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FOREWORD

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INTRODUCTION

The reliability of 11kV metal-enclosed ring main units can affect the overall quality of supply requirements of SANS 1816. To ensure that City Power's customers experience minimal power outages and planned interruptions for maintenance, ring main units offering the advantages of maintenance-free technology, as well as increased operator and public safety, and complying with SANS 1874, shall be purchased.

1 SCOPE

This specification covers City Power's requirements for 11 kV metal-enclosed ring main units for type B miniature substations, complying with SANS 1874.

2 NORMATIVE REFERENCES

The following documents contain provisions that, through reference in the text, constitute requirements of this specification. At the time of publication, the editions indicated were valid. All standards and specifications are subject to revision, and parties to agreements based on this specification are encouraged to investigate the possibility of applying the most recent editions of the documents listed below.

SANS 1874: Switchgear – metal-enclosed ring main units for rated A.C. voltages above 1 kV and up to and including 24 kV

SANS 876: Cable terminations and live conductors within air insulated enclosures

SANS 97/1339: Medium-Voltage Cables

SANS 61243-5: Live working – Voltage detectors. Part 5 –Voltage detecting systems (VDS).

SANS 61598: High-voltage prefabricated switchgear and controlgear assemblies – Voltage presence indicating systems

SANS 1816 Electric Supply Quality of Supply

3 DEFINITIONS AND ABBREVIATIONS

The definitions and abbreviations of shall apply to this specification from the normative reference.

4 REQUIREMENTS

4.1 General

4.1.1 Nothing in this specification shall lessen the obligations of the supplier. The supplier shall be fully responsible for the design and its satisfactory performance in service. Approval by City Power shall not relieve the supplier of the responsibility for the adequacy of the design.

4.1.2 This specification covers the requirements for 11 kV metal-enclosed ring main units to be used in type B miniature substations. The ring main units shall be manufactured in accordance with SANS 1874. The specific requirements for ring main units are specified below. Where conflicting requirements with SANS 1874 occur, this specification shall take precedence.

4.1.3 All ring main units shall comply with the requirements of SANS 1874.

4.1.4 All ring main units shall have SF_6 insulated or SF_6 Free insulated, sealed main tanks designed to last for 30 years.

4.2 Ratings

The rated voltage of the ring main unit shall be 12 kV.

4.3 Design and construction

Indoor designed ring main units are required.

4.4 Extensibility

Non-extensible ring main units are required.

4.5 Configuration

The configuration of the non-extensible ring main units shall be 2SD & CB, in a SD, SD, CB or SD, CB, SD configuration.

Note: Fuses shall not be accepted under any circumstances.

4.6 Cable testing facility

4.6.1 Integral cable testing facilities that are independent of the cable boxes and accessible from the front of the ring main unit shall be provided.

4.6.2 All earthing copper bars shall be enclosed with separate metal covers and they shall be secured to the ring main unit with a bracket or earth braid, to prevent the theft of these earthing bars.

4.6.3 The metal covers in 4.6.2 shall be independently interlocked with the earth switch of the switching device that the cable test is being performed on. Once the metal covers have been opened, it shall be possible to remove the earth bar/plate to test the cables.

4.6.4 For operator safety, the cable testing procedures shall be visible displayed on the front and inside of the cable testing facility covers.

4.7 Switch disconnectors

4.7.1 The rated current of all switch disconnectors shall be 630A.

4.7.2 The insulating medium shall be SF_6 Free or SF_6 Free air insulated

4.7.3 The interrupting medium shall be SF_6 Free or vaccum

Note: Due to a commitment for City Power to migrate and continue to be a cleaner environment to its stakeholders (City of Johannesburg), the manufacture shall be required within 1 year after award to test and comply to the new SF6 free RMU.

4.8 Circuit Breakers for tee-offs

4.8.1 The rated current of the circuit breaker shall be 200A or 630A as specified. Note 630A units are for special applications.

4.8.2 The insulating medium shall be SF_6 or SF_6 Free

4.8.3 The interrupting medium shall be either SF_6 Free or vacuum.

Note: Due to a commitment for City Power to migrate and continue to be a cleaner environment to its stakeholders (City of Johannesburg), the manufacture shall be required within 1 year after award to test and comply to the new SF6 free RMU.

4.9 Protections

4.9.1 The protection tripping of the circuit breaker shall be through a self-powered protection relay.

4.9.2 Current sensor technology around the circuit breaker Type C bushing is acceptable. Where used, the medium voltage current transformers (CTs) shall comply with CP_TSSPEC_064 and shall be of the multi-ratio type, with ratios of 50/100/150/200:5 or 50/100/150/200:1, Class 5P20, 15 VA for core 1 (Protection) and with ratios of 50/100/150/200:5,Class 0.5, 15 VA for core 2 (SCADA and Metering).

4.9.3 The protection relay shall provide an over-current function with normal inverse, very inverse and extremely inverse protection elements. Dependant time characteristic curves shall be according to table 1. Over – current pick-up setting ranges shall be selectable from 50% to 200% of the nominal relay rating in a step size not greater than 10%.

4.9.4 An earth-fault function shall be provided with:

a) standard inverse, very inverse and extremely inverse protection elements.. Dependant time characteristic curves shall be according to table 1.The earth fault pick-up setting range shall be selectable from 5 % to 80 % of the nominal relay rating in a step size not greater than 5 %; and

b) a definite time protection element with a selectable time delay from 0 s to 5 s in a 0,05 s step size. The pick-up setting range shall be selectable from 5 % to 80 % of the nominal relay rating in a step size not greater than 5 %.

	Standard Inverse	Very Inverse	Extreme Inverse
k	0.14	13.5	80.0
a	0.02	1.0	2.0

Table 1 – Dependant time characteristic curves

4.9.5 A selectable one second protection trip delay facility or second harmonic blocking shall be provided to prevent false tripping due to transformer inrush currents.

Note: The RMUs covered by this specification are intended for use with distribution transformers, either in miniature substations or within brick-built substations. In order to avoid spurious tripping of the circuit-breaker as a result of the transformer inrush current, the feature described in 4.8.8 above is required.

4.9.6 A portable hand held tester shall be provided to test the protection relay and associated tripping systems, which electrically simulates short circuit and zero sequence fault currents.

4.10 Monitoring and control facilities

4.10.1 The hard-wired monitoring and control facilities detailed in Table 2 below shall be provided for all configurations of RMUs specified.

Device	Monitoring requirement	Interface requirements
All switch disconnector devices (SD) and circuit breaker devices (CB)	SD/CB opened or closed status, double-bit digital signal per device.	An independent, galvanically isolated set of both 'a' and 'b' auxiliary contacts per MV switching device shall be provided.
Circuit breaker devices (CB)	Protection over-current operated alarm and earth-fault operated alarm, single bit digital signals	Independent, galvanically isolated, single contact per alarm, minimum operating duration of 50 milliseconds shall be provided. May be transient or sustained, in which case reset by the action of resetting protection flags.
	Phase current measurements, 0 to 5 mA representing full scale current rating of 200 A, with 100 % over-range capability to 10 mA representing 400 A. Individual phase currents required.	May be derived from either CT and self-powered transducer arrangement or from electronic transducer devices compatible with a DC power supply in the range 12 to 48 VDC from the monitoring RTU.
	*For future remote control operation requirements, provision for charging motors shall be made so that they can easily be installed after installation if necessary.	*Additional space for 6 terminals on the wiring interface terminal strip will be required in the event that a circuit breaker device is automated.
Earth fault indicator (EFI) devices	Cable 'Earth fault detected' alarm, single bit digital signal.	Signal to originate from the earth fault indicator unit, where the remote monitoring contact or opto-coupler device shall be made available for connection to an RTU.

Table 2 – Monitoring and control facilities

4.10.2 Digital signal contact ratings: Voltage – nominal 12 to 48 VDC, maximum 48 VDC, current rating maximum 20 mA. (In the case of opto-coupler devices, the same maximum ratings apply and the circuit must be protected against reverse-polarity connection.)

4.10.3 Analogue signals: 0 to 10 mA DC, with nominal full scale representation of measured parameter at 5 mA DC mid-point, thus providing 100 % over-range capability. Minimum transducer accuracy of 2 % required, minimum isolation of 1 kV to primary circuit sensing devices.

4.10.4 Wiring access: Multi-core cable interface for all wired functions for the monitoring and control equipment shall be provided by means of a numbered terminal strip marked “Monitoring and Control interface”.

4.10.5 Terminals shall accommodate either stranded or solid core wires not exceeding a cross sectional area of 1 mm^2. Terminals shall be of the solid, screw-connector type, not requiring special tools to effect wiring terminations or disconnections.

4.10.6 Provision shall be made to either gland or clamp the multi-core cable in a position that provides strain relief for terminated wiring cores. The arrangement shall be suitable for armoured or un-armoured cables with a diameter of between 10 and 25 mm.

4.11 Busbar insulaion

Busbars shall be SF_6Free or SF_6 Free insulated

4.12 Cable boxes and terminations

4.12.1 All ring main units shall have air-filled internal arc vented cable boxes with interlocked front covers.

Note: For safety reasons, interlocks as detailed above are required such that the cable box covers can only be removed when the associated function is in the earth position.

4.12.2 Type 4 cable termination requirements are required in accordance with SANS 876.

4.12.3 The cable box shall be suitable for terminating 1× 300 mm^2 × 3-core aluminium MV XLPE cable in accordance with SANS 1339.

4.12.4 The design of the cable box shall comply in all respects with the requirements of SANS 876.

4.13 Bushing and separable connectors

4.13.1 Type C bushings (with an M16 × 2 thread) in accordance with clause 4.7.4.2 of SANS 1874 shall be provided for all switching devices. No reducing studs shall be provided; however, each bushing shall be supplied with a suitable 35 mm M16 bolt of either brass or grade 304 (or better) stainless steel. All associated washers shall be supplied.

4.13.2 The documentation accompanying the ring main unit shall specify the correct torque of the M16 bolt referred to in clause 4.12.1 above, in order to avoid over- or under-tightening of the bolt.

4.13.3 All cable termination bushings shall be located on the same horizontal line.

4.13.4 The minimum clearance dimensions shall be in accordance with SANS 876.

4.14 Cable clamps

Adjustable 3-core cable clamps complying with clause 4.3.1.11 of SANS 876 shall be provided for both the two incoming SD switching devices of the ring main unit.

4.15 Earthing

4.15.1 The maximum system earth fault level shall be 13,1 kA for 1 second.

4.15.2 All earthing connections shall be provided with M12 nuts and bolts.

4.16 Live circuit detecting-Indication

4.16.1 A voltage detection system (VDS) in accordance with SANS 61243-5 shall be provided.

4.17 Accessibility

4.17.1 To ensure operator safety, only front accessibility is permitted, in accordance with 4.2.1.4 of SANS 1874. Access to the side and rear of ring main units is not permitted due to the internal arc requirements of the ring main unit.

4.17.2 A 400 mm extended operating lever shall be provided with every ring main unit.

4.18 Mimic diagrams

In order to provide increased operator safety and minimise the chance of error, all ring main units shall be supplied with mimic indication on the front panel.

4.19 Raising plinth (for Item 2 SAP 1701)

4.19.1 In addition to the standard cable boxes provided, a 300 mm high mild steel raising plinth is required to allow retrofitting in existing installations and adequate bending radius of medium voltage cables.

4.19.2 The metal raising plinth dimensions shall comply with the ring main unit foot print dimensions.

4.19.3 M12 mounting bolts and nuts shall be provided to bolt the ring main unit to the metal raising plinth. The plinth shall be supplied already bolted to the RMU (i.e. as one unit).

4.19.4 The metal raising plinth shall have a removable front panel for cable termination preparation.

4.19.5 The metal raising plinth shall be black in colour.

4.19.6 Provision shall be made to bolt the raising plinth to a concrete floor.

5 MARKING, LABELING AND PACKAGING

Marking, labelling and packaging shall comply with the requirements of SANS 1874. In addition to the requirements of SANS 1874, the City Power SAP number and configuration (e.g. SAP 1292, 2SD&CB) shall be marked on the right hand side (when facing the front) of the ring main unit. The characters shall be black and not less than 50 mm in height.

6 TESTS

6.1 Testing shall comply with the type and routine tests requirements of clause 5 of SANS 1874, except as detailed in clause 6.2 below.

6.2 The internal arc requirements of SANS 1874 are hereby increased to 20 kA for 500 ms. The type tests showing compliance with this requirement shall demonstrate compliance for all air-filled and gas-filled enclosures.

Note: The required IA classification is AFLR, as the RMU itself will be used within chambers. In the case of miniature substations, the onus rests with the MSS manufacturer(s) to demonstrate that the entire MSS has an IA classification of AF – BFLR.

6.3 The supplier shall prove the ability of the switchgear to pass the required type tests by supplying a summary of test reports that has been issued by a laboratory accredited by a full member (MRA signatory) of ILAC (International Laboratory Accreditation Cooperation). Full details of the

accrediting body as well as proof of such accreditation shall be supplied. If so requested by City Power, copies of the full type test reports in addition to the summary shall be provided.

7 DOCUMENTATION

7.1 Technical product catalogue and operating and installation manuals shall be provided.

7.2 Full detailed dimensions drawings shall be provided.

7.3 Full detailed electrical circuit diagrams.

7.4 A certified copy of all type test reports shall be provided.

7.5 A certified copy of the proposed factory routine test report shall be provided.

7.6 The ring main unit will not be accepted unless the following is provided with every unit;

a) Factory routine test report,

b) Operating manual; and

c) Installation manual.

7.7 Details of the training course(s) detailed in clause 8 below, as well a plan of implementation, shall be provided.

8 TRAINING

8.1 The following certified training courses shall be offered for City Power's staff;

a) Operating,

b) Installation,

c) Network planning, and

d) Protection relays.

8.2 The associated costs for the certified training courses in 8.1 shall be given per person and shall be fixed for the period of the contract. In addition, full details of the course and an implementation schedule/plan shall be supplied at the time of tendering. The onus shall remain with the supplier to ensure that suitable training is given to all necessary City Power personnel and contractors.

9 QUALITY ASSURANCE

A quality management system shall be set up to assure the proper quality management of the11KV metal enclosed for ring main units for type B miniature substation during design, development, production, installation and servicing phases. Guidance on the requirements for a quality management plan may be found in the ISO 9001:2015. The details shall be subject to agreement between City Power and the Supplier.

10 ENVIRONMENTAL MANAGEMENT

An environmental management system shall be set up to assure the proper environmental management of the 11KV metal enclosed for ring main units for type B miniature substation throughout its entire life cycle (i.e. during design, development, production, installation, operation and maintenance, decommissioning and disposal phases). Guidance on the requirements for an environmental management system may be found in ISO 14001:2015 standards. The details shall be

subject to agreement between City Power and the Supplier. This is to ensure that the asset created conforms to environmental standards and City Power SHERQ Policy

11 HEALTH AND SAFETY

A health and safety systems shall be set up to ensure proper management and compliance of the 11KV metal enclosed for ring main units for type B miniature substation during installation operation, maintenance, and decommissioning phases. Guidance on the requirements of a health and safety plan may be found in ISO 45001:2018 standards. This is to ensure that the asset conforms to standard operating procedures and City Power SHERQ Policy. The details shall be subject to agreement between City Power and the Supplier.

Annex A - Bibliography

SCSSCAAM 6 : 2001, Eskom specification for medium-voltage, metal-enclosed ring main units for 11 kV and 22 kV miniature substations.

Annex B - Revision information

DATE	REV. NO.	NOTES
Dec 2002	0	First issue
June 2006	1	General editing
		Update of format
		Addition of Annex D – Stock Items
		Clarification of constructional requirements
		Clarification of Protection and SCADA requirements
		Increased constructional requirements in line with SSNS 876
		Inclusion of Type 3 and 4 terminations and removal of Type 2
		Increase of earth fault level to 13,1 kA
		Clarification of IAC rating
		Increase of internal arc requirements to 20 kA for 500 ms
		Training plan detail requirement included
		Increased service life from 25 to 30 years
		Annex C amended in accordance with SANS 1874
		Included reference to SANS 61243-5 and 61958 for VDS and VPIS
		Include requirement of mimic diagrams
		Inclusion of raising plinth for Item 2
		Inclusion of marking requirements
		IA classification included as per SANS 62271-200 (A-FLR)
		Clarification of test authority accreditation requirements

May 2008	2	Format changes

4.1.4 All ring main units shall have SF_6 insulated, sealed main tanks designed to last for 30 years.

4.8.6 The protection relay shall provide an over-current function with normal inverse, very inverse and extremely inverse protection elements. The protection elements shall comply with IEC 255-3. Dependant time characteristic curves shall be according to table 1. Over – current pick-up setting ranges shall be selectable from 50% to 200% of the nominal relay rating in a step size not greater than 10%.

4.8.7 An earth-fault function shall be provided with:

a) standard inverse, very inverse and extremely inverse protection elements. The protection elements shall comply with IEC 60255-3. Dependant time characteristic curves shall be according to table 1.The earth fault pick-up setting range shall be selectable from 5 % to 80 % of the nominal relay rating in a step size not greater than 5 %; and

b) a definite time protection element with a selectable time delay from 0 s to 5 s in a 0,05 s step size. The pick-up setting range shall be selectable from 5 % to 80 % of the nominal relay rating in a step size not greater than 5 %.

Added: Table 1 – Dependant time characteristic curves

Feb 2018	3	Update list of study committees All NRS changed to SANS Added SF6 Free RMU Included Health and Safety
July 2024	4	Update list of workgroup study committees Resin Insulation change to SF6 FREE Updated clause 9,10 and 11

Annex C - Technical schedules A and B

RMU (TX) 11 SF6 2SD&CB- SAP (1292)

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
1		**Ratings**		**XXXX**	**XXXX**
1.1	4.2	Rated power-frequency voltage	kV	12	
1.2		Rated lightning impulse withstand voltage	kV	95	
1.3		Rated short-duration power frequency withstand voltage [50Hz: 1 min]	kV	28	
1.4		Rated normal current of ring-main busbars	A	630	
1.5	4.7	Rated normal current of switch disconnectors	A	630	
1.6	4.8	Rated normal current of circuit breaker	A	200	
1.7		Rated short-circuit breaking current of circuit breaker (3 second)	kA	20	
1.8	6.2	Internal arc classification		A-FLR	
1.9	6.2	Internal arc current and duration		20 kA/500 ms	
2		**Construction**		**XXXX**	**XXXX**
2.1	4.3	Is an indoor or outdoor unit required?		Indoor	
2.2	4.4	Is an extensible or non-extensible unit required?		Non-extensible	
2.3		Degree of protection of unit offered		Required	
2.4	4.5	Configuration		2SD&CB	
2.5	4.6	Type of cable testing facility offered		Required	
2.6	4.10	Insulating medium of busbars		SF_6	
2.7	4.7.2	Insulating medium of switch disconnectors		SF_6	
2.8	4.8.2	Insulating medium of circuit breaker		SF_6	
2.9	4.7.3	Interrupting medium of switch disconnectors		SF_6 Free	
2.10	4.8.3	Interrupting medium of circuit breaker		SF_6 Free	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
2		**Construction (continued)**		**XXXX**	**XXXX**
2.11		Is a kiosk required	No	No	
2.12					
2.13		Recommended types of tools to install and maintain unit		Required	
2.14		Method used to attach rating plates		Required	
2.15		Method used to attach labels		Required	
2.16	4.19	Is a raising plinth required for Item 1?	No	No	
2.17					
2.18		Is the RMU required for a corrosive or non-corrosive environment?		Corrosive	
2.19		Is earth fault indication required?	No	No	
2.20		Type of earth fault indication offered		Required	
2.21		List of recommended spares attached	Yes	Yes	
2.22		Are remote tripping and closing required?	Yes	Yes	
2.23	4.10.2	Details of preferred auxiliary supply:		XXXX	XXXX
2.24		a) Voltage	Vdc	12 – 48	
2.25		b) Current	mA	0 – 10	
2.26		Provision for future automation		Required	
2.27					

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Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
3		**Switch description**		**XXXX**	**XXXX**
3.1		Manufacturer's designation of RMU		Required	
3.2		Type of SF_6 ring main unit		Required	XXXX
		a) Manufacturer		Required	
		b) Country of manufacture		Required	
4		**Design**		**XXXX**	**XXXX**
4.1	4.1.3	Ring main units designed and constructed in accordance with SANS 1874		Required	
4.2		Provision of facilities for lifting or slinging		Required	
4.3		Type of provision for lifting and slinging		Required	
4.4		Provision of SF_6 pressure gauge		Required	
4.5		SF_6 pressure gauge visible from the operating side of RMU (front of RMU)		Required	
4.6		Quantity of SF_6		XXXX	XXXX
4.7	4.12	Is a cable box required?	Yes/ No	Yes	
4.8	4.12.1	Compound-filled or air-filled cable box		Air-filled	
4.9	4.16	VDS required for all circuits	Yes/ No	Yes	
4.10		Type of system offered		Required	
5		**Earthing**		**XXXX**	**XXXX**
5.1	4.15.1	Maximum earth fault current	kA	13,1	
5.2		Current density (maximum)	A/m	200	
5.3	4.15.2	Provision of reliable earthing terminal for each metal enclosure/tank (compatible with M12 lug-hole)		Required	
5.4		Each earth terminal to be indelibly marked		Required	

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Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
6		**Cable termination requirements – ring main unit**		**XXXX**	**XXXX**
6.1		Incoming MV cable requirements:		XXXX	XXXX
6.2	4.12.3	a) 1×300 mm^2 3 core XLPE		Required	
6.3	4.14	b) Cable support (clamping) required		Required	
6.4	4.13.4	c) Minimum distance from top of cable clamp to bushing centres	mm	800	
6.5	4.12.2	d) Type of termination		screened	
6.6	4.12.4	Clearance requirements		As per SANS 876	
6.7	4.13.1	Are only Type C (630 A) bushings required?	Yes	Yes	
6.8	4.13.3	Bushings to be horizontally positioned		Required	
6.9	4.13.4	Bushing-centre spacing (minimum)	mm	105	
6.10	4.13.4	Distance between outer bushing-centres and earthed metal enclosure (minimum)	mm	55	
6.11		Provision for earthing of cables		Required	
6.12		Are the accessories for cable termination to be supplied by the RMU supplier?	No	No	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

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Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
7		**Materials and corrosion protection**		**XXXX**	**XXXX**
7.1		RMU material		XXXX	XXXX
7.2		Copper earth busbar		Required	
7.3		Final colour		XXXX	XXXX
8	6	**Marking and labelling**		**XXXX**	**XXXX**
8.1		Method of attachment of labels		Required	
8.2		Main circuit designation labels		Required	
8.3		RMU rating plate		Required	
8.4		ON, OFF and EARTH position labels		Required	
8.5		Additional marking system (i.e. mimics)		Required	
8.6		Instruction plates		Required	
9		**Documentation**		**XXXX**	**XXXX**
9.1	7.4	Type test certificates	Sets	1	
9.2	7.5	Proposed routine test certificates	Sets	1	
9.3	7.2	Drawings	Sets	2	
9.4	7.3	Circuit diagrams	Sets	2	
9.5	7.1	Installation, operating and maintenance instructions	Sets	2	
9.6		Details of special tools required	Sets	2	
9.7		Detailed spare-parts list provided	Sets	2	

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Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description	Schedule A	Schedule B
10	**4.8**	**Protection**	**XXXX**	**XXXX**
10.1		Make of protection relay offered	Required	
10.2		Model of protection relay offered	Required	
10.3	4.8.6	Details of over current protection function	Required	
10.4	4.8.7	Details of earth fault protection function	Required	
10.5	4.8.5	Details of protection class current transformers.	Required	
10.6	4.8.5	Details of metering class current transformers	Required	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

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Full name of company: _____

Note: Due to a commitment for City Power to migrate and continue to be a cleaner environment to its stakeholders (City of Johannesburg), the manufacture shall be required within 1 year after award to test and comply to the new SF6 free RMU.

Technical schedules A and B

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.		
Item	**Sub-clause of CP_TSSPEC_006**	**Proposed deviation**

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

RMU (TX) 11 SF6 2SD&CB WITH RAISING PLINTH -SAP (1705)

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
1		**Ratings**		**XXXX**	**XXXX**
1.1	4.2	Rated power-frequency voltage	kV	12	
1.2		Rated lightning impulse withstand voltage	kV	95	
1.3		Rated short-duration power frequency withstand voltage [50Hz: 1 min]	kV	28	
1.4		Rated normal current of ring-main busbars	A	630	
1.5	4.7	Rated normal current of switch disconnectors	A	630	
1.6	4.8	Rated normal current of circuit breaker	A	200	
1.7		Rated short-circuit breaking current of circuit breaker (3 second)	kA	20	
1.8	6.2	Internal arc classification		A-FLR	
1.9	6.2	Internal arc current and duration		20 kA/500 ms	
2		**Construction**		**XXXX**	**XXXX**
2.1	4.3	Is an indoor or outdoor unit required?		Indoor	
2.2	4.4	Is an extensible or non-extensible unit required?		Non-extensible	
2.3		Degree of protection of unit offered		XXXX	
2.4	4.5	Configuration		2SD&CB	
2.5	4.6	Type of cable testing facility offered		Required	
2.6	4.11	Insulating medium of busbars		SF_6	
2.7	4.7.2	Insulating medium of switch disconnectors		SF_6	
2.8	4.8.2	Insulating medium of circuit breaker		SF_6	
2.9	4.7.3	Interrupting medium of switch disconnectors		SF_6 Free	
2.10	4.8.3	Interrupting medium of circuit breaker		SF_6 Free	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
2		**Construction (continued)**		**XXXX**	**XXXX**
2.11		Is a kiosk required	No	No	
2.12					
2.13		Recommended types of tools to install and maintain unit		Required	
2.14		Method used to attach rating plates		Required	
2.15		Method used to attach labels		Required	
2.16					
2.17	4.19	Is a raising plinth required for Item 2?	Yes	Yes	
2.18		Is the RMU required for a corrosive or non-corrosive environment?		Corrosive	
2.19		Is earth fault indication required?	No	No	
2.20		Type of earth fault indication offered		Required	
2.21		List of recommended spares attached	Yes	Yes	
2.22		Are remote tripping and closing required?	Yes	Yes	
2.23	4.10.2	Details of preferred auxiliary supply:		XXXX	XXXX
2.24		a) Voltage	Vdc	12 – 48	
2.25		b) Current	mA	0 – 10	
2.26		Provision for future automation		Required	
2.27		Quantity already produced and installed in South Africa		XXXX	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

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Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
3		**Switch description**		**XXXX**	**XXXX**
3.1		Manufacturer's designation of RMU		Required	
3.2		Type of SF_6 ring main unit		XXXX	XXXX
		a) Manufacturer		Required	
		b) Country of manufacture		Required	
4		**Design**		**XXXX**	**XXXX**
4.1	4.1.3	Ring main units designed and constructed in accordance with SANS 1874		Required	
4.2		Provision of facilities for lifting or slinging		Required	
4.3		Type of provision for lifting and slinging		Required	
4.4		Provision of SF_6 pressure gauge		Required	
4.5		SF_6 pressure gauge visible from the operating side of RMU (front of RMU)		Required	
4.6		Quantity of SF_6		XXXX	XXXX
4.7	4.12	Is a cable box required?	Yes	Yes	
4.8	4.12.1	Compound-filled or air-filled cable box		Air-filled	
4.9	4.16	VDS required for all circuits	Yes	Yes	
4.10		Type of system offered		Required	
5		**Earthing**		**XXXX**	**XXXX**
5.1	4.15.1	Maximum earth fault current	kA	13,1	
5.2		Current density (maximum)	A/m	200	
5.3	4.15.2	Provision of reliable earthing terminal for each metal enclosure/tank (compatible with M12 lug-hole)		Required	
5.4		Each earth terminal to be indelibly marked		Required	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
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Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
6		**Cable termination requirements – ring main unit**		**XXXX**	**XXXX**
6.1		Incoming MV cable requirements:		XXXX	
6.2	4.12.3	a) 1×300 mm^2 3 core XLPE		Required	
6.3	4.14	b) Cable support (clamping) required		Required	
6.4	4.13.4	c) Minimum distance from top of cable clamp to bushing centres	mm	800	
6.5	4.12.2	d) Type of termination		screened	
6.6	4.12.4	Clearance requirements		As per SANS 876	
6.7	4.13.1	Are only Type C (630 A) bushings required?	Yes	Yes	
6.8	4.13.3	Bushings to be horizontally positioned		Required	
6.9	4.13.4	Bushing-centre spacing (minimum)	mm	105	
6.10	4.13.4	Distance between outer bushing-centres and earthed metal enclosure (minimum)	mm	55	
6.11		Provision for earthing of cables		Required	
6.12		Are the accessories for cable termination to be supplied by the RMU supplier?	No	No	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

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Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
7		**Materials and corrosion protection**		**XXXX**	**XXXX**
7.1		RMU material		Required	
7.2		Copper earth busbar		Required	
7.3		Final colour		Required	
8	6	**Marking and labelling**		**XXXX**	**XXXX**
8.1		Method of attachment of labels		Required	
8.2		Main circuit designation labels		Required	
8.3		RMU rating plate		Required	
8.4		ON, OFF and EARTH position labels		Required	
8.5		Additional marking system (i.e. mimics)		Required	
8.6		Instruction plates		Required	
9		**Documentation**		**XXXX**	**XXXX**
9.1	7.4	Type test certificates	Sets	1	
9.2	7.5	Proposed routine test certificates	Sets	1	
9.3	7.2	Drawings	Sets	2	
9.4	7.3	Circuit diagrams	Sets	2	
9.5	7.1	Installation, operating and maintenance instructions	Sets	2	
9.6		Details of special tools required	Sets	2	
9.7		Detailed spare-parts list provided	Sets	2	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description	Schedule A	Schedule B
10	**4.8**	**Protection**	**XXXX**	**XXXX**
10.1		Make of protection relay offered	Required	
10.2		Model of protection relay offered	Required	
10.3	4.8.6	Details of over current protection function	Required	
10.4	4.87	Details of earth fault protection function	Required	
10.5	4.85	Details of protection class transformers	Required	
10.6	4.8.5	Details of metering class transformers	Required	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Technical schedules A and B

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.		
Item	**Sub-clause of CP_TSSPEC_006**	**Proposed deviation**

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

Annex C - Technical schedules A and B

RMU (TX) 11 SF6 FREE 2SD&CB- SAP 4391

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
1		**Ratings**		**XXXX**	**XXXX**
1.1	4.2	Rated power-frequency voltage	kV	12	
1.2		Rated lightning impulse withstand voltage	kV	95	
1.3		Rated short-duration power frequency withstand voltage [50Hz: 1 min]	kV	28	
1.4		Rated normal current of ring-main busbars	A	630	
1.5	4.7	Rated normal current of switch disconnectors	A	630	
1.6	4.8	Rated normal current of circuit breaker	A	200	
1.7		Rated short-circuit breaking current of circuit breaker (3 second)	kA	20	
1.8	6.2	Internal arc classification		A-FLR	
1.9	6.2	Internal arc current and duration		20 kA/500 ms	
2		**Construction**		**XXXX**	**XXXX**
2.1	4.3	Is an indoor or outdoor unit required?		Indoor	
2.2	4.4	Is an extensible or non-extensible unit required?		Non-extensible	
2.3		Degree of protection of unit offered		XXXX	
2.4	4.5	Configuration		2SD&CB	
2.5	4.6	Type of cable testing facility offered		XXXX	
2.6	4.11	Insulating medium of busbars		SF_6 Free	
2.7	4.7.2	Insulating medium of switch disconnectors		SF_6 Free	
2.8	4.8.2	Insulating medium of circuit breaker		SF_6 Free	
2.9	4.7.3	Interrupting medium of switch disconnectors		SF_6 Free	
2.10	4.8.3	Interrupting medium of circuit breaker		SF_6 Free	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

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Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
2		**Construction (continued)**		**XXXX**	**XXXX**
2.11		Is a kiosk required	No	No	
2.12		Colour of kiosk		XXXX	XXXX
2.13		Recommended types of tools to install and maintain unit		Required	
2.14		Method used to attach rating plates		Required	
2.15		Method used to attach labels		Required	
2.16	4.19	Is a raising plinth required for Item 3?	No	No	
2.17					
2.18		Is the RMU required for a corrosive or non-corrosive environment?		Corrosive	
2.19		Is earth fault indication required?	No	No	
2.20		Type of earth fault indication offered		Required	
2.21		List of recommended spares attached	Yes	Yes	
2.22		Are remote tripping and closing required?	Yes	Yes	
2.23	4.10.2	Details of preferred auxiliary supply:		XXXX	XXXX
2.24		a) Voltage	Vdc	12 – 48	
2.25		b) Current	mA	0 – 10	
2.26		Provision for future automation		Required	
2.27		Quantity already produced and installed in South Africa		XXXX	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

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Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
3		**Switch description**		**XXXX**	**XXXX**
3.1		Manufacturer's designation of RMU		Required	
3.2		Type of SF_6 Free ring main unit		XXXX	XXXX
		a) Manufacturer		Required	
		b) Country of manufacture		Required	
4		**Design**		**XXXX**	**XXXX**
4.1	4.1.3	Ring main units designed and constructed in accordance with SANS 1874		Required	
4.2		Provision of facilities for lifting or slinging		Required	
4.3		Type of provision for lifting and slinging		Required	
4.4		Provision of SF_6 Free Indication sign		Required	
4.5		SF_6 Free indication visible from the operating side of RMU (front of RMU)		Required	
4.6					
4.7	4.12	Is a cable box required?	Yes	Yes	
4.8	4.12.1	Compound-filled or air-filled cable box		Air-filled	
4.9	4.16	VDS required for all circuits	Yes	Yes	
4.10		Type of system offered		Required	
5		**Earthing**		**XXXX**	**XXXX**
5.1	4.15.1	Maximum earth fault current	kA	13,1	
5.2		Current density (maximum)	A/m	200	
5.3	4.15.2	Provision of reliable earthing terminal for each metal enclosure/tank (compatible with M12 lug-hole)		Required	
5.4		Each earth terminal to be indelibly marked		Required	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

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Tenderer's Authorised Signatory: _____
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Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
6		**Cable termination requirements – ring main unit**		**XXXX**	**XXXX**
6.1		Incoming MV cable requirements:		XXXX	
6.2	4.12.3	a) 1×300 mm^2 3 core XLPE		Required	
6.3	4.12	b) Cable support (clamping) required		Required	
6.4	4.13.4	c) Minimum distance from top of cable clamp to bushing centres	mm	800	
6.5	4.12.2	d) Type of termination		screened	
6.6	4.12.4	Clearance requirements		As per SANS 876	
6.7	4.13.1	Are only Type C (630 A) bushings required?	Yes	Yes	
6.8	4.13.3	Bushings to be horizontally positioned		Required	
6.9	4.13.4	Bushing-centre spacing (minimum)	mm	105	
6.10	4.13.4	Distance between outer bushing-centres and earthed metal enclosure (minimum)	mm	55	
6.11		Provision for earthing of cables		Required	
6.12		Are the accessories for cable termination to be supplied by the RMU supplier?	No	No	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
7		**Materials and corrosion protection**		**XXXX**	**XXXX**
7.1		RMU material		XXXX	XXXX
7.2		Copper earth busbar		Required	
7.3		Final colour		XXXX	XXXX
8	6	**Marking and labelling**		**XXXX**	**XXXX**
8.1		Method of attachment of labels		Required	
8.2		Main circuit designation labels		Required	
8.3		RMU rating plate		Required	
8.4		ON, OFF and EARTH position labels		Required	
8.5		Additional marking system (i.e. mimics)		Required	
8.6		Instruction plates		Required	
9		**Documentation**		**XXXX**	**XXXX**
9.1	7.4	Type test certificates	Sets	1	
9.2	7.5	Proposed routine test certificates	Sets	1	
9.3	7.2	Drawings	Sets	2	
9.4	7.3	Circuit diagrams	Sets	2	
9.5	7.1	Installation, operating and maintenance instructions	Sets	2	
9.6		Details of special tools required	Sets	2	
9.7		Detailed spare-parts list provided	Sets	2	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

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Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description	Schedule A	Schedule B
10	**4.8**	**Protection**	**XXXX**	**XXXX**
10.1		Make of protection relay offered	Required	
10.2		Model of protection relay offered	Required	
10.3	4.8.6	Details of over current protection function	Required	
10.4	4.8.7	Details of earth fault protection function	Required	
10.5	4.8.5	Details of protection class current transformers.	Required	
10.6	4.8.5	Details of metering class current transformers	Required	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Technical schedules A and B

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.		
Item	**Sub-clause of CP_TSSPEC_006**	**Proposed deviation**

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

Annex C - Technical schedules A and B

RMU (TX) 11 SF6 FREE 2SD&CB WITH RAISING PLINTH-SAP (4392)

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
1		**Ratings**		**XXXX**	**XXXX**
1.1	4.2	Rated power-frequency voltage	kV	12	
1.2		Rated lightning impulse withstand voltage	kV	95	
1.3		Rated short-duration power frequency withstand voltage [50Hz: 1 min]	kV	28	
1.4		Rated normal current of ring-main busbars	A	630	
1.5	4.7	Rated normal current of switch disconnectors	A	630	
1.6	4.8	Rated normal current of circuit breaker	A	200	
1.7		Rated short-circuit breaking current of circuit breaker (3 second)	kA	20	
1.8	6.2	Internal arc classification		A-FLR	
1.9	6.2	Internal arc current and duration		20 kA/500 ms	
2		**Construction**		**XXXX**	**XXXX**
2.1	4.3	Is an indoor or outdoor unit required?		Indoor	
2.2	4.4	Is an extensible or non-extensible unit required?		Non-extensible	
2.3		Degree of protection of unit offered		Required	
2.4	4.5	Configuration		2SD&CB	
2.5	4.6	Type of cable testing facility offered		Required	
2.6	4.11	Insulating medium of busbars		SF_6 Free	
2.7	4.7.2	Insulating medium of switch disconnectors		SF_6 Free	
2.8	4.8.2	Insulating medium of circuit breaker		SF_6 Free	
2.9	4.7.3	Interrupting medium of switch disconnectors		SF_6 Free	
2.10	4.8.3	Interrupting medium of circuit breaker		SF_6 Free	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

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Tenderer's Authorised Signatory: _____

Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
2		**Construction (continued)**		**XXXX**	**XXXX**
2.11		Is a kiosk required	No	No	
2.12		Colour of kiosk		XXXX	XXXX
2.13		Recommended types of tools to install and maintain unit		XXXX	XXXX
2.14		Method used to attach rating plates		Required	
2.15		Method used to attach labels		Required	
2.16	4.19	Is a raising plinth required for Item 4?	Yes	YES	
2.17					
2.18		Is the RMU required for a corrosive or non-corrosive environment?		Corrosive	
2.19		Is earth fault indication required?	No	No	
2.20		Type of earth fault indication offered		Required	
2.21		List of recommended spares attached	Yes	Yes	
2.22		Are remote tripping and closing required?	Yes	Yes	
2.23	4.10.2	Details of preferred auxiliary supply:		XXXX	XXXX
2.24		a) Voltage	Vdc	12 – 48	
2.25		b) Current	mA	0 – 10	
2.26		Provision for future automation		Required	
2.27		Quantity already produced and installed in South Africa		XXXX	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
3		**Switch description**		**XXXX**	**XXXX**
3.1		Manufacturer's designation of RMU		Required	
3.2		Type of SF_6 Free ring main unit		XXXX	XXXX
		a) Manufacturer		Required	
		b) Country of manufacture		Required	
4		**Design**		**XXXX**	**XXXX**
4.1	4.1.3	Ring main units designed and constructed in accordance with SANS 1874		Required	
4.2		Provision of facilities for lifting or slinging		Required	
4.3		Type of provision for lifting and slinging		Required	
4.4		Provision of SF_6 Free Indication sign		Required	
4.5		SF_6Free indication visible from the operating side of RMU (front of RMU)		Required	
4.6					
4.7	4.12	Is a cable box required?	Yes	Yes	
4.8	4.12.1	Compound-filled or air-filled cable box		Air-filled	
4.9	4.16	VDS required for all circuits	Yes	Yes	
4.10		Type of system offered		Required	
5		**Earthing**		**XXXX**	**XXXX**
5.1	4.15.1	Maximum earth fault current	kA	13,1	
5.2		Current density (maximum)	A/m	200	
5.3	4.15.2	Provision of reliable earthing terminal for each metal enclosure/tank (compatible with M12 lug-hole)		Required	
5.4		Each earth terminal to be indelibly marked		Required	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
6		**Cable termination requirements – ring main unit**		**XXXX**	**XXXX**
6.1		Incoming MV cable requirements:		XXXX	
6.2	4.12.3	a) 1×300 mm^2 3 core XLPE		Required	
6.3	4.14	b) Cable support (clamping) required		Required	
6.4	4.13.4	c) Minimum distance from top of cable clamp to bushing centres	mm	800	
6.5	4.12.2	d) Type of termination		screened	
6.6	4.12.4	Clearance requirements		As per SANS 876	
6.7	4.13.1	Are only Type C (630 A) bushings required?	Yes	Yes	
6.8	4.13.3	Bushings to be horizontally positioned		Required	
6.9	4.13.4	Bushing-centre spacing (minimum)	mm	105	
6.10	4.13.4	Distance between outer bushing-centres and earthed metal enclosure (minimum)	mm	55	
6.11		Provision for earthing of cables		Required	
6.12		Are the accessories for cable termination to be supplied by the RMU supplier?	No	No	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description		Schedule A	Schedule B
7		**Materials and corrosion protection**		**XXXX**	**XXXX**
7.1		RMU material		XXXX	
7.2		Copper earth busbar		Required	
7.3		Final colour		Required	
8	6	**Marking and labelling**		**XXXX**	**XXXX**
8.1		Method of attachment of labels		Required	
8.2		Main circuit designation labels		Required	
8.3		RMU rating plate		Required	
8.4		ON, OFF and EARTH position labels		Required	
8.5		Additional marking system (i.e. mimics)		Required	
8.6		Instruction plates		Required	
9		**Documentation**		**XXXX**	**XXXX**
9.1	7.4	Type test certificates	Sets	1	
9.2	7.5	Proposed routine test certificates	Sets	1	
9.3	7.2	Drawings	Sets	2	
9.4	7.3	Circuit diagrams	Sets	2	
9.5	7.1	Installation, operating and maintenance instructions	Sets	2	
9.6		Details of special tools required	Sets	2	
9.7		Detailed spare-parts list provided	Sets	2	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____
Name in block lettersSignature

Full name of company: _____

Annex C - Technical schedules A and B

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_006	Description	Schedule A	Schedule B
10	**4.8**	**Protection**	**XXXX**	**XXXX**
10.1		Make of protection relay offered	Required	
10.2		Model of protection relay offered	Required	
10.3	4.8.6	Details of over current protection function	Required	
10.4	4.8.7	Details of earth fault protection function	Required	
10.5	4.8.5	Details of protection class current transformers	Required	
10.6	4.8.5	Details of metering class current transformers	Required	

Note: Ticks, Cross [√, X], Astrick [*], Word [Noted] or TBA ["To Be Advice"] will not be accepted

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block lettersSignature

Full name of company: _____

Technical schedules A and B

Deviation schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.		
Item	**Sub-clause of CP_TSSPEC_006**	**Proposed deviation**

Tender Number: _____

Tenderer's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

Annex D – Stock Items

Material Group: SWG-MV-UG

Item	SAP No.	SAP Short Description	SAP Long Description
1	1292	RMU (TX) 11 SF6 2SD&CB	RING MAIN UNIT, 11 KV, SF6 INSULATED, NON-EXTENSIBLE, COMPRISING OF 2 X 630 A SWITCH DISCONNECTORS AND 1 X 200 A CIRCUIT BREAKER COMBINED IN A COMPACT SINGLE UNIT. FOR USE IN DISTRIBUTION TRANSFORMER APPLICATIONS. ITEM SPECIFICATION NO. CP_TSSPEC_006.
2	1701	RMU (TX) 11 SF6 2SD&CB WITH RAISING PLINTH	RING MAIN UNIT, 11 KV, SF6 INSULATED, NON-EXTENSIBLE, COMPRISING OF 2 X 630 A SWITCH DISCONNECTORS AND 1 X 200 A CIRCUIT BREAKER COMBINED IN A COMPACT SINGLE UNIT. COMPLETE WITH METAL RAISING PLINTH. FOR USE IN DISTRIBUTION TRANSFORMER APPLICATIONS. ITEM SPECIFICATION NO. CP_TSSPEC_006.
3	4391	RMU (TX) 11 SF6 FREE 2SD&CB	RING MAIN UNIT, 11 KV, SF6 FREE INSULATED, NON-EXTENSIBLE, COMPRISING OF 2 X 630 A SWITCH DISCONNECTORS AND 1 X 200 A CIRCUIT BREAKER COMBINED IN A COMPACT SINGLE UNIT. FOR USE IN DISTRIBUTION TRANSFORMER APPLICATIONS. ITEM SPECIFICATION NO. CP_TSSPEC_006.
4	4392	RMU (TX) 11 SF6 FREE 2SD&CB WITH RAISING PLINTH	RING MAIN UNIT, 11 KV, SF6 FREE INSULATED, NON-EXTENSIBLE, COMPRISING OF 2 X 630 A SWITCH DISCONNECTORS AND 1 X 200 A CIRCUIT BREAKER COMBINED IN A COMPACT SINGLE UNIT. COMPLETE WITH METAL RAISING PLINTH. FOR USE IN DISTRIBUTION TRANSFORMER APPLICATIONS. ITEM SPECIFICATION NO. CP_TSSPEC_006.

Note: When read in conjunction with CP_TSSPEC_005, the ring main units for Type B miniature substations shall be purchased already installed in the Type B miniature substation. However, the items above may be required as stock in the case of workshop repairs (Item 1) or the installation of RMU in brick-built substation chambers where one or more distribution transformers are required to be supplied (Item 2).