX compliant status.
- 2.2. Supply municipal services (water, sanitation, rates and electricity) clearance certificate or Lease Agreement with a current Bill and rates clearances, or Current Bill of Account not owing more than 90 days. In a case where the services are paid by the Landlord, the signed lease agreement and statement of account must be submitted by the bidder.
 - 2.1.1 In an event, that the Bidder utilizes prepaid services (e.g. Water or electricity) a valid municipal clearance certificate(s) must still be provided.
- 2.2 CIDB grading – Level 6 EP/EB/CE and above.
- 2.3 The service provider must supply valid letter of good standing with the Compensation Commissioner.
- 2.4 The bidder must be registered with National Treasury Data Base of suppliers and proof thereof must be submitted.
- 2.5 Proof of ISO 9001 quality accreditation from the manufacturer of the goods (a certified copy of the accreditation will suffice).
- 2.6 Please note that the Special Conditions table as per point 3 below, needs to be met. All supporting documents needs to be submitted where applicable.

3. SPECIAL CONDITIONS

Take Note that it is compulsory for Bidders to complete the table in full.

Description	Yes	No	Submit documentation
The successful bidder will be expected to enter into a Service Level Agreement with CENTLEC			Upon appointment
Please note that CENTLEC reserves the right to appoint more than one bidder.			N/A
Any work outside of the current scope of work, identified by CENTLEC duly authorized persons can be quoted on by the approved bidder.			N/A
The quotation can be considered by CENTLEC, and a work instruction generated for the quoted Adhoc work.			N/A
Factory Acceptance Test for four CENTLEC persons must include transport (flight arrangements), accommodation and transport. The cost will be for the successful bidder account.			N/A
All the equipment delivered must be accompanied with protection wiring diagrams, panel layout drawings, factory test results, special keys, 200ml touch up paint, and maintenance manuals.			N/A
All the current transformer information will be indicated in the panel kiosk.			N/A
All the panels must be labeled according to the specification, A1 to A10, in the middle and on top of the panel kiosk.			N/A
The services provider will train CENTLEC personnel on all relays, circuit breaker and panel operations for the duration of this contract.			N/A
The service provider will submit, with his tender a fully breakdown like the spares list, a list of spares that will be applicable to the switchgears tendered for.			Spares list
The service provider must ensure that			Submit letter of con-

all circuit breakers are functional in all panels so that it can be utilized in any panel. CB wiring and panel wiring must be standard.			formation.
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Table 2. Special Conditions

4. DEFINITIONS AND ABBREVIATIONS

- 4.1 A - Ampere
- 4.2 V - Voltage
- 4.3 kVA - Kilo Volt Ampere
- 4.4 LV - Low Voltage
- 4.5 Hz - Hertz
- 4.6 ISO - International Organization for Standardization
- 4.7 IEC - International Electro Technical Commission Standards
- 4.8 SANS - South Africa Nasional Standard
- 4.9 Ue – Operational voltage
- 4.10 Ui - Isolation voltage
- 4.11 VA - Volt Ampere
- 4.12 kA - Kilo Ampere
- 4.13 Ct - Current transformer
- 4.14 Pt - Potential transformer
- 4.15 NER - Neutral Earth Resistor
- 4.16 NERCT – Neutral Earth Compensator Resistor

5. SCOPE OF WORK

5.1 The bidder will be required to manufacture, supply and deliver the following:

- 5.1.1 Part A: 12 kV vacuum indoor metal clad switchgear.
- 5.1.2 Part B: 12 kV fixed pattern metal clad ring main unit and associated accessories according to the applicable standards.
- 5.1.3 Part C: Vacuum circuit breakers to replace AG16 oil type circuit breakers and the repairs of 12kV switchgear on adhoc quotation basis. Retrofit Reyrolle circuit breakers.

5.2 The bidder will be required to (existing 11kV switchgear):

- 5.2.1 Repair existing 11kV circuit breakers and related equipment in CENTLEC's network.
- 5.2.2 Strip and quote quotations on repairs of existing 11kV switchgear, related equipment and the transporting from Bloemfontein to their premises and back to CENTLEC.
- 5.2.3 To supply the related Protective Relays and other listed items in the Pricing Schedule.

6. TECHNICAL SPECIFICATION

6.1 METEOROLOGICAL CONDITIONS AT CENTLEC SUPPLY AREA

1. Outdoor temperatures in degrees Celsius	Annual mean – 24.4; Maximum = 40; Minimum = -10
2. Average relative humidity	At 8h00 = 76%; at 14h00 = 33%; at 20h00 = 48% Minimum = 7% and Maximum = 98%
3. Thunderstorm activity	Severe Thunderstorms

Table 2 – Climatological Data

6.2 ELECTRICAL SYSTEM IN BLOEMFONTEIN

- 6.2.1 Voltage: 11 000 /400 Volt
- 6.2.2 Phase: 3 (A-Red, B-Yellow and C-Blue)
- 6.2.3 Frequency: 50 Hz
- 6.2.4 On the 11 kV side at the transformers 33/11 kV and 132kV/11kV in distribution centres in Bloemfontein; the neutral is earthed through a resistor to limit the maximum current to 300 A, 20Ω or 600 A, 10Ω. Please note that the circuit breakers must still be designed to fault level capacity of 350 MVA.
- 6.2.5 Phase rotation is non-standard. (Red, Yellow, Blue) Must be label on switchgear.
- 6.2.6 The load on the system consists mainly of lighting, heating and inductive loads.
- 6.2.7 The three types of cable mainly used on the 11 kV network are 240 mm² Cu paper insulated lead, 185mm² Al paper insulated lead and 70 mm² Cu paper insulated lead, cable.
- 6.2.8 The insulation level for the voltage transformers must be according to SANS 780: 2009.

6.3 SPECIFICATIONS ON SWITCHGEAR:

6.3.1 Busbar insulation: -

Busbars, cable termination points and all live metal shall be fully and suitably insulated. Busbars which use air only as insulating medium is not acceptable. Switchgear and busbar insulation shall be designed to prevent the risk of accidental short circuit due to animals and vermin. Busbar connections must be tinted (Silver plate).

The degree of Ingress-Protection for the metal-clad switchgear shall conform to IP4X

6.3.2 Rated insulation level: -

Switchgear must have a basic impulse insulation withstand level of 95 kV.

6.3.3 Voltage transformers: -

- a. Voltage transformer shall comply with the requirements of SANS (SANS) IEC 60044-2, 3 phase, 100VA, Class 0.5 and shall be the encapsulated type that is fully encapsulated in epoxy resin and must be fitted with an earthed metal screen. Only the LIMB /swivel type with interlocking busbar shutters will be considered on switchgear type A2, A3 and A10. The phasing must be labeled clearly.
- b. **Take note of the primary connection position of all 11000/110 Volt voltage transformers on the switchgear** The position of voltage transformer shall be Cable side mounted as specified in the schedule unless specifically specified otherwise on an order.
- c. The 110-volt DC (secondary side) fuses must be accessible and easy to be replace without isolation of the voltage transformer or removing of covers.
- d. Installation of a panel mounted voltmeter is only necessary if the protection relay is unable to display the primary voltage.

6.3.4 Metering: -

- a. Circuit breaker panels, schedule A2, A3 and A10, metering CT's must be installed as specification unless otherwise specified on order, according to schedule A11.6.
- b. Connection points (HV side) on current transformers base must be such that it can be easily taped close.

6.3.5 Protection and auxiliary equipment: -

All Protection Relays offered in the main offer must be consistent with the technical specifications as listed and described in the schedules under item 6.4 below including the dimensions. All Current transformers will be studded type where all small wiring will be terminated labeled and numbered.

All relays must carry a minimum of Ten Year (10) warranty, for repair(s) or replacement(s).

6.3.6 Protection Relay and Bus Wiring must be as follows: -

The auxiliary DC supply (protection relay auxiliary supply) and the tripping/closing DC supply must be separated and individually supplied (Moulded Case Circuit Breakers). Both DC supply circuits must be wired to the rear terminal box.

- 6.3.7 Install arc flash protection in cable termination chamber and busbar chamber to trip each individual circuit breaker. Light sensors must be installed at the specific points that have the greatest risk of arc flash. Light sensors must be linked to the protective relay. The protective relay must be easily integrated with the supervisory and control system, enabling remote settings and configuration, and must have a high-speed pickup. Light sensors must be interconnected to the protective relay by fiber optic cables to eliminate the need for other components inside the cubicles.
- 6.3.8 Hand-held remote control (Pendant control), for closing and tripping the circuit breaker, must be standard on all panels. This can be accomplished by a plug-in type of extension lead with trip / close control (minimum 10m in length). Quantity of leads will be specified when ordered.
- 6.3.9 Auxiliary wiring between the switchgear panel and the withdrawable circuit breaker shall be by means of a wire harness with a detachable socket. Interlocking to prevent operation of the switchgear is required if the detachable socket is not firmly in position.
- 6.3.10 Provision must be made for the circuit breaker status ("open" or "closed") to be indicated on the panel, using a LED type lamp indicator.
- 6.3.11 All spare circuit breaker auxiliary contacts ("a" and "b") must be wired to rear terminal box.
- 6.3.12 Auto-reclose status and sensitive earth fault status must be flagged on the protection relay display.
- 6.3.13 Auto-reclose on sensitive earth fault must be selectable via a front panel selector switch. This must be duplicated on the protective relay.
- 6.3.14 Auto-reclose, "On" and "Off" must be selectable via a front panel selector switch. This may be duplicated on the relay.
- 6.3.15 Ammeters are only to be installed if the protection relays are incapable of displaying instantaneous current values. In this case, only a single meter must be installed on the yellow phase, with the appropriate interposing CT.

6.3.16 Cable termination boxes: -

- a. Surge Arresters must be installed on all type A7 panels and be situated in the power cable termination box as close as possible to the terminal fixing point of the cable. Surge arresters installed must not have an integral disconnecting device.
- b. All power cable termination boxes must cater for split gland plates and include a PVC wedge type non-ferrous, cable retaining cleat to accommodate from 70mm² Cu PILC cable, 185 mm² Al PILC cable and 240mm² Cu PILC cable.

6.3.17 Labels (All labels shall conform to SANS 1885: 2001 clause 4.17).

6.3.18 All panels with manual spring charge circuit breakers (non-motorized circuit breaker mechanisms) a label must be provided on the circuit breaker, red text on white background that reads: "Hand charge - Closing and Tripping must be done with using Pendant Control or standoff push button cable".

6.4 PART A: -

METAL-CLAD SWITCHGEAR 12kV (SBV4-E, SBV3-E types) or equivalent, Complete Colom, PARTICULARS OFFERED AND GUARANTEED, from schedule A1 to A11.

6.4.1 A1 SWITCH-DISCONNECTOR

SCHEDULE A1: SWITCH-DISCONNECTOR PANEL – COMPATIBLE WITH ALL SWITCHGEAR PANELS		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A1	UNITS	SPECIFIED RE- QUIREMENT	SANS CLAUSE	PARTICU- LARS OF- FERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		Switch Disconnectors		
Insulation Medium		Oil, Vacuum or Sf6 gas.	4.3.1.1.3	
System Voltage	kV	11	4.1.1.1	
Rated Voltage	kV	12	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Manual	4.3.1.9	
Trip Coil	V	Hand Operated	4.3.1.10	
Spring Release Coil	V	N/A	4.3.1.10	
Indication for Trip/Close		YES	4.3.1.2	
Status Indication Lamps (open/close)	LED	N/A	4.3.2.2	

			a)	
Circuit Earthing Facilities		Bottom Entry	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PLIC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Ca- ble.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		N/A	4.2.7	
Remote Control Unit		N/A (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:				
Install CT's		N/A	4.8	
Purpose		N/A		
Ratio		N/A		
Burden		N/A		
Class		N/A		
Quantity		N/A		
Insulation Level		N/A		
Install Ct's (Metering/Differential)		N/A	4.8	
Purpose		N/A		
Burden		N/A		
Ratio		N/A		
Class		N/A		
Quantity		N/A		
Insulation Level		N/A		

SCHEDULE A1: SWITCH-DISCONNECTOR PANEL – COMPATIBLE WITH ALL SWITCH- GEAR PANELS		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A1	UNITS	SPECIFIED QUIREMENT	RE- SANS CLAU SE	PARTICILARS OFFERED AND GU- RANTEED
VOLTAGE TRANSFORMER				
Install VT		No	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-7		
Spare auxilliary Contacts required		N/A	4.14	
		N/A		

Marking/Labeling/Documentation		N/A	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		N/A	4.10	
Pilot Wire Current Differential Protection Seepricing schedule onpage 94		N/A	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		N/A	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		N/A	4.10	
Transformer Over Temperature tripping relay Hand reset Flag		N/A	4.10	
D.C Circuit Protection		N/A	4.14.3	
Location of Fuses inside RC		N/A		
Location of Test Terminal Blocks RC Door		N/A	4.14.7	
Battery Charger with Batteries – 30 Volt		No		
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.2 A2 CIRCUIT BREAKER

SCHEDULE A2: CIRCUIT BREAKER - MV CONNECTION < 1MVA		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A2	UNITS	SPECIFIED REQUIREMENT	RE-CLAUSE	PARTICULARS OFFERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		MV Connection < 1MVA		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	11	4.1.1.1	
Rated Voltage	kV	12	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Handspring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PLIC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		

Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		N/A	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connections.		
Install CT's		Yes	4.8	
Purpose		OC/EF Protection		
Ratio		100/1		
Burden		10VA		
Class		10P10		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Metering		
Burden		10VA		
Ratio		60/30/5		
Class		0.5		
Quantity		2		
Insulation Level		IL 12/28/95 KV		

SCHEDULE A2: CIRCUIT BREAKER - MV CONNECTION < 1MVA		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A2	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICILARS OFFERED AND GU-RANTEED
VOLTAGE TRANSFORMER				
Install VT		Yes	4.9	
Ratio		11000/110 V		
Burden and Accuracy		0.5		
Voltage Factor		1.9		
Limbs		3		
Primary Connection		Cable side		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		Yes	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS -9- 7		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		Yes: The Relay must have these capabilities:	4.10	

		<ul style="list-style-type: none"> i. Power Supply: Universal – 24 to 120V DC/AC. ii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input. iii. Voltage Input: 110V phase to phase AC Voltage. iv. Configurable labels: Yes v. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port vi. Communications Protocol: DNP3_level 2 minimum vii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate. viii. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application. ix. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay. x. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay). xi. Relay dimensions: Must be able to fit on to the control panel portion of the switchgear. 		
Pilot Wire Current Differential Protection See pricing schedule on page 94		N/A	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		N/A	4.10	

3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		N/A	4.10	
Transformer Over Temperature tripping relay Hand reset Flag or LEDs		Yes	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Busbar chamber		
D.C Circuit Protection		MCB's	4.14.3	
Location of MCB inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.3 A3 CIRCUIT BREAKER

SCHEDULE A3: CIRCUIT BREAKER - MV CONNECTION > 1MVA		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A3	UNITS	SPECIFIED REQUIREMENT	RE-CLAUSE	PAR-TICILARS OFFERED AND GU-RANTEED
SWITCHGEAR GENERAL				
Panel Function		MV Connection > 1MVA		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	11	4.1.1.1	
Rated Voltage	kV	12	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Hand Spring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PLIC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		N/A	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		

Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connections.		
Install CT's		Yes	4.8	
Purpose		OC/EF Protection		
Ratio		600/1		
Burden		10VA		
Class		10P10		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Metering		
Burden		10VA		
Ratio		300/200/100/5		
Class		0.5		
Quantity		2		
Insulation Level		IL 12/28/95 KV		

SCHEDULE A3: CIRCUIT BREAKER - MV CONNECTION >1MVA		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A3	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
VOLTAGE TRANSFORMER				
Install VT		Yes	4.9	
Ratio		11000/110 V		
Burden and Accuracy		0.5		
Voltage Factor		1.9		
Limbs		3		
Primary Connection		Cable side		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		Yes	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-8		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		Yes: The Relay must have these capabilities: i. Power Supply: Universal – 24 to 120V DC/AC. ii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input. iii. Voltage Input: 110V phase to phase AC	4.10	

		<p>Voltage.</p> <p>iv. Configurable labels: Yes</p> <p>v. Communication Ports:</p> <p>Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port.</p> <p>Front: 1 x Serial Port</p> <p>vi. Communications Protocol:</p> <p>DNP3_level 2 minimum</p> <p>vii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate.</p> <p>viii. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application.</p> <p>ix. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>x. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p> <p>Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.</p>		
Pilot Wire Current Differential Protection Seepricing schedule on-page 94		N/A	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		N/A	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		N/A	4.10	
Transformer Over Temperature tripping relay Hand reset Flag or LEDs		Yes	4.10	
Arc Flash sensors		Cable, Circuit Break-		

		er and Busbar chamber		
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.4 A4 CIRCUIT BREAKER SECONDARY FEEDER

SCHEDULE A4: CIRCUIT BREAKER - SECONDARY FEEDER		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A4	UNIT S	SPECIFIED REQUIREMENT	RE- SANS CLAUSE	PARTICULARS OFFERED AND GU- RANTEED
SWITCHGEAR GENERAL				
Panel Function		Secondary Feeder		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	11	4.1.1.1	
Rated Voltage	kV	12	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Handspring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PILC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		N/A	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:				
Install CT's		Studded 6mm Brass S connections.		
Purpose		Yes	4.8	
Ratio		OC/EF Protection		
Burden		600/1		
Class		10VA		
		10P10		

Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install Ct's (Metering/Differential)		No	4.8	
Purpose		N/A		
Burden		N/A		
Ratio		N/A		
Class		N/A		
Quantity		N/A		
Insulation Level		N/A		

SCHEDULE A4: CIRCUIT BREAKER - SECONDARY FEEDER		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A4	UNIT S	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
VOLTAGE TRANSFORMER				
Install VT		NO	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
Primary Connection		N/A		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-8		
Spare auxiliary Contacts required		"a"-2	4.14	
		"b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		<p>Yes: The Relay must have these capabilities:</p> <ul style="list-style-type: none"> i. Power Supply: Universal – 24 to 120V DC/AC. ii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input. iii. Voltage Input: 110V phase to phase AC Voltage. iv. Configurable labels: Yes v. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. 	4.10	

		<p>Front: 1 x Serial Port</p> <p>vi. Communications Protocol: DNP3_Level 2 minimum</p> <p>vii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate.</p> <p>viii. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application.</p> <p>ix. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>x. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p> <p>Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.</p>		
Pilot Wire Current Differential Protection See pricing schedule on page 94		N/A	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		N/A	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		N/A	4.10	
Transformer Over Temperature tripping relay Hand reset Flag or LEDs		N/A	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Bus-bar chamber	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC		Yes	4.14.7	

Door				
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.5 A5 CIRCUIT BREAKER PRIMARY OUT GOING FEEDER

SCHEDULE A5: CIRCUIT BREAKER – PRIMARY OUT-GOING FEEDER		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A5	UNIT S	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		Primary Out-Going Feeder		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	11	4.1.1.1	
Rated Voltage	kV	12	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Handspring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)		Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PILC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		N/A	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		

CURRENT TRANSFORMERS:		Studded 6mm Brass S connec- tions.		
Install CT's		Yes	4.8	
Purpose		OC/EF Protection		
Ratio		600/1		
Burden		10VA		
Class		10P10		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Pilot wire protection		
Burden				
Ratio		600/1		
Class		X or TPS or PX		
Quantity		3		
Insulation Level		IL 12/28/95 KV		

SCHEDULE A5: CIRCUIT BREAKER – PRI- MARY OUT-GOING FEEDER		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICU- LARS NOTE: PANEL MUST BE MARKED ON TOP A5	UNITS	SPECIFIED RE- QUIREMENT	SANS CLAUSE	PAR- TICILARS OFFERED AND GU- RANTEED
VOLTAGE TRANSFORMER				
Install VT		N0	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
Primary Connection		N/A		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS -9- 8		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		Yes: The Relay must have these capabilities: i. Power Supply: Universal – 24 to 120V DC/AC. ii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A	4.10	

		<p>Neutral Input.</p> <p>iii. Voltage Input: 110V phase to phase AC Voltage.</p> <p>iv. Configurable labels: Yes</p> <p>v. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port</p> <p>vi. Communications Protocol: DNP3 level 2 minimum.</p> <p>vii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate.</p> <p>viii. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application.</p> <p>ix. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>x. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p> <p>Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.</p>		
High Speed Pilot wire protection- “ Solkor RF” or compatible		Yes	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		N/A	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with coun-		N/A	4.10	

ter-solid state				
Transformer Over Temperature tripping relay		N/A	4.10	
Hand reset Flag or LEDs				
Arc Flash Sensors		Cable, Circuit Breaker and Bus-bar chamber	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.6 A6 CIRCUIT BREAKER TRANSFORMER FEEDER.

SCHEDULE A6: CIRCUIT BREAKER TRANSFORMER FEEDER.		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A6	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		Transformer Feeder		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	11	4.1.1.1	
Rated Voltage	kV	12	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Hand Spring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PLIC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		N/A	4.2.7	

Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS AND FINISH	Paint	Light Grey G29		
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connections.		
Install CT's		Yes	4.8	
Purpose		OC/EF Protection		
Ratio		60/30/1		
Burden		10VA		
Class		10P10		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install Ct's (Metering/Differential)		N/A	4.8	
Purpose		N/A		
Burden		N/A		
Ratio		N/A		
Class		N/A		
Quantity		N/A		
Insulation Level		N/A		

SCHEDULE A6: CIRCUIT BREAKER TRANSFORMER FEEDER.		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A6	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
VOLTAGE TRANSFORMER				
Install VT		No	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-9		
Spare auxiliary Contacts required		"a"-2	4.14	
		"b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		Yes: The Relay must have these capabilities: i. Power Supply: Universal – 24 to 120V DC/AC.	4.10	

		<ul style="list-style-type: none"> ii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input. iii. Voltage Input: 110V phase to phase AC Voltage. iv. Configurable labels: Yes v. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port vi. Communications Protocol: DNP3 level 2 minimum. vii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate. viii. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application. ix. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay. x. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay). Relay dimensions: Must be able to fit onto the control panel portion of the switchgear. 		
Pilot Wire Current Differential Protection See pricing schedule on page 94		N/A	4.10	

Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		N/A	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		N/A	4.10	
Transformer Over Temperature tripping relay Hand reset Flag or LEDs		N/A	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Arc Flash Sensors		Cable, Circuit Breaker and Bus-bar chamber	4.10	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.7 A7 CIRCUIT BREAKER OVERHEAD LINE FEEDER

SCHEDULE A7: CIRCUIT BREAKER OVERHEAD LINE FEEDER		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A7	UNIT S	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		Overhead line feeder		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	11	4.1.1.1	
Rated Voltage	kV	12	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Auto Spring Charge	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PILC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		

Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		Yes, Cable side 12kV	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connec- tions.		
Install CT's		Yes	4.8	
Purpose		OC/EF Protection		
Ratio		600/1		
Burden		10VA		
Class		10P10		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Metering		
Burden		10 VA		
Ratio		300/200/100/5		
Class		0.5		
Quantity		2		
Insulation Level		IL 12/28/95 KV		

SCHEDULE A7: CIRCUIT BREAKER OVERHEADLINE FEEDER.		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICU- LARS NOTE: PANEL MUST BE MARKED ON TOP A7	UNIT S	SPECIFIED RE- QUIREMENT	SANS CLAUS E	PARTICILARS OFFERED AND GU- RANTEED
VOLTAGE TRANSFORMER				
Install VT		Yes	4.9	
Ratio		11000/110		
Burden and Accuracy		0.5		
Voltage Factor		1.9		
Limbs		3		
Primary Connection		Cable side		
AMMETER:				
Scale		Yes	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		Yes	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-9		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		Yes: The Relay must have these capabili- ties: i. Power Supply:	4.10	

		<p>Universal – 24 to 48VDC</p> <p>ii. Secondary Input Current: 3 x AC 1A plus a 50mA Neutral Input.</p> <p>iii. Voltage Input: V_{NOM} (L-L) should have the following specifications; 20 to 440V for DELTA_Y for DELTA and WYE</p> <p>iv. Configurable labels: Yes</p> <p>v. Programmable pushbuttons: Minimum of four programmable pushbuttons, each with programmable LEDs</p> <p>vi. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port</p> <p>vii. Communications Protocol: DNP3 level 2 minimum.</p> <p>viii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24VDC (External wetting); Inputs should be individually user-configured to operate.</p> <p>ix. High Speed, High current Interruption (Outputs): Minimum of 6A continuous current – Minimum of 8 Universal – 19.2 to 60 VDC for the 24 to 48 power supply.</p> <p>x. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>xi. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p> <p>Relay dimensions: Must be able to fit onto the control</p>		
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		panel portion of the switchgear.		
Pilot Wire Current Differential Protection Seepricing schedule on-page 94		N/A	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		Yes	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		Yes	4.10	
Auto-reclose facility.		Yes: 30V DC electrical closing via ARC relay.	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Busbar chamber	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.8 A8 CIRCUIT BREAKER PRIMARY INCOMER FEEDER

SCHEDULE A8: CIRCUIT BREAKER PRIMARY INCOMER FEEDER		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A8	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		Primary Incomer feeder		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	11	4.1.1.1	
Rated Voltage	kV	12	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Handspring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	

Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PILC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		No	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connections.		
Install CT's		Yes Differential	4.8	
Purpose		Pilot wire protection		
Ratio		600/1		
Burden		10VA		
Class		X or TPS or PX		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Metering		
Burden		10VA		
Ratio		300/5		
Class		0.5		
Quantity		2		
Insulation Level		IL 12/28/95 KV		

SCHEDULE A8: CIRCUIT BREAKER PRIMARY INCOMER FEEDER		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A8	UNITS	SPECIFIED REQUIREMENT	RE-CLAUSE	PARTICULARS OFFERED AND GUARANTEED
VOLTAGE TRANSFORMER				
Install VT		No	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
Primary Connection		N/A		
AMMETER:				
Scale		Yes	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		Yes	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-10		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	

PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		No	4.10	
Pilot Wire Current Differential Protection Seepricing schedule on-page 94		Yes	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		No	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		No	4.10	
Auto-reclose facility.		No	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Busbar chamber	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.9 A9 CIRCUIT BREAKER BUS- SECTION SWITCH

SCHEDULE A9: CIRCUIT BREAKER BUS- SECTION SWITCH		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A9	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		Bus-Section Switch		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	11	4.1.1.1	
Rated Voltage	kV	12	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Hand Spring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		N/A	4.3.1.9	

Main Cable Detail		Busbars to Link busbars through Circuit breaker.		
Main Cable Termination		N/A		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		No	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connections.		
Install CT's		No	4.8	
Purpose		N/A		
Ratio		N/A		
Burden		N/A		
Class		N/A		
Quantity		N/A		
Insulation Level		N/A		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Metering		
Burden		10VA		
Ratio		300/200/100/5		
Class		0.5		
Quantity		2		
Insulation Level		IL 12/28/95 KV		

SCHEDULE A9: CIRCUIT BREAKER BUS- SECTION SWITCH		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A9	UNIT S	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
VOLTAGE TRANSFORMER				
Install VT		No	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
Primary Connection		N/A		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS -9- 10		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		

Mark- ing/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		<p>Yes: The Relay must have these capabilities:</p> <p>xi. Power Supply: Universal – 24 to 120V DC/AC.</p> <p>xii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input.</p> <p>xiii. Voltage Input: 110V phase to phase AC Voltage.</p> <p>xiv. Configurable labels: Yes</p> <p>xv. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port</p> <p>xvi. Communications Protocol: DNP3 level 2 minimum.</p> <p>xvii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user configured to operate.</p> <p>xviii. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application.</p> <p>xix. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>xx. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p> <p>Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.</p>	4.10	
Pilot Wire Current Differential Protection Seepricing schedule onpage 94		No	4.10	
Sensitive Earth Fault – Time delay range		No	4.10	

0.01-25 sec – solid state				
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		No	4.10	
Auto-reclose facility; 1A Phase and 50mA neutral.		No	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Busbar chamber	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.10 A10 FUSED SWITCH DISCONNECTOR COMPATIBLE TO ALL PANELS

SCHEDULE A10: FUSED SWITCH DISCONNECTOR COMPATIBLE TO ALL PANELS		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS. NOTE: PANEL MUST BE MARKED ON TOP A10	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		Fused-Switch Disconnect with metering.		
Insulation Medium		Oil, vacuum or SF6 gas	4.3.2.1.6	
System Voltage	kV	11	4.1.1.1	
Rated Voltage	kV	12	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	

Mechanism Type		Handspring	4.3.1.9	
Trip Coil	V	No	4.3.1.10	
Spring Release Coil	V	No	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		PVC Wedge cleat 70 to 185 mm Ca- ble		
Main Cable Termination		1x 185mm x 3 core PILC.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		No	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:				
Install CT's		Studded 6mm Brass S connec- tions.	4.8	
Purpose		No		
Ratio		N/A		
Burden		N/A		
Class		N/A		
Quantity		N/A		
Insulation Level		N/A		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Metering		
Burden		10VA		
Ratio		60/30/5		
Class		0.5		
Quantity		2		
Insulation Level		IL 12/28/95 KV		

SCHEDULE A10: FUSED SWITCH DISCONNECTOR COMPATIBLE TO ALL PANELS		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS. NOTE: PANEL MUST BE MARKED ON TOP A10	UNIT S	SPECIFIED RE- QUIREMENT	SANS CLAUSE	PAR- TICULARS OFFERED AND GU- RANTEED
VOLTAGE TRANSFORMER				
Install VT		Yes	4.9	
Ratio	V	11000/110 V		
Burden and Accuracy		0.5		
Voltage Factor		1.9		
Limbs		3		
Primary Connection		Cable side		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		

VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS -9- 10		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		No	4.10	
Pilot Wire Current Differential Protection See pricing schedule on-page 94		No	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		No	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		No	4.10	
Auto-reclose facility		No	4.10	
Arc Flash Sensors		No	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

METAL-CLAD SWITCHGEAR 22kV (SBV4-E, types) or equivalent, Complete Column, PARTICULARS OFFERED AND GUARANTEED, from schedule 22A1 to 22A11.

6.4.11 22A1 SWITCH-DISCONNECTOR

SCHEDULE 22A1: SWITCH-DISCONNECTOR PANEL – COMPATIBLE WITH ALL SWITCHGEAR PANELS		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A1	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		Switch Disconnectors		
Insulation Medium		Oil, Vacuum or Sf6 gas.	4.3.1.1.3	
System Voltage	kV	22	4.1.1.1	
Rated Voltage	kV	24	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	

Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Manual	4.3.1.9	
Trip Coil	V	Hand Operated	4.3.1.10	
Spring Release Coil	V	N/A	4.3.1.10	
Indication for Trip/Close		YES	4.3.1.2	
Status Indication Lamps (open/close)	LED	N/A	4.3.2.2 a)	
Circuit Earthing Facilities		Bottom Entry	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PLIC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Ca- ble.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		N/A	4.2.7	
Remote Control Unit		N/A (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:				
Install CT's		N/A	4.8	
Purpose		N/A		
Ratio		N/A		
Burden		N/A		
Class		N/A		
Quantity		N/A		
Insulation Level		N/A		
Install Ct's (Metering/Differential)		N/A	4.8	
Purpose		N/A		
Burden		N/A		
Ratio		N/A		
Class		N/A		
Quantity		N/A		
Insulation Level		N/A		

SCHEDULE 22A1: SWITCH-DISCONNECTOR PANEL – COMPATIBLE WITH ALL SWITCHGEAR PANELS		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP A1	UNIT S	SPECIFIED REQUIREMENT	RE-SANS CLAUSE	PARTICILARS OFFERED AND GU-RANTEED
VOLTAGE TRANSFORMER				
Install VT		No	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
AMMETER:				
Scale		No	4.14.4	

Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-7		
Spare auxiliary Contacts required		N/A	4.14	
		N/A		
Marking/Labeling/Documentation		N/A	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		N/A	4.10	
Pilot Wire Current Differential Protection See pricing schedule on page 94		N/A	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		N/A	4.10	
3 Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		N/A	4.10	
Transformer Over Temperature tripping relay Hand reset Flag		N/A	4.10	
D.C Circuit Protection		N/A	4.14.3	
Location of Fuses inside RC		N/A		
Location of Test Terminal Blocks RC Door		N/A	4.14.7	
Battery Charger with Batteries – 30 Volt		No		
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.12 22A2 CIRCUIT BREAKER

SCHEDULE 22A2: CIRCUIT BREAKER - MV CONNECTION < 1MVA		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22 A2	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		MV Connection < 1MVA		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	22	4.1.1.1	
Rated Voltage	kV	24	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Handspring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	

Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PLIC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		N/A	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connections.		
Install CT's		Yes	4.8	
Purpose		OC/EF Protection		
Ratio		100/1		
Burden		10VA		
Class		10P10		
Quantity		3		
Insulation Level		IL 24/40/95 KV		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Metering		
Burden		10VA		
Ratio		60/30/5		
Class		0.5		
Quantity		2		
Insulation Level		IL 24/40/95 KV		

SCHEDULE 22A2: CIRCUIT BREAKER - MV CONNECTION < 1MVA		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A2	UNITS	SPECIFIED REQUIREMENT	RE-CLAUSE	PARTICULARS OFFERED AND GUARANTEED
VOLTAGE TRANSFORMER				
Install VT		Yes	4.9	
Ratio		22000/110 V		
Burden and Accuracy		0.5		
Voltage Factor		1.9		
Limbs		3		
Primary Connection		Cable side		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		Yes	4.14.4	
Phase Selector Switch		N/A		

GENERAL:				
Configuration of Switchgear		TS -9- 7		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		<p>Yes: The Relay must have these capabilities:</p> <p>xii. Power Supply: Universal – 24 to 120V DC/AC.</p> <p>xiii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input.</p> <p>xiv. Voltage Input: 110V phase to phase AC Voltage.</p> <p>xv. Configurable labels: Yes</p> <p>xvi. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port</p> <p>xvii. Communications Protocol: DNP3_level 2 minimum</p> <p>xviii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate.</p> <p>xix. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application.</p> <p>xx. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>xxi. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p>	4.10	

		cxii. Relay dimensions: Must be able to fit on-to the control panel portion of the switch-gear.		
Pilot Wire Current Differential Protection Seepricing schedule on page 94		N/A	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		N/A	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		N/A	4.10	
Transformer Over Temperature tripping relay Hand reset Flag or LEDs		Yes	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Busbar chamber		
D.C Circuit Protection		MCB's	4.14.3	
Location of MCB inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.13 22A3 CIRCUIT BREAKER

SCHEDULE 22A3: CIRCUIT BREAKER - MV CONNECTION > 1MVA		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A3	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		MV Connection > 1MVA		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	22	4.1.1.1	
Rated Voltage	kV	24	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	

Mechanism Type		Hand Spring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PLIC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		N/A	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connections.		
Install CT's		Yes	4.8	
Purpose		OC/EF Protection		
Ratio		600/1		
Burden		10VA		
Class		10P10		
Quantity		3		
Insulation Level		IL 24/40/95 KV		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Metering		
Burden		10VA		
Ratio		300/200/100/5		
Class		0.5		
Quantity		2		
Insulation Level		IL 24/40/95 KV		

SCHEDULE 22A3: CIRCUIT BREAKER - MV CONNECTION >1MVA		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A3	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
VOLTAGE TRANSFORMER				
Install VT		Yes	4.9	
Ratio		22000/110 V		
Burden and Accuracy		0.5		
Voltage Factor		1.9		
Limbs		3		
Primary Connection		Cable side		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		Yes	4.14.4	

Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-8		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		<p>Yes: The Relay must have these capabilities:</p> <ul style="list-style-type: none"> xi. Power Supply: Universal – 24 to 120V DC/AC. xii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input. xiii. Voltage Input: 110V phase to phase AC Voltage. xiv. Configurable labels: Yes xv. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port xvi. Communications Protocol: DNP3_level 2 minimum xvii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate. xviii. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application. xix. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay. xx. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At 	4.10	

		no additional costs (free issue with the relay). Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.		
Pilot Wire Current Differential Protection Seepricing schedule on-page 94		N/A	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		N/A	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		N/A	4.10	
Transformer Over Temperature tripping relay Hand reset Flag or LEDs		Yes	4.10	
Arc Flash sensors		Cable, Circuit Breaker and Busbar chamber		
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.14 22A4 CIRCUIT BREAKER SECONDARY FEEDER

SCHEDULE 22A4: CIRCUIT BREAKER - SECONDARY FEEDER		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A4	UNIT S	SPECIFIED REQUIREMENT	RE-SANS CLAUSE	PARTICILARS OFFERED AND GU-RANTEED
SWITCHGEAR GENERAL				
Panel Function		Secondary Feeder		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	22	4.1.1.1	
Rated Voltage	kV	24	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	

Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Handspring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PILC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		N/A	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:				
		Studded 6mm Brass S connections.		
Install CT's		Yes	4.8	
Purpose		OC/EF Protection		
Ratio		600/1		
Burden		10VA		
Class		10P10		
Quantity		3		
Insulation Level		IL 24/40/95 KV		
Install Ct's (Metering/Differential)		No	4.8	
Purpose		N/A		
Burden		N/A		
Ratio		N/A		
Class		N/A		
Quantity		N/A		
Insulation Level		N/A		

SCHEDULE 22A4: CIRCUIT BREAKER - SECONDARY FEEDER		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A4	UNIT S	SPECIFIED REQUIREMENT	RE-SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
VOLTAGE TRANSFORMER				
Install VT		N0	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
Primary Connection		N/A		
AMMETER:				

Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-8		
Spare auxiliary Contacts required		"a"-2	4.14	
		"b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		<p>Yes: The Relay must have these capabilities:</p> <p>xi. Power Supply: Universal – 24 to 120V DC/AC.</p> <p>xii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input.</p> <p>xiii. Voltage Input: 110V phase to phase AC Voltage.</p> <p>xiv. Configurable labels: Yes</p> <p>xv. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port</p> <p>xvi. Communications Protocol: DNP3_level 2 minimum</p> <p>xvii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate.</p> <p>xviii. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application.</p> <p>xix. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be</p>	4.10	

		provided with the relay. xx. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay). Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.		
Pilot Wire Current Differential Protection Seepricing schedule onpage 94		N/A	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		N/A	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		N/A	4.10	
Transformer Over Temperature tripping relay Hand reset Flag or LEDs		N/A	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Bus-bar chamber	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.15 22A5 CIRCUIT BREAKER PRIMARY OUT GOING FEEDER

SCHEDULE 22A5: CIRCUIT BREAKER – PRIMARY OUT-GOING FEEDER		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A5	UNIT S	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICILARS OFFERED AND GU-RANTEED
SWITCHGEAR GENERAL				
Panel Function		Primary Out-Going		

		Feeder		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	22	4.1.1.1	
Rated Voltage	kV	24	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Handspring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)		Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PILC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		N/A	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:				
		Studded 6mm Brass S connec- tions.		
Install CT's		Yes	4.8	
Purpose		OC/EF Protection		
Ratio		600/1		
Burden		10VA		
Class		10P10		
Quantity		3		
Insulation Level		IL 24/40/95 KV		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Pilot wire protection		
Burden				
Ratio		600/1		
Class		X or TPS or PX		
Quantity		3		
Insulation Level		IL 24/40/95 KV		

SCHEDULE 22A5: CIRCUIT BREAKER – PRIMARY OUT-GOING FEEDER		PART A – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICU- LARS NOTE: PANEL MUST BE MARKED ON TOP 22A5	UNITS	SPECIFIED RE- QUIREMENT	SANS CLAUSE	PAR- TICILARS OFFERED AND GU-

				RANTEED
VOLTAGE TRANSFORMER				
Install VT		N0	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
Primary Connection		N/A		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS -9- 8		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		<p>Yes: The Relay must have these capabilities:</p> <p>xi. Power Supply: Universal – 24 to 120V DC/AC.</p> <p>xii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input.</p> <p>xiii. Voltage Input: 110V phase to phase AC Voltage.</p> <p>xiv. Configurable labels: Yes</p> <p>xv. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port</p> <p>xvi. Communications Protocol: DNP3 level 2 minimum.</p> <p>xvii. Digital Opto-isolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate.</p> <p>xviii. Digital Opto-isolated high speed and high current Outputs: Minimum of 6A continuous –</p>	4.10	

Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-9		
Spare auxiliary Contacts required		"a"-2	4.14	
		"b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		<p>Yes: The Relay must have these capabilities:</p> <p>xxi. Power Supply: Universal – 24 to 120V DC/AC.</p> <p>xxii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input.</p> <p>xiii. Voltage Input: 110V phase to phase AC Voltage.</p> <p>xiv. Configurable labels: Yes</p> <p>xv. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port</p> <p>xvi. Communications Protocol: DNP3 level 2 minimum.</p> <p>xvii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate.</p> <p>xviii. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V</p>	4.10	

		DC/AC voltage application. xix. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay. xx. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay). Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.		
Pilot Wire Current Differential Protection Seepricing schedule on-page 94		N/A	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		N/A	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		N/A	4.10	
Transformer Over Temperature tripping relay Hand reset Flag or LEDs		N/A	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Arc Flash Sensors		Cable, Circuit Breaker and Bus-bar chamber	4.10	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.17 22A7 CIRCUIT BREAKER OVERHEAD LINE FEEDER

SCHEDULE 22A7: CIRCUIT BREAKER OVERHEAD LINE FEEDER		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A7	UNIT S	SPECIFIED RE- QUIREMENT	SANS CLAUS E	PARTICILARS OFFERED AND GU-

SWITCHGEAR GENERAL					RANTEED
Panel Function		Overhead line feed-er			
Insulation Medium		Vacuum	4.3.2.1.6		
System Voltage	kV	22	4.1.1.1		
Rated Voltage	kV	24	4.1.1.1		
Circuit Normal Rated Current	Amp	800	4.1.1.3		
Busbar Normal Rated Current	Amp	800	4.1.1.3		
Fault Level Capacity	MVA	350	4.1.1.3		
Impulse Withstand Voltage	kV	95	4.1.1.4.2		
Short Circuit Breaking Capacity	kA	20	4.1.1.5		
Duration of Short Circuit	s	3	4.1.1.5		
Peak Withstand Current	kA	63	4.1.1.5		
Mechanism Type		Auto Spring Charge	4.3.1.9		
Trip Coil	V	30 V D.C	4.3.1.10		
Spring Release Coil	V	30 V D.C	4.3.1.10		
Indication for Trip/Close		Yes	4.3.1.2		
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)		
Circuit Earthing Facilities		Yes	4.2.8.2		
System Earthing		NER 300 A Max	4.3.1.1.3		
Cable Entry		Bottom Entry	4.3.1.9		
Main Cable Detail		70 to 185mm x 3core XLPE/PILC	4.3.1.2		
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.			
Circuit Earthing Facility		Yes	4.2.8.1		
Interlocks		Yes			
Surge Arrestors (suppressors)		Yes, Cable side 12kV	4.2.7		
Remote Control Unit		Yes (open and close)	4.3.1.7		
DIMENSIONS					
Height	mm	Max 1800			
Depth	mm	Max 1500			
Width	mm	Max 600			
CURRENT TRANSFORMERS:					
Install CT's		Studded 6mm Brass S connections.	4.8		
Purpose		OC/EF Protection			
Ratio		600/1			
Burden		10VA			
Class		10P10			
Quantity		3			
Insulation Level		IL 24/40/95 KV			
Install Ct's (Metering/Differential)		Yes	4.8		
Purpose		Metering			
Burden		10 VA			
Ratio		300/200/100/5			
Class		0.5			
Quantity		2			
Insulation Level		IL 24/40/95 KV			

SCHEDULE 22A7: CIRCUIT BREAKER OVERHEADLINE FEEDER.		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A7	UNIT S	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GU-RANTEED

VOLTAGE TRANSFORMER				
Install VT		Yes	4.9	
Ratio		22000/110		
Burden and Accuracy		0.5		
Voltage Factor		1.9		
Limbs		3		
Primary Connection		Cable side		
AMMETER:				
Scale		Yes	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		Yes	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-9		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		<p>Yes: The Relay must have these capabilities:</p> <p>xii. Power Supply: Universal – 24 to 48VDC</p> <p>xiii. Secondary Input Current: 3 x AC 1A plus a 50mA Neutral Input.</p> <p>xiv. Voltage Input: V_{NOM} (L-L) should have the following specifications: 20 to 440V for DELTA_Y for DELTA and WYE</p> <p>xv. Configurable labels: Yes</p> <p>xvi. Programmable pushbuttons: Minimum of four programmable pushbuttons, each with programmable LEDs</p> <p>xvii. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port</p> <p>xviii. Communications Protocol: DNP3 level 2 minimum.</p> <p>xix. Digital Optoisolated Inputs: Minimum of 8. Universal – 24VDC (External wetting); Inputs should be individually user-configured to operate.</p>	4.10	

		<p>xx. High Speed, High current Interruption (Outputs): Minimum of 6A continuous current – Minimum of 8 Universal – 19.2 to 60 VDC for the 24 to 48 power supply.</p> <p>xxi. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>xxii. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p> <p>Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.</p>		
Pilot Wire Current Differential Protection Seepricing schedule on-page 94		N/A	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		Yes	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		Yes	4.10	
Auto-reclose facility.		Yes: 30V DC electrical closing via ARC relay.	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Busbar chamber	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.18 22A8 CIRCUIT BREAKER PRIMARY INCOMER FEEDER

SCHEDULE 22A8: CIRCUIT BREAKER PRIMARY INCOMER FEEDER		PART A – METAL-CLAD SWITCHGEAR			
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A8	UNITS	SPECIFIED REQUIREMENT	RE-	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED

SWITCHGEAR GENERAL				
Panel Function		Primary Incomer feeder		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	22	4.1.1.1	
Rated Voltage	kV	24	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MV A	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Handspring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		70 to 185mm x 3core XLPE/PILC	4.3.1.2	
Main Cable Termination		PVC wedge cleat 70 to 185 mm Cable.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		No	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:				
		Studded 6mm Brass S connections.		
Install CT's		Yes Differential	4.8	
Purpose		Pilot wire protection		
Ratio		600/1		
Burden		10VA		
Class		X or TPS or PX		
Quantity		3		
Insulation Level		IL 24/40/95 KV		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Metering		
Burden		10VA		
Ratio		300/5		
Class		0.5		
Quantity		2		
Insulation Level		IL 24/40/95 KV		

SCHEDULE 22A8: CIRCUIT BREAKER PRIMARY INCOMER FEEDER		PART A – METAL-CLAD SWITCHGEAR			
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A8	UNIT S	SPECIFIED REQUIREMENT	RE-	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED

VOLTAGE TRANSFORMER				
Install VT		No	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
Primary Connection		N/A		
AMMETER:				
Scale		Yes	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		Yes	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS-9-10		
Spare auxiliary Contacts required		"a"-2 :b"-2	4.14	
Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		No	4.10	
Pilot Wire Current Differential Protection See pricing schedule on-page 94		Yes	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		No	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		No	4.10	
Auto-reclose facility.		No	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Busbar chamber	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.19 22A9 CIRCUIT BREAKER BUS- SECTION SWITCH

SCHEDULE 22A9: CIRCUIT BREAKER BUS- SECTION SWITCH		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A9	UNIT S	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GU- RANTEED
SWITCHGEAR GENERAL				
Panel Function		Bus-Section Switch		
Insulation Medium		Vacuum	4.3.2.1.6	
System Voltage	kV	22	4.1.1.1	
Rated Voltage	kV	24	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	

Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Hand Spring	4.3.1.9	
Trip Coil	V	30 V D.C	4.3.1.10	
Spring Release Coil	V	30 V D.C	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	
Cable Entry		N/A	4.3.1.9	
Main Cable Detail		Busbars to Link bus-bars through Circuit breaker.		
Main Cable Termination		N/A		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		No	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connections.		
Install CT's		No	4.8	
Purpose		N/A		
Ratio		N/A		
Burden		N/A		
Class		N/A		
Quantity		N/A		
Insulation Level		N/A		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Metering		
Burden		10VA		
Ratio		300/200/100/5		
Class		0.5		
Quantity		2		
Insulation Level		IL 24/40/95 KV		

SCHEDULE 22A9: CIRCUIT BREAKER BUS- SECTION SWITCH		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED ON TOP 22A9	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
VOLTAGE TRANSFORMER				
Install VT		No	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
Primary Connection		N/A		
AMMETER:				
Scale		No	4.14.4	

Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS -9- 10		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Mark- ing/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		<p>Yes: The Relay must have these capabilities:</p> <p>xxi. Power Supply: Universal – 24 to 120V DC/AC.</p> <p>xxii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input.</p> <p>xiii. Voltage Input: 110V phase to phase AC Voltage.</p> <p>xiv. Configurable labels: Yes</p> <p>xv. Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port</p> <p>xvi. Communications Protocol: DNP3 level 2 minimum.</p> <p>xvii. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user configured to operate.</p> <p>xviii. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application.</p> <p>xix. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>xi. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with</p>	4.10	

		the relay). Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.		
Pilot Wire Current Differential Protection Seepricing schedule onpage 94		No	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		No	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		No	4.10	
Auto-reclose facility; 1A Phase and 50mA neutral.		No	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Busbar chamber	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.20 22A10 FUSED SWITCH DISCONNECTOR COMPATIBLE TO ALL PANELS

SCHEDULE 22A10: FUSED SWITCH DISCONNECTOR COMPATIBLE TO ALL PANELS		PART A – METAL-CLAD SWITCHGEAR (WITH METERING)		
DESCRIPTION OF PARTICULARS. NOTE: PANEL MUST BE MARKED ON TOP 22A10	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
SWITCHGEAR GENERAL				
Panel Function		Fused-Switch Disconnect with metering.		
Insulation Medium		Oil, vacuum or SF6 gas	4.3.2.1.6	
System Voltage	kV	22	4.1.1.1	
Rated Voltage	kV	24	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.3	
Busbar Normal Rated Current	Amp	800	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.4.2	
Short Circuit Breaking Capacity	kA	20	4.1.1.5	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type		Handspring	4.3.1.9	
Trip Coil	V	No	4.3.1.10	
Spring Release Coil	V	No	4.3.1.10	
Indication for Trip/Close		Yes	4.3.1.2	
Status Indication Lamps (open/close)	LED	Yes	4.3.2.2 a)	
Circuit Earthing Facilities		Yes	4.2.8.2	
System Earthing		NER 300 A Max	4.3.1.1.3	

Cable Entry		Bottom Entry	4.3.1.9	
Main Cable Detail		PVC Wedge cleat 70 to 185 mm Ca- ble		
Main Cable Termination		1x 185mm x 3 core PILC.		
Circuit Earthing Facility		Yes	4.2.8.1	
Interlocks		Yes		
Surge Arrestors (suppressors)		No	4.2.7	
Remote Control Unit		Yes (open and close)	4.3.1.7	
DIMENSIONS				
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:				
Install CT's		Studded 6mm Brass S connec- tions.		
Purpose		No	4.8	
Ratio		N/A		
Burden		N/A		
Class		N/A		
Quantity		N/A		
Insulation Level		N/A		
Install Ct's (Metering/Differential)		Yes	4.8	
Purpose		Metering		
Burden		10VA		
Ratio		60/30/5		
Class		0.5		
Quantity		2		
Insulation Level		IL 24/40/95 KV		

SCHEDULE 22A10: FUSED SWITCH DIS-CONNECTOR COMPATIBLE TO ALL PANELS		PART A ~ METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS. NOTE: PANEL MUST BE MARKED ON TOP 22A10	UNITS	SPECIFIED RE-QUIREMENT	SANS CLAUSE	PAR-TICILARS OFFERED AND GU-RANTEED
VOLTAGE TRANSFORMER				
Install VT		Yes	4.9	
Ratio	V	22000/110 V		
Burden and Accuracy		0.5		
Voltage Factor		1.9		
Limbs		3		
Primary Connection		Cable side		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		No	4.14.4	
Phase Selector Switch		N/A		
GENERAL:				
Configuration of Switchgear		TS -9- 10		
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		

Marking/Labeling/Documentation		Yes	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Overcurrent and Earth fault- 3 Pole Phase plus Earth Fault (IDMT)		No	4.10	
Pilot Wire Current Differential Protection Seepricing schedule on-page 94		No	4.10	
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state		No	4.10	
3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		No	4.10	
Auto-reclose facility		No	4.10	
Arc Flash Sensors		No	4.10	
D.C Circuit Protection		MCB's	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.21 (A) Feeder 110VDCpanel:

Tender must be for single and double busbars. (Upper bar/Lower Bar and Front / back bar) with complete busbars for SBV3 and SBV4.

SCHEDULE 12: SBV 3 E FEEDER PANEL COMPATIBLE WITH ALL SWITCHGEAR PANELS (110VDC)		PART C – METAL-CLAD SWITCHGEAR			
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED	UNIT S	SPECIFIED MENT	REQUIRE-	SANS CLAUSE	PAR- TICULARS OFFERED AND GU- RANTEED
Panel Function		Feeder			
Insulation Medium		Vacuum			
System Voltage	kV	11		4.3.2 .1.6	
Rated Voltage	kV	12		4.1.1 .1	
Circuit Normal Rated Current	Amp	800		4.1.1 .1	
Busbar Normal Rated Current	Amp	2500		4.1.1 .3	
Fault Level Capacity	MVA	350		4.1.1 .3	
Impulse Withstand Voltage	kV	95		4.1.1 .3	
Short Circuit Breaking Capacity	kA	20		4.1.1 .4.2	
Duration of Short Circuit	s	3		4.1.1 .5	
Peak Withstand Current	kA	63		4.1.1 .5	

Mechanism Type	M.W .S	Auto spring charges	4.1.1 .5	
Trip Coil 120VDC	V	YES	4.3.1 .9	
Spring Release Coil 110VDC	V	YES	4.3.1 .10	
Indication for Trip/Close 110VDC		YES	4.3.1 .10	
Status Indication Lamps (open/close) VCB open; Green LED indication. VCB Close: Red LED indication VCB Earthed: White LED indication VCB In Service Position Amber in- dication.	LED	YES	4.3.1 .2	
Local Remote selector switch		YES		
Circuit Earthing Facilities		Bottom Entry	4.3.2 .2 a)	
System Earthing		NER 300 A,20Ω Max	4.2.8 .2	
Cable Entry		Bottom Entry	4.3.1 .1.3	
Main Cable Detail		70 to 240mm ² x 3core XLPE/PILC 300 to 500mm ² Single Core Cable	4.3.1 .9	
Main Cable Termination		PVC wedge cleat 70 to 240 mm ² Cable. PVC wedge cleat 300 to 500 mm ²		
Circuit Earthing Facility		Yes		
Interlocks		Yes	4.2.8 .1	
Surge Arrestors (suppressors)		Yes		
Remote Control Unit. Panel fitted with cannon standoff trip/close socket.		Open and Close	4.2.7	
Panel heater (220V)		YES		
VCB Chamber light (110VDC)		YES		
DIMENSIONS			4.3.1 .7	
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connections.		
Install CT's		Yes		
Purpose		OC / EF	4.8	
Ratio		600/1		
Burden		10VA		
Class		5P20		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install Ct's (Differential)		YES		
Purpose		FEEDER	4.8	

Burden		kPV = 300V		
Ratio		600/1		
Class		X/TPS/PX		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install test block PK2-4way		YES (OC/EF)		
Install Ct's (Metering)		YES		
Purpose		Metering	4.8	
Burden		600/300/200/1		
Ratio		10VA		
Class		0.5		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install test block PK2-4way		YES (Diff / Metering)		
VOLTAGE TRANSFORMER				
Install VT		No	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
Primary Connection		N/A		
AMMETER:				
Scale		No	4.14. 4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		YES	4.14. 4	
Phase Selector Switch		YES		
GENERAL:				
Configuration of Switchgear				
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes (Blank)	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state. Auto Re-Close: 3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		Yes: The Relay must have these capabilities: i Power Supply: Universal – 110 to 240 Vac/VDC. ii Secondary Input Current: 3 x AC 1A plus a 50mA Neutral Input. iii Voltage Input: VNOM (L-L) should have the following specifications: 20 to 440V for DELTA_Y for DELTA and WYE iv Configurable labels: Yes v Programmable pushbuttons: Minimum of four programmable	4.10	

		<p>pushbuttons, each with programmable LEDs</p> <p>vi Front panel LEDs: Status and Trip Target LEDs</p> <p>vii Communication</p> <p>Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port</p> <p>viii Communications Protocol: Should have the following protocols: DNP3 level 2 minimum, standard plus IEC 61850, Modbus RTU, Modbus TCU,</p> <p>ix Digital Optoisolated Inputs: Minimum of 8. Universal – 110 Vac/VDC digital inputs with an operating range of 88 to 137,5 VDC (External wetting); Inputs should be individually user-configured to operate.</p> <p>x High Speed, High current Interruption (Outputs): Minimum of 6A continuous current – Minimum of 8 Universal – with a rated operating voltage of 264 VDC and a rated voltage range of 19.2 to 275 VDC. Should have a mechanical durability with a minimum of 100 000 no load operations."</p> <p>xi Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>xii Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p> <p>xiii Protection elements: Relay should have the following elements: Phase, neutral, residual, and negative-sequence overcurrent elements; Phase, neutral, residual, and negative-sequence time-overcurrent elements; Current-based over- and under frequency; Arc-</p>		
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		flash detection and arc-flash overcurrent; Over- and under voltage; Power elements; Voltage-based over- and under frequency; Rate-of-change of frequency; Measured residual overcurrent		
High Speed Pilot wire protection- "Solkor R or RF" or compatible. Differential protection.		Pilot wire Protection Relay, 1A or 5A and must be compatible with Solkor R/RF Relay.	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Busbar chamber	4.10	
D.C Circuit Protection		MCB's 110VDC	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.22 (B) Incomer 110VDC panel: Tender must be for single and double busbars. (Upper bar / Lower bar and Front / back bar) with complete busbars.

SCHEDULE 12: SBV 3 E FEEDER PANEL COMPATIBLE WITH ALL SWITCHGEAR PANELS (110VDC)		PART C – METAL-CLAD SWITCHGEAR		
DESCRIPTION OF PARTICULARS NOTE: PANEL MUST BE MARKED	UNITS	SPECIFIED REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
Panel Function		Feeder		
Insulation Medium		Vacuum		
System Voltage	kV	11	4.3.2.1.6	
Rated Voltage	kV	12	4.1.1.1	
Circuit Normal Rated Current	Amp	800	4.1.1.1	
Busbar Normal Rated Current	Amp	2500	4.1.1.3	
Fault Level Capacity	MVA	350	4.1.1.3	
Impulse Withstand Voltage	kV	95	4.1.1.3	
Short Circuit Breaking Capacity	kA	20	4.1.1.4.2	
Duration of Short Circuit	s	3	4.1.1.5	
Peak Withstand Current	kA	63	4.1.1.5	
Mechanism Type	M.W.S	Auto spring charges	4.1.1.5	
Trip Coil 120VDC	V	YES	4.3.1.9	
Spring Release Coil 110VDC	V	YES	4.3.1.10	
Indication for Trip/Close 110VDC		YES	4.3.1.10	
Status Indication Lamps (open/close)	LED	YES	4.3.1.2	

VCB open; Green LED indication. VCB Close: Red LED indication VCB Earthed: White LED indication VCB In Service Position Amber indication.				
Local Remote selector switch		YES		
Circuit Earthing Facilities		Bottom Entry	4.3.2.2 a)	
System Earthing		NER 300 A, 20Ω Max	4.2.8.2	
Cable Entry		Bottom Entry	4.3.1.1.3	
Main Cable Detail		70 to 240mm ² x 3core XLPE/PILC 300 to 500mm ² Single Core Cable	4.3.1.9	
Main Cable Termination		PVC wedge cleat 70 to 240 mm ² Cable. PVC wedge cleat 300 to 500 mm ²		
Circuit Earthing Facility		Yes		
Interlocks		Yes	4.2.8.1	
Surge Arrestors (suppressors)		Yes		
Remote Control Unit. Panel fitted with cannon standoff trip/close socket.		Open and Close	4.2.7	
Panel heater (220V)		YES		
VCB Chamber light (110VDC)		YES		
DIMENSIONS			4.3.1.7	
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connections.		
Install CT's		Yes		
Purpose		OC / EF	4.8	
Ratio		600/1		
Burden		10VA		
Class		5P20		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install Ct's (Differential)		YES		
Purpose		FEEDER	4.8	
Burden		kPV = 300V		
Ratio		600/1		
Class		X/TPS/PX		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install test block PK2-4way		YES (OC/EF)		
Install Ct's (Metering)		YES		
Purpose		Metering	4.8	
Burden		600/300/200/1		
Ratio		10VA		
Class		0.5		
Quantity		3		
Insulation Level		IL 12/28/95 KV		

Install test block PK2-4way		YES (Diff / Metering)		
VOLTAGE TRANSFORMER				
Install VT		Yes	4.9	
Ratio		11000/110/63.5 Volts		
Burden and Accuracy		100 VA Class 0.5		
Voltage Factor		1.9		
Limbs		3 or 5		
Primary Connection		Cable side		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		YES	4.14.4	
Phase Selector Switch		YES		
GENERAL:				
Configuration of Switchgear				
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes (Blank)	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state. Auto Re-Close: 3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		Yes: The Relay must have these capabilities: i Power Supply: Universal – 110 to 240 Vac/VDC. ii Secondary Input Current: 3 x AC 1A plus a 50mA Neutral Input. iii Voltage Input: VNOM (L-L) should have the following specifications: 20 to 440V for DELTA_Y for DELTA and WYE iv Configurable labels: Yes v Programmable pushbuttons: Minimum of four programmable pushbuttons, each with programmable LEDs vi Front panel LEDs : Status and Trip Target LEDs vii Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port	4.10	

(open/close) VCB open; Green LED indication. VCB Close: Red LED indication VCB Earthed: White LED indication VCB In Service Position Amber indication.				
Local Remote selector switch		YES		
Circuit Earthing Facilities		Bottom Entry	4.3.2.2 a)	
System Earthing		NER 300 A, 20Ω Max	4.2.8.2	
Cable Entry		Bottom Entry	4.3.1.1.3	
Main Cable Detail		70 to 240mm ² x 3core XLPE/PILC 300 to 500mm ² Single Core Cable	4.3.1.9	
Main Cable Termination		PVC wedge cleat 70 to 240 mm ² Cable. PVC wedge cleat 300 to 500 mm ²		
Circuit Earthing Facility		Yes		
Interlocks		Yes	4.2.8.1	
Surge Arrestors (suppressors)		Yes		
Remote Control Unit. Panel fitted with cannon standoff trip/close socket.		Open and Close	4.2.7	
Panel heater (220V)		YES		
VCB Chamber light (110VDC)		YES		
DIMENSIONS			4.3.1.7	
Height	mm	Max 1800		
Depth	mm	Max 1500		
Width	mm	Max 600		
CURRENT TRANSFORMERS:		Studded 6mm Brass S connections.		
Install CT's		Yes		
Purpose		OC / EF	4.8	
Ratio		600/1		
Burden		10VA		
Class		5P20		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install Ct's (Differential)		YES		
Purpose		FEEDER	4.8	
Burden		kPV = 300V		
Ratio		600/1		
Class		X/TPS/PX		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install test block PK2-4way		YES (OC/EF)		
Install Ct's (Metering)		YES		
Purpose		Metering	4.8	
Burden		600/300/200/1		
Ratio		10VA		
Class		0.5		
Quantity		3		

Insulation Level		IL 12/28/95 KV		
Install test block PK2-4way		YES (Diff / Metering)		
VOLTAGE TRANSFORMER				
Install VT		No	4.9	
Ratio		N/A		
Burden and Accuracy		N/A		
Voltage Factor		N/A		
Limbs		N/A		
Primary Connection		N/A		
AMMETER:				
Scale		No	4.14.4	
Interposing CT		N/A		
Maximum Demand Indicator		N/A		
VOLTMETER:				
Voltmeter		YES	4.14.4	
Phase Selector Switch		YES		
GENERAL:				
Configuration of Switchgear				
Spare auxiliary Contacts required		"a"-2	4.14	
		:b"-2		
Marking/Labeling/Documentation		Yes (Blank)	4.17	
Main Circuit Designation Label		Blank	4.17	
PROTECTION:				
Sensitive Earth Fault – Time delay range 0.01-25 sec – solid state. Auto Re-Close: 3Pole Multi Shot Auto-Reclose Relay – min. 4 Shot Programmable with counter-solid state		Yes: The Relay must have these capabilities: i Power Supply: Universal – 110 to 240 Vac/VDC. ii Secondary Input Current: 3 x AC 1A plus a 50mA Neutral Input. iii Voltage Input: VNOM (L-L) should have the following specifications: 20 to 440V for DELTA_Y for DELTA and WYE iv Configurable labels: Yes v Programmable pushbuttons: Minimum of four programmable pushbuttons, each with programmable LEDs vi Front panel LEDs: Status and Trip Target LEDs vii Communication Ports: Rear: 1 x 10/100 base-T plus 1 x 1 RS 232 port. Front: 1 x Serial Port viii Communications Protocol: Should have	4.10	

		<p>the following protocols: DNP3 level 2 minimum, standard plus IEC 61850, Modbus RTU, Modbus TCU,</p> <p>ix Digital Optoisolated Inputs: Minimum of 8. Universal – 110 Vac/VDC digital inputs with an operating range of 88 to 137,5 VDC (Ex- ternal wetting); Inputs should be individually user-configured to op- erate.</p> <p>x High Speed, High current Interruption (Outputs): Minimum of 6A continuous current – Minimum of 8 Universal – with a rated operating voltage of 264 VDC and a rated voltage range of 19.2 to 275 VDC. Should have a mechan- ical durability with a minimum of 100 000 no load operations."</p> <p>xi Arc Flash capabil- ity: 4 x Arc Flash detec- tion inputs. Four Fiber- optic point sensors for ARC flash must be pro- vided with the relay.</p> <p>xii Software: Windows- based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p> <p>xiii Protection ele- ments: Relay should have the following ele- ments: Phase, neutral, residual, and negative- sequence overcurrent elements; Phase, neu- tral, residual, and nega- tive-sequence time- overcurrent elements; Current-based over- and under frequency; Arc-flash detection and arc-flash overcurrent; Over-and under volt- age; Power elements; Voltage-based over- and under frequency;</p>		
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		Rate-of-change of frequency; Measured residual overcurrent.		
High Speed Pilot wire protection- "Solkor R or RF" or compatible. Differential protection.		NO	4.10	
Arc Flash Sensors		Cable, Circuit Breaker and Busbar chamber	4.10	
D.C Circuit Protection		MCB's 110VDC	4.14.3	
Location of Fuses inside RC		Yes		
Location of Test Terminal Blocks RC Door		Yes	4.14.7	
Number of copies of Drawings supplied with Panel on delivery		2	7.3	
Number of copies of Routine Test Report Certificates on delivery		2	7.4	

6.4.24 Description of the 12kV and 22kV Joint (J)-, Switch (S)-, Test (T) - AND Panel (P)-packs according, to SANS 1885: 2001 and latest amendments, for 400A, 800A and 2000A specifications.

Detail breakdown of “P, J, T and S-Packs”			
DESCRIPTION	QTY	Part No.	COMMENTS
“P-pack” (A12.1)			
38w scotch fill putty	18		1 set per panel. Packed in one box and labeled “P-pack”.
Electrical scotch no 23 tapes	9		
18w no 33 tapes	18		
250 ml tin panel touch-up paint	1		
All bolts to bolt panels together (sink coated)	Box		
Busbar end covers (Painted red)	2		
100mm x 10 mm anchor bolts and nuts	6		
“J-pack” (A12.2)			
6x25mm inter panel earth bar	1		1 set per panel. Packed in one box labeled “J-pack”.
800 Amp insulated, tinted busbars	3		
800 Amp lh/half joint shroud	3		
800 Amp rh/half joint shroud	3		
M12 washers for busbars	12		
M12 x 55 high tension busbar bolts (sink coated)	6		
M12 nuts	6		
M12 spring washers	6		
Insulated-lock cable ties	6		
“S-pack” (A12.3)			
			1 set as per order. Packed in one box labeled “S-pack”.
Circuit breaker ramp plate	1		
Circuit breaker spring charge handle	1		
Circuit breaker racking handle	1		
Hand-held remote control (pendant control 15m extension lead)	1		

Wall mounted bracket for all items in "S-pack"	1		
"T-pack" (A12.4)			
Tests spouts	1		1 set as per order. Packed in one box labeled "T-pack".
Circuit breaker wear gauge	1		
Trolleys (if applicable)	1		
Set of special tools (if applicable)	1		

6.4.25 Schedule Packs

ITEM	DESCRIPTION	SPECIFIC REQUIREMENT	SANS CLAUSE	PARTICULARS OFFERED AND GUARANTEED
A12.1	Panel Packs as specify in description 5.4.12 above	As per SANS	4.15.1	
A12.2	Jointing Packs as specify in description 5.4.12 above	As per SANS	4.15.2	
A12.3	Switchboard Accessories Packs as specify in description 5.4.12 above	Yes – Wall mounted	4.15.3	
A12.4	Test Packs as specify in description 5.4.12 above	As per NRS	4.15	

Part B: Fixed pattern metal clad ring main unit and associated accessories according to the applicable standards, non-extendable.

6.5.1 Ring Main Units

SCHEDULE B1; B2, B3: - METAL ENCLOSED RING MAIN UNITS					
DESCRIPTION OF PARTICULARS:	UNITS	SPECIFICATIONS	REQUIREMENTS	SANS 1874 CLAUSE S	PARTICULARS OFFERED AND GUARANTEED (SCHEDULE B)
Manufacturer					
Country of origin					
Catalogue/Type designation					
Total switchgear mass	kg	Total mass with kiosk			
Nominal voltage	kV	12			
Rated voltage	kV	12		4.1.1	
Circuit rated normal current	A	200 to 630 (LV fuse Units)		4.3.1.2	
Busbar rated normal current	A	630			
System earthing method	A	NER - 300 A maximum, 20Ω			
Fault breaking capacity	MVA	350			
Fault making capacity	kA	33,4			
Through fault rating for 3 seconds	kA	20			
Standard 1/50 microsecond impulse rating at sea level	kV	95			
Is an indoor or outdoor unit required?		Indoor/outdoor		4.2.1.5	
Is an extensible or non-extensible unit required?		Non- extensible		4.2.2.1	
Degree of protection of unit offered				4.2.3.2	

Specify the configuration	<p>B1. Ring main unit with fused transformer t-off feeder – without metering, fitted inside metal clad outdoor kiosk. (Preferably SF6 gas)</p> <p>B2. Ring main unit with fused Medium Voltage connection feeder – with metering unit, fitted inside metal clad outdoor kiosk. The CT's must be fitted in the cable connection box, easily accessible when test or replaced. The CT, s must be studded for secondary wiring and numbering. The Power transformer fuses on the secondary side must be easily accessible for testing.</p> <p>B3. Ring main unit with two fused t-off feeders- One with metering for medium voltage connection feeder and the other one without metering for a transformer, fitted inside metal clad outdoor kiosk. The CT's must be fitted in the cable connection box of the medium voltage connection, easily accessible when test or replaced. The CT's must be studded for secondary wiring and numbering. The Power transformer fuses on the secondary side must be easily accessible for testing or replacement.</p>		4.2.4	
Integral cable earth facility with lock-out mechanism required		Yes	4.2.5.1	
Type of cable testing facility offered		1	4.2.5.2	
The insulation medium, or the interruption medium (or both) of switch disconnectors, if there is a preference		SF6 Gas and oil is preferred as insulation medium. Price on both.	4.3.2.1	
The insulating medium, or the interrupting medium (or both) of switch disconnectors offered			4.3.2.2	
Maximum transformer load to be protected	kVA	1000	4.4.2.1	
Rated current of fuse link	A	35.5 to 63 (Max)	4.2.1.5	
Type of fuse link offered		Fuse – Striker pin type HRC HT	4.2.2.1	
Dimensions of fuse link offered			4.2.3.2	
Metering CT/PT unit to fit fused isolator		60-30/5 10 VA Class 0.5	4.4.3.2	
Metering Potential Transformer		11kV/110V Star/Star 100VA Class 0.5 Dry type with remote secondary terminals. Low voltage PT fuses must be outside.	4.4.3.3	
Type of protection required on transformer feeder		Fuse– striker pin type HRC HT	4.5.2.1	
What is the insulation medium of the busbar chamber?			4.6.5	

Is a cable boxes required?		Yes	4.7.1.1	
Compound-filled or air-filled cable box required?		Air filled	4.7.1.2	
Cable type		PILC or XLPE	4.7.1.3	
Maximum size(s)		35mm to 185 mm		
Dimensions of cable trench: aa) depth bb) width	mm mm	400 600	4.7.1.4	
Termination type		Heat Shrink	4.7.2.2	
Are only type C bushings required?		Yes	4.7.4.2	
Are the accessories for cable terminations to be supplied		No	4.7.5.1	
Are cable glands to be insulated and fitted with an earth strap?		No	4.7.5.2	
Required method of clamping the cables		PVC wedge cleats	4.7.5.4	
Is a pressure-checking device required?		Yes, If it is SF6 gas and Oil level glass if it is oil filled.	4.9.3	
Quantity of SF ₆	l	Indicate the unit gas pressure.	4.9.5	
Recommended types of tools to install and maintain unit		All special tools must be supplied on order if specified. SF6 gauges and fitting must be supplied with switchgear.	4.14.2	
Method used to attach rating plates		Screwed on	4.15.1	
Method used to attach labels		Screwed on	4.16.1.1	
Is engraving of main circuit designation labels required?		No	4.16.2.5	
If yes, state details		Leave it blank		
Colour of unit		Light - grey	4.17.4	
Is the ring main unit required for a corrosive or a non-corrosive environment?		Non-corrosive	4.17.7	
Details of internal arc tests		Supply test certificates	5.1.3	
Documentation required		Supply all factory tests	5.2(k)	
Number of sets of manuals required, if more than one set		One per each unit delivered.	6.1	
All mounting material necessary to mount the unit is to be supplied with every unit				

6.5.2 Supply and/or repairs of NULEC N-series ACR N12 Pole mounted Automatic Circuit Reclosing Breakers (12 kV).

The N-Series three phase pole/structure mounted auto recloser circuit breaker, must be Sf6 gas filled with vacuum arc interrupters. Supply with integrated CT's and Vt's and with remote control complete with all the brackets and small cabling. Complete with pole top and communication cubicle. **The replacement of the existing Switchgear and Control Panels, with equivalent and compatible equipment, is required should the existing equipment be discontinued or obsolete.**

1.	Rated Voltage	15 kV
2.	Rated Short circuit current	16kA
3.	Rated Load Current	800Amp
4.	Stainless Steel Tank	316 grades, Sf6 gas filled
5.	Arc Interruption	Vacuum
6.	Battery back up	24 VDC (2X12VDC, 7Ah)
7.	Battery charger	24VDC
8.	Sf6 gas refill kit Nulec	Connecting fittings, pipes and gauges. Complete set.
9.	SCADA	Supporting DNP3 Protocol – Level 2

6.5.3 Supply and/or repairs of NULEC N-series ACR N12 Pole mounted Automatic Circuit Reclosing Breakers (36 kV).

1.	Rated Voltage	36 kV
2.	Rated Short circuit current	40 kA
3.	Rated Load Current	800Amp
4.	Stainless Steel Tank	316 grades, Sf6 gas filled
5.	Arc Interruption	Vacuum
6.	Battery back up	24 VDC (2 x 12VDC, 7Ah)
7.	Battery charger	24VDC
8.	Sf6 gas refill kit Nulec	Connecting fittings, pipes and gauges. Complete set.
9.	SCADA	Supporting DNP3 Protocol – Level 2

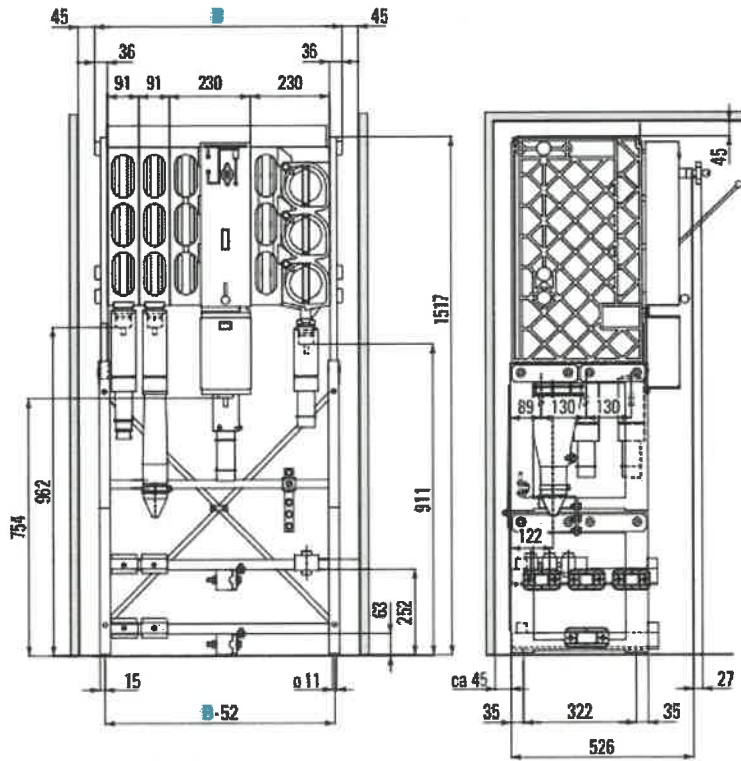
6.5.4 Magnefix Type MF disconnect switch

The Magnefix MF disconnect switches must be supplied complete with brackets and fuses to fit in a miniature substation HT kiosk.

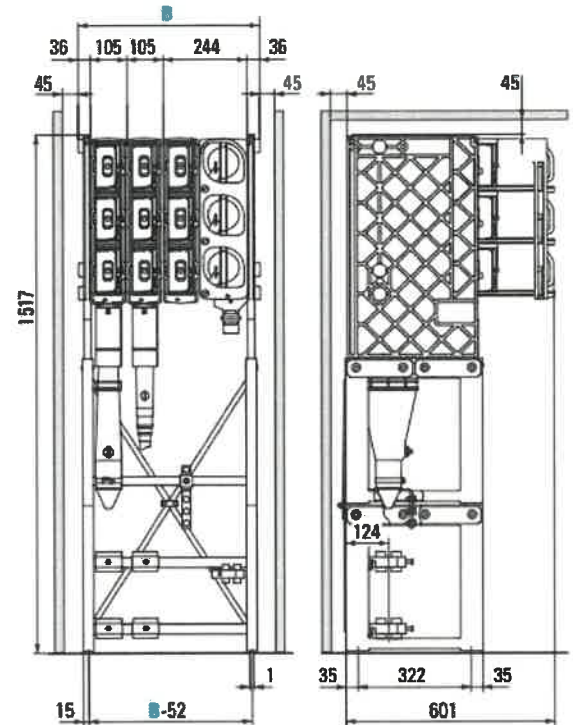
MAGNEFIX TYPE MF		
1.	Cable unit	105 mm
2.	Busbar connection unit	105 mm
3.	Cable unit for top connection	210 mm
4.	Busbar Sectionalizer	210 mm
5.	Fuse protection tee-off	244 mm (30.5 Amp fuses)
6.	Circuit-breaker protection tee-off	-
7.	Total width calculations	$B = C \times 105 + T \times 244 + 72$
(C= number of cable units, T = number of protected tee-offs)		

Magnefix type MF						
1.	Normal current	A	450	450	450	450
2.	Mainly active load breaking current	A	450	450	450	450

3.	Short-circuit making current peak value	kA	50	50	50	50
4.	Short time withstand current	kV - 1s	20	20	20	20
5.	Earth fault breaking current	A	240	240	240	240
6.	Cable charging breaking current	A	25	25	25	25
7.	Normal current	A	450	450	450	450



Magnefix type MD4.



Magnefix type MF.

Picture on the right Magnefix MF

Part C: Vacuum circuit breakers to replace AG16 oil type circuit breakers and the repairs of 12kV switchgear on adhoc quotation bases. **(Retrofit)** The service provider will be responsible for strip and quote quotations on repairs of 11kV switchgear and related equipment and the transport from Bloemfontein to their premises and back.

SCHEDULE C1: VACUUM CIRCUIT BREAKER REPAIR AND RETROFIT (NOTE: No alternations to panel will be allowed, the new vacuum breaker must fit in existing panel)

6.5.5 A. Existing Switch Gear GEC, AG16, to vacuum.

DESCRIPTION OF PARTICULARS	UNITS	SPECIFIED REQUIREMENT	RE-	SANS 1874 CLAUSE	PARTICULARS OFFERED AND GUARANTEED SCHEDULE C
Manufacturer					
Country of origin					
Catalogue/Type designation					
Total switchgear mass	kg				

Nominal voltage	kV	11		
Rated voltage	kV	12	4.1.1	
Circuit rated normal current	A	800	4.3.1.2	
Busbar rated normal current	A	800		
Fault breaking capacity	MVA	350		
Fault making capacity	kA	33,4		
Through fault rating for 3 seconds	kA	20 kA		
Standard 1/50 micro-second impulse rating at sea level	kV	95		
Circuit Breaker to fit Panel		GEC type AG16 (without any alternations to the existing panel)		

B. Existing Switchgear Reyrolle LMS, LMR, LMT to VD4-LMT ABB-Reyrolle CB. (Vacuum)

DESCRIPTION OF PARTICULARS	UNITS	SPECIFIED REQUIREMENT	SANS 1874 CLAUSE	PARTICULARS OFFERED AND GUARANTEED SCHEDULE C
Manufacturer				
Country of origin				
Catalogue/Type designation				
Total switchgear mass	kg			
Nominal voltage	kV	11		
Rated voltage	kV	12	4.1.1	
Circuit rated normal current	A	1250	4.3.1.2	
Busbar rated normal current	A	1250		
Fault breaking capacity	MVA	350		
Fault making capacity	kA	31.5		
Through fault rating for 3 seconds	kA	20 kA		
Standard 1/50 micro-second impulse rating at sea level	kV	95		
Circuit Breaker to fit Panel		Circuit Breaker to fit in existing panel without alternations to panel.		
Replacement of Reyrolle Panel, Current transformers and Voltage Transformers.				
Reyrolle Panel complete with busbars and shutters.	A	1250		

VOLTAGE FORMER	TRANS-			
Install VT		Yes	4.9	
Ratio		11000/110/63.5 Volts		
Burden and Accuracy		100 VA Class 0.5		
Voltage Factor		1.9		
CURRENT FORMERS:	TRANS-	Studded 6mm Brass S connections.		
Install CT's		Yes		
Purpose		OC / EF	4.8	
Ratio		600/1		
Burden		10VA		
Class		5P20		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install Ct's (Differential)		Yes		
Purpose		Diff	4.8	
Burden				
Ratio		600/1		
Class		X or TPS or PX		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install test block PK2-4way		YES (OC/EF)		
Install Ct's (Metering)		YES		
Purpose		Metering	4.8	
Burden		600/300/200/1		
Ratio		10VA		
Class		0.5		
Quantity		3		
Insulation Level		IL 12/28/95 KV		
Install test block PK2-4way		YES (Diff / Metering)		
Required method of clamping the cables		PVC wedge cleats	4.7.5.4	

**6.5.6 Existing Switch Gear. The following Existing Circuit breakers must be repaired:
(Strip &Quote)**

Make	Type
Reyrolle LMS	LMS/X1/QMRO
Reyrolle LMR	LMR/X2/QMRO
Reyrolle LMT	LMT2/X31/QM
Actom	SBV4E/2000/25/SI
Johnson & Phillips	PDB/A/2Z and TSB16
GEC	PDB/A/400
HAWKER SIDDELEY	VIL-6 and R4/1 and V4/1 and D6XD
FIRST ELECTRIC	JB621
BRUSH	W4/11 and S4

LONG & CRAWFORD	AVS2
ALSTOM	AGVB-800/20/S and SBV4/800/20-S1
SACE BERGAMO	RM1235
BRITISH THOMPSON	BTH/JB621 and LC/B3
BRUSH	W4/11
NULEC	N24S-ACR-SF6-24-12-150
JG STATTER	VTGR150
YORKSHIRE	YSF6
RMU Actom	K3 oil and gas
RMU Magenefix	Dry Type Air
RMU GEC	T3 oil
RMU ABB	Gas
RMU Schneider	Gas
RMU Tiger	oil
Nulec switchgear outdoor pole mounted.	Sf6 Gas

6.5.7 Supply of switching- and spring charges handles on the following types of existing switchgear.

Make	Type
Reyrolle LMS	LMS/X1/QMRO
Reyrolle LMR	LMR/X2/QMRO
Reyrolle LMT	LMT2/X31/QM
Actom	SBV4E/2000/25/SI
Johnson & Phillips	PDB/A/2Z and TSB16
GEC	PDB/A/400
HAWKER SIDDELEY	VIL-6 and R4/1 and V4/1 and D6XD
FIRST ELECTRIC	JB621
BRUSH	W4/11 and S4
LONG & CRAWFORD	AVS2
ALSTOM	AGVB-800/20/S and SBV4/800/20-S1
SACE BERGAMO	RM1235
BRITISH THOMPSON	BTH/JB621 and LC/B3
BRUSH	W4/11
NULEC	N24S-ACR-SF6-24-12-150
JG STATTER	VTGR150
YORKSHIRE	YSF6
RMU Actom	K3 oil and gas
RMU Magenefix	Dry Type Air
RMU GEC	T3 oil
RMU ABB	Gas
RMU Schneider	Gas
RMU Tiger	oil
Nulec switchgear outdoor pole mounted.	Sf6 Gas

7. HEALTH AND SAFETY REQUIREMENTS

- 7.1 All the equipment must be plastic wrapped and secure when transport.
- 7.2 All the Items must be properly labeled with sticker, after wrapping, to identify the offloading without unwrapping the plastic rapping.
- 7.3 The offloading of equipment on CENTLEC premises must be done safely.
- 7.4 All chemical data sheets must be delivered with equipment.
- 7.5 Maintenance manuals must be delivered with equipment.

8. EVALUATION CRITERIA

All proposals submitted will be evaluated in accordance with the criteria set out in the policy of Supply Chain Management of the Entity.

The most suitable candidate will then be selected. Please take note that CENTLEC is not bound to select any of the bidders' submitting proposals.

Furthermore, technical competence is the principal selection criteria, CENTLEC will evaluate the technical criteria first, and will only look at the price and BBBEE level of contribution if it is satisfied with the technical evaluation. As a result of this, CENTLEC does not bind itself in any way to select the bidder offering the lowest price.

The relative specific goal criteria are as follows:

No.	Criteria	Description	Points
8.1	Track record and experience	Submit reference letter(s), signed off by an authorised official to confirm the successful completion of manufacturing, supplying, and delivering of similar equipment to a local authority. Two (2) letters = 10 points Three (3) or more letters = 20 points.	20
8.2	Capability	The bidder(s) must provide proof of their ability to manufacture this equipment by submit prove of the following: (Submit contracts of agreements, on signed letter head, if outsourced, for the duration of contract.) Manufacturer Licensed facility = 10 Points Testing facilities (submit a valid accreditation certificate) = 10 Points Field services for installation (Letter of commitment) = 10 Points	30
8.3	Technical schedules	Did the Manufacturer complete all the Schedules and submit it? Spare list must be completed = 30 Points	30

No.	Criteria	Description	Points
8.4	Guarantee and Warranty	Submit Ten Year (10) warranty and guarantee that is signed by the manufacturer of the relays = 10 points	10
8.5	Local (Mangaung) operational capability and economic investment	Does the bidder have a local office with operational capability? (a) Existing and established local office = 10 points (b) If not, but within RSA = 5 points	10
TOTAL			100

A bidder who gets a minimum of 85 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 – 10 points

Item 2 – 30 points

Item 3 – 30 points

Item 4 – 10 points

Item 5 – 5 points in the Evaluation Criteria.

8.2. PRICE AND REFERENTIAL POINTS SCORING – STAGE 2 (Price and B-BBEE status)

All Bidders that have passed the technical evaluation threshold of 85 points would also be scored based the 90/10 principle where 90 Points is for the Price and 10 points for B-BBEE as per the detail given below.

8.3 Points awarded for price

A maximum of 90 Points is allocated for price on the following basis:

$$\text{Where } P_s = 90 \left[1 - \frac{P_t - P_{\min}}{P_{\min}} \right]$$

P_s = Points Scored for comparative price of bid under consideration

P_t = Comparative Price of bid under consideration

P_{\min} = Comparative Price of lowest acceptable bid

8.4POINTS AWARDED FOR SPECIFIC GOALS

In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table below as may be supported by proof/ documentation stated in the conditions of this tender:

Specified Goals for Preferential Point System

Specified Goals	Points Allocation
50% Black owned	10
50% Women owned	5
50% Youth owned <35 years	5
Total Points	20

Table 3: Specified Goals

8. PRICING SCHEDULES

8.1 Quotation Price

8.1.1 The bid price(s) shall be SEIFSA based priced

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

PRICE SCHEDULE FOR SPARES, Current transformers on special order. (Ad-hoc purchase) Prices must exclude VAT and include delivery to our CENTLEC stores.

Ite m	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
1	100-50/5, 10 VA, Class 0.5 IL12/28/75 kV	Each			
2	100-50/10VA, 10P10 IL12/28/75 kV	Each			
3	Combined CT, 100-50/5, 10 VA Class 0.5, IL12/28/75 kV 100-50/5, 10VA, 10P10 IL12/28/75 kV	Each			
4	Combined CT 100-50/5, 10 VA Class 0.5, IL12/28/75 kV 600/1, 10VA, 10P10 IL12/28/75 kV	Each			
5	300-200-100/5, 10VA, Class 0.5 IL12/28/75 kV 600/1, 10VA, 10P10 IL12/28/75 kV	Each			
6.	60/30/5, 10VA, 10P10, Ring type IL12/28/75 kV	Each			
7.	600/5, 10VA, 10P10, Ring Type	Each			

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	IL12/28/75 kV				
8	60-30/5, 10 VA, Class 0.5, IL12/28/75 kV	Each			
9	100-50/5, 10 VA, Class 0.5, IL12/28/75 kV	Each			

NOTE: PRICES OF SPARES, for existing infrastructure, on the SBV3, SBV4, GEC, J&P and English Electrical Switch gear. Please include circuit breaker list for spares. Prices must exclude VAT and include delivery to our CENTLEC stores.

Item	Description	Unit of Measurement	Manufacturer	Unit Price in (R)	Delivery Time
1	32 Volt trip coil	Each			
2	32 Volt closing coil	Each			
3	110 Volt trip coil	Each			
4	110 Volt Closing coil	Each			
5	110 Volt DC Spring charges motor	Each			
6	Circuit Breaker Contacts 400 Amp	Set of Three			
7	Circuit Breaker Contacts 800 Amp	Set of Three			
8	Circuit Breaker contacts 1600 Amp	Set of Three			
9	Circuit Breaker contacts 2000 Amp	Set of Three			
10	Vacuum Bottle replacement per set 400 Amp	Set of Three			
11	Vacuum Bottle replacement per set 1600 Amp	Set of			

Item	Description	Unit of Measurement	Manufacturer	Unit Price in (R)	Delivery Time
		Three			
12	Vacuum Bottle replacement per set 2000 Amp	Set of Three			
13	SF6 gas gauges for refilling of Sf6 gas	Set of Three			
14	Auxiliary contacts rotor switch for 110 Volt breaker	Each			
15	Auxiliary contacts rotor switch for 32 Volt breaker	Each			
16	Set of limit switches per circuit breaker	Per/set			
17	Touch-up paint 1 litre tin for panels	500ml			
18	400Amp Copper Busbars silver plated per/set of 3 with all Bolts & nuts	Set of Three			
19	Set of Three (3) 400 Amp Cable side spouts (Mono blocks)	Set of Three			
20	Set of Three (3) 400amp Busbar side spouts (Mono blocks)	Set of Three			
21	Set of Three (3) 800 Amp Cable side spouts (Mono blocks)	Set of Three			
22	Set of Three (3) 800amp Busbar side spouts (Mono blocks)	Set of Three			
23	Set of Three (3) 2000amp Busbar side spouts (Mono blocks)	Set of Three			
24	Set of Three (3) 2000 Amp Cable side spouts (Mono blocks)	Set of Three			
25	LED type lamp indicator Red, Yellow, Clear and green.	Set of Three			
26	12 kV Surge arresters x Three (3)	Set of Three			

Item	Description	Unit of Measurement	Manufacturer	Unit Price in (R)	Delivery Time
27	Voltage Transformer, 11000/110 V, 100VA, 3 limb, Voltage factor 1.9, accuracy class 0.5. Complete with base.	Each			
28	Set of Three (3) Voltage transformer, Cu busbar raisers on the cable side.	Set of Three			
29	Set of Three (3) Voltage transformer, Cu busbar raisers on the busbar side.	Set of Three			
30	Current transformers 600/1,5P20, 10VA, IL 12/28/75 kV.	Each			
31	Current transformers 600/1, class X, IL 12/28/75 kV.	Each			
32	Current transformers 300/200/100/5, class 0.5, IL 12/28/75 kV.	Each			
33	Current transformers 60/30/5, class 0.5, IL 12/28/75 kV.	Each			
34	Dual Current transformers 600/1,10P10, 10VA, IL 12/28/75 kV. Current transformers 300/200/100/5, class 0.5, IL 12/28/75 kV.	Each			
35	Dual Current transformers 600/1,10P10, 10VA, IL 12/28/75 kV. Current transformers 60/30/5, class 0.5, IL 12/28/75 kV.	Each			
36	Plug sock for pendant control on panels, price per each.	Each			
37	All weather door for ring main K-3 type unit	Each			

Item	Description	Unit of Measurement	Manufacturer	Unit Price in (R)	Delivery Time
	three cable entries.				
38	Safety side wall for panels (Fire wall)	Each			
39	Hand-held remote control	Each			
40	J-packs for SBV3 2000Amp	Each			
41	J-packs for SBV3-E 2000Amp	Each			
42	J-packs for AG16 GEC Panel 800Amp	Each			
43	Nulec Battery charger 24VDC	Each			
44	Sf6 gas refill kit Nulec. Connecting fittings, pipes and gauges. Complete set.	Each			
45	GEC AG16 tank rubber packings	Each			
46	GEC AG16 inside tank insulation	Each			

PRICE SCHEDULE FOR SPARES, for existing infrastructure, 30VDC RELAYS: (Ad-hoc purchase) Prices must exclude VAT and include delivery to our CENTLEC stores.

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
1	<p>Overcurrent, Earth Fault and Sensitive Earth Fault Numerical Relay. Compliant to the Technical Specifications below:</p> <p>i. Power Supply: 24 to 48VDC</p> <p>ii. Secondary Input Current: 3 x AC 1A plus a 50mA Neutral Input.</p> <p>iii. Voltage Input: VNOM (L-L) should have the following specifications: 20 to 440V for</p>	Each			

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	<p>DELTA_Y for DELTA and WYE</p> <p>Configurable labels: Yes</p> <p>Programmable pushbuttons: Minimum of four programmable push button, each with programmable LEDs</p> <p>Communication Ports:</p> <p>Rear: 1 x 10/100 Base-T plus 1 x 1 RS 232 port.</p> <p>Front: 1 x Serial Port</p> <p>Communications Protocol: DNP3 level 2 minimum.</p> <p>Digital Optoisolated Inputs: Minimum of 8. Universal – 24VDC (External wetting); Inputs should be individually user-configured to operate.</p> <p>High Speed, High current Interruption (Outputs): Minimum of 6A continuous current – Minimum of 8 Universal – 19.2 to 60 VDC for the 24 to 48 power supply.</p> <p>Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p>				

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	xiv. Relay dimensions: Must be able to fit onto the control panel portion of the switchgear				
1.1	50mA neutral SEF Element as a replaceable card or component. 30VDC. (Only the card or component alone)	Each			
1.2	1Amp OC/EF Element as a replaceable card or component. 30VDC. (Only the card or component alone)	Each			
2	Pilot Wire Current Differential Protection <ul style="list-style-type: none"> i. High transient stability ii. High speed operation iii. Low phase and earth fault settings iv. Little or no variation of settings with pilot length v. In zone bleed off up to 20% of rated load vi. 15kV pilot isolation option vii. Be connected as either Solkor Rf or SolkorR viii. Rated Frequency: 50Hz/60Hz ix. Operating Frequency range: 47Hz to 52Hz x. Max. Loop resistance: For R Mode: 1000 ohm For Rf Mode: 2000 ohm xi. Peak Voltage applied to pilots under fault conditions: For R Mode: 300v 	Each			

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	<p>For RF Mode: 450v</p> <p>xii. Maximum current carried by pilots under fault conditions:</p> <p>For R Mode: 200mA</p> <p>For Rf Mode: 250mA</p> <p>NB! It is critical that it be noted that the existing Pilot Wire Protection relays are the Solkor R/RF make. The relays on Offer must be compatible with them.</p>				
3	<p>Overcurrent, Earth Fault and Sensitive Earth Fault Numerical Relay. Compliant to the Technical Specifications below:</p> <p>i. Power Supply: 24—48 VDC nominal</p> <p>ii. Secondary Input Current: 1 Amp Phase, 1 Amp Neutral; 5Amp Phase, 5Amp Neutral; 1Amp Phase, 50mA Neutral (nondirectional Sensitive Earth fault [SEF]).</p> <p>iii. Voltage Input: Nominal range:</p> <p>iv. Line-to-Neutral: 67-120 Vrms</p> <p>v. Line-to-Line: 115-120 Vrms</p> <p>vi. Configurable labels: Yes</p> <p>vii. Pushbuttons: Minimum of eight operator control push buttons.</p> <p>viii. Front panel LEDs: Status and Trip Target LEDs.</p> <p>ix. Communication Ports:</p> <p>x. Rear: 1 x 10/100 Base-T plus 1 x 1 RS 232 port.</p> <p>xi. Front: 1 x Serial Port; EIA-485</p>	Each			

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
xii.	Firmware: Standard				
xiii.	Communications Protocol: Should have the following protocols: DNP 3.00 Level 2 Slave.				
xiv.	Digital Optoisolated Inputs: Minimum of on for 15–30 VDC for VDC control inputs; and 12.8–30.0 Vac for Vac control inputs; Inputs should be individually user-configured to operate.				
xv.	High Speed, High current Interruption (Outputs): Minimum of 15 Universal outputs with the following criteria: Make: 30 A; Carry: 6 A continuous carry; MOV Protection: 270 Vac/360 VDC; 40 J;				
xvi.	Arc Flash capability: No				
xvii.	Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).				
xviii.	Protection elements: Phase Fault Overcurrent Protection; Adaptive Phase Overcurrent Elements; Ground Fault Overcurrent Protection; Directional Ground Protection; Under- and Overvoltage Elements; Under- and Over Frequency Protection; Rate-of-Change-of-Frequency Protection; Harmonic Blocking; Sequence Voltage Elements; Fault Locator				
xix.	Relay Logic/Automation: Relay should have: local control logic points; remote control logic points; latching logic points; counters; math variables; logic variables; timers				

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	xx. Monitoring and reporting: Event Reporting and Sequential Events Recorder (SER)				
4	Bus Differential and Breaker failure protection Numerical Relay. Compliant to the Technical Specifications below: i. Power Supply: 48/125 VDC or 110-120 VAC ii. Mainboard Input Voltage: 110 VDC iii. Secondary Input Current: 1 Amp Phase, 1 Amp Neutral. iv. Voltage Input: 3 AC Voltage, 21 AC Current v. Configurable labels: Yes vi. Programmable pushbuttons: Trip/Close Pushbuttons; 8 operator control pushbuttons vii. Front panel LEDs: Status and Trip Target LEDs (minimum of 16) viii. Communication Ports: ix. Rear: Ethernet Card with Two 10/100 Base-T plus 1 x 1 RS 232 port x. Front: 1 x Serial Port; EIA-485 xi. Firmware: Includes Mirrored Bits and Load Profile. xii. Communications Protocol: Should have the following protocols: DNP 3.00 Level 2 Slave, FTP, Telnet, and DNP3 LAN/WAN xiii. Digital Optoisolated Inputs: Minimum of				

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	<p>16 – 110 Vac/VDC digital inputs with a pickup 88–132 VDC; Dropout 66 VDC (External wetting); Inputs should be individually user-configured to operate.</p> <p>xiv. High Speed, High current Interruption (Outputs): Minimum of 15 Universal outputs with the following criteria: Make: 30 A; Carry: 6 A continuous carry; MOV Protection: 270 Vac/360 VDC; 40 J;</p> <p>xv. Arc Flash capability: No</p> <p>xvi. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p> <p>xvii. Protection elements: Phase Fault Overcurrent Protection; Adaptive Phase Overcurrent Elements; Ground Fault Overcurrent Protection; Directional Ground Protection; Under- and Overvoltage Elements; Under- and Over Frequency Protection; Rate-of-Change-of-Frequency Protection; Harmonic Blocking; Sequence Voltage Elements; Fault Locator</p> <p>xviii. Relay Logic/Automation: Relay should have: local control logic points; remote control logic points; 2 latching logic points; counters; math variables; logic variables; timers</p> <p>xix. Monitoring and reporting: Event Reporting and Sequential Events Recorder (SER)</p>				
5	Transformer differential protection, Numerical				

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	<p>cal Relay. Compliant to the Technical Specifications below:</p> <p>i. Power Supply: 125/250 VDC or VAC; 85–350 VDC or 85–264 Vac</p> <p>ii. AC Secondary Input Current: Secondary Input Current 1 Amp Phase, 1 Amp Neutral, including 2xREF Element; 3 A continuous, 100 A for 1 s;</p> <p>iii. Voltage Input: No</p> <p>iv. Configurable labels: No</p> <p>v. Front panel LEDs: Status and Trip Target LEDs</p> <p>vi. Programmable pushbuttons: Minimum of eight operator control pushbuttons</p> <p>vii. Communication Ports:</p> <p>viii. Rear: 1 x 10/100 Base-T plus 1 x 1 RS 232 port.</p> <p>ix. Front: 1 x Serial Port</p> <p>x. Communications Protocol: Should have the following protocols: DNP 3.00 Level 2 Slave,</p> <p>xi. Digital Optoisolated Inputs: Minimum of 16 – 110 Vac/VDC digital inputs with a pickup 88–132 VDC; Dropout 66 VDC (External wetting); Inputs should be individually user-configured to operate.</p> <p>xii. High Speed, High current Interruption (Outputs): Minimum of 15 Universal outputs with the following criteria: Make: 30 A; Carry: 6 A continuous carry; MOV Protection:</p>				

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	<p>270 Vac/360 VDC; 40 J; xiii. Arc Flash capability: No xiv. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay). xv. Relay Logic/Automation: Relay should have: local control logic points; remote control logic points; latching logic points; counters; math variables; logic variables; timers xvi. Monitoring and reporting: Event Reporting and Sequential Events Recorder (SER) xvii. Protection elements: Relay should have the following protection elements: Percentage Differential Protection; Harmonic and DC Elements; Unrestrained Differential Protection; Overcurrent Fault Protection; Restricted Earth Fault Protection; Through-Fault Event Monitor; CT Phase Angle Compensation</p>				
6	<p>Overcurrent, Earth Fault and Sensitive Earth Fault Numerical Relay. Compliant to the Technical Specifications below:</p> <p>i. Power Supply: 125VDC or 120 VAC ii. Secondary Input Current: 1 Amp Phase, 1 Amp Neutral; 5Amp Phase, 5Amp Phase; 1Amp Phase, 0.05Amp Neutral (nondirectional Sensitive Earth fault [SEF]). iii. Voltage Input: No iv. Configurable labels: Yes</p>				

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
v.	Pushbuttons: Minimum of eight operator control push buttons; Trip/Close Pushbuttons				
vi.	Front panel LEDs: Status and Trip Target LEDs				
vii.	Communication Ports:				
viii.	Rear: 1 x 10/100 Base-T plus 1 x 1 RS 232 port.				
ix.	Front: 1 x Serial Port; EIA-485				
x.	Firmware: Includes Mirrored Bits and Load Profile.				
xi.	Communications Protocol: Should have the following protocols: DNP 3.00 Level 2 Slave, standard protocols; IEC 61850				
xii.	Digital Optoisolated Inputs: Minimum of 16 – 110 Vac/VDC digital inputs with a pickup 88–132 VDC; Dropout 66 VDC (External wetting); Inputs should be individually user-configured to operate.				
xiii.	High Speed, High current Interruption (Outputs): Minimum of 15 Universal outputs with the following criteria: Make: 30 A; Carry: 6 A continuous carry; MOV Protection: 270 Vac/360 VDC; 40 J;				
xiv.	Arc Flash capability: No				
xv.	Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).				
xvi.	Protection elements: Phase Fault Overcurrent Protection; Adaptive Phase Overcurrent Elements; Ground Fault Overcurrent Protec-				

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	tion; Directional Ground Protection; Under- and Overvoltage Elements; Under- and Over Frequency Protection; Rate-of-Change-of-Frequency Protection; Harmonic Blocking; Sequence Voltage Elements; Fault Locator xvii. Relay Logic/Automation: Relay should have: local control logic points; remote control logic points; latching logic points; counters; math variables; logic variables; timers xviii. Monitoring and reporting: Event Reporting and Sequential Events Recorder (SER)				
7	Overcurrent, Earth Fault and Sensitive Earth Fault Numerical Relay. Compliant to the Technical Specifications below: i. Power Supply: Universal – 24 to 120V DC/AC. ii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input. iii. Voltage Input: 110V phase to phase AC Voltage. iv. Configurable labels: Yes v. Communication Ports: Rear: 1 x 10/100 Base-T plus 1 x 1 RS 232 port. vii. Front: 1 x Serial Port viii. Communications Protocol: DNP3_level 2 minimum ix. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage ap-				

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	<p>plication (External wetting); Inputs should be individually user-configured to operate.</p> <p>x. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application.</p> <p>xi. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>xii. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p> <p>xiii. Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.</p>				
8	<p>Arc fault monitor. Compliant to the Technical Specifications below:</p> <p>20 – 60 VDC</p> <ul style="list-style-type: none"> i. Should have a tri-colour LED. ii. Front push button reset. iii. Minimum of three arc sensor inputs iv. Two high speed tripping duty arc sense output contacts: 2 N/O, 1 N/C for the power supply. v. Output contact ratings: Continuous current carrying ability should be 5A AC or DC. vi. Transient overvoltage: Between all termi- 				

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	<p>nals and earth – 5kV 1.2/50 microseconds, 0.5 J.</p> <p>Between independent circuits without damage or flashover – 5kV 1.2/50 microseconds 0.5 J.</p> <p>vii. Case: ZA12 flash or DIN rail mount type</p> <p>viii. Must have a continuous arc sensor supervision.</p> <p>ix. Should have Intergrated self-supervision.</p> <p>x. Should have a fail alarm contact</p> <p>xi. Operating voltage: 20 - 60Vdc</p> <p>xii. Should provide three optical arc fault sensors that is applicable to the device. The sensor should have the following characteristics: Compact rugged design, three optical detectors, high speed arc detection, Optional 20m and screened cable, heavy duty 6m terminal cables, sealed unit for harsh environments.</p>				
9	<p>Arc fault monitor. Compliant to the Technical Specifications below:</p> <p>110 – 150 VDC</p> <p>i. Should have a tri-colour LED.</p> <p>ii. Front push button reset.</p> <p>iii. minimum of three arc sensor inputs.</p> <p>iv. Two high speed tripping duty arc sense output contacts: 2 N/O, 1 N/C for the power</p>				

Item	Description	Unit of measurement	Manufacturer	Price in (R)	Delivery Time
	<p>v. Output contact ratings: Continuous current carrying ability should be 5A AC or DC.</p> <p>vi. Transient overvoltage: Between all terminals and earth – 5kV 1.2/50 microseconds, 0,5 J.</p> <p>Between independent circuits without damage or flashover – 5kV 1.2/50 microseconds 0.5 J.</p> <p>vii. Case: ZA12 flash or DIN rail mount type</p> <p>viii. Must have a continuous arc sensor supervision.</p> <p>ix. Should have Intergrated self-supervision.</p> <p>x. Should have a fail alarm contact.</p> <p>xi. Operating voltage: 110 -150Vdc</p> <p>xii. Optical ARC flash sensor: Should provide three optical arc fault sensors that is applicable to the device.</p> <p>The sensor should have the following characteristics: Compact rugged design, three optical detectors, high speed arc detection, Optional 20m and screened cable, heavy duty 6m terminal cables, sealed unit for harsh environments.</p>				
10	<p>Fiber optic Arc fault sensor.</p> <p>i. Fiber-optic point sensors that comply with relay specifications mentioned in previous sections.</p>				

PRICES AND DELIVERY SCHEDULE - Prices must exclude VAT and include delivery to our CENTLEC stores.

PART A – PRICING FOR METAL-CLAD SWITCHGEAR:

Item	Sched- ule	Description	Unit of meas- urement	Price per unit in (R)for vacuum VCB's	Manufacturer	Delivery period in weeks
1.	A1	Switch - Disconnecter panel - diagram 1/10	Each			
2.	A2	Circuit breaker panel - diagram 2/10	Each			
3.	A3	MV Connection < 1 MVA Circuit breaker panel - diagram 3/10	Each			
4.	A4	MV Connection > 1 MVA Circuit breaker panel - diagram 4/10	Each			
5.	A5.	Secondary feeder Circuit breaker panel - diagram 5/10	Each			
6.	A6	Primary feeder (out-going) Circuit breaker panel - diagram 6/10	Each			
7.	A7	Transformer feeder Circuit breaker panel - diagram 7/10	Each			
8.	A.8	Overhead line feeder Circuit breaker panel - diagram 8/10	Each			
9.	A.9	Primary feeder - (In-coming) Circuit breaker panel - diagram 9/10 Bus- Section switch (busbar coupler)	Each			

Item	Sched- ule	Description	Unit of meas- urement	Price per unit in (R)for vacuum VCB's	Manufacturer	Delivery period in weeks
10.	A.10	Fused switch disconnecter - di- agram 10/10	Each			
11.	1	Complete Magnetix Disconnect- or switch (5.5.2)	Each			
12.	2	Complete Nulec N-series ACR N12 recloser / circuit breaker. (5.5.3)	Each			

5.4.11 PRICING FOR 110VDC PANELS: Tender must be for single and double busbars. (Upper bar and back bar) Complete with busbars.
(SBV3 and SBV3 E or compatible equivalent without juggle boxes)

Item	Sched- ule	Description	Unit	Price per unit in (R) for Sin- gle Bar	Price per unit in (R)for Front and Back Bar	Price per unit in (R)for Upper and Lower Bar	Manufacturer	Delivery period weeks
1.	5.4.11 A	Feeder panel	Ea ch					
2.	5.4.11 B	Incomer pan- el with 3Limb VT	Ea ch					
3.	5.4.11 B	Incomer pan- el with 5Limb VT	Ea ch					

Item	Schedule	Description	Unit	Price per unit in (R) for Single Bar	Price per unit in (R) for Front and Back Bar	Price per unit in (R) for Upper and Lower Bar	Manufacturer	Delivery period weeks
4.	5.4.11. C	Bus Coupler panel	Ea ch					
5.	5.4.12. D	Power transformer 11000/110 V, 100VA, 5 limb, Voltage factor 1.9, accuracy class 0.5. Complete with base and busbar raisers.	Ea ch					
6.	5.4.13. E	Power transformer 11000/110 V, 100VA, 3 limb, Voltage factor 1.9, accuracy class 0.5. Complete with base and busbar raisers.	Ea ch					

5.4.12 PRICING FOR PACKS – 11kV VACUUM CIRCUIT BREAKERS:

Item	Schedule	Description	Unit of measurement	Price per unit in (R)for vacuum VCB's	Manufacturer	Delivery period in weeks
1.	A12.1	Panel packs "P"-packs (all tapes, bolts and nuts for panels included)	Each			
2.	A12.2A	a) Jointing packs "J"-packs 400 Amp silver coated on the connection points. (Bolts and nuts included)	Each			
3.	A12.2B	b) Jointing packs "J"-packs 800 Amp silver coated on the connection points. (Bolts and nuts included)	Each			
4.	A12.2C	c) Jointing packs "J"-packs 2000 Amp silver coated on the connection points. (Bolts and nuts included)	Each			
5.	A12.3	Switchboard accessories "S"-packs.	Each			
6.	A12.4	Test packs "T"-packs	Each			
7.	A12.3	Hand-held remote control	Each			

PART B – NON-EXTENSIBLE RING MAIN UNITS 11kV–

Prices must exclude VAT and include delivery to our CENTLEC stores.

Item	Schedule	Description	Unit of measurement	Price per unit (R) for Oil (per litre)	Price per unit (R) for SF6 Gas (per kg)	Manufacturer	Delivery period in weeks
1.	B1	Ring main unit with fused transformer feeder without metering	Each				
2.	B2	Ring main unit with fused transformer feeder with metering unit, fitted inside metal clad outdoor kiosk	Each				
3.	B3	Ring main unit with two fused transformer feeders- One with metering and the other one without metering	Each				

PART C – 1. A. Oil to Vacuum Circuit Breakers Retrofit and Repair of The Listed Circuit Breakers, 12kV.

Prices must exclude VAT and include delivery to our CENTLEC Premises.

Item	Schedule	Description	Unit	Unit total price in (R)	Manufacturer and Service provider to be stated below.	Delivery period in weeks
1.	C1 a)	Vacuum circuit breaker to retrofit type PDB oil circuit breaker to fit the panel without any alternations to the panel. This must be for GEC, English-Electric and Johnson & Phillips. Type AG 16.1 1kV switchgear.	Each			
2.	C1 b)	Transport of circuit breaker	p/km			

Item	Schedule	Description	Unit	Unit total price in (R)	Manufacturer and Service provider to be stated below.	Delivery period in weeks
3.	C1 c)	Labour	p/hour			
4.	C1 d)	Repair CB on existing switchgear list below. NB! "Strip & Quote" will be applicable.	Each			
5.	C1 e)	Retrofit the Reyrolle breakers spring charge mechanism with new spring charges motors.	Each			

PART D - Retrofit existing switchgear, SF6 circuit breakers in particular - Reyrolle LMS, LMR, LMT to the replacement and equivalent vacuum or SF6 circuit breaker that will fit into the existing panel. The 110V circuit breaker panels)

DESCRIPTION OF PARTICULARS	UNITS	SPECIFIED REQUIREMENT	Unit	Unit total price in (R)	Delivery period in weeks
Manufacturer			Each		
Country of origin					
Insulation (Arc extinguishing) medium					
Circuit breaker type					
Total switchgear (circuit breaker) mass	kg				
Nominal voltage	kV	11			
Rated voltage	kV	12			
Circuit rated normal current	A	1250			
Busbar rated normal current	A	1250			
Fault breaking capacity	MVA	350			
Fault making capacity	kA	31.5			
Through fault rating for 3 seconds	kA	20 kA			

DESCRIPTION OF PARTICULARS	UNITS	SPECIFIED REQUIREMENT	Unit	Unit total price in (R)	Delivery period in weeks
Standard 1/50 microsecond impulse rating at sea level	kV	95			
Spring charge motor (110V DC)					
Closing coil (110V DC)					
Trip coil (110V DC)					
Circuit Breaker to fit Panel		Circuit Breaker to fit in existing panel without alternations to panel.			

PART E - Retrofit existing switchgear, SF6 circuit breakers in particular - Reyrolle LMS, LMR, LMT to the replacement and equivalent vacuum or SF6 circuit breaker that will fit into the existing panel. The 32V circuit breaker panels)

DESCRIPTION OF PARTICULARS	UNITS	SPECIFIED REQUIREMENT	Unit	Unit total price in (R)	Delivery period in weeks
Manufacturer					
Country of origin					
Insulation (Arc extinguishing) medium					
Circuit breaker type					
Total switchgear (circuit breaker) mass	kg				
Nominal voltage	kV	11			
Rated voltage	kV	12			
Circuit rated normal current	A	1250			
Busbar rated normal current	A	1250			

DESCRIPTION OF PARTICULARS	UNITS	SPECIFIED REQUIREMENT	Unit	Unit total price in (R)	Delivery period in weeks
Fault breaking capacity	MVA	350			
Fault making capacity	KA	31.5			
Through fault rating for 3 seconds	KA	20 KA			
Standard 1/50 microsecond impulse rating at sea level	KV	95			
Spring charge motor (32V DC)					
Closing coil (32V DC)					
Trip coil (32V DC)					
Circuit Breaker to fit Panel		Circuit Breaker to fit in existing panel without alternations to panel.			

PART F: Replacement of Reyrolle Panel - Feeder Protection Panel without Pilot Wire Protection.
NB: Panel can be ordered either with 600/5 or 600/1 Current Transformers as well as a 1A or 5A Nominal Current, Numerical Protective Relay as described in the table below.

DESCRIPTION OF PARTICULARS	UNITS	SPECIFIED REQUIREMENT	Unit	Unit price in (R)	Delivery period in weeks
Reyrolle Panel complete with bus-bars and shutters.	A	1250	Each		
VOLTAGE TRANSFORMER					
Install VT		NA			
Ratio			Each		
Burden and Accuracy					

DESCRIPTION OF PARTICULARS	UNITS	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
Voltage Factor						
CURRENT TRANSFORMERS: Studded 6mm Brass "S" connections.						
Manufacturer						
Install CT's		Yes				
Purpose		OC / EF				
Ratio		600/1				
Burden		15VA	Each			
Class		10P10				
Quantity		3				
Insulation Level		IL 12/28/95 KV				
ALTERNATIVE CTs TO BE INSTALLED						
Purpose		OC / EF				
Ratio		600/5				
Burden		15VA	Each			
Class		10P10				
Quantity		3				
Insulation Level		IL 12/28/95 KV				
Install Ct's (Differential)		N/A				
Purpose						
Burden						
Ratio						
Class			Each			
Quantity						
Insulation Level						
Install test block PK2-4way						
Install Ct's (Metering)		YES (OC/EF)	Each			
Purpose		N/A				
Burden						
Ratio			Each			
Class						

DESCRIPTION OF PARTICULARS	UNITS	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
Quantity						
Insulation Level						
Install test block PK2-4way		N/A				
PROTECTIVE RELAY						
Manufacturer						
Protective Relay: Time Overcurrent and Earth Fault Protection		<p>Overcurrent, Earth Fault and Sensitive Earth Fault Numerical Relay. Compliant to the Technical Specifications below:</p> <ul style="list-style-type: none"> i. Power Supply: Universal – 24 to 120V DC/AC. ii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input. iii. Voltage Input: 110V phase to phase AC Voltage. iv. Configurable labels: Yes v. Communication Ports: vi. Rear: 1 x 10/100 Base-T plus 1 x 1 RS 232 port. vii. Front: 1 x Serial Port viii. Communications Protocol: DNP3_level 2 minimum ix. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate. x. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application. xi. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay. 				

DESCRIPTION OF PARTICULARS	UNITS	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
		xii. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay). xiii. Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.				

PART G: Replacement of Reyrolle Panel - Feeder Protection Panel with Pilot Wire Protection.

NB: Panel can be ordered either with 600/5 or 600/1 Current Transformers as well as a 1A or 5A Nominal Current, Numerical Protective Relay as described in the table below. The Pilot Wire Protection Relay is also to be added to this panel.

DESCRIPTION OF PARTICULARS	UNIT	S	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
Reyrolle Panel complete with bus-bars and shutters.	A		1250	Each			
VOLTAGE TRANSFORMER							
Install VT			NA				
Ratio							
Burden and Accuracy				Each			
Voltage Factor							
CURRENT TRANSFORMERS: Studded 6mm Brass "S" connections.							
Install CT's			Yes				
Purpose			OC / EF				
Ratio			600/1				
Burden			15VA				
Class			10P10	Each			
Quantity			3				
Insulation Level			IL 12/28/95 KV				

DESCRIPTION OF PARTICULARS	UNIT S	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
ALTERNATIVE CTs TO BE INSTALLED						
Purpose		OC / EF				
Ratio		600/5				
Burden		15VA				
Class		10P10				
Quantity		3				
Insulation Level		IL 12/28/95 KV				
Install Ct's (Differential)		Yes				
Purpose		Differential				
Burden						
Ratio		600/1				
Class		X or TPS or PX				
Quantity		3				
Insulation Level		IL 12/28/95 KV				
ALTERNATIVE CTs TO BE INSTALLED						
Install Ct's (Differential)		Yes				
Purpose		Differential				
Burden						
Ratio		600/e				
Class		X or TPS or PX				
Quantity		3				
Insulation Level		IL 12/28/95 KV				
Install test block PK2-4way		YES (OC/EF) and Differential				
Install Ct's (Metering)		N/A				
Purpose						
Burden						
Ratio						
Class						
Quantity						

DESCRIPTION OF PARTICULARS	UNIT S	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
Insulation Level						
Install test block PK2-4way		N/A				
PROTECTIVE RELAY						
Manufacturer						
Protective Relay: Time Overcurrent and Earth Fault Protection		Overcurrent, Earth Fault and Sensitive Earth Fault Numerical Relay. Compliant to the Technical Specifications below: i. Power Supply: Universal – 24 to 120V DC/AC. ii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input. iii. Voltage Input: 110V phase to phase AC Voltage. iv. Configurable labels: Yes v. Communication Ports: vi. Rear: 1 x 10/100 Base-T plus 1 x 1 RS 232 port. vii. Front: 1 x Serial Port viii. Communications Protocol: DNP3_level 2 minimum ix. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate. x. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application. xi. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.				

DESCRIPTION OF PARTICULARS	UNIT S	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
		xii. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay). xiii. Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.				
HIGH SPEED PILOT WIRE DIFFERENTIAL PROTECTION						
Manufacturer						
		Pilot Wire Current Differential Protection i. High transient stability ii. High speed operation iii. Low phase and earth fault settings iv. Little or no variation of settings with pilot length v. In zone bleed off up to 20% of rated load vi. 15kV pilot isolation option vii. Be connected as either Solkor Rt or SolkorR viii. Rated Frequency: 50Hz/60Hz ix. Operating Frequency range: 47Hz to 52Hz x. Max. Loop resistance: a. For R Mode: 1000 ohm b. For Rt Mode: 2000 ohm xi. Peak Voltage applied to pilots un-				

DESCRIPTION OF PARTICULARS	UNIT S	SPECIFIED REQUIREMENT	Unit	Unit price in (R)	Delivery period in weeks
		<p>der fault conditions:</p> <p>xii. For R Mode: 300V</p> <p>xiii. For RF Mode: 450V</p> <p>xiv. Maximum current carried by pilots under fault conditions:</p> <p>xv. For R Mode: 200mA</p> <p>xvi. For Rf Mode: 250mA</p> <p>NB! It is critical that it be noted that the existing Pilot Wire Protection relays are the Solkor R/RF make. The relays on Offer must be compatible with them.</p>			

PART H: Replacement of Reyrolle Panel - Feeder Protection Panel for local transformer use.

NB: Panel can be ordered either with 100/1 OR 100/5 Current Transformers as well as a 1A or 5A Nominal Current, Numerical

DESCRIPTION OF PARTICULARS	UNIT S	SPECIFIED REQUIREMENT	Unit	Unit price in (R)	Delivery period in weeks
Reyrolle Panel complete with bus-bars and shutters.	A	1250	Each		
VOLTAGE TRANSFORMER					
Install VT		N/A			
Ratio			Each		
Burden and Accuracy					
Voltage Factor					
CURRENT TRANSFORMERS: Studded 6mm Brass "S" connections.					
Manufacturer					

DESCRIPTION OF PARTICULARS	UNIT S	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
Install CT's		Yes	Each			
Purpose		OC / EF				
Ratio		100/1				
Burden		10VA				
Class		10P10				
Quantity		3				
Insulation Level		IL 12/28/95 KV	Each			
ALTERNATIVE CTs TO BE IN-STALLED						
Install Ct's (Differential)		Yes				
Purpose		OC / EF				
Ratio		100/5				
Burden		15VA				
Class		10P10	Each			
Quantity		3				
Insulation Level		IL 12/28/95 KV				
Install test block PK2-4way		YES (OC/EF)				
Install Ct's (Metering)		N/A				
Purpose						
Burden						
Ratio			Each			
Class						
Quantity						
Insulation Level						
Install test block PK2-4way		YES (Diff / Metering)				
PROTECTIVE RELAY						
Manufacturer						
Protective Relay: Time Overcurrent and Earth Fault Protection		Overcurrent, Earth Fault and Sensitive Earth Fault Numerical Relay. Compliant to the Technical Specifications below:				

DESCRIPTION OF PARTICULARS	UNIT S	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
		<ul style="list-style-type: none"> i. Power Supply: Universal – 24 to 120V DC/AC. ii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input. iii. Voltage Input: 110V phase to phase AC Voltage. iv. Configurable labels: Yes v. Communication Ports: vi. Rear: 1 x 10/100 Base-T plus 1 x 1 RS 232 port. vii. Front: 1 x Serial Port viii. Communications Protocol: DNP3_level 2 minimum ix. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); Inputs should be individually user-configured to operate. x. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application. xi. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay. xii. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay). xiii. Relay dimensions: Must be able to fit onto the control panel portion of the switchgear. 				

PART I: Replacement of Reyrolle Panel - Feeder Protection Panel for Medium Voltage Connection.
NB: Panel can be ordered either with 600/1 OR 100/1 Current Transformers as well as a 1A or 5A Nominal Current, Numerical

DESCRIPTION OF PARTICULARS	UNIT S	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
Reyrolle Panel complete with bus-bars and shutters.	A	1250	Each			
VOLTAGE TRANSFORMER						
Manufacturer						
Install VT		Yes	Each			
Ratio		11000/110/63.5 Volts				
Burden and Accuracy		100 VA Class 0.5				
Voltage Factor		1.9				
CURRENT TRANSFORMERS: Studded 6mm Brass "S" connections.						
Manufacturer						
Install CT's		Yes				
Purpose		OC / EF				
Ratio		600/1				
Burden		15VA				
Class		10P10	Each			
Quantity		3				
Insulation Level		IL 12/28/95 KV				
ALTERNATIVE CTs TO BE INSTALLED						
Purpose		OC / EF	Each			
Ratio		100/1				
Burden		15VA				
Class		10P10				
Quantity		3				

DESCRIPTION OF PARTICULARS	UNIT S	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
Insulation Level		IL 12/28/95 KV				
Install Ct's (Differential)		N/A				
Install test block PK2-4way		YES (OC/EF)				
Install Ct's (Metering)		YES	Each			
Purpose		Metering				
Burden		600/300/200/1				
Ratio		10VA				
Class		0.5				
Quantity		3	Each			
Insulation Level		IL 12/28/95 KV				
Install test block PK2-4way		YES (Diff / Metering)				
PROTECTIVE RELAY						
Manufacturer						
Protective Relay: Time Overcurrent and Earth Fault Protection		Overcurrent, Earth Fault and Sensitive Earth Fault Numerical Relay. Compliant to the Technical Specifications below: i. Power Supply: Universal – 24 to 120V DC/AC. ii. Secondary Input Current: 3 x AC 5A/1A plus a 1A/5A Neutral Input. iii. Voltage Input: 110V phase to phase AC Voltage. iv. Configurable labels: Yes v. Communication Ports: vi. Rear: 1 x 10/100 Base-T plus 1 x 1 RS 232 port. vii. Front: 1 x Serial Port viii. Communications Protocol: DNP3_level 2 minimum ix. Digital Optoisolated Inputs: Minimum of 8. Universal – 24 to 120V DC/AC voltage application (External wetting); In-				

DESCRIPTION OF PARTICULARS	UNIT S	SPECIFIED REQUIREMENT	Unit	Unit price (R)	total in	Delivery period in weeks
		<p>puts should be individually user-configured to operate.</p> <p>x. Digital Optoisolated high speed and high current Outputs: Minimum of 6A continuous – Minimum of 8. Universal – 24 to 120V DC/AC voltage application.</p> <p>xi. Arc Flash capability: 4 x Arc Flash detection inputs. Four Fiber-optic point sensors for ARC flash must be provided with the relay.</p> <p>xii. Software: Windows-based PC software for setting, report retrieval, metering, HMI, and control; At no additional costs (free issue with the relay).</p> <p>xiii. Relay dimensions: Must be able to fit onto the control panel portion of the switchgear.</p>				

The following Existing Circuit breakers must be repaired: (Strip & Quote)
Repair, Strip & Quote means that the Service provider must submit a quotation for the repairs and then invoice after repairs.

Make	Type
Reyrolle LMS	LMS/X1/QMRO
Reyrolle LMR	LMR/X2/QMRO
Reyrolle LMT	LMT2X31/QM
Actom	SBV4E/2000/25/SI and SBV4/80/20/S1
Actom	SBV3E/2000/25/SI
Johnson & Phillips	PDB/A/2Z and TSB16
GEC	PDB/A/400
HAWKER SIDDELEY	VIL-6 and R4/1 and V4/1 and D6XD
FIRST ELECTRIC	JB621
BRUSH	W4/11 and S4
LONG & CRAWFORD	AVS2
ALSTOM	AGVB-800/20/S and SBV4/800/20-S1
SACE BERGAMO	RM1235
BRITISH THOMPSON	BTH/JB621 and LC/B3
BRUSH	W4/11
NULEC	N24S-ACR-SF6-24-12-150
JG STARTER	VTGR150
YORKSHIRE	YSF6
RMU Actom	K3 oil and gas
RMU Magenefix	Dry Type Air
RMU GEC	T3 oil
RMU ABB	Gas
RMU Schneider	Gas
RMU Tiger	oil
NULEC switchgear outdoor pole mounted.	Sf6 Gas

8.5.4 Price for switching and spring charges handles (set) on the following types of existing switchgear.

Item	Make	Type	Delivery period in weeks	Price per set
1.	Reyrolle LMS	LMS/X1/QMRO		
2.	Reyrolle LMR	LMR/X2/QMRO		
3.	Reyrolle LMT	LMT2/X31/QM		
4.	Actom	SBV4E/2000/25/SI		
5.	Johnson & Phillips	PDB/A/2Z and TSB16		
6.	GEC	PDB/A/400		
7.	HAWKER SID-DELEY	VIL-6 and R4/1 and V4/1 and D6XD		
8.	FIRST ELECTRIC	JB621		
9.	BRUSH	W4/11 and S4		
10.	LONG & CRAW-FORD	AVS2		
11.	ALSTOM	AGVB-800/20/S and SBV4/800/20-S1		
12.	SACE BERGAMO	RM1235		
13.	BRITISH THOMP-SON	BTH/JB621 and LC/B3		
14.	BRUSH	W4/11		
15.	NULEC	N24S-ACR-SF6-24-12-150		
16.	JG STATTER	VTGR150		
17.	YORKSHIRE	YSF6 (Sf6gas)		
18.	RMU Actom	K3 oil and gas		
19.	RMU Magenefix	Dry Type Air		

20.	RMU GEC	T3 oil			
21.	RMU ABB	Gas			
22.	RMU Schneider	Gas			
23.	RMU Tiger	oil			
24.	Nulec switchgear outdoor pole mounted.	Sf6 Gas			
25.	Transport costs	Transport for strip and quote only			AA rates basis

11 CONTACT INFORMATION

11.1 For any further technical information regarding the document contents please contact Mr P.J. Niemann at Piet.Niemann@centlec.co.za or Lindiwe.Kalane@centlec.co.za and all queries must be done in writing, the email address provided serves this purpose. The answer to one question will be sent to all the other prospective bidders that have bought the bid documents.

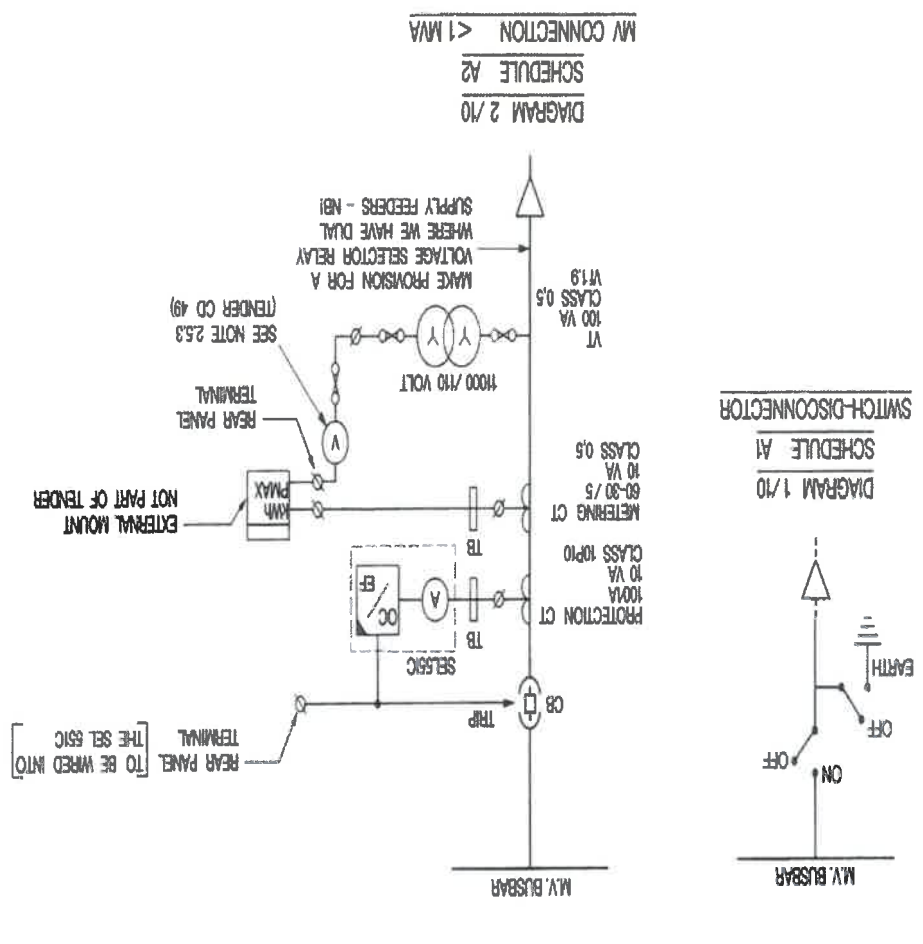
11.2 For Supply Chain Related questions, please contact Me. Palesa Makhele at Palesa.makhele@centlec.co.za

12 ANNEXURES

CENTREC 1000 N. 10th St., Suite 100 Phoenix, AZ 85006-3029 Tel: 602/254-2200	FACILITY	DATE	TIME	NAME	TITLE	COMPANY	ADDRESS	CITY	STATE	ZIP	PHONE	FAX	E-MAIL	WEB	NOTES	REMARKS	ACTION	STATUS	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED BY	SIGNATURE	DATE	TIME	BY	REVIEWED BY	APPROVED
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REGISTRATION NO.	REGISTRATION DATE
C	26 AUGUST 2018
B	08 DECEMBER 2010
A	05 AUGUST 2009

NOTE 25.2
THE CONNECTION OF THE HT SIDE OF VT SHALL
BE CONNECTED ON THE CABLE SIDE, UNLESS
OTHERWISE INDICATED.



CENTLEC (S.O.C.) LTD

LEGEND

WITHDRAWABLE METAL CLAD C / B	
CURRENT TRANSFORMER	
INVERSE DEFNITE MINIMUM TIME OC	
PILOT WIRE	
PROTECTION RELAY (SOLAR R)	
KVA / kWh COMBINATION	
ENERGY METER	
TRANSFORMER TEMPERATURE TRIP RELAY (SELSIC)	
VOLTAGE TRANSFORMER	
VOLT METER	
TERMINAL TEST BLOCK ON FRONT PANEL	
TERMINAL BLOCK IN FRONT PANEL	
TERMINAL BLOCK IN REAR PANEL	
FUSE	
CABLE TERMINATION	

DIAGRAM 4 / 10
SCHEDULE A4
SECONDARY FEEDER

DIAGRAM 3 / 10
SCHEDULE A3
MV CONNECTION > 1 MVA

NOTE 25.2

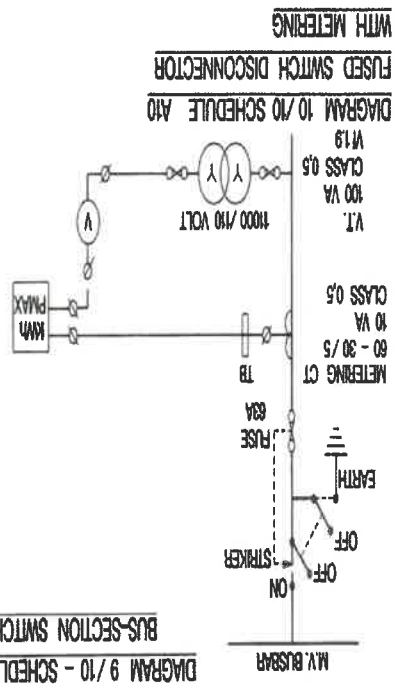
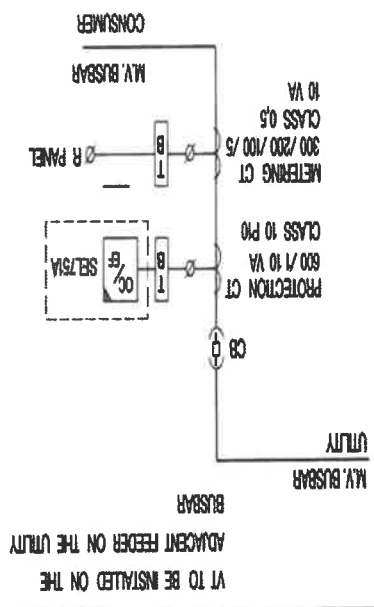
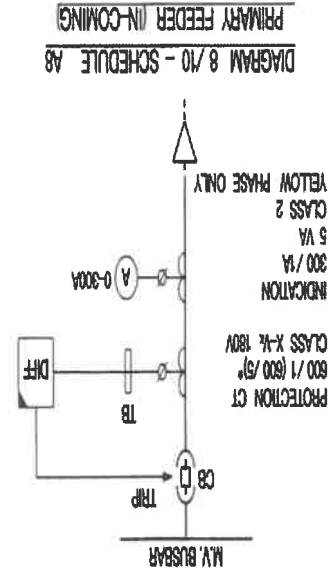
THE CONNECTION OF THE HT SIDE OF VT, SHALL BE CONNECTED ON THE CABLE SIDE, UNLESS OTHERWISE INDICATED.

A4 SHEET

NOTE 252
THE CONNECTION OF THE HT SIDE OF VT SHALL
BE CONNECTED ON THE CABLE SIDE UNLESS
OTHERWISE INDICATED.



CENTLEC (S.O.C.) LTD



NOTE 252
THE CONNECTION OF THE HT SIDE OF VT, SHALL BE CONNECTED ON THE CABLE SIDE, UNLESS OTHERWISE INDICATED.

- WITHDRAWABLE METAL
- CLAD C / B
- CURRENT TRANSFORMER
- PLOT WIRE
- PROTECTION RELAY (SOLUCOR R+)
- KVA / KWH COMBINATION ENERGY METER
- VOLTAGE TRANSFORMER
- VOLT METER
- TERMINAL TESTLOCK ON FRONT PANEL
- TERMINAL BLOCK IN FRONT PANEL
- TERMINAL BLOCK IN REAR PANEL
- FUSE
- CABLE TERMINATION

REVISION NO.	REVISION DATE	REVISION DESCRIPTION
A	05 AUGUST 2009	
B	11 AUGUST 2010	
C	08 DECEMBER 2010	
D	28 AUGUST 2018	

THE C.A.D. REFERENCE NUMBER IS: H/NEW-DGN/TS

INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE (NAME OF MUNICIPALITY/ENTITY)

BID NUMBER:

CLOSING DATE:

CLOSING TIME:

DESCRIPTION

The successful bidder will be required to fill in and sign a written Contract Form (MBD 7).

BID DOCUMENTS MAY BE POSTED TO:

OR

DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS)

Bidders should ensure that bids are delivered timeously to the correct address. If the bid is late, it will not be accepted for consideration.

The bid box is generally open 24 hours a day, 7 days a week.

ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS – (NOT TO BE RE-TYPED)

THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2011, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT

NB: NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE (as defined in Regulation 1 of the Local Government Municipal Supply Chain Management Regulations)

**THE FOLLOWING PARTICULARS MUST BE FURNISHED
(FAILURE TO DO SO MAY RESULT IN YOUR BID BEING DISQUALIFIED)**

NAME OF BIDDER
POSTAL ADDRESS
STREET ADDRESS
TELEPHONE NUMBER
CODE NUMBER
CELLPHONE NUMBER
FACSIMILE NUMBER
E-MAIL ADDRESS
VAT REGISTRATION NUMBER

HAS AN ORIGINAL AND VALID TAX CLEARANCE CERTIFICATE BEEN ATTACHED? (MBD 2)
YES/NO

HAS A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE BEEN SUBMITTED? (MBD 6.1)
YES/NO

IF YES, WHO WAS THE CERTIFICATE ISSUED BY?

AN ACCOUNTING OFFICER AS CONTEMPLATED IN THE CLOSE CORPORATION ACT (CCA)
A VERIFICATION AGENCY ACCREDITED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM (SANAS)
A REGISTERED AUDITOR
(Tick applicable box)

(A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE)

ARE YOU THE ACCREDITED REPRESENTATIVE

IN SOUTH AFRICA FOR THE GOODS/SERVICES/WORKS OFFERED ?

YES/NO
(IF YES ENCLOSE PROOF)

SIGNATURE OF BIDDER
DATE

CAPACITY UNDER WHICH THIS BID IS SIGNED
TOTAL BID PRICE
TOTAL NUMBER OF ITEMS OFFERED

ANY ENQUIRIES REGARDING THE BIDDING PROCEDURE MAY BE DIRECTED TO:

Municipality / Municipal Entity:
Department:
Contact Person:
Tel:
Fax:

ANY ENQUIRIES REGARDING TECHNICAL INFORMATION MAY BE DIRECTED TO:

Contact Person:
Tel:
Fax:

INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE (NAME OF MUNICIPALITY/ENTITY)

BID NUMBER:

CLOSING DATE:

CLOSING TIME:

DESCRIPTION:

The successful bidder will be required to fill in and sign a written Contract Form (MBD 7).

BID DOCUMENTS MAY BE POSTED TO:

.....

.....

OR

DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS)

.....

.....

Bidders should ensure that bids are delivered timeously to the correct address. If the bid is late, it will not be accepted for consideration.

The bid box is generally open 24 hours a day, 7 days a week.

ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS – (NOT TO BE RE-TYPED)

THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2011, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT

NB: NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE (as defined in Regulation 1 of the Local Government: Municipal Supply Chain Management Regulations)

**THE FOLLOWING PARTICULARS MUST BE FURNISHED
(FAILURE TO DO SO MAY RESULT IN YOUR BID BEING DISQUALIFIED)**

NAME OF BIDDER

POSTAL ADDRESS

STREET ADDRESS

TELEPHONE NUMBER CODE NUMBER

CELLPHONE NUMBER

FACSIMILE NUMBER CODE NUMBER

E-MAIL ADDRESS

VAT REGISTRATION NUMBER

HAS AN ORIGINAL AND VALID TAX CLEARANCE CERTIFICATE BEEN ATTACHED? (MBD 2) YES/NO

HAS A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE BEEN SUBMITTED? (MBD 6.1) YES/NO

IF YES, WHO WAS THE CERTIFICATE ISSUED BY?

AN ACCOUNTING OFFICER AS CONTEMPLATED IN THE CLOSE CORPORATION ACT (CCA) ☐
A VERIFICATION AGENCY ACCREDITED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM (SANAS) ☐
A REGISTERED AUDITOR ☐
(Tick applicable box)

(A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE)

ARE YOU THE ACCREDITED REPRESENTATIVE
IN SOUTH AFRICA FOR THE GOODS/SERVICES/WORKS OFFERED ?

YES/NO
(IF YES ENCLOSE PROOF)

SIGNATURE OF BIDDER

DATE

CAPACITY UNDER WHICH THIS BID IS SIGNED

TOTAL BID PRICE..... TOTAL NUMBER OF ITEMS OFFERED

ANY ENQUIRIES REGARDING THE BIDDING PROCEDURE MAY BE DIRECTED TO:

Municipality / Municipal Entity:

Department:

Contact Person:

Tel:

Fax:

ANY ENQUIRIES REGARDING TECHNICAL INFORMATION MAY BE DIRECTED TO:

Contact Person:

Tel:

Fax:

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND PREFERENTIAL PROCUREMENT REGULATIONS, 2022

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 To be completed by the organ of state

(delete whichever is not applicable for this tender).

- a) The applicable preference point system for this tender is the 90/10 preference point system.
- b) The applicable preference point system for this tender is the 80/20 preference point system.
- c) Either the 90/10 or 80/20 preference point system will be applicable in this tender. The lowest/ highest acceptable tender will be used to determine the accurate system once tenders are received.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

- (a) Price; and
- (b) Specific Goals.

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	
SPECIFIC GOALS	
Total points for Price and SPECIFIC GOALS	100

- 1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.
- 1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

- (a) **“tender”** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;
- (b) **“price”** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) **“rand value”** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;
- (d) **“tender for income-generating contracts”** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) **“the Act”** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

A maximum of 80 or 90 points is allocated for price on the following basis:

80/20

or

90/10

$$P_s = 80 \left(1 - \frac{P_t - P_{min}}{P_{min}} \right) \text{ or } P_s = 90 \left(1 - \frac{P_t - P_{min}}{P_{min}} \right)$$

Where

P_s = Points scored for price of tender under consideration

P_t = Price of tender under consideration

P_{min} = Price of lowest acceptable tender

3.2. FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

3.2.1. POINTS AWARDED FOR PRICE

A maximum of 80 or 90 points is allocated for price on the following basis:

$$P_S = 80 \left(1 + \frac{P_t - P_{\max}}{P_{\max}} \right) \text{ or } P_S = 90 \left(1 + \frac{P_t - P_{\max}}{P_{\max}} \right)$$

Where

P_s = Points scored for price of tender under consideration
 P_t = Price of tender under consideration
 P_{max} = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

- 4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:
- 4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—
 - (a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or
 - (b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

Table 1: Specific goals for the tender and points claimed are indicated per the table below.

(Note to organs of state: Where either the 90/10 or 80/20 preference point system is applicable, corresponding points must also be indicated as such.

Note to tenderers: The tenderer must indicate how they claim points for each preference point system.)

The specific goals allocated points in terms of this tender	Number of points allocated (90/10 system) (To be completed by the organ of state)	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)
50% Black owned	6			
50% Women owned	2			
50% Youth owned <35 years	2			
Specified Goals Total	10			

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm.....

4.4. Company registration number:

4.5. TYPE OF COMPANY/ FIRM

Partnership/Joint Venture / Consortium

One-person business/sole propriety

Close corporation

Public Company

Personal Liability Company

(Pty) Limited

Non-Profit Company

State Owned Company

[TICK APPLICABLE BOX]

4.6. I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I acknowledge that:

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –
 - (a) disqualify the person from the tendering process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
 - (e) forward the matter for criminal prosecution, if deemed necessary.

.....
SIGNATURE(S) OF TENDERER(S)

SURNAME AND NAME:

DATE:

ADDRESS:

.....

.....

.....

DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This Municipal Bidding Document (MBD) must form part of all bids invited. It contains general information and serves as a declaration form for local content (local production and local content are used interchangeably).

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2011 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

1. General Conditions

- 1.1. Preferential Procurement Regulations, 2011 (Regulation 9) makes provision for the promotion of local production and content.
- 1.2. Regulation 9.(1) prescribes that in the case of designated sectors, where in the award of bids local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.
- 1.3. Where necessary, for bids referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE.
- 1.4. A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.
- 1.5. The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1 - x / y] * 100$$

Where

x is the imported content in Rand

y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by the South African Reserve Bank (SARB) at 12:00 on the date of advertisement of the bid as required in paragraph 4.1 below.

The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp at no cost.

1.6. A bid may be disqualified if –

- (a) this Declaration Certificate and the Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation; and
- (b) the bidder fails to declare that the Local Content Declaration Templates (Annex C, D and E) have been audited and certified as correct.

2. Definitions

- 2.1. **“bid”** includes written price quotations, advertised competitive bids or proposals;
 - 2.2. **“bid price”** price offered by the bidder, excluding value added tax (VAT);
 - 2.3. **“contract”** means the agreement that results from the acceptance of a bid by an organ of state;
 - 2.4. **“designated sector”** means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;
 - 2.5. **“duly sign”** means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility (close corporation, partnership or individual).
 - 2.6. **“imported content”** means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;
 - 2.7. **“local content”** means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;
 - 2.8. **“stipulated minimum threshold”** means that portion of local production and content as determined by the Department of Trade and Industry; and
 - 2.9. **“sub-contract”** means the primary contractor’s assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.
3. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services works or goods

Stipulated minimum threshold

%

%

%

4. Does any portion of the services, works or goods offered have any imported content?

(Tick applicable box)

YES		NO	
-----	--	----	--

- 4.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the general conditions must be the rate(s) published by the SARB for the specific currency at 12:00 on the date of advertisement of the bid.

The relevant rates of exchange information is accessible on www.reservebank.co.za.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	
Yen	
Other	

NB: Bidders must submit proof of the SARB rate (s) of exchange used.

5. Were the Local Content Declaration Templates (Annex C, D and E) audited and certified as correct?

(Tick applicable box)

YES		NO	
-----	--	----	--

- 5.1. If yes, provide the following particulars:

- (a) Full name of auditor:
- (b) Practice number:
- (c) Telephone and cell number:
- (d) Email address:

(Documentary proof regarding the declaration will, when required, be submitted to the satisfaction of the Accounting Officer / Accounting Authority)

6. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the Accounting Officer / Accounting Authority provide directives in this regard.

LOCAL CONTENT DECLARATION
(REFER TO ANNEX B OF SATS 1286:2011)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO.

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity):
.....

NB

1 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

2 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on <http://www.thedti.gov.za/industrialdevelopment/ip.jsp>. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below. Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, (full names),
do hereby declare, in my capacity as
of (name of bidder
entity), the following:

(a) The facts contained herein are within my own personal knowledge.

(b) I have satisfied myself that

- (i)** the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011; and
- (ii)** the declaration templates have been audited and certified to be correct.

(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R
Imported content (x), as calculated in terms of SATS 1286:2011	R
Stipulated minimum threshold for local content (paragraph 3 above)	
Local content %, as calculated in terms of SATS 1286:2011	

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 13 of the Preferential Procurement Regulations, 2011 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

SIGNATURE: _____

DATE: _____

WITNESS No. 1 _____

DATE: _____

WITNESS No. 2 _____

DATE: _____

CONTRACT FORM - PURCHASE OF GOODS/WORKS

THIS FORM MUST BE FILLED IN DUPLICATE BY BOTH THE SUCCESSFUL BIDDER (PART 1) AND THE PURCHASER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SUCCESSFUL BIDDER AND THE PURCHASER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS.

PART 1 (TO BE FILLED IN BY THE BIDDER)

1. I hereby undertake to supply all or any of the goods and/or works described in the attached bidding documents to (name of institution)..... in accordance with the requirements and specifications stipulated in bid number..... at the price/s quoted. My offer/s remain binding upon me and open for acceptance by the purchaser during the validity period indicated and calculated from the closing time of bid.
2. The following documents shall be deemed to form and be read and construed as part of this agreement:
 - (i) Bidding documents, viz
 - Invitation to bid;
 - Tax clearance certificate;
 - Pricing schedule(s);
 - Technical Specification(s);
 - Preference claims for Broad Based Black Economic Empowerment Status Level of Contribution in terms of the Preferential Procurement Regulations 2011;
 - Declaration of interest;
 - Declaration of bidder's past SCM practices;
 - Certificate of Independent Bid Determination;
 - Special Conditions of Contract;
 - (ii) General Conditions of Contract; and
 - (iii) Other (specify)
3. I confirm that I have satisfied myself as to the correctness and validity of my bid; that the price(s) and rate(s) quoted cover all the goods and/or works specified in the bidding documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.
4. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfilment of this contract.
5. I declare that I have no participation in any collusive practices with any bidder or any other person regarding this or any other bid.
6. I confirm that I am duly authorised to sign this contract.

NAME (PRINT)

CAPACITY

SIGNATURE

NAME OF FIRM

DATE

WITNESSES

1

2.

DATE:

CONTRACT FORM - PURCHASE OF GOODS/WORKS**PART 2 (TO BE FILLED IN BY THE PURCHASER)**

1. I..... in my capacity as..... accept your bid under reference numberdated.....for the supply of goods/works indicated hereunder and/or further specified in the annexure(s).
2. An official order indicating delivery instructions is forthcoming.
3. I undertake to make payment for the goods/works delivered in accordance with the terms and conditions of the contract, within 30 (thirty) days after receipt of an invoice accompanied by the delivery note.

ITEM NO.	PRICE (ALL APPLICABLE TAXES INCLUDED)	BRAND	DELIVERY PERIOD	B-BBEE STATUS LEVEL OF CONTRIBUTION	MINIMUM THRESHOLD FOR LOCAL PRODUCTION AND CONTENT (if applicable)

4. I confirm that I am duly authorized to sign this contract.

SIGNED ATON.....

NAME (PRINT)

SIGNATURE

OFFICIAL STAMP

--

WITNESSES

1.

2.

DATE

CONTRACT FORM - RENDERING OF SERVICES

THIS FORM MUST BE FILLED IN DUPLICATE BY BOTH THE SERVICE PROVIDER (PART 1) AND THE PURCHASER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SERVICE PROVIDER AND THE PURCHASER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS.

PART 1 (TO BE FILLED IN BY THE SERVICE PROVIDER)

1. I hereby undertake to render services described in the attached bidding documents to (name of the institution)..... in accordance with the requirements and task directives / proposals specifications stipulated in Bid Number..... at the price/s quoted. My offer/s remain binding upon me and open for acceptance by the Purchaser during the validity period indicated and calculated from the closing date of the bid.
2. The following documents shall be deemed to form and be read and construed as part of this agreement:
 - (i) Bidding documents, viz
 - Invitation to bid;
 - Tax clearance certificate;
 - Pricing schedule(s);
 - Filled in task directive/proposal;
 - Preference claims for Broad Based Black Economic Empowerment Status Level of Contribution in terms of the Preferential Procurement Regulations 2011;
 - Declaration of interest;
 - Declaration of Bidder's past SCM practices;
 - Certificate of Independent Bid Determination;
 - Special Conditions of Contract;
 - (ii) General Conditions of Contract; and
 - (iii) Other (specify)
3. I confirm that I have satisfied myself as to the correctness and validity of my bid; that the price(s) and rate(s) quoted cover all the services specified in the bidding documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.
4. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfilment of this contract.
5. I declare that I have no participation in any collusive practices with any bidder or any other person regarding this or any other bid.
6. I confirm that I am duly authorised to sign this contract.

NAME (PRINT)

CAPACITY

SIGNATURE

NAME OF FIRM

DATE

WITNESSES

1

2

DATE:

PART 2 (TO BE FILLED IN BY THE PURCHASER)

1. I..... in my capacity as.....
accept your bid under reference numberdated.....for the rendering of
services indicated hereunder and/or further specified in the annexure(s).
2. An official order indicating service delivery instructions is forthcoming.
3. I undertake to make payment for the services rendered in accordance with the terms and conditions of
the contract, within 30 (thirty) days after receipt of an invoice.

DESCRIPTION OF SERVICE	PRICE (ALL APPLICABLE TAXES INCLUDED)	COMPLETION DATE	B-BBEE STATUS LEVEL OF CONTRIBUTION	MINIMUM THRESHOLD FOR LOCAL PRODUCTION AND CONTENT (if applicable)

4. I confirm that I am duly authorised to sign this contract.

SIGNED AT _____ ON _____

NAME (PRINT)

SIGNATURE _____

OFFICIAL STAMP

WITNESSES

1 *****

2 **INDEPENDENT AND UNBIASED JUDICIAL POWER**

DATE: _____

CONTRACT FORM - SALE OF GOODS/WORKS

THIS FORM MUST BE FILLED IN DUPLICATE BY BOTH THE SUCCESSFUL BIDDER (PART 1) AND THE SELLER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SUCCESSFUL BIDDER AND THE SELLER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS.

PART 1 (TO BE FILLED IN BY THE BIDDER)

1. I hereby undertake to purchase all or any of the goods and/or works described in the attached bidding documents from (name of Institution)..... in accordance with the requirements stipulated in (bid number)..... at the price/s quoted. My offer/s remain binding upon me and open for acceptance by the seller during the validity period indicated and calculated from the closing time of bid.

2. The following documents shall be deemed to form and be read and construed as part of this agreement:
 - (i) Bidding documents, viz
 - Invitation to bid;
 - Tax clearance certificate;
 - Pricing schedule(s);
 - Declaration of interest;
 - Declaration of Bidder's past SCM practices;
 - Special Conditions of Contract;
 - (ii) General Conditions of Contract; and
 - (iii) Other (specify)

3. I confirm that I have satisfied myself as to the correctness and validity of my bid; that the price(s) quoted cover all the goods and/or works specified in the bidding documents; that the price(s) cover all my obligations and I accept that any mistakes regarding price(s) and calculations will be at my own risk.

4. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfilment of this contract.

5. I undertake to make payment for the goods/works as specified in the bidding documents.

6. I declare that I have no participation in any collusive practices with any bidder or any other person regarding this or any other bid.

7. I confirm that I am duly authorised to sign this contract.

NAME (PRINT)

CAPACITY

SIGNATURE

NAME OF FIRM

DATE

WITNESSES

1.

2.

DATE:

PART 2 (TO BE FILLED IN BY THE SELLER)

1. I..... in my capacity as.....
accept your bid under reference numberdated.....for the purchase of
goods/works indicated hereunder and/or further specified in the annexure(s).
2. I undertake to make the goods/works available in accordance with the terms and conditions of the
contract.

ITEM NO.	DESCRIPTION	PRICE (ALL APPLICABLE <u>TAXES INCLUDED</u>)	

4. I confirm that I am duly authorized to sign this contract.

SIGNED AT _____ ON _____

NAME (PRINT)

SIGNATURE _____

OFFICIAL STAMP

WITNESSES

1. all information that is not to be made public

2. D11055-01211-1010011007100

DATE

DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

- 1 This Municipal Bidding Document must form part of all bids invited.
- 2 It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
- 3 The bid of any bidder may be rejected if that bidder, or any of its directors have:
 - a. abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
 - b. been convicted for fraud or corruption during the past five years;
 - c. willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
 - d. been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).
- 4 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

Item	QUESTION	Yes	No
4.1	<p>Is the bidder or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector?</p> <p>(Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the <i>audi alteram partem</i> rule was applied).</p> <p>The Database of Restricted Suppliers now resides on the National Treasury's website(www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.1.1	If so, furnish particulars:		
4.2	<p>Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)?</p> <p>The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.2.1	If so, furnish particulars:		
4.3	Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

4.3.1 If so, furnish particulars:

Item	Question	Yes	No
4.4	Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	<input type="checkbox"/>	<input type="checkbox"/>
4.4.1	If so, furnish particulars:		
4.5	Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	<input type="checkbox"/>	<input type="checkbox"/>
4.7.1	If so, furnish particulars:		

CERTIFICATION

I, THE UNDERSIGNED (FULL NAME)
CERTIFY THAT THE INFORMATION FURNISHED ON THIS
DECLARATION FORM TRUE AND CORRECT.

I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT,
ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION
PROVE TO BE FALSE.

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder

Js367bW

CERTIFICATE OF INDEPENDENT BID DETERMINATION

- 1 This Municipal Bidding Document (MBD) must form part of all bids¹ invited.

- 2 Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).² Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.

- 3 Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:
 - a. take all reasonable steps to prevent such abuse;
 - b. reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and
 - c. cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.

- 4 This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.

- 5 In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid:

¹ Includes price quotations, advertised competitive bids, limited bids and proposals.

² Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid:

(Bid Number and Description)

in response to the invitation for the bid made by:

(Name of Municipality / Municipal Entity)

do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of:

that:

(Name of Bidder)

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
 - (a) has been requested to submit a bid in response to this bid invitation;
 - (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
 - (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder

6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium³ will not be construed as collusive bidding.
7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - (a) prices;
 - (b) geographical area where product or service will be rendered (market allocation)
 - (c) methods, factors or formulas used to calculate prices;
 - (d) the intention or decision to submit or not to submit, a bid;
 - (e) the submission of a bid which does not meet the specifications and conditions of the bid; or
 - (f) bidding with the intention not to win the bid.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

³ Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder

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