


TENDER DOCUMENT GOODS AND SERVICES		 CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD
SUPPLY CHAIN MANAGEMENT		
SCM - 542	Approved by Branch Manager: February 2024	Version: 10

TENDER NO: 15G/2026/27

TENDER DESCRIPTION: SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

CONTRACT PERIOD: NOT EXCEEDING THIRTY-SIX (36) MONTHS FROM DATE OF COMMENCEMENT OF CONTRACT

CLOSING DATE 12 August 2026

CLOSING TIME 10:00 am

TENDER BOX NUMBER 199

TENDER FEE R200.00

Non – refundable tender fee payable to the City of Cape Town (CCT) for a hard copy of the tender document. This fee is not applicable to website downloads of the tender document.

TENDERER	
NAME of Company/Close Corporation or Partnership / Joint Venture/ Consortium or Sole Proprietor /Individual (hereinafter the "Tenderer")	
TRADING AS (if different from above)	
Registration number of Tenderer	
Physical address and chosen domicilium citandi et executandi of Tenderer	

NATURE OF TENDER OFFER (please indicate below)	
Main Offer (see clause 2.2.11.1)	
Alternative Offer (see clause 2.2.11.1)	

TENDER SERIAL NO.:	
SIGNATURES OF CCT OFFICIALS AT TENDER OPENING	
1	
2	
3	

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THE TENDER

T.1 GENERAL TENDER INFORMATION

TENDER ADVERTISED	: 10 July 2026
CLARIFICATION MEETING	: Time: 11:00 on Date: 21 July 2026 (Not compulsory, but strongly recommended)
VENUE FOR CLARIFICATION MEETING	: Ms Teams: https://teams.microsoft.com/meet/37170782994201?p=euW21oACd6tisPV9he
TENDER BOX & ADDRESS	: Tender Box as per front cover at the Tender & Quotation Boxes Office , 2 nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town. : The Tender Document (which includes the Form of Offer and Acceptance) completed and signed in all respects, plus any additional supporting documents required, must be submitted in a sealed envelope with the name and address of the tenderer, the endorsement “TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS” , the tender box number. and the closing date indicated on the envelope. The sealed envelope must be inserted into the appropriate official tender box before closing time. If the tender offer is too large to fit into the abovementioned box or the box is full, please enquire at the public counter (Tender Distribution Office) for alternative instructions. It remains the tenderer’s responsibility to ensure that the tender is placed in either the original box or as alternatively instructed.
CCT TENDER REPRESENTATIVE	SCM Email: SCM.Tenders12@capetown.gov.za

TENDERERS MUST NOTE THAT WHEREVER THIS DOCUMENT REFERS TO ANY PARTICULAR TRADE MARK, NAME, PATENT, DESIGN, TYPE, SPECIFIC ORIGIN OR PRODUCER, SUCH REFERENCE SHALL BE DEEMED TO BE ACCOMPANIED BY THE WORDS “OR EQUIVALENT”

T.2 CONDITIONS OF TENDER

2.1 General

2.1.1 Actions

2.1.1.1 The City of Cape Town (hereafter referred to as the “CCT” and each tenderer submitting a tender offer (hereinafter referred to as the “tenderer” or the “supplier”) shall comply with item T.2 of this Tender Document Goods and Services (hereinafter referred to as these “Conditions of Tender”). The tenderer and the CCT shall collectively hereinafter be referred to as the “Parties” and individually a “Party”. In their dealings with each other, the Parties shall discharge their duties and obligations as set out in these Conditions of Tender, timeously and with integrity, and behave equitably, honestly and transparently, and shall comply with all legal obligations imposed on the Parties herein and in accordance with all applicable laws.

The Parties agree that this tender Tender Document Goods and Services (hereinafter referred to as the “Tender” / “Tender Document”), its evaluation and acceptance and any resulting contract shall also be subject to the CCT’s Supply Chain Management Policy (“SCM Policy”) that was applicable on the date the bid was advertised and as amended from time to time. If the CCT adopts a new SCM Policy which contemplates that any clause therein would apply to the Contract emanating from this tender (hereinafter referred to as the “Contract”), such clause shall also be applicable to that Contract. Please refer to this document contained on the CCT’s website.

Abuse of the supply chain management system is not permitted and may result, inter alia, (1) in the tender being rejected; (2) cancellation of the contract; (3) restriction of the supplier, and/or (4) the exercise by the CCT of any other remedies available to it as provided for in the SCM Policy and/or the Contract and/or this tender and/or any applicable laws.

2.1.1.2 The CCT, the tenderer and their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the CCT shall declare any conflict of interest to the CCT at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict, and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

2.1.1.3 The CCT shall not seek, and a tenderer shall not submit a tender, without having a firm intention and capacity to proceed with the contract.

2.1.2 Interpretation

2.1.2.1 The additional requirements contained in Annexure F to the contract (hereinafter referred to as the “returnable documents” / “Returnable Schedules”) are part of these Conditions of Tender and are specifically hereby incorporated into these Conditions of Tender.

2.1.2.2 These Conditions of Tender and returnable Documents which are required for CCT’s tender evaluation purposes herein, shall form part of the Contract arising from the CCT’s corresponding invitation to tender.

2.1.3 Communication during tender process

Verbal or any other form of communication, from the CCT, its employees, agents or advisors during site visits/clarification meetings or at any other time prior to the award of the Contract, will not be regarded as binding on the CCT, unless communicated by the CCT in writing to suppliers / tenderers by its Director: Supply Chain Management or his nominee. Similarly, any communication of the tenderer / supplier that is not reduced to writing by the tenderer / supplier, its employees, agents or advisors, shall not be regarded as binding on the CCT, unless communicated to the CCT in writing by the suppliers / tenderers, or their duly authorised representatives.

2.1.4 The CCT's right to accept or reject any tender offer

2.1.4.1 The CCT may accept or reject any tender offer and may cancel the corresponding tender process or reject all tender offers at any time before the formation of a contract. The CCT may, prior to the award of the tender, cancel a tender if:

- (a) due to changed circumstances, there is no longer a need for the services, works or goods requested; or
- (b) funds are no longer available to cover the total envisaged expenditure; or
- (c) no acceptable tenders are received;
- (d) there is a material irregularity in the tender process; or
- (e) the Parties are unable to negotiate market related pricing.

The CCT shall not accept or incur any liability to a tenderer for such cancellation or rejection, but will give written reasons for such action upon receiving a written request to do so.

2.1.5 Procurement procedures

2.1.5.1 General

Unless otherwise stated in the Conditions of Tender, a contract will be concluded with the tenderer who scores the highest number of tender adjudication points per basket.

Tenderers bidding for any basket must tender for all items (activity & material) within the respective basket. An item which no rate is entered, or if anything other than a rate or a nil rate (for example, a zero, a dash or the word "included" or abbreviations thereof) is entered against an item, will be evaluated as a nil rate having been entered against that item, i.e. that there is no charge for that activity or material.

The CCT intends to appoint two tenderers for each of the 5 (five) Baskets listed below, (the highest ranked tenderer ("the Winner" (Main Contractor)) and in addition an "Alternative" (Alternative Contractor), for the allocation of work. If insufficient responsive bids are received, the CCT reserves the right to appoint fewer tenderers, or not to appoint any tenderers at all.

- **Basket A** - Air Insulated Switchgear for Extension of Existing ABB Unigear ZACB Installations
(Item A: Items A1.1 – A5.5.7)
- **Basket B** - Internal Arc Rated AIS 12 kV Switchgear for New Installations
(Item B: Items B1.1 – B5.5.7)
- **Basket C** - Gas Insulated Switchgear for Extension of Existing ABB ZX0.2 Installations
(Item C: Items C1.1 – C5.5.7)
- **Basket D** - Internal Arc Rated GIS 12 kV Switchgear for New Installations
(Item D: Items D1.1 – D5.5.7)

Optional Item

- **Basket E** - Internal Arc Rated Solid-Dielectric Insulated 12 kV Switchgear (SIS) for New Installations
(Item E: Items E1.1 – E5.5.7)

OEM Spares Items detailed in **Parts A.6, B.6, C.6, D.6 and E.6** will be awarded to the successful tenderer for the respective baskets A, B, C, D and E above subject to price benchmarking.

Purchase Orders will in the first instance be placed by the CCT with the Winner.

Should the Winner (Main Contractor) not be able to meet the contractual commitments relating to a particular order or orders, either in terms of delivery performance or of compliance with the requirements of the specification, the Contractor shall advise the CCT within 5 working days of receipt of the order(s). The purchase order(s) will thereafter be cancelled and orders placed with the Alternative Contractor.

Should the Winner continually fail to meet the contractual commitments the CCT reserves the right to initiate the Default process, during which the Contractor will be afforded an opportunity to address in

consultation with the CCT his contract performance and failure to meet the contractual commitments.

During the course of any such Default process the CCT reserves the right to place with the Alternative Contractor instead of the Winner and shall retain this right until such time as the Winner has either corrected the non-compliance with the contractual commitments or has provided a proposal to correct the non-compliance with the contractual commitments that is to the satisfaction of the CCT.

In the event that the Winner is formally placed in Default in terms of the contract the contract shall be placed with the Alternative Contractor for the balance of the contract period.

The contract period shall be for a period **not exceeding 36 (thirty six) months** from the date of commencement which will be no earlier than **TBC**.

2.1.5.2 Proposal procedure using the two stage-system

A two-stage system will not be followed.

2.1.5.3 Nomination of Standby Bidder

“Standby Bidder” means a bidder, identified by the CCT at the time of awarding a bid that will be considered for award should the contract be terminated for any reason whatsoever. In the event that a contract is terminated during the execution thereof, the CCT may consider the award of the contract, or non-award, to the Standby Bidder in terms of the procedures included its SCM Policy, as amended from time to time.

2.1.6 Objections, complaints, queries and disputes/ Appeals in terms of Section 62 of the Systems Act/ Access to court

2.1.6.1 Disputes, objections, complaints and queries

In terms of Regulations 49 and 50 of the Local Government: Municipal Finance Management Act, 56 of 2003 Municipal Supply Chain Management Regulations (Board Notice 868 of 2005):

- a) Persons aggrieved by decisions or actions taken by the CCT in the implementation of its supply chain management system, may lodge within 14 days of the decision or action, a written objection or complaint or query or dispute against the decision or action.

2.1.6.2 Appeals

- a) In terms of Section 62 of the Local Government: Municipal Systems Act, 32 of 2000 a person whose rights are affected by a decision taken by the CCT, may appeal against that decision by giving written notice of the appeal and reasons to the City Manager within 21 days of the date of the notification of the decision.
- b) An appeal must contain the following:
 - i. Must be in writing
 - ii. It must set out the reasons for the appeal
 - iii. It must state in which way the Appellant’s rights were affected by the decision;
 - iv. It must state the remedy sought; and
 - v. It must be accompanied with a copy of the notification advising the person of the decision
- c) The relevant CCT appeal authority must consider the appeal and **may confirm, vary or revoke** the decision that has been appealed, but no such revocation of a decision may detract from any rights that may have accrued as a result of the decision.

2.1.6.3 Right to approach the courts and rights in terms of Promotion of Administrative Justice Act, 3 of 2000 and Promotion of Access to Information Act, 2 of 2000

The sub- clauses above do not influence any affected person’s rights to approach the High Court at any time or its rights in terms of the Promotion of Administrative Justice Act (PAJA) and Promotion of Access to Information Act (PAIA).

- 2.1.6.4 All requests referring to sub clauses 2.1.6.1 and 2.1.6.2 must be submitted in writing to:
The City Manager - C/o the Manager: Legal Compliance Unit, Legal Services Department, Office of the City Manager
Via hand delivery at: 20th Floor, Tower Block, 12 Hertzog Boulevard, Cape Town 8001
Via post at: Private Bag X918, Cape Town, 8000
Via email at: MSA.Appeals@capetown.gov.za

2.1.6.5 All requests referring to clause 2.1.6.3 must be submitted in writing to:

The City Manager - C/o the Manager: Access to Information Unit, Legal Service Department, Office of the City Manager

Via hand delivery at: 20th Floor, Tower Block, 12 Hertzog Boulevard, Cape Town 8001

Via post at: Private Bag X918, Cape Town, 8000

Via email at: Access2info.Act@capetown.gov.za

2.1.6.6 The minimum standards regarding accessing and 'processing' of any personal information belonging to another in terms of Protection of Personal Information Act, 2013 (POPIA).

For purposes of this clause 2.1.6.6, the contract and these Conditions of Tender, the terms "data subject", "Personal Information" and "Processing" shall have the meaning as set out in section 1 of POPIA, and "Process" shall have the corresponding meaning.

The CCT, its employees, representatives and sub-contractors may, from time to time, Process the tenderer's and/or its employees', representatives' and/or sub-contractors' Personal Information, for purposes of, and/or relating to, the tender, the contract and these Conditions of Tender, for research purposes, and/or as otherwise may be envisaged in the CCT's Privacy Notice and/or in relation to the CCT's Supply Chain Management Policy or as may be otherwise permitted by law. This includes the Processing of the latter Personal Information by the CCT's due diligence assurance provider, professional advisors and the Appeal Authority as applicable. The CCT's justification for the processing of such aforesaid Personal Information is based on section 11(1)(b) of POPIA, i.e., in terms of which the CCT's Processing of the said Personal Information is necessary to carry out actions for the conclusion and/or performance of the contract, to which the applicable data subject (envisaged in this clause 2.1.6.6 above) is a party.

All requests relating to data protection must be submitted in writing to:

The City Manager - C/o the Information Officer, Office of the City Manager

Via hand delivery at: 20th Floor, Tower Block, 12 Hertzog Boulevard, Cape Town 8001

Via post at: Private Bag X9181, Cape Town, 8000

Via email at: Popia@capetown.gov.za

2.1.6.7 Compliance to the CCTs Appeals Policy.

In terms of the CCT's Appeals Policy, a fixed upfront administration fee will be charged. In addition, a surcharge may be imposed for vexatious and frivolous or otherwise manifestly inappropriate tender related appeals.

The current approved administration fee is R300.00 and may be paid at any of the Municipal Offices or at the Civic Centre in Cape Town using the GL Data Capture Receipt attached as Annexure F.14: Appeal Application Form. Alternatively, via EFT into the CCT's NEDBANK Account: CITY OF CAPE TOWN and using Reference number: 198158966. You are required to send proof of payment when lodging your appeal.

The current surcharge for vexatious and frivolous or otherwise manifestly inappropriate tender related appeals will be calculated as $\frac{1}{2}$ (Administrative cost of the tender appeal) + 0.25 % (Appellant's tender price).

Should the payment of the administration fee of R300.00 or the surcharge not be received, such fee or surcharge will be added as a Sundry Tariff to the bidder's municipal account.

In the event where the bidder does not have a Municipal account with the CCT, the fee or surcharge may be recovered in terms of the CCT's Credit Control and Debt Collection By-law, 2006 (as amended) and its Credit Control and Debt Collection Policy.

2.1.7 CCT Supplier Database Registration

Tenderers are required to be registered on the CCT Supplier Database as a service provider. Tenderers must register as such upon being requested to do so in writing and within the period contained in such a request, failing which no orders can be raised or payments processed from the resulting contract. In the case of Joint Venture partnerships this requirement will apply individually to each party of the Joint Venture.

Tenderers who wish to register on the CCT's Supplier Database may collect registration forms from the

Supplier Management Unit located within the Supplier Management / Registration Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town (Tel 021 400 9242/3/4/5). Registration forms and related information are also available on the CCT's website www.capetown.gov.za (follow the Supply Chain Management link to Supplier registration).

It is each tenderer's responsibility to keep all the information on the CCT Supplier Database updated.

2.1.8 National Treasury Web Based Central Supplier Database (CSD) Registration

Tenderers are required to be registered on the National Treasury Web Based Central Supplier Database (CSD) as a service provider. Tenderers must register as such upon being requested to do so in writing and within the period contained in such a request, failing which no orders can be raised or payments processed from the resulting contract. In the case of Joint Venture partnerships this requirement will apply individually to each party of the Joint Venture.

Tenderers who wish to register on the National Treasury Web Based Central Supplier Database (CSD) may do so via the web address <https://secure.csd.gov.za>

It is each tenderer's responsibility to keep all the information on the National Treasury Web Based Central Supplier Database (CSD) updated.

2.2 Tenderer's obligations

2.2.1 Eligibility Criteria

2.2.1.1 Tenderers are obligated to submit a tender offer that complies in all aspects to the conditions as detailed in this tender document and the Conditions of Tender. An 'acceptable tender must "COMPLY IN ALL" aspects with the tender, Conditions of Tender, all Specifications (i.e., item C.5 below, hereinafter the "Specifications"), pricing instructions herein and the Contract including its conditions.

2.2.1.1.1 Submit a tender offer

Only those tender submissions from which it can be established, *inter alia* that a clear, irrevocable and unambiguous offer has been made to CCT, by whom the offer has been made and what the offer constitutes, will be declared responsive.

2.2.1.1.2 Compliance with requirements of CCT SCM Policy and procedures

Only those tenders that are compliant with the requirements below will be declared responsive:

- a) A completed **Details of Tenderer** to be provided (applicable schedule below to be completed);
- b) A completed **Certificate of Authority for Partnerships/ Joint Ventures/ Consortiums** to be provided authorising the tender to be made and the signatory to sign the tender on the partnership /joint venture/consortium's (applicable schedule below to be completed);
- c) A copy of the partnership / joint venture / consortium agreement to be provided, where applicable.
- d) A completed **Declaration of Interest – State Employees** to be provided and which does not indicate any non-compliance with the legal requirements relating to state employees (applicable schedule below to be completed);
- e) A completed **Declaration – Conflict of Interest and Declaration of Bidders' past Supply Chain Management Practices** to be provided and which does not indicate any conflict or past practises that renders the tender non-responsive based on the conditions contained thereon (applicable schedules below to be completed);
- f) A completed **Certificate of Independent Bid Determination** to be provided and which does not indicate any non-compliance with the requirements of the schedule (applicable schedule below to be completed);
- g) The tenderer (including any of its representatives, directors or members), has not been restricted in terms of abuse of the Supply Chain Management Policy,
- h) The tenderer's tax matters with SARS are in order, or the tenderer is a foreign supplier that is not required to be registered for tax compliance with SARS;
- i) The tenderer is not an advisor or consultant contracted with the CCT whose prior or current obligations creates any conflict of interest or unfair advantage;
- j) The tenderer is not a person, advisor, corporate entity or a director of such corporate entity, who is directly or indirectly involved or associated with the bid specification committee;

- k) A completed **Authorisation for the Deduction of Outstanding Amounts Owed to the CCT** to be provided and which does not indicate any details that renders the tender non-responsive based on the conditions contained thereon (applicable schedules below to be completed);
- l) The tenderer (including any of its representatives, directors or members), has not been found guilty of contravening the Competition Act 89 of 1998, as amended from time to time;
- m) The tenderer (including any of its representatives, directors or members), has not been found guilty on any other basis listed in the Supply Chain Management Policy.

2.2.1.1.3 Compulsory clarification meeting

Not Applicable

2.2.1.1.4 Minimum score for functionality

Not Applicable

2.2.1.1.5 Eligibility referring to specification

Compliance with the Specification

In order to be declared responsive, the tenderer must comply fully with the specifications outlined in the tender documents. The tenderer's attention is specifically drawn to the following sections of the specifications:

- Section 20: Key Personnel & Competency
 - Complete Schedule F.13 D: Details of Tenderer's Installations History, Track Record of Equipment & Key Personnel Information
- Section 40: Technical Documentation, Drawings, Operating and Maintenance Instructions
- Section 50.2: Type Tests
 - Complete Schedule F.13 G: Schedule of Type Tests, detailing all type tests performed.
- Section 53: Original Equipment Manufacturers (OEM) and their Authorised Reseller/Distributor
- Technical Schedules:
 - Schedule F.13 A: Schedule of Manufacturer Information
 - Schedule F.13 B: Schedule of Technical Data
 - Schedule F.13 C: Schedule of Tenderer Installations History, Track Record of Equipment & Key Personnel Information
 - Schedule F.13 D: Details of Experience, Quality Systems and After Sales Facilities in South Africa
 - Schedule F.13 E: Departures from the Requirements of the Specification
 - Schedule F.13 F: OEM, Quality and Environmental Certification
 - Schedule F.13 G: Schedule of Type Tests or SABS certification
 - Schedule F.13 H: Details of Switchgear Disposal
 - Schedule F.13 I: Drawing Summary Sheet
 - Schedule F.13 J: Method Statement of Previous Installations
 - Schedule F.13 K: Commencement Date and Dates of Readiness for Inspection, Testing and Delivery
 - Schedule F.13 L: Schedule of Sub-Contractors
 - Schedule F.13 M: Schedule of Construction Equipment

In addition to the above, the tenderer is required demonstrate compliance with the full extent of the technical specifications. In order to be evaluated for compliance with the technical specifications, the tenderer must complete **Schedule F.13**. It is the responsibility of the tenderer to fully and accurately complete this schedule.

Any tender submissions that are found to be materially non-compliant to the Specification for one or more of the items tendered in accordance with 2.3.7 of the Conditions of Tender, and following any necessary clarification in accordance with 2.3.9 the Conditions of Tender, shall be declared non-responsive for the respective items.

2.2.1.1.6 Provision of samples

Not Applicable

2.2.2 Cost of tendering

The CCT will not be liable for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer complies with requirements.

2.2.3 Check documents

The documents issued by the CCT for the purpose of a tender offer are listed in the index of this tender document.

Before submission of any tender, the tenderer should check the number of pages, and if any are found to be missing or duplicated, or the figures or writing is indistinct, or if the Price Schedule contains any obvious errors, the tenderer must apply to the CCT at once to have the same rectified.

2.2.4 Confidentiality and copyright of documents

The tenderer shall treat as strictly confidential all matters arising in connection with the tender. Use and copy the documents issued by the CCT only for the purpose of preparing and submitting a tender offer in response to the invitation.

2.2.5 Reference documents

The tenderer shall obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, Conditions of Contract and other publications, which are not attached but which are incorporated into the tender document(s) by reference.

2.2.6 Acknowledge and comply with notices

The tenderer shall acknowledge receipt of notices to the tender documents, which the CCT may issue, and shall fully comply with all instructions issued in the said notices, and if necessary, apply for an extension of the closing time stated on the front page of the tender document, in order to take the notices into account. Notwithstanding any requests for confirmation of receipt of the said notices issued, the tenderer shall be deemed to have received such notices if the CCT can show proof of transmission thereof via electronic mail, facsimile, or registered post or other lawful means.

2.2.7 Clarification meeting

The tenderer shall attend, where required, a clarification meeting at which tenderers may familiarise themselves with aspects of the proposed work, services or supply and pose questions. Details of the meeting(s) are stated in the General Tender Information (i.e., in item T.1 above).

Tenderers should be represented at the site visit/clarification meeting by a duly authorised person who is suitably qualified and experienced to comprehend the implications of the work involved.

2.2.8 Seek clarification

The tenderer shall request clarification of the tender documents, if necessary, by notifying the CCT at least one week before the closing time stated in the General Tender Information (i.e., in item T.1 above), where possible.

2.2.9 Pricing the tender offer

2.2.9.1 The tenderer shall comply with all pricing instructions as stated on the Price Schedule.

2.2.10 Alterations to documents

The tenderer shall not make any alterations or additions to the tender documents, except to comply with instructions issued by the CCT in writing, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations.

2.2.11 Alternative tender offers

2.2.11.1 Unless otherwise stated in the Conditions of Tender, the tenderers may submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted.

If a tenderer wishes to submit an alternative tender offer, he/she/it shall do so as a separate offer on a complete set of tender documents. The alternative tender offer shall be submitted in a separate sealed envelope clearly marked "Alternative Tender" in order to distinguish it from the main tender offer.

Only the alternative of the highest ranked acceptable main tender offer (that is, submitted by the same tenderer) will be considered, and if appropriate, recommended for award.

Alternative tender offers of any but the highest ranked main tender offer will not be considered.

An alternative tender offer to the highest ranked acceptable main tender offer that is priced higher than the main tender offer may be recommended for award, provided that the ranking of the alternative tender offer is higher than the ranking of the next ranked acceptable main tender offer.

The CCT will not be bound to consider alternative tenders and shall have sole discretion in this regard.

In the event that the alternative is accepted, the tenderer warrants that the alternative offer complies in all respects with the CCT's standards and requirements as set out in the tender document.

2.2.11.2 Acceptance of an alternative tender offer by the CCT may be based only on the criteria stated in the Conditions of Tender or applicable criteria otherwise acceptable to the CCT.

2.2.12 Submitting a tender offer

2.2.12.1 The tenderer is required to submit one tender offer only on the original tender documents as issued by the CCT, either as a single tendering entity or as a member in a joint venture to provide the whole of the works, services or supply identified in the Conditions of Contract and described in the Specifications. Only those tenders submitted on the tender documents as issued by the CCT together with all Tender Returnable Documents duly completed and signed will be declared responsive.

2.2.12.2 The tenderer shall return the entire tender document to the CCT after completing it in its entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.

2.2.12.3 The tenderer shall sign the original tender offer where required in terms of the Conditions of Tender. The tender shall be signed by a person duly authorised by the tenderer to do so. Tenders submitted by joint ventures of two or more firms shall be accompanied by the document of formation / founding document of the joint venture or any other document signed by all Parties, in which is defined precisely the conditions under which the joint venture will function, its period of duration, the persons authorised to represent and obligate it, the participation of the several firms forming the joint venture, and any other information necessary to permit a full appraisal of its functioning. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner.

2.2.12.4 Where a two-envelope system is required in terms of the Conditions of Tender, place and seal the returnable documents listed in the Conditions of Tender in an envelope marked "financial proposal" and place the remaining returnable documents in an envelope marked "technical proposal". Each envelope shall state on the outside the CCT's address and identification details stated in the General Tender Information (i.e., item T.1 above), as well as the tenderer's name and contact address.

2.2.12.5 The tenderer shall seal the original tender offer and copy packages together in an outer package that states on the outside only the CCT's address and identification details as stated in the General Tender

Information. . If it is not possible to submit the original tender and the required copies (see 2.2.12.3) in a single envelope, then the tenderer must seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY" in addition to the aforementioned tender submission details.

2.2.12.6 The CCT shall not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.

2.2.12.7 Tender offers submitted by facsimile or e-mail will be rejected by the CCT, unless stated otherwise in the Conditions of Tender.

2.2.12.8 By signing the offer part of the Form of Offer (**Section C.2, hereto**) the tenderer warrants and agrees that all information provided in the tender submission is true and correct.

2.2.12.9 Tenderers shall properly deposit its bid in the designated tender box (as detailed on the front page of this tender document) on or before the closing date and before the closing time, in the relevant tender box at the Tender & Quotation Boxes Office situated on the 2nd floor, Concourse Level, Civic Centre, 12 Hertzog Boulevard, Cape Town. If the tender submission is too large to fit in the allocated box, please enquire at the public counter for assistance.

2.2.12.10 The tenderer must record and reference all information submitted contained in other documents for example cover letters, brochures, catalogues, etc. in the Returnable Schedule titled **List of Other Documents Attached by Tenderer**.

2.2.13 Information and data to be completed in all respects

Tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the CCT as non-responsive.

2.2.14 Closing time

2.2.14.1 The tenderer shall ensure that the CCT receives the tender offer, together with all applicable documents specified herein, at the address specified in the General Tender Information herein prior to the closing time stated on the front page of the tender document.

2.2.14.2 If the CCT extends the closing time stated on the front page of the tender document for any reason, the requirements of these Conditions of Tender apply equally to the extended deadline.

2.2.14.3 The CCT shall not consider tenders that are received after the closing date and time for such a tender (late tenders).

2.2.15 Tender offer validity and withdrawal of tenders

2.2.15.1 The tenderer shall warrant that the tender offer(s) remains valid, irrevocable and open for acceptance by the CCT at any time for a period of 120 days after the closing date stated on the front page of the tender document.

2.2.15.2 Notwithstanding the period stated in clause 2.2.15.1 above, bids shall remain valid for acceptance for a period of twelve (12) months after the expiry of the original validity period, unless the CCT is notified in writing of anything to the contrary by the bidder. The validity of bids may be further extended by a period of not more than six months subject to mutual agreement by the parties, administrative processes and upon approval by the City Manager, unless the required extension is as a result of an appeal process or court ruling.

In circumstances where the validity period of a tender has expired, and the tender has not been awarded, the tender process is considered "completed", despite there being no decision (award or cancellation) made. This anomaly does not fall under any of the listed grounds of cancellation and should be treated as a "non-award". A "non award" is supported as a recommendation to the CCT's Bid Adjudication Committee ("BAC") for noting.

2.2.15.3 A tenderer may request in writing, after the closing date, that its tender offer be withdrawn. Such

withdrawal will be permitted or refused at the sole discretion of the CCT after consideration of the reasons for the withdrawal, which shall be fully set out by the tenderer in such written request for withdrawal. Should the tender offer be withdrawn in contravention hereof, the tenderer agrees that:

- a) it shall be liable to the CCT for any additional expense incurred or losses suffered by the CCT in having either to accept another tender or, if new tenders have to be invited, the additional expenses incurred or losses suffered by the invitation of new tenders and the subsequent acceptance of any other tender;
- b) the CCT shall also have the right to recover such additional expenses or losses by set-off against monies which may be due or become due to the tenderer under this or any other tender or contract or against any guarantee or deposit that may have been furnished by the tenderer or on its behalf for the due fulfilment of this or any other tender or contract. Pending the ascertainment of the amount of such additional expenses or losses, the CCT shall be entitled to retain such monies, guarantee or deposit as security for any such expenses or loss, without prejudice to the CCT's other rights and/or remedies available to it in accordance with any applicable laws.

2.2.16 Clarification of tender offer, or additional information, after submission

Tenderer's shall promptly provide clarification of its tender offer, or additional information, in response to a written request to do so from the CCT during the evaluation of tender offers within the time period stated in such request. No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

Note: This clause does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the CCT elect to do so.

Failure, or refusal, to provide such clarification or additional information within the time for submission stated in the CCT's written request may render the tender non-responsive.

2.2.17 Provide other material

2.2.17.1 Tenderer's shall promptly provide, upon request by the CCT, any other material that has a bearing on the tender offer, the tenderer's commercial position (including joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the CCT for the purpose of the evaluation of the tender. Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the CCT's request, the CCT may regard the tender offer as non-responsive.

2.2.17.2 The tenderer shall provide, on written request by the CCT, where the transaction value inclusive of VAT **exceeds R 10 million**:

- a) audited annual financial statement for the past 3 years, or for the period since establishment if established during the past 3 years, if required by law to prepare annual financial statements for auditing;
- b) a certificate signed by the tenderer certifying that the tenderer has no undisputed commitments for municipal services towards a municipality or other service provider in respect of which payment is overdue for more than 30 days;
- c) particulars of any contracts awarded to the tenderer by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract;
- d) a statement indicating whether any portion of the goods or services are expected to be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality or municipal entity is expected to be transferred out of the Republic.

Each entity to a Consortium/Joint Venture bid shall submit separate certificates/statements in the above regard.

2.2.17.3 Tenderers shall be required to undertake to fully cooperate with the CCT's external service provider appointed to perform a due diligence review and risk assessment upon receipt of such written instruction from the CCT.

2.2.18 Samples, Inspections, tests and analysis

Tenderers shall provide access during working hours to premises for inspections, tests and analysis as provided for in the Conditions of Tender or Specifications.

If the Specifications requires the tenderer to provide samples, these shall be provided strictly in accordance with the instructions set out in the Specification.

If such samples are not submitted as required in the bid documents or within any further time stipulated by the CCT in writing, then the bid concerned may be declared non-responsive.

The samples provided by all successful bidders will be retained by the CCT for the duration of any subsequent contract. Bidders are to note that samples are requested for testing purposes therefore samples submitted to the CCT may not in all instances be returned in the same state of supply and in other instances may not be returned at all. Unsuccessful bidders will be advised by the Project Manager or dedicated CCT Official to collect their samples, save in the aforementioned instances where the samples would not be returned.

2.2.19 Certificates

The tenderer must provide the CCT with all certificates as stated below:

2.2.19.1. Preference Points for Specific Goals

In order to qualify for preference points for Specific Goals, it is the responsibility of the tenderer to submit documentary proof (Company registration certification, Central Supplier Database report, BBBEE certificate, Financial Statements, commissioned sworn affidavits, etc.) in support of tenderer claims for such preference for that specific goal.

Tenderers are further referred to the content of the Preference Schedule for the full terms and conditions applicable to the awarding of preference points.

2.2.19.2 Evidence of tax compliance

Tenderers shall be registered with the South African Revenue Service (SARS) and their tax affairs must be in order and they must be tax compliant subject to the requirements of clause 2.2.1.1.2.h. In this regard, it is the responsibility of the Tenderer to submit evidence in the form of a valid Tax Compliance Status PIN issued by SARS to the CCT at the Supplier Management Unit located within the Supplier Management / Registration Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town (Tel 021 400 9242/3/4/5), or included with this tender. The tenderer must record its Tax Compliance Status PIN number on the **Details of Tenderer** pages of the tender submission.

Each party to a Consortium/Joint Venture shall submit a separate Tax Compliance Status Pin.

Before making an award the CCT must verify the bidder's tax compliance status. Where the recommended bidder is not tax compliant, the bidder should be notified of the non-compliant status and be requested to submit to the CCT, within 7 working days, written proof from SARS that they have made arrangement to meet their outstanding tax obligations. The proof of tax compliance submitted by the bidder must be verified by the CCT via CSD or e-Filing. The CCT should reject a bid submitted by the bidder if such bidder fails to provide proof of tax compliance within the timeframe stated herein.

Only foreign suppliers who have answered "NO" to all the questions contained in the Questionnaire to Bidding Foreign Suppliers section on the **Details of Tenderer** pages of the tender submission, are not required to register for a tax compliance status with SARS.

2.2.20 Compliance with Occupational Health and Safety Act, 85 of 1993

Tenderers are to note the requirements of the Occupational Health and Safety Act, 85 of 1993. The Tenderer shall be deemed to have read and fully understood the requirements of the above Act and Regulations and to have allowed for all costs in compliance therewith.

In this regard the Tenderer shall submit **upon written request to do so by the CCT**, a Health and Safety Plan in sufficient detail to demonstrate the necessary competencies and resources to deliver the goods or services

all in accordance with the Act, Regulations and Health and Safety Specification.

2.2.21 Claims arising from submission of tender

By responding to the tender herein, the tenderer warrants that it has:

- a) Inspected the Specifications and read and fully understood the Conditions of Contract.
- b) Read and fully understood the whole text of the Specifications and Price Schedule and thoroughly acquainted himself with the nature of the goods or services proposed and generally of all matters which may influence the Contract.
- c) visited the site(s) where delivery of the proposed goods will take place, carefully examined existing conditions, the means of access to the site(s), the conditions under which the delivery is to be made, and acquainted himself with any limitations or restrictions that may be imposed by the Municipal or other Authorities in regard to access and transport of materials, plant and equipment to and from the site(s) and made the necessary provisions for any additional costs involved thereby.
- d) requested the CCT to clarify the actual requirements of anything in the Specifications and Price Schedule, the exact meaning or interpretation of which is not clearly intelligible to the Tenderer.
- e) Received any notices to the tender documents which have been issued in accordance with the CCT's Supply Chain Management Policy.

The CCT will therefore not be liable for the payment of any extra costs or claims arising from the submission of the tender.

2.2.22 Collection and issuing of tender documents

The CCT will only issue tender documents through its Tender Distribution Office and/or the official CCT tender portal. Bidders who obtain documents through any means other than described herein, will not be known to the CCT and may thus not receive tender notices and addendums. Tenderers are not allowed to distribute tender documents to other potential bidders.

It is the responsibility of bidders who obtain documents through any means other than described herein, to notify the CCT tender representative thereof that they are participating in the tender. The CCT accepts no liability for any tender notices or addendums not reaching any bidders, who obtained documents through any means other than described herein or who provided incorrect contact details to the CCT.

2.3 The CCT's undertakings

2.3.1 Respond to requests from the tenderer

2.3.1.1 Unless otherwise stated in the Conditions of Tender, the CCT shall respond to a request for clarification received up to one week (where possible) before the tender closing time stated on the front page of the tender document.

2.3.1.2 The CCT's duly authorised representative for the purpose of this tender is stated on the General Tender Information page above.

2.3.2 Issue Notices

If necessary, the CCT may issue addenda in writing that may amend or amplify the tender documents to each tenderer during the period from the date the tender documents are available until one week before the tender closing time stated in the Tender Data. The CCT reserves its rights to issue addenda less than one week before the tender closing time in exceptional circumstances. If, as a result a tenderer applies for an extension to the closing time stated on the front page of the tender document, the CCT may grant such extension and, shall then notify all tenderers who drew documents.

Notwithstanding any requests for confirmation of receipt of notices issued, the tenderer shall be deemed to have received such notices if the CCT can show proof of transmission thereof via electronic mail, facsimile or registered post.

2.3.3 Opening of tender submissions

2.3.3.1 Unless the two-envelope system is to be followed, CCT shall open tender submissions in the presence of tenderers' agents who choose to attend at the time and place stated in the Conditions of Tender.

Tenders will be opened immediately after the closing time for receipt of tenders as stated on the front page of the tender document, or as stated in any Notice extending the closing date and at the closing venue as stated in the General Tender Information.

2.3.3.2 Announce at the meeting held immediately after the opening of tender submissions, at the closing venue as stated in the General Tender Information, the name of each tenderer whose tender offer is opened and, where possible, the prices indicated.

2.3.3.3 Make available a record of the details announced at the tender opening meeting on the CCT's website (<http://www.capetown.gov.za/en/SupplyChainManagement/Pages/default.aspx>.)

2.3.4 Two-envelope system

2.3.4.1 Where stated in the Conditions of Tender that a two-envelope system is to be followed, the CCT shall open only the technical proposal of tenders in the presence of tenderers' agents who choose to attend at the time and place stated in the Conditions of Tender and announce the name of each tenderer whose technical proposal is opened.

2.3.4.2 The CCT shall evaluate the quality of the technical proposals offered by tenderers, then advise tenderers who have submitted responsive technical proposals of the time and place when the financial proposals will be opened. The CCT shall open only the financial proposals of tenderers, who have submitted responsive technical proposals in accordance with the requirements as stated in the Conditions of Tender, and announce the total price and any preference claimed. Return unopened financial proposals to tenderers whose technical proposals were non responsive.

2.3.5 Non-disclosure

The CCT shall not disclose to tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers and recommendations for the award of a contract, until after the award of the contract to the successful tenderer.

2.3.6 Grounds for rejection and disqualification

The CCT shall determine whether there has been any effort by a tenderer to influence the processing of tender offers and instantly disqualify a tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.

2.3.7 Test for responsiveness

2.3.7.1 Appoint a Bid Evaluation Committee and determine after opening whether each tender offer properly received:

- a) complies with the requirements of these Conditions of Tender,
- b) has been properly and fully completed and signed, and
- c) is responsive to the other requirements of the tender documents.

2.3.7.2 A responsive tender is one that conforms to all the terms, conditions, and specifications of the tender documents without material deviation or qualification. A material deviation or qualification is one which, in the CCT's opinion, would:

- a) Detrimentially affect the scope, quality, or performance of the goods, services or supply identified in the Specifications,
- b) Significantly change the CCT's or the tenderer's risks and responsibilities under the contract, or
- c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.

Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of any material deviation or qualification.

The CCT reserves the right to accept a tender offer which does not, in the CCT's opinion, materially and/or substantially deviate from the terms, conditions, and specifications of the tender documents.

2.3.8 Arithmetical errors, omissions and discrepancies

2.3.8.1 Check the responsive tenders for:

- a) The gross misplacement of the decimal point in any unit rate;
- b) Omissions made in completing the Price Schedule; or
- c) Arithmetic errors in:
 - i) line item totals resulting from the product of a unit rate and a quantity in the Price Schedule; or
 - ii) The summation of the prices; or
 - iii) Calculation of individual rates.

2.3.8.2 The CCT must correct the arithmetical errors in the following manner:

- a) Where there is a discrepancy between the amounts in words and amounts in figures, the amount in words shall govern.
- b) If pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as tendered shall govern, and the unit rate shall be corrected.
- c) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern and the tenderer will be asked to revise selected item prices (and their rates if Price Schedules apply) to achieve the tendered total of the prices.

Consider the rejection of a tender offer if the tenderer does not correct or accept the correction of the arithmetical error in the manner described above.

2.3.8.3 In the event of tendered rates or lump sums being declared by the CCT to be unacceptable to it

because they are not priced, either excessively low or high, or not in proper balance with other rates or lump sums, the tenderer may be required to produce evidence and advance arguments in support of the tendered rates or lump sums objected to. If, after submission of such evidence and any further evidence requested, the CCT is still not satisfied with the tendered rates or lump sums objected to, it may request the tenderer to amend these rates and lump sums along the lines indicated by it.

The tenderer will then have the option to alter and/or amend the rates and lump sums objected to and such other related amounts as are agreed on by the CCT, but this shall be done without altering the tender offer in accordance with this clause.

Should the tenderer fail to amend his tender in a manner acceptable to and within the time stated by the CCT, the CCT may declare the tender as non-responsive.

2.3.9 Clarification of a tender offer

The CCT may, after the closing date, request additional information or clarification from tenderers, in writing on any matter affecting the evaluation of the tender offer or that could give rise to ambiguity in a contract arising from the tender offer, which written request and related response shall not change or affect their competitive position or the substance of their offer. Such request may only be made in writing by the Director: Supply Chain Management using any means as appropriate.

2.3.10 Evaluation of tender offers

2.3.10.1 General

2.3.10.1.1 The CCT may reduce each responsive tender offer to a comparative price and evaluate them using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the Conditions of Tender.

2.3.10.1.2 Not Applicable

2.3.10.1.3 Where the scoring of functionality forms part of a bid process, each member of the Bid Evaluation Committee must individually score functionality. The individual scores must then be interrogated and calibrated if required where there are significant discrepancies. The individual scores must then be added together and averaged to determine the final score.

2.3.10.2 Decimal places

Score financial offers, preferences and functionality, as relevant, to two decimal places.

2.3.10.3 Scoring of tenders (price and preference)

2.3.10.3.1 Points for price will be allocated in accordance with the formula set out in this clause based on the price per item / rates as set out in the **Price Schedule (Section C.4)**:

- Based on the sum of the prices/rates in relation to a typical project/job.

2.3.10.3.2 Points for preference will be allocated in accordance with the provisions of **Preference Schedule** and the table in this clause.

2.3.10.3.3 The terms and conditions of **Preference Schedule** as it relates to preference shall apply in all respects to the tender evaluation process and any subsequent contract.

2.3.10.3.4 Applicable formula:

The 90/10 price/preference points system will be applied to the evaluation of responsive tenders above a Rand value of R50'000'000 (all applicable taxes included), whereby the order(s) will be placed with the tenderer(s) scoring the highest total number of adjudication points.

Price shall be scored as follows:

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

Where: Ps is the number of points scored for price;
 Pt is the price of the tender under consideration;
 Pmin is the price of the lowest responsive tender.

Preference points shall be based on the Specific Goal as per below:

Table B2: Awards above R50 mil (VAT Inclusive)

#	Specific goals allocated points	Preference Points (90/10)
	<i>Reconstruction and Development Programme (RDP) as published in Government Gazette</i>	
1	<p>Promotion of Micro and Small Enterprises <i>Micro with a turnover up to R20million and Small with a turnover up to R80 million as per National Small Enterprise Act, 1996 (Act No.102 of 1996)</i> <i>SME partnership, sub-contracting, joint venture or consortiums</i></p>	4
2	<p>Enterprise Supplier Development and Socio Economic Development</p> <p>> 15% of total expenditure = 3 points > 10% up to 15% of total expenditure = 2 points >= 5% up to 10% of total expenditure = 1 points < 5% of total expenditure = 0 points</p>	3
3	<p>Skills Development OR Employee Share Scheme</p> <p>Skills Development > 5% of total profit = 3 points > 3% up to 5% of total profit = 2 points >= 1% up to 3% of total profit = 1 points < 1% of total profit = 0 points</p> <p>OR Employee Share Scheme > 15% employee ownership = 3 points > 10% up to 15% employee ownership = 2 point >= 5% up to 10% employee ownership = 1 point < 5% employee ownership = 0 point</p>	3
	Total points	10

*Ownership: main tendering entity

2.3.10.5 Risk Analysis

Notwithstanding compliance with regard to any requirements of the tender, the CCT will perform a risk analysis in respect of the following:

- a) reasonableness of the financial offer
- b) reasonableness of unit rates and prices
- c) the tenderer's ability to fulfil its obligations in terms of the tender document, that is, that the tenderer can demonstrate that he/she possesses the necessary professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, capacity, experience, reputation, personnel to perform the contract, etc.; the CCT reserves the right to consider a tenderer's existing contracts with the CCT in this regard
- d) any other matter relating to the submitted bid, the tendering entity, matters of compliance, verification of submitted information and documents, etc.

The conclusions drawn from this risk analysis will be used by the CCT in determining the acceptability of the tender offer.

No tenderer will be recommended for an award unless the tenderer has demonstrated to the satisfaction of the CCT that he/she has the resources and skills required.

2.3.11 Negotiations with preferred tenderers

The CCT may negotiate the final terms of a contract with tenderers identified through a competitive tendering process as preferred tenderers provided that such negotiation:

- a) Does not allow any preferred tenderer a second or unfair opportunity;
- b) Is not to the detriment of any other tenderer; and
- c) Does not lead to a higher price than the tender as submitted.

If negotiations fail to result in acceptable contract terms, the City Manager (or his delegated authority) may terminate the negotiations and cancel the tender, or invite the next ranked tenderer for negotiations. The original preferred tenderer should be informed of the reasons for termination of the negotiations. If the decision is to invite the next highest ranked tenderer for negotiations, the failed earlier negotiations may not be reopened by the CCT.

Minutes of any such negotiations shall be kept for record purposes.

The provisions of this clause will be equally applicable to any invitation to negotiate with any other tenderers.

In terms of the CCT's SCM Policy, tenders must be cancelled in the event that negotiations fail to achieve a market related price with any of the three highest scoring tenderers.

2.3.12 Acceptance of tender offer

Notwithstanding any other provisions contained in the tender document, the CCT reserves the right to:

- 2.3.12.1** Accept a tender offer(s) which does not, in the CCT's opinion, materially and/or substantially deviate from the terms, conditions, and specifications of the tender document.
- 2.3.12.2** Accept the whole tender or part of a tender or any item or part of any item or items from multiple manufacturers, or to accept more than one tender (in the event of a number of items being offered), and the CCT is not obliged to accept the lowest or any tender.
- 2.3.12.3** Accept the tender offer(s), if in the opinion of the CCT, it does not present any material risk and only if the tenderer(s):
 - a) is not under restrictions, has any principals who are under restrictions, or is not currently a supplier to whom notice has been served for abuse of the supply chain management system, preventing participation in the CCT's procurement,

- b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,
- c) has the legal capacity to enter into the contract,
- d) is not insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act, 2008, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing, complies with the legal requirements, if any, stated in the tender data, and
- e) is able, in the opinion of the CCT, to perform the contract free of conflicts of interest.

If an award cannot be made in terms of anything contained herein, the CCT reserves the right to consider the next ranked tenderer(s).

2.3.12.4 The CCT reserves the right not to make an award, or revoke an award already made, where the implementation of the contract may result in reputational risk or harm to the CCT as a result of (inter alia):

- a) reports of poor governance or unethical behaviour, or both;
- b) association with known notorious individuals and family of notorious individuals;
- c) poor performance issues, known to the CCT;
- d) negative media reports, including negative social media reports;
- e) adverse assurance (e.g. due diligence) report outcomes; and
- f) circumstances where the relevant vendor has employed, or is directed by, anyone who was previously employed in the service of the state (as defined in clause 1.53 of the SCM Policy), where the person is or was negatively implicated in any SCM irregularity.

2.3.12.5 The CCT reserves the right to nominate an StandbyBidder at the time when an award is made and in the event that a contract is terminated during the execution thereof, the CCT may consider the award of the contract, or non-award, to the Standby Bidder in terms of the procedures included its SCM Policy.

2.3.13 Prepare contract documents

2.3.13.1 If necessary, revise documents that shall form part of the contract and that were issued by the CCT as part of the tender documents to take account of:

- a) Notices issued during the tender period,
- b) Inclusion of some of the returnable documents, and
- c) Other revisions agreed between the CCT and the successful tenderer.

2.3.13.2 Complete the schedule of deviations attached to the form of offer and acceptance, if any.


2.3.14 Notice to successful and unsuccessful tenderers

2.3.14.1 Before accepting the tender of the successful tenderer the CCT shall notify the successful tenderer in writing of the decision of the CCT's Bid Adjudication Committee to award the tender to the successful tenderer. No rights shall accrue to the successful tenderer in terms of this notice

2.3.14.2 The CCT shall, at the same time as notifying the successful tenderer of the Bid Adjudication Committee's decision to award the tender to the successful tenderer, also give written notice to the other tenderers informing them that they have been unsuccessful.

2.3.15 Provide written reasons for actions taken

Provide upon request written reasons to tenderers for any action that is taken in applying these Conditions of Tender, but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

TENDER DOCUMENT GOODS AND SERVICES		 CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD
SUPPLY CHAIN MANAGEMENT		
SCM - 542	Approved by Branch Manager: February 2024	Version: 10 Page 23 of 478

TENDER NO: 15G/2026/27
TENDER DESCRIPTION: SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS
CONTRACT PERIOD: NOT EXCEEDING THIRTY-SIX (36) MONTHS FROM DATE OF COMMENCEMENT OF CONTRACT

THE CONTRACT

THE CITY OF CAPE TOWN	
A metropolitan municipality, established in terms of the Local Government: Municipal Structures Act, 117 of 1998 read with the Province of the Western Cape: Provincial Gazette 5588 dated 22 September 2000, as amended (“the Purchaser”) herein represented by	
AUTHORISED REPRESENTATIVE	

AND

SUPPLIER	
NAME of Company/Close Corporation or Partnership / Joint Venture/ Consortium or Sole Proprietor /Individual (The “Supplier” / “tenderer”)	
TRADING AS (if different from above)	
REGISTRATION NUMBER	
PHYSICAL ADDRESS / CHOSEN DOMICILIUM CITANI ET EXECTUANDI OF THE SUPPLIER	
AUTHORISED REPRESENTATIVE	
CAPACITY OF AUTHORISED REPRESENTATIVE	

(HEREINAFTER COLLECTIVELY REFERRED TO AS “THE PARTIES” AND INDIVIDUALLY A “PARTY”)

NATURE OF TENDER OFFER (please indicate below)	
Main Offer (see clause 2.2.11.1)	
Alternative Offer (see clause 2.2.11.1)	

C.2 FORM OF OFFER AND ACCEPTANCE

TENDER NO: 15G/2026/27: SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM A: Air Insulated Switchgear for Extension of Existing ABB Unigear ZACB Installations

C.2.1 Offer (To Be Completed by the Tenderer as Part of Tender Submission)

The tenderer, identified in the offer signature table below,

HEREBY AGREES THAT by signing the *Form of Offer and Acceptance*, the tenderer:

1. confirms that it has examined the documents listed in the Index (including Schedules and Annexures) and has accepted all the Conditions of Tender;
2. confirms that it has received and incorporated any and all notices issued to tenderers issued by the CCT;
3. confirms that it has satisfied itself as to the correctness and validity of the tender offer; that the price(s) and rate(s) offered cover all the goods and/or services specified in the tender documents; that the price(s) and rate(s) cover all its obligations and accepts that any mistakes regarding price(s), rate(s) and calculations will be at its own risk;
4. offers to supply all or any of the goods and/or render all or any of the services described in the tender document to the CCT in accordance with the:
 - 4.1 terms and conditions stipulated in this tender document;
 - 4.2 specifications stipulated in this tender document; and
 - 4.3 at the prices as set out in the **Price Schedule**.
5. accepts full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on it in terms of the Contract.

SIGNED AT _____ (PLACE) ON THE ____ (DAY) OF _____ (MONTH AND YEAR)

For and on behalf of the Supplier
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

INITIALS OF CCT OFFICIALS		
1	2	3

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27: SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM A: Air Insulated Switchgear for Extension of Existing ABB Unigear ZACB Installations

C.2.2 Acceptance (To Be Completed by the CCT)

By signing this part of this *Form of Offer and Acceptance*, the CCT accepts the tenderer's (if awarded the Supplier's) offer. In consideration thereof, the CCT shall pay the Supplier the amount due in accordance with the conditions of contract. Acceptance of the Supplier's offer shall form an agreement between the CCT and the Supplier upon the terms and conditions contained in this document.

The terms of the agreement are contained in the Contract (as defined) including drawings and documents or parts thereof, which may be incorporated by reference.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the *Tender Returnable Documents* as well as any changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance, are contained in the *Schedule of Deviations* attached to and forming part of this *Form of Offer and Acceptance*. No amendments to or deviations from said documents are valid unless contained in the *Schedule of Deviations*.

The Supplier shall within 2 (two) weeks after receiving a complete, copy of the Contract, including the *Schedule of Deviations* (if any), contact the CCT to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documents to be provided in terms the *Special Conditions of Contract*. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation / breach of the agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the Commencement Date, and the contract period shall be for a maximum period of 36 months.

For and on behalf of the City of Cape Town
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27: SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM A: Air Insulated Switchgear for Extension of Existing ABB Unigear ZACB Installations

C.2.3 Schedule of Deviations (To be Completed by the CCT upon Acceptance)

Notes:

1. The extent of deviations from the tender documents issued by the CCT before the tender closing date, is limited to those permitted in terms of the conditions of tender.
2. A tenderer's covering letter shall not be included in the final Contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties to become an obligation of the Contract, shall be recorded here.
4. Any change or addition to the tender documents arising from the above agreements and recorded here, shall form part of the Contract.

1 Subject

Details

2 Subject

Details

3 Subject

Details

4 Subject

Details



By the duly authorised representatives signing this agreement, the CCT and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to this tender document and addenda thereto as listed in the *Tender Returnable Documents*, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the Commencement Date, shall have any meaning or effect between the Parties arising from the agreement.

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27: SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM A: Air Insulated Switchgear for Extension of Existing ABB Unigear ZACB Installations

C.2.4 Confirmation of Receipt (To be Completed by Supplier upon Acceptance)

The Supplier identified in the offer part of the Contract hereby confirms receipt from the CCT of 1 (one) complete, signed copy of the Contract, including the *Schedule of Deviations* (if any) on:

The..... (Day)

Of..... (Month)

20..... (year)

At..... (Place)

Contract Commencement date - Notwithstanding clause 1.1A of the Special Conditions of Contract, the commencement date shall be no earlier than TBC.

For the Supplier: Signature(s)

Name(s)

Capacity

Signature and name of witness:

Signature Name

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

C.2 FORM OF OFFER AND ACCEPTANCE

TENDER NO: 15G/2026/27: SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM B: Internal Arc Rated AIS 12 kV Switchgear for New Installations

C.2.1 Offer (To Be Completed by the Tenderer as Part of Tender Submission)

The tenderer, identified in the offer signature table below,

HEREBY AGREES THAT by signing the *Form of Offer and Acceptance*, the tenderer:

1. confirms that it has examined the documents listed in the Index (including Schedules and Annexures) and has accepted all the Conditions of Tender;
2. confirms that it has received and incorporated any and all notices issued to tenderers issued by the CCT;
3. confirms that it has satisfied itself as to the correctness and validity of the tender offer; that the price(s) and rate(s) offered cover all the goods and/or services specified in the tender documents; that the price(s) and rate(s) cover all its obligations and accepts that any mistakes regarding price(s), rate(s) and calculations will be at its own risk;
4. offers to supply all or any of the goods and/or render all or any of the services described in the tender document to the CCT in accordance with the:
 - 4.1 terms and conditions stipulated in this tender document;
 - 4.2 specifications stipulated in this tender document; and
 - 4.3 at the prices as set out in the **Price Schedule**.
5. accepts full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on it in terms of the Contract.

SIGNED AT _____ (PLACE) ON THE _____ (DAY) OF _____ (MONTH AND YEAR)

For and on behalf of the Supplier
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

INITIALS OF CCT OFFICIALS		
1	2	3

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM B: Internal Arc Rated AIS 12 kV Switchgear for New Installations

C.2.2 Acceptance (To Be Completed by the CCT)

By signing this part of this *Form of Offer and Acceptance*, the CCT accepts the tenderer's (if awarded the Supplier's) offer. In consideration thereof, the CCT shall pay the Supplier the amount due in accordance with the conditions of contract. Acceptance of the Supplier's offer shall form an agreement between the CCT and the Supplier upon the terms and conditions contained in this document.

The terms of the agreement are contained in the Contract (as defined) including drawings and documents or parts thereof, which may be incorporated by reference.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the *Tender Returnable Documents* as well as any changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance, are contained in the *Schedule of Deviations* attached to and forming part of this *Form of Offer and Acceptance*. No amendments to or deviations from said documents are valid unless contained in the *Schedule of Deviations*.

The Supplier shall within 2 (two) weeks after receiving a complete, copy of the Contract, including the *Schedule of Deviations* (if any), contact the CCT to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documents to be provided in terms the *Special Conditions of Contract*. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation / breach of the agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the Commencement Date, and the contract period shall be for a maximum period of 36 months.

For and on behalf of the City of Cape Town
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

ONLY TO BE
COMPLETED AT
ACCEPTANCE STAGE

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM B: Internal Arc Rated AIS 12 kV Switchgear for New Installations

C.2.3 Schedule of Deviations (To be Completed by the CCT upon Acceptance)

Notes:

- 1. The extent of deviations from the tender documents issued by the CCT before the tender closing date, is limited to those permitted in terms of the conditions of tender.
- 2. A tenderer's covering letter shall not be included in the final Contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
- 3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties to become an obligation of the Contract, shall be recorded here.
- 4. Any change or addition to the tender documents arising from the above agreements and recorded here, shall form part of the Contract.

1 Subject

Details

2 Subject

Details

3 Subject

Details

4 Subject

Details

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

By the duly authorised representatives signing this agreement, the CCT and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to this tender document and addenda thereto as listed in the *Tender Returnable Documents*, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the Commencement Date, shall have any meaning or effect between the Parties arising from the agreement.

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM B: Internal Arc Rated AIS 12 kV Switchgear for New Installations

C.2.4 Confirmation of Receipt (To be Completed by Supplier upon Acceptance)

The Supplier identified in the offer part of the Contract hereby confirms receipt from the CCT of 1 (one) complete, signed copy of the Contract, including the *Schedule of Deviations* (if any) on:

The..... (Day)

Of..... (Month)

20..... (year)

At..... (Place)

Contract Commencement date - Notwithstanding clause 1.1A of the Special Conditions of Contract, the commencement date shall be no earlier than TBC.

For the Supplier: Signature(s)

Name(s)

Capacity

Signature and name of witness:

Signature Name

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

C.2 FORM OF OFFER AND ACCEPTANCE

TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM C: Gas Insulated Switchgear for Extension of Existing ABB ZX0.2 Installations

C.2.1 Offer (To Be Completed by the Tenderer as Part of Tender Submission)

The tenderer, identified in the offer signature table below,

HEREBY AGREES THAT by signing the *Form of Offer and Acceptance*, the tenderer:

1. confirms that it has examined the documents listed in the Index (including Schedules and Annexures) and has accepted all the Conditions of Tender;
2. confirms that it has received and incorporated any and all notices issued to tenderers issued by the CCT;
3. confirms that it has satisfied itself as to the correctness and validity of the tender offer; that the price(s) and rate(s) offered cover all the goods and/or services specified in the tender documents; that the price(s) and rate(s) cover all its obligations and accepts that any mistakes regarding price(s), rate(s) and calculations will be at its own risk;
4. offers to supply all or any of the goods and/or render all or any of the services described in the tender document to the CCT in accordance with the:
 - 4.1 terms and conditions stipulated in this tender document;
 - 4.2 specifications stipulated in this tender document; and
 - 4.3 at the prices as set out in the **Price Schedule**.
5. accepts full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on it in terms of the Contract.

SIGNED AT _____ (PLACE) ON THE ____ (DAY) OF _____ (MONTH AND YEAR)

For and on behalf of the Supplier
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

INITIALS OF CCT OFFICIALS		
1	2	3

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM C: Gas Insulated Switchgear for Extension of Existing ABB ZX0.2 Installations

C.2.2 Acceptance (To Be Completed by the CCT)

By signing this part of this *Form of Offer and Acceptance*, the CCT accepts the tenderer's (if awarded the Supplier's) offer. In consideration thereof, the CCT shall pay the Supplier the amount due in accordance with the conditions of contract. Acceptance of the Supplier's offer shall form an agreement between the CCT and the Supplier upon the terms and conditions contained in this document.

The terms of the agreement are contained in the Contract (as defined) including drawings and documents or parts thereof, which may be incorporated by reference.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the *Tender Returnable Documents* as well as any changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance, are contained in the *Schedule of Deviations* attached to and forming part of this *Form of Offer and Acceptance*. No amendments to or deviations from said documents are valid unless contained in the *Schedule of Deviations*.

The Supplier shall within 2 (two) weeks after receiving a complete, copy of the Contract, including the *Schedule of Deviations* (if any), contact the CCT to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documents to be provided in terms the *Special Conditions of Contract*. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation / breach of the agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the Commencement Date, and the contract period shall be for a maximum period of 36 months.

For and on behalf of the City of Cape Town
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

ONLY TO BE
COMPLETED AT
ACCEPTANCE STAGE

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM C: Gas Insulated Switchgear for Extension of Existing ABB ZX0.2 Installations

C.2.3 Schedule of Deviations (To be Completed by the CCT upon Acceptance)

Notes:

1. The extent of deviations from the tender documents issued by the CCT before the tender closing date, is limited to those permitted in terms of the conditions of tender.
2. A tenderer's covering letter shall not be included in the final Contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties to become an obligation of the Contract, shall be recorded here.
4. Any change or addition to the tender documents arising from the above agreements and recorded here, shall form part of the Contract.

1 Subject

Details

2 Subject

Details

3 Subject

Details

4 Subject

Details

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

By the duly authorised representatives signing this agreement, the CCT and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to this tender document and addenda thereto as listed in the *Tender Returnable Documents*, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the Commencement Date, shall have any meaning or effect between the Parties arising from the agreement.

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM C: Gas Insulated Switchgear for Extension of Existing ABB ZX0.2 Installations

C.2.4 Confirmation of Receipt (To be Completed by Supplier upon Acceptance)

The Supplier identified in the offer part of the Contract hereby confirms receipt from the CCT of 1 (one) complete, signed copy of the Contract, including the *Schedule of Deviations* (if any) on:

The..... (Day)

Of..... (Month)

20..... (year)

At..... (Place)

Contract Commencement date - Notwithstanding clause 1.1A of the Special Conditions of Contract, the commencement date shall be no earlier than TBC.

For the Supplier: Signature(s)

Name(s)

Capacity

Signature and name of witness:

Signature Name

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

C.2 FORM OF OFFER AND ACCEPTANCE

TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM D: Internal Arc Rated GIS 12 kV Switchgear for New Installations

C.2.1 Offer (To Be Completed by the Tenderer as Part of Tender Submission)

The tenderer, identified in the offer signature table below,

HEREBY AGREES THAT by signing the *Form of Offer and Acceptance*, the tenderer:

1. confirms that it has examined the documents listed in the Index (including Schedules and Annexures) and has accepted all the Conditions of Tender;
2. confirms that it has received and incorporated any and all notices issued to tenderers issued by the CCT;
3. confirms that it has satisfied itself as to the correctness and validity of the tender offer; that the price(s) and rate(s) offered cover all the goods and/or services specified in the tender documents; that the price(s) and rate(s) cover all its obligations and accepts that any mistakes regarding price(s), rate(s) and calculations will be at its own risk;
4. offers to supply all or any of the goods and/or render all or any of the services described in the tender document to the CCT in accordance with the:
 - 4.1 terms and conditions stipulated in this tender document;
 - 4.2 specifications stipulated in this tender document; and
 - 4.3 at the prices as set out in the **Price Schedule**.
5. accepts full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on it in terms of the Contract.

SIGNED AT _____ (PLACE) ON THE _____ (DAY) OF _____ (MONTH AND YEAR)

For and on behalf of the Supplier
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

INITIALS OF CCT OFFICIALS		
1	2	3

FORM OF OFFER AND ACCEPTANCE (continued)

**TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING
AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY
EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS**

ITEM D: Internal Arc Rated GIS 12 kV Switchgear for New Installations

C.2.2 Acceptance (To Be Completed by the CCT)

By signing this part of this *Form of Offer and Acceptance*, the CCT accepts the tenderer's (if awarded the Supplier's) offer. In consideration thereof, the CCT shall pay the Supplier the amount due in accordance with the conditions of contract. Acceptance of the Supplier's offer shall form an agreement between the CCT and the Supplier upon the terms and conditions contained in this document.

The terms of the agreement are contained in the Contract (as defined) including drawings and documents or parts thereof, which may be incorporated by reference.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the *Tender Returnable Documents* as well as any changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance, are contained in the *Schedule of Deviations* attached to and forming part of this *Form of Offer and Acceptance*. No amendments to or deviations from said documents are valid unless contained in the *Schedule of Deviations*.

The Supplier shall within 2 (two) weeks after receiving a complete, copy of the Contract, including the *Schedule of Deviations* (if any), contact the CCT to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documents to be provided in terms the *Special Conditions of Contract*. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation / breach of the agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the Commencement Date, and the contract period shall be for a maximum period of 36 months.

For and on behalf of the City of Cape Town
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

ONLY TO BE
COMPLETED AT
ACCEPTANCE STAGE

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27: SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM D: Internal Arc Rated GIS 12 kV Switchgear for New Installations

C.2.3 Schedule of Deviations (To be Completed by the CCT upon Acceptance)

Notes:

1. The extent of deviations from the tender documents issued by the CCT before the tender closing date, is limited to those permitted in terms of the conditions of tender.
2. A tenderer's covering letter shall not be included in the final Contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties to become an obligation of the Contract, shall be recorded here.
4. Any change or addition to the tender documents arising from the above agreements and recorded here, shall form part of the Contract.

1 Subject

Details

2 Subject

Details

3 Subject

Details

4 Subject

Details

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

By the duly authorised representatives signing this agreement, the CCT and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to this tender document and addenda thereto as listed in the *Tender Returnable Documents*, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the Commencement Date, shall have any meaning or effect between the Parties arising from the agreement.

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27: SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM D: Internal Arc Rated GIS 12 kV Switchgear for New Installations

C.2.4 Confirmation of Receipt (To be Completed by Supplier upon Acceptance)

The Supplier identified in the offer part of the Contract hereby confirms receipt from the CCT of 1 (one) complete, signed copy of the Contract, including the *Schedule of Deviations* (if any) on:

The..... (Day)

Of..... (Month)

20..... (year)

At..... (Place)

Contract Commencement date - Notwithstanding clause 1.1A of the Special Conditions of Contract, the commencement date shall be no earlier than TBC.

For the Supplier: Signature(s)

Name(s)

Capacity

Signature and name of witness:

Signature Name

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

C.2 FORM OF OFFER AND ACCEPTANCE

TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM E: Internal Arc Rated Solid-Dielectric Insulated 12 kV Switchgear (SIS) for New Installations

C.2.1 Offer (To Be Completed by the Tenderer as Part of Tender Submission)

The tenderer, identified in the offer signature table below,

HEREBY AGREES THAT by signing the *Form of Offer and Acceptance*, the tenderer:

1. confirms that it has examined the documents listed in the Index (including Schedules and Annexures) and has accepted all the Conditions of Tender;
2. confirms that it has received and incorporated any and all notices issued to tenderers issued by the CCT;
3. confirms that it has satisfied itself as to the correctness and validity of the tender offer; that the price(s) and rate(s) offered cover all the goods and/or services specified in the tender documents; that the price(s) and rate(s) cover all its obligations and accepts that any mistakes regarding price(s), rate(s) and calculations will be at its own risk;
4. offers to supply all or any of the goods and/or render all or any of the services described in the tender document to the CCT in accordance with the:
 - 4.1 terms and conditions stipulated in this tender document;
 - 4.2 specifications stipulated in this tender document; and
 - 4.3 at the prices as set out in the **Price Schedule**.
5. accepts full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on it in terms of the Contract.

SIGNED AT _____ (PLACE) ON THE ____ (DAY) OF _____ (MONTH AND YEAR)

For and on behalf of the Supplier
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

INITIALS OF CCT OFFICIALS		
1	2	3

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27 : SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM E: Internal Arc Rated Solid-Dielectric Insulated 12 kV Switchgear (SIS) for New Installations

C.2.2 Acceptance (To Be Completed by the CCT)

By signing this part of this *Form of Offer and Acceptance*, the CCT accepts the tenderer's (if awarded the Supplier's) offer. In consideration thereof, the CCT shall pay the Supplier the amount due in accordance with the conditions of contract. Acceptance of the Supplier's offer shall form an agreement between the CCT and the Supplier upon the terms and conditions contained in this document.

The terms of the agreement are contained in the Contract (as defined) including drawings and documents or parts thereof, which may be incorporated by reference.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the *Tender Returnable Documents* as well as any changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance, are contained in the *Schedule of Deviations* attached to and forming part of this *Form of Offer and Acceptance*. No amendments to or deviations from said documents are valid unless contained in the *Schedule of Deviations*.

The Supplier shall within 2 (two) weeks after receiving a complete, copy of the Contract, including the *Schedule of Deviations* (if any), contact the CCT to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documents to be provided in terms the *Special Conditions of Contract*. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation / breach of the agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the Commencement Date, and the contract period shall be for a maximum period of 36 months.

For and on behalf of the City of Cape Town
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

ONLY TO BE
COMPLETED AT
ACCEPTANCE STAGE

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27: SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM E: Internal Arc Rated Solid-Dielectric Insulated 12 kV Switchgear (SIS) for New Installations

C.2.3 Schedule of Deviations (To be Completed by the CCT upon Acceptance)

Notes:

1. The extent of deviations from the tender documents issued by the CCT before the tender closing date, is limited to those permitted in terms of the conditions of tender.
2. A tenderer's covering letter shall not be included in the final Contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties to become an obligation of the Contract, shall be recorded here.
4. Any change or addition to the tender documents arising from the above agreements and recorded here, shall form part of the Contract.

1 Subject

Details

2 Subject

Details

3 Subject

Details

4 Subject

Details

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

By the duly authorised representatives signing this agreement, the CCT and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to this tender document and addenda thereto as listed in the *Tender Returnable Documents*, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the Commencement Date, shall have any meaning or effect between the Parties arising from the agreement.

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER NO: 15G/2026/27: SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

ITEM E: Internal Arc Rated Solid-Dielectric Insulated 12 kV Switchgear (SIS) for New Installations

C.2.4 Confirmation of Receipt (To be Completed by Supplier upon Acceptance)

The Supplier identified in the offer part of the Contract hereby confirms receipt from the CCT of 1 (one) complete, signed copy of the Contract, including the *Schedule of Deviations* (if any) on:

The..... (Day)

Of..... (Month)

20..... (year)

At..... (Place)

Contract Commencement date - Notwithstanding clause 1.1A of the Special Conditions of Contract, the commencement date shall be no earlier than TBC.

For the Supplier: Signature(s)

Name(s)

Capacity

Signature and name of witness:

Signature Name

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

C.3 OCCUPATIONAL HEALTH AND SAFETY AGREEMENT

AGREEMENT MADE AND ENTERED INTO BETWEEN THE CCT (HEREINAFTER CALLED THE "CCT") AND

..... ,
(Supplier/Mandatory/Company/CC Name)

IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 85 OF 1993 AS AMENDED.

I,, representing

..... , as an employer in its own right in its own right, do hereby undertake to ensure, as far as is reasonably practicable, that all work will be performed, and all equipment, machinery or plant used in such a manner as to comply with the provisions of the Occupational Health and Safety Act (hereafter "OHSA") and the Regulations promulgated thereunder.

I furthermore confirm that I am/we are registered with the Compensation Commissioner and that all registration and assessment monies due to the Compensation Commissioner have been fully paid or that I/We are insured with an approved licensed compensation insurer.

COID ACT Registration Number:

OR Compensation Insurer: Policy No:

I undertake to appoint, where required, suitable competent persons, in writing, in terms of the requirements of OHSA and the Regulations and to charge him/them with the duty of ensuring that the provisions of OHSA and Regulations as well as the Council's Special Conditions of Contract, Way Leave, Lock-Out and Work Permit Procedures are adhered to as far as reasonably practicable.

I further undertake to ensure that any subcontractors employed by me will enter into an occupational health and safety agreement separately, and that such subcontractors comply with the conditions set.

I hereby declare that I have read and understand the Occupational Health and Safety Specifications contained in this tender and undertake to comply therewith at all times.

I hereby also undertake to comply with the Occupational Health and Safety Specification and Plan submitted and approved in terms thereof.

Signed at on the day of 20....

Witness

Mandatory

Signed at..... on the..... day of..... 20

Witness

for and on behalf of
CCT

C.4 PRICE SCHEDULE

Bid specifications may not make any reference to any particular trade mark, name, patent, design, type, specific origin or producer, unless there is no other sufficiently precise or intelligible way of describing the characteristics of the work, in which case such reference must be accompanied by the words "or equivalent".

TENDERERS MUST NOTE THAT WHEREVER THIS DOCUMENT REFERS TO ANY PARTICULAR TRADE MARK, NAME, PATENT, DESIGN, TYPE, SPECIFIC ORIGIN OR PRODUCER, SUCH REFERENCE SHALL BE DEEMED TO BE ACCOMPANIED BY THE WORDS 'OR EQUIVALENT'

Pricing Instructions:

- 5.1 State the rates and prices in Rand unless instructed otherwise in the Conditions of Tender.
- 5.2 Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT), and other levies payable by the successful tenderer, such duties, taxes and levies being those applicable 14 days before the closing time stated in the General Tender Information.
- 5.3 All prices tendered must include all expenses, disbursements and costs (e.g. transport, accommodation etc.) that may be required for the execution of the tenderer's obligations in terms of the Contract, and shall cover the cost of all general risks, liabilities and obligations set forth or implied in the Contract as well as overhead charges and profit (in the event that the tender is successful). All prices tendered will be final and binding.
- 5.4 All prices shall be tendered in accordance with the units specified in this schedule.
- 5.5 Where a value is given in the Quantity column, a Rate and Price (the product of the Quantity and Rate) is required to be inserted in the relevant columns.
- 5.6 The successful tenderer is required to perform all tasks listed against each basket. The tenderer must therefore tender prices/rates on all items as per the section in the Price Schedule. **An item against which no rate is/are entered, or if anything other than a rate or a nil rate (for example, a zero, a dash or the word "included" or abbreviations thereof) is entered against an item, it will also be regarded as a nil rate having been entered against that item, i.e. that there is no charge for that item. The Tenderer may be requested to clarify nil rates, or items regarded as having nil rates; and the CCT may also perform a risk analysis with regard to the reasonableness of such rates.**

Tenderers bidding for any Items in each basket must tender for all Items in that basket. An item which no rate is entered, or if anything other than a rate or a nil rate (for example, a zero, a dash or the word "included" or abbreviations thereof) is entered against an item, will be evaluated as a nil rate having been entered against that item, i.e. that there is no charge for that item.
- 5.6.1 The CCT intends to appoint two tenderers for each of the 5 (five) Baskets listed below, (the highest ranked tenderer ("the Winner" (Main Contractor)) and in addition an "Alternative" (Alternative Contractor), for the allocation of work. If insufficient responsive bids are received, the CCT reserves the right to appoint fewer tenderers, or not to appoint any tenderers at all.

- **Basket A** - Air Insulated Switchgear for Extension of Existing ABB Unigear ZACB Installations
(Item A: Items A1.1 – A5.5.7)
- **Basket B** - Internal Arc Rated AIS 12 kV Switchgear for New Installations
(Item B: Items B1.1 – B5.5.7)
- **Basket C** - Gas Insulated Switchgear for Extension of Existing ABB ZX0.2 Installations
(Item C: Items C1.1 – C5.5.7)
- **Basket D** - Internal Arc Rated GIS 12 kV Switchgear for New Installations
(Item D: Items D1.1 – D5.5.7)

Optional Item

- **Basket E** - Internal Arc Rated Solid-Dielectric Insulated 12 kV Switchgear (SIS) for New Installations
(Item E: Items E1.1 – E5.5.7)

OEM Spares Items detailed in **Parts A.6, B.6, C.6, D.6 and E.6** will be awarded to the successful tenderer for the respective baskets A, B, C, D and E above subject to price benchmarking.

INITIALS OF CITY OFFICIALS		
1	2	3

Note: The FOB and FOR components of the Tender Rate must be detailed in Returnable SCHEDULE F.1 (F) : PRICE BASIS FOR IMPORTED PLANT AND MATERIAL.

- 5.7 Provide fixed rates and prices for the duration of the contract that are not subject to adjustment except as otherwise provided for in Clause 17 of the Special Conditions of Contract.
- 5.8 **The City of Cape Town intends to appoint a “Winner” (Main Contractor) and a “Alternative” (Alternative Contractor) (who has offered equipment from an alternative manufacturer, where possible) for each basket. Refer to Clause 2.1.5.1 of the Conditions of Tender for full details.**

INITIALS OF CITY OFFICIALS		
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SCHEDULE

(To be completed by Tenderer)

SCHEDULE OF RATES: ITEM A

ITEM A: AIR INSULATED SWITCHGEAR FOR EXTENSION OF EXISTING ABB UNIGEAR ZACB INSTALLATIONS

Item No.	PART A1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
A1.1	12 kV, 25 kA, 630 A, 400/300/5 Distribution Feeder panels	200010692	each	R
A1.2	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels	200010694	each	R
A1.3	12 kV, 25 kA 1250 A, 1250/5 Distribution Bus-section panels	200010698	each	R
A1.4	12 kV, 25 kA, 1250 A Distribution Busbar Riser panels	200010700	each	R
A1.5	12 kV, 25 kA, 1250 A Distribution Busbar earthing panels	200010701	each	R
A1.6	12 kV, 25 kA, 630 A, 400/300/5 Main Substation Feeder panels with 1250 A busbars	200015075	each	R
A1.7	12 kV, 25 kA, 1250 A, 1250/1 Main Substation Incoming Transformer panels	200015074	each	R
A1.8	12 kV, 25 kA, 1250 A, Main Substation Bus-section panels	200015076	each	R
A1.9	12 kV, 25 kA, 1250 A Main Substation Busbar Riser panels	200015077	each	R

INITIALS OF CITY OFFICIALS		
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Note: The FOB and FOR components of the Tender Rate must be detailed in Returnable SCHEDULE F.1 (F) : PRICE BASIS FOR IMPORTED PLANT AND MATERIAL.

Item No.	PART A1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
A1.10	12 kV, 25 kA, 1250 A Main Substation Busbar earthing panels	200015078	each	R
A1.11	12 kV, 25 kA, 630 A, 400/300/5 Main Substation Feeder panels with 2500 A busbars	500007217	each	R
A1.12	12 kV, 25 kA, 2500 A, 2500/1 Main Substation Incoming Transformer panels	500007218	each	R
A1.13	12 kV, 25 kA, 2500 A, 2500/1 Main Substation Bus-section panels	500007219	each	R
A1.14	12 kV, 25 kA, 2500 A Main Substation Busbar Riser panels	500007240	each	R
A1.15	12 kV, 25 kA, 2500 A Main Substation Busbar earthing panels	500007241	each	R
A1.16	Insulated 1250 A busbars, set of three.	200019478	set	R
A1.17	Insulated 2500 A busbars, set of three.	200019479	set	R
A1.18	11 000 / 110 V, 15 VA, Class 0,5 Voltage transformers	200010683	each	R
A1.19	11 000 / 110 V, 15 VA, Class 0,2 Voltage transformers	200019591	each	R

INITIALS OF CITY OFFICIALS		
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Item No.	PART A1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
A1.20	630 / 1250 A Circuit breaker trolleys	200010685	each	R
A1.21	2500 A Circuit breaker trolleys	500007194	each	R
A1.22	Primary test trucks	200010686	each	R
A1.23	Exhaust ducting, Indoor, per exhaust, standard length complete with joints and end units	200013262	set	R
A1.24	Exhaust ducting, outdoor, per exhaust, standard length complete with joints and end units	200014048	set	R
A1.25	Exhaust ducting, Indoor, 1 metre extension piece	200013261	metre	R
A1.26	Exhaust ducting, Outdoor, 1 metre extension piece	200019358	metre	R
A1.27	Exhaust duct wall finishing plate	200015024	each	R
A1.28	D-duct plenum for retrofit to compact duct Unigear panels, complete	200019360	each	R
A1.29	Compact duct plenum for retrofit to D-duct Unigear panels, complete	200014691	each	R

INITIALS OF CITY OFFICIALS		
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Item No.	PART A1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
A1.30	Busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, left side, complete.	200019571	set	R
A1.31	Busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, right side, complete.	200019473	set	R
A1.32	Manual operating, racking and spring charge handles and accessories for switchgear operation, set of one of each (Tenderer to itemise in detail)	200019474	set	R
A1.33	Wall mounted cubicle for operating handles and accessories for switchgear operation, per switchboard.	200019475	each	R
A1.34	Arc detection fibre, made-up complete with arc detection point sensor and V-pin connectors, one metre length	500010476	each	R
A1.35	Black jacketed arc detection fibre (without fittings), per metre	500010477	metre	R
A1.36	Clear jacketed fibre arc flash detection sensor for busbar loop detectors, made-up complete with 2x V-pin connectors, one metre length	500010478	each	R
A1.37	Clear jacketed fibre arc flash detection sensor (without fittings) for busbar loop detector, per metre	500010479	metre	R
A1.38	Ruggedized multi-mode OM4 Ethernet communication fibre, made-up complete with LC connectors, one metre length	500010500	each	R
A1.39	Ruggedized multi-mode OM4 Ethernet communication fibre (without fittings), per metre	500010501	metre	R
A1.40	Manufacture, supply and delivery to site of galvanised steel floor frames and associated fasteners for affixing switchgear to floor frame, as specified, per switch-panel	TBA	each	R

INITIALS OF CITY OFFICIALS		
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Item No.	PART A2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
A2.1	12 kV, 25 kA, 630 A, 400/300/5 Feeder panels	each	R
A2.2	12 kV, 25 kA, 630 A, 400/200/1 Feeder metering panels	each	R
A2.3	12 kV, 25 kA 1250 A, 1250/5 Bus-section panels	each	R
A2.4	12 kV, 25 kA, 1250 A Distribution Busbar Riser panels	each	R
A2.5	12 kV, 25 kA, 1250 A Distribution Busbar earthing panels	each	R
A2.6	12 kV, 25 kA, 630 A, 400/300/5 Main Substation Feeder panels with 1250 A busbars	each	R
A2.7	12 kV, 25 kA, 1250 A, 1250/1 Main Substation Incoming Transformer panels with 1250 A busbars	each	R
A2.8	12 kV, 25 kA, 1250 A, 1250/1 Main Substation Bus-section panels with 1250 A busbars	each	R
A2.9	12 kV, 25 kA, 1250 A Main Substation Busbar Riser panels	each	R
A2.10	12 kV, 25 kA, 1250 A Main Substation Busbar earthing panels	each	R
A2.11	12 kV, 25 kA, 630 A, 400/300/5 Main Substation Feeder panels with 2500 A busbars	each	R

INITIALS OF CITY OFFICIALS		
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Item No.	PART A2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
A2.12	12 kV, 25 kA, 2500 A, 2500/1 Main Substation Incoming Transformer panels	each	R
A2.13	12 kV, 25 kA, 2500 A, 2500/1 Main Substation Bus-section panels	each	R
A2.14	12 kV, 25 kA, 2500 A Main Substation Busbar Riser panels	each	R
A2.15	12 kV, 25 kA, 2500 A Main Substation Busbar earthing panels	each	R
A2.16	11 000 / 110 V, 15 VA, Class 0,5 Voltage transformers	each	R
A2.17	11 000 / 110 V, 15 VA, Class 0,2 Voltage transformers	each	R
A2.18	Supply and Retrofit of 400/300/5 Class PX // 400/5, 10VA Class 5P10 Type A62 Block Type Current Transformers into Unigear ZACB 650 mm 100/5 Transformer panels	each	R
A2.19	Installation of wall mounted cubicle fitted with manual operating, racking and spring charge handles and accessories required for switchgear operation, per Works Project	each	R
A2.20	Exhaust ducting, exhausting into indoor plenum room, per exhaust, standard length complete with joints and end units	each	R
A2.21	Exhaust ducting, exhausting outdoors, per exhaust, standard length complete with joints and end units	each	R
A2.22	Exhaust ducting, extension piece	per metre	R

INITIALS OF CITY OFFICIALS		
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Item No.	PART A2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
A2.23	Exhaust duct wall finishing plate	each	R
A2.24	Retrofit of D-duct plenum onto ABB Unigear compact duct panel	each	R
A2.25	Retrofit of compact duct plenum onto ABB Unigear D-duct panel	each	R
A2.26	Installation of busbar end covers, gas plenum end covers and switchboard cosmetic end sheets, per switchboard	Per sw/brd	R
A2.27	Installation of made-up arc flash detection point fibres for retrofit on existing switch-panels, per fibre	each	R
A2.28	Installation of made-up arc flash detection loop sensors, per loop, complete	each	R
A2.29	Installation of made-up ruggedized multi-mode Ethernet communication fibres, per fibre	each	R
A2.30	Installation of free issue 30 / 110 V DC battery charger equipment, per Works Project	each	R
A2.31	Installation of free issue floor mounted Remote Terminal Unit (RTU), per Works Project	each	R
A2.32	Installation of free issue floor mounted Supervisory Marshalling Kiosk (SMK), per Works Project	each	R

INITIALS OF CITY OFFICIALS		
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Item No.	PART A2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
A2.33	Installation of free issue floor mounted Metering Cubicle, per Works Project	each	R
A2.34	Supply and installation of 19 inch rack mount, MCBs for ac and dc supplies, and associated wiring and accessories, and installation and cold commissioning of free-issued 19 inch rack Fibre Ethernet Switch into existing Busbar Earth panel for extension of "Soft" SCADA panels on existing switchboard.	Per Busbar Earth panel	R
A2.35	Supply, installation and termination of external multi-core and auxiliary cable (Std length per Works Project, as specified)	Per W/Proj	R
A2.36	Supply installation and termination of external earthing (Std length per Works Project, as specified)	Per W/Proj	R
A2.37	Collection, transport and delivery of equipment & personnel to Works Site (per Works Project, standard distance of 20 km)	Per W/Proj	R
A2.38	Health and Safety compliance per Works Projects	each	R

INITIALS OF CITY OFFICIALS		
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PART A3: REPAIR, TESTING AND COMMISSIONING OF EQUIPMENT			
Item No.	Description	Unit of Measurement	Total Price per unit (R)
A3.1	Site visit and assessment of scope of repairs required following fault or vandalism of the switchgear type covered by Item A, per substation	each	R
A3.2	Testing and commissioning of repaired switchgear panels to specified standard, per switchgear panel	each	R
A3.3	Pressure testing of switchboard following decarbonisation and cleaning, per switchboard	each	R
A3.4	Administration costs for switchgear repair, including Health and Safety Compliance and As-Built drawings, per substation	each	R
A3.5	Handling charge on outsourced Parts and Components, percentage on cost price of parts and components	%	%
	NOTE: All other switchgear and equipment repair / replacement costs to be based upon relevant tendered rates for installation and / or Rates for Measured Quantities, as per Detailed Specification.		

PART A4: GENERAL			
Item No.	Description	Unit of Measurement	Total Price per unit (R)
A4.1	Hardware, Operator and Maintenance training (Full training intervention comprising 5x 1 day classes, 20 persons per class)	Full Training Intervention	R

INITIALS OF CITY OFFICIALS		
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PART A5: RATES FOR MEASURED QUANTITIES					
Item No.	NHLSFR / ZEROTOX Multicore and Auxiliary Cables	Unit	Supply (R/m)	Installation (R/m)	Terminate, Test and Commission (R/cable)
A5.1.1	2-core 2,5 mm ² Copper Cable	m			
A5.1.2	2-core 1,5 mm ² Copper Cable	m			
A5.1.3	4-core 2,5 mm ² Copper Cable	m			
A5.1.4	4-core 1,5 mm ² Copper Cable	m			
A5.1.5	7-core 2,5 mm ² Copper Cable	m			
A5.1.6	7-core 1,5 mm ² Copper Cable	m			
A5.1.7	12-core 2,5 mm ² Copper Cable	m			
A5.1.8	12-core 1,5 mm ² Copper Cable	m			
A5.1.9	19-core 2,5 mm ² Copper Cable	m			
A5.1.10	19-core 1,5 mm ² Copper Cable	m			
A5.1.11	4-core 16 mm ² Copper Cable	m			
A5.1.12	2-Twisted pair, individually screened, armoured 1,5 mm ² Copper Cable	m			
A5.1.13	12-Twisted pair, Aluminium /Polyester tape screened, 0,22mm ² Data Copper Cable	m			

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Item No.	PART A5: EARTHING BARS AND EARTH CONDUCTORS	Unit	Supply (R/m)	Installation (R/m)	Terminate, Test and Commission (R/conductor)
A5.2.1	50 mm x 6 mm Flat earth bar	m			
A5.2.2	50 mm x 3 mm Flat earth bar	m			
A5.2.3	70 mm ² Bare conductor (stranded)	m			
A5.2.4	70 mm ² Covered conductor (stranded)	m			
A5.2.5	95 mm ² Bare conductor (stranded)	m			
A5.2.6	95 mm ² Covered conductor (stranded)	m			
A5.2.7	120 mm ² Bare conductor (stranded)	m			
A5.2.8	120 mm ² Covered conductor (stranded)	m			
A5.2.9	Copper-Clad Steel Bare conductor (70 mm ² Equivalent)	m			
A5.2.10	Copper-Clad Steel Covered conductor (70 mm ² Equivalent)	m			
A5.2.11	Copper-Clad Steel Bare conductor (120 mm ² Equivalent)	m			
A5.2.12	Copper-Clad Steel Covered conductor (120 mm ² Equivalent)	m			

INITIALS OF CITY OFFICIALS		
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Item No.	PART A5: CABLE RACKS, CABLE LADDERS AND CONDUITT	Unit	Supply (R/m)	Installation (R/m)
A5.3.1	Supply and Install overhead suspended 300 mm wide cable rack	Per metre		
A5.3.2	Supply and install wall mounted 300 mm wide cable rack	Per metre		
A5.3.3	Supply and Install overhead suspended 300 mm wide cable rack preformed section with bend of up to 90°	Per unit		
A5.3.4	Supply and Install wall mounted 300 mm wide Cable Ladder preformed section with bend of up to 90°	Per unit		
A5.3.5	Supply and install 32 mm PVC conduit for Ethernet communication fibre	Per metre		
Item No.	PART A5: TRANSPORT (IN EXCESS OF STANDARD 20 KM FROM NDABENI STORES)	Unit	Rate (R/km)	
A5.4.1	Supervisor vehicle: Sedan	Per km		
A5.4.2	Artisan vehicle: 1 ton Pick-up	Per km		
A5.4.3	Equipment transport: 2 ton Truck	Per km		
A5.4.4	Equipment transport: 5 ton Truck	Per km		

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Item No.	PART A5: LABOUR COST BASIS (RATES FOR NORMAL TIME TO BE DETAILED)	Unit of Measurement	Rate (R/hour)
A5.5.1	Commissioning Engineer	Per hour	
A5.5.2	Supervisor	Per hour	
A5.5.3	Technician	Per hour	
A5.5.4	Artisan	Per hour	
A5.5.5	Artisan's Assistant	Per hour	
A5.5.6	Labourer	Per hour	

Private Armed Security		Unit of Measurement	Rate (R/hour)
A5.5.7	Onsite Private Armed Security for High Risk Areas	Per hour	

INITIALS OF CITY OFFICIALS		
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Item No.	PART A6: OEM SPARES	Material Code	Unit of Measurement	Total Price per unit (R)
A6.1	Charging Motor 230V _{AC}		Each	
A6.2	Circuit Breaker: 12 kV, 25 kA, 630 A		Each	
A6.3	Circuit Breaker: 12 kV, 25 kA, 1250 A		Each	
A6.4	Circuit Breaker: 12 kV, 25 kA, 2500 A		Each	
A6.5				
A6.6				
A6.7				
A6.8				
A6.9				
A6.10				

INITIALS OF CITY OFFICIALS		
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TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

(To be completed by Tenderer)

SCHEDULE OF RATES: ITEM B

ITEM B: INTERNAL ARC RATED AIR INSULATED 12kV SWITCHGEAR FOR NEW INSTALLATIONS

Item No.	PART B1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
B1.1	12 kV, 25 kA, 630 A, 400/300/5 Distribution Feeder panels	TBA	each	R
B1.2.	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels	TBA	each	R
B1.3	12 kV, 25 kA 1250 A, 1250/5 Distribution Bus-section panels	TBA	each	R
B1.4	12 kV, 25 kA, 1250 A Distribution Busbar Riser panels	TBA	each	R
B1.5	12 kV, 25 kA, 1250 A Distribution Busbar earthing panels	TBA	each	R
B1.6	Insulated 1250 A Busbars, set of three	TBA	set	R
B1.7	11 000 / 110 V, 15 VA, Class 0,5 voltage transformers	TBA	each	R
B1.8	11 000 / 110 V, 15 VA, Class 0,2 voltage transformers	TBA	each	R
B1.9	Circuit breaker trolleys	TBA	each	R
B1.10	Primary test trucks	TBA	each	R
B1.11	Exhaust ducting, Indoor, per exhaust, std length complete with joints and end units	TBA	set	R

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART B1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
B1.12	Exhaust ducting, outdoor, per exhaust, standard length complete with joints and end units	TBA	set	R
B1.13	Exhaust ducting, Indoor, 1 metre extension piece	TBA	metre	R
B1.14	Exhaust ducting, Outdoor, 1 metre extension piece	TBA	metre	R
B1.15	Exhaust duct wall finishing plate	TBA	each	R
B1.16	Switchboard exhaust ducting end-plenum, if required	TBA	set	R
B1.17	Feeder Panel busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, left side, complete.	TBA	set	R
B1.18	Feeder panel busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, right side, complete.	TBA	set	R
B1.19	Busbar Earth Panel busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, left side, complete (if different from Feeder Panel end covers).	TBA	set	R
B1.20	Busbar Earth Panel busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, right side, complete (if different from Feeder Panel end covers).	TBA	set	R
B1.21	Manual operating, racking and spring charge handles and accessories for switchgear operation, set of one of each	TBA	set	R

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART B1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
B1.22	Wall mounted cubicle for operating handles and accessories for switchgear operation, per switchboard.	TBA	each	R
B1.23	Clear jacketed fibre arc flash detection sensor for busbar loop detectors, made-up complete with 2x V-pin connectors, one metre length	TBA	each	R
B1.24	Clear jacketed fibre arc flash detection sensor (without fittings) for busbar loop detector, per metre	TBA	metre	R
B1.25	Ruggedized multi-mode OM4 Ethernet communication fibre, made-up complete with LC connectors, one metre length	TBA	each	R
B1.26	Ruggedized multi-mode OM4 Ethernet communication fibre (without fittings), per metre	TBA	metre	R
B1.27	Manufacture, supply and delivery to site of galvanised steel floor frames and associated fasteners for affixing switchgear to floor frame, as specified, per switch-panel	TBA	each	R

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART B2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
B2.1	12 kV, 25 kA, 630 A, 400/300/5 Distribution Feeder panels	each	R
B2.2.	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels	each	R
B2.3	12 kV, 25 kA 1250 A, 1250/5 Distribution Bus-section panels	each	R
B2.4	12 kV, 25 kA, 1250 A Distribution Busbar Riser panels	each	R
B2.5	12 kV, 25 kA, 1250 A Distribution Busbar earthing panels	each	R
B2.6	11 000 / 110 V, 15 VA, Class 0,5 Voltage transformers	each	R
B2.7	11 000 / 110 V, 15 VA, Class 0,2 Voltage transformers	each	R
B2.8	Installation of wall mounted cubicle fitted with manual operating, racking and spring charge handles and accessories required for switchgear operation, per Works Project	each	R
B2.9	Exhaust ducting, exhausting into indoor plenum room, per exhaust, standard length complete with joints and end units	each	R
B2.10	Exhaust ducting, exhausting outdoors, per exhaust, standard length complete with joints and end units	each	R
B2.11	Exhaust ducting, extension piece	Per metre	R
B2.12	Exhaust duct wall finishing plate	each	R

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART B2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
B2.13	Installation of busbar end covers, gas plenum end covers and switchboard cosmetic end sheets (and exhaust ducting end-plenum, if required), per switchboard	per sw/brd	R
B2.14	Installation of made-up arc flash detection loop sensors, per loop, complete	each	R
B2.15	Installation of made-up ruggedized multi-mode Ethernet communication fibres, per fibre	each	R
B2.16	Installation of free issue 30 / 110 V DC battery charger equipment, per Works Proj	each	R
B2.17	Installation of free issue floor mounted Remote Terminal Unit (RTU), per Works Project	each	R
B2.18	Installation of free issue Metering Cubicle, per Works Project	each	R
B2.19	Supply, installation and termination of external multi-core and auxiliary cable (Std length per Works Project, as specified)	Per W/Proj	R
B2.20	Supply installation and termination of external earthing (Std length per Works Project, as specified)	Per W/Proj	R
B2.21	Collection, transport and delivery of equipment and personnel to Works Site (per Works Project, distance of 20 km)	Per W/Proj	R
B2.22	Health and Safety compliance per Works Projects	each	R

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART B3: REPAIR, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
B3.1	Site visit and assessment of scope of repairs required following fault or vandalism of the switchgear type covered by Item B, per substation	each	
B3.2	Testing and commissioning of repaired switchgear panels to specified standard, per switchgear panel	each	
B3.3	Pressure testing of switchboard following decarbonisation and cleaning, per switchboard	each	
B3.4	Administration costs for switchgear repair, including Health and Safety Compliance and As-Built drawings, per substation	each	
B3.5	Handling charge on outsourced Parts and Components, percentage on cost price of parts and components	%	%
	NOTE: All other switchgear and equipment repair / replacement costs to be based upon relevant tendered rates for installation and / or Rates for Measured Quantities, as per Detailed Specification.		

Item No.	PART B4: GENERAL	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
B4.1	Hardware, Operator and Maintenance training (Full training intervention comprising 5x 1 day classes, 20 persons per class)	Full Training Intervention	

INITIALS OF CITY OFFICIALS		
1	2	3

PART B5: RATES FOR MEASURED QUANTITIES					
Item No.	NHLSFR / ZEROTOX Multicore and Auxiliary Cables	Unit	Supply (R/m)	Installation (R/m)	Terminate, Test and Commission (R/cable)
B5.1.1	2-core 2,5 mm ² Copper Cable	m			
B5.1.2	2-core 1,5 mm ² Copper Cable	m			
B5.1.3	4-core 2,5 mm ² Copper Cable	m			
B5.1.4	4-core 1,5 mm ² Copper Cable	m			
B5.1.5	7-core 2,5 mm ² Copper Cable	m			
B5.1.6	7-core 1,5 mm ² Copper Cable	m			
B5.1.7	12-core 2,5 mm ² Copper Cable	m			
B5.1.8	12-core 1,5 mm ² Copper Cable	m			
B5.1.9	19-core 2,5 mm ² Copper Cable	m			
B5.1.10	19-core 1,5 mm ² Copper Cable	m			
B5.1.11	4-core 16 mm ² Copper Cable	m			
B5.1.12	2-Twisted pair, individually screened, armoured 1,5 mm ² Copper Cable	m			
B5.1.13	12-Twisted pair, Aluminium /Polyester tape screened, 0,22mm ² Data Copper Cable	m			

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART B5: EARTHING BARS AND EARTH CONDUCTORS	Unit	Supply (R/m)	Installation (R/m)	Terminate, Test and Commission (R/cable)
B5.2.1	50 mm x 6 mm Flat earth bar	m			
B5.2.2	50 mm x 3 mm Flat earth bar	m			
B5.2.3	70 mm ² Bare conductor (stranded)	m			
B5.2.4	70 mm ² Covered conductor (stranded)	m			
B5.2.5	95 mm ² Bare conductor (stranded)	m			
B5.2.6	95 mm ² Covered conductor (stranded)	m			
B5.2.7	120 mm ² Bare conductor (stranded)	m			
B5.2.8	120 mm ² Covered conductor (stranded)	m			
B5.2.9	Copper-Clad Steel Bare conductor (70 mm ² Equivalent)	m			
B5.2.10	Copper-Clad Steel Covered conductor (70 mm ² Equivalent)	m			
B5.2.11	Copper-Clad Steel Bare conductor (120 mm ² Equivalent)	m			
B5.2.12	Copper-Clad Steel Covered conductor (120 mm ² Equivalent)	m			

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART B5: Cable Racks, Cable Ladders and Conduit	Unit	Supply (R/m)	Installation (R/m)
B5.3.1	Supply and Install overhead suspended 300 mm wide cable rack	Per metre		
B5.3.2	Supply and install wall mounted 300 mm wide cable rack	Per metre		
B5.3.3	Supply and Install overhead suspended 300 mm wide cable rack preformed section with bend of up to 90°	Per unit		
B5.3.4	Supply and Install wall mounted 300 mm wide Cable Ladder preformed section with bend of up to 90°	Per unit		
B5.3.5	Supply and install 32 mm PVC conduit for Ethernet communication fibre	Per metre		

Item No.	PART B5: Transport (In excess of standard 20 km from Ndabeni Stores)	Unit	Rate (R/km)
B5.4.1	Supervisor vehicle: Sedan	Per km	
B5.4.2	Artisan vehicle: 1 ton Pick-up	Per km	
B5.4.3	Equipment transport: 2 ton Truck	Per km	
B5.4.4	Equipment transport: 5 ton Truck	Per km	

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART B5: Labour Cost Basis (Rates for Normal Time to be Detailed)	Unit	Rate (R/hour)
B5.5.1	Commissioning Engineer	Per hour	
B5.5.2	Supervisor	Per hour	
B5.5.3	Technician	Per hour	
B5.5.4	Artisan	Per hour	
B5.5.5	Artisan's Assistant	Per hour	
B5.5.6	Labourer	Per hour	

Private Armed Security		Unit of Measurement	Rate (R/hour)
B5.5.7	Onsite Private Armed Security for High Risk Areas	Per hour	

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART B6: OEM SPARES	Material Code	Unit of Measurement	Total Price per unit (R)
B6.1	Racking Handle	TBA	Each	
B6.2	Charging Motor 230V _{AC}	TBA	Each	
B6.3	Circuit Breaker: 12 kV, 25 kA, 630 A	TBA	Each	
B6.4	Circuit Breaker: 12 kV, 25 kA, 1250 A	TBA	Each	
B6.5				
B6.6				
B6.7				
B6.8				
B6.9				
B6.10				

INITIALS OF CITY OFFICIALS		
1	2	3

TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

SCHEDULE OF RATES: ITEM C**ITEM C: GAS INSULATED SWITCHGEAR FOR EXTENSION OF EXISTING ABB ZX0.2 INSTALLATIONS**

Item No.	PART C1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
C1.1	12 kV, 25 kA, 630 A, 400/300/1 Distribution Feeder panels	200019510	each	R
C1.2	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels, complete with VT	200019581	each	R
C1.3	12 kV, 25 kA 1250 A, 1250/1 Distribution Bus-section panels	200019582	each	R
C1.4	12 kV, 25 kA ZX0.2 Busbar Riser panels	200019583	each	R
C1.5	12 kV, 25 kA Busbar earthing panels	200019584	each	R
C1.6	Screened Type C end adapter for external busbars, as specified, per set of three complete	TBA	per set of three complete	R
C1.7	Screened Type C cross adapter for external busbars, as specified	TBA	per set of three complete	R
C1.8	Screened Type C dead end cap for external busbars, as specified	TBA	per set of three complete	R
C1.9	Screened 1250 A external busbar, as specified, per set of three complete	TBA	per set of three complete	R
C1.10	Exhaust ducting, Indoor, per exhaust, standard length complete with joints and end units	200019355	set	R

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART C1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
C1.11	Exhaust ducting, outdoor, per exhaust, standard length complete with joints and end units	200019356	set	R
C1.12	Exhaust ducting, Indoor, 1 metre extension piece	200019357	metre	R
C1.13	Exhaust ducting, Outdoor, 1 metre extension piece	200019359	metre	R
C1.14	Exhaust duct wall finishing plate	TBA	each	R
C1.15	Feeder panel switchboard gas plenum end cover and cosmetic end cover, left side, complete	500010515	set	R
C1.16	Feeder panel switchboard gas plenum end cover and cosmetic end cover, right side, complete	500010516	set	R
C1.17	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if different from Feeder Panel end covers), left side, complete	500010517	set	R
C1.18	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if different from Feeder Panel end covers), right side, complete	500010464	set	R
C1.19	Manual operating and spring charge handles and accessories for switchgear operation, set of one of each (Tenderer to itemise in detail)	200019476	set	R
C1.20	Accessories, fittings and adapters for emergency gas re-pressurisation, as specified	500006926	Set	R
C1.21	Wall mounted cubicle for operating handles, test probes, gas handling and re-pressurisation equipment and accessories for switchgear operation, per switchboard.	200019477	each	R
C1.22	Arc detection fibre, complete with arc detection point sensor and V-Pin connector, one metre length	500010465	each	R

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART C1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
C1.23	Black jacketed arc detection fibre (without fittings), per metre	500010466	metre	R
C1.24	Clear jacketed fibre arc flash detection sensor for busbar loop detectors, made-up complete with 2x V-Pin connectors, one metre length	500010467	each	R
C1.25	Clear jacketed fibre arc flash detection sensor (without fittings) for busbar loop detector, per metre	500010468	metre	R
C1.26	Ruggedized multi-mode OM4 Ethernet communication fibre, made-up complete with LC connectors, one metre length	500010469	each	R
C1.27	Ruggedized multi-mode OM4 Ethernet communication fibre (without fittings), per metre	500010480	metre	R
C1.28	Manufacture, supply and delivery to site of galvanised steel floor frames and associated fasteners for affixing switchgear to floor frame, as specified, per switch-panel	TBA	each	R

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART C2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
C2.1	12 kV, 25 kA, 630 A, 400/300/1 Distribution Feeder panels	each	R
C2.2.	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels	each	R
C2.3	12 kV, 25 kA 1250 A, 1250/1 Distribution Bus-section panels	each	R
C2.4	12 kV, 25 kA Busbar Riser panels	each	R
C2.5	12 kV, 25 kA Distribution Busbar earthing panels	each	R
C2.6	Installation of wall mounted cubicle fitted with manual operating and spring charge handles; gas handling and re-pressurisation equipment and accessories required for switchgear operation, per Works Project	each	R
C2.7	Exhaust ducting, exhausting into indoor plenum room, per exhaust, standard length complete with joints and end units	each	R
C2.8	Exhaust ducting, exhausting outdoors, per exhaust, standard length complete with joints and end units	each	R
C2.9	Exhaust ducting, extension piece	Per metre	R
C2.10	Exhaust duct wall finishing plate	each	R
C2.11	Installation of busbar end covers, gas plenum end covers and switchboard cosmetic end sheets (and exhaust ducting end-plenum, if required), per switchboard	Per sw/brd	R
C2.12	Installation of made-up arc detection fibres, per fibre	each	R
C2.13	Installation of made-up arc flash detection loop sensors, per loop, complete	each	R
C2.14	Installation of made-up ruggedized multi-mode Ethernet communication fibres, per fibre	each	R

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART C2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT (Cont'd)	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
C2.15	Installation of free issue 30 / 110 V DC power supply equipment, per Works Project	each	R
C2.16	Installation of free issue floor mounted Remote Terminal Unit (RTU), per Works Project	each	R
C2.17	Installation of free issue floor mounted Metering Cubicle, per Works Project	each	R
C2.18	Supply, installation and termination of external multi-core and auxiliary cable (Std length per Works Project, as specified)	Per W/Proj	R
C2.19	Supply installation and termination of external earthing (Std length per Works Project, as specified)	Per W/Proj	R
C2.20	Collection, transport and delivery of equipment and personnel to Works Site (per Works Project, standard distance of 20 km)	Per W/Proj	R
C2.21	Health and Safety compliance per Works Projects	each	R

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART C3: REPAIR, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
C3.1	Site visit and assessment of scope of repairs required following fault or vandalism of the switchgear type covered by Item C, per substation	each	
C3.2	Testing and commissioning of repaired switchgear panels to specified standard, per switchgear panel	each	
C3.3	Pressure testing of switchboard following decarbonisation and cleaning, per switchboard	each	
C3.4	Administration costs for switchgear repair, including Health and Safety Compliance and As-Built drawings, per substation	each	
C3.5	Handling charge on outsourced Parts and Components, percentage on cost price of parts and components	%	%
	NOTE: All other switchgear and equipment repair / replacement costs to be based upon relevant tendered rates for installation and / or Rates for Measured Quantities, as per Detailed Specification.		

Item No.	PART C4: GENERAL	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
C4.1	Hardware, Operator and Maintenance training (Full training intervention comprising 5 x 1 day classes, 20 persons per class)	Full Training Intervention	

INITIALS OF CITY OFFICIALS		
1	2	3

PART C5: RATES FOR MEASURED QUANTITIES					
Item No.	NHLSFR / ZEROTOX Multicore and Auxiliary Cables	Unit	Supply (R/m)	Installation (R/m)	Terminate, Test and Commission (R/cable)
C5.1.1	2-core 2,5 mm ² Copper Cable	m			
C5.1.2	2-core 1,5 mm ² Copper Cable	m			
C5.1.3	4-core 2,5 mm ² Copper Cable	m			
C5.1.4	4-core 1,5 mm ² Copper Cable	m			
C5.1.5	7-core 2,5 mm ² Copper Cable	m			
C5.1.6	7-core 1,5 mm ² Copper Cable	m			
C5.1.7	12-core 2,5 mm ² Copper Cable	m			
C5.1.8	12-core 1,5 mm ² Copper Cable	m			
C5.1.9	19-core 2,5 mm ² Copper Cable	m			
C5.1.10	19-core 1,5 mm ² Copper Cable	m			
C5.1.11	4-core 16 mm ² Copper Cable	m			
C5.1.12	2-Twisted pair, individually screened, armoured 1,5 mm ² Copper Cable	m			
C5.1.13	12-Twisted pair, Aluminium /Polyester tape screened, 0,22mm ² Data Copper Cable	m			

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART C5:Earthing Bars and Earth Conductors	Unit	Supply (R/m)	Installation (R/m)	Terminate, Test and Commission (R/cable)
C5.2.1	50 mm x 6 mm Flat earth bar	m			
C5.2.2	50 mm x 3 mm Flat earth bar	m			
C5.2.3	70 mm ² Bare conductor (stranded)	m			
C5.2.4	70 mm ² Covered conductor (stranded)	m			
C5.2.5	95 mm ² Bare conductor (stranded)	m			
C5.2.6	95 mm ² Covered conductor (stranded)	m			
C5.2.7	120 mm ² Bare conductor (stranded)	m			
C5.2.8	120 mm ² Covered conductor (stranded)	m			
C5.2.9	Copper-Clad Steel Bare conductor (70 mm ² Equivalent)	m			
C5.2.10	Copper-Clad Steel Covered conductor (70 mm ² Equivalent)	m			
C5.2.11	Copper-Clad Steel Bare conductor (120 mm ² Equivalent)	m			
C5.2.12	Copper-Clad Steel Covered conductor (120 mm ² Equivalent)	m			

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART C5: Cable Racks, Cable Ladders and Conduitt	Unit	Supply (R/m)	Installation (R/m)
C5.3.1	Supply and Install overhead suspended 300 mm wide Cable Rack	Per metre		
C5.3.2	Supply and install wall mounted 300 mm wide Cable Ladder	Per metre		
C5.3.3	Supply and Install overhead suspended 300 mm wide Cable Rack preformed section with bend of up to 90°	Per unit		
C5.3.4	Supply and Install wall mounted 300 mm wide Cable Ladder preformed section with bend of up to 90°	Per unit		
C5.3.5	Supply and install 32 mm PVC conduit for Ethernet communication fibre	Per metre		

Item No.	PART C5: Transport (In excess of standard 20 km from Ndabeni Stores)	Unit	Rate (R/km)
C5.4.1	Supervisor vehicle: Sedan	Per km	
C5.4.2	Artisan vehicle: 1 ton Pick-up	Per km	
C5.4.3	Equipment transport: 2 ton Truck	Per km	
C5.4.4	Equipment transport: 5 ton Truck	Per km	

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART C5: Labour Cost Basis (Rates for Normal Time to be Detailed)	Unit	Rate (R/hour)
C5.5.1	Commissioning Engineer	Per hour	
C5.5.2	Supervisor	Per hour	
C5.5.3	Technician	Per hour	
C5.5.4	Artisan	Per hour	
C5.5.5	Artisan's Assistant	Per hour	
C5.5.6	Labourer	Per hour	

Private Armed Security		Unit of Measurement	Rate (R/hour)
C5.5.7	Onsite Private Armed Security for High Risk Areas	Per hour	

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	PART C6: OEM SPARES	Material Code	Unit of Measurement	Total Price per unit (R)
C6.1	Charging Motor 230V _{Ac}		Each	
C6.2	Breaker Mechanism		Each	
C6.3				
C6.4				
C6.5				
C6.6				
C6.7				
C6.8				
C6.9				
C6.10				

TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

INITIALS OF CITY OFFICIALS		
1	2	3

SCHEDULE OF RATES: ITEM D**ITEM D: INTERNAL ARC RATED GAS 12kV SWITCHGEAR FOR NEW INSTALLATIONS**

Item No.	PART D1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
D1.1	12 kV, 25 kA, 630 A, 400/300/1 Distribution Feeder panels	TBA	each	R
D1.2.	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels, complete with VT	TBA	each	R
D1.3	12 kV, 25 kA 1250 A, 1250/1 Distribution Bus-section panels	TBA	each	R
D1.4	12 kV, 25 kA Busbar Riser panels (if separate from Bus Section Panel)	TBA	each	R
D1.5	12 kV, 25 kA Busbar earthing panels (for switchboards WITHOUT B/Sec panels fitted)	TBA	each	R
D1.6	Screened busbar couplings for in-line busbar connections (where applicable), as specified	TBA	per set of three complete	R
D1.7	Screened busbar end blanking plugs and cover plates for in-line busbar connections (where applicable), as specified	TBA	per set of three complete	R
D1.8	Screened Type C end adapter for external busbars (where applicable), as specified, per set of three complete	TBA	per set of three complete	R
D1.9	Screened Type C cross adapter for external busbars (where applicable), as specified	TBA	per set of three complete	R
D1.10	Screened Type C dead end cap for external busbars (where applicable), as specified	TBA	per set of three complete	R

INITIALS OF CITY OFFICIALS		
1	2	3

Item No.	Part D1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
D1.11	Screened 1250 A external busbar (where applicable), as specified, per set of three complete	TBA	per set of three complete	R
D1.12	Exhaust ducting, Indoor, per exhaust, standard length complete with joints and end units	TBA	set	R
D1.13	Exhaust ducting, outdoor, per exhaust, standard length complete with joints and end units	TBA	set	R
D1.14	Exhaust ducting, Indoor, 1 metre extension piece	TBA	metre	R
D1.15	Exhaust ducting, Outdoor, 1 metre extension piece	TBA	metre	R
D1.16	Exhaust duct wall finishing plate	TBA	each	R
D1.17	Switchboard exhaust ducting end-plenum, if required	TBA	Set	R
D1.18	Feeder panel switchboard gas plenum end cover and cosmetic end cover (if required), left side, complete	TBA	set	R
D1.19	Feeder panel switchboard gas plenum end cover and cosmetic end cover (if required), right side, complete	TBA	set	R
D1.20	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if required and different from Feeder Panel end covers), left side, complete	TBA	set	R
D1.21	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if required and different from Feeder Panel end covers), right side, complete	TBA	set	R
D1.22	Manual operating and spring charge handles and accessories for switchgear operation, set of one of each (Tenderer to itemise in detail)	TBA	set	R

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Item No.	Part D1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
D1.23	Primary cable test equipment / cable test probes, where applicable	TBA	Set of three	R
D1.24	Accessories, fittings and adapters for emergency gas re-pressurisation, as specified	TBA	Set	R
D1.25	Wall mounted cubicle for operating handles, test probes, gas handling and re-pressurisation equipment and accessories for switchgear operation, per switchboard.	TBA	each	R
D1.26	Clear jacketed fibre arc flash detection sensor for busbar loop detectors, made-up complete with 2x V-Pin connectors, one metre length	TBA	each	R
D1.27	Clear jacketed fibre arc flash detection sensor (without fittings) for busbar loop detector, per metre	TBA	metre	R
D1.28	Ruggedized multi-mode OM4 Ethernet communication fibre, made-up complete with LC connectors, one metre length	TBA	each	R
D1.29	Ruggedized multi-mode OM4 Ethernet communication fibre (without fittings), per metre	TBA	metre	R
D1.30	Manufacture, supply and delivery to site of galvanised steel floor frames and associated fasteners for affixing switchgear to floor frame, as specified, per switch-panel	TBA	each	R

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Item No.	Part D2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
D2.1	12 kV, 25 kA, 630 A, 400/300/1 Distribution Feeder panels	each	R
D2.2	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels	each	R
D2.3	12 kV, 25 kA 1250 A, 1250/1 Distribution Bus-section panels	each	R
D2.4	12 kV, 25 kA Busbar Riser panels (if separate from Bus Section Panel)	each	R
D2.5	12 kV, 25 kA Distribution Busbar earthing panels	each	R
D2.6	Installation of wall mounted cubicle fitted with manual operating and spring charge handles; gas handling and re-pressurisation equipment and accessories required for switchgear operation, per Works Project	each	R
D2.7	Exhaust ducting, exhausting into indoor plenum room, per exhaust, standard length complete with joints and end units	each	R
D2.8	Exhaust ducting, exhausting outdoors, per exhaust, standard length complete with joints and end units	each	R
D2.9	Exhaust ducting, extension piece	Per metre	R
D2.10	Exhaust duct wall finishing plate	each	R
D2.11	Installation of busbar end covers, gas plenum end covers and switchboard cosmetic end sheets (and exhaust ducting end-plenum, if required), per switchboard	Per sw/brd	R
D2.12	Installation of made-up arc flash detection loop sensors, per loop, complete	each	R

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Item No.	Part D2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT (Cont'd)	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
D2.13	Installation of made-up ruggedized multi-mode Ethernet communication fibres, per fibre	each	R
D2.14	Installation of free issue 30 / 110 V DC power supply equipment, per Works Project	each	R
D2.15	Installation of free issue floor mounted Remote Terminal Unit (RTU), per Works Project	each	R
D2.16	Installation of free issue floor mounted Metering Cubicle, per Works Project	each	R
D2.17	Supply, installation and termination of external multi-core and auxiliary cable (Std length per Works Project, as specified)	Per W/Proj	R
D2.18	Supply installation and termination of external earthing (Std length per Works Project, as specified)	Per W/Proj	R
D2.19	Collection, transport and delivery of equipment and personnel to Works Site (per Works Project, standard distance of 20 km)	Per W/Proj	R
D2.20	Health and Safety compliance per Works Projects	each	R

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Item No.	Part D3: REPAIR, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
D3.1	Site visit and assessment of scope of repairs required following fault or vandalism of the switchgear type covered by Item D, per substation	each	
D3.2	Testing and commissioning of repaired switchgear panels to specified standard, per switchgear panel	each	
D3.3	Pressure testing of switchboard following decarbonisation and cleaning, per switchboard	each	
D3.4	Administration costs for switchgear repair, including Health and Safety Compliance and As-Built drawings, per substation	each	
D3.5	Handling charge on outsourced Parts and Components, percentage on cost price of parts and components	%	%
	NOTE: All other switchgear and equipment repair / replacement costs to be based upon relevant tendered rates for installation and / or Rates for Measured Quantities, as per Detailed Specification.		

Item No.	Part D4: GENERAL	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
D4.1	Hardware, Operator and Maintenance training (Full training intervention comprising 5 x 1 day classes, 20 persons per class)	Full Training Intervention	

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PART D5: RATES FOR MEASURED QUANTITIES					
Item No.	NHLSFR / ZEROTOX Multicore and Auxiliary Cables	Unit	Supply (R/m)	Installation (R/m)	Terminate, Test and Commission (R/cable)
D5.1.1	2-core 2,5 mm ² Copper Cable	m			
D5.1.2	2-core 1,5 mm ² Copper Cable	m			
D5.1.3	4-core 2,5 mm ² Copper Cable	m			
D5.1.4	4-core 1,5 mm ² Copper Cable	m			
D5.1.5	7-core 2,5 mm ² Copper Cable	m			
D5.1.6	7-core 1,5 mm ² Copper Cable	m			
D5.1.7	12-core 2,5 mm ² Copper Cable	m			
D5.1.8	12-core 1,5 mm ² Copper Cable	m			
D5.1.9	19-core 2,5 mm ² Copper Cable	m			
D5.1.10	19-core 1,5 mm ² Copper Cable	m			
D5.1.11	4-core 16 mm ² Copper Cable	m			
D5.1.12	2-Twisted pair, individually screened, armoured 1,5 mm ² Copper Cable	m			
D5.1.13	12-Twisted pair, Aluminium /Polyester tape screened, 0,22mm ² Data Copper Cable	m			

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Item No.	PART D5:Earthing Bars and Earth Conductors	Unit	Supply (R/m)	Installation (R/m)	Terminate, Test and Commission (R/cable)
D5.2.1	50 mm x 6 mm Flat earth bar	m			
D5.2.2	50 mm x 3 mm Flat earth bar	m			
D5.2.3	70 mm ² Bare conductor (stranded)	m			
D5.2.4	70 mm ² Covered conductor (stranded)	m			
D5.2.5	95 mm ² Bare conductor (stranded)	m			
D5.2.6	95 mm ² Covered conductor (stranded)	m			
D5.2.7	120 mm ² Bare conductor (stranded)	m			
D5.2.8	120 mm ² Covered conductor (stranded)	m			
D5.2.9	Copper-Clad Steel Bare conductor (70 mm ² Equivalent)	m			
D5.2.10	Copper-Clad Steel Covered conductor (70 mm ² Equivalent)	m			
D5.2.11	Copper-Clad Steel Bare conductor (120 mm ² Equivalent)	m			
D5.2.12	Copper-Clad Steel Covered conductor (120 mm ² Equivalent)	m			

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Item No.	PART D5: Cable Racks, Cable Ladders and Conduitt	Unit	Supply (R/m)	Installation (R/m)
D5.3.1	Supply and Install overhead suspended 300 mm wide Cable Rack	Per metre		
D5.3.2	Supply and install wall mounted 300 mm wide Cable Ladder	Per metre		
D5.3.3	Supply and Install overhead suspended 300 mm wide Cable Rack preformed section with bend of up to 90°	Per unit		
D5.3.4	Supply and Install wall mounted 300 mm wide Cable Ladder preformed section with bend of up to 90°	Per unit		
D5.3.5	Supply and install 32 mm PVC conduit for Ethernet communication fibre	Per metre		

Item No.	PART D5: Transport (In excess of standard 20 km from Ndabeni Stores)	Unit	Rate (R/km)
D5.4.1	Supervisor vehicle: Sedan	Per km	
D5.4.2	Artisan vehicle: 1 ton Pick-up	Per km	
D5.4.3	Equipment transport: 2 ton Truck	Per km	
D5.4.4	Equipment transport: 5 ton Truck	Per km	

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Item No.	PART D5: Labour Cost Basis (Rates for Normal Time to be Detailed)	Unit	Rate (R/hour)
D5.5.1	Commissioning Engineer	Per hour	
D5.5.2	Supervisor	Per hour	
D5.5.3	Technician	Per hour	
D5.5.4	Artisan	Per hour	
D5.5.5	Artisan's Assistant	Per hour	
D5.5.6	Labourer	Per hour	

Private Armed Security		Unit of Measurement	Rate (R/hour)
D5.5.7	Onsite Private Armed Security for High Risk Areas	Per hour	

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Item No.	PART D6: OEM SPARES	Material Code	Unit of Measurement	Total Price per unit (R)
D6.1	Charging Motor 230V _{Ac}	TBA	Each	
D6.2	Breaker Mechanism	TBA	Each	
D6.3				
D6.4				
D6.5				
D6.6				
D6.7				
D6.8				
D6.9				
D6.10				

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TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

SCHEDULE OF RATES: ITEM E (Optional Item)**ITEM E: INTERNAL ARC RATED SOLID-DIELECTRIC INSULATED 12kV SWITCHGEAR (SIS) FOR NEW INSTALLATIONS**

Item No.	PART E1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
E1.1	12 kV, 25 kA, 630 A, 400/300/1 Distribution Feeder panels	500018366	each	R
E1.2	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels, complete with VT	500018367	each	R
E1.3	12 kV, 25 kA 1250 A, 1250/1 Distribution Bus-section panels	500018368	each	R
E1.4	12 kV, 25 kA Busbar Riser panels (if separate from Bus Section Panel)	500018369	each	R
E1.5	12 kV, 25 kA Busbar earthing panels (for switchboards WITHOUT B/Sec panels fitted)	500018380	each	R
E1.6	Screened busbar couplings for in-line busbar connections (where applicable), as specified	TBA	per set of three complete	R
E1.7	Screened busbar end blanking plugs and cover plates for in-line busbar connections (where applicable), as specified	TBA	per set of three complete	R
E1.8	Screened Type C end adapter for external busbars (where applicable), as specified, per set of three complete	TBA	per set of three complete	R
E1.9	Screened Type C cross adapter for external busbars (where applicable), as specified	TBA	per set of three complete	R
E1.10	Screened Type C dead end cap for external busbars (where applicable), as specified	TBA	per set of three complete	R

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Item No.	Part E1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
E1.11	Screened 1250 A external busbar (where applicable), as specified, per set of three complete	TBA	per set of three complete	R
E1.12	Exhaust ducting, Indoor, per exhaust, standard length complete with joints and end units	500018381	set	R
E1.13	Exhaust ducting, outdoor, per exhaust, standard length complete with joints and end units	500018382	set	R
E1.14	Exhaust ducting, Indoor, 1 metre extension piece	500018383	metre	R
E1.15	Exhaust ducting, Outdoor, 1 metre extension piece	500018384	metre	R
E1.16	Exhaust duct wall finishing plate	TBA	each	R
E1.17	Switchboard exhaust ducting end-plenum, if required	TBA	Set	R
E1.18	Feeder panel switchboard gas plenum end cover and cosmetic end cover (if required), left side, complete	500018385	set	R
E1.19	Feeder panel switchboard gas plenum end cover and cosmetic end cover (if required), right side, complete	500018386	set	R
E1.20	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if required and different from Feeder Panel end covers), left side, complete	500018387	set	R
E1.21	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if required and different from Feeder Panel end covers), right side, complete	500018388	set	R
E1.22	Manual operating and spring charge handles and accessories for switchgear operation, set of one of each (Tenderer to itemise in detail)	500018389	set	R

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Item No.	Part E1: MANUFACTURE, TESTING, SUPPLY AND DELIVERY OF EQUIPMENT	Material Code	Unit of Measurement	Unit price delivered and Off-loaded (Excluding value-added tax) (R)
E1.23	Primary cable test equipment / cable test probes, where applicable	TBA	Set of three	R
E1.24	Accessories, fittings and adapters for emergency gas re-pressurisation, as specified	500018390	Set	R
E1.25	Wall mounted cubicle for operating handles, test probes, gas handling and re-pressurisation equipment and accessories for switchgear operation, per switchboard.	500018391	each	R
E1.26	Clear jacketed fibre arc flash detection sensor for busbar loop detectors, made-up complete with 2x V-Pin connectors, one metre length	500018392	each	R
E1.27	Clear jacketed fibre arc flash detection sensor (without fittings) for busbar loop detector, per metre	500018393	metre	R
E1.28	Ruggedized multi-mode OM4 Ethernet communication fibre, made-up complete with LC connectors, one metre length	500018394	each	R
E1.29	Ruggedized multi-mode OM4 Ethernet communication fibre (without fittings), per metre	500018395	metre	R
E1.30	Manufacture, supply and delivery to site of galvanised steel floor frames and associated fasteners for affixing switchgear to floor frame, as specified, per switch-panel	TBA	each	R

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Item No.	Part E2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
E2.1	12 kV, 25 kA, 630 A, 400/300/1 Distribution Feeder panels	each	R
E2.2	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels	each	R
E2.3	12 kV, 25 kA 1250 A, 1250/1 Distribution Bus-section panels	each	R
E2.4	12 kV, 25 kA Busbar Riser panels (if separate from Bus Section Panel)	each	R
E2.5	12 kV, 25 kA Distribution Busbar earthing panels	each	R
E2.6	Installation of wall mounted cubicle fitted with manual operating and spring charge handles; gas handling and re-pressurisation equipment and accessories required for switchgear operation, per Works Project	each	R
E2.7	Exhaust ducting, exhausting into indoor plenum room, per exhaust, standard length complete with joints and end units	each	R
E2.8	Exhaust ducting, exhausting outdoors, per exhaust, standard length complete with joints and end units	each	R
E2.9	Exhaust ducting, extension piece	Per metre	R
E2.10	Exhaust duct wall finishing plate	each	R
E2.11	Installation of busbar end covers, gas plenum end covers and switchboard cosmetic end sheets (and exhaust ducting end-plenum, if required), per switchboard	Per sw/brd	R
E2.12	Installation of made-up arc flash detection loop sensors, per loop, complete	each	R

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Item No.	Part E2: INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT (Cont'd)	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
E2.13	Installation of made-up ruggedized multi-mode Ethernet communication fibres, per fibre	each	R
E2.14	Installation of free issue 30 / 110 V DC power supply equipment, per Works Project	each	R
E2.15	Installation of free issue floor mounted Remote Terminal Unit (RTU), per Works Project	each	R
E2.16	Installation of free issue floor mounted Metering Cubicle, per Works Project	each	R
E2.17	Supply, installation and termination of external multi-core and auxiliary cable (Std length per Works Project, as specified)	Per W/Proj	R
E2.18	Supply installation and termination of external earthing (Std length per Works Project, as specified)	Per W/Proj	R
E2.19	Collection, transport and delivery of equipment and personnel to Works Site (per Works Project, standard distance of 20 km)	Per W/Proj	R
E2.20	Health and Safety compliance per Works Projects	each	R

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Item No.	Part E3: REPAIR, TESTING AND COMMISSIONING OF EQUIPMENT	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
E3.1	Site visit and assessment of scope of repairs required following fault or vandalism of the switchgear type covered by Item D, per substation	each	
E3.2	Testing and commissioning of repaired switchgear panels to specified standard, per switchgear panel	each	
E3.3	Pressure testing of switchboard following decarbonisation and cleaning, per switchboard	each	
E3.4	Administration costs for switchgear repair, including Health and Safety Compliance and As-Built drawings, per substation	each	
E3.5	Handling charge on outsourced Parts and Components, percentage on cost price of parts and components	%	%
	NOTE: All other switchgear and equipment repair / replacement costs to be based upon relevant tendered rates for installation and / or Rates for Measured Quantities, as per Detailed Specification.		

Item No.	Part E4: GENERAL	Unit of Measurement	Total Price per unit Installed, tested and Commissioned (R)
E4.1	Hardware, Operator and Maintenance training (Full training intervention comprising 5 x 1 day classes, 20 persons per class)	Full Training Intervention	

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PART E5: RATES FOR MEASURED QUANTITIES					
Item No.	NHLSFR / ZEROTOX Multicore and Auxiliary Cables	Unit	Supply (R/m)	Installation (R/m)	Terminate, Test and Commission (R/cable)
E5.1.1	2-core 2,5 mm ² Copper Cable	m			
E5.1.2	2-core 1,5 mm ² Copper Cable	m			
E5.1.3	4-core 2,5 mm ² Copper Cable	m			
E5.1.4	4-core 1,5 mm ² Copper Cable	m			
E5.1.5	7-core 2,5 mm ² Copper Cable	m			
E5.1.6	7-core 1,5 mm ² Copper Cable	m			
E5.1.7	12-core 2,5 mm ² Copper Cable	m			
E5.1.8	12-core 1,5 mm ² Copper Cable	m			
E5.1.9	19-core 2,5 mm ² Copper Cable	m			
E5.1.10	19-core 1,5 mm ² Copper Cable	m			
E5.1.11	4-core 16 mm ² Copper Cable	m			
E5.1.12	2-Twisted pair, individually screened, armoured 1,5 mm ² Copper Cable	m			
E5.1.13	12-Twisted pair, Aluminium /Polyester tape screened, 0,22mm ² Data Copper Cable	m			

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Item No.	PART E5: Earthing Bars and Earth Conductors	Unit	Supply (R/m)	Installation (R/m)	Terminate, Test and Commission (R/cable)
E5.2.1	50 mm x 6 mm Flat earth bar	m			
E5.2.2	50 mm x 3 mm Flat earth bar	m			
E5.2.3	70 mm ² Bare conductor (stranded)	m			
E5.2.4	70 mm ² Covered conductor (stranded)	m			
E5.2.5	95 mm ² Bare conductor (stranded)	m			
E5.2.6	95 mm ² Covered conductor (stranded)	m			
E5.2.7	120 mm ² Bare conductor (stranded)	m			
E5.2.8	120 mm ² Covered conductor (stranded)	m			
E5.2.9	Copper-Clad Steel Bare conductor (70 mm ² Equivalent)	m			
E5.2.10	Copper-Clad Steel Covered conductor (70 mm ² Equivalent)	m			
E5.2.11	Copper-Clad Steel Bare conductor (120 mm ² Equivalent)	m			
E5.2.12	Copper-Clad Steel Covered conductor (120 mm ² Equivalent)	m			

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Item No.	PART E5: Cable Racks, Cable Ladders and Conduitt	Unit	Supply (R/m)	Installation (R/m)
E5.3.1	Supply and Install overhead suspended 300 mm wide Cable Rack	Per metre		
E5.3.2	Supply and install wall mounted 300 mm wide Cable Ladder	Per metre		
E5.3.3	Supply and Install overhead suspended 300 mm wide Cable Rack preformed section with bend of up to 90°	Per unit		
E5.3.4	Supply and Install wall mounted 300 mm wide Cable Ladder preformed section with bend of up to 90°	Per unit		
E5.3.5	Supply and install 32 mm PVC conduit for Ethernet communication fibre	Per metre		

Item No.	PART E5: Transport (In excess of standard 20 km from Ndabeni Stores)	Unit	Rate (R/km)
E5.4.1	Supervisor vehicle: Sedan	Per km	
E5.4.2	Artisan vehicle: 1 ton Pick-up	Per km	
E5.4.3	Equipment transport: 2 ton Truck	Per km	
E5.4.4	Equipment transport: 5 ton Truck	Per km	

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Item No.	PART E5: Labour Cost Basis (Rates for Normal Time to be Detailed)	Unit	Rate (R/hour)
E5.5.1	Commissioning Engineer	Per hour	
E5.5.2	Supervisor	Per hour	
E5.5.3	Technician	Per hour	
E5.5.4	Artisan	Per hour	
E5.5.5	Artisan's Assistant	Per hour	
E5.5.6	Labourer	Per hour	

Private Armed Security		Unit of Measurement	Rate (R/hour)
E5.5.7	Onsite Private Armed Security for High Risk Areas	Per hour	

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Item No.	PART E6: OEM SPARES	Unit of Measurement	Total Price per unit (R)
E6.1	Charging Motor 230V _{AC}	Each	
E6.2	Breaker Mechanism	Each	
D6.3			
E6.4			
E6.5			
E6.6			
E6.7			
E6.8			
E6.9			
E6.10			

TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

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C.5 SPECIFICATION(S)

SPECIFICATION CEE 50

FOR

SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS

2 SCOPE OF SPECIFICATION

- 2.1 This specification provides for the design, manufacture, testing at the Manufacturer's Works, supply, delivery and off-loading at the City of Cape Town's Stores of indoor switchgear and ancillary equipment, and for the loading, delivery, installation, repair and / or replacement, site testing and commissioning for various Works Projects within the boundaries of the City of Cape Town metropolitan area at rates tendered by the Contractor in the Schedules of Rates for a period of 3 (three) years of the following:
- 2.1.1 The indoor air-insulated switchgear and ancillary equipment required for extensions to existing ABB Type UNIGEAR ZACB switch boards, and for specific retrofits, modifications and upgrades to existing ABB Type UNIGEAR ZACB switchgear and the repair and / or replacement thereof (Item A).
- 2.1.2 The indoor air-insulated switchgear and ancillary equipment required for new installations and for extensions of existing switchgear installations of the same type of switchgear offered by the tenderer and the repair and / or replacement thereof (Item B).
- 2.1.3 The indoor gas-insulated switchgear and ancillary equipment required for extensions to existing ABB Type ZX0.2 switch boards, and for specific retrofits, modifications and upgrades to existing ABB Type ZX0.2 switchgear and the repair and / or replacement thereof (Item C).
- 2.1.4 The indoor gas-insulated switchgear and ancillary equipment required for new installations and for extensions of existing switchgear installations of the same type of switchgear offered by the tenderer and the repair and / or replacement thereof (Item D).
- 2.1.5 The indoor solid-dielectric-insulated switchgear and ancillary equipment required for new installations and for extensions of existing switchgear installations of the same type of switchgear offered by the tenderer and the repair and / or replacement thereof (Item E).
- 2.2 Key personnel will be expected to operate out of the local office which shall be established within one month of contract award, the office shall be located within the metropolitan area of the City of Cape Town.
- 2.3 **Definite Work**
- 2.3.1 **Work at fixed schedule prices**

- 2.3.1.1 The design, manufacture, supply, testing, delivery to stores and off-loading in accordance with the Conditions of Contract and this Specification at the prices stated in the Schedules of the switchgear and equipment of which the numbers, quantities and details are specified in Purchase Orders placed from time to time during the validity period of the Contract, the types, voltages and ratings are described, and of which particulars of the detailed equipment are given, such equipment including all accessories, wiring and other work required to complete the equipment, whether specified herein or not.
- 2.3.1.2 The collection and loading at stores, delivery to site, erection, site testing, completion and commissioning in accordance with the Conditions of Contract and this Specification at the prices stated in the Schedules of switchgear and equipment of which the numbers, quantities and details are specified in Purchase Orders and the Works Projects Documents placed from time to time during the validity period of the Contract, and such work shall include all accessories, wiring and other work required to complete the equipment, whether specified herein or not.
- 2.3.1.3 The repair and / or replacement of faulted or vandalised switchgear and equipment, including where applicable the collection and loading at stores, delivery to site and erection, and the site testing, completion and commissioning in accordance with the Conditions of Contract and this Specification at the prices stated in the Schedules of which the numbers, quantities and details are specified in Purchase Orders and the Works Projects Documents placed from time to time during the validity period of the Contract, and such work shall include all accessories, wiring and other work required to complete the equipment, whether specified herein or not.
- 2.3.2 Measured work at schedule rates
 - 2.3.2.1 The supply, delivery, installation and testing in excess of the standard quantities detailed in the specification of the LV power and control cables and earthing material to make all electrical connections to apparatus installed at the various Works Projects under this Contract at the prices stated in the Schedules.
 - 2.3.2.2 The supply, delivery and installation of the cable ladders, cable racks and other equipment and material installed at the various Works Projects under this Contract at the prices stated in the Schedules.
 - 2.3.2.3 The transport in excess of the standard quantities detailed in the specification of installation and supervisory staff, switchgear and equipment to and from the sites of the various Works Projects under this Contract at the prices stated in the Schedules.
 - 2.3.2.4 The cost of labour in excess of the standard quantities detailed in the specification incurred as a result of approved overtime work at the various Works Projects under this Contract at the prices stated in the Schedules.
- 2.3.3 Training
 - 2.3.3.1 The provision of installation, operation, erection and maintenance training of the Employer's staff and all associated literature and manuals as detailed in this Specification and in the Schedules.

2.4 Work at the Option of the Employer

2.4.1 Work at time and material rates

- 2.4.1.1 If and when the Contractor is required to carry out work at time and material rates by the written instructions of the Engineer, this will comprise any work which is not covered by work at fixed schedule prices or measured work at schedule rates.
- 2.4.1.2 If the Contractor is required to do so the Engineer will furnish the Contractor with such particulars as are necessary to enable the Contractor to prepare detailed drawings and schedules of all such work.
- 2.4.1.3 All work at time and material rates shall be paid in accordance with rates stated in the schedules.
- 2.4.1.4 No work shall be carried out on a time and material basis without the consent of the Engineer in writing. When the work is in progress the Contractor shall render day-work sheets in duplicate to the Engineer, showing the number of men so employed with the number of hours worked and the details of materials used. The Contractor shall obtain the Engineer's certification of the day-work sheets at the time such work is carried out and failure to do so shall render the Contractor liable to forfeit payment.

2.4.2 Work at fixed schedule prices

- 2.4.2.1 The design, manufacture, supply, testing, delivery to the site, erection, testing on site, completion, setting to work and maintenance of plant and equipment in accordance with the Conditions of Contract and this Specification at the prices stated in the Schedules of the electrical equipment of which the numbers, quantities and details are specified in the Schedules, the types, voltages and ratings as described and of which particulars of the detailed equipment are given, such equipment including all accessories, wiring, cabling on Site and in buildings whether specified herein or not, and other work required to complete the equipment other than measured work at schedule rates.

2.4.3 Spare apparatus and materials

- 2.4.3.1 The manufacture, supply, testing and delivery to stores as the Council may require in accordance with the Conditions of Contract at the prices stated in the Schedules of such quantities of the apparatus and materials enumerated.

2.4.4 Type Tests

- 2.4.4.1 When required by the Engineer, the variation of the requirements by the carrying out or omission of any specific type tests at the cost stated in the Schedules.

3 TERMS & DEFINITIONS

The following definitions shall apply to this specification:

- 3.1 Employer shall mean the City of Cape Town, represented by the Director: Electricity Generation and Distribution and/or such other official or officials duly authorised thereto by the Director: Electricity Generation and Distribution.

- 3.2 Engineer shall mean the Director: Electricity Generation and Distribution or his duly appointed representative, or a firm of Consulting Engineers or other body appointed to act on behalf of the Director: Electricity Generation and Distribution.
- 3.3 Feeder Panel: a switch panel with withdrawable circuit breaker or a fixed circuit breaker and associated disconnect/earthing switch (as specified in the schedules), feeder differential and/or overcurrent protection, and instrumentation for controlling a circuit the other end of which is connected to a similar switch panel forming part of a switchboard supplied by others.
- 3.4 Feeder Metering Panel: a switch panel with a withdrawable circuit breaker or a fixed circuit breaker and associated disconnect/earthing switch (as specified in the schedules), overcurrent and earth fault protection, instrumentation and with the addition of instrument transformers for the 3-phase 4-wire system of metering.
- 3.5 Incoming Transformer Panel: a switch panel with a withdrawable circuit breaker or a fixed circuit breaker and associated disconnect/earthing switch, (as specified in the Schedules), with differential and overcurrent protection, instrumentation and instrument transformers for the 3-phase 4-wire system of metering for controlling an incoming circuit from step down transformers in a Main Substations.
- 3.6 Bus Section Panel: a switch panel with a withdrawable circuit breaker or a fixed circuit breaker and associated disconnect/earthing switch (as specified in the schedules), busbar earth switch, overcurrent/earth fault protection and instrumentation (where specified in the Schedules) that is installed within the length of a busbar and by means of which the two portions of the busbar may be electrically separated. Bus-section panels shall be LHS panels (ie Standard busbars to LHS of Bus-section panel, Busbar Riser panel to RHS, when viewed from the front of the switch-board).
- 3.7 Busbar Riser Panel: a panel of the same general construction as the switch panels mentioned above, and having the same external dimensions, containing a set of three busbars and where specified a disconnect/earthing switch, and designed to be installed alongside a Bus-section panel to raise the busbars to the standard level for the switch board. Busbar Riser panels shall be RHS panels (ie Standard busbars to RHS of Busbar Metering panel, Bus-Section panel to LHS, when viewed from the front of the switch-board).
- 3.8 Busbar Earthing Panel: a panel of the same general construction as the switch panels mentioned above, and having the same external dimensions, fitted with a busbar earthing switch.
- 3.9 External Busbars: Fully insulated, screened busbars for GIS or SIS switchgear where the entire busbar is assembled external to the switch-panel during switchgear installation, and

is connected to outer cone busbar bushings on the individual switch-panels using end adapters or cross adapters.

- 3.10 In-Line Busbars: Fully insulated, screened busbars for GIS or SIS switchgear where the busbar is installed inside the switch-panel during manufacture and is provided with inner cone busbar bushings on both sides of each switch-panel, and where in-line busbar coupling inserts are utilised during switchgear installation to connect the busbars between switch-panels.
- 3.11 Busbar Couplings: Fully insulated, screened busbar coupling inserts used to interconnect the busbars of adjacent switch-panels on a GIS or SIS switchboard with in-line busbars through insertion into the inner cone busbar bushings of the two adjacent switch-panels.
- 3.12 Busbar Blanking Plugs: Fully insulated, screened busbar inserts used to seal the inner cone busbar bushings on the two ends of a GIS or SIS switchboard with in-line busbars, and supplied complete with metal blanking cover.
- 3.13 Busbar End Adapters: Fully insulated, screened connector used to connect external busbars to the outer cone busbar bushing of a GIS or SIS switch-panel designed for external busbars, and used where the busbars are extended in one direction only from that switch-panel.
- 3.14 Busbar Cross Adapters: Fully insulated, screened connector used to connect external busbars to the outer cone busbar bushing of a GIS or SIS switch-panel designed for external busbars, and used where the busbars are extended in both directions from that switch-panel.
- 3.15 Busbar Dead End Cap: Fully insulated, screened connector used to cap GIS or SIS switch-panel outer-cone busbar bushings that are not in use on a GIS or SIS switchboard.

4 **NORMATIVE REFERENCES**

- 4.1 The following documents contain provisions that, whether referenced in the text or not, 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 032	Internal and/or external protective coatings for steel tubes – Specification for dip galvanized coatings applied in automatic plants
SANS 064	The preparation of steel surfaces for coating
SANS 097	Electric cables - Impregnated paper-insulated metal-sheathed

	cables for rated voltages 3,3/3,3 kV to 19/33 kV (excluding pressure assisted cables)
SANS 121	Hot-dipped galvanised coatings on fabricated iron and steel articles
SANS 679	Zinc chromate primers for steel
SANS 876	Cable terminations and live conductors within air-insulated enclosures (insulation co-ordination) for rated a.c. voltages of 7,2 kV and up to and including 36 kV.
SANS 935	Hot dip (galvanized) zinc coatings on steel wire
SANS 1019	Standard voltages, currents and insulation levels for electricity supply
SANS 1091	National colour standard
SANS 1186	Symbolic safety signs Part 1: Standard signs and general requirements
SANS 1213	Mechanical cable glands
SANS 1332	Accessories for medium-voltage XLPE and impregnated-paper insulated power cables (3,8/6,6 kV to 19/33 kV)
SANS 1391-1	Thermally sprayed metal coatings Part 1: Zinc and aluminium coatings for the protection of iron and steel against atmospheric corrosion.
SANS 1507-2	Electric cables with extruded solid dielectric insulation for fixed installations. Part 2 Wiring cables
SANS 1507-3	Electrical cables with extruded solid dielectric insulation for fixed installation (300/500 V to 1900/3300 V) Part 3: PVC distribution cables.
SANS 1885	Metal-clad switchgear for rated a.c. voltages above 1 kV and up to and including 36 kV – General requirements and methods of test
SANS 2808	Paints and varnishes. Determination of film thickness
SANS 3575	Hot dipped (galvanized) zinc coatings on steel sheet and strip
SANS 4998	Continuous hot-dipped zinc-coated carbon steel sheet of structural quality
SANS 9000	Quality management systems – Fundamentals and vocabulary
SANS 9001	Quality management system – Requirements
SANS 9002	Quality systems – model for quality assurance in production, installation and servicing
SANS 10064	The preparation of steel surfaces for coating
SANS 60034	Rotating electrical machines
SANS 60060-1	High-voltage test techniques Part 1: Switchgear, control gear and fuses
SANS 60060-2	High-voltage test techniques Part 2: Measuring systems
SANS 60072	Dimensions and output series for rotating electrical machines
SANS 60137	Insulated bushings for alternating voltages above 1 000 V

SANS 60186	Voltage transformers
SANS 60269-1	Low voltage fuses – Part 1: General Requirements
SANS 60270	High-voltage test techniques - Partial discharge measurements
SANS 60529	Degrees of protection provided by enclosures (IP code)
SANS 60947-2	Low voltage switchgear and control gear Part 2: Circuit-breakers
SANS 61000	Electromagnetic compatibility (EMC)
SANS 61238-1	Compression and mechanical connectors for power cables for rated voltages up to 30 kV ($U_m = 36$ kV) Part 1: Test methods and requirements
SANS 61243-5	Live working – Voltage detectors Part 5: Voltage detecting systems (VDS)
SANS 62271-213	High-voltage switchgear and control-gear - Voltage detecting and indicating system
SANS 61850-1	Communication Networks and systems for power utility automation – Part 1: Introduction and overview
SANS 61850-3	Communication Networks and systems in substations – Part 3: General requirements
SANS 61869-1	Instrument transformers Part 1: General requirements
SANS 61869-2	Instrument transformers Part 2: Additional requirements for current transformers
SANS 61869-3	Instrument transformers Part 3: Additional requirements for Inductive voltage transformers
SANS 62271-1	High-voltage switchgear and control gear Part 1: Common specifications
SANS 62271-100	High-voltage switchgear and control gear Part 100 : High voltage alternating current circuit breakers
SANS 62271-102	High-voltage switchgear and control gear Part 102 : High voltage alternating current disconnectors and earthing switches
SANS 62271-103	High-voltage switchgear and control gear Part 103: Switches for rated voltages, above 1 kV and less than 52 kV
SANS 62271-110	High-voltage switchgear and control gear Part 110 : Inductive load switching
SANS 62271-200	High-voltage switchgear and control gear Part 200: AC metal-enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV
SANS 62271-201	High-voltage switchgear and control gear Part 201: AC insulation- enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV
SANS 62271-301	High-voltage switchgear and control gear Part 301 : Dimensional standardisation of terminals
IEC 60051	Direct acting indicating analogue electrical measuring instruments

IEC 60068-2	Environmental Testing
IEC 60071	Insulation co-ordination
IEC 60085	Thermal evaluation and classification of electrical installations
IEC 60112	Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions
IEC 60255	Electrical relays
IEC 60376	Specification and acceptance of new sulphur hexafluoride gas
IEC 60455	Resin based reactive compounds used for electrical insulation
IEC 60687	Alternating Current Static Watt-Hour Meters for Active Energy (Classes 0,2 S and 0,5 S)
IEC 61187	Electrical and electronic measuring equipment, documentation
ISO 9003	Quality system-model for quality in final inspection and test
ISO 8501-1	Preparation of steel substrates before application of paints and related products - visual assessment of surface cleanliness – Part 1: rust grades and preparation grades of uncoated steel substrates after overall removal of previous coatings
EN 50181	Plug-in type bushings above 1 kV up to 36 kV and from 250 A to 1,25 kA for equipment other than liquid filled transformers.
NRS 029	Current transformers for rated a.c. voltages from 3,6 kV up to and including 420 kV (maximum voltage for equipment)
NRS 030	Inductive voltage transformers for rated a.c. voltages from 3,6 kV up to and including 145 kV for indoor and outdoor application
NRS 060	Code of practice for clearances for electrical systems with rated voltages up to and including 12 kV, for the safety of persons

4.2 City of Cape Town Electricity Services Department Occupation Health and Safety Specification for Construction Work on LV and MV Distribution Networks

4.3 Reference to a particular standard or recommendation in this Specification does not relieve the Manufacturer of the necessity of complying with other relevant standards or recommendations.

4.4 The design features of all equipment shall be based on the SI system of units.

4.5 All equipment shall in respect of electromagnetic compatibility comply with the requirements of SANS 61000 or IEC 61000 where a SANS approved equivalent has yet to be published.

5 OPERATING CONDITIONS

- 5.1 Electrical energy is generated at interconnected power stations as a three phase current at a frequency of 50 Hz and transmitted by means of overhead lines and underground cable to a number of switching stations at voltages of 132 kV, 66 kV and 33 kV between phases and the working voltage of any part of the transmission system will normally not exceed 10% above these levels. The system may, however, operate continuously at this upper limit and all equipment shall be designed accordingly.
- 5.2 The neutral points of the 132 kV and the 66 kV systems are directly earthed at each point of transformation.
- 5.3 The equipment will be connected to the medium voltage distribution system having a maximum fault level of 25 kA and a nominal voltage of 11,5 kV or 11,66 kV, the neutral point of which is earthed either directly or through an 800 A or 1 600 A resistor.
- 5.4 The highest ambient temperature commonly experienced is 40°C and the lowest -5°C. Relative humidity varies between 20% and 90%.
- 5.5 The equipment shall be suitable in all respects for continuous operation at its rated capacity under the climatic conditions on Site as detailed in this Specification.

6 QUALITY, DESIGN AND EXECUTION

- 6.1 All apparatus should comply with this Specification. Any departures from the requirements of this Specification shall be stated in the Tenderer's Covering Letter and in the Schedules and may be accepted at the Engineer's discretion.
- 6.2 No departure shall be implemented without the prior approval of the Engineer.
- 6.3 The equipment shall comply with the particulars and guarantees stated in the Schedules.
- 6.4 The manufacturer(s) shall have proven and acceptable experience in the manufacture of equipment of the type offered, and shall have a service record thoroughly demonstrating the reliability and quality of the equipment offered. The equipment offered shall comprise the Manufacturer's standard equipment. Only proven design and construction methods and principles will be acceptable.

- 6.5 The Manufacturer's quality assurance system shall be approved in terms of SANS/ISO 9001 or an alternative quality assurance system to the approval of the Engineer. A copy of the registration certificate applicable for each item of the specification shall be submitted with the tender.
- 6.6 All materials used shall be new materials and of the best quality. The material of which each part is made shall be one of those recognised as suitable for the purpose in conservative modern practice and of a class suitable for working under the conditions specified. The variations of temperature and atmospheric conditions arising under working conditions shall not cause distortion, deterioration or the setting up of undue stresses in any part nor affect the strength and suitability of the various parts for the work which they have to perform. No welding, filling or plugging of defective parts will be permitted without the sanction in writing of the Engineer.
- 6.7 The design and execution of the Works shall incorporate every practicable precaution and provision for:-
- 6.7.1 the safety of those who will operate and maintain the equipment
 - 6.7.2 the satisfactory operation of the equipment under all conditions liable to be met in service, and
 - 6.7.3 to facilitate inspection, maintenance and repairs.
- 6.8 Features likely to require excessive maintenance shall be carefully avoided.
- 6.9 Kiosks, cubicles and similar enclosed compartments shall be adequately ventilated to restrict condensation.
- 6.10 Tenderers shall offer equipment of the highest possible quality to ensure highly reliable service and only proven designs with proven in-service history in conditions equal or worse than those experienced in this region will be accepted.
- 6.11 All apparatus and materials supplied shall comply with the current requirements of the Occupational Health and Safety Act (Act No 85 of 1993), as amended, and the Regulations issued thereunder and any regulations issued in modification or substitution thereof. In addition, they shall comply with any other requirements having the force of law to which this Undertaking is subject to.
- 7 SWITCHGEAR DESIGN
- 7.1 Substation Design and Layout

- 7.1.1 The switchgear is to be used as new switchboards and as extension panels on existing switchboards in multiple new and existing distribution substations with general station arrangement and layout as detailed on the accompanying generic drawings. It is the responsibility of the Contractor to prepare detailed layouts showing the manner in which the various items of equipment offered can be accommodated to best advantage within the generic distribution substation layout.
- 7.1.2 The circuit arrangements may be modified as necessary to suit the Contractor's layout and equipment requirements provided the basic principles shown in the drawings are maintained.
- 7.1.3 Alternative layouts will be considered especially where these offer economic or technical advantages. It is emphasised, however, that the main tender offer should comply with the principles shown in the drawings, other arrangements being submitted solely as alternatives to the main offer.
- 7.1.4 Air-insulated switchgear procured in accordance with Item A of the specification is required for busbar extensions and maintenance / fault replacements of switch-panels on ABB Unigear ZACB switchboards currently installed in the City's distribution system. Accordingly AIS switchgear offered for Item A shall be fully mechanically and electrically compatible with ABB Unigear ZACB switchgear and it shall be possible to install the AIS switchgear offered on an ABB Unigear ZACB switchboard without the need for any modifications or adjustments to the existing switch-panels or the AIS switchgear offered. The dimensions of the equipment shall enable the extension of the existing switchboards with minor floor modifications (ie the dimensions from the cable compartment to the busbar interface shall be similar to ensure only minor civil alterations) and fastening provisions, wireways and earthbars shall be identical to the existing switchgear. IAC ducting shall either be compatible to the existing switchgear or switchgear specific and minor substation alteration will be permitted. Mechanical and electrical compatibility shall have been proven by type testing. For staff and public safety and supply continuity reasons the AIS switchgear offered shall have been internal arc type tested in accordance with the standards specified in this specification as an extension panel assembled on a ABB Unigear ZACB switchboard / panel, with the arcs initiated within the tendered AIS switch-panel and the exhaust of hot gases being from the ABB Unigear ZACB switchboard / panel. The tenderer shall provide documentation from the OEM of the ABB Unigear ZACB confirming that the warranty for that switchgear will be honoured notwithstanding the extension of the switchboard with the tendered AIS switchgear.
- 7.1.5 Gas-insulated switchgear procured in accordance with Item C of the specification is required for busbar extensions and maintenance / fault replacements of switch-panels on ABB ZX0.2 switchboards currently installed in the City's distribution system. Accordingly GIS switchgear offered for Item C shall be fully mechanically and electrically compatible with ABB ZX0.2 switchgear and it shall be possible to install the GIS switchgear offered on an ABB ZX0.2 switchboard without the need for any modifications or adjustments to the existing switch-panels or the GIS switchgear offered. The dimensions of the equipment shall enable the extension of the existing switchboards with minor floor modifications (ie the dimensions from the cable compartment to the busbar interface shall be similar to ensure no major civil alterations) and fastening provisions, wireways and earthbars shall be identical to the existing switchgear. IAC ducting shall either be compatible to the existing switchgear or switchgear specific and minor substation alteration will be permitted. Mechanical and electrical compatibility shall have been proven by type testing. For staff and public safety and supply continuity reasons the GIS switchgear offered shall have been internal arc type tested in accordance with the standards specified in this specification as an extension panel assembled on a ABB ZX0.2 switchboard / panel, with the arcs initiated within the tendered GIS switch-panel and the exhaust

of hot gases being from the ABB ZX0.2 switchboard / panel. The tenderer shall provide documentation from the OEM of the ABB ZX0.2 confirming that the warranty for that switchgear will be honoured notwithstanding the extension of the switchboard with the tendered GIS switchgear.

- 7.1.6 Where alternative switchgear is offered for Baskets A & C and the design requires a joggle chamber to be used for the extension of the existing switchgear, the joggle chamber shall be fully type tested with the existing switchgear Basket A to ABB Unigear ZACB or the switchgear offered for Basket C to ABB ZX0.2.
- 7.1.7 Typical switchboard layouts utilised by the Employer for AIS, GIS and the SIS switchgear will require a busbar earth panel at the end of the switchboard. Switchgear designs that require cosmetic end sheets at either end of the switchboard shall make provision where provided for in the Schedules of Rates for both busbar earth panel end sheets and feeder panel end sheets in the event that the depth or height dimensions of these panels differs.
- 7.1.8 Where busbar earth panel end dimensions differ from those of feeder panels the Tenderer shall in addition provide for any end sheets required on the rear side of the adjacent feeder panel, if extending beyond the dimension of the busbar earth panel. Such provision shall be included in the rate for the busbar earth panels detailed in the Schedule of Rates.

7.2 Engineering Approval

- 7.2.1 The equipment tendered shall comply fully with the requirements of the specification, and the Tenderer shall demonstrate such compliance through the completion of all Returnable Schedules and the provision of full particulars of the equipment offered including detailed technical documentation, drawings, operating and maintenance instructions as specified.
- 7.2.2 Drawings provided at the tender stage shall include those detailed in the drawing specification.
- 7.2.3 Following contract award Contractors shall provide full switchgear design details within the timeframes detailed in the drawing specification section, and these shall be scrutinised and comments provided and amendments requested by the employer during the engineering approval phase in order to ensure full compliance with the requirements of the specification and contract.
- 7.2.4 During the engineering approval phase the Employer in addition reserves the right to request such additional amendments and changes to the fine detail of the design as may be necessary in order to satisfactorily meet detailed engineering requirements not specifically or adequately addressed in the tender specification. Such detailed engineering amendments to the design submission shall not constitute material changes to the scope and specification of the contract.

7.3 Switchgear Equivalence for AIS and GIS Switchgear Items

- 7.3.1 The technical specification for the AIS switchgear and equipment required to be manufactured, tested, supplied and delivered in terms of Item A and Item B is identical for the equivalent Pricing Schedule sub-items. Tenderers that are tendering for both of Items A and B, and that are tendering the same switchgear Make and Model for these two Items, shall ensure that the switchgear and equipment tendered

for the two Items is identical in all respects and is offered at identical pricing for the equivalent Pricing Schedule sub-items.

- 7.3.2 In the event that Items A and B are awarded to the same Tenderer for the same switchgear Make and Model but any pricing for equivalent sub-items differs, the Employer will order the switchgear and equipment required from time to time for stock at the Item A or Item B prices that are most beneficial to the Employer.
- 7.3.3 The technical specification for the GIS switchgear and equipment required to be manufactured, tested, supplied and delivered in terms of Item C and Item D is identical for the equivalent Pricing Schedule sub-items. Tenderers that are tendering for both of Items C and D, and that are tendering the same switchgear Make and Model for these two Items, shall ensure that the switchgear and equipment tendered for the two Items is identical in all respects and is offered at identical pricing for the equivalent Pricing Schedule sub-items.
- 7.3.4 In the event that Items C and D are awarded to the same Tenderer for the same switchgear Make and Model but any pricing for equivalent sub-items differs, the Employer will order the switchgear and equipment required from time to time for stock at the Item C or Item D prices that are most beneficial to the Employer.
- 7.3.5 In the event that the Tenderer is offering a different or materially upgraded switchgear Make or Model for Item B (in comparison with that offered by them for Item A) or for Item D (in comparison with that offered by them for Item C) the Tenderer shall ensure that this is clearly detailed in the tender submission, that distinct Make and Model numbers are identified in the Returnable Schedules and in the switchgear documentation, datasheets and drawings provided as supporting documents, and that a thorough and detailed explanation is provided with the tender submission explaining the reason and necessity for the differences.

7.4 Design Principles and Parameters

- 7.4.1 The switchgear shall comply with SANS 62271-200, SANS 62271-201 and SANS 1885 as specified.
- 7.4.2 Air insulated switchgear (AIS) shall be of the fully metal-enclosed factory assembled type with withdrawable circuit breakers.
- 7.4.3 Gas insulated switchgear (GIS) switchgear shall be fixed pattern type switchgear with all primary circuit components installed in SF₆ compartment. Fully screened solid insulation busbars in air enclosed compartments will be acceptable.
- 7.4.4 Solid-dielectric insulated (SIS) switchgear shall be fixed pattern type switchgear with all primary circuit components installed in the solid insulated compartment. Fully screened solid insulation busbars in air enclosed compartments will be acceptable.
- 7.4.5 Switchgear shall be designed so that normal service and maintenance operations can be carried out in safety including the checking of phase sequence, earthing of connected cables, location of cable faults and voltage tests on connected cables.
- 7.4.6 All components of the same rating and construction which may need to be replaced during service shall be interchangeable.
- 7.4.7 Components within the metal enclosures shall be subject to individual International Electrotechnical Commission (IEC) standards which are relevant except where modified by this Specification.

- 7.4.8 The equipment offered shall comprise the Manufacturer's standard equipment, the reliability of which has been thoroughly proven in service.
- 7.4.9 Equipment parts and components, in particular those subjected to mechanical wear, strain or torsion in service shall be designed to be physically robust and durable and suitable for the required duty for the full service life of the equipment. Parts and components found to be subject to unreasonable wear and tear and premature failure in service shall be assessed for latent defects and replacement at the manufacturer's cost.
- 7.4.10 All components and accessories shall have passed the type tests laid down in the appropriate specifications. The type tests shall have been conducted or, where in-house tests cannot be avoided, shall have been fully witnessed and certified by an accredited independent test laboratory and approved by the Engineer. The testing laboratory shall be accredited by a national accreditation body that is a member of the International Laboratory Accreditation Cooperation.
- 7.4.11 The equipment offered shall be identical to the equipment covered by the type tests and the panel offered shall be assembled in the same factory as the type tested panel. In the event that equipment is manufactured in a factory different from the equipment subjected to type testing, but the Tenderer believes that the type test certification is nevertheless applicable, the Tenderer shall submit a full and detailed motivation for the acceptance by the Employer of the type test certification as applicable to the equipment tendered. Acceptance of such type test certification shall be at the Engineer's discretion.
- 7.4.12 The switch panels will be used to make up switch boards and shall be supplied complete with erection equipment including insulating material for making the busbar joints between panels, bus wiring, all other materials and any special tools or components required to extend the switch board.
- 7.4.13 The AIS switchgear shall be suitable for installation in a substation of maximum ceiling height 3,2 m without reduction of the internal arc withstand rating or any other rating of the switchgear. The Tenderer shall further indicate the suitability of the switchgear for installation in existing substations of maximum ceiling height 3,0 m.
- 7.4.14 The GIS switchgear shall be suitable for installation in a substation of maximum ceiling height 2,8 m without reduction of the internal arc withstand rating or any other rating of the switchgear. The Tenderer shall further indicate the suitability of the switchgear for installation in existing substations of maximum ceiling height 2,7 m.
- 7.4.15 The SIS switchgear shall be suitable for installation in a substation of maximum ceiling height 2,8 m without reduction of the internal arc withstand rating or any other rating of the switchgear. The Tenderer shall further indicate the suitability of the switchgear for installation in existing substations of maximum ceiling height 2,7 m.
- 7.4.16 The AIS switchgear shall be suitable for installation in substations with a cable trench at the rear of the switchgear, with the cable termination compartment overhanging the cable trench. Termination of the MV cable and completion of the cable wiping gland shall be from the rear of the switchgear. Cable basements will not be available in the substation.
- 7.4.17 The GIS switchgear shall be suitable either for installation in substations with a cable trench at the rear of the switchgear with the cable termination compartment overhanging the cable trench at the rear.

- 7.4.18 The SIS switchgear shall be suitable either for installation in substations with a cable trench at the rear of the switchgear with the cable termination compartment overhanging the cable trench at the rear.
- 7.4.19 The switchgear installation rates shall include the supply and installation of all switchgear base frameworks necessary in order to install and support the equipment over the trenches as specified. The frames shall be designed to withstand the full static and dynamic forces of the complete panel, including circuit breaker operations.
- 7.4.20 The operation of all circuit breakers, earth switches and devices shall be from the front of the panel only.
- 7.4.21 Access to all multicore and pilot terminals shall be from the front of the panel only.
- 7.4.22 All switch panels shall be constructed in such a way that they are rigid even when stood alone.
- 7.4.23 Provision shall be made for the lifting of each panel.
- 7.4.24 Switch panels shall be constructed so that they can be easily and readily adapted on site including the fitting of voltage transformers.
- 7.4.25 Panel doors shall be fitted with stops to prevent them from over swinging when opened.
- 7.4.26 Distribution and Main Substation AIS switch panels of circuit rating 630 A and 1250 A shall be of minimum width 550 mm and of maximum width 650 mm. GIS switch panels (single bay) shall be of maximum width 650 mm. SIS switch panels (single bay) shall be of maximum width 650 mm.

7.5 Ratings

- 7.5.1 The switchgear and associated equipment shall comply with the ratings specified in the Schedules.
- 7.5.2 Every current carrying part of the switchgear equipment including circuit breakers, busbars, current transformers, connections and joints shall be capable of carrying under the atmospheric and climatic conditions existing at Site its specified rated current continuously and in no part shall the temperature rise exceed the values specified in SANS 62271 and other relevant standards.
- 7.5.3 Every part of the switchgear equipment shall also withstand without mechanical or thermal damage, the specified instantaneous peak current and rated short time current for the specified duration.
- 7.5.4 A rating plate complying with the requirements of SANS 62271-200 shall be fixed to the front of the switchgear and shall include the Specification / Contract Number and the drawing references.
- 7.5.5 Rating plates complying with the requirements of SANS 61869-2 and 61869-3 for current and voltage transformers, respectively, shall be affixed to each current and voltage transformer in a position that is visible without the need to remove the transformer when the relevant compartment door or cover is in the open position. In addition, duplicate rating plates for the current and voltage transformers shall be affixed in a clearly visible position in the inside of the low voltage control / relay compartment.

7.5.6 A further rating plate shall be affixed in the low voltage compartment of all switch-panels containing metering current transformers that details the design burden of the metering current transformer secondary wiring. This is for the purpose of field accuracy testing of metering current transformers, as such tests are conducted from the low voltage compartment.

7.6 Degrees of Protection

7.6.1 The switch panels shall have the following degrees of protection in accordance with SANS 60529:

7.6.1.1 The control / relay compartment and relay panels shall have an IP2X rating.

7.6.1.2 For AIS switchgear that is solidly insulated to full service voltage and has no bare live conductors or components, the degree of protection of the MV compartments shall be a minimum of IP4X.

7.6.1.3 For AIS switchgear that is not solidly insulated to full service voltage and where bare live conductors or components are present, the degree of protection of the MV compartments shall be a minimum of IP5X.

7.6.1.4 For GIS switchgear the MV compartments shall have an IP65 rating.

7.6.1.5 For SIS switchgear the MV compartments shall have an IP65 rating.

7.6.1.6 External parts and end units of outdoor exhausts ducts are subject to heavy, wind driven winter rains and pollutant laden onshore winds and shall have minimum degree of protection of IP55.

7.7 Internal Arc Withstand and Pressure Relief Facilities

7.7.1 The switchgear shall be designed, constructed and type tested to withstand an internal arc of 25 kA for a duration of 1 s with accessibility AFLR, in accordance with SANS 62271-200.

7.7.2 The specified internal arc rating shall be achieved without the release of hot gasses or overpressures within the switch room in the event of an arcing fault. Accordingly, the switchgear shall be designed, tested and supplied with an enclosed exhaust ducting plenum to gather and control hot gasses and overpressures in the event of an arcing fault and to channel these out of the switch room via suitable exhaust ducting.

7.7.3 Switchgear shall have the enclosed exhaust ducting plenum fitted to the top of the switch-panels and running horizontally over the length of the switchboard. Switchgear internal arc pressure relief designs that in addition require the installation of a vertical exhaust ducting end-plenum to channel hot gasses from lower switchgear compartments into the top plenum shall be to the Engineer's approval.

7.7.4 The use of deflector plates or any other hot gas and overpressure control measures that provide for the release of such hot gasses and / or overpressures inside the switch room shall not be acceptable.

7.7.5 Exhaust ducting for standard switchgear installations shall be designed to exhaust to the rear of the switchboard, and through the rear wall of the switch room. The standard minimum clearance from the rear side of the switchgear to the switch room rear wall is 1-1.3 metre.

- 7.7.6 Exhaust ducts shall be tendered complete, based upon exhausting of hot gasses to the rear of the switchboard, and shall include the end unit and all ducts, joints, fasteners and other parts necessary to extend from the switchgear exhaust ducting plenum to outside of the switch-room.
- 7.7.7 Outdoor exhaust ducts shall have the end unit and all other components that will extend past the outside wall of the substation building constructed from 3CR12 stainless steel and powder coated. Indoor exhaust ducts may be constructed from galvanised mild steel or other material to the approval of the Engineer.
- 7.7.8 Exhaust designs providing for an alternative of exhaust ducting to the one side of the switchboard through the side wall of the switchroom are encouraged but such switchgear must also provide for the rear exhausting specified above as side exhausts can be utilised only in specific applications where substation layout permits.
- 7.7.9 Bolted gland plates shall be provided in the cable termination chamber and it shall be demonstrated that an internal arc occurring within any compartment of the switchgear will not result in the bolted gland plate being dislodged.
- 7.7.10 The exhaust ducting top plenum and exhaust ducting shall not encroach on the minimum clearance required above the switchgear in terms of SANS 62271-200 for the specified maximum substation ceiling height unless the tenderer provides type test certification verifying the specified Internal Arc Withstand with the reduced clearance.
- 7.7.11 The exhaust ducting top plenum and exhaust ducting shall not obstruct access to the control / relay compartment top entry for multi-core cables.
- 7.7.12 The circuit breaker compartment of AIS switchgear shall be designed and IAC tested for circuit breaker racking behind closed doors.
- 7.7.13 The tendered price per switch panel shall include all exhaust ducting that is to be assembled onto such switch panel as part of the exhaust ducting top plenum in the completed installation, irrespective of whether such exhaust ducting is supplied and delivered assembled on the switch panel, separately as a complete assembly, or separately in kit form. Costs of supply and of installation of end-covers for either end of the gas top plenum shall be separately itemised with the busbar end-covers and cosmetic end sheets where provided for in the price schedule.
- 7.7.14 Costs of supply and of installation of exhaust ducting end-plenums, if required, shall be separately itemised where provided for in the price schedule.
- 7.7.15 Exhaust ducting components forming part of the exhaust ducting from the switchboard exhaust ducting plenum to the exterior of the switch room shall be detailed and tendered separately, as indicated in the price schedule.
- 7.8 Extension Facilities**
- 7.8.1 The switch panels shall be designed in such a way that, when made up into switchboards, the switchboards can be extended readily and safely at either the left or right hand side end with similar panels to those offered.
- 7.8.2 The extension of the switch board using the same panels as offered shall not require the fitment of specially modified equipment e.g. VTs, cable boxes etc.

7.8.3 During extensions of existing switch boards it shall be possible to complete the installation of one or more extension switch panels and the extension of the existing busbars within a single shut-down of a maximum duration of 8 hours.

7.9 Earthing Facilities

7.9.1 Busbar earthing and cable earthing switches shall comply with the requirements of SANS 62271-102.

7.9.2 Each switch panel shall be equipped with an integral fault make earth switch whereby the cable circuit can be positively earthed.

7.9.3 Bus Section panels for AIS switchgear shall have integral fault make earth switches for independent busbar earthing of the right hand side of the switchboard on switchboards that include a Bus Section panel.

7.9.4 Busbar earthing for AIS switchboard configurations that do not include a Bus Section panel or for the left hand side of AIS switchboards that do include a Bus Section panel shall be achieved through the use of a dedicated busbar earthing panel equipped with an integral fault make earth switch.

7.9.5 Bus Section panels and Busbar Riser panels for GIS switchgear shall have integral fault make earth switches or shall provide for busbar earthing through a circuit breaker and three position disconnecter / earthing switch for independent busbar earthing of both sides of the switchboard on switchboards that include a Bus Section panel.

7.9.6 Busbar earthing for GIS and SIS switchboard configurations that do not include a Bus Section panel shall be achieved through the use of a dedicated busbar earthing panel, either equipped with an integral fault make earth switch or alternatively equipped for busbar earthing through a circuit breaker and earthing switch.

7.9.7 The fault make earth switch shall have a making current rating and short time rating equal to that of the circuit breaker.

7.9.8 The fault make earth switch or circuit breaker / earth switch combination shall have suitable robust mechanical interlocking to prevent incorrect operation.

7.9.9 Padlocking facilities shall be provided to lock the fault make earth switch or circuit breaker / earth switch combination in both the open and closed positions. Earthing mechanism power drives shall be disabled when the earthing mechanism is locked.

7.9.10 The method of providing indication of the earth switch contact positions shall be stated. Local indication should be mechanically driven as directly as possible from the moving contact drive rod of the earthing switch operating mechanism. Indication driven from a single pole of the earthing switch shall not be acceptable.

7.9.11 The earthing switch position indication shall be mounted in a position where it is clearly visible from the front of the panel and shall be clearly labelled.

7.9.12 Auxiliary switches, linked as directly as possible from the contact drive, shall be provided for remote indication.

7.9.13 Earthing mechanism motors (where provided) shall be fitted with timers to prevent excessive running times. An alarm shall be provided to indicate time-out.

7.10 Phasing-out Facilities

- 7.10.1 Permanent facilities shall be provided on each feeder panel to indicate the presence or absence of operating voltage and to enable the cable connected to any one feeder panel to be electrically phased out with any other.
- 7.10.2 Phasing-out facilities shall be capacitive-divider based.
- 7.10.3 The phasing-out facilities shall comply with SANS 61243-5, shall have been type tested and shall have proven in-service performance history in harsh coastal environments. All capacitive dividers shall be individually tested for partial discharge in accordance with the requirements of SANS 60270.
- 7.10.4 The facilities shall include an integral SANS 61243-5 compliant Voltage Detecting System indication unit installed on the control / relay compartment which shall provide permanent VDS indication facilities.
- 7.10.5 The facilities shall further make provision for the comparison of voltage state and phase balance between separate switch-panels on a switchboard through testing with a Universal Phase Comparator in accordance with SANS 61243-5.

7.11 Interlocks

7.11.1 Philosophy

- 7.11.1.1 Interlocks in accordance with SANS 1885, SANS 62271-200 and SANS 62271-201 shall be provided on all switch panels, circuit breakers and earthing devices together with any further interlocks the Engineer may deem necessary. The system employed shall satisfy two distinct categories:

7.11.1.2 Operational interlocking

Interlocking associated with normal system operation and switching and intended to ensure that a predetermined switching sequence is satisfied. Such interlocking shall be achieved by mechanical and electrical means in a manner that permits the equipment to perform any safe operation.

7.11.1.3 Maintenance interlocking

Interlocking associated with a series of switching operations to render the equipment or sections of the substation safe for access and maintenance by personnel. The interlocking facilities recommended in SANS 62271-200 and SANS 62271-201 shall be provided. Padlocking to the requirements of this Specification shall be provided for operational and maintenance security.

7.11.2 Principles

- 7.11.2.1 The following principles shall apply:

- 7.11.2.2 Disconnectors are capable of switching the capacitive currents of associated connections.

- 7.11.2.3 Disconnectors have no load making or breaking capacity.

- 7.11.2.4 Disconnectors are not capable of making or breaking transformer magnetising current.

- 7.11.2.5 Disconnectors are capable of the duty imposed when operated under parallel switching conditions.
- 7.11.2.6 It shall not be possible to close or open any earth switches unless:
- the point of application is disconnected from all possible sources of supply, and;
 - the power operating devices of such disconnectors are selected to the local control position.
- 7.11.2.7 It shall not be possible to operate any disconnectors if an associated earth switch is already closed.
- 7.11.2.8 It shall not be possible to operate any disconnector if the gas pressure in an associated compartment is below a safe level.
- 7.11.2.9 Disconnectors and earth switches concerned with supplies from a remote point cannot be fully interlocked and shall carry a warning notice to this effect. Similar notices shall be applied to earth switches.
- 7.11.2.10 Positive mechanical interlocking on three-position disconnectors shall be provided to prevent inadvertent switching from the ON position to the EARTH position without a definite stop in the OFF position, or from the EARTH position to the ON position without a definite stop in the OFF position.
- 7.11.2.11 All electrical interlocks shall so function as to interrupt the power supply to the operating mechanism and shall also interlock the emergency hand operating mechanism of apparatus which is normally power operated.
- 7.11.2.12 The interlocking must allow the devices in a bay to be selected in an appropriate configuration to allow cable testing via the cable test facilities as well as primary injection tests for the protection. Use of the interlock override facilities to achieve this is not acceptable.
- 7.11.2.13 Maintenance Interlocking preventing access to compartments shall have a documented means of override in the event of an interlock mechanism failure that prevents access to the compartment when in the earthed position.
- 7.11.2.14 Interlocking solenoids that are required to be permanently energised in normal service shall be avoided where possible or, if not avoidable, be specified and implemented such as to minimise standing loads on the substation auxiliary supply.
- 7.11.3 Busbar Earth Interlocking
- 7.11.3.1 Switch panels shall have a busbar earthing interlock scheme in accordance with SANS 1885, SANS 62271-200 and SANS 62271-201 to ensure that the busbar earthing panel earthing switch and the bus-section and/or busbar riser panel earthing switch cannot be closed unless all circuit breakers on that zone of the switchboard (including the associated bus-section circuit breaker) are fully racked out (ie. in the test position) for AIS switchgear, or isolated for GIS switchgear. Compliance with the interlock requirements shall release a captive Castell key from its "service" location and this Castell key shall be necessary to operate the busbar earth switch.
- 7.11.3.2 The Castell key interlock shall further ensure that circuit breakers on that zone of the switchboard and the bus-section circuit breaker cannot be racked into the service

position (AIS switchgear) or the busbar disconnecter closed (GIS & SIS switchgear) unless the busbar earth switch is open and the Castell key released from its "earth" location and returned to its "service" location.

- 7.11.3.3 The Castell key shall be captive in the "earth" location for as long as the earth switch is closed, and shall be captive in the "service" location for as long as any switch panel circuit breaker on that zone of the switchboard or the bus-section panel circuit breaker is in the closed or racked-in/service position.

7.12 Padlocking

- 7.12.1 Locking facilities suitable for a 35 mm padlock with a 5 mm diameter shackle shall be provided on each switch panel for locking the following:

- 7.12.1.1 the busbar and circuit safety shutter devices, independently, in the closed position.
- 7.12.1.2 each circuit breaker local manual operating handle in the "neutral" position and each circuit breaker mechanism in the "open" position.
- 7.12.1.3 each Local / Remote selector switch in either position.
- 7.12.1.4 each isolating device operating mechanism and handle in the "open" or "closed" positions.
- 7.12.1.5 each earthing device operating mechanism and handle in the "open" or "closed" positions.
- 7.12.1.6 the trip test button cover in the closed position.
- 7.12.1.7 the cover of the Cannon (or equivalent) plug socket used for remote switching with a hand held device in the closed position.
- 7.12.1.8 all access doors, equipment cover, guard, or screen in the "closed" position and protection/control panel doors in the "closed" position.
- 7.12.1.9 for any other purposes that the Engineer may deem necessary.

- 7.12.2 The locking facilities shall be to approval.

- 7.12.3 The locking facilities shall be designed so that, when a motor-driven device is locked in the specified position, both the mechanical drive mechanism and the electrical supply to the motor shall be disabled.

- 7.12.4 Padlocks will be provided by others.

7.13 Anti-Condensation

- 7.13.1 The switchgear shall be ventilated to prevent condensation of atmospheric moisture but shall meet the IP rating required. Non-perishable vermin shields shall be fitted to all ventilation openings and all components.

- 7.13.2 The switch panels shall be fitted with suitably rated 230 V ac panel heaters as required to prevent condensation.

7.13.3 Anti-condensation panel heaters in the AIS switchgear shall be fitted in the circuit breaker compartment, the current transformer compartment and in the cable termination compartment.

7.13.4 Anti-condensation panel heaters in the GIS & SIS switchgear shall be fitted in the cable termination compartment.

7.14 Bushings and Support Insulators

7.14.1 All bushings shall be partial discharge tested in accordance with SANS 60270, and the partial discharge level of each bushing shall not exceed 5 pC.

7.14.2 The surface of bushings and support insulators shall be smooth all over and free from blemishes and patches or fillings.

7.14.3 Under no circumstances shall dough moulded compound be accepted for cable termination bushings, circuit breaker bushings, switch panel primary isolating contact orifices or any other MV circuit bushings.

7.14.4 Dough moulded compound will only be accepted for use for support insulators and other components subject to the submission by the tenderer of type test certification detailing full compliance with accepted international standards for DMC insulators for MV use, and subject to the submission of full details of an acceptable factory quality assurance programme to SANS 9001 for these products.

7.15 Cable Test and Isolating Facilities

7.15.1 For AIS switchgear cable testing shall be achieved without the need to access the cable termination compartment, either by the provision of integral test facilities or through the use of a removable Primary Test Truck.

7.15.2 For GIS and SIS switchgear cable test facilities shall be provided to allow the cable test equipment to be connected and high voltage tests to be conducted on the MV cable without the need to access the cable termination compartment, disturb any MV cable termination or access any of the gas enclosures and from a position that does not invalidate the IAC classification of the switchgear. If cable test probes are required in order to achieve this such test probes shall be mounted within the switchboard accessories cubicle to be installed within each substation and the cost thereof shall be included where indicated in the pricing schedule.

7.15.3 The test facilities shall be fully interlocked in an approved manner.

7.15.4 The insulation level of all equipment from the cable termination up to and including the cable circuit earth switch and disconnector (open) shall be capable of withstanding without failure or reduction of general insulation levels, the power cable routine test voltage applied for 15 minutes between the conductor and earth. The test voltage shall be as detailed in SANS 97 for PILC cable.

7.15.5 Where provided, integral test facilities shall be in accordance with the requirements of SANS 1885.

7.15.6 Where cable test facilities are not accessible from the front of the switchgear an integral SANS 61243-5 compliant VDS indication unit shall be provided which shall provide VDS indication facilities that are clearly visible at the point of cable testing. Such VDS facilities may be common with the phasing out facilities required in terms of this specification.

7.16 Current Transformer Primary Injection

- 7.16.1 Facilities shall be provided which allow primary injection testing of the current transformers via the cable to the far end substation for the purpose of protection testing without any of the metal-clad gas enclosures or any MV metal clad air-insulated enclosures being opened up.

8 CIRCUIT BREAKERS

8.1 General

- 8.1.1 Circuit breakers shall comply with the requirements of SANS 62271-100 and SANS 1885.
- 8.1.2 Withdrawable circuit breakers for AIS switchgear shall be encapsulated and fully insulated to full service voltage, and shall not have exposed un-insulated live conductors or components other than the primary isolating contacts.
- 8.1.3 The complete circuit breaker including the activating mechanisms shall have a mechanical endurance Class M2 and an electrical endurance Class E2 in accordance with SANS 62271-100, and shall not require maintenance inspections more frequently than 4 yearly intervals under normal operating conditions.

8.2 Interrupters

- 8.2.1 The interrupting medium of the circuit breaker shall be vacuum.
- 8.2.2 The circuit breakers shall be supplied complete with the interrupting medium ready for service and sealed.
- 8.2.3 Interrupters shall be of Class C2, with a very low probability of restriking during capacitive current breaking. Arc extinction shall be soft and current chopping under the maximum capacitive switching rating shall be limited to a maximum of 5 A. Certification of the current chopping characteristics of the circuit breakers shall be included with the tender.
- 8.2.4 Only interrupters from reputable manufacturers with a proven service history shall be accepted.
- 8.2.5 Interrupters shall be type tested and the type test certificates for the complete panel shall be for the specific interrupter offered.
- 8.2.6 Vacuum interrupters shall be rated for a minimum normal service life of 20 000 maintenance free operations at full service rating.
- 8.2.7 The rated transient recovery voltage (TRV) of vacuum interrupters at rated short circuit breaking current shall comply with the requirements of SANS 62271-100, and shall not reduce below the requirements of SANS 62271-100 during the rated normal service life of the interrupter for operations at rated load
- 8.2.8 Vacuum interrupters shall be capable of fulfilling the number of operating sequences at rated short circuit breaking current specified in SANS 62271-100, and this shall be without reduction of the rated TRV below the requirements of SANS 62271-100.

8.3 Circuit Breaker Operating Mechanism

- 8.3.1 Each circuit breaker shall be provided with a spring-operated mechanism for performing the opening and closing operations.
- 8.3.2 The circuit breaker operating mechanism shall be an integral part of the circuit breaker itself.
- 8.3.3 The circuit breaker mechanisms for GIS switchgear shall be accessible from the low voltage compartment, and it shall be possible to replace the mechanism without requiring any gas compartment to be opened.
- 8.3.4 The circuit breaker mechanisms for SIS switchgear shall be accessible from the low voltage compartment, and it shall be possible to replace the mechanism without requiring any medium voltage compartments to be opened.
- 8.3.5 Circuit breakers shall open with normal speed and with full travel under all operating conditions including the conditions of failure to latch or a trip impulse being given during the closing stroke.
- 8.3.6 For maintenance purposes, means shall be provided for manual operation.
- 8.3.7 Non-resettable operation counters, to record the number of closing strokes, shall be provided for each circuit breaker mechanism. A local mechanical indicator shall be provided on each operating mechanism to show whether the circuit breaker is in the open or closed position. This should be driven as directly as possible from that portion of the moving contact drive rod located at earth potential and shall be mounted in a position where it is clearly visible to a person standing in front of the switchgear. Auxiliary switches, linked as directly as possible from the contact drive, shall be provided for remote indication.
- 8.3.8 The method of providing external indication of contact positions shall be stated. External indication from one pole only is not acceptable.
- 8.3.9 All circuit breakers shall be provided with means to prevent contact pumping while the closing circuit remains energised should the circuit breaker either fail to latch, or be tripped during closing due to the operation of the protective relays. Any relays to accomplish this shall be continuously rated and shall be mounted in the circuit breaker mechanism box. This arrangement shall not involve paralleling of the trip and close circuits.
- 8.3.10 The energy available in an operating mechanism shall be sufficient to provide for the operating duty cycle specified.
- 8.3.11 The various parts shall be of substantial construction, carefully fitted so as to ensure free action and the design shall be such as to reduce mechanical shock during operation to a minimum, and to prevent inadvertent operation due to vibration or other cause.
- 8.3.12 The power supply for controlling circuit breaker operation shall be as stated in the Schedules. The electrical devices shall operate satisfactorily between the voltage limits specified by IEC with the coils at a temperature of 40°C.
- 8.3.13 Circuit breaker mechanisms and all parts requiring lubrication shall be housed in vermin and dust free enclosures.
- 8.3.14 Circuit breaker closing shall be actuated by an electrical release, and a manual release shall also be provided on the circuit breaker mechanism.

- 8.3.15 Each circuit breaker shall be provided with trip and close relays for remote operation and a spring uncharged/charge fail indication to approval.
- 8.3.16 The mechanical operation shall be by means of padlockable trip and close facilities in accordance with SANS 1885 and shall be operated from the front of the panel.
- 8.3.17 The circuit breakers shall be fitted with lockout facilities which shall be padlockable in all positions.
- 8.3.18 The spring mechanism charging shall be motorised and spring charging shall be possible with the door of the circuit breaker compartment closed. It shall, nonetheless, be possible to charge the mechanism manually and each mechanism shall be supplied with an integral manual charging lever or a separate (removable) manual charging lever which shall be supplied per substation and mounted within the switchboard accessories cubicle to be installed within each substation.
- 8.3.19 Motorised spring mechanism charging shall be actuated from the 230 V ac station supply. The control circuit for the motor shall be such that in the event of a failure to charge the spring, the supply to the motor shall be interrupted after a fixed time delay and an alarm contact shall be activated. The control circuit shall be to approval.
- 8.3.20 Spring closing mechanisms shall be provided with a circuit breaker auxiliary contact interlock to permit automatic rewinding of the closing springs only when the circuit breaker is closed. A pushbutton or spring return to 'off' switch shall be provided in parallel with this interlock contact to allow local rewinding of the springs when the circuit breaker is open. Facilities shall also be provided for remote initiation of the spring rewinding when the circuit breaker is open. The spring rewind interlock and pushbutton or switch contacts shall be capable of interrupting the maximum current drawn by the spring rewind motors or motor contactors.
- 8.3.21 The motor rewind circuits shall be to the Engineer's approval.
- 8.3.22 The spare normally open spring drive limit switch shall operate coincidentally with the contactor coil and motor limit switches.
- 8.3.23 Circuit breaker closure whilst a spring charging operation is in progress shall be prevented, and release of the springs shall not be possible until they are fully charged.
- 8.3.24 The state of charge of the operating springs shall be indicated by a mechanical device which shows 'SPRING CHARGE' when operation is permissible and 'SPRING FREE' when operation is not possible. A local manual spring release device shall be provided and arranged to prevent inadvertent operations. Provision should be made for remote indication of 'spring charged' and 'spring charge fail' conditions.
- 8.3.25 The spring release coil shall be suitable for operation at any voltage between 80% and 115% of the nominal supply voltage specified.

8.4 Circuit Breaker Trucks and Trolleys

- 8.4.1 Withdrawable circuit breakers for AIS switchgear shall be mounted on an integral truck capable of carrying and racking the circuit breaker into service, isolated and test positions. The positions shall be clearly identified to approval.

- 8.4.2 Circuit breaker trolleys shall be provided for the removal of the circuit breaker from the switch-panel circuit breaker compartment for the purpose of maintenance or replacement.

8.5 Auxiliary Switches and Contacts

- 8.5.1 In addition to the auxiliary contacts fitted to suit the circuit served, sufficient contacts shall be provided on each circuit breaker, disconnecter and / or earthing switch together with associated wiring and isolating contacts to fully integrate the indication, protection, control, interlocking and supervisory facilities specified. Auxiliary contacts shall also be provided for AIS switchgear to indicate whether the circuit breaker is in the racked in or racked out position.
- 8.5.2 All auxiliary switches shall be wired up to a suitable terminal board on the control / relay compartment of the switchgear whether they are in use or not in the first instance, and shall be arranged in the same sequence on all equipment.
- 8.5.3 A minimum of 2 spare normally open and 2 spare normally closed auxiliary contacts or 20% spare, whichever is the greatest, shall be provided on each circuit breaker together with the associated wiring and isolating contacts.
- 8.5.4 Switches shall be provided to interrupt the supply of current to the tripping mechanism of the circuit breakers directly after the operation of the latter has been completed.
- 8.5.5 All such switches and mechanisms shall be mounted in approved accessible positions clear of the operating mechanism, and shall be adequately protected.
- 8.5.6 The contacts of all auxiliary switches shall be strong, shall have a positive action when closing and be capable of adjustment in relation to the movement of the circuit breaker or other item of equipment.
- 8.5.7 Unless otherwise approved contactors shall comply with the provisions of SANS 60947 and this Specification where applicable.

8.6 Trip and Release Coils

- 8.6.1 Each circuit breaker shall be fitted with a trip and release coil as detailed in the Schedules.
- 8.6.2 The auxiliary voltage for circuit breakers shall be 30V_{dc} or 110V_{dc}, as detailed in the Schedules.
- 8.6.3 The coils shall be suitable for operation at any voltage between 80% and 115% of the nominal supply voltage specified.

8.7 Secondary Jumper Connection

- 8.7.1 For AIS switchgear the auxiliary connections to the circuit breaker shall be made via "plug and socket" secondary jumper connections. The secondary jumper connections shall permit testing of the circuit breakers in the "isolated" position.

9 SOLID-DIELECTRIC INSULATED SWITCHGEAR (SIS)

- 9.1 The SIS panels shall comply with the requirements of IEC 62271-1 and 62271-200.

- 9.2 No liquid (Oil, etc) or gas (SF₆, Dry Air, etc) insulated technology will be considered solid-dielectric insulated switchgear.
- 9.3 Solid insulated compartments of the switchgear shall be factory sealed for life for a minimum maintenance-free lifespan of 30 years.
- 9.4 Where applicable, the SIS panels shall comply to all the technical requires and testing requirements that are applicable to SF₆ panels. No technical exception shall be considered with regards to ratings, Internal Arc compliance and functionality.
- 9.5 All internal arc type testing shall have been conducted on the new SIS panels as per the requirements of this specification.
- 9.6 All type test reports and product information shall be supplied for the engineers consideration and approval.
- 9.7 SIS technology shall only be awarded if the total cost of ownership justifies the change in technology. A proven track record is also required to support this change.

10 SULPHUR HEXAFLUORIDE GAS (SF₆)

- 10.1 The SF₆ gas shall comply with the requirements of IEC 60376. Only new gas shall be used.
- 10.2 All the SF₆ gas necessary for filling and putting the complete switchgear installation into commercial operation shall be supplied. This shall also include any gas that may be required to replace gas lost as a result of failure or any maintenance work that occurs during the guarantee period.
- 10.3 Details of the purity of SF₆ gas required for safe operation of the SF₆ switchgear shall be given in the Schedules. The details should include the proportional quantities of other gases and/or vapours that can be tolerated in the SF₆ gas.
- 10.4 Details of the filling and evacuating plant that will be required as well as the description of the filling and evacuating procedures shall be provided.
- 10.5 The high pressure cylinders in which the SF₆ gas is shipped to and stored on Site shall comply with the requirements of the Occupational Health and Safety Act No. 85 of 1993 and IEC 60376.
- 10.6 A portable pressure gauge shall be supplied.
- 10.7 An SF₆ gas register shall be included with the supply of each panel.
- 10.8 Details of SF₆ gas handling, monitoring and reclamation procedures as well as details of environmental procedures, standards and protocols are to be included with the tender.
- 10.9 The tender shall include guarantees for SF₆ gas reclamation once the equipment has reached the end of its serviceable life. Details of the SF₆ gas reclamation facilities and guarantees shall be included with the tender.
- 10.10 The cost of supplying additional gas in the standard transport and storage cylinders which the Council may wish to purchase over and above that required for initial filling, putting into service, and during the guarantee period shall be given in the list of spares called for in the Schedules.

- 10.11 Details shall be submitted of the precise procedure to be adopted by maintenance personnel for handling equipment which has been exposed to the products of arcing in SF₆ gas and to ensure that they are not affected by possible irritants of the skin and respiratory system. Recommendations shall be submitted for suitable protective clothing, methods of disposal of circuit breaker cleaning utensils and other relevant matters.
- 11 REQUIREMENTS SPECIFIC TO SOLID-DIELECTRIC INSULATED SWITCHGEAR (SIS)**
- 11.1 General**
- 11.1.1 Each SIS switch panel shall be a self-contained factory assembled unit of fixed pattern design which shall include compartment/s containing fully screened solid insulated busbars, compartment/s for busbar disconnectors, circuit breaker, test plugs and earthing switches, an air insulated cable compartment containing cable termination bushings and facilities and instrument transformers and a control / relay compartment with instruments, relays and the circuit breaker operating mechanism.
- 11.1.2 Current transformers shall be external to the insulating gas enclosure and shall be fitted around the Type C cable terminations interphase bushings.
- 11.1.3 Busbars may be of the external solid insulation type enclosed in an air insulated enclosure.
- 11.2 Enclosures**
- 11.2.1 Enclosures shall be designed for bolting together and shall be connected together to ensure electrical conductivity.
- 11.2.2 The enclosures for main conductors shall be of metal, permanently earthed and capable of withstanding normal and transient pressures to which they are subjected in service.
- 11.2.3 Overpressure created by arcing in an enclosure shall be relieved by means of bursting overpressure relief discs venting out of the enclosure. Pressure relief by collapse of internal gas barriers is not acceptable. Each unit shall be designed to ensure that the enclosure does not rupture in the event of an internal arcing fault. The Contractor shall submit proposals in this respect for the agreement of the Engineer.
- 11.2.4 Facilities shall be provided for locating the position of an internal fault within any of the individual compartments of the switchgear units.
- 11.2.5 The arrangement of the pressure relief discs shall be such that any expulsion of disc debris or gas will be directed into the arc duct plenum in a manner that will not endanger any personnel present.
- 11.2.6 The type of materials and thickness of the enclosures shall be such as to ensure that the enclosure is not materially weakened or punctured by a fault arc current corresponding to the maximum fault levels given in the Schedules. The duration of a fault arc will be determined by the speed of the main protection equipment.
- 11.2.7 The laws relating to pressure vessels in force in South Africa shall also apply.

11.2.8 Precautions shall be taken in the design of individual enclosed units to reduce to a minimum the possibility of internal faults.

11.3 Finish of Interior Surfaces and Cleaning

11.3.1 The finish of interior surfaces of the metalclad enclosures shall facilitate cleaning and inspection. Any paints or other coatings that may be used shall be such that they will not deteriorate when exposed to the SF₆ gas and other vapours, arc products, etc, that may be present in enclosures. They shall also not contain any substances which could contaminate the enclosed SF₆ gas or affect its insulating properties over a period of time.

11.3.2 The finish of the interior surfaces shall be given in the Schedules. The equipment shall be manufactured and assembled at the Manufacturer's works under conditions of the utmost cleanliness and before works testing and packing for shipping, interior surfaces, insulators, barriers, etc, shall be thoroughly cleaned.

11.4 Support Insulators and Section Barriers

11.4.1 The support insulators and section barriers/insulators shall be manufactured from the highest quality material. They shall be free from all voids and the design shall be such as to reduce the electrical stresses in the insulators to a minimum. They shall also be of sufficient strength to ensure that the conductor spacing and clearances are maintained when short circuit faults occur.

11.4.2 The electrical and mechanical properties of the support insulators and gas section barriers shall be given in the Schedules.

11.5 SIS Switch-Panel Configurations

11.5.1 SIS Distribution Feeder panels, Feeder Metering panels and Busbar Earthing panels shall be separate, single bay panels, as specified.

11.5.2 Bus-Section panels and Busbar Riser panels shall be separate, single bay panels. Connections between the Bus-Section and Busbar Risers panels shall be via busbars. Cable connections shall not be acceptable.

11.6 Busbars and Busbar Connections

11.6.1 General

11.6.1.1 The busbars for SIS switchgear shall be fully screened solid insulated busbars extensible at both sides of each switch-panel.

11.6.1.2 Busbar connections between switch-panels shall be achieved through the use of in-line busbar couplings or through the use of external busbars.

11.6.1.3 Busbar connections, whether by in-line busbar couplings or external busbars, shall be fully sealed to preclude ingress of moisture and shall be maintenance free for the service life of the switchgear.

11.6.1.4 Full design and installation details for the busbar connections shall be provided with the tender documentation.

11.6.2 In-Line Busbars

- 11.6.2.1 SIS switchgear designs using In-line busbars shall provide inner-cone busbar bushings for extension of busbars on either side of each switch-panel.
- 11.6.2.2 Busbar connections between switch-panels shall be achieved utilising busbar coupling inserts.
- 11.6.2.3 The design provisions for the switch-panel assembly shall ensure that the variations in distance and alignment between adjacent panels are constrained by means of bolted mechanical spacers to within the busbar coupling design tolerances. The busbar couplings shall be suitable for user installation.
- 11.6.2.4 Busbar blanking plugs and metal blanking cover plates shall be provided for sealing the inner-cone busbar bushings on both ends of the switchboard.
- 11.6.2.5 Busbar couplings and busbar blanking plugs shall be fully insulated, screened and stress controlled.
- 11.6.2.6 Busbar couplings and busbar blanking plugs shall be designed and tested to provide a tight dielectric seal and to fully preclude the possibility of air voids and partial discharges once assembled.
- 11.6.3 External Busbars
- 11.6.3.1 External busbars shall be fully insulated, screened and stress controlled.
- 11.6.3.2 Bushings on switchgear for connection to external busbars shall be Type C bushings complying fully with the requirements of this specification for GIS switchgear MV cable bushings.
- 11.6.3.3 External busbars should include end adapters for busbar connections on the panels at either end of a switchboard and on Bus-Section and Busbar Riser panels, and cross adapters for busbar connections on the switch-panels within the length of a switchboard or switchboard section.
- 11.6.3.4 External busbars shall provide for dead end caps for sealing the busbars at the switchboard end. Such dead end caps shall be firmly and securely fitted in place, shall be fully insulated, screened and stress controlled and shall be designed and tested to provide a tight dielectric seal and to fully preclude the possibility of air voids and partial discharges once assembled.
- 11.6.3.5 The switchgear shall be provided with protective covers to shroud the external busbars on all sides and such protective covers shall be supplied as loose parts forming part of each switch panel and packaged with the switch-panel, and shall be assembled by the Contractor during switch-panel installation.
- 11.6.3.6 The design provisions for the switch-panel assembly shall ensure that the variations in distance and alignment between adjacent panels are constrained by means of bolted mechanical spacers to within the external busbar design tolerances. The external busbars shall be suitable for user installation.

11.7 Disconnectors

- 11.7.1 Disconnectors shall be three-position disconnectors / earth switches complying with the requirements of SANS 62271-102.
- 11.7.2 Emergency hand operation shall be provided on power operated disconnectors and the power drive shall be mechanically disconnected during hand operation.

- 11.7.3 Disconnectors shall be designed so that no dangerous leakage currents can flow from the terminals at one side of the open disconnector to terminals at the other side.
- 11.7.4 It shall not be possible for disconnectors to open inadvertently due to forces which may occur in service including those due to short circuit and their contacts shall not be damaged or burned by the passage of fault current. Disconnectors shall be self-latching in either the open or closed positions.
- 11.8 Earthing Devices**
- Earthing devices shall be provided as specified.
- 11.9 Cable Termination Compartment**
- 11.9.1 The cable termination compartments shall be air-filled compartments complying with SANS 876.
- 11.9.2 The cable termination compartments for the main cables for all panels shall be suitable for termination of three core impregnated paper insulated 11 kV cables of up to 300 mm² with air-insulated dry type cable terminations and unscreened separable connectors complying with SANS 1332 (95 kV BIL). All 11 kV cables will be provided, installed and terminated by others. The number of cables per phase shall be as specified in the schedules.
- 11.9.3 Cable terminations will be SANS 876 Type 3 unscreened separable connector terminations for Type C outer cone bushings.
- 11.9.4 Cable termination compartments that do not comply with the requirements for Type 3 unscreened separable connector terminations, but instead require SANS 876 Type 4 screened separable connector terminations will be subject to the Engineer's approval.
- 11.9.5 All type test certification for the switchgear shall be applicable to switch panels fitted with this cable termination compartment. All breathing vents shall be suitably vermin proofed.
- 11.9.6 The cable termination compartment shall comprise a separate metal-clad chamber and shall be suitable for terminating the number of cables specified in the Schedules. All necessary earth bars and associated nuts, bolts and washers shall be included.
- 11.9.7 The cable termination compartment shall be designed for cable entry from a cable trench of nominal depth 1 000 mm but of minimum depth 900 mm in existing substations. The cable termination compartment shall overhang the cable trench at the front or rear of the switchgear, as provided for in the design of the specific switchgear, and shall not span the full width of the trench.
- 11.9.8 The cable termination compartment shall be fitted with 630 A Type C bushings in accordance with EN 50181 and complying with the requirements of SANS 876 for the purpose of terminating the incoming main cables.
- 11.9.9 The minimum height of cable termination compartments fitted with Type C bushings or single connection busbars shall be 650 mm, in accordance with SANS 876.
- 11.9.10 The cable termination compartment shall be provided with a gland plate bolted to the panel frame and universal tapered brass gland and island layer gland insulators

suitable for termination of PILCDSTA cable as specified. The glands shall be supplied with tapped inserts for the installation of earthing bars. Unistrut and K clamps to secure the cables shall not be acceptable.

- 11.9.11 The current transformer shall be installed around the Type C cable termination bushing. Ring current transformers around the cables are not acceptable.
- 11.9.12 Drawings of the cable termination compartments shall be submitted for approval before manufacture commences.

12 REQUIREMENTS SPECIFIC TO GIS SWITCHGEAR

12.1 General

- 12.1.1 Each GIS switch panel shall be a self-contained factory assembled unit of fixed pattern design which shall include compartment/s containing gas insulated or fully screened solid insulated busbars, gas insulated compartment/s for busbar disconnectors, circuit breaker, test plugs and earthing switches, an air insulated cable compartment containing cable termination bushings and facilities and instrument transformers and a control / relay compartment with instruments, relays and the circuit breaker operating mechanism.
- 12.1.2 The gas insulated compartments shall be sealed pressure systems in accordance with SANS 62271-1, factory filled and sealed and requiring no further gas handling during installation or during the expected life of the switchgear. Overpressure relief plates / discs shall be provided. A gas pressure monitoring device shall be fitted. Provision shall be made for access into the compartment under exceptional circumstances for repair / replacement of components. The gas insulated compartments shall be individually screened and earthed.
- 12.1.3 Current transformers shall be external to the insulating gas enclosure and shall be fitted around the Type C cable terminations interphase bushings.
- 12.1.4 Busbars may be of the external solid insulation type enclosed in an air insulated enclosure.

12.2 Enclosures

- 12.2.1 Enclosures shall be designed for bolting together and shall be connected together to ensure electrical conductivity.
- 12.2.2 The enclosures for main conductors shall be of metal, permanently earthed and capable of withstanding normal and transient pressures to which they are subjected in service.
- 12.2.3 Overpressure created by arcing in an enclosure shall be relieved by means of bursting overpressure relief discs venting out of the enclosure. Pressure relief by collapse of internal gas barriers is not acceptable. Each unit shall be designed to ensure that the enclosure does not rupture in the event of an internal arcing fault. The Contractor shall submit proposals in this respect for the agreement of the Engineer.
- 12.2.4 Facilities shall be provided for locating the position of an internal fault within any of the individual compartments of the switchgear units.

- 12.2.5 The arrangement of the pressure relief discs shall be such that any expulsion of disc debris or gas will be directed into the arc duct plenum in a manner that will not endanger any personnel present.
- 12.2.6 The overpressure relief discs for gas compartments shall be so positioned that access is afforded to components within the gas compartment for the purpose of replacement of failed parts.
- 12.2.7 The type of materials and thickness of the enclosures shall be such as to ensure that the enclosure is not materially weakened or punctured by a fault arc current corresponding to the maximum fault levels given in the Schedules. The duration of a fault arc will be determined by the speed of the main protection equipment.
- 12.2.8 The laws relating to pressure vessels in force in South Africa shall also apply.
- 12.2.9 Precautions shall be taken in the design of individual enclosed units to reduce to a minimum the possibility of internal faults.

12.3 Finish of Interior Surfaces and Cleaning

- 12.3.1 The finish of interior surfaces of the metalclad enclosures shall facilitate cleaning and inspection. Any paints or other coatings that may be used shall be such that they will not deteriorate when exposed to the SF₆ gas and other vapours, arc products, etc, that may be present in enclosures. They shall also not contain any substances which could contaminate the enclosed SF₆ gas or affect its insulating properties over a period of time.
- 12.3.2 The finish of the interior surfaces shall be given in the Schedules. The equipment shall be manufactured and assembled at the Manufacturer's works under conditions of the utmost cleanliness and before works testing and packing for shipping, interior surfaces, insulators, barriers, etc, shall be thoroughly cleaned.

12.4 Support Insulators and Section Barriers

- 12.4.1 The support insulators and section barriers/insulators shall be manufactured from the highest quality material. They shall be free from all voids and the design shall be such as to reduce the electrical stresses in the insulators to a minimum. They shall also be of sufficient strength to ensure that the conductor spacing and clearances are maintained when short circuit faults occur.
- 12.4.2 The electrical and mechanical properties of the support insulators and gas section barriers shall be given in the Schedules.

12.5 Gas Sectionalisation

- 12.5.1 Gas compartment barriers including seals to the conductor and enclosure wall shall be gas-tight and shall be capable of withstanding the maximum pressure differential that could occur across the barrier, i.e. with a vacuum drawn on the one side of the barrier and, on the other side, the maximum gas pressure that can exist under normal operating and maintenance conditions or the maximum gas over-pressure, at least equal to the operating pressure of the relief devices, that could be attained with a persistent internal fault arc.
- 12.5.2 The three phases of each busbar shall be provided in either a single gas enclosure or shall be in an air enclosure and be insulated by means of approved solid insulation. Gas enclosures for busbars, where applicable, shall be sealed pressure

systems per switch panel. Solid insulated busbars shall be enclosed in a metal compartment.

12.5.3 The mass of gas in all the individual compartments at rated nominal density shall be provided after the contract is awarded. The total mass of gas in the complete installation and the mass of gas in the largest and smallest gas sections shall be given in the Schedules.

12.5.4 The gas compartment(s) shall be fitted with permanent valves through which the gas is pumped into or evacuated from the compartments. If the gas density sensor is mounted in a position different from the filling valve the valve shall be provided with a sealing cap to prevent gas leaks through the valve. The cap shall be attached to the valve by means of a chain. The valve shall be provided with facilities for locking in the closed position with a padlock.

12.6 Gas Seals

12.6.1 All gas seals shall be designed to ensure that leakage rates are kept to an absolute minimum under all normal pressure, temperature, electrical load and fault conditions. The material of sealing elements shall be such that the seals will not deteriorate during the lifetime of the switchgear equipment when exposed to the gas and vapours, temperature variations and mechanical forces than can normally be expected to be present.

12.6.2 The maximum gas leakage rate under working conditions shall not exceed 0,1% per annum. The material and method of sealing to be used and the maximum gas leakage rate shall be stated in the Schedules. Sealing methods relying on the application of rubberized type sealing compounds such as Loctite etc are not acceptable.

12.6.3 The sealing surfaces shall be machined and shall not be painted.

12.7 Gas Monitoring, Alarm and Protection Circuits

12.7.1 Gas density/pressure monitoring gauges shall be provided for each gas compartment. The placement of the gauges shall be to approval and shall be readable from ground level. The gauge faces shall have density markings at intervals to be approved by the Engineer. The gauges shall be connected to the gas compartment by copper piping. The connection shall be at interfaces designed into the structure of the compartment. Drilling and tapping holes after the manufacture of the compartments is not acceptable.

12.7.2 Alarm annunciation shall be by means of programmable LEDs on the overcurrent/earth fault relay / IED. The control and protection equipment associated with the gas density/pressure monitoring devices shall be provided. Any relays which may be required for the alarm or indication circuits and protection and control from the gas monitoring shall be located in the local control panel.

12.7.3 Where gas insulated busbars are offered the alarm facilities and circuits associated with the gas monitoring devices from all sections enclosing any part of the main busbars shall also be grouped together separately for each busbar (electrical) section. These facilities shall be located on the bus section local control panel.

12.7.4 Two potential free electrical contacts shall be provided with each and every alarm, and grouped together and wired to the cable termination blocks in the local control panels/marshalling kiosks to give remote alarm indications.

- 12.7.5 When the section with low gas pressure falls within the main busbars, the control and protection circuits shall be arranged to trip all circuits connected to the busbar in which the faulty section is located.
- 12.7.6 A lock-out device associated with the gas density/pressure monitoring devices shall be provided and shall be temperature compensated.
- 12.7.7 Staged alarm systems shall be provided as recommended by the Manufacturer.
- 12.8 Gas Handling Equipment**
- 12.8.1 Pipes, couplings, valves, fittings and adaptors necessary for emergency topping up of SF₆ gas shall be priced, together with a spare gas density gauge.
- 12.8.2 Such gas handling equipment shall be housed in the switchgear accessories cubicle to be supplied and installed by the Contractor.
- 12.9 GIS Switch-Panel Configurations**
- 12.9.1 GIS Distribution Feeder panels, Feeder Metering panels and Busbar Earthing panels shall be separate, single bay panels, as specified.
- 12.9.2 Bus-Section panels and Busbar Riser panels shall be separate, single bay panels. Connections between the Bus-Section and Busbar Risers panels shall be via busbars. Cable connections shall not be acceptable.
- 12.10 Busbars and Busbar Connections**
- 12.10.1 General
- 12.10.1.1 The busbars for GIS switchgear shall be gas insulated or fully screened solid insulated busbars extensible at both sides of each switch-panel.
- 12.10.1.2 Busbar connections between switch-panels shall be achieved through the use of in-line busbar couplings or through the use of external busbars.
- 12.10.1.3 Busbar connections, whether by in-line busbar couplings or external busbars, shall be fully sealed to preclude ingress of moisture and shall be maintenance free for the service life of the switchgear.
- 12.10.1.4 Full design and installation details for the busbar connections shall be provided with the tender documentation.
- 12.10.2 In-Line Busbars
- 12.10.2.1 GIS switchgear designs using In-line busbars shall provide inner-cone busbar bushings for extension of busbars on either side of each switch-panel.
- 12.10.2.2 Busbar connections between switch-panels shall be achieved utilising busbar coupling inserts.
- 12.10.2.3 The design provisions for the switch-panel assembly shall ensure that the variations in distance and alignment between adjacent panels are constrained by means of bolted mechanical spacers to within the busbar coupling design tolerances. The busbar couplings shall be suitable for user installation.

- 12.10.2.4 Busbar blanking plugs and metal blanking cover plates shall be provided for sealing the inner-cone busbar bushings on both ends of the switchboard.
- 12.10.2.5 Busbar couplings and busbar blanking plugs shall be fully insulated, screened and stress controlled.
- 12.10.2.6 Busbar couplings and busbar blanking plugs shall be designed and tested to provide a tight dielectric seal and to fully preclude the possibility of air voids and partial discharges once assembled.
- 12.10.3 External Busbars
- 12.10.3.1 External busbars shall be fully insulated, screened and stress controlled.
- 12.10.3.2 Bushings on switchgear for connection to external busbars shall be Type C bushings complying fully with the requirements of this specification for GIS switchgear MV cable bushings.
- 12.10.3.3 External busbars should include end adapters for busbar connections on the panels at either end of a switchboard and on Bus-Section and Busbar Riser panels, and cross adapters for busbar connections on the switch-panels within the length of a switchboard or switchboard section.
- 12.10.3.4 External busbars shall provide for dead end caps for sealing the busbars at the switchboard end. Such dead end caps shall be firmly and securely fitted in place, shall be fully insulated, screened and stress controlled and shall be designed and tested to provide a tight dielectric seal and to fully preclude the possibility of air voids and partial discharges once assembled.
- 12.10.3.5 The switchgear shall be provided with protective covers to shroud the external busbars on all sides and such protective covers shall be supplied as loose parts forming part of each switch panel and packaged with the switch-panel, and shall be assembled by the Contractor during switch-panel installation.
- 12.10.3.6 The design provisions for the switch-panel assembly shall ensure that the variations in distance and alignment between adjacent panels are constrained by means of bolted mechanical spacers to within the external busbar design tolerances. The external busbars shall be suitable for user installation.
- 12.11 Disconnectors**
- 12.11.1 Disconnectors shall be three-position disconnectors / earth switches complying with the requirements of SANS 62271-102.
- 12.11.2 Emergency hand operation shall be provided on power operated disconnectors and the power drive shall be mechanically disconnected during hand operation.
- 12.11.3 Disconnectors shall be designed so that no dangerous leakage currents can flow from the terminals at one side of the open disconnector to terminals at the other side.
- 12.11.4 It shall not be possible for disconnectors to open inadvertently due to forces which may occur in service including those due to short circuit and their contacts shall not be damaged or burned by the passage of fault current. Disconnectors shall be self-latching in either the open or closed positions.
- 12.12 Earthing Devices**

Earthing devices shall be provided as specified.

12.13 Cable Termination Compartment

- 12.13.1 The cable termination compartments shall be air-filled compartments complying with SANS 876.
- 1.1.1.1
12.13.2 The cable termination compartments for the main cables for all panels shall be suitable for termination of three core impregnated paper insulated 11 kV cables of up to 300 mm² with air-insulated dry type cable terminations and unscreened separable connectors complying with SANS 1332 (95 kV BIL). All 11 kV cables will be provided, installed and terminated by others. The number of cables per phase shall be as specified in the schedules.
- 12.13.3 Cable terminations will be SANS 876 Type 3 unscreened separable connector terminations for Type C outer cone bushings.
- 12.13.4 Cable termination compartments that do not comply with the requirements for Type 3 unscreened separable connector terminations, but instead require SANS 876 Type 4 screened separable connector terminations will be subject to the Engineer's approval.
- 12.13.5 All type test certification for the switchgear shall be applicable to switch panels fitted with this cable termination compartment. All breathing vents shall be suitably vermin proofed.
- 12.13.6 The cable termination compartment shall comprise a separate metal-clad chamber and shall be suitable for terminating the number of cables specified in the Schedules. All necessary earth bars and associated nuts, bolts and washers shall be included.
- 12.13.7 The cable termination compartment shall be designed for cable entry from a cable trench of nominal depth 1 000 mm but of minimum depth 900 mm in existing substations. The cable termination compartment shall overhang the cable trench at the front or rear of the switchgear, as provided for in the design of the specific switchgear, and shall not span the full width of the trench.
- 12.13.8 The cable termination compartment shall be fitted with 630 A Type C bushings in accordance with EN 50181 and complying with the requirements of SANS 876 for the purpose of terminating the incoming main cables.
- 12.13.9 The minimum height of cable termination compartments fitted with Type C bushings or single connection busbars shall be 650 mm, in accordance with SANS 876.
- 12.13.10 The cable termination compartment shall be provided with a gland plate bolted to the panel frame and universal tapered brass gland and island layer gland insulators suitable for termination of PILCDSTA cable as specified. The glands shall be supplied with tapped inserts for the installation of earthing bars. Unistrut and K clamps to secure the cables shall not be acceptable.
- 12.13.11 The current transformer shall be installed around the Type C cable termination bushing. Ring current transformers around the cables are not acceptable.
- 12.13.12 Drawings of the cable termination compartments shall be submitted for approval before manufacture commences.

13 REQUIREMENTS SPECIFIC TO AIS SWITCHGEAR

13.1 General

- 13.1.1 Each AIS switch panel shall be a self-contained factory assembled unit consisting of a fixed portion which shall include busbars, instrument transformers, earthing switches (if separate), cable termination compartment, supporting framework, instruments and relays, and a withdrawable portion comprising the circuit breaker with its operating mechanism and supporting truck.
- 13.1.2 The fixed portion of the panel shall be complete including all frameworks, locking-off doors, multi-core cable glands, wiring trunking and wiring, erection materials and all necessary fittings
- 13.1.3 The connections between the two portions shall be by means of plug and socket primary isolating contacts so that the circuit breaker can be withdrawn from the fixed portion.
- 13.1.4 The switch panel shall have four separate metal enclosed compartments for circuit breakers, busbars, current transformers and cable terminations, and a separate control / relay compartment, each individually screened by means of enclosing with sheet metal.
- 13.1.5 The circuit breaker compartment shall be designed and IAC tested for racking behind closed doors. The door locking mechanism shall be designed and tested to operate reliably and maintain the door's internal arc rating for the service life of the switchgear, without the need for routine maintenance.
- 13.1.6 The busbars, components and circuit connections shall be air-insulated but shall in addition be completely covered with solid insulation capable of withstanding the full service voltage. Taped busbars mounted on horizontal stand-off insulators shall not be acceptable.
- 13.1.7 Where the switchgear and components cannot be solidly insulated to full service voltage, the switchgear shall have the enhanced minimum degree of protection specified in Section 5.5, and all support / standoff insulators and bushings shall have a minimum specific creepage distance of 25 mm/kV.
- 13.1.8 Notwithstanding the above, the circuit breaker and busbars shall be solidly insulated to full service voltage.
- 13.1.9 The current transformer compartment shall be designed to facilitate the easy removal and replacement of the CTs. The replacement of a CT shall not require adjacent chambers of the same panel to be disturbed.

13.2 Circuit Breaker Racking

- 13.2.1 The circuit breakers shall be racked in and out behind a closed circuit breaker compartment door manually and/or electrically.
- 13.2.2 Where motorised racking is provided, the electrical actuation shall be supplied from the 230 V ac station supply. The control circuit for the motor shall be such that in the event of a failure to complete the racking cycle, the supply to the motor shall be interrupted after a fixed time delay and an alarm contact shall be activated. The control circuit shall be to approval.

13.3 Safety Shutter Devices

- 13.3.1 A set of automatically opening and closing metal shutters in accordance with SANS 62271-200 shall be provided to cover each three-phase group of fixed isolating contacts. It shall be possible to operate each set individually and to padlock each set in the closed position.
- 13.3.2 Shutters shall be positively driven in both the opening and closing directions and shall not rely on springs or gravity for their operation.
- 13.3.3 Unless otherwise approved by the Engineer shutters shall be driven from both sides (left and right hand sides) and shall not rely on mechanism drives from one side only.

13.4 Auxiliary Switches and Contacts

- 13.4.1 Sufficient auxiliary switches and contacts shall be provided in the AIS switchgear to allow the specified SCADA / Supervisory facilities without the use of repeat relays.

13.5 Cable Termination Compartment

- 13.5.1 The cable termination compartments for the main cables on all panels shall be suitable for air-insulated terminations complying with the requirements of SANS 876.
- 13.5.2 The cable termination compartments for the main cables for all panels shall be suitable for termination of three core impregnated paper insulated 11 kV cables of up to 300 mm² with air-insulated dry type cable terminations complying with SANS 1332 (95 kV BIL). All 11 kV cables will be provided, installed and terminated by others.
- 13.5.3 All type test certification for the switchgear shall be applicable to switch panels fitted with this cable termination compartment. All breathing vents shall be suitably vermin proofed.
- 13.5.4 The cable termination compartment shall comprise a separate metal-clad chamber and shall be suitable for terminating the number of cables specified in the Schedules. All necessary flexible connections, earth bars, cable lugs and associated nuts, bolts and washers shall be included.
- 13.5.5 The cable termination compartment shall not contain current transformers, which shall be housed in a separate metal-enclosed current transformer compartment.
- 13.5.6 The cable termination compartment shall be designed for rear cable entry from a cable trench of depth 1 000 mm. The cable termination compartment shall overhang the cable trench at the rear of the switchgear, and shall not span the full width of the trench.
- 13.5.7 The cable termination compartment shall be fitted with either horizontal busbars or with cable bushings for the purpose of terminating the incoming main cables.
- 13.5.8 In the case of cable termination compartments fitted with busbars, the busbar shall be insulated using heatshrink material and only a portion shall be left uninsulated to allow for bolting-on of the lug.

- 13.5.9 In the case of cable termination compartments fitted with cable bushings, bushings shall be 630 A Type C bushings in accordance with EN 50181 and complying with the requirements of SANS 876.
- 13.5.10 The minimum height of cable termination compartments fitted with Type C bushings or single connection busbars shall be 650 mm, in accordance with SANS 876. Where cable termination compartments are fitted with busbars with provision for multiple connections a reduced height of 550 mm is acceptable as cable phase crossings can be safely achieved using the depth of the cable compartment.
- 13.5.11 The cable termination compartment shall be provided with a gland plate and universal tapered brass gland and island layer gland insulators suitable for termination of PILCDSTA cable as specified. The glands shall be supplied with tapped inserts for the installation of earthing bars. Unistrut and K clamps to secure the cables shall not be acceptable.
- 13.5.12 The cable termination compartment shall be separate from the current transformer compartment and shall be designed and positioned so that it does not in any way impede the removal or replacement of current transformers in the current transformer chamber. It shall not be necessary to break down cable terminations to carry out this work
- 13.5.13 Drawings of the cable termination compartments, glands and lugs shall be submitted for approval before manufacture commences.

14 CURRENT TRANSFORMERS

- 14.1 The current transformers shall comply with SANS 61869-1, SANS 61869-2, this specification and the values stated in the Schedules.
- 14.2 The current transformers shall have the accuracies and, where applicable, the instrument security factors stipulated in the Schedules.
- 14.3 Current transformers shall be connected on the side of the circuit breaker remote from the busbars.
- 14.4 The current transformers are required to work in conjunction with other equipment and must accordingly have characteristics suitable for accommodating the feeder protection or transformer protection as specified in the Schedules.
- 14.5 Each current transformer secondary winding circuit shall be earthed at only one point. Wherever possible the connection to earth shall be on the side of the S2 (or S3 for multi-ratio CTs) terminals.
- 14.6 Where adequate earth screens are fitted between the primary and secondary windings earthing of the secondary winding shall be via a link mounted in the related control/relay compartment. Where such earth screens are not fitted a separate earth system may be necessary.
- 14.7 Where multi-ratio transformer windings are specified, multi-ratio primary windings will only be considered where the protection arrangement makes these suitable for all aspects of the installation.
- 14.8 The secondary windings of the protection current transformers and metering current transformers shall be brought out to type PK-2 (or equivalent to approval) 4-way test blocks with integral shorting facilities. Where specified the secondary windings of

the current transformers for tariff metering shall be brought out to 20-way SecuControl (or equivalent to approval) type test blocks with integral shorting facilities.

- 14.9 The current transformer connection terminals in the LV control / relay compartment shall be provided with test sockets suitable for 4mm test plugs, to be used with jumpers for the purpose of shorting of the CT secondary side during ratio selection.
- 14.10 The following information for each current transformer shall be submitted for approval:
- 14.10.1 Magnetisation curve
 - 14.10.2 Exact turns ratio
 - 14.10.3 Secondary winding resistance
 - 14.10.4 Construction

14.11 Class PX Current Transformers

- 14.11.1 All Class PX transformers shall be subjected to the routine tests specified in Part 50 in addition to those tests called for in SANS 61869-2. These routine tests shall follow the inter-turn insulation tests specified.
- 14.11.2 Class PX transformers shall have the following additional marking:
- a. Nominal turns ratio eg. 1/500 (test winding turns ratio, eg. 50/500 or 1/10),
 - b. rated knee-point voltage at maximum secondary turns,
 - c. maximum exciting current at rated knee-point emf,
 - d. rated primary current,
 - e. secondary winding resistance at 75°C.

15 VOLTAGE TRANSFORMERS

15.1 General

- 15.1.1 Voltage transformers shall comply with the requirements of SANS 61869-1 and SANS 61869-3.
- 15.1.2 Voltage transformers shall be discharge free and of the resin encapsulated type and shall be feeder-connected, ie. on the side of the circuit breaker remote from the busbars.
- 15.1.3 The voltage transformers for AIS switchgear shall be separate single phase VTs assembled and suitably connected on a common withdrawable carriage.
- 15.1.4 The voltage transformers for GIS & SIS switchgear shall be separate single phase VTs.
- 15.1.5 The voltage transformers for AIS switchgear shall be mounted in a metal-clad chamber and shall be connected to the fixed portion of the switch panels by isolating contacts. The voltage transformer common carriage shall be withdrawable under deenergised conditions, either horizontally or vertically.

- 15.1.6 The separate single phase screened voltage transformers for GIS & SIS switchgear shall be supplied with type-C bushing and shall be mounted within the cable termination compartment.
- 15.1.7 The voltage transformers ratio, output (rated burden) and accuracy shall be as specified in the Schedules.
- 15.1.8 In the event that the voltage transformers offered has rated burden greater than that specified, they shall in addition to meeting the SANS 61869-3 requirements for their rating have an accuracy that also complies with the specified accuracy over the range of 25% to 100% of the specified rated burden.
- 15.1.9 Accuracy curves for all voltage transformers offered depicting the output vs accuracy shall be provided.
- 15.1.10 The voltage transformers shall be equipped with approved fuses on both the high and the low voltage sides. Voltage transformers for GIS switchgear that are not provided with primary fuses shall be to the approval of the Engineer. The voltage transformer for SIS needs to be connected on the circuit side of the current transformer through a screened bushing via separable connector.
- 15.1.11 The secondary MCBs shall be provided for each voltage transformer in the relevant feeder control / relay compartment located such that they are accessible while the primary is alive and shall be provided with labels indicating their function and their phase colour.
- 15.1.12 The voltage transformer secondary circuits shall be complete in themselves and shall be neutral earthed at one point only in an approved manner. A separate earth link shall be provided for each secondary winding and shall be situated at the transformer.
- 15.1.13 The voltage transformer secondary circuit shall have provision for VT selection for applications where multiple circuits are operated in parallel. Such VT selection shall be achieved through the provision of slidelinks in the LV Control / Relay Compartment.
- 15.1.14 Voltage transformers shall be guaranteed for a period of no less than 5 years.
- 15.1.15 Where specified the secondary windings of the voltage transformers for protection/voltage control functions shall be brought out to type PK-2 (or equivalent to approval) 4-way test blocks and for tariff metering functions shall be brought out to 20-way SecuControl (or equivalent to approval) type test blocks without integral shorting facilities.
- 15.1.16 Voltage transformers shall be routine partial discharge tested in accordance with the requirements of SANS 61869-3.
- 15.1.17 Particular attention shall be given to ensuring that saturation or sustained ferro-resonant oscillations do not occur during all foreseeable system conditions. To this end residual windings shall be provided on the voltage transformers and connected in an open delta with a suitable ferro-resonance damping device.

16 LV CONTROL / RELAY COMPARTMENT

16.1 General

- 16.1.1 Each switch panel shall be fitted with a low voltage control / relay compartment.
- 16.1.2 All local control, protection, alarm and instrumentation facilities shall be located on the control / relay compartment of the switchgear except where specified.
- 16.1.3 Each control / relay compartment shall be fully wired and equipped with all necessary equipment including all local control, protection, instrumentation, indication, test, isolating and alarm facilities, as specified in the schedules.
- 16.1.4 Clear indication shall be given of 'on' and 'off' positions of the circuit breaker, all isolators and earthing switches in the particular bay in the form of a mimic diagram and / or indication lamps, as specified, on the control / relay compartment door.
- 16.1.5 Each device on each switch panel shall be controlled from a local OPEN/ NEUTRAL/CLOSE control switch or open and close pushbuttons.
- 16.1.6 Protective relays, PK-2 test blocks, 20-way SecuControl type (or similar to approval) test blocks, LOCAL / REMOTE selector switch, OPEN/ NEUTRAL/CLOSE operating handle, voltage detection system (VDS) indication and electrical phasing-out unit, instruments, trip test push button, remote pendant operation Cannon (or equivalent) socket and indication lamps shall be flush mounted on the control / relay compartment door.
- 16.1.7 All circuits, equipment and control switches in the control / relay compartment shall be clearly labelled as to their purpose and function.

16.2 Control Facilities

- 16.2.1 The closing circuit, signalling circuits and each tripping circuit shall be separately fused.
- 16.2.2 All control circuits shall be provided with suitable means of isolation.
- 16.2.3 Alarm and indication equipment as specified in the Schedules shall be provided to indicate the operation of the main and back-up system protections, operation of the equipment alarms and all other alarms which are required for the satisfactory operation of the complete installation.

16.3 Local / Supervisory Selector

- 16.3.1 Each switch panel shall be provided with a Local / Supervisory Selector Switch which shall preclude the possibility of the equipment being operated both locally and via supervisory control simultaneously.
- 16.3.2 The selection of "LOCAL" operation shall inhibit the operation from any remote source excluding the protection scheme.
- 16.3.3 The selection to "SUPERVISORY" shall inhibit local operation excluding the protection scheme.
- 16.3.4 The Local / Supervisory Selector Switch shall be lockable in both positions.
- 16.3.5 Indication of the local position shall be wired to the OCEF protective relay / IED, currently (and for the purposes of design) the SEL 751A.

- 16.3.6 Selection of the Local / Supervisory Selector Switch to “LOCAL” shall permit the operation of power operated equipment as follows:
- 16.3.6.1 Operation of the circuit breaker using either the Open / Neutral / Close operating handle, push buttons or a hand held pendant control device connected via the Cannon (or equivalent) Socket.
- 16.3.6.2 Operation of the busbar earthing switches.
- 16.3.6.3 Operation of busbar disconnectors.
- 16.3.7 Selection of the Local / Supervisory Selector Switch to “SUPERVISORY” shall permit the operation of power operated equipment as follows:
- 16.3.7.1 Operation of the circuit breaker using Supervisory Control.
- 16.3.7.2 Operation of disconnectors using Supervisory Control.
- 16.4 Remote Trip/Close Facilities**
- 16.4.1 The switch panels shall each be provided with a padlockable Cannon (or equivalent) type plug socket suitable for connecting a hand-held remote control unit for remote tripping and closing of the circuit breaker. All plugs and sockets shall be of a military specification standard to approval and shall be compatible with existing remote switching devices. Cannon type plug sockets shall be ITT Cannon CA3102F14S-2SB sockets, or equivalent to the Engineer’s approval.
- 16.4.2 The pin connections for the Cannon (or equivalent) socket (and the hand held remote switching device) shall be as follows:
- 16.4.2.1 Pins 1 and 2 (or A and B) for close
- 16.4.2.2 Pins 3 and 4 (or C and D) for trip
- 16.4.3 Where AIS switchgear with motorised racking is offered, facilities shall be provided for the remote activation of the motorised racking. These facilities, including the plug socket type and configuration and additional pin connections, shall be to the approval of the Engineer.
- 16.5 Trip Test Facility**
- Each switch panel equipped with a circuit breaker shall be provided with a trip test button, to approval, which shall initiate a local trip, and an intertrip where applicable. The trip test button shall be fitted with a padlockable metal flap.
- 16.6 Pilot Cable Termination**
- 16.6.1 The multi-core cables as detailed in the Schedules shall be terminated directly in the control / relay compartment.
- 16.6.2 The control / relay compartment shall be provided with terminal blocks, glands and all associated fittings necessary for terminating the multicore cables.
- 16.6.3 The pilot cable terminations shall be accessible from the front of the switch panel only. Cable entry shall be from the top of the control / relay compartment, from

suspended cable racks. Access to all multicore and pilot terminals shall be from the front.

16.7 Indication Lamps and Mimic Diagram

16.7.1 The AIS switchgear shall be provided with indication lamps for the following:

- | | | | |
|----------|---|---|-------|
| 16.7.1.1 | Circuit breaker closed | - | Red |
| 16.7.1.2 | Circuit breaker open | - | Green |
| 16.7.1.3 | Circuit breaker spring charged | - | White |
| 16.7.1.4 | Anti-condensation heaters on | - | White |
| 16.7.1.5 | SF ₆ gas low (if applicable) | - | Amber |

16.7.2 Indicating lamps and lamp-holders shall be so arranged that replacement of lamps and the cleaning of glasses and reflectors employed can be readily effected. Indicating lamps shall be high intensity light emitting diodes.

16.7.3 The GIS switchgear shall be supplied with a mimic diagram indicating the switching devices provided on the bay and mechanical or electrical indication of the status of each device, to the approval of the Engineer.

16.7.4 The switch panels shall utilise the LEDs on the overcurrent and earth fault protection relay as indication lamps for additional alarms to the approval of the Engineer. The following inputs to the relay shall be provided for this purpose:

- | | |
|----------|--|
| 16.7.4.1 | Circuit breaker open and closed |
| 16.7.4.2 | Earth switch open and closed |
| 16.7.4.3 | Three position disconnecter / earth switch in each position |
| 16.7.4.4 | Circuit breaker racked in and out - AIS only. |
| 16.7.4.5 | CB Spring Discharged |
| 16.7.4.6 | Solkor relay Differential Trip |
| 16.7.4.7 | Trip Circuit Supervision |
| 16.7.4.8 | SF ₆ Gas Pressure alarms (alarm and critical stage separately) for EACH gas compartment (GIS switchgear only) |
| 16.7.5 | Where these are insufficient additional annunciators shall be provided. |

16.8 Instruments

16.8.1 The indicating instrument scales and pointers shall be in accordance with DIN 43802.

16.8.2 All instruments shall be flush mounting and arranged for back connection. Instrument cases shall be finished in an approved colour

- 16.8.3 Ammeter dials shall be clearly marked with the current transformer ratio in use and shall have a 20% overscale.
- 16.8.4 The ammeters for the feeder panels shall be maximum demand indicating ammeters with a separate resettable pointer.
- 16.8.5 The ammeters shall have a 100 mm x 100 mm dial. Voltmeters shall have a 150 mm x 150 mm dial. They shall be sealed as detailed in the Schedules. Alternative dimensions shall be to the approval of the Engineer.
- 16.8.6 The voltmeters shall have a suppressed zero point and be calibrated 7 to 13,5 kV with a red marker at 12 kV.

16.9 Test Blocks

- 16.9.1 Where specified for tariff metering the metering voltages, currents, and pulse circuits shall be brought out to a 20-way SEL SecuControl ITS 4620BSB16H test block, or equivalent to approval. The test block shall be vertically flush mounted and fitted with dust covers.
- 16.9.2 Each SecuControl test block shall be supplied with a test plug code A14-INT and four test probes.
- 16.9.3 Protection current transformer cores shall be wired to type PK-2 (or equivalent to approval) 4-way test blocks with integral starting facilities.

16.10 Watt-hour Meters

- 16.10.1 Electronic Watt-hour meters shall be SEL-734 and shall be provided by others.
- 16.10.2 The meter shall be powered by an additional power supply as specified in the schedules.
- 16.10.3 Provision shall be made for the flush-mounting of these meters on the relay / control compartment door where specified in the Schedules.

17 SCADA / SUPERVISORY EQUIPMENT

17.1 General

- 17.1.1 SCADA / Supervisory facilities for the AIS switchgear (Items A & B) and the GIS switchgear (Items C & D) shall be "Soft" SCADA in accordance with the SANS 61850 protocol, utilising the OCEF protective relay / IED (currently the SEL 751A) to marshal switchpanel indication, alarm and control facilities.
- 17.1.2 AIS switchgear procured in accordance with Item A that is extended onto existing ABB Unigear ZACB switchboards equipped with hard wired SCADA and RTU will have an additional SANS 61850 "Soft" SCADA RTU installed at each installation as a master RTU.
- 17.1.3 ABB Unigear ZACB AIS switchgear previously procured and still on hand at the Employer's Stores that is extended onto existing ABB Unigear ZACB switchboards equipped with hard wired SCADA will be installed utilising the existing hard-wired SCADA facilities in the switch-panel.

17.2 SANS 61850 Switch

- 17.2.1 Provision shall be made in the LV compartment of the Busbar Earthing panel for both AIS and GIS switchgear for a fibre Ethernet Switch for SANS 61850 communications between the RTU and the individual switch panel protective relay IEDs.
- 17.2.2 The fibre Ethernet Switch will be provided by others.
- 17.2.3 The switch will utilise a 19 inch rack mount, 9,87 inch height and 1U depth, with fibre plug connections on the front of the switch.
- 17.2.4 MCB protected connections to the switch are to be provided from the 230 V_{ac} substation supply and the substation dc auxiliary supply.
- 17.2.5 The switch is to be provided with a Relay Fail alarm contact, buswired through each switch panel's protective relay IED.
- 17.2.6 Switchpanel installation rates for both AIS and GIS switchgear shall include for the cost of installation of dedicated ruggedized multi-mode duplex OM4 Ethernet communication fibres with LC to LC connectors between each panel's SEL 751A OCEF protective relay (IED) and the fibre switch mounted in the Busbar Earth panel. This includes Item A, where the required ruggedized Ethernet fibre will extend the length of the switchboard, from the Busbar Earth panel to the required extension panel. Ruggedized Ethernet fibres are to be routed inside the panels, not externally on the cable racks.
- 17.2.7 Tenderers for Item A shall include rates where indicated in the Schedule of Rates for the retrofit of a 19 inch rack mount, ac and dc supply MCBs and all related wiring and accessories into the Busbar Earth panel on existing switchboards, and the installation and cold commissioning of a free issued fibre switch, where required due to busbar extension over additional "Soft" SCADA switchpanels supplied in accordance with Item A of this specification.
- 17.2.8 Tenderers for all Items shall provide rates where indicated in the Schedule of Rates for the making-up and supply of ruggedized multi-mode duplex OM4 Ethernet communication fibres with LC connectors, and for , and for the installation of the communications fibre as required for connections from the Ethernet Switch to the RTU.
- 17.2.9 Ethernet communication fibre from the Busbar Earth panel to the RTU shall be installed on the external cable rack in 32mm PVC conduit. The rates for supply and installation of the conduit are to be included where indicated in the Schedules of Rates.
- 17.3 Supervisory Control, Indication and Alarm Facilities**
- 17.3.1 Provision shall be made for the following supervisory control, indication and alarm facilities via each switch panel's protective relay IED to an RTU.
- 17.3.2 The equipment and facilities shall be provided to permit the following supervisory control and indication telemetry to and from the Supervisory Control Centre:
- 17.3.2.1 Circuit breaker control and status indication, including racking status on withdrawable switchgear.
- 17.3.2.2 Circuit breaker spring charged status indication.

- 17.3.2.3 Busbar disconnecter control and status indication on fixed pattern switchgear.
- 17.3.2.4 Earth switch status indication.
- 17.3.2.5 Local / Supervisory selector status indication.
- 17.3.2.6 Switch panel MCB status indication.
- 17.3.3 The equipment and facilities shall be provided to permit the following alarm telemetry to and from the Supervisory Control Centre:
 - 17.3.3.1 Protection alarms, Circuit breaker operation and equipment defects.
 - 17.3.3.2 Gas pressure alarms and lockout (where applicable).
 - 17.3.3.3 Switching device mechanism alarms.
 - 17.3.3.4 Auxiliary supply alarms.
 - 17.3.3.5 VT supply fail.
- 17.3.4 The Contractor shall submit recommendations regarding the alarms appropriate to his equipment that should be announced locally within the station and those that should be relayed to the Supervisory Control Centre.
- 17.3.5 A normal (healthy) condition shall be represented by normally open contacts
- 17.3.6 The equipment and facilities shall be provided to permit the following load flow and system voltage telemetry to and from the Supervisory Control Centre:
 - 17.3.6.1 Current on all switch panels.
 - 17.3.6.2 Feeder voltage on panels equipped with voltage transformers.

17.4 Telemetry Equipment

- 17.4.1 Each AIS and GIS switch panel shall be provided with suitable auxiliary contacts and relays as required to provide information and control to the SCADA System via the switch panel's protective relay IED.
- 17.4.2 The equipment will be required to give remote indication of circuit breaker service position, earth position, open/close position, spring uncharged, disconnecter and earthing switch open/close positions, Solkor protection trip, overcurrent trip, earth fault trip, circuit breaker fail, start-up signal, protection fail and current as well as supervisory open and close commands and shall be suitably wired accordingly.
- 17.4.3 All GIS switchgear shall incorporate a common alarm system to enable a low pressure gas alarm to be given.
- 17.4.4 A normal (healthy) condition shall be represented by normally open contacts.

18 PROTECTIVE AND METERING EQUIPMENT

18.1 General

- 18.1.1 The protective and metering equipment to be supplied on this contract shall comprise all current transformers, voltage transformers, protective and metering circuitry and such auxiliary equipment necessary for a complete and fully operational scheme of protection and metering as detailed in the Schedules. This shall include full provision for the installation of protective relays as detailed, but the protective relays shall be provided by others.
- 18.1.2 The protective equipment shall be mounted on the low voltage control / relay of the relevant switch panel.
- 18.1.3 The protection circuits shall be designed to disconnect faulty circuits with speed and certainty without interference to healthy circuits. The equipment shall also be designed to prevent incorrect operation of the circuit breakers as a result of transient phenomena not arising from a faulty condition of the section of line or equipment associated with each set of relays but which may occur during fault periods due to disturbances on the system.
- 18.1.4 All proprietary and embedded software as well as any licencing shall be included.

18.2 Protection Relays

- 18.2.1 Unless otherwise specified, protection relays shall be supplied by others. Relays shall be in withdrawable flush-mounted cases.
- 18.2.2 Suitable cut outs and blanking plates shall be provided on the switch panel LV control / relay compartment door for the later mounting and installation of the relays specified.
- 18.2.3 Relay wiring looms shall be pre-wired, cut to length, ferruled and made off onto dummy backing boards configured identically to the specified relays. Such dummy mounting boards shall be installed on stand-off supports in the LV control / relay compartment such that the relay wiring connections are positioned correctly for the actual relay terminal positions.
- 18.2.4 The feeder differential protection relay currently in use is the Reyrolle Protection type Solkor R/Rf, as specified in the schedules.
- 18.2.5 The IDMT OC/EF protection relay / IED currently in use is the Schweitzer type SEL 751A relay, as detailed in the schedules, and is to be taken into consideration for the purpose of tender submissions.
- 18.2.6 The relay auxiliary supply voltage shall be 30V_{dc} or 110V_{dc}, as specified in the Schedules and the Detailed Particulars of Items of Equipment.
- 18.2.7 Circuit diagrams for approval shall include full integration of the above relays into the switch panels, as specified.

18.3 Arc Detection Protection

- 18.3.1 Switch-panels shall have arc detection protection as detailed below and in the Detailed Particulars.
- 18.3.2 Arc detection protection for main substation AIS switch-panels will use a dedicated arc protection relay to detect arc flash in combination with an overcurrent detection. The arc detection scheme currently in use, and to be taken into consideration for the purpose of wiring design, is the ABB REA.

- 18.3.3 Arc detection protection for distribution AIS switch-panels will use the OCEF relay / IED fitted with four-channel arc-flash detection to detect arc flash in combination with an overcurrent detection. The relay currently in use, and to be taken into consideration for the purpose of wiring design, is the SEL 751A.
- 18.3.4 GIS switch-panels shall be provided with over-pressure detection in combination with overcurrent detection for the gas insulated compartments. Arc detection protection for the air insulated compartments in GIS switch-panels will use the OCEF relay / IED fitted with four-channel arc-flash detection to detect arc flash in combination with an overcurrent detection. The relay currently in use, and to be taken into consideration for the purpose of wiring design, is the SEL 751A.
- 18.3.5 The protection zones for AIS and GIS switch-panels shall include the cable compartment, busbars, circuit breaker compartment and current transformer compartment. A fault in any chamber shall result in the isolation of the affected busbar and associated bus section (if applicable). Selective tripping shall be provided. The scheme and design shall be to approval.
- 18.3.6 Arc detection protection for distribution AIS Busbar Riser and Busbar Earthing panels shall include an arc detection point sensor in the riser portion of the panel and shall use the OCEF relay / IED (currently the SEL751A) in the adjacent Bus Section or Feeder panel. Fibres shall be of sufficient length for this purpose.
- 18.3.7 Arc detection protection for busbar compartments without individual segregation per switchpanel shall be achieved through the use of looped clear-jacketed fibre arc flash detection (AFD) sensors.
- 18.3.8 The looped AFD sensors shall be routed through the full length of the busbar chamber (or busbar section in the case of switchboards with Bus Sections) in a closed loop from a double input of the OCEF relay / IED (currently the SEL751A) on the switchboard incomer panel. A Busbar looped AFD sensor shall be provided for each incomer panel on the switchboard, as identified for the particular Works Project by the Employer.
- 18.3.9 Tenderers shall provide rates for the supply of clear jacketed fibre AFD sensors and for the installation per switchboard incomer panel, as provided for in the Schedule of Rates.
- 18.3.10 Tenderers for Items A and C shall in addition provide rates for making-up, supply and installation of fibre point sensors and fibres for retrofit to existing switchboards, as provided for in the Schedule of Rates.
- 18.3.11 Fibres and sensors in the cable termination compartment shall be installed and positioned in such a way that they are protected from damage during cable installation and termination.
- 18.3.12 The faulted chamber shall be identified by an indication on the relay.
- 18.3.13 Arc detection protection for main substation AIS switch-panels shall include the design provisions for and pre-wiring for the specific REA arc detection relays as detailed in the Detailed Particulars. The REA arc detection relays will be provided by others.
- 18.3.14 Arc detection protection for all AIS switch-panels and for the air insulated compartments of GIS switch-panels shall include the provision and installation by

the OEM of arc detection fibres, V-Pin connectors and sensors in the required compartments, and shall be included within the tendered cost per switch-panel.

18.4 **Busbar Blocking**

18.4.1 The busbar blocking scheme shall be provided on panels where specified in the schedules.

18.4.2 The busbar blocking scheme shall be a simple overcurrent and earth fault scheme generally in accordance to the attached drawing SK 5010. The scheme shall use the high set protection of the IDMTL relays for starting and blocking of the scheme.

18.4.3 The scheme shall take into account that the bus sections may be closed.

18.4.4 The operation of this protection shall be indicated in a suitable manner.

19 **LOOSE PARTS, SPARES AND ADDITIONAL EQUIPMENT**

19.1 **Switchboard Installation Loose Parts**

19.1.1 Loose parts and accessories forming part of each switch panel or necessary for the assembly of each switchboard including but not limited to busbar shrouds (for AIS switchgear), secondary jumpers, fasteners, spacers, fittings and other accessories shall be included in the tendered rate per switch-panel and these parts and accessories shall be supplied and packaged by the Contractor with each switch-panel.

19.2 **Switchboard Accessories**

19.2.1 Switchboard accessories necessary for operation of the switchgear shall be priced per switchboard together with a wall mounted, steel cubicle with suitable internal mounting brackets for each accessory item, and shall be installed in each substation by the Contractor at the tendered installation rate.

19.2.2 The wall mounted cubicle shall be fitted with a steel door and locking mechanism that shall be lockable using a padlock with an 8 mm shackle.

19.2.3 Switchboard accessories shall include manual racking handle, manual spring charge handle, operating handle, cable test probes and / or gas monitoring equipment (as applicable to the switchgear offered) and any other accessories necessary for routine and manual operation of the specific switchgear.

19.3 **Spares**

19.3.1 Tenderers shall list in the schedules the details of recommended spare parts together with the recommended quantities and their individual prices. The price quoted for spares shall be at the same rate as quoted for Optional Work and shall include the cost of packing, delivery and off-loading.

19.3.2 The spares shall include consumable items sufficient for a plant operational period of 5 years after commissioning, as well as essential replacement parts to cover the event of a break-down which would affect the availability or safety of the Plant. Moreover the Tenderer shall guarantee that spare components of all types shall be available for at least a period of 10 years following Contract Award.

- 19.3.3 The Contractor will be required to give at least twelve months' notice of his or any subcontractors intention to cease manufacture of any components in the Works.
- 19.3.4 Any spare apparatus, parts and tools shall be subject to the same specification, tests and conditions as similar material supplied under the Definite Work section of the Contract. They shall be strictly interchangeable and suitable for use in place of the corresponding parts supplied with the Plant and equipment and must be suitably marked and numbered for identification and shall be prepared for storage by greasing or painting to prevent deterioration.
- 19.3.5 All spare equipment or materials containing electrical insulation shall be packed and delivered in cases suitable for storing such equipment over a period of years without deterioration. Such cases shall have affixed to both the underside and topside of the lid a list detailing its contents, including the description, part number and quantity for each part and reference to the relevant drawing and installation instruction. The case will remain the property of the Council.
- 19.3.6 The insulating compound for completion of busbars shall be provided on an "as required" basis directly from the supplier in order to eliminate the use of such material after the recommended shelf-life.

19.4 Primary Test Truck

- 19.4.1 The primary test truck shall provide a facility for testing cable circuits and busbars on AIS switchgear which avoids the need for manual opening of shutters and manual insertion of test prods onto the primary contacts.
- 19.4.2 The primary test truck shall be designed for plugging into the circuits concerned after the latter have been disconnected from the source of supply and the associated circuit breakers have been removed.
- 19.4.3 The primary test truck shall be mounted on a truck base similar to that of the circuit breaker, and it shall be possible to rack the test truck in the circuit breaker compartment utilising the standard circuit breaker racking mechanism.
- 19.4.4 The test truck shall be selectable to connect onto either the cable side primary contacts or the busbar side primary contacts, but not both together, and shall open only the set of shutters necessitated by the testing. The other set of shutters in the circuit breaker compartment shall remain closed and padlockable during testing.
- 19.4.5 The primary test truck test contacts shall be solidly earthed during racking. The earth connection shall be removable to permit testing.
- 19.4.6 The primary test truck shall be stored and secured when not in use within the unused circuit breaker compartment of the Busbar Earthing Panel. Alternative primary test truck storage arrangements shall be to the approval of the Engineer.

20 KEY PERSONNEL & COMPETENCY

- 20.1 The Contractor shall have the following Key Personnel in its permanent employment at the closing date of tenders (for each of Items A, B, C, D & E tendered), or confirmed via a signed undertaking from a specialist company having the required personnel and committed to the contract via a sub-contractor agreement:
- 20.1.1 Contractor Representative (Contract Manager)
- 20.1.2 Site Agent

- 20.1.3 Foreman
- 20.1.4 Commissioning Engineer
- 20.1.5 Installation Teams
- 20.2 Numbers, competencies, skills and experience for these Key Personnel shall be as laid out in Section 20.
- 20.3 The Site Agent is required to be appointed as the Construction Manager in terms of the Construction Regulations and shall be responsible for the execution of all site work carried out in terms of the contract. The Site Agent shall be a Competent Person in terms of the OHS Act.
- 20.4 The Foreman for each Works Project site is required to be appointed as a Construction Supervisor in terms of the Construction Regulations and to be an NRS 040 Responsible Person, and shall receive permits for site work and be responsible for the supervision and compliance of the Works Projects assigned to him. The Foreman shall be a Competent Person in terms of the OHS Act.
- 20.5 Tenderers tendering for both Items A & B (AIS Switchgear) may identify a single individual for both Items as the Contractor Representative and a single individual as the Site Agent, and may also identify individuals for Foreman, Commissioning Engineer and Installation Teams for Item A who are also included in the equivalent categories for Item B.
- 20.6 The Key Personnel for each of Items A & B (AIS Switchgear) shall meet the specified minimum numbers per Item detailed in Section 20 and shall include no overlap or duplication of individuals other than as detailed above.
- 20.7 Tenderers tendering for both Items C & D (GIS Switchgear) may identify a single individual for both Items as the Contractor Representative and a single individual as the Site Agent, and may also identify individuals for Foreman, Commissioning Engineer and Installation Teams for Item C who are also included in the equivalent categories for Item D.
- 20.8 The Key Personnel for each of Items C & D shall meet the specified minimum numbers per Item detailed below and shall include no overlap or duplication of individuals other than as detailed above.
- 20.9 The Key Personnel for Item E shall meet the specified minimum numbers as detailed.
- 20.10 For each Item, the Key Personnel detailed for each of the identified roles (eg. Contractor Representative, Site Agent, Foreman, Commissioning Engineer, Installation Team Member) shall be separate individuals (ie. one person may not fulfil multiple defined Key Personnel roles either within or between tender Items).
- 20.11 Where Tenderers are awarded more than one of Tender Items A, B, C, D & E the Employer will consider on a case by case basis the occasional utilisation of Key Personnel from any of the awarded Items to provide support and conduct Works Projects for other awarded Items in periods of high demand, provided that the requested Key Personnel are fully trained and certified by the OEM of the relevant switchgear and provided that adequate spare capacity exists at that time in the awarded tender Item for which they were originally identified in the tender submission.
- 20.12 Where contract workload is expected to exceed the originally envisaged quantities for any of Items A, B, C, D and / or E for an extended period the contractor may be

requested to identify additional Key Personnel to meet such additional demand. In such a case the additional personnel will be required to meet and be certified to the standards and requirements defined in this specification before being approved to carry out any duties in accordance with this specification.

- 20.13 The tenderer must have the following key personnel in its permanent employment at the close of tender. Alternatively, a signed undertaking from a specialist company having the required personnel, stating that they will undertake the necessary work on behalf of the tenderer in terms of a sub-contractor agreement, will be acceptable. Such undertaking must be attached to Schedule F.13 C Returnable Schedules.
- 20.14 Tenderers tendering for both Items A & B (AIS Switchgear) may identify a single individual for both Items as the Contractor Representative and a single individual as the Site Agent, and may also identify individuals for Foreman, Commissioning Engineer and Installation Teams for Item A who are also included in the equivalent categories for Item B. The Key Personnel for each of Items A & B shall meet the specified minimum numbers per Item detailed below and shall include no overlap or duplication of individuals other than as detailed above.
- 20.15 Tenderers tendering for both Items C & D (GIS Switchgear) may identify a single individual for both Items as the Contractor Representative and a single individual as the Site Agent, and may also identify individuals for Foreman, Commissioning Engineer and Installation Teams for Item C who are also included in the equivalent categories for Item D. The Key Personnel for each of Items C & D shall meet the specified minimum numbers per Item detailed below and shall include no overlap or duplication of individuals other than as detailed above.
- 20.16 Tenderers tendering for Items A and/or B (AIS Switchgear) and also for Items C and/or D (GIS Switchgear) and/or E (SIS Switchgear) may identify a single individual for all three groups of Items as the Contractor Representative and a single individual as the Site Agent. Tenderers shall, however, identify individuals for Foreman, Commissioning Engineer and Installation Teams for A & B (AIS Switchgear) who comply with the above requirements and who are NOT also included in the equivalent categories for Items C & D (GIS Switchgear) and Item E (SIS Switchgear), and visa versa.

The Key Personnel for each of Items A, B, C, D & E shall include no overlap or duplication of individuals other than as detailed above.

For each Item, the Key Personnel detailed for each of the identified roles (eg. Contractor Representative, Site Agent, Foreman, Commissioning Engineer, Installation Team Member) shall be separate individuals (ie. one person may not fulfil multiple defined Key Personnel roles either within or between tender Items).

The Tenderer must submit a general CV for each of the key personnel and shall in addition submit a statement for each of the key personnel highlighting any particular fields of specialisation and experience that is relevant to this particular tender. These statements must be appended to Schedule F.13 C : Returnable Schedules.

Key personnel will be expected to operate out of a local office (which shall be established within 30 days of contract commencement), as the exigencies of this project require. The experience required shall be in the field of expertise required for the scope of the work of this tender.

Competency	Minimum Number of Employees				
	Item A	Item B	Item C	Item D	Item E
Contractor Representative					
A qualified electrical engineering Technician / Technologist / Engineer / project manager who over the past ten years has project managed at least five (5) projects of the same or equivalent nature to that detailed in the Scope of Works, and who has verified training and a high level of experience in the technical and commercial aspects of the project and the equipment involved.	1	1	1	1	1
Site Agent					
A qualified electrical engineering Technician / Technologist / Engineer who over the past ten years has undertaken at least 10 (ten) projects in the installation and / or retrofitting of MV or HV switchgear that are of a similar nature to that detailed in the Scope of Works and who shall be responsible for executing all work carried out in terms of this tender.	1	1	1	1	1
Foreman					
<p>The Foreman shall be responsible for supervising the site installation crew, and shall as a minimum have completed and qualified in appropriate formal training and be accredited by the switchgear OEM to render him fully competent in the switchgear installation and retrofit work envisaged in accordance with this specification. The Foreman shall over the past ten years have completed at least 10 (ten) projects in the installation and retrofitting of MV AIS or GIS switchgear of the same or equivalent type to that offered for the particular Item, and with a scope equivalent to that detailed in the Scope of Works.</p> <ul style="list-style-type: none"> The Foreman for Item A shall be certified and accredited by the Original Manufacturer of the ABB type UNIGEAR ZACB switchgear to oversee the installation work specified for Item A. The Foreman for Item C shall be certified and accredited by the Original Manufacturer of the ABB type ZX 0.2 switchgear offered to oversee the installation work specified for Item C. The Foremen for Item B and / or Item D / or Item E shall be certified and accredited by the Original Manufacturer of the equipment offered for Item B and / or D and / or E to oversee the installation work specified for Items B and / or D and / or E. 	1	2	1	1	1
Commissioning Engineer					
A qualified electrical engineering Technician / Technologist / Engineer who in the past ten years has fulfilled the commissioning duties for at least 10 (ten) MV or HV switchgear installation and retrofit projects of the same or equivalent nature to that detailed in the Scope of Works and who shall be responsible for executing all commissioning work carried out in terms of this tender.	1	2	1	1	1
Installation Teams					

Competency	Minimum Number of Employees				
	Item A	Item B	Item C	Item D	Item E
<p>Installation teams shall comprise sufficient staff to carry out installation of a full switchboard of nominally nine but on occasion up to or exceeding fifteen switch panels at a substation. All installation team members shall as a minimum have completed and qualified in appropriate formal in-house training by the switchgear OEM to render them fully competent in the switchgear installation and retrofit work envisaged in accordance with this specification for the particular Item. Team members shall over the past ten years have completed at least 10 (ten) projects in the installation and / or retrofitting of MV AIS or GIS switchgear of the same or equivalent type to that offered for the particular Item, and with a scope equivalent to that detailed in the Scope of Works.</p> <ul style="list-style-type: none"> Installation team members for Item A shall be certified and accredited by the Original Manufacturer of the ABB type UNIGEAR ZACB switchgear to carry out the installation work specified for Item A. Installation team members for Item C shall be certified and accredited by the Original Manufacturer of the ABB type ZX 0.2 switchgear to carry out the installation work specified for Item C. Installation team members for Item B and / or Item D and / or Item E shall be certified and accredited by the Original Manufacturer of the equipment offered for Item B and / or Item D and / or Item E to carry out the installation work specified for Items B and / or D and / or Item E. 	1 Teams	2 Teams	1 Team	1 Team	1 Team

1. Track Record of Equipment						
Description	Minimum Requirement					Applicable Schedule
	Item A	Item B	Item C	Item D	Item E	
<p>Total quantity manufactured, installed and commissioned to date (worldwide) of the MV AIS or GIS or SIS switch-panel type (incl design variants) offered with this tender.</p> <p>Total quantity manufactured, installed and commissioned to date (worldwide) of the MV vacuum interrupters offered with this tender (including those included above).</p> <p>Total quantity of substation installations in Southern Africa of the MV AIS or GIS or SIS switch-panel type offered with this tender.</p>	<p>1000 switch panels</p> <p>5000 interrupters</p> <p>50 S/Stations</p>	<p>1000 switch panels</p> <p>5000 interrupters</p> <p>50 S/Stations</p>	<p>250 switch panels</p> <p>5000 interrupters</p> <p>5 S/Stations</p>	<p>250 switch panels</p> <p>5000 interrupters</p> <p>5 S/Stations</p>	<p>250 switch panels</p> <p>5000 interrupters</p> <p>5 S/Stations</p>	Schedule F.13 C

2. Demonstrated Experience of Tenderer						
Description	Minimum Requirement					Applicable Schedule
Number of substation installations of equivalent scope / complexity completed by Tenderer or their sub-contractor during the past ten years comprising the MV AIS, GIS, SIS switchgear offered in this tender for the particular Item or equivalent MV AIS, GIS, SIS switchgear to that offered in this tender for the particular Item.	50 substations	50 substations	25 substations	25 substations	25 substations	Schedule F.13 C
4. Demonstrated Service Facility						
Description	Minimum Requirement					Applicable Schedule
<u>MANUFACTURER / TENDERER MUST HAVE :</u> For Contract and Post-Contract Support Technical support in South Africa	In South Africa	In South Africa	In South Africa	In South Africa	In South Africa	Schedule F.13 D
For Contract and Post-Contract Repairs Repair facilities in South Africa	In South Africa	In South Africa	In South Africa	In South Africa	In South Africa	

A more detailed explanation of the criteria is given below:

1. Track record of equipment

The Tenderer shall certify the track record of the equipment offered by submitting evidence in the form of details of the total quantities manufactured and delivered worldwide and a reference list of clients as well as details of projects, project location and project value where this equipment has been supplied and commissioned in South Africa by the OEM or their South African agent or representative.

The information shall be appended to Returnable Schedules F.13 C.

2. Experience and Qualifications of Tenderer

Tenderers shall be suitably experienced and qualified to carry out the specified work.

Tenderers must complete Returnable Schedules F.13 C, which is a list all projects of equivalent scope / complexity that have been successfully completed in their local South African office in the past ten years, or that are underway at present, by the Tenderer or their tendered sub-contractor(s).

Note: Where the entity tendering is a joint venture the responsiveness for track record will be assessed for each party to the joint venture.

A proposed work plan must be provided with the tender submission, attached to Returnable Schedule F.13 J, which must be of sufficient detail (but preferably not more than 5 pages in length) to indicate that the project brief has been understood. That is, Tenderers must show

that they have appreciated that the nature of the problem, and indicate the approach and methodology that they intend following in order to reach the required outcome.

Tenderers shall submit written evidence with his tender of his qualifications to perform the specified work satisfactorily.

The Tenderer shall certify his qualifications by submitting evidence that it:

- is a qualified and well established manufacturer, or the authorised representative of a qualified and well established manufacturer, who regularly manufactures equipment and materials of the type specified and has adequate technical knowledge and practical experience. Where applicable, technical and manufacturing licensing agreements shall be identified and described. If the Tenderer is an authorised representative, he shall show evidence that he is authorised to represent the qualified manufacturer.
- has undertaken the design, manufacture, delivery, installation and commissioning of projects in the past ten years in, each of which are of similar magnitude and complexity to the scheme covered by this Specification. Additional evidence shall be given in the form of a detailed reference list which should also clearly indicate the extent of responsibility of the Tenderer for each project and indicate achievement of guarantees and delivery dates where appropriate.
- has adequate plant and manufacturing capacity available to do the work properly and expeditiously within the time period specified. (Details to be completed in Schedules F.13 C & D and thorough supporting evidence appended).

If a portion of the work is to be subcontracted, any such sub-contractors shall comply with the above stated requirements with respect to the work to be sub-contracted to them.

The Employer's Agent shall be allowed access, at all reasonable times during the period in which tenders remain open for acceptance, to the works of the Tenderer or the manufacturer represented by the Tenderer, as the case may be, for the purpose of ascertaining his ability to perform satisfactorily the specified work. Refusal of such access shall render the tender non-responsive.

3. Service Facilities

The Tenderer shall give details with his tender of the service facilities which he or his representatives have available in South Africa in support of the equipment offered with this tender, including:

- the nature of the resident permanent engineering staff,
- the extent of the service facilities available including the number of resident permanent technicians, and
- the extent of spares normally carried in stock which would be suitable for use in connection with the plant included in the tender.

The tenderer shall provide details of his service facilities in Schedule F.13 D.

21 NRS 040 CERTIFIED RESPONSIBLE PERSONS

- 21.1 It is a mandatory contract requirement that at least one NRS 040 certified Responsible Person with valid and current certification be present on site at all times during the execution of Works Projects in accordance with this tender specification. Such persons shall be the Foremen and may include further individuals within the Installation Teams.
- 21.2 Immediately after contract award the Contractor(s) shall identify the NRS 040 certified Responsible Persons and provide copies of the valid and current certification identifying them as NRS 040 Responsible Persons.
- 21.3 In the event that the Contractor does not have any, or sufficient, NRS 040 certified Responsible Persons at contract commencement the Contractor shall within 30 days arrange and ensure the completion of the required NRS 040 Responsible Person

training for the necessary Key Personnel identified for this role, and provide the City with the relevant certification.

- 21.4 Should the Contractor fail to provide the details and current and valid certification for the required NRS 040 Responsible Persons within the 30 days mentioned above this shall be a material breach of the contract and the City shall be entitled to terminate the contract forthwith and without further notice to the supplier.
- 21.5 The NRS 040 Responsible Person(s) shall in addition be certificated in the following skills / competencies, and tenderers shall provide proof of compliance prior to commencement of contract:
- 21.5.1 First Aid Level 1
- 21.5.2 Safety, Health and Environmental Awareness.
- 21.5.3 Basic Firefighting
- 21.6 Provided that the Contractor has submitted an acceptable Responsible Person and an acceptable health and safety plan, the Works Project sites will be handed over to the Contractor. Thereafter, the Contractor will be entirely responsible for the safety of his staff and any other person on the site, and the public in the area in close proximity to the site.
- 21.7 Should the Responsible Person leave the Site, all work will cease and all Contractor's Staff will be removed from the Site unless a suitable replacement Responsible Person is provided by the Contractor.

22 LOCAL OFFICE, TECHNICAL SUPPORT AND REPAIR FACILITIES

- 22.1 As detailed in Section 20, the Manufacturer or Tenderer shall have established technical support and repair facilities situated within South Africa that are suitably equipped and resourced for contract and post-contract support, including major repair and / or modification of equipment delivered in accordance with this specification, where required.
- 22.2 It is envisaged that for Items A and / or B these facilities will in most cases coincide with the manufacturing facilities required in terms of the DTI local content designation for AIS switchgear. For Items C and / or D and / or E it is envisaged that these facilities will as a minimum comprise the Manufacturer's established and permanent technical support and repair facilities necessary in order to provide required support for the manufacturer's installed switchgear based within South Africa.
- 22.3 The Contractor's key personnel for the execution of the various Works Projects envisaged in accordance with this tender specification (including the repair and / or replacement, erection on site, site testing and commissioning of switchgear and equipment as new installations, extensions, repairs, retrofits, modifications and / or upgrades to existing switchgear) shall operate out of a local office for the duration of the contract, including defects liability period.
- 22.4 The local office shall be situated within the boundaries of the City of Cape Town metropolitan area and shall be fully established and operational within 30 days from the commencement of contract up to defect liability period.
- 22.5 The local office shall be suitable for use as the contract office for the Contractor's Key Personnel (other than the Contractor Representative, who need not be Cape Town based) and shall also have workshop and storage facilities suitable for basic

fitment, modification and repair tasks (on the equipment delivered in accordance with this specification) that do not necessitate transportation to the OEM or the Contractor's major manufacturing and repair facility elsewhere in South Africa.

- 22.6 The local office shall also provide appropriate and secure storage for equipment delivered in accordance with this specification that is temporarily stored in preparation for transportation to Works Project sites or that is under modification or repair.
- 22.7 Should the Contractor fail to establish and commence operations from a local office which complies with the aforementioned requirements within the 30 days mentioned above this shall be a material breach of the contract and the City shall be entitled to terminate the contract forthwith and without further notice to the supplier.

23 WORKS PROJECTS SITE MEETING

- 23.1 The Contractor shall attend a site meeting with the Employer's District Staff and Project Manager for each Works Project during which the scope of work for the Works Project will be finalised.
- 23.2 The Contractor shall at the time of the Works Project Site Inspection familiarise himself fully with the layout, wiring and SCADA and Protection facilities present on any existing switch-panels at the Works Project Site and those required for the proposed switchgear installation, and shall not commence site work if he is not fully acquainted with the detailed requirements of the work.
- 23.3 To this end the Contractor shall identify any outstanding requirements for schematic drawings and other information relating to the switchgear installation at the Site Meeting, and shall request panel schematics, SCADA schematics and / or the presence of the Employer's appropriate SCADA and / or Protection specialists at the Site Inspection if necessary in order to prepare himself adequately for the Works Project.
- 23.4 The Works Project Document for the particular Works Project shall be signed by the Contractor and returned to the Employer's Project Manager concerned after completion of the Site Meeting. The Works Project Document shall detail the full scope of the works and the required commencement and completion dates. The Contractor shall detail in the signed Works Project Document any outstanding issues prerequisite for commencement of the works.

24 TRANSPORT TO THE WORKS PROJECTS SITES

- 24.1 The Works Projects shall be for work to be executed at substation sites throughout the area of supply of the Employer, but specific Works Projects substation sites have not been determined at the time of going to tender.
- 24.2 The cost of collection of equipment at Ndabeni Stores and transport and delivery of the equipment to the Works Projects substation sites, and the cost of all other personnel and equipment transport to the Works Projects substation sites for the duration of the Works Project shall be tendered separately as a single item per installation, as indicated in the schedules.
- 24.3 Tendered prices shall be based upon a standard distance of 20 km from the Ndabeni Stores to the Works Projects substation site, and upon a standard switchboard size for the Works Projects of 9 panels. Additional costs incurred due to specific project

requirements that exceed these standard figures shall be measured and claimed at Tendered Rates for Additional Measured Quantities, and shall be to the approval of the Engineer.

25 WORKS PROJECT SITE WORKS

- 25.1 Substation building construction and / or floor modifications at the Works Project site will be carried out by others. The site layout and switch room for each installation will be detailed on specific PRA drawings provided by the Employer at the time for each substation.
- 25.2 To provide a suitably level surface the Contractor shall provide, install and permanently affix galvanised steel floor frames, to which the switchgear shall be mounted and fixed.
- 25.3 The rates for the manufacture, supply and delivery of the floor frames (per switch-panel) shall be detailed where provided for in the Schedule of Rates. The cost of the installation and affixing of the floor frames is not separately itemised and shall be included in the installation cost tendered per switch-panel. Floor frames shall be delivered directly to site, and not to the Employer's Stores.
- 25.4 The trench cover boards shall be provided by others. The Contractor shall be responsible for providing dimensioned drawings within five working days of the approval of the Works Project Document that detail the floor frame design and layout for the particular Works Project in relation to the trench layout depicted on the specific PRA drawing. In the event that such floor frame design and layout drawings are not provided by the Contractor in time to inform the manufacture of the trench cover boards, the Contractor shall be responsible for the modification of the supplied trench cover boards to suit the floor frame layout.
- 25.5 The Contractor shall be responsible for site inspection and floor level measurements at the Works Project site prior to commencement of the installation work in order to confirm that the substation site and floor levels are suitable for the installation of the switchgear tendered.

26 INSTALLATION AND COMMISSIONING OF SWITCHGEAR AND EQUIPMENT

- 26.1 The switchgear panels are to be installed in new substations or in existing live substations at the Works Projects sites as specified in the Scope of Work of the Works Project Document. The Contractor shall implement and maintain adequate safety precautions to avoid damage to existing equipment and nuisance tripping of circuits.
- 26.2 Installations for Item A (The manufacturing, testing, supply and delivery and the installation, testing and commissioning of air insulated switchgear for extension of existing ABB Unigear ZACB installations), Item B (The manufacturing, testing, supply and delivery and the installation, testing and commissioning of internal arc rated air insulated switchgear for new installations), Item C (The manufacturing, testing, supply and delivery and the installation, testing and commissioning of Gas Insulated Switchgear for Extension of Existing ABB ZX0.2 Installations) and Item D (The manufacturing, testing, supply and delivery and the installation, testing and commissioning of internal arc rated gas insulated switchgear for new installations) shall be undertaken only by contractor's staff who are officially accredited for such installation work by the Original Equipment Manufacturer..

- 26.3 The switchgear panels, voltage transformers, exhaust ducting and other loose parts and / or accessories that were supplied in accordance with Item A1, B1, C1 or D1 of this Tender (Manufacture, Testing, Supply and Delivery of Equipment, Complete as Specified) will be free-issued by the Employer for each Works Project at the commencement of the Works Project, together with any other equipment detailed in the Scope of Work of the Works Project that is to be free-issued by the Employer for installation by the Contractor
- 26.4 All other equipment, cable, busbar compound, earthing, loose parts and accessories required by the Contractor to complete the Works Project as tendered shall be supplied by the Contractor.
- 26.5 The Contractor shall be responsible for the collection of equipment from Ndabeni Stores, the provision of other equipment, cable, fibre, busbar compound, earthing, loose parts and accessories as required, and the delivery to site and installation, testing and cold-commissioning of the switchgear, circuit breakers, current transformers, voltage transformers, ancillary equipment and other equipment covered by this contract as specified in the Scope of Work of the specific Works Project Document. This shall include the collection and delivery, installation, cabling, secondary and primary injection testing and cold-commissioning of free-issued protection relays, battery charger equipment, Metering Cubicles, Remote Terminal Units (RTUs) and supervisory marshalling kiosks where specified in the Works Project Document.
- 26.6 Primary injection testing of circuits to prove protection scheme functionality (ie. end to end tests) shall be carried out by others.
- 26.7 The installation and cold-commissioning of the switchgear panels and equipment covered by the Works Project Document shall include panel and equipment integrity inspections on collection at Ndabeni and on delivery to site, equipment installation integrity and completion inspections, on-site mechanical operations checks and control wiring inspections, testing and proving of phasing out facilities per switch-panel, testing, proving and commissioning of arc fibre sensors and circuits and or Ethernet communications fibres, ductor testing of all busbar and other primary circuit connections made in accordance with the Scope of Works, and all further tests and inspections necessary to verify and certify the functionality and serviceability of the equipment installed.
- 26.8 Allowance shall be made for interruptions in the Site Work required during the changeovers and switching operations required for busbar extensions and commissioning.
- 26.9 All inspections and tests shall be documented and certified in a Handover Document to be provided to the Employer by the Contractor and accepted by the Engineer at the time of handover of the completed installation. Site handover will not be accepted until the Contractor has as a minimum provided marked-up "Redline" as-built drawings and all required commissioning checklists and test certification.
- 26.10 The Contractor shall be responsible for the provision of a detailed Works Project Manual complete with formal copies of all as-built drawings, test and handover certification and other necessary documentation within two weeks of completion of the Site Work. Completion and submission of the Works Project Manual and all related documentation is a prerequisite for issuing of Performance Certificate and release of Works Project retention.

26.11 Where a suitable auxiliary supply as required by the Contractor to conduct the Works is not available at site the Contractor shall be responsible for providing a suitable temporary supply.

27 REPAIR OF FAULTED OR VANDALISED SWITCHGEAR AND EQUIPMENT

27.1 Tenderers shall also tender for the site repair and / or replacement of faulted or vandalised switchgear and equipment of the types tendered for each of the Tendered Items A, B, C, D & E to repair the switchgear and equipment to the standards specified in this Specification.

27.2 Tenderers shall provide rates where indicated in the Schedules of Rates for Items A, B, C, D & E for the inspection, assessment and scoping of repair work to faulted or vandalised switchgear and equipment of the type tendered for the particular Item.

27.3 Contractors shall have OEM accredited technical personnel available on a working hours call-out basis for the site inspection, damage assessment and finalisation of the scope of work, and shall make teams available on short notice and as required for the cleaning, stripping, repair, replacement, testing and commissioning of repaired or replaced switchgear panels.

27.4 Initial site inspection and assessment of the nature and extent of the damage caused by equipment failure or vandalism shall be carried out by the Contractor's technical personnel trained and formally accredited by the switchgear original equipment manufacturer, and identified as such in the schedules of key personnel detailed in the tender submission.

27.5 Following site inspection the Contractor shall provide a detailed scope of work covering the repairs and replacements required to restore the faulted or vandalised switchgear and equipment to service condition, and detailing the estimated durations and quantities in accordance with the rates tendered in the Schedule of Rates, for consideration and approval by the Employer.

27.6 Repair and / or replacement of faulted or vandalised switchgear shall commence immediately after finalisation of the scope of work between the Contractor and the Employer and preparation, acceptance and signature of the related Works Project Document. Commencement on site shall be subject to provision of the project specific health and safety file and to the relevant operational procedures having been completed and the equipment having been handed-out for such repairs. The repair of faulted or vandalised switchgear, shall not exceed 30 days from the signing of the WPD.

27.7 Repair and replacement of faulted or vandalised switchgear and equipment shall be undertaken only by contractor's staff who are officially accredited for such installation work by the Original Equipment Manufacturer.

27.8 Teams involved in the repair and replacement of faulted or vandalised switchgear panels shall be available to continue work until completed, during and outside normal working hours, or shall be replaced on site by equivalent teams if necessitated by the duration of the repair work.

27.9 Switchgear panels and other equipment that are required to be replaced (rather than repaired in-situ) and that were purchased to stock in accordance with this specification will be free-issued from the Employer's Stores and shall be collected and transported to the site by the Contractor.

- 27.10 Protective relays and other equipment purchased separately to stock by the Employer and required in order to effect the repairs of faulted or vandalised switchgear and equipment will be free-issued from the Employer's Stores and shall be collected and transported to the site by the Contractor, together with any other equipment free-issued for the purpose of the repairs.
- 27.11 Installation of such replaced switchgear panels and other equipment shall be priced at the rates detailed in the tender submission for Installation, Testing and Commissioning of Equipment (which includes all related costs, including labour and commissioning engineer costs)
- 27.12 Where required, the Contractor shall be responsible for dismantling the existing faulted or vandalised switchgear panels and other equipment at the rates for Labour Cost Basis detailed in the Schedule of Rates: Rates for Measured Quantities, based upon actual durations, and the returning of the dismantled and replaced equipment to the Employer's Stores or Depot.
- 27.13 Cleaning of the faulted switchgear and switchboard on site shall be conducted by the Contractor at the rates for labour cost basis detailed in the Schedule of Rates: Rates for Measured Quantities, based upon actual durations.
- 27.14 Electrical cleaning fluids and solvents, and cleaning rags will be free-issued from the Employers Stores.
- 27.15 Replacement or repair of wiring and earthing shall be conducted by the Contractor at the rates for Multicore and Auxiliary Cables, Earthing Bars and Earth Conductors and the Labour Cost Basis, as detailed in the Schedule of Rates: Rates for Measured Quantities, based upon actual quantities and durations.
- 27.16 Transport costs necessary to transport Contractor personnel to site, to collect free-issued switchgear and equipment at the Employer's Stores and to return removed equipment to the Employers Stores or Depots shall be conducted by the Contractor at the rates for transport detailed in the Schedule of Rates: Rates for Measured Quantities, based on actual quantities.
- 27.17 Switchgear parts and components that are required to be replaced in order to repair faulted or vandalised switchgear but that are not available in the Employer's Stores and that are not covered by rates tendered elsewhere to this specification shall be quoted for and provided by the Contractor.
- 27.18 Parts and components that are held in stock by the Contractor shall be priced on a Contractor's cost price basis.
- 27.19 Parts and components that are to be outsourced by the Contractor shall be priced on a Contractor's "Cost price plus Percentage Handling Charge" basis, as provided for in the Schedule of Rates.
- 27.20 Tenderers shall detail the proposed Percentage Handling Charge where indicated in the Schedule of Rates. Tender evaluation shall include provision for the cost to the City of the Percentage Handling Charge, on the basis of a predetermined provision in the evaluation basket of goods and services for the anticipated costs of outsourced parts and components. Excessive Percentage Handling Charges will directly contribute to a higher and less competitive evaluation price based on the total evaluation basket. Furthermore, an excessive Percentage Handling Charge that cannot be considered by the Bid Evaluation Committee to be fair and reasonable will be challenged through a Preferred Bidder process if the tender is in line for an award.

- 27.21 All such costs for parts and components are required to be demonstrably fair and market related. Contractors shall provide detailed source quotations for all such parts and components, and approval of such pricing by the Employer shall be subject to thorough assessment to verify fair and market related costing.
- 27.22 The Contractor shall estimate and / or quote the above quantities during determination of the scope of the work required, which shall form the basis of the Works Project Scope of Work. The Contractor shall keep a detailed and precise inventory of all measured quantities during the execution of the work which shall be signed off by the Employer's Representative on a daily basis and shall form the basis for the final cost.
- 27.23 Tenderers shall provide rates where indicated in the Schedule of Rates for the costs of testing and commissioning of the repaired switchgear panels to the specified standard. (Note that this excludes those switchgear panels free-issued from the Employer's Stores and installed complete, for which rates for testing and commissioning are included in the installation rates detailed elsewhere in the Schedule of Rates).
- 27.24 Testing and commissioning of the repaired switchgear and equipment shall be to the specified standards and in accordance with the requirements of this specification for installation, testing and commissioning of new equipment of the same type.
- 27.25 Tenderers shall provide rates where indicated in the Schedule of Rates for the costs of pressure testing of the decarbonised and cleaned switchboard (busbar chamber and implicated switchpanels) to the specified standard.
- 27.26 The site work in repair and / or replacement of the faulted or vandalised switchgear and equipment shall include the required health and safety compliance and site specific risk assessments, and provision of project specific safety file.
- 27.27 Tenderers shall provide rates where indicated in the Schedules of Rates for the administrative costs associated with the repair and / or replacement of the faulted or vandalised equipment, namely the health and safety compliance and as-built drawings.
- 27.28 The repairs and rewiring of the faulted or vandalised switchgear and equipment shall be conducted to the standard and detail approved by the Employer in accordance with the specific approved drawings.
- 27.29 On completion and commissioning of the repairs the Contractor shall provide redline as-built drawings detailing in full the work conducted as well as test and commissioning sheets confirming compliance to the specified standard. Updated final drawings shall be provided as soon as possible after handover and commencement of the defects liability period.

28 CABLE WORK

- 28.1 All main power cables and pilot cables will be provided, laid, made off and terminated by others.
- 28.2 All multi-core and power cables for auxiliary power, control, tripping and alarm circuits, as detailed in the Schedules, shall be provided, installed and terminated by the Contractor directly into the control / relay compartment or into a pilot cable terminating box, and shall enter and be glanded at the top-front of the switch board.

- 28.3 The cost of supply, installation and termination of multi-core and auxiliary cabling external to the switch board shall be tendered separately as a single item per switch board, as indicated in the schedules. Tendered prices shall be based upon a standard length of 10 m of multi-core cables external to the switchboard. Additional costs incurred due to specific project requirements over and above this standard length shall be measured and claimed at Tendered Rates for Additional Measured Quantities, and shall be to the approval of the Engineer.
- 28.4 The tendered price per switch panel shall include all bus-wiring for auxiliary power, control, tripping, alarm and other circuits required for the installation of that switch panel, and all arc detection fibres required for that panel and the Ethernet communication fibres from that panel to the Ethernet switch in the Busbar Earthing panel.
- 28.5 The cost of looped AFD sensor fibres for busbar arc detection shall be costed per Works Project based upon the rates for measured quantities included in the Schedules of Rates.
- 28.6 Terminating boxes shall be provided with such terminal blocks, glands, labels and all associated fittings as are required.
- 28.7 Multi-core and auxiliary power cables shall be installed on 300 mm wide overhead cable racks and wall mounted cable ladders which shall be installed by the Contractor at the tendered rates for additional measured quantities where provided for in the Scope of Works of the specific Works Project Document.
- 28.8 Where required and instructed by the Engineer existing multicore cable shall be cut away and recovered from the substation for scrapping. The scrap cable shall be returned to the Employer's Stores by the Contractor.

29 SUBSTATION EARTHING SYSTEMS

29.1 Substation Earth

- 29.1.1 The station main earthing system will be installed by others and will be brought out to the substation main earth bar in the cable trench of the substation.
- 29.1.2 The Contractor shall supply and install an earthing system to connect all equipment in the substation to the substation main earth bar. Earthing connections to equipment included in this contract shall be provided under this contract.
- 29.1.3 The cost of supply, installation and termination of earthing external to the switch board shall be tendered separately as a single item per switch board, as indicated in the schedules. Prices shall be based upon an earth connection brought out from each end of the switchboard earthbar to the substation main earthbar and with a standard total length of 12 m of 120 mm² covered earthing conductor external to the switchboard. Additional costs incurred due to specific project requirements over and above this standard length shall be measured and claimed at Tendered Rates for Additional Measured Quantities, and shall be to the approval of the Engineer.
- 29.1.4 The tendered price per switch panel shall include all internal earthing required for the installation of that switch panel.

- 29.1.5 The switch panels shall be connected to the substation main earth bar at two opposite points on the switchboard by a covered copper conductor having a cross-sectional area complying with the requirements of 5.3 of SANS 62271-200.
- 29.1.6 The earthing connections from the metal-clad enclosures to the station main earth shall be arranged to obtain the minimum inductance and thereby restricting the magnitude of high frequency voltages coupled from the voltages generated by the interruption of capacitive current by the disconnectors.
- 29.1.7 Drawings detailing the earthing system proposed for the complete installation to be provided under this Contract shall be submitted for approval.
- 29.1.8 All main members of structural steelwork shall be earthed by copper connections bonded to the steelwork. Structures shall not be relied upon to form a continuous earth for electrical equipment.
- 29.1.9 Connections to apparatus and structures shall be made clear of ground level, preferably to a vertical face and protected against electrolytic corrosion.
- 29.1.10 The earth bars and earth conductors shall be of copper. Joints in earth bars shall be brazed. Where bolted joints are used in copper connections they shall have the joint faces tinned.
- 29.1.11 All earthing copper shall be painted as detailed in Clause 34.18.7.

29.2 Earthing of Ancillary Equipment

- 29.2.1 All metal parts of ancillary equipment installed under this contract, other than those forming part of an electrical circuit, shall be earthed by connection to the earth bar in an approved manner. All earthing terminals and connections shall be of adequate dimensions.
- 29.2.2 All control, relay and other ancillary equipment panels installed under this contract shall have a continuous earth bar of cross-sectional area not less than 95 mm² run along the bottom of the panels. One end of each panel earth bar shall be connected to the station earth bar. Earth bars shall be located internally where possible.
- 29.2.3 Metal cases of instruments and metal bases of relays on the panels shall be connected directly to the panel earth bar by braided conductors having a cross-sectional area not less than 2,5 mm². The earthing may not comprise conductors looped from panel to panel or relay to relay with a common conductor to the station earth bar. Any such arrangement will be rejected.
- 29.2.4 When apparatus or instruments are accommodated on panel or cubicle doors or swinging frames, flexible cable or braid shall be used for earthing items. The door hinges will not be accepted as a means of earthing this part of the equipment.
- 29.2.5 Except when otherwise approved a stud type terminal of diameter not less than 12 mm or a tapped boss of equivalent size shall be provided on the outside of each cabinet or structure for the purpose of making the connection to the switching station main earth bar.
- 29.2.6 All earthing shall be located internally as far as possible and shall be painted the same colour as that of the switch panels.
- 29.2.7 The Works shall include the connection of all apparatus to the switching station main earth bar which will be installed as part of this Contract.

- 29.2.8 The Contractor shall be responsible for providing, fixing and connecting all earth bars between all metal structures and the main earth bar.

30 INSTALLATION OF BATTERY TRIPPING UNITS AND POWER SUPPLY UNITS

- 30.1 Where specified in the Scope of Work of the Works Project Document the Contractor shall be responsible for the collection from Ndabeni Stores, delivery to Works Project sites and the installation, testing and commissioning of free-issue battery tripping units and /or power supply units at the rates tendered in the Schedules of Rates.
- 30.2 Battery tripping units and power supply units shall be supplied by others.
- 30.3 Battery tripping units will be either 30V_{dc} or 110V_{dc} supply, as specified in the Scope of Works of the particular Works Project Document.
- 30.4 Battery tripping units and power supply units shall be floor mounted over the trench provided on the interior side or front wall, as required for the specific project. Specific details shall be provided on the Employer's PRA drawing for that project.
- 30.5 The auxiliary power multi-core cable required to supply the switch board from the battery tripping unit is included in the cost of supply, installation and termination of multi-core and auxiliary cabling external to the switch board, which is tendered as a single separate item per switch board, as indicated in the schedules. Additional costs incurred due to specific project requirements over and above the specified standard length shall be measured and claimed at Tendered Rates for Additional Measured Quantities, and shall be to the approval of the Engineer.
- 30.6 Additional auxiliary power multi-core cable required in the event that a power supply unit is required in addition to a battery tripping unit shall be measured and claimed at Tendered Rates for Additional Measured Quantities, and shall be to the approval of the Engineer.

31 INSTALLATION OF REMOTE TERMINAL UNITS (RTUs)

- 31.1 Where specified in the Scope of Work of the Works Project Document the Contractor shall be responsible for the collection from Ndabeni Stores, delivery to Works Project sites and the installation of free-issue Remote terminal Units (RTUs) at the rates tendered in the Schedule of Rates.
- 31.2 RTUs shall be supplied by others.
- 31.3 RTUs shall be wall mounted above the trench provided on the interior side or front wall, as required for the specific project. Specific details shall be provided on the Employer's PRA drawing for that project.
- 31.4 The cost of supply and installation of the auxiliary power multi-core cable required to supply the RTU from the battery tripping unit is to be measured and priced at the approved Tendered Rates for Additional Measured Quantities, and shall be to the approval of the Engineer.
- 31.5 The costs of supply and installation of ruggedized Ethernet Fibre from the Ethernet Switch in the Busbar Earth panel (or of 12 twisted-pair, Aluminium/Polyester tape screened, stranded 0,22 mm² data cable required between switch-panel(s) and the

RTU, if applicable) shall be measured and priced at the approved Tendered Rates for Additional Measured Quantities.

32 INSTALLATION OF SUPERVISORY MARSHALLING KIOSKS

- 32.1 Where specified in the Scope of Work of the Works Project Document the Contractor shall be responsible for the collection from Ndabeni Stores, delivery to Works Project sites and the installation, connection, testing and cold-commissioning, at the tendered rates, of free-issue Supervisory Marshalling Kiosks (SMKs). (This is expected to be applicable in the case of Installation of existing ABB Unigear ZACB switch-panels with hard-wired SCADA facilities that are currently held in stock, as per Item A of the specification).
- 32.2 SMKs will be 10-way, 14-way or 25-way, as specified in the Scope of Works of the particular Works Project Document. The SMKs will be supplied by others.
- 32.3 SMKs shall be floor mounted over the trench provided in the position indicated by the Engineer or detailed on the Employer's specific PRA drawing for the Works Project.
- 32.4 The Contractor shall supply, install and terminate the 12 twisted-pair, Aluminium/Polyester tape screened, stranded 0,22 mm² data cable required between each switch-panel and the SMK at the approved Tendered Rates for Additional Measured Quantities. Termination of the data cable shall utilise boot-lace ferrules to the Engineer's approval.
- 32.5 Data cable between the Switch-panels and the SMK shall be installed on cable racks and cable ladders which, where specified in the Scope of Work of the Works Project Document, shall be supplied and installed by the Contractor at the Tendered Rates for Additional Measured Quantities.
- 32.6 The Contractor shall be responsible for providing redline drawings of the SCADA facilities as installed on handover, and detailed as-built drawings of the SCADA facilities as installed in the Works Project Manual within two weeks of the Handover of the Works Project.

33 INSTALLATION OF METERING CUBICLES

- 33.1 Where specified in the Scope of Work of the Works Project Document the Contractor shall be responsible for the collection from Ndabeni Stores, delivery to Works Project sites and the installation of free-issue Metering Cubicles at the rates tendered in the Schedule of Rates.
- 33.2 Metering Cubicles shall be supplied by others.
- 33.3 Metering Cubicles shall be wall mounted above the trench provided on the interior side or front wall, as required for the specific project. Specific details shall be provided on the Employer's PRA drawing for that project.

34 AFTER-HOURS WORK

- 34.1 After-hours work necessary as a consequence of specific requirements of the particular Works Project shall be identified and approved at the time of acceptance of the Work Project Document, and only the nett additional cost of the after-hours

work over and above the rate for normal working hours shall be covered, at the approved rates.

- 34.2 All labour costs for the installation work during normal working hours shall be included in the tendered installation rates per equipment item.
- 34.3 In order to provide the basis for determination of the personnel costs for after-hours work the hourly labour rates for normal-time work shall be detailed in the Pricing Schedule.
- 34.4 The additional costs for after-hours work (over and above the normal-hours rates already included in the tendered installation rates per equipment item) shall be calculated from these rates on the basis of the nature and expected duration of the actual after-hours work planned for the specific Works Project.
- 34.5 Overtime costs for Saturdays and after-hours work on Weekdays shall be at 50% of the normal time rate and overtime costs for Sundays and Public Holidays shall be at 100% of the normal time rate.

35 CONTRACTOR'S SUPERINTENDENCE

- 35.1 The Contractor shall until the end of the defects notification period make such arrangements as to ensure the attendance on the Site within 24 h of being called upon by the Engineer of a competent Supervising Engineer for the purpose of carrying out any work of maintenance for which the Contractor shall be liable and during such part or parts of the said period as the Engineer shall deem it necessary the said representative shall be continuously available on the Site.
- 35.2 Any work which may be necessary for the Contractor to carry out in pursuance of his obligations under the Conditions of Contract shall be carried out with the minimum of interference to the normal operation of the switching station. Work on the Site shall be carried out at such time and during such hours as the Engineer may require.
- 35.3 Other requirements regarding the availability of staff during the maintenance period of any portion of the plant and equipment are stated in the Conditions of Contract.

36 MAINTENANCE AND CLEARING OF SITE

- 36.1 The placing of materials and plant and equipment near the erection site prior to their being erected and installed shall be done in a neat, tidy and safe manner. The Contractor shall at his own expense keep the site area allocated to him and also the erection area of the Works reasonably clean and shall remove all waste materials as it accumulates and as directed by the Engineer from time to time.
- 36.2 To ensure efficient cleaning of the substation works and any other areas where work may be carried out simultaneously under this and other contracts the Contractor shall, if required by the Engineer, co-operate in the setting up and operation of a joint cleaning squad, the costs of which shall be borne by each Contractor in proportion to the cleaning required under this Works as determined by the Engineer.
- 36.3 Other requirements in respect of the maintenance and clearance of the Site are stated in the Conditions of Contract.

37 GENERAL REQUIREMENTS

37.1 General Requirements for all Panels

- 37.1.1 Where separate panels are required each cubicle shall be fully wired and equipped with all necessary equipment including alarms, indication and test facilities, isolating facilities, instruments, fuses and cable terminations etc as specified in the Schedules. Where loose equipment is to be installed on the panels being provided, all the ancillary equipment above shall be provided.
- 37.1.2 Cubicles shall be constructed from sheet steel designed to be self-supporting and be vermin and termite proof. They shall not be less than 600 mm wide, and in no case shall the depth exceed the width. The doors shall be hinged to lie back flat to avoid restricting access. Hinges shall be of the lift off type. Doors shall be secured by integral handles which shall be suitable for locking by padlocks and not more than 1,8 m above floor level.
- 37.1.3 Circuit labels shall be provided on the front and back of each panel and on the outside of the cubicle doors.
- 37.1.4 Full provision for testing each part of the equipment shall be made so that it will not be necessary to disconnect wires from terminals.

37.2 Control and Selector Switches

- 37.2.1 Switches shall comply with the requirements of IEC 60337, the particular duty and utilisation category required being selected from the range stated, according to the duty imposed by the particular application.
- 37.2.2 Switches shall be designed to prevent inadvertent operation. Means shall be provided for locking the control switches when they are in the "neutral" position. Means shall be provided for locking selector switches in the "remote" position. Where selector switches are required to have a "neutral" position means for locking in this position shall be provided. Control switches of the discrepancy type shall require two independent movements to effect operation. The control switch shall be so designed that when released by the operator it shall return automatically to the "neutral" position after having been turned to the "closed" position and shall at the same time interrupt the supply current.
- 37.2.3 All Castell keys shall be unique. All key switches shall be of the highest quality available. Switches not lockable shall be mounted behind a clear, lockable cover to prevent tampering.

37.3 Cubicle Wiring

- 37.3.1 All wiring shall be coloured according to phase colours [red, white, blue and black (star point)] for current transformer and voltage transformer circuits, green for earth and grey for all other circuits. Alternatively, subject to approval by the Engineer, ferrules shall be colour identified as above.
- 37.3.2 All cubicle internal wiring and small wiring shall be of PVC insulated multi-strand flexible wire to SANS 1507. Control circuits shall be wired using multi-strand 1,5 mm² wire, and current carrying circuits with 2,5 mm² wire. Crimping lugs of an approved type shall be provided for all terminations. The insulation shall have a glossy finish and shall be incapable of supporting combustion.

- 37.3.3 All incoming and outgoing cubicle wiring connections shall be terminated at a terminal block. Direct connections into auxiliary switches, relays or other equipment are not acceptable.
- 37.3.4 Wires shall not be jointed or teed between terminal points. Bus wires shall be fully insulated and run separately from one another along the top or bottom of the cubicle. Fuses and links shall be provided to enable all circuits in a cubicle, except a lighting circuit, to be isolated from the bus wires.
- 37.3.5 The dc trip and ac voltage supplies and wiring to main protective gear shall be segregated from those for back-up protection and also from protective apparatus for special purposes. Each such group shall be fed through separate fuses from the bus wires. There shall not be more than one set of supplies to the apparatus comprising each group.
- 37.3.6 All cubicle wiring shall be brought to screw type terminal blocks and shall be neatly run and securely fixed in cleats or PVC trunking in such a manner that, wherever practicable, wiring can be checked without removing cleats.
- 37.3.7 Cleats shall be of an approved moulded insulating material and preferably of the limited compression type. There shall be no possibility of oil entering connection boxes used for cable or wiring.
- 37.3.8 Covers over individual sections of small wiring trunking shall be readily removable. Pilot box covers shall be removable with the circuit breaker in the normal service position.
- 37.3.9 All wiring diagrams for control panels shall be drawn as if viewed from the front and shall show the terminal boards arranged as in service.
- 37.3.10 Where circuits working at different voltages are present in the same compartment, connections rated at 230 V and above shall be adequately screened and "DANGER" notices shall be affixed on the connection blocks.
- 37.3.11 Circuits working at different voltages shall be adequately segregated and labelled.
- 37.3.12 All switch panels shall be supplied with small wiring and dummy terminal board necessary to secure all wiring where relays are not required. Blanking plates shall be provided on all apertures where equipment is not supplied under this contract.
- 37.4 Multicore Cables and Conduit Wiring**
- 37.4.1 The multicore cabling between switchgear and relay panels and the ancillary equipment shall form part of the Works and shall consist of 600/1 000 V Ethylene Vinyl Chloride (white stripe) "Zerotox" type insulated and sheathed steel wire armoured cable with an overall sheath to SANS 1507 strapped to cable racks.
- 37.4.2 Where cable cores are liable to contact with oil or oil vapour the insulation shall be unaffected by oil.
- 37.4.3 All copper conductors shall consist of multi-stranded annealed copper wires.
- 37.4.4 All cores shall be numbered throughout their length in such a manner as to render them easily identifiable. The spare cores of all multicore cables shall be numbered and terminated at a terminal block in the cubicle. All cores shall be coloured grey.

- 37.4.5 Multicore cable tails shall be so bound that each wire may be traced to its cable without difficulty. Where cables are terminated in a junction box and the connections to a relay or control cubicle are continued in conduit, the spare cores shall be taken through the conduit and terminated in a cubicle.
- 37.4.6 All incoming and outgoing connections shall be terminated at a terminal block. Direct connection into auxiliary switches or relays are not acceptable.
- 37.4.7 The screens of screened pairs of multicore cables shall be earthed at one end of the cable only. The position of the earthing connections shall be shown clearly on the diagram.
- 37.4.8 PVC sheathed cables shall be terminated by compression glands complying with SANS 1213 (or equivalent).
- 37.4.9 The drilling of gland plates, supply and fitting of compression glands and connecting up of power cables shall be carried out under this Contract.
- 37.4.10 The Contractor shall ensure that tails of sufficient length are left at each end of the multicore cables to connect up to the terminal boards. The Contractor shall strip, insulate, ring through and tag the tails, and seal the cable boxes and shall be responsible for rechecking the individual cores and for the final connecting up and fitting of ferrules.
- 37.4.11 All multicore cables shall be identified at each end with identifying tags just below the cable glands and have the same tag applied every 3 m along its length.
- 37.4.12 The Contractor shall provide, in accordance with an agreed programme, adequate information regarding external power and control cabling which is associated with the equipment included in the Contract.
- 37.4.13 The information shall preferably be shown on connection diagrams or in equivalent cable schedule form and shall include the following information:
- 37.4.13.1 Terminating facilities for each item of equipment.
- 37.4.13.2 The function and destination of all external connections from the terminal block.
- 37.4.13.3 The function and destination of all internal wiring within the equipment.
- 37.4.13.4 The wire and terminal number for each destination.
- 37.4.13.5 The spare terminals in the equipment.
- 37.4.13.6 The voltage of each circuit and minimum wire size required.
- 37.4.13.7 Any special requirements for the external connections e.g. screened cores.
- 37.4.14 It should not be necessary for the Engineer to refer to the schematic diagram for the purpose of establishing external cabling requirements and the connection diagrams or equipment schedules shall give the complete information.

37.5 Ferrules

- 37.5.1 All small wiring and all multicore cables shall have ferrules which bear the same number at both ends. At those points of interconnection between wiring where a change of number cannot be avoided double ferrules shall be provided on each wire.

The change of numbering shall be shown on the appropriate diagram of the equipment. The same ferrule shall not be used on wires in different circuits of the same panel. Numbering of ferrules shall comply with SANS 1885 Annex A unless otherwise approved.

- 37.5.2 Ferrules shall be of insulating material and shall be provided with a glossy finish to prevent the adhesion of dirt. They shall be clearly and durably marked and shall not be affected by dampness or oil. In addition all wires associated with the tripping circuits shall be provided with red ferrules marked "Trip" or "T" in white. For current transformer circuits the ferrules shall be coloured red, white or blue according to the phase, or black for the star point.
- 37.5.3 The Contractor shall submit for approval a list of the proposed ferrule numbers. The Employer will furnish the Contractor with a list of ferrule numbers to be used in supervisory circuits will be supplied to the Contractor.
- 37.5.4 Patch leads and pigtails shall be fitted with approved ferrule numbers.

37.6 Terminal Boards and Terminal Blocks

- 37.6.1 Terminal boards shall be mounted vertically and set not less than 100 mm apart with a minimum distance of 200 mm between the top or bottom and the gland plate.
- 37.6.2 Terminals shall be of the spring loaded insertion clamp type incorporating captive pressure screws which do not bear directly on the wire but on a serrated clamping plate. The pressure screws shall have an inherent locking feature.
- 37.6.3 Terminals for current transformer secondary wiring in the LV control / relay compartment shall be provided with test sockets suitable for 4mm test plugs, to be used with jumpers for the purpose of shorting of the CT secondary side during ratio selection.
- 37.6.4 Terminations shall be grouped according to function and labels shall be provided on the fixed portion of the terminal boards showing the function of the group.
- 37.6.5 The use of terminal boards as junction points for wires which are not required in the associated cubicle shall be avoided wherever practicable.
- 37.6.6 Covers of transparent insulating materials shall be provided on terminal boards on which connections for circuits at 125 V or higher are terminated.
- 37.6.7 All terminal boards shall have a minimum of 20% spare terminals.
- 37.6.8 Terminal boards and blocks shall be positioned such that uninhibited access is provided to the pressure screws and terminals for the purpose of connecting or disconnecting wires.

37.7 Fuses and Links

- 37.7.1 Carriers and bases for fuses and links shall be in accordance with SANS 60269 and colour coded black for fuses and white for links.
- 37.7.2 The fuses and links mounted in cubicles for tripping circuits and protective gear test links and the type PK-2 (or equivalent to approval) test blocks on current transformer secondary circuits shall be mounted on the front of the panel. Other links and fuses shall be accommodated within the cubicle or above the cubicle

doors. Fuses and links shall be grouped, labelled and spaced according to their function in order to facilitate identification.

- 37.7.3 All incoming circuits in which the voltage exceeds 125 V shall be fed through insulated fuses and/or links or MCB's, the supplies being connected to the bottom terminal. The contacts on the fixed portion of the fuse or link shall be shrouded so that accidental contact with live metal cannot be made when the moving portion is withdrawn.
- 37.7.4 Main ac and dc supply fuse links shall be of the high rupturing capacity cartridge type.
- 37.7.5 Where fuse carriers are mounted vertically the incoming (supply) side shall be the bottom terminal.
- 37.7.6 Where either fuses or circuit breakers are used it should be ensured that they shall be of suitable rating and that proper discrimination between main and sub-circuits is maintained.

37.8 Motors

- 37.8.1 The motors associated with the operation of the switchgear shall be ac motors rated at 230V ac and supplied from the substation ac supply.
- 37.8.2 All motors shall comply with IEC 60034 and dimensions with IEC 60072. They shall be capable of operating continuously under actual service conditions without exceeding the specified temperature rises, determined by resistance.
- 37.8.3 All motors shall be totally enclosed, and if situated in the open they shall be weatherproof and suitable for outdoor working. They shall be provided with a suitable means of drainage to prevent accumulation of water due to condensation and with suitable means of breathing.
- 37.8.4 Motors operating in an ambient temperature not exceeding 40°C shall have Class 'E' insulation or better but where the ambient temperature may exceed this figure or where the motor may be appreciably affected by conducted heat, Class 'B' insulation or better shall be used.
- 37.8.5 All motors shall be suitable for direct starting at full voltage.
- 37.8.6 Motors shall have sealed ball or roller bearings.
- 37.8.7 The line connections shall be brought out to a terminal box. The terminal arrangements shall be suitable for the reception of aluminium cable. Terminal markings shall be made in a clear and permanent manner and shall comply with IEC 60034. A permanently attached diagram or instruction sheet shall be provided giving the connections for the required direction of rotation. All terminal boxes shall be of the totally enclosed type designed to exclude the entry of dust and moisture and sealed from the internal air circuit of the motor. All joints shall be flanged with gaskets or neoprene or other approved material. Natural rubber insulation shall not be used.

37.9 Motor Control Gear

- 37.9.1 Control gear shall comply with the requirements of IEC 60292, the control gear being rated according to the duty imposed by the particular application.

- 37.9.2 Motor contactors shall comply with IEC 60158 class of intermittent duty 0-3 with type IP52 enclosure protection and a utilization category AC4. They, and their associated apparatus, shall be capable of switching the stalled current, and shall have a continuous current rating of at least 50% greater than the full load current of the motors they control.
- 37.9.3 The operating currents of overload trips fitted to motor contactors shall be substantially independent of ambient temperature conditions, including the effect of direct sunlight on the enclosure in which the contactors are installed.
- 37.9.4 Where small motors are connected in groups, the group protection shall be arranged so that it will operate satisfactorily in the event of a fault occurring on a single motor. The control and protection equipment shall be accommodated in the control cabinet or marshalling kiosk.
- 37.9.5 Each motor or group of motors shall be provided with control gear for starting and stopping by hand and automatically. Overload and single-phasing protection shall be provided.

37.10 Moulded Case Circuit Breakers

- 37.10.1 Moulded case circuit breakers shall be designed and tested in accordance with SANS 60947-2. They shall be suitable for use over the full range of expected voltage variation as specified in the Schedules.
- 37.10.2 They shall be suitably rated for both the continuous and short circuit loadings of the circuits they are protecting under all service and atmospheric conditions stated in the specification and to ensure that correct discrimination is maintained between main and sub-circuits.
- 37.10.3 For three phase circuits the miniature circuit breakers shall be of the three pole type, for single phase circuits they shall be of the single pole type and for dc circuits they shall be of the double pole type.
- 37.10.4 Where miniature circuit breakers are used in circuits containing inductive loads eg operating coils, it is essential that they are suitable for satisfactory operation in the circuit in which they are used, ie take account at the circuit time constant.
- 37.10.5 All miniature circuit breakers shall be provided with an auxiliary contact(s) for remote indication of circuit breaker operation.
- 37.10.6 Means shall be provided to prevent the miniature circuit breakers being inadvertently switched to the 'OFF' position.
- 37.10.7 Miniature circuit breakers shall be mounted in such a manner so as to give easily visible indication of breaker position and shall be grouped and spaced according to their function in order to facilitate identification and easy replacement.

37.11 Interchangeability

- 37.11.1 Corresponding parts shall be made to gauge and shall be interchangeable wherever possible throughout the Works. When required by the Engineer, the Contractor shall prove his quality by actually interchanging the various parts.
- 37.11.2 All circuit breakers shall be fully interchangeable with circuit breakers from the switch panels of similar type without realignment, modifications or operator safety risk.

37.12 Stainless Steel

- 37.12.1 Any stainless steel used in the Works shall be of a type that is easily repaired by electric arc welding and of the properties stated in the Schedule. Those stainless steels of which the composition or properties are adversely affected by welding or the associated heat treatment shall not be used.
- 37.12.2 Where required by the Engineers, mechanisms shall be constructed of stainless steel, brass or gunmetal to prevent sticking due to rust or corrosion.

37.13 Galvanizing

- 37.13.1 Galvanising shall be applied by the hot dip process and shall comply with SANS 121, SANS 4998, SANS 935 or SANS 32 as applicable. Any other methods of galvanising proposed by the Tenderer shall be to the Engineer's approval.
- 37.13.2 All welds shall be de-scaled, all machining carried out and all parts shall be adequately cleaned prior to galvanizing. The preparation for galvanizing and the galvanizing itself shall not adversely affect the mechanical properties of the coated material.
- 37.13.3 The threads of all galvanized bolts and screwed rods shall be cleared of spelter by spinning or brushing. A die shall not be used for cleaning the threads unless specially approved by the Engineer. All nuts shall be galvanized with the exception of the threads which shall be oiled.
- 37.13.4 Surfaces which are in contact with oil shall not be galvanized or cadmium plated.
- 37.13.5 Partial immersion of the work will not be permitted and the galvanizing tank must therefore be sufficiently large to permit galvanizing to be carried out by one immersion.
- 37.13.6 Galvanizing of wires shall be applied by the hot dip process and shall meet the requirements of SANS 935 or SANS 121.

37.14 Rubber Seals

Where rubber to metal water seals are employed the composition of the contacting surfaces shall be such that sticking or seizure does not occur.

37.15 Welding

- 37.15.1 The Contractor shall submit to the Engineer full details of weld procedures, including preheat, electrodes to be used, stress relief, method of temperature measurement and weld profiles.
- 37.15.2 The Contractor shall submit for approval documentary evidence regarding the competence of all welders to be employed on the Works. Those welders failing to satisfy the foregoing conditions will be required to complete qualification tests, witnessed by the Engineer, in accordance with the requirements of the appropriate Code or to requirements specified by the Engineer.
- 37.15.3 The Contractor shall submit for approval full details of any proposed repair by welding.

- 37.15.4 Preheat for welding may be required on all fabrications of alloy steel and also for mild steel where the thickness is 25 mm or more and stress relieving is to be carried out to the approval of the Engineer.
- 37.15.5 All strength welds are to be non-destructively tested by an approved method to the satisfaction of the Engineer.
- 37.15.6 Any welding at Site is to be carried out under the supervision of a competent welding engineer.
- 37.15.7 Castings requiring repair shall be submitted to the Engineer's inspecting authority before commencement of rectification work. No repairs will be permitted until the proposed repair weld procedure has been submitted to and approved by the Engineer's inspecting authority. All areas in respect of which approval has been given for weld repair shall be chipped or ground back to sound metal followed by crack detection or radiographic examination is to be carried out - all of the foregoing non-destructive testing in the presence of the Engineer's inspecting authority.
- 37.15.8 Weld repair of forgings is not permitted.
- 37.15.9 Weld repair of cast iron details is not permitted but alternative methods of repair may be submitted to the Engineer's inspecting authority for consideration.
- 37.16 Bolts and Nuts**
- 37.16.1 All bolts, studs, screw threads, pipe threads, bolt heads and nuts shall comply with ISO standards for metric threads.
- 37.16.2 Except for small wiring, current carrying terminal bolt or studs, for mechanical reasons, shall not be less than 16 mm in diameter.
- 37.16.3 All nuts and pins shall be locked in position. All lock nuts or lock washers shall be of approved type.
- 37.16.4 Wherever possible bolts shall be fitted in such a manner that in the event of failure of locking resulting in the nuts working loose and falling off, the bolt will remain in position.
- 37.16.5 Each bolt or stud shall project at least one thread but not more than three threads through its nut, except when otherwise approved for terminal board studs or relay stems. If bolts and nuts are placed so that they are inaccessible by means of ordinary spanners, special spanners shall be provided.
- 37.16.6 The length of the screwed portion of the bolts shall be such that no screw thread may form part of a shear plane between members.
- 37.16.7 Taper washers shall be provided where necessary.
- 37.16.8 On exposed or outdoor equipment bolts, nuts and washers in contact with non-ferrous metallic parts shall be of phosphor-bronze or cadmium plated. Black finished bolts are not acceptable.
- 37.17 Oils and Greases**
- 37.17.1 The Contractor shall provide the first filling of oil for all transformers, one complete change of oil for all auxiliary equipment and grease for all bearings etc.

37.17.2 The Employer will nominate the supplier of oil and grease whom it prefers, and the Contractor shall, as far as possible, select types of oil and grease readily obtainable from this source. The Contractor shall endeavour to keep the number of types to a minimum.

37.17.3 In the event of difficulty, the Contractor may use special oils and greases, subject to the approval of the Engineer, provided that he can properly justify their use.

37.18 Cleaning and Painting

37.18.1 All paints shall be of a type and make to the approval of the Engineer and shall be applied in strict accordance with the paint manufacturer's instructions.

37.18.2 All painting shall be carried out on dry and clean surfaces and under suitable atmospheric and other conditions in accordance with the paint manufacturer's recommendations for coastal conditions.

37.18.3 Rust and millscale on plates and sections comprising the equipment shall be removed prior to fabrication by means of shot-blasting, and tubular sections shall be cleaned by acid pickling.

37.18.4 Post fabrication treatment shall embrace grinding, deburring and polishing, followed by a high pressure degreasing iron phosphate wash.

37.18.5 The complete equipment and all mechanical accessories shall be given one primer coat of zinc chromate etch-primer followed by intermediate and finishing coats of polyurethane acrylic enamel applied in alternate coats of contrasting colours until a paint thickness of 125 µm is obtained.

37.18.6 If epoxy powder coating is used, the final thickness shall not be less than 50 µm.

37.18.7 All external bare copper earth conductors shall be finished with one coat of polyurethane acrylic enamel. The colour shall be D10 Brilliant Green to SANS 1091.

37.18.8 Work's Processes

37.18.8.1 All steelwork, plant supporting steelwork and metalwork, except galvanised surfaces or where otherwise specified, shall be blast cleaned to Grade Sa 2,5 to SANS 064 or ISO 8501-1 to achieve a blast profile of 50 µm to 75 µm.

37.18.8.2 All surfaces shall then be painted with one coat of twin pack epoxy zinc rich primer, to a film thickness of 100 µm. This primer shall be applied preferably by airless spray and within twenty minutes but not exceeding one hour of blast cleaning.

37.18.8.3 All rough surfaces of coatings shall be filled with an approved two pack filler and rubbed down to a smooth surface.

37.18.8.4 The interior surfaces of all steel tanks and oil filled chambers shall be blast cleaned in accordance with SANS 064 or ISO 8501-1 to Grade Sa 3 and painted within a period of preferably twenty minutes but not exceeding one hour with an oil resisting coating of a type and make to the approval of the Engineer.

37.18.8.5 The interior surfaces of mechanism chambers, boxes and kiosks, after preparation, cleaning and priming as required above, shall be painted with one coat zinc chromate primer, one coat phenolic based undercoating, followed by one coat phenolic based finishing paint to a light or white colour. For equipment for outdoor

use this shall be followed by a final coat of anti-condensation paint of a type and make to the approval of the Engineer, to a light or white colour. A minimum overall paint film thickness of 150 µm shall be maintained throughout.

- 37.18.8.6 All steelwork and metalwork, except where otherwise specified, shall after preparation and priming as required above be painted with one coat metallic zinc primer and two coats of micaceous iron oxide paint to an overall minimum paint film thickness of 150 µm.
- 37.18.8.7 Galvanized surfaces shall not be painted in the Works.
- 37.18.8.8 For powder coating, all steel parts shall be immersed in a heated wash trough to remove all fine foreign particles and lubricants. The paint coat shall be a high quality polyurethane based powder coat designed for interior and exterior conditions applied by electrostatic spray equipment. The sprayed powder coat shall be baked in an oven at a temperature of approximately 200°C for a period of ten minutes or as specified by the paint manufacturers. The dry film coat shall be as uniform as possible, but shall not be less than 50 µm and not more than 100 µm thick. The finish shall be high gloss with a minimum of surface defects.
- 37.18.8.9 Unless otherwise approved the colour of the final coat of paint shall be G29 Light Grey to SANS 1091 or RAL7032 Pebble Grey. The internal surfaces shall be White.
- 37.18.8.10 The Contractor may propose alternative paint systems for consideration by the Engineer.
- 37.18.9 Site Painting
- 37.18.9.1 After erection on site the interior and exterior surfaces shall be thoroughly examined and all damaged paintwork shall be rubbed down and made good to the full original paint specification.
- 37.18.9.2 All surfaces of steelwork and metalwork shall be thoroughly washed down, any deteriorated or otherwise faulty paintwork removed down to bare metal and made good to the full specification then painted one further coat of phenolic based undercoating and one coat phenolic based hard gloss finishing paint to provide an overall minimum paint film thickness of 200 µm.
- 37.18.9.3 Any nuts, bolts, washers, etc, which have been removed during site erection, or which may be required to be removed for maintenance purposes shall be restored to their original condition.
- 37.18.9.4 All nuts, bolts, washers, etc which are fitted after fabrication or during erection shall be painted as described above
- 37.18.9.5 All paintwork shall be left clean and perfect on completion of the Works.

37.19 Fire Precautions

All apparatus, connections and cabling shall be designed and arranged to minimise the risk of fire and any damage which might be caused in the event of fire. The Employer will be responsible for sealing all holes in floors, walls, roofs etc through which the cabling may pass.

37.20 Spanners and Special Tools

- 37.20.1 The Tenderer shall indicate in the Prices and Quantities for Optional Work the cost per complete set for any SPECIALISED spanners and tools required to fit every nut and bolt head on the apparatus supplied under this Contract. The specialised tools required for a substation shall be supplied as a kit in a portable toolbox. The contents of the specialised tools kit shall be itemised and fully detailed in the tender submission.
- 37.20.2 The Tenderer shall furthermore indicate in the Prices and Quantities for Optional Work the cost per complete set for any SPECIALISED devices, slings and tackle required for a complete site overhaul of the apparatus supplied under this Contract. The specialised devices, slings and tackle required shall be supplied as a kit in a portable container. The contents of the specialised devices, slings and tackle kit shall be itemised and fully detailed in the tender submission.

37.21 Labels and Marking

- 37.21.1 Before leaving the Manufacturer's Works all apparatus and fittings shall be painted or stamped in two places with a distinguishing number and/or letter corresponding to the distinguishing number and/or letter on an approved drawing and material list.
- 37.21.2 The erection marks on galvanized material shall be stamped before galvanising and shall be clearly legible after galvanising
- 37.21.3 All markings shall be legible.
- 37.21.4 Weatherproofed tags, where used, shall be durable, securely attached and duplicated.
- 37.21.5 All apparatus shall be clearly labelled indicating, where necessary, its purpose and service positions. Each phase of alternating current and each pole of direct current equipment and connections shall be coloured in an approved manner to distinguish phase or polarity.
- 37.21.6 The material of all labels and the dimensions, legend, and method of printing shall be to approval. Solvent or heat activated dry film adhesive labels may be used for certain functions subject to approval. The surface of indoor labels shall have a matt or satin finish to avoid dazzle from reflected light.
- 37.21.7 Each switch panel shall be provided with a blank circuit label on the front, on the rear and on the circuit breaker or circuit breaker truck. Unless otherwise approved, these labels shall be of the sandwich-board type with black lettering on a white background. The method of fixing these labels shall be to approval, but adhesive is not acceptable.
- 37.21.8 Labels to identify the equipment function shall be provided on the front and rear doors of all cubicles. Labels shall be provided inside cubicles for circuits and apparatus which otherwise could only be identified from the front of the cubicle.
- 37.21.9 External relay and components labels and internal labels for fuse holders, phasing sockets etc shall be trafolite with black lettering on white background.
- 37.21.10 Colours shall be permanent and free from fading. Labels mounted on black surfaces shall have white lettering. 'Danger' plates shall be in accordance with SANS 1186 type WW 7.

38 PACKING, SHIPPING AND TRANSPORT

- 38.1 The Contractor shall make his own arrangements for the delivery of the plant and equipment to the Employer's Electricity Stores or to site and shall provide all labour, plant and material necessary for the unloading.
- 38.2 The Contractor shall be responsible for the packing, loading, transport and off-loading of the plant and equipment from the place of manufacture, whether this is at his own works or those of any supplier, to the Employer's Electricity Stores or to site.
- 38.3 All apparatus shall be carefully packed for transport by sea, rail and road as necessary and in such a manner that it is protected against climatic conditions.
- 38.4 The method of packing shall provide adequate protection to the equipment contained within and attached, for transportation. The method of packing and precautions to be taken during transport shall be clearly marked on the appropriate drawings.
- 38.5 Precautions shall be taken to protect the equipment insulation against the ingress of moisture.
- 38.6 All bright parts liable to rust shall receive a coat of anti-rusting composition and shall be suitably protected. The machined face of all flanges shall be protected by means of a blank disc bolted to each face.
- 38.7 Where appropriate all parts shall be boxed in substantial crates or containers to facilitate handling in a safe and secure manner. Each crate or container shall be marked clearly on the outside of the case to show where the mass is bearing and the correct position for the slings. Each crate or container shall also be marked with the notation of the part or parts contained therein, contract number and port of destination, and shall become the property of the Employer after delivery.
- 38.8 Where exhaust ducting that is to be assembled onto each switch panel in the completed installation is supplied and delivered in kit or other form separate from the switch panel, such ducting shall be crated or packaged complete such that all parts and fasteners necessary to assemble such ducting onto the switch panel are contained in a single container. The container shall be marked with a complete bill of materials and components contained there-in, together with the relevant part numbers and reference to the drawing number detailing assembly of such parts. Where appropriate, complete sets of gas duct components for two or more panels may be delivered in a single container provided that each kit is complete.
- 38.9 Gas exhaust ducting from the switchboard to the exterior of the switch room shall be supplied and delivered complete or in kit form in a single crate or container per assembly such that all parts and fasteners necessary to completely assemble and install such exhaust ducting in its specified standard length are contained in the single container. The container shall be marked with a complete bill of materials and components contained there-in, together with the relevant part numbers and reference to the drawing number detailing assembly of such parts. Where appropriate, complete sets of gas exhaust duct components for two exhausts may be delivered in a single container provided that each kit is complete. Components for more than two gas exhausts ducts may not be enclosed within a single container.
- 38.10 The components and fasteners for gas exhaust duct extension pieces necessary for each extension of specified length shall be supplied and delivered complete or in kit form in a single crate or container. The container shall be marked with a complete

bill of materials and components contained there-in, together with the relevant part numbers and reference to the drawing number detailing assembly of such parts. Where appropriate, complete sets of gas duct components for two or more exhaust duct extension pieces may be delivered in a single container provided that each set is complete.

- 38.11 Loose parts and accessories forming part of each switch panel or necessary for the assembly of each switchboard shall be dispatched and delivered with such switch panels. Fasteners, spacers, fittings, busbar shrouds (for AIS switchgear), secondary jumpers and other accessories for each switch-panel shall be crated and packaged with the switch-panel. Payment will not be authorised per switch panel until all relevant loose parts and accessories have been delivered. Any loose parts not crated or packaged with the switch-panel shall be crated or packaged such that all parts and fasteners necessary for each assembly are contained in a single container. The container shall be marked with a complete bill of materials and components contained there-in, together with the relevant part numbers and reference to the drawing number detailing assembly of such parts.
- 38.12 Any damage due to defective or insufficient packing shall be made good by the Contractor at his own expense and within reasonable time when called upon by the Employer to do so. Two copies of complete packing lists showing the number, size, marks, mass and contents of each package shall be posted to the Council and four copies to the Engineer immediately after the material is despatched.
- 38.13 The Contractor shall inform himself fully as to all relevant transport facilities and requirements and loading gauges and ensure that the equipment as packed for transport complies with the South African highway regulations and/or conforms to the limitations of the transport facilities of Transnet Ltd. The Contractor shall also be responsible for verifying the adequacy of any cranes required for off-loading at the port of entry, at the Council's Stores and Site.
- 38.14 The Contractor shall take reasonable steps to prevent damage to any highways or bridges by his traffic and shall select routes, choose and use vehicles and restrict and distribute loads so that the risk of damage shall be limited as far as is reasonably possible. The Contractor shall immediately report to the Engineer any claims made against him arising out of alleged damage to a highway or bridge.
- 38.15 Access to the Stores is by road only.

39 DELIVERY PERIOD

- 39.1 The specified delivery period per item is detailed in Schedule F.13.
- 39.2 Tenderers shall detail in the space provided in Schedule F.13 the tendered delivery period per item. Tendered delivery periods that exceed the specified delivery period will be to the approval of the Engineer.
- 39.3 Tendered delivery periods that are considered by the Engineer to be excessive and that would have an adverse effect on the Employer's material stock planning and project execution may result in the Tender being deemed non-responsive.
- 39.4 The contracted delivery period shall be the specified delivery period or an alternative tendered delivery period that has been considered and formally approved by the Engineer at the time of tender award.

- 39.5 The Contractor shall deliver Goods ordered from time to time in accordance with this tender within the contracted delivery period unless specifically approved to the contrary by the Engineer.
- 39.6 The Contractor shall on placement of new purchase orders by the Employer prepare a detailed delivery schedule that accords with the contracted delivery period and submit this to the Engineer within 5 working days of the placement of the orders.
- 39.7 In cases where large quantities of Goods are ordered simultaneously staggered deliveries that extend beyond the contracted delivery period will be considered provided that the delivery schedule has been formally approved by the Engineer.
- 39.8 Contract deliveries that exceed the contracted delivery period and for which the extended delivery period has not been formally approved by the Engineer will be subject to penalties in accordance Contract Data.

40 TECHNICAL DOCUMENTATION, DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS

- 40.1 Tenderers shall submit with their tenders full particulars of the equipment offered and shall complete the Schedules attached hereto.
- 40.2 No tender will be considered unless sufficient technical data, diagrams, drawings and relevant information are submitted to enable the characteristics and merits of the equipment offered to be ascertained.
- 40.3 Tenderers shall submit details of the manufacturing facilities that will be utilized for the construction of the tendered items and the location thereof, as well as details of the location and capabilities of their service / repair facility situated closest to the City of Cape Town.
- 40.4 The Tenderers shall submit the drawings detailed in Clause 2 of Section 49 of this specification with the Tender.
- 40.5 The Contractor shall submit the drawings detailed in Clause 3 of Section 49 of this specification for Engineering approval prior to commencement of Works and within the timeframes detailed in Schedule 24.3 of Volume 3.
- 40.6 Details of the drawings forming part of this specification are included in Clause 4 of Section 49 of this specification.

41 GENERAL PARTICULARS AND GUARANTEES

- 41.1 The plant and equipment shall comply with the particulars and guarantees stated in the Schedules.

41.2 Places of Manufacture

The manufacturers and places of manufacture, testing and inspection of the various portions of the Works shall be stated in the Schedules. Any changes shall be made with the written agreement of the Engineer and the Contractor shall ensure that the manufacturers and places of manufacture are acceptable to the Engineer.

41.3 Variance with Conditions of Contract

41.3.1 In the event of there being any inconsistency between the technical provisions of this Specification and the Conditions of Contract, the technical provisions of the Specification shall prevail and shall be considered as incorporated in the Contract.

41.3.2 Neither the items nor the clauses nor the detailed description therein nor anything contained in this Specification or the schedules shall limit the obligations and liabilities of the Contractor under the Conditions of Contract.

41.4 Compliance with Specification

41.4.1 All apparatus should comply with this Specification. Any departures from the requirements of this Specification shall be stated in the schedules and may be accepted at the Engineer's discretion.

41.4.2 No departure shall be implemented without the prior approval of the Engineer.

41.4.3 The Contractor shall be responsible for any discrepancies, errors or omissions in the particulars and guarantees, whether or not such particulars and guarantees have been approved by the Engineer.

41.4.4 All details given in this Specification and the drawings forming part of it have been carefully compiled but the onus is on the Tenderer to satisfy himself truly as to the accuracy thereof.

41.4.5 Tenderers shall submit with their tenders a completed copy of the relevant schedule listing clause by clause the specific technical details indicating compliance or non-compliance with the requirements of the specification.

42 STAFF TRAINING

42.1 Training shall be provided in Cape Town to enable the Employer's staff to install and maintain the equipment offered.

42.2 The Hardware, Operator and Maintenance Training course for the switchgear shall include, but not be limited to, the following:

- 42.2.1 Detailed overview of Equipment
- 42.2.2 Theory of operation
- 42.2.3 Interlocks and Safety Features
- 42.2.4 Installation and commissioning
- 42.2.5 Preventative maintenance
- 42.2.6 Maintenance manual review
- 42.2.7 Testing, troubleshooting and configuration
- 42.2.8 Repairs
- 42.2.9 Practical Demonstration

1.2

42.3 The training proposal shall include a description of the contents and duration of each course and prerequisites, if any, required of course participants. The outlines shall be in sufficient detail to evaluate the course material. The proposal shall be submitted with the tender.

42.4 The training instructors shall be South African based staff members of the OEM or their Agent and shall have been certified by the OEM as training instructors in the particular equipment offered.

- 42.5 The instructors shall have a complete and thorough knowledge of the equipment and course materials and shall have prior experience in conducting the specified training.
- 42.6 As the training may need to be conducted on more than one occasion during the contract period the training interventions shall neither require nor be priced to be conducted by overseas equipment specialists. Training interventions that are excessively priced will not be awarded without full justification and detailed breakdown of costing by the Tenderer.
- 42.7 Each course participant shall receive a copy of the training manuals and other pertinent materials with all changes and revisions to manuals and other documentation used during the training courses.
- 42.8 All training will be undertaken at Employer's premises.
- 42.9 The courses shall be given to classes of maximum size of 20 individuals and the training course per class shall be conducted and completed over a single, full day.
- 42.10 Full training interventions shall cover five separate classes and be completed in a single week of five working days (Monday to Friday), with a maximum expected attendance of 100 individuals.
- 42.11 On completion of the training each candidate shall be provided with certification of attendance of the course, with copies of the certification being provided to the Employer.
- 42.12 The price for each training intervention shall cover the complete training and include all preparation, travelling, accommodations and incidental costs including all course materials. The price tendered in the Schedule of Rates shall be for the full training intervention (ie. One week (five working days) encompassing five repeats in succession of the single day course). The training price is not a price per person nor a price per day.

43 INSPECTION AND TESTS

- 43.1 The switchgear shall be subject to type tests, routine tests, sample tests and inspections in accordance with SANS 62271 (All applicable parts), 62271-200, 61869-1, 61869-2, 61869-3, as applicable, and other applicable specifications.
- 43.2 During manufacture and prior to despatch the equipment will be inspected by the Engineer who will call for such tests as he may consider necessary to prove compliance with this specification and to ensure safe and reliable operation in service. Before the despatch of any equipment, an acceptance certificate will be issued by the Engineer.
- 43.3 In the event that type tests are still outstanding at the time of tender (and subject to subsequent completion having been approved by the Engineer) and are carried out subsequently or repeated, these type tests shall be witnessed by the Engineer. A minimum notice period of 21 days prior to scheduled type tests shall be given.
- 43.4 Detailed requirements for testing and inspections are included in Section 50: Quality Control, Inspection and Testing.

44 DISCLOSURE

The Employer shall have the right to disclose the contents of manuals, drawings, software documentation, protocol information and equipment to its employees, contractors, subcontractors or other utilities for the purpose of repair, modification, enhancement or replacement of the equipment supplied under this Contract. Deliverables marked as “proprietary” or similar shall not be acceptable. The Contractor shall submit his standard disclosure agreement for review and approval.

45 HEALTH, SAFETY & ENVIRONMENTAL COMPLIANCE

45.1 The contractor will comply with the Occupational Health and Safety Act, 85 of 1993 and ensure that all work is executed while being compliant with Environmental Management Systems Standard ISO 14001 and Occupational Health and Safety Management System ISO 45001. A project specific SHE file will be required for work being executed on site, which should be kept on site for the duration of the project. The file is not limited minimum requirements listed below:

- 45.1.1 Site-Specific Risk Assessment:
A detailed assessment of potential hazards and risks associated with the specific project and its activities.
- 45.1.2 Health and Safety Plan:
A plan outlining the company's approach to managing and mitigating health and safety risks, including incident management and emergency procedures.
- 45.1.3 Site Specific Emergency Telephone Numbers:
A list of contact numbers for relevant emergency services.
- 45.1.4 Site HSE Organogram:
A diagram outlining the responsibilities of individuals involved in health and safety on the site. (Clearly Indicating Responsible Person and First Aider etc)
- 45.1.5 Site Scope of Work:
A clear definition of the project's scope, including the tasks that will be undertaken.
- 45.1.6 Letter of Good Standing:
Proof of compliance with the Workmen's Compensation Commission or other relevant bodies.
- 45.1.7 Proof of Competency:
Evidence that staff involved have the necessary training and experience. (ORHVS)
- 45.1.8 Mandatory Agreements:
Agreements between the client and contractor, as required by the Occupational Health and Safety Act.
- 45.1.9 Risk Assessments and Safe Work Procedures:
Detailed risk assessments and safe work method statements (SWMS) for specific tasks.
- 45.1.10 Inspection Reports:
Records of regular inspections to identify and address safety hazards.
- 45.1.11 Material Safety Data Sheets (MSDS):
Information about hazardous materials used on the site.
- 45.1.12 Training Records:
Documentation of health and safety training provided to employees.
- 45.1.13 Toolbox Talks:

Records of safety discussions held with employees.

45.1.14 Incident and Accident Reports:

Detailed reports of any incidents or accidents that occur.

45.1.15 Personal Protective Equipment (PPE) Records:

Documentation of the use and maintenance of PPE.

45.1.16 General Information:

Company Supporting Documentation: Information about the company's structure, policies, and organizational chart.

45.1.17 Insurance Documents:

Proof of insurance coverage.

45.1.18 Emergency Contact Details:

A list of emergency contacts for various situations.

45.1.19 Fall Protection Plan:

A plan outlining measures to prevent falls, especially for work at heights. (If Applicable)

46 CONTINGENCY

An amount of 5% shall be catered for the individual works projects.

47 DETAILED PARTICULARS OF ITEMS OF EQUIPMENT – DEFINITE WORK

Number	Description	Number required per bay
1.	AIS DISTRIBUTION FEEDER PANEL (Items A1.1 (SAP 200010692), B1.1 (SAP Mat No TBA))	
1.1	The fixed portion of each Feeder Panel shall include:	
1.1.1	Sheet metal circuit breaker chamber with positively driven safety shutter devices.	1
1.1.2	Sheet metal busbar chamber suitable for three 1250 A busbars with approved insulation supported in air by means of approved insulators, with three 630 A isolating contacts and associated bushings, complete with specified accessories, but excluding busbars.	1
1.1.3	Sheet metal current transformer chamber with three 630 A isolating contacts and associated bushings, three cable-side bushings, and containing current transformers as follows:	1
1.1.3.1	Current transformers, ratio 400/300/5 Class PX for Solkor Rf feeder protection as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B \emptyset
1.1.3.2	Current transformers, ratio 400/5, 10 VA output per phase, Class 5P10 for overcurrent and earth fault protection and operation of the ammeter as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B \emptyset
1.1.4	Integral fault make cable earth switch	1
1.1.5	Capacitive-divider voltage sensing device for voltage detection system and electrical phasing-out	1 set
1.1.6	Segregated cable dividing box fitted with tapered brass gland and clamp suitable for making off a 3-core PILC cable of cross-section up to 300 mm ² by means of dry type cable terminations and one circuit label left blank.	1
1.1.7	Exhaust ducting for internal arc overpressure relief	1 set
1.1.8	Sheet metal control/relay panel fitted with:	1
1.1.8.1	Circuit label, left blank.	1
1.1.8.2	Housing including all associated wiring terminated onto a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted Solkor Rf relay insulated for 5 kV as specified EXCLUDING the relay.	1
1.1.8.3	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL 751A 2-pole overcurrent and 1-pole earth fault relay as specified EXCLUDING the relay.	1
1.1.8.4	Voltage Detection System (VDS) Indication and electrical phasing-out unit	1
1.1.8.5	MDI ammeter scaled 0-600 A.	1
1.1.8.6	Lockable Trip / Off / Close Operating handle for electrical closing and tripping of the circuit breaker.	1
1.1.8.7	Lockable Local / Remote selector switch	1
1.1.8.8	Lockable push button for trip testing via the protection circuit	1

Number	Description	Number required per bay
1.1.8.9	Indication lamps (LED).	4
1.1.8.10	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
1.1.8.11	Type PK-2 (or equivalent to approval) 4-way test blocks	2
1.1.8.12	Facilities on control / relay compartment suitable for terminating the specified multicore cables	
1.1.9	Arc detection fibres, V-Pin connectors and point sensors in the current transformer, circuit breaker and cable compartments.	1 set
1.1.10	Anti-condensation panel heaters.	1 set
1.1.11	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
1.2	The removable portion of each distribution feeder panel shall include:	
1.2.1	Three phase 30 V _{dc} 630 A circuit breaker.	1
1.2.2	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	1
1.2.3	Motorised and manual spring recharging facilities as specified.	1
1.2.4	Manual, behind closed doors, circuit breaker racking facilities as specified	1
1.2.5	All necessary auxiliary fittings and interlocks.	1 set
1.2.6	Circuit label, left blank.	1
1.2.7	Non-resettable circuit breaker operations counter.	1
2.	AIS DISTRIBUTION FEEDER METERING PANEL (Item A1.2 (SAP Mat No 200010694), Item B1.2 (SAP Mat No TBA))	
2.1	The fixed portion of each Feeder Metering Panel shall include:	
2.1.1	Sheet metal circuit breaker chamber with positively driven safety shutter devices.	1
2.1.2	Sheet metal busbar chamber suitable for three 1250 A busbars with approved insulation supported in air by means of approved insulators, with three 630 A isolating contacts and associated bushings, complete with specified accessories, but excluding busbars.	1
2.1.3	Sheet metal current transformer chamber with three 630 A isolating contacts and associated bushings, three cable-side bushings, and containing current transformers as follows:	1
2.1.3.1	Current transformers, ratio 400/200/1, 10 VA output per phase, Class 0,5S for metering as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ø
2.1.3.2	Current transformers, ratio 400/5, 10 VA output per phase, Class 5P10 for overcurrent and earth fault protection and operation of the ammeter as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ø
2.1.4	Sheet metal voltage transformer chamber for a circuit connected removable voltage transformer including all necessary auxiliary fittings, interlocks, shutters and VT fuse protection EXCLUDING the voltage transformer.	1
2.1.5	Integral fault make cable earth switch .	1
2.1.6	Capacitive-divider voltage sensing device for voltage detection system and electrical phasing-out	1 set
2.1.7	Segregated cable dividing box fitted with tapered brass gland and clamp suitable for making off a 3-core PILC cable of cross-section up to 300 mm ² by means of dry type cable terminations and one circuit label left blank.	1
2.1.8	Exhaust ducting for internal arc overpressure relief	1 set

Number	Description	Number required per bay
2.1.9	Sheet metal control/relay panel fitted with:	1
2.1.9.1	Circuit label, left blank.	1
2.1.9.2	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL 751A 2-pole overcurrent and 1-pole earth fault relay as specified EXCLUDING the relay.	1
2.1.9.3	Voltage Detection System (VDS) Indication and electrical phasing-out unit	1
2.1.9.4	MDI ammeter scaled 0-600 A.	1
2.1.9.5	Lockable Trip / Off / Close Operating handle for electrical closing and tripping of the circuit breaker.	1
2.1.9.6	Lockable Local / Remote selector switch	1
2.1.9.7	Lockable push button for trip testing via the protection circuit	1
2.1.9.8	Indication lamps (LED).	4
2.1.9.9	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
2.1.9.10	Type PK-2 (or equivalent to approval) 4-way test blocks	2
2.1.9.11	Facilities on control / relay compartment suitable for terminating the specified multicore cables	
2.1.10	Arc detection fibres, V-Pin connectors and point sensors in the current transformer, circuit breaker and cable compartments.	1 set
2.1.11	Anti-condensation panel heaters.	1 set
2.1.12	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
2.2	The removable portion of each feeder metering panel shall include:	
2.2.1	Three phase 30 V _{dc} 630 A circuit breaker.	1
2.2.2	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	1
2.2.3	Motorised and manual spring recharging facilities as specified.	1
2.2.4	Manual, behind closed doors, circuit breaker racking facilities as specified	1
2.2.5	All necessary auxiliary fittings and interlocks.	1 set
2.2.6	Circuit label, left blank.	1
2.2.7	Non-resettable circuit breaker operations counter.	1

Number	Description	Number required per bay
3.	AIS DISTRIBUTION BUS-SECTION PANEL (Items A1.3 (SAP Mat No 200010698), B1.3 (SAP Mat No TBA))	
3.1	Bus-section panels shall be LHS panels (ie Standard busbars to LHS of Bus-section panel, Busbar Riser panel to RHS). The fixed portion of each Bus-section Panel shall include:	
3.1.1	Sheet metal circuit breaker chamber with positively driven safety shutter devices.	1
3.1.2	Sheet metal busbar chamber suitable for three 1250 A busbars with approved insulation supported in air by means of approved insulators, with three 1250 A isolating contacts and associated bushings, complete with specified accessories, but excluding busbars.	1
3.1.3	Sheet metal current transformer chamber with three 1250 A isolating contacts and associated bushings, and containing current transformers as follows:	1
3.1.3.1	Current transformers, ratio 1250/5, 10 VA output per phase, Class 5P10 for overcurrent and earthfault protection and operation of the ammeter as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ø
3.1.4	Integral fault make busbar earth switch for RHS of Switch Board with Castell Key interlocked operating mechanism.	1
3.1.5	Exhaust ducting for internal arc overpressure relief	1 set
3.1.6	Sheet metal control/relay panel fitted with:	1
3.1.6.1	Circuit label, left blank.	1
3.1.6.2	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL 751A 2-pole overcurrent and 1-pole earth fault relay as specified EXCLUDING the relay.	1
3.1.6.3	MDI ammeter scaled 0-1600 A.	1
3.1.6.4	Lockable Trip / Off / Close Operating handle for electrical closing and tripping of the circuit breaker.	1
3.1.6.5	Lockable Local / Remote selector switch	1
3.1.6.6	Busbar earth switch interlock solenoid with captive Castell Key	1
3.1.6.7	Push button release for Castell Key solenoid	1
3.1.6.8	Lockable push button for trip testing via the protection circuit	1
3.1.6.9	Indication lamps (LED).	4
3.1.6.10	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
3.1.6.11	Type PK-2 (or equivalent to approval) 4-way test blocks	1
3.1.6.12	Facilities on control / relay compartment suitable for terminating the specified multicore cables	
3.1.7	Arc detection fibres, V-Pin connectors and point sensors in the current transformer and circuit breaker compartments.	1 set
3.1.8	Anti-condensation panel heaters.	1 set
3.1.9	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
3.2	The removable portion of each Distribution Bus Section panel shall include:	
3.2.1	Three phase 30 V _{dc} 1250 A circuit breaker.	1
3.2.2	Sets of auxiliary contacts for indicating and operating circuits, supervisory	

Number	Description	Number required per bay
	indication and spares as specified.	1
3.2.3	Motorised and manual spring recharging facilities as specified.	1
3.2.4	Manual, behind closed doors, circuit breaker racking facilities as specified	1
3.2.5	All necessary auxiliary fittings and interlocks.	1 set
3.2.6	Circuit label, left blank.	1
3.2.7	Non-resettable circuit breaker operations counter.	1
4.	AIS 1250 A BUSBAR RISER PANEL (Items A1.4 (SAP Mat No 200010700), B1.4 (SAP Mat No TBA))	
4.1	Busbar Riser panels shall be RHS panels (ie Standard busbars to RHS of Busbar Metering panel, Bus-Section to LHS). Each Busbar Riser Panel shall include:	
4.1.1	Sheet metal busbar riser chamber containing three riser 1250 A busbars with approved insulation supported in air by means of approved insulators, complete with specified accessories, but excluding loose busbars for connection to adjacent panels.	1
4.1.2	Exhaust ducting for internal arc overpressure relief	1 set
4.1.3	Sheet metal control/relay panel fitted with:	1
4.1.3.1	Circuit label, left blank.	1
4.1.3.2	Indication lamps (LED).	1
4.1.4	Arc detection fibres, V-Pin connectors and point sensors in the busbar, compartment..	1 set
4.1.5	Anti-condensation panel heaters.	1 set
4.1.6	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
5.	AIS 1250 A BUSBAR EARTHING PANEL (Items A1.5 (SAP Mat No 200010701), B1.5 (SAP Mat No TBA))	
5.1	Each Busbar Earthing Panel shall include:	
5.1.1	Sheet metal busbar chamber suitable for three 1250 A busbars with approved insulation supported in air by means of approved insulators, complete with specified accessories, but excluding busbars.	1
5.1.2	An integral fault make busbar earth switch with Castell Key interlocked operating mechanism.	1
5.1.3	Exhaust ducting for internal arc overpressure relief	1 set
5.1.4	Sheet metal control/relay panel fitted with:	1
5.1.4.1	Circuit label, left blank.	1
5.1.4.2	Busbar earth switch interlock solenoid with captive Castell Key	1
5.1.4.3	Push button release for Castell Key solenoid	1
5.1.4.4	Indication lamps (LED).	1
5.1.4.5	Facilities on control / relay compartment suitable for terminating the specified multicore cables	
5.1.5	Arc detection fibres, V-Pin connectors and point sensors in the earth switch compartments.	1 set
5.1.6	Anti-condensation panel heaters.	1 set
5.1.7	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
	AIS MAIN SUBSTATION FEEDER PANEL (1250 A BUSBARS) (Items	

Number	Description	Number required per bay
6.	A1.6 (SAP Mat No 200015075)	
6.1	The fixed portion of each Feeder Panel shall include:	
6.1.1	Sheet metal circuit breaker chamber with positively driven safety shutter devices.	1
6.1.2	Sheet metal busbar chamber suitable for three 1250 A busbars with approved insulation supported in air by means of approved insulators, with three 630 A isolating contacts and associated bushings, complete with specified accessories, but excluding busbars.	1
6.1.3	Sheet metal current transformer chamber with three 630 A isolating contacts and associated bushings, three cable-side bushings, and containing current transformers as follows:	1
6.1.3.1	Current transformers, ratio 400/300/5 Class PX for Solkor Rf feeder protection as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ϕ
6.1.3.2	Current transformers, ratio 400/5, 10 VA output per phase, Class 5P10 for overcurrent and earth fault protection and operation of the ammeter as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ϕ
6.1.4	Integral fault make cable earth switch.	1
6.1.5	Capacitive-divider voltage sensing device for voltage detection system and electrical phasing-out.	1 set
6.1.6	Segregated cable dividing box fitted with tapered brass gland and clamp suitable for making off a 3-core PILC cable of cross-section up to 300 mm ² by means of dry type cable terminations and one circuit label left blank.	1
6.1.7	Exhaust ducting for internal arc overpressure relief	1 set
6.1.8	Sheet metal control/relay panel fitted with:	1
6.1.8.1	Circuit label, left blank.	1
6.1.8.2	Housing including all associated wiring terminated onto a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted Solkor Rf relay insulated for 5 kV as specified EXCLUDING the relay.	1
6.1.8.3	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL 751A 2-pole overcurrent and 1-pole earth fault relay as specified EXCLUDING the relay.	1
6.1.8.4	Provision for the mounting of REA 107 Arc Detection Relay, including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, suitable for retrofitting of the relay but EXCLUDING the relay.	1
6.1.8.5	Busbar blocking scheme, as specified	1
6.1.8.6	Voltage Detection System (VDS) Indication and electrical phasing-out unit	1
6.1.8.7	MDI ammeter scaled 0-600 A.	1
6.1.8.8	Lockable Trip / Off / Close Operating handle for electrical closing and tripping of the circuit breaker.	1
6.1.8.9	Lockable Local / Remote selector switch	1
6.1.8.10	Lockable push button for trip testing via the protection circuit	1
6.1.8.11	Indication lamps (LED).	4
6.1.8.12	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
6.1.8.13	Type PK-2 (or equivalent to approval) 4-way test blocks	2
6.1.8.14	Facilities on control / relay compartment suitable for terminating the specified multicore cables	

Number	Description	Number required per bay
6.1.9	Arc detection fibres, V-Pin connectors and point sensors in the current transformer, circuit breaker and cable compartments.	1 set
6.1.10	Anti-condensation panel heaters.	1 set
6.1.11	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
6.2	The removable portion of each Main Substation feeder panel (1250 A busbars) shall include:	
6.2.1	Three phase 110 V _{dc} 630 A circuit breaker.	1
6.2.2	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	1
6.2.3	Motorised and manual spring recharging facilities as specified.	1
6.2.4	Manual, behind closed doors, circuit breaker racking facilities as specified	1
6.2.5	All necessary auxiliary fittings and interlocks.	1 set
6.2.6	Circuit label, left blank.	1
6.2.7	Non-resettable circuit breaker operations counter.	1
7.	 AIS MAIN SUBSTATION 1250 A INCOMER PANEL (Items A1.7 (SAP 200015074))	
7.1	The fixed portion of each Feeder Panel shall include:	
7.1.1	Sheet metal circuit breaker chamber with positively driven safety shutter devices.	1
7.1.2	Sheet metal busbar chamber suitable for three 1250 A busbars with approved insulation supported in air by means of approved insulators, with three 1250 A isolating contacts and associated bushings, complete with specified accessories, but excluding busbars.	1
7.1.3	Sheet metal current transformer chamber with three 1250 A isolating contacts and associated bushings, three cable-side bushings, and containing current transformers as follows:	1
7.1.3.1	Current transformers, ratio 1250/1 Class PX for transformer differential protection as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ø
7.1.3.2	Current transformers, ratio 1250/1, 10 VA output per phase, Class 5P10 for overcurrent and earth fault protection and operation of the ammeter as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ø
7.1.3.3	Current transformers, ratio 1250/1, 10 VA output per phase, Class 0,2S for metering as specified and with the secondary windings brought out to SecuControl 20-way test block.	3; R,W & B ø
7.1.4	Sheet metal voltage transformer chamber for a circuit connected removable voltage transformer including all necessary auxiliary fittings, interlocks, shutters and VT fuse protection and with the secondary windings brought out to SecuControl 20-way test block EXCLUDING the voltage transformer.	1
7.1.5	Integral fault make cable earth switch.	1
7.1.6	Capacitive-divider voltage sensing device for voltage detection system and electrical phasing-out	1 set
7.1.7	Segregated cable dividing box for making off single-core PILC cables of cross-section up to 500 mm ² (3 single-core cables per phase), including glands, lugs and connectors.	1
7.1.8	Exhaust ducting for internal arc overpressure relief	1 set
7.1.9	Sheet metal control/relay panel fitted with:	1
7.1.9.1	Circuit label, left blank.	1

Number	Description	Number required per bay
7.1.9.2	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL 751A 3-pole overcurrent and 1-pole earth fault relay as specified EXCLUDING the relay.	1
7.1.9.3	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL-734 integrating watt-hour meter, EXCLUDING the meter.	1
7.1.9.4	Busbar blocking scheme, as specified	1
7.1.9.5	Voltage Detection System (VDS) Indication and electrical phasing-out unit	1
7.1.9.6	MDI ammeter scaled 0-1600 A	1
7.1.9.7	Voltmeter with dial plate scaled 7 to 13,5 kV.	1
7.1.9.8	Lockable Trip / Off / Close Operating handle for electrical closing and tripping of the circuit breaker.	1
7.1.9.9	Lockable Local / Remote selector switch	1
7.1.9.10	Lockable push button for trip testing via the protection circuit	1
7.1.9.11	Indication lamps (LED).	4
7.1.9.12	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
7.1.9.13	Type PK-2 (or equivalent to approval) 4-way test blocks	2
7.1.9.14	SecuControl 20-way test block	1
7.1.9.15	Facilities on control / relay compartment suitable for terminating the specified multicore cables	
7.1.10	Arc detection fibres, V-Pin connectors and sensors in the current transformer, circuit breaker and cable compartments.	1 set
7.1.11	Anti-condensation panel heaters.	1 set
7.1.12	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
7.2	The removable portion of each Main Substation 1250 A Incomer panel shall include:	
7.2.1	Three phase 110 V _{dc} 1250 A circuit breaker.	1
7.2.2	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	1
7.2.3	Motorised and manual spring recharging facilities as specified.	1
7.2.4	Manual, behind closed doors, circuit breaker racking facilities as specified	1
7.2.5	All necessary auxiliary fittings and interlocks.	1 set
7.2.6	Circuit label, left blank.	1
7.2.7	Non-resettable circuit breaker operations counter.	1
8.	AIS MAIN SUBSTATION 1250 A BUS-SECTION PANEL (Items A1.8 (SAP 200015076))	
8.1	Bus-section panels shall be LHS panels (ie Standard busbars to LHS of Bus-section panel, Busbar Riser panel to RHS). The fixed portion of each Feeder Panel shall include:	
8.1.1	Sheet metal circuit breaker chamber with positively driven safety shutter devices.	1
8.1.2	Sheet metal upper busbar chamber suitable for three 1250 A busbars with approved insulation supported in air by means of approved insulators, with three 1250 A isolating contacts and associated bushings, complete with specified accessories, but excluding busbars.	1

Number	Description	Number required per bay
8.1.3	Sheet metal lower busbar chamber suitable for three 1250 A busbars with approved insulation supported in air by means of approved insulators, with three 1250 A isolating contacts and associated bushings, complete with specified accessories, but excluding busbars.	1
8.1.4	Integral fault make busbar earth switch for RHS of Switch Board with Castell Key interlocked operating mechanism.	1
8.1.5	Exhaust ducting for internal arc overpressure relief	1 set
8.1.6	Sheet metal control/relay panel fitted with:	1
8.1.6.1	Circuit label, left blank.	1
8.1.6.2	Provision for the mounting of REA 101 Arc Detection Relay for the right hand side of the Switchboard, including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, suitable for retrofitting of the relay but EXCLUDING the relay.	1
8.1.6.3	Arc Detection Reset Push Button	1
8.1.6.4	Busbar blocking scheme, as specified	
8.1.6.5	Lockable Trip / Off / Close Operating handle for electrical closing and tripping of the circuit breaker.	1
8.1.6.6	Lockable Local / Remote selector switch	1
8.1.6.7	Lockable push button for trip testing via the protection circuit	1
8.1.6.8	Indication lamps (LED).	4
8.1.6.9	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
8.1.6.10	Busbar earth switch interlock solenoid with captive Castell Key	1
8.1.6.11	Push button release for Castell Key solenoid	1
8.1.6.12	Facilities on control / relay compartment suitable for terminating the specified multicore cables	
8.1.7	Arc detection fibres, V-Pin connectors and point sensors in the circuit breaker compartment.	1 set
8.1.8	Anti-condensation panel heaters.	1 set
8.1.9	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
8.2	The removable portion of each Main Substation 1250 A Bus Section panel shall include:	
8.2.1	Three phase 110 V _{dc} 1250 A circuit breaker.	1
8.2.2	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	1
8.2.3	Motorised and manual spring recharging facilities as specified.	1
8.2.4	Manual, behind closed doors, circuit breaker racking facilities as specified	1
8.2.5	All necessary auxiliary fittings and interlocks.	1 set
8.2.6	Circuit label, left blank.	1
8.2.7	Non-resettable circuit breaker operations counter.	1
9.	AIS MAIN SUBSTATION 1250 A BUSBAR RISER PANEL (Item A1.9 (SAP Mat No 200015077))	
9.1	Busbar Riser panels shall be RHS panels (ie Standard busbars to RHS of Busbar Metering panel, Bus-Section to LHS). Each Busbar Riser Panel shall include:	
9.1.1	Sheet metal busbar riser chamber containing three riser 1250 A busbars with approved insulation supported in air by means of approved insulators,	1

Number	Description	Number required per bay
	complete with specified accessories, but excluding loose busbars for connection to adjacent panels.	
9.1.2	Exhaust ducting for internal arc overpressure relief	1 set
9.1.3	Sheet metal control/relay panel fitted with:	1
9.1.3.1	Circuit label, left blank.	1
9.1.3.2	Indication lamps (LED).	1
9.1.4	Arc detection fibres, V-Pin connectors and point sensors in the busbar riser compartment.	1 set
9.1.5	Anti-condensation panel heaters.	1 set
9.1.6	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
10.	AIS MAIN SUBSTATION 1250 A BUSBAR EARTH PANEL (Item A1.10 (SAP Mat No 200015078))	
10.1	Each Busbar Earthing Panel shall include:	
10.1.1	Sheet metal busbar chamber suitable for three 1250 A busbars with approved insulation supported in air by means of approved insulators, complete with specified accessories, but excluding busbars.	1
10.1.2	An integral fault make busbar earth switch with Castell Key interlocked operating mechanism.	1
10.1.3	Exhaust ducting for internal arc overpressure relief	1 set
10.1.4	Sheet metal control/relay panel fitted with:	1
10.1.4.1	Circuit label, left blank.	1
10.1.4.2	Provision for the mounting of REA 101 Arc Detection Relay for the left hand side of the switchboard, including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, suitable for retrofitting of the relay but EXCLUDING the relay.	1
10.1.4.2	Arc Detection Reset Push Button	1
10.1.4.3	Busbar earth switch interlock solenoid with captive Castell Key	1
10.1.4.4	Push button release for Castell Key solenoid	1
10.1.4.5	Indication lamps (LED).	1
10.1.4.6	Facilities on control / relay compartment suitable for terminating the specified multicore cables.	
10.1.5	Arc detection fibres, V-Pin connectors and sensors in the busbar and earth switch compartments.	1 set
10.1.6	Anti-condensation panel heaters.	1 set
10.1.7	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
11.	AIS MAIN SUBSTATION FEEDER PANEL (2500 A BUSBARS) (Item A1.11 (SAP Mat No 500007217))	
11.1	The fixed portion of each Feeder Panel shall include:	
11.1.1	Sheet metal circuit breaker chamber with positively driven safety shutter devices.	1
11.1.2	Sheet metal busbar chamber suitable for three 2500 A busbars with approved insulation supported in air by means of approved insulators, with three 630 A isolating contacts and associated bushings, complete with specified accessories, but excluding busbars.	1
11.1.3	Sheet metal current transformer chamber with three 630 A isolating contacts and associated bushings, three cable-side bushings, and containing current	1

Number	Description	Number required per bay
	transformers as follows:	
11.1.3.1	Current transformers, ratio 400/300/5 Class PX for Solkor Rf feeder protection as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ø
11.1.3.2	Current transformers, ratio 400/5, 10 VA output per phase, Class 5P10 for overcurrent and earth fault protection and operation of the ammeter as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ø
11.1.4	Integral fault make cable earth switch.	1
11.1.5	Capacitive-divider voltage sensing device for voltage detection system and electrical phasing-out.	1 set
11.1.6	Segregated cable dividing box fitted with tapered brass gland and clamp suitable for making off a 3-core PILC cable of cross-section up to 300 mm ² by means of dry type cable terminations and one circuit label left blank.	1
11.1.7	Exhaust ducting for internal arc overpressure relief	1 set
11.1.8	Sheet metal control/relay panel fitted with:	1
11.1.8.1	Circuit label, left blank.	1
11.1.8.2	Housing including all associated wiring terminated onto a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted Solkor Rf relay insulated for 5 kV as specified EXCLUDING the relay.	1
11.1.8.3	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL 751A 2-pole overcurrent and 1-pole earth fault relay as specified excluding the relay.	1
11.1.8.4	Provision for the mounting of REA 107 Arc Detection Relay, including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, suitable for retrofitting of the relay but EXCLUDING the relay.	1
11.1.8.5	Busbar blocking scheme, as specified	1
11.1.8.6	Voltage Detection System (VDS) Indication and electrical phasing-out unit	1
11.1.8.7	MDI ammeter scaled 0-600 A.	1
11.1.8.8	Lockable Trip / Off / Close Operating handle for electrical closing and tripping of the circuit breaker.	1
11.1.8.9	Lockable Local / Remote selector switch	1
11.1.8.10	Lockable push button for trip testing via the protection circuit	1
11.1.8.11	Indication lamps (LED).	4
11.1.8.12	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
11.1.8.13	Type PK-2 (or equivalent to approval) 4way test blocks	2
11.1.8.14	Facilities on control / relay compartment suitable for terminating the specified multicore cables	
11.1.9	Arc detection fibres, V-Pin connectors and point sensors in the current transformer, circuit breaker and cable compartments.	1 set
11.1.10	Anti-condensation panel heaters.	1 set
11.1.11	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
11.2	The removable portion of each Main Substation feeder panel (2500 A busbars) shall include:	

Number	Description	Number required per bay
11.2.1	Three phase 110 V _{dc} 630 A circuit breaker.	1
11.2.2	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	1
11.2.3	Motorised and manual spring recharging facilities as specified.	1
11.2.4	Manual, behind closed doors, circuit breaker racking facilities as specified	1
11.2.5	All necessary auxiliary fittings and interlocks.	1 set
11.2.6	Circuit label, left blank.	1
11.2.7	Non-resettable circuit breaker operations counter.	1
12.	AIS MAIN SUBSTATION 2500 A INCOMER PANEL (Item A1.12 (SAP Mat No 500007218))	
12.1	The fixed portion of each Feeder Panel shall include:	
12.1.1	Sheet metal circuit breaker chamber with positively driven safety shutter devices.	1
12.1.2	Sheet metal busbar chamber suitable for three 2500 A busbars with approved insulation supported in air by means of approved insulators, with three 2500 A isolating contacts and associated bushings, complete with specified accessories, but excluding busbars.	1
12.1.3	Sheet metal current transformer chamber with three 2500 A isolating contacts and associated bushings, three cable-side bushings, and containing current transformers as follows:	1
12.1.3.1	Current transformers, ratio 2500/1 Class PX for transformer differential protection as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ø
12.1.3.2	Current transformers, ratio 2500/1, 10 VA output per phase, Class 5P10 for overcurrent and earth fault protection and operation of the ammeter as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ø
12.1.3.3	Current transformers, ratio 2500/1, 10 VA output per phase, Class 0,2S for metering as specified and with the secondary windings brought out to SecuControl 20-way test block.	3; R,W & B ø
12.1.4	Sheet metal voltage transformer chamber for a circuit connected removable voltage transformer including all necessary auxiliary fittings, interlocks, shutters and VT fuse protection and with the secondary windings brought out to SecuControl 20-way test block EXCLUDING the voltage transformer.	1
12.1.5	Integral fault make cable earth switch-	1
12.1.6	Capacitive-divider voltage sensing device for voltage detection system and electrical phasing-out.	1 set
12.1.7	Segregated cable dividing box for making off single-core PILC cables of cross-section up to 500 mm ² (5 single-core cables per phase), including glands, lugs and connectors.	1
12.1.8	Exhaust ducting for internal arc overpressure relief	1 set
12.1.9	Sheet metal control/relay panel fitted with:	1
12.1.9.1	Circuit label, left blank.	1
12.1.9.2	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL 751A 3-pole overcurrent and 1-pole earth fault relay as specified EXCLUDING the relay.	1
12.1.9.3	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL-734 integrating watt-hour meter, EXCLUDING the meter.	1
12.1.9.4	Busbar blocking scheme, as specified	1

Number	Description	Number required per bay
12.1.9.5	Voltage Detection System (VDS) Indication and electrical phasing-out unit	1
12.1.9.6	MDI ammeter scaled 0-3000 A.	1
12.1.9.7	Voltmeter with dial plate scaled 7 to 13,5 kV.	1
12.1.9.8	Lockable Trip / Off / Close Operating handle for electrical closing and tripping of the circuit breaker.	1
12.1.9.9	Lockable Local / Remote selector switch	1
12.1.9.10	Lockable push button for trip testing via the protection circuit	1
12.1.9.11	Indication lamps (LED).	4
12.1.9.12	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
12.1.9.13	Type PK-2 (or equivalent to approval) 4-way test blocks	2
12.1.9.14	SecuControl 20-way test block	1
12.1.9.15	Facilities on control / relay compartment suitable for terminating the specified multicore cables	
12.1.10	Arc detection fibres, V-Pin connectors and point sensors in the current transformer, circuit breaker and cable compartments.	1 set
12.1.11	Anti-condensation panel heaters.	1 set
12.1.12	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
12.2	The removable portion of each Main Substation 2500 A Incomer panel shall include:	
12.2.1	Three phase 110 V _{dc} 2500 A circuit breaker.	1
12.2.2	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	1
12.2.3	Motorised and manual spring recharging facilities as specified.	1
12.2.4	Manual, behind closed doors, circuit breaker racking facilities as specified	1
12.2.5	All necessary auxiliary fittings and interlocks.	1 set
12.2.6	Circuit label, left blank.	1
12.2.7	Non-resettable circuit breaker operations counter.	1
13.	AIS MAIN SUBSTATION 2500 A BUS-SECTION PANEL (Item A1.13 (SAP Mat No 500007219))	
13.1	Bus-section panels shall be LHS panels (ie Standard busbars to LHS of Bus-section panel, Busbar Riser panel to RHS). The fixed portion of each Feeder Panel shall include:	
13.1.1	Sheet metal circuit breaker chamber with positively driven safety shutter devices.	1
13.1.2	Sheet metal upper busbar chamber suitable for three 2500 A busbars with approved insulation supported in air by means of approved insulators, with three 2500 A isolating contacts and associated bushings, complete with specified accessories, but excluding busbars.	1
13.1.3	Sheet metal lower busbar chamber suitable for three 2500 A busbars with approved insulation supported in air by means of approved insulators, with three 2500 A isolating contacts and associated bushings, complete with specified accessories, but excluding busbars.	1
13.1.4	Integral fault make busbar earth switch for RHS of Switch Board with Castell Key interlocked operating mechanism.	1
13.1.5	Exhaust ducting for internal arc overpressure relief	1 set
13.1.6	Sheet metal control/relay panel fitted with:	1

Number	Description	Number required per bay
13.1.6.1	Circuit label, left blank.	1
13.1.6.2	Provision for the mounting of REA 101 Arc Detection Relay for the right hand side of the Switchboard, including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, suitable for retrofitting of the relay but EXCLUDING the relay.	1
13.1.6.3	Arc Detection Reset Push Button	1
13.1.6.4	Busbar blocking scheme, as specified	
13.1.6.5	Lockable Trip / Off / Close Operating handle for electrical closing and tripping of the circuit breaker.	1
13.1.6.6	Lockable Local / Remote selector switch	1
13.1.6.7	Lockable push button for trip testing via the protection circuit	1
13.1.6.8	Indication lamps (LED).	4
13.1.6.9	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
13.1.6.10	Busbar earth switch interlock solenoid with captive Castell Key	1
13.1.6.11	Push button release for Castell Key solenoid	1
13.1.6.12	Facilities on control / relay compartment suitable for terminating the specified multicore cables	
13.1.7	Arc detection fibres, V-Pin connectors and sensors in the busbar and circuit breaker compartments.	1 set
13.1.8	Anti-condensation panel heaters.	1 set
13.1.9	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
13.2	The removable portion of each Main Substation 2500 A Bus Section panel shall include:	
13.2.1	Three phase 110 V _{dc} 2500 A circuit breaker.	1
13.2.2	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	1
13.2.3	Motorised and manual spring recharging facilities as specified.	1
13.2.4	Manual, behind closed doors, circuit breaker racking facilities as specified	1
13.2.5	All necessary auxiliary fittings and interlocks.	1 set
13.2.6	Circuit label, left blank.	1
13.2.7	Non-resettable circuit breaker operations counter.	1
14.	AIS MAIN SUBSTATION 2500 A BUSBAR RISER PANEL (Item A1.14 (SAP Mat No 500007240))	
14.1	Busbar Riser panels shall be RHS panels (ie Standard busbars to RHS of Busbar Metering panel, Bus-Section to LHS). Each Busbar Riser Panel shall include:	
14.1.1	Sheet metal busbar riser chamber containing three riser 2500 A busbars with approved insulation supported in air by means of approved insulators, complete with specified accessories, but excluding loose busbars for connection to adjacent panels.	1
14.1.2	Exhaust ducting for internal arc overpressure relief	1 set
14.1.3	Sheet metal control/relay panel fitted with:	1
14.1.3.1	Circuit label, left blank.	1
14.1.3.2	Indication lamps (LED).	1
14.1.4	Arc detection fibres, V-Pin connectors and sensors in the busbar riser compartment.	1 set

Number	Description	Number required per bay
14.1.5	Anti-condensation panel heaters.	1 set
14.1.6	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
15.	AIS MAIN SUBSTATION 2500 A BUSBAR EARTH PANEL (Item A1.15 (SAP Mat No 500007241))	
15.1	Each Busbar Earthing Panel shall include:	
15.1.1	Sheet metal busbar chamber suitable for three 2500 A busbars with approved insulation supported in air by means of approved insulators, complete with specified accessories, but excluding busbars.	1
15.1.2	An integral fault make busbar earth switch with Castell Key interlocked operating mechanism.	1
15.1.3	Exhaust ducting for internal arc overpressure relief	1 set
15.1.4	Sheet metal control/relay panel fitted with:	1
15.1.4.1	Circuit label, left blank.	1
15.1.4.2	Provision for the mounting of REA 101 Arc Detection Relay for the left hand side of the Switchboard, including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, suitable for retrofitting of the relay but EXCLUDING the relay.	1
15.1.4.3	Arc Detection Reset Push Button	1
15.1.4.4	Busbar earth switch interlock solenoid with captive Castell Key	1
15.1.4.5	Push button release for Castell Key solenoid	1
15.1.4.6	Indication lamps (LED).	1
15.1.4.7	Facilities on control / relay compartment suitable for terminating the specified multicore cables	
15.1.5	Arc detection fibres, V-Pin connectors and sensors in the earth switch compartment.	1 set
15.1.6	Anti-condensation panel heaters.	1 set
15.1.7	The fixed portion of each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
16.	VOLTAGE TRANSFORMERS FOR AIS SWITCHGEAR	
16.1	11000/ $\sqrt{3}$ //110/ $\sqrt{3}$ V, 15 VA, Class 0,5 voltage transformers as specified for use with feeder metering panels. (SAP Mat No 200010683)	Lot
16.2	11000/ $\sqrt{3}$ //110/ $\sqrt{3}$ V, 15 VA, Class 0,2 voltage transformers as specified for use with Main Substation Incomer panels. (SAP Mat No 200019591)	Lot
17.	CIRCUIT BREAKER TROLLEYS FOR AIS SWITCHGEAR	
17.1	Circuit breaker trolley for 630 A / 1250 A circuit breaker, as detailed in the specification (Item A1.20 (SAP Mat No 200010685); (Item B1.14 (SAP Mat No TBA))	Lot
17.2	Circuit breaker trolley for 2500 A circuit breaker, as detailed in the specification (Item A1.21 (SAP Mat No 500007194)	Lot
18.	PRIMARY TEST TRUCKS FOR AIS SWITCHGEAR (Item A1.22 (SAP Mat No 200010686)) As detailed in the Specification.	Lot
19.	GIS DISTRIBUTION FEEDER PANEL (Item C1.1 (SAP Mat No 200019510), D1.1 (SAP Mat No TBA)) Indoor metal enclosed, fixed pattern, single busbar, SF ₆ insulated switchgear with a continuous current rating of 630 A and a busbar rating of 1250 A, wired for 110 V _{dc} auxiliary voltage and suitably labelled, comprising:	

Number	Description	Number required per bay
19.1.	Sheet metal busbar chamber containing three 1250 A gas insulated or fully screened solid insulated busbars to approval, complete with suitable bushings for in-line or external busbar connections as provided for by the particular switchgear design.	1
19.2.	SF ₆ insulated compartment comprising:	
19.2.1.	Three position 3-pole Disconnect/Earth switch, motor and hand operated, complete.	1
19.2.2.	630 A 3-pole Circuit breaker, complete with motorised spring recharging facilities as specified.	1
19.2.3.	Test facilities to provide for primary current injection through the CTs into cable, suitably interlocked	1 set
19.3.	Exhaust ducting for internal arc overpressure relief	1 set
19.4.	Sheet metal suitably interlocked cable termination chamber with three Type C cable termination bushings with cast resin current transformers over the Type C Bushings as follows:	1
19.4.1.	Current transformers, ratio 400/300/1 Class PX for Solkor Rf feeder protection as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ø
19.4.2.	Current transformers, ratio 400/1, 10 VA output per phase, Class 5P10 for overcurrent and earth fault protection and operation of the ammeter as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B ø
19.4.3.	Split base gland plate with tapered brass gland and clamp suitable for making off a 3-core PILC cable of cross-section up to 300 mm ² by means of dry type cable terminations and one circuit label left blank.	1
19.5.	Sheet metal control/relay panel fitted with:	1
19.5.1.	Circuit label, left blank.	1
19.5.2.	Internal lamp and door switch.	1
19.5.3.	Housing including all associated wiring terminated onto a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted Solkor Rf relay insulated for 5 kV as specified EXCLUDING the relay.	1
19.5.4.	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL 751A 2-pole overcurrent and 1-pole earth fault relay as specified EXCLUDING the relay.	1
19.5.5.	Capacitive Divider based Voltage Detection System (VDS) Indication and electrical phasing-out unit	1
19.5.6.	MDI ammeter scaled 0-600 A.	1
19.5.7.	Lockable Local / Remote selector switch	1
19.5.8.	Lockable push button for trip testing via the protection circuit	1
19.5.9.	Interlocked and lockable local operation facilities for:	
19.5.9.1.	Circuit breaker opening and closing, by means of Trip / Off / Close Operating handle or Trip/Close pushbuttons for electrical closing and tripping of the circuit breaker.	1
19.5.9.2.	Three position disconnect/earthing switch operation, both mechanically and electrically.	1
19.5.9.3.	Circuit breaker manual spring charging	1
19.5.10.	Mimic of primary circuit and mechanically driven position indications for each device.	1 set
19.5.11.	Spring Charge indication for spring assisted mechanisms	1 set
19.5.12.	Indication lamps (LED)	1 set

Number	Description	Number required per bay
19.5.13.	SF ₆ Gas Density monitoring, indication and alarm system	1 set
19.5.14.	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
19.5.15.	Type PK-2 (or equivalent to approval) 4-way test blocks	2
19.5.16.	Facilities on control / relay compartment suitable for terminating the specified multicore cables.	
19.6.	Over-pressure based arc detection for gas insulated compartments	1 set
19.7.	Arc detection fibres, V-Pin connectors and point sensors in air insulated MV compartments.	1 set
19.8.	Anti-condensation panel heaters	1 set
19.9.	VDS Capacitive dividers	1 set
19.10.	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	As specified
19.11.	All necessary auxiliary fittings and interlocks.	1 set
19.12.	Non-resettable circuit breaker operations counter.	1
19.13.	Each panel shall be complete including frameworks, doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
20.	GIS DISTRIBUTION FEEDER METERING PANEL (Item C1.2 (SAP Mat No 200019581), D1.2 (SAP Mat No TBA))	
	Indoor metal enclosed, fixed pattern, single busbar, SF ₆ insulated switchgear with a continuous current rating of 630 A and a busbar rating of 1250 A, wired for 110 V _{dc} auxiliary voltage and suitably labelled, comprising:	
20.1.	Sheet metal busbar chamber containing three 1250 A gas insulated or fully screened solid insulated busbars to approval, complete with suitable bushings for in-line or external busbar connections as provided for by the particular switchgear design.	1
20.2.	SF ₆ insulated compartment comprising:	
20.2.1.	Three position 3-pole Disconnect/Earth switch, motor and hand operated, complete.	1
20.2.2.	630 A 3-pole Circuit breaker, complete with motorised spring recharging facilities as specified.	1
20.2.3.	Test facilities to provide for primary current injection through the CTs into cable, suitably interlocked	1 set
20.3.	Exhaust ducting for internal arc overpressure relief	1 set
20.4.	Sheet metal cable termination chamber suitably interlocked, containing the following:	1
20.4.1.	Circuit connected plug-in type 11000/ $\sqrt{3}$ //110/ $\sqrt{3}$ V, 15VA Class 0.5 voltage transformers with series isolating device including all necessary auxiliary fittings, interlocks, shutters and VT fuse protection <u>INCLUDING</u> the voltage transformers.	3; R,W & B \emptyset
20.4.2.	Split base gland plate with tapered brass gland and clamp suitable for making off a 3-core PILC cable of cross-section up to 300 mm ² by means of dry type cable terminations and one circuit label left blank.	1
20.4.3.	Three Type C cable termination bushings with cast resin current transformers over the Type C bushings as follows:	3
20.4.3.1.	Current transformers, ratio 400/200/1, 10 VA output per phase, Class 0,5S for metering as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B \emptyset
20.4.3.2.	Current transformers, ratio 400/1, 10 VA output per phase, Class 5P10 for overcurrent and earth fault protection and operation of the ammeter as specified and with the secondary windings brought out to a type PK-2 (or	3; R,W & B \emptyset

Number	Description	Number required per bay
	equivalent to approval) 4-way test block.	
20.5.	Sheet metal control/relay panel fitted with:	1
20.5.1.	Circuit label, left blank.	1
20.5.2.	Internal lamp and door switch.	1
20.5.3.	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL 751A 2-pole overcurrent and 1-pole earth fault relay as specified EXCLUDING the relay.	1
20.5.4.	Capacitive Divider based Voltage Detection System (VDS) Indication and electrical phasing-out unit	1
20.5.5.	MDI ammeter scaled 0-600 A.	1
20.5.6.	Lockable Local / Remote selector switch	1
20.5.7.	Lockable push button for trip testing via the protection circuit	1
20.5.8.	Interlocked and lockable local operation facilities for:	1 set
20.5.8.1.	Circuit breaker opening and closing, by means of Trip / Off / Close Operating handle or Trip/Close pushbuttons for electrical closing and tripping of the circuit breaker.	
20.5.8.2.	Three position disconnect/earthing switch operation, both mechanically and electrically.	
20.5.8.3.	Circuit breaker manual spring charging	
20.5.9.	Mimic of primary circuit and mechanically driven position indications of each device.	1 set
20.5.10.	Spring Charge indication for spring assisted mechanisms	1 set
20.5.11.	Indication lamps (LED)	1 set
20.5.12.	SF ₆ Gas Density monitoring, indication and alarm system	1 set
20.5.13.	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
20.5.14.	Type PK-2 (or equivalent to approval) 4-way test blocks	2
20.5.15.	Facilities on control / relay compartment suitable for terminating the specified multicore cables.	
20.6.	Over-pressure based arc detection for gas insulated compartments	1 set
20.7.	Arc detection fibres, V-Pin connectors and point sensors in air insulated MV compartments.	1 set
20.8.	Anti-condensation panel heaters.	1 set
20.9.	VDS Capacitive dividers	1 set
20.10.	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	As specified
20.11.	All necessary auxiliary fittings and interlocks.	1 set
20.12.	Non-resettable circuit breaker operations counter.	1
20.13.	Each panel shall be complete including frameworks, doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
21.	GIS DISTRIBUTION BUS-SECTION PANEL (Item C1.3 (SAP Mat No 200019582), D1.3 (SAP Mat No TBA))	
	Indoor metal enclosed, fixed pattern, single busbar, SF ₆ insulated switchgear with a continuous current rating of 1250 A and a busbar rating of 1250 A, wired for 110 V _{dc} auxiliary voltage and suitably labelled, comprising:	
21.1.	Sheet metal upper busbar chamber containing three 1250 A gas insulated or fully screened solid insulated busbars, complete with suitable bushings for in-line or external busbar connections to LHS.	1

Number	Description	Number required per bay
21.2.	Sheet metal lower busbar chamber containing three 1250 A gas insulated or fully screened solid insulated busbars, complete with suitable bushings for in-line or external busbar connections to RHS, and containing air insulated cast resin current transformers as follows:	1
21.2.1.	Current transformers, ratio 1250/1, 10 VA output per phase, Class 5P10 for overcurrent and earth fault protection and operation of the ammeter as specified and with the secondary windings brought out to a type PK-2 (or equivalent to approval) 4-way test block.	3; R,W & B \emptyset
21.3.	SF ₆ insulated enclosure comprising:	
21.3.1.	Three position 3-pole Disconnecter/Earth switch, motor and hand operated, complete.	1
21.3.2.	1250 A 3-pole Circuit breaker, complete with motorised spring recharging facilities as specified.	1
21.4.	Exhaust ducting for internal arc overpressure relief	1 set
21.5.	Sheet metal control/relay panel fitted with:	1
21.5.1.	Circuit label, left blank.	1
21.5.2.	Internal lamp and door switch.	1
21.5.3.	Housing including all associated wiring terminated on a fixed dummy terminal board, spaced and drilled, including relay cut-out blanking plates, suitable for retrofitting of a flush mounted SEL 751A 2-pole overcurrent and 1-pole earth fault relay as specified EXCLUDING the relay.	1
21.5.4.	MDI ammeter scaled 0-1600 A.	1
21.5.5.	Lockable Local / Remote selector switch	1
21.5.6.	Lockable push button for trip testing via the protection circuit	1
21.5.7.	Interlocked and lockable local operation facilities for:	
21.5.7.1.	Circuit breaker opening and closing, by means of Trip / Off / Close Operating handle or Trip/Close pushbuttons for electrical closing and tripping of the circuit breaker.	1
21.5.7.2.	Three position disconnector/earthing switch operation, both mechanically and electrically.	1
21.5.7.3.	Circuit breaker manual spring charging	1
21.5.8.	Mimic of primary circuit and mechanically driven position indications of each device.	1 set
21.5.9.	Spring Charge indication for spring assisted mechanisms	1 set
21.5.10.	Indication lamps (LED)	1 set
21.5.11.	Castell Key busbar mechanical interlock system for earthing of busbars on RHS of switchboard, comprising busbar earth switch interlock solenoid with captive Castell Key, and push button release for Castell Key Solenoid.	1 set
21.5.12.	SF ₆ Gas Density monitoring, indication and alarm system	1 set
21.5.13.	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device	1
21.5.14.	Type PK-2 (or equivalent to approval) 4-way test block	1
21.5.15.	Facilities on control / relay compartment suitable for terminating the specified multicore cables.	
21.6.	Over-pressure based arc detection for gas insulated compartments	1 set
21.7.	Arc detection fibres, V-Pin connectors and sensors in air insulated MV compartments.	1 set
21.8.	Anti-condensation panel heaters.	1 set
21.9.	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	As specified

Number	Description	Number required per bay
21.10.	All necessary auxiliary fittings and interlocks.	1 set
21.11.	Non-resettable circuit breaker operations counter.	1
21.12.	Each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
22.	GIS DISTRIBUTION BUSBAR RISER PANEL (Item C1.4 (SAP Mat No 200019583), D1.4 (SAP Mat No TBA))	
	Busbar Riser panels (where Bus-section panels do not have busbar riser incorporated) shall be RHS panels (ie Standard busbars to RHS of Busbar Metering panel, Bus-Section panel to LHS).	
	Each Panel shall comprise:	
	Indoor metal enclosed, single busbar, SF ₆ insulated switchgear with a continuous current rating of 1250 A, wired for 110 V _{dc} auxiliary voltage and suitably labelled comprising:	
22.1.	Sheet metal upper busbar chamber containing three 1250 A gas insulated or fully screened solid insulated busbars, complete with suitable bushings for in-line or external busbar connections to RHS.	1
22.2.	Sheet metal lower busbar chamber containing three 1250 A gas insulated or fully screened solid insulated busbars, complete with suitable bushings for in-line or external busbar connections to LHS.	1
22.3.	SF ₆ insulated compartment comprising:	
22.3.1.	Three position 3-pole Disconnecter/Earth switch, motor and hand operated, complete.	1
22.4.	Exhaust ducting for internal arc overpressure relief	1
22.5.	Sheet metal control/relay panel fitted with:	
22.5.1.	Circuit label, left blank.	1
22.5.2.	Internal lamp and door switch.	1
22.5.3.	Lockable Local / Remote selector switch	1
22.5.4.	Interlocked and lockable local operation facilities for:	
22.5.4.1.	Three position disconnector/earthing switch operation, both mechanically and electrically.	1
22.5.5.	Mimic of primary circuit and mechanically driven position indications of each device.	1
22.5.6.	Indication lamps (LED)	1 set
22.5.7.	Castell Key busbar mechanical interlock system for earthing of busbars on LHS of switchboard, comprising busbar earth switch interlock solenoid with captive Castell Key, and push button release for Castell Key Solenoid.	1 set
22.5.8.	SF ₆ Gas Density monitoring, indication and alarm system	1 set
22.5.9.	Facilities on control / relay compartment suitable for terminating the specified multicore cables.	
22.6.	Over-pressure based arc detection for gas insulated compartments	1 set
22.7.	Arc detection fibres, V-Pin connectors and point sensors in air insulated MV compartments.	1 set
22.8.	Anti-condensation panel heaters.	
22.9.	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	As specified
22.10.	All necessary auxiliary fittings and interlocks.	1 set

Number	Description	Number required per bay
22.11.	Each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
23.	GIS DISTRIBUTION BUSBAR EARTHING PANEL (Item C1.5 (SAP Mat No 200019584), D1.5 (SAP Mat No TBA)) Each Panel shall comprise: Indoor metal enclosed, single busbar, SF ₆ insulated switchgear with a continuous current rating of 1250 A, wired for 110 V _{dc} auxiliary voltage and suitably labelled comprising:	
23.1.	Sheet metal busbar chamber containing three 1250 A gas insulated or fully screened solid insulated busbars to approval, complete with suitable bushings for in-line or external busbar connections as provided for by the particular switchgear design.	1
23.2.	SF ₆ insulated compartment comprising:	
23.2.1.	1250 A 3-pole Circuit breaker, complete with motorised spring recharging facilities, and earth switch, motor and hand operated, complete as specified OR High speed fault make busbar earth switch	1
23.3.	Exhaust ducting for internal arc overpressure relief	1
23.4.	Sheet metal control/relay panel fitted with:	
23.4.1.	Circuit label, left blank.	1
23.4.2.	Internal lamp and door switch.	1
23.4.3.	Supervisory indication relays as specified.	1 set
23.4.4.	Lockable Local / Remote selector switch	1
23.4.5.	Interlocked and lockable local operation facilities for:	1 set
23.4.5.1.	Manual operation of high speed busbar earth switch, where applicable, OR	1 set
23.4.5.2.	Circuit breaker opening and closing, by means of Trip / Off / Close Operating handle or Trip/Close pushbuttons for electrical closing and tripping of the circuit breaker, where applicable	1 set
23.4.5.3.	Earthing switch operation, mechanical and electrical, where applicable.	1 set
23.4.5.4.	Circuit breaker manual spring charging, where applicable.	1 set
23.4.6.	Mimic of primary circuit and mechanically driven position indications of each device.	1 set
23.4.7.	Spring Charge indication for spring assisted mechanisms	1 set
23.4.8.	Indication lamps (LED).	1 set
23.4.9.	Castell Key busbar mechanical interlock system for earthing of busbars, comprising busbar earth switch interlock solenoid with captive Castell Key, and push button release for Castell Key Solenoid.	1 set
23.4.10.	SF ₆ Gas Density monitoring, indication and alarm system	1 set
23.4.11.	Lockable Milspec type Cannon (or equivalent) plug socket for interface with hand held remote close and trip device.	1
23.4.12.	Facilities on control / relay compartment suitable for terminating the specified multicore cables.	
23.4.13.	Arc detection fibres, V-Pin connectors and point sensors in air insulated MV compartments.	1 set
23.4.14.	Anti-condensation panel heaters.	1 set
23.4.15.	Sets of auxiliary contacts for indicating and operating circuits, supervisory indication and spares as specified.	As specified
23.4.16.	All necessary auxiliary fittings and interlocks.	1 set

Number	Description	Number required per bay
23.4.17.	Each panel shall be complete including all frameworks, locking-off doors, multicore cable glands, trunking and wiring, erection material and all necessary fittings.	1 set
24.	GIS EXHAUST DUCT - INDOOR (Item C1.12 (SAP Mat No 200019355), D1.12 (SAP Mat No TBA)) The exhaust required for the exhausting of the hot gases from within the switchboard arc ducting plenum into the switchroom's indoor plenum room, complete with joints, ducts and angled end piece, length based upon the specified distance from rear of switchboard to switchroom rear wall, and including provision for a 330 mm indoor plenum room wall.	Per Switchboard, as specified and tested by Manufacturer
25.	GIS EXHAUST DUCT – OUTDOOR (Item C1.13 (SAP Mat No 200019356), D1.13 (SAP Mat No TBA)) The exhaust required for the exhausting of the hot gases from within the switchboard arc ducting plenum out of the switchroom to an outdoor yard, complete with joints, ducts and powder coated 3CR12 angled end piece, length based upon the specified distance from rear of switchboard to switchroom rear wall, and including provision for a 300 mm switch room outside wall.	Per Switchboard, as specified and tested by Manufacturer
26.	GIS INTERNAL EXHAUST EXTENSION PIECES (Item C1.14 (SAP Mat No 200019357), D1.14 (SAP Mat No TBA)) Mild steel exhaust extension pieces for indoor exhaust extensions.	As required, per Works Project
27.	GIS EXTERNAL EXHAUST EXTENSION PIECES (Item C1.15 (SAP Mat No 200019359), D1.15 (SAP Mat No TBA)) Powder coated 3CR12 exhaust extension pieces for outdoor exhaust extensions.	As required, per Works Project
28.	PRIMARY TEST EQUIPMENT (SAP Mat No TBA) Primary high voltage test probes for GIS Switchgear as detailed in the Specification. Primary current injection test probes for GIS Switchgear as detailed in the Specification.	Lot, as required

48 DETAILED PARTICULARS OF ITEMS OF EQUIPMENT – OPTIONAL WORK

Item No.	Description	Number required
1.	<p>Recommended Spares for Switchgear</p> <p>A comprehensive list stating descriptions of every different part which could be considered as a possible spare, including, but not limited to, consumable spares, replacement bottles of SF₆ gas and mechanical spares recommended below:</p> <p>The list of spares shall be completed by the Tenderer.</p> <p>PART (A,B,C,D) 2: ADDITIONAL SPARES, ACCESSORIES & TOOLS</p> <p>1.2.1 Each item of the spares in a case shall be suitably identified by means of a metal label and a parts list complete with diagrams showing the application of all parts supplied shall be provided with the spares.</p>	Lot, as required

Item No.	Description	Number required
2.	<p>Special Tools and Equipment as Offered</p> <p>A comprehensive list stating descriptions of every different part which could be considered as a possible spare, including, but not limited to, consumable spares, replacement bottles of SF₆ gas, tools required for installation of switchgear, tools required for installation of busbars, tools required to withdraw VT and mechanical spares recommended below:</p> <p>The list of spares shall be completed by the Tenderer.</p> <p>PART (A,B,C,D) 2: ADDITIONAL SPARES, ACCESSORIES & TOOLS</p> <p>1.2.2 Each item of the spares in a case shall be suitably identified by means of a metal label and a parts list complete with diagrams showing the application of all parts supplied shall be provided with the spares.</p>	Lot, as required

49 DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS

The following drawings are applicable to the contract and are issued with this tender document and will form part of the Contract Documents:

DRAWING NUMBER	DESCRIPTION
DR 2732 Sheets 1, 2, 4 & 5	Main Substation Supervisory facilities
PRP1 sheet 1	CB Supervisory alarm indication
PRP1 sheet 2	Supervisory control
PRP1 sheet 3	CB Supervisory alarm indication: breaker status
SK 5010	Main Substation Busbar blocking scheme
SK 5230 sheet 1 & 2	Typical substation single line diagrams

49.1 DRAWINGS

- 49.1.1 All drawings shall be to scale not less than 1:50 and fully detailed. All important dimensions shall be given and the material of which each principal part is to be constructed shall be indicated. All dimensions marked on the drawings shall be considered correct although measurement by scale may differ therefrom. Drawings shall not exceed size A0 standard dimensions and shall bear approved contract references.
- 49.1.2 Three copies of all documents shall be submitted. The Contractor shall supply any further copies required by the Engineer.

- 49.1.3 A register of all the Contractor's documents shall be provided with each submission.
- 49.1.4 Drawings shall be prepared in accordance with the latest issue of SANS 10111. An equivalent international code of engineering drawing practice will also be acceptable.
- 49.1.5 Drawings shall be to scale, with both the scale and the drawing being large enough to clearly show all relevant components of the plant and equipment.
- 49.1.6 In addition to the usual plan and two side elevations, sufficient additional sections shall be included to clearly show the arrangement of all plant and equipment.
- 49.1.7 Item lists shall be provided on the drawing or on a separate parts list.
- 49.1.8 Drawings for approval shall be submitted in duplicate as black line prints on a light background and at least 14 days shall be allowed for the approval of each set of drawings. On completion of work on site all drawings shall be revised where necessary to show the equipment as installed and two copies submitted for approval. The Contractor shall supply for the Employer's own use 5 sets of all erection, operating and maintenance instructions and all the drawings bound in individual files. The general arrangement, section, wiring and schematic diagrams shall also be provided on CD-ROM in a format compatible with AutoCAD 2012 as well as on a separate CD-ROM with the drawings in Adobe pdf format. The directory structure shall be to approval.
- 49.1.9 General arrangement drawings of equipment shall show masses, crane lift necessary and size of lifting lugs or eyes. Parts to be removed for transport shall be indicated and their masses stated.
- 49.1.10 Any drawing modified from a previously submitted drawing shall bear a new or revised number and shall bear a reference to the revision.
- 49.1.11 Schematic and wiring diagrams and equipment arrangement drawings arranged in a hierarchical manner are acceptable.
- 49.1.12 No wiring or connection diagrams shall be submitted for approval unless prior approval has been obtained in writing for the schematic diagrams.

49.2 DRAWINGS TO BE SUBMITTED WITH TENDER

- 49.2.1 Tenderers shall submit with their tenders full particulars of all equipment offered. The following is a list of the drawings to be submitted as a minimum by the Tenderer with his tender:
 - 49.2.1.1 General arrangement of switch board. This drawing shall give the principal dimensions of the switch panels and circuit breakers, etc and shall include a single line diagram of the main medium voltage connections..
 - 49.2.1.2 Section drawings of each switch panel type showing general details of construction and all principal components and dimensions, including INTERNAL ARC pressure relief ducting
 - 49.2.1.3 Section drawings of circuit breakers showing general details of construction.
 - 49.2.1.4 Section drawings of INTERNAL ARC pressure relief exhaust ducting showing general details of construction.
 - 49.2.1.5 General arrangement of control / relay compartments.

49.3 DRAWINGS TO BE SUBMITTED BY SUCCESSFUL CONTRACTOR

49.3.1 The Contractor shall submit the following drawings for approval within the period stated in the Schedules and shall not commence manufacture before obtaining approval of the drawings:

49.3.1.1 General outline and assembly.

49.3.1.2 Sectional drawings showing the construction of the switchgear. Details of the cable boxes must be included.

49.3.1.3 Arrangement drawing of each type of switch panel which shall clearly indicate all principal dimensions, arc ducts and the cable box arrangement. Drawings shall bear approved contract references as well as the SAP Material Number Codes specific to the item, as detailed in the specification (C3.2 Detailed Particulars of Items of Equipment).

49.3.1.4 Wiring and schematic diagrams of each type of switch panel.

49.3.1.5 Works Progress Chart (submitted weekly).

49.3.1.6 Detailed Sub-Order Chart.

49.3.1.7 Final drawings corresponding to all drawings submitted by the Contractor with his tender.

49.3.1.8 Details of circuit breakers.

49.3.1.9 Details of current transformers.

49.3.1.10 Details of voltage transformers.

49.3.1.11 Details of switchgear phasing equipment.

49.3.1.12 Details of isolating switches and three-position disconnectors

49.3.1.13 Details of earthing switches.

49.3.1.14 Details and schematic diagram of interlocking.

49.3.1.15 Details and schematic diagram of busbar earthing panel interlocking.

49.3.1.16 Complete schematic diagrams of:

49.3.1.16.1 Direct current tripping connections.

49.3.1.16.2 Direct current control and indication connections.

49.3.1.16.3 Current transformer connections.

49.3.1.16.4 AC voltage connections for protective equipment and indication.

49.3.1.16.5 Connections of electrical interlocking equipment (if any).

49.3.1.16.6 Voltage selection.

49.3.1.16.7 Meter selection and instrument indications.

- 49.3.1.17 Details of protective relays, accessories and current transformers including particulars of wiring and drilling dimensions.
- 49.3.1.18 Schematic diagrams and schedule of multicore cables.
- 49.3.1.19 Cable schedule of auxiliary, control, alarm and indicator circuits.
- 49.3.1.20 Other drawings as required by the Engineer.

49.4 OPERATING AND MAINTENANCE INSTRUCTIONS

- 49.4.1 The Contractor shall submit in a durable form six copies of the erection, operating and maintenance instructions within the period stated in the Schedules. In addition, the documentation shall be provided on CD-ROM in Portable Document Format (pdf) and in a format compatible with AutoCAD 2010.
- 49.4.2 The erection, operating and maintenance instructions shall also be included within each switch panel delivered.
- 49.4.3 A comprehensive spare parts catalogue shall be supplied.
- 49.4.4 The manuals and configuration files shall also be submitted on CD-ROM's with manuals (in Adobe pdf format) on one CD (which may be combined with the drawings) and the configuration files on the other.

50 QUALITY CONTROL, INSPECTION AND TESTING

50.1 GENERAL

- 50.1.1 This section outlines the minimum general requirements necessary to ensure that proper attention is given to the materials used, the standard of workmanship, the manufacturing processes and the quality of all component parts and the guaranteed performance of the finished items of plant and equipment.
- 50.1.2 The Contractor's attention is drawn to the relevant clauses of the Conditions of Contract regarding testing.
- 50.1.3 The Contractor shall carry out the tests specified in this Section in accordance with the conditions thereof and, without extra charge, such additional tests in the manufacturer's works, on the Site, or elsewhere as in the opinion of the Engineer are necessary to determine that the Works comply with this Specification whether under test conditions or in ordinary working. Type tests may be omitted at the discretion of the Engineer if satisfactory evidence is given of such tests already made on identical equipment.
- 50.1.4 All materials used shall be subjected to and shall withstand satisfactorily such routine tests as are customary in the manufacture of the types of plant and equipment included in the Works.
- 50.1.5 The cost of material tests and/or analyses required by the Engineer to be effected elsewhere than at the Works of the Contractor or a subcontractor or on the Site will be borne by the Employer should such material tests or analyses prove satisfactory but the Contractor will be called upon to pay all expenses incurred by the Employer for material tests and/or analyses found to be unsatisfactory in respect of compliance with the terms of the Specification.

50.1.6 All tests shall be carried out in the presence of, and to the satisfaction of the Engineer and at such reasonable times as he may require.

50.1.7 All labour, materials, stores, apparatus, instruments and connections required for the above tests shall be provided by the Contractor, save for the purpose of tests and analyses the cost of which is to be borne by the Employer as aforesaid and except that the Employer will when reasonably possible permit the Contractor to use for the tests on Site any instrument and apparatus which may have been provided on the Site under this contract, subject to the operation of the system and the carrying out of the other contracts and conditional upon the Contractor accepting liability for any damage which may be sustained by the Employer's equipment during the test. There will be provided free of charge on the Site electrical energy, fuel and water required to run the plant:

50.1.7.1 for the purpose of the Contractor's quality control, and

50.1.7.2 for approved preliminary tests, and

50.1.7.3 for the official tests.

50.1.8 The Contractor shall be responsible for the proper testing of the Work completed or plant or materials supplied by a sub-contractor to the same extent as if the Work, plant or materials were completed or supplied by the Contractor himself.

50.1.9 If further preliminary runs are necessary, or if further official tests are required due to the Works not complying with the terms of this Specification, the Employer may call upon the Contractor to pay for any additional costs incurred by the Employer.

50.2 TYPE TESTS

50.2.1 The Tenderer shall submit with his tender a Schedule of Type Tests detailing all completed type tests applicable to each item tendered, as specified. The schedule shall detail the full description of the item tested, the test authority, the type test certificate numbers, the applicable standard and the specific tests covered by the certificate.

50.2.2 Type tests conducted on equivalent equipment to that tendered that are considered by the tenderer to be applicable to the equipment tendered will not be accepted unless evidence is submitted that confirms the equivalence of the equipment and the applicability of the type test. Acceptance will be at the discretion of the Engineer.

50.2.3 The Tenderer shall submit copies of the cover sheets, the tested equipment detail pages and the results summaries for the type test certificates detailed in the Schedule of Type Tests, as well as certificates of rating.

50.2.4 Tenderers shall not submit the full type test certificates but only the relevant pages detailed above. The full type test certificates shall be made available to the Engineer for review on request. Where available electronically, full type test certificates may be submitted on a CD attached to the tender submission, but this shall not constitute an alternative to the Schedule of Type Tests, which shall still remain a requirement.

50.2.5 All type test reports to be submitted on a memory stick with a detailed index aligned to Schedule F.13G, with the tender submission.

50.3 QUALITY PLAN

- 50.3.1 The Contractor shall submit for approval within 28 days of commencement date, an inspection and test plan (quality plan) defining the programme of quality control and inspection activities which he will perform in order to ensure that the plant and equipment during manufacture and on completion, complies with the specified requirements. The quality plan may be of any form to suit the Contractor's system, but it shall as a minimum:-
- 50.3.1.1 all type, routine, sample special and tests required by the relevant standard and which will be conducted. In the case of the sample tests, each draw shall be subjected to the sample tests.
 - 50.3.1.2 indicate each inspection and test point and its relative location in the production cycle including incoming packaging and site inspection;
 - 50.3.1.3 indicate where subcontractor services will be employed;
 - 50.3.1.4 identify the characteristics to be inspected, examined and tested at each point and specify procedures and acceptance criteria to be used;
 - 50.3.1.5 indicate mandatory hold points established by the Engineer which require his verification of selected characteristics of an items or process before the work can proceed;
 - 50.3.1.6 define or refer to sampling plans if proposed and where they will be used;
 - 50.3.1.7 refer to quality plans or checklists governing the work of major sub-contractors;
 - 50.3.1.8 where applicable, specify where lots or batches will be used.
 - 50.3.1.9 make reference, in the case of components manufactured by or services rendered by a sub-contractor to an inspection plan drawn up by the sub-contractor along the lines indicated in this Clause.

50.4 INSPECTION

- 50.4.1 Inspection of the plant and equipment will be made by the Engineer and will include the following activities:-
- 50.4.1.1 witness inspection and testing and/or verification of inspection records at the Engineer's discretion covering:-
 - 50.4.1.1.1 compliance of manufactured parts, assemblies and final items with specifications, drawings, standards and good engineering practice;
 - 50.4.1.1.2 periodic inspection of Contractor's design and production and preparation of progress reports;
 - 50.4.1.1.3 follow up of design work in case of delay in despatch of drawings;
 - 50.4.1.1.4 witnessing of tests;
 - 50.4.1.1.5 follow up of compliance with equipment and drawing, delivery schedules and release of equipment for despatch;
 - 50.4.1.1.6 packing for shipment including check for completeness of shipment, handling requirements, and case markings and identification.

- 50.4.1.2 Where the Contractor's quality assurance system has not been registered in terms of SANS 9001 the Engineer's inspection will include the following:
- 50.4.1.2.1 evaluation of the Contractor's inspection system and approval of the Contractor's inspection plan;
 - 50.4.1.2.2 periodic checks to confirm the effectiveness of, and the Contractor's compliance with, the established inspection procedures;
 - 50.4.1.2.3 Compliance of raw material with specified requirements.
- 50.4.2 All raw materials, components, shop assemblies and products shall be subject to inspection and test by the Engineer as required by the Specification and to the extent practicable at all times and places during the period of manufacture.
- 50.4.3 The Contractor is requested to include in all his orders to subcontractors a note informing that materials and equipment covered are subject to inspection by the Engineer. Three copies of such purchase orders shall be forwarded simultaneously to the Engineer.
- 50.4.4 The Contractor shall be responsible for the proper testing of the Work completed or plant or materials supplied by a sub-contractor to the same extent as if the Work, plant or materials were completed or supplied by the Contractor himself.
- 50.4.5 In order to verify compliance with manufacturing, engineering and procurement schedules and programmes, the Engineer shall have access at all reasonable times to all places where materials or equipment are being prepared or manufactured, including the Works of the Contractors, subcontractors, or suppliers of raw material.
- 50.4.6 The Contractor shall keep the Engineer informed in advance of the time of starting and of the progress of the work in its various stages so that arrangements can be made for inspection and for tests. He shall also provide without additional charge all reasonable facilities and assistance for the safety and convenience of the Engineer in the performance of his duties.
- 50.4.7 All tests shall be carried out to the satisfaction of the Engineer and, if required, in his presence, at such reasonable times as he may require.
- 50.4.8 Not less than two weeks' notice of all tests shall be given to the Engineer in order that he may be represented if he so desires. As many tests as possible shall be arranged together. Three copies of the Contractor's record of tests shall be supplied to the Engineer.
- 50.4.9 All inspections or tests by the Engineer shall be scheduled and performed so as to avoid undue risk of delaying the work. In the event of postponement, by the Contractor, of tests previously scheduled or of the necessity to make tests due to unsatisfactory results of the original tests, or other reasons attributable to the Contractor, the Contractor will bear all costs for new tests and expenses involved in their witnessing by the Engineer.
- 50.4.10 All apparatus, instruments and connections required for the above tests shall be provided by the Contractor but the Council will permit the Contractor to use for the tests on Site any instruments and apparatus which may be provided permanently on Site subject to the operation of the system and the carrying out of the other contracts and conditional upon the Contractor accepting liability for any damage which may be sustained by the Council's equipment during the test.

- 50.4.11 Measuring apparatus shall be approved by the Engineer and if required shall be calibrated at the expense of the Contractor at an approved laboratory.
- 50.4.12 Acceptance or rejection of the equipment and/or components shall be made as promptly as practicable after manufacture, but failure to inspect and accept or reject equipment and/or components shall neither relieve the Contractor from responsibility for such items which may not be in accordance with the Contract requirements, nor impose liability for them on the Employer.
- 50.4.13 The Contractor shall supply suitable test pieces of all materials as required by the Engineer. If required by the Engineer test specimens shall be prepared for check testing and forwarded at the expense of the Contractor to an independent testing authority selected by the Engineer.
- 50.4.14 The cost of all tests and/or analyses shall be borne by the Contractor, but the costs of check tests and/or analyses effected elsewhere than at the manufacturer's works or on the Site, and the results of which are approved, will be refunded to the Contractor by the Employer by agreement.
- 50.4.15 No materials shall be shipped until all tests, analyses and inspections have been made, or certified copies of reports of tests and analysis or Contractor's certificates have been accepted and released by the Engineer or by a waiver in writing. The Contractor shall furnish the Engineer two copies of certified reports on all required tests and analysis.
- 50.4.16 Effectiveness and quality of packing for shipment will be verified by the Engineer having regard to protection required and handling, transport arrangements and site storage requirements.
- 50.4.17 The Contractor shall inform the Engineer of the name of his representative authorised to make decisions, and/or provide, in respect of equipment, tests and any other data related to the Contract.
- 50.4.18 The Engineer shall have complete authority to accept or reject any equipment or part thereof considered unsatisfactory and/or not in accordance with the Contract.
- 50.4.19 The switchgear and associated equipment will be inspected by the Engineer during manufacture and prior to despatch.
- 50.4.20 No equipment shall be despatched from the manufacturer's works without the approval of the Engineer.

50.5 TESTS IN THE MANUFACTURER'S WORKS

50.5.1 General

- 50.5.1.1 The tests shall be arranged to represent working conditions as closely as possible.
- 50.5.1.2 Unless otherwise stated, type tests when called for shall be made on equipment which has previously passed its routine tests.
- 50.5.1.3 Test certificates proving successful completion of the Type Tests detailed below shall be submitted with the tender documentation.
- 50.5.1.4 Should reasonable doubt exist as to the validity of test certificates submitted, for example by virtue of modifications made to the switchgear, the Employer may direct that further tests be carried out at a recognized test facility in the presence of a representative of the

Employer, on a sample unit of the switchgear in question. The cost of these tests shall be for the expense of the Contractor.

- 50.5.1.5 The switchgear offered shall have test certificates relating to complete switchgear assembly as manufactured or assembled at the proposed the location. If a test certificate relating to a complete switchgear assembly manufactured elsewhere is submitted, it shall be accompanied by a statement that the offered unit is identical (this shall be verified by an accredited test authority, see note below) with the type tested product and the number of such units already produced and installed shall be stated in the schedule.
- 50.5.1.6 NOTE Identical in terms of all design parameters as developed and tested by the original manufacturer.
- 50.5.1.7 The manufacturer shall be fully equipped to perform all the required tests as specified. Tenderers shall confirm the manufacturer's capabilities in this regard when submitting tenders. Any limitations shall be clearly stated. The Employer reserves the right of inspection of the manufacturer's test facilities by the Engineer. Where required instruments shall be calibrated by an agreed independent body at the Contractor's expense.
- 50.5.1.8 Test certificates proving successful completion of the Routine Tests detailed below shall be supplied to the Engineer on the completion of the relevant tests, and submission and approval of these certificates shall be a pre-requisite for the issue of a factory release certificate by the Engineer.

50.6 Medium Voltage Switchgear

50.6.1 The medium voltage switchgear shall be tested in accordance with the requirements of SANS 62271-1 and 62271-200. Test shall apply to the assembled switchgear, and shall cover the specific switch panel and circuit breaker offered in terms of this tender.

50.6.2 Switchgear Type Tests

50.6.2.1.1 The type tests required in terms of SANS 62271-1, 62271-100, 62271-102, 62271-103 and 62271-200 shall have been successfully conducted.

50.6.2.1.2 Where current transformers of the integral or separately mounted types are to be installed in or adjacent to the circuit breaker, the complete assembly shall be included in the circuit breaker type test series when so required by the Engineer.

50.6.2.1.3 For the purpose of the circuit breaker tests, the operating pressures for gas circuit breakers of all types shall be as follows:-

- a. Making and breaking current capacity type test - minimum operating pressure.
- b. Inductive current interrupting type test - maximum operating pressure.
- c. Capacitive current interrupting type test - minimum operating pressure.

50.6.2.1.4 Partial Discharge Type Tests

All components of the switchgear apparatus utilising organic and/or cast insulation materials as the major insulation shall be subjected to partial discharge measurements. The test method shall be one which enables the apparent magnitude of individual discharge to be determined in accordance with the requirements of SANS 60270. Partial discharge tests shall also be undertaken on the complete switch panel or on the complete switchgear apparatus ordered (eg circuit breaker).

50.6.2.1.5 Temperature Rise Tests

Test certification for the heat run tests shall detail all busbar and conductor sizes and cross-sections, as tested.

50.6.2.1.6 Internal Arcing Test

The internal arc type testing shall demonstrate the ability of the pressure relief devices to relieve pressure and direct hot gasses and overpressure out of the switch room.

50.6.2.2 Switchgear Routine Tests

Routine tests shall be conducted as required in terms of SANS 62271-1 and 62271-200.

50.6.2.2.1 Dielectric Tests

A power frequency voltage test at the level specified shall be made on each component of the switchboard. Clause 7.1 of SANS 62271-1 is applicable, with the following addition and exception:

The power-frequency voltage test shall be performed according to the requirements in 6.2.6.1 of SANS 62271:200:2004. The test voltage specified in tables 1a and 1b, column 2, of SANS 62271-1 shall be applied connecting each phase conductor of the main circuit in turn to the high-voltage terminal of the test supply, with the other phase conductors connected to earth and the continuity of the main circuit assured (for example, by closing the switching devices or otherwise). For gas-filled compartments, the tests shall be performed at the rated filling pressure (or density) of the insulating gas.

50.6.2.2.2 Partial Discharge Routine Tests

Each item of organic insulation shall be subjected to partial discharge tests as specified in SANS 60270. Each factory assembled unit shall also be tested.

50.6.2.2.3 Resistance of Main Circuits and Joints

SANS 62271-1 is not applicable. The D.C. voltage drop or resistance of each phase of the main circuit shall be measured under conditions as close as possible to those under which the corresponding type test was carried out. The measured value of the type test can be used to determine the limit of resistance value for the routine test. The resistance of each joint or contact within a particular assembly shall be measured and shall not differ from that measured during the temperature rise test by more than $\pm 10\%$.

50.6.2.2.4 Testing of Interlock Equipment

Each assembly of interlocking shall be operated 50 times in succession with the electrical, pneumatic or hydraulic devices set to the most unfavourable operating values.

50.6.3 Current Transformers

50.6.3.1 Type Tests

Type tests shall be made in accordance with SANS 61869-2 along with the additional tests as detailed below. Equivalent type test certification in accordance with the replaced standard SANS 60044-1 will be accepted for current transformers that have not yet been tested to the replacement standard SANS 61869-2.

50.6.3.2 Special Tests

50.6.3.2.1 Thermal Stability Test

50.6.3.2.1.1 Each type of current transformer being provided shall be subject to a thermal stability test as follows:-

- a. The transformer, complete as in service shall be erected in a suitable chamber such that the temperature of the surrounding medium is maintained at 75°C. A

sufficient period shall be allowed for the transformer to reach equilibrium with the surrounding air prior to applying a voltage of 0,86E to the primary winding.

- b. The loss angle shall be measured at suitable intervals until a virtually constant level is attained. The transformer shall be allowed to cool to the ambient temperature and the loss angle test repeated. No significant change of loss angle shall have occurred.

50.6.3.2.2 Magnetisation and Internal Burden Tests

The following magnetisation characteristic and an internal burden test shall be made and test results submitted for each core:

- a. A magnetisation curve shall be made for one ratio, preferably the ratio in the schedules for which the output accuracy class and accuracy limit factor (if applicable) are listed in this Specification. The exciting current at the secondary voltage specified in this Specification, or at the emf corresponding to the rated accuracy limit factor, shall be particularly noted.
- b. Secondary winding resistance corrected for 75°C for each ratio.

50.6.3.3 Routine Tests

Each current transformer being provided shall be subjected to the routine tests specified in SANS 61869-2 along with the additional tests as detailed below.

50.6.3.3.1 Magnetisation and Internal Burden Tests

50.6.3.3.2 Routine Partial discharge tests shall be conducted in accordance with SANS 61869-1.

50.6.3.4 Routine Tests – Class PX Current Transformers

Class PX current transformers have the following additional tests carried out:

50.6.3.4.1 Excitation Current

An excitation curve shall be taken at least up to that point where an increase of 10% in voltage results in an increase of 100% in current. The exciting current at the rated knee-point voltage and/or at any stated percentage thereof, shall not exceed the specified value(s).

50.6.3.4.2 Turns Ratio

The turns ratio shall be determined and shall not differ from the specified ratio by more than $\pm 0,25\%$.

50.6.4 Voltage Transformers

50.6.4.1 Type and Routine Tests

Voltage transformers shall be subjected to the type and routine tests specified in SANS 61869-3. Equivalent type test certification in accordance with the replaced standard SANS 60044-2 will be accepted for voltage transformers that have not yet been tested to the replacement standard SANS 61869-3.

50.6.5 Busbar Conductor and Connections

The tests shall be in accordance with IEC 60209.

- 50.6.6 Control and Relay Panels, Instruments and Secondary Wiring
- 50.6.6.1 Type Tests
- 50.6.6.1.1 Mimic Diagram Panel Operation Tests
One typical indicating panel shall be erected as in service and the indicating devices operated to the satisfaction of the Engineer.
- 50.6.6.2 Routine Tests
- 50.6.6.2.1 All panels and instruments shall comply with the tests specified in the appropriate standard Specifications.
- 50.6.6.2.2 The wiring on each panel, cubicle, rack and each removable panel or plate of apparatus shall be subjected for one minute to an alternating voltage equal to the test pressure specified for the apparatus to which it is connected. This test shall take place after the complete assembly of the apparatus and wiring on or in the panels, cubicles and racks.
- 50.6.6.2.3 All wiring and apparatus which is, or may become, connected to voltage sources other than the supply for the very low voltage (50 V and below) apparatus shall be subjected for one minute to an alternating test pressure of 2 kVrms to the frame of the panels on which they are accommodated, immediately after which the insulation measured at 500 V dc shall not be less than 20 mΩ. Included in these requirements is apparatus and wiring which become connected to voltage or current transformers.
- 50.6.6.2.4 The windings and electrical connections of indicating and recording meters shall be subjected for one minute to a test voltage of 2 kVrms to the case or any other metal which is not intended to be insulated from the case when the instrument or meter is in use.
- 50.6.7 Material
- 50.6.7.1 Type Tests
Samples selected by the Engineer from metals used in the Works shall be tested to prove compliance with the Specification including the guarantees stated.
- 50.6.8 Galvanising
- 50.6.8.1 Routine Tests
Samples of all galvanised material, selected by the Engineer, shall be subjected to the galvanising tests set out in SANS 32, 121 and 4998.
- 50.6.9 Handling Devices and Lifting Tackle
- 50.6.9.1 Routine Tests
- 50.6.9.1.1 Mechanical Test
- 50.6.9.1.2 All handling devices and lifting tackle supplied for maintenance purposes under this Contract, shall, unless they are built into and form part of the equipment, be tested, and marked and certificates of test provided in the manner required by the appropriate regulations.
- 50.6.9.1.3 Operation Test
Lifting tackle built into and forming part of the equipment shall be operated with the maximum working load to the IEC or BS Specifications or Occupational Health and Safety Act No. 85 of 1993.

All secondary wiring, including panel wiring and control circuits and all apparatus connected directly thereto shall withstand a high voltage test of $2 \text{ kV}_{\text{rms}}$ to earth unless otherwise specified.

50.6.10 Cables

50.6.10.1 Each type of cable being provided for power supply, lighting, multicore cabling etc, shall be subjected to the type, sample and routine tests specified in the British or other approved international standard appropriate to the particular category of cable.

50.6.11 Insulated Pressure Containers (Including Circuit Breakers)

50.6.11.1 Routine Tests

50.6.11.1.1 Pressure Tests

Containers made of insulating material which have in service to withstand pressures in excess of atmospheric pressure, shall each be tested hydraulically after all necessary machining work on them has been completed. The tests shall be carried out at the pressures given below for a period of 15 minutes, and components shall thereafter be marked in an approved manner.

- a. For containers subject to static pressure loads only and not subject to significant mechanical shock in service the test shall be made at twice maximum working pressure.
- b. For containers subject to rapid changes of pressures, or to pressure plus mechanical shock, the test shall be made at three times maximum working pressure.

50.6.12 Circuit Breaker Tanks

50.6.12.1 Type Test

50.6.12.1.1 One tank of each type shall be tested to three times the maximum impulse pressure to which the circuit breaker is subjected under short circuit conditions as stated in the Schedules.

50.6.12.1.2 Measurements shall be made to determine the magnitude of the temporary distortion. There will be no permanent set.

50.6.13 Motors

Performance tests shall be in accordance with SANS 60034-1.

50.6.14 Motor Control Equipment

Type and routine tests shall be carried out in accordance with SANS 60947.

50.6.15 Protection Equipment

50.6.15.1 Routine Tests

50.6.15.1.1 All relays shall be subjected to routine tests at the manufacturer's works to confirm that they comply with the claimed performance and design limits.

50.6.15.1.2 For measuring relays (ie relays which have a defined setting of the input and/or characteristic quantity subjected to accuracy requirements, e.g. current, time etc) these routine tests shall include as a minimum the following:

- a. Measurement of the assigned error(s) under reference conditions, ie measuring accuracy and operating time characteristics.
- b. Measurement of the resetting ratios.
- c. Dielectric tests as specified in Clause 6 of IEC 60255 5, the test voltage being 2 kVrms. All normally open output contacts of all relays shall withstand a test voltage of 1 kVrms.

50.6.15.1.3 For all or nothing relays, the routine tests shall include a check of relay operation and resetting, together with the dielectric tests described above.

50.6.15.1.4 Unless otherwise agreed with the Engineer, all unit protection schemes using either biased differential, current balance or voltage balance principles shall be subjected to heavy current conjunctive tests using the actual current transformer windings which will be used in service. Tests shall be made to prove operating sensitivity, time of operation and to demonstrate stability of the protection under the worst transient external fault conditions. Tests will only be waived if the manufacturer is able to produce type test results for an identical scheme. In this case it will be sufficient to prove that individual component characteristics are identical, eg current transformers are of the same design, have the same magnetization characteristics, knee point voltage and secondary resistance.

50.6.15.1.5 For protection schemes including distance protection, phase comparison protection, autoreclosing and automatic switching sequence schemes etc routine tests shall be performed on each complete scheme to ensure that all possible operational sequences and features are fully functional. Where necessary, this shall be done using simulation of any ancillary equipment normally used in conjunction with the scheme, e.g. circuit breakers. These routine tests will be performed in addition to the tests normally applied to individual elements of the scheme and details of the proposed test programme shall be submitted to the Engineer for approval not less than one month before they are to be performed.

50.6.15.1.6 If such routine tests are not practicable due to the complexity of the scheme, a scheme type test will be accepted on representative production equipment. The test shall be performed so as to simulate, as nearly as possible, the conditions which will be experienced in service and details of the proposed test programme shall be submitted to the Engineer for approval not less than one month before they are performed. In those cases where correct operation of the scheme is dependent on measured quantities associated with primary system plant (e.g. circuit breaker gas pressure), such quantities shall be measured directly during the tests.

50.6.15.2 Type Tests

50.6.15.2.1 Approved type tests shall be carried out in the manufacturer's works on each type of protective system. During the tests, ancillary equipment shall be erected and connected so as to reproduce service conditions as closely as possible. The main purpose of these tests shall be to determine the performance of the protection for the range of system conditions which will be encountered by the protection in practice, and to determine all

the appropriate application parameters. The test condition shall be as agreed by the Engineer.

50.6.15.2.2 Where type tests have been carried out under previous contracts on protective equipment similar in all essential respects to the equipment included in the Contract, the Engineer may waive the type tests on production of complete test records which he approves, relating to the equipment concerned. Each set of test records shall include a full statement of the performance claims, e.g. performance under reference conditions, effect of influencing the quantities, steady state and dynamic stability for unit protection schemes, current and voltage transformer requirements, etc and full details of tests performed on representative samples of production equipment to demonstrate that the performance claims have been met.

50.6.15.2.3 For circulating current protective schemes using high impedance relays, calculation of the predicted performance will be accepted in lieu of type testing of each individual scheme. Type test results must, however, be available for inspection by the Engineer to show that heavy current conjunctive tests have been performed on a representative scheme to prove the stability and operating time performance. Details of the accepted method of calculation are given in Appendix A.

50.6.15.2.4 In addition, each scheme must fulfil the following supplementary routine testing requirements:

- a. Each current transformer, which must be of the low reactance type, shall be individually tested for turns ratio, secondary winding resistance and excitation characteristic up to a secondary voltage equal to 120% of the "knee point" voltage.
- b. The VA consumption at operation of current operated relays shall be measured and shall not exceed the maximum value declared by the manufacturer.
- c. The operating current of voltage relays shall be measured and shall not exceed the maximum value declared by the manufacturer.
- d. value declared by the manufacturer.

50.6.16 Tests at Site

50.6.16.1 After the plant and ancillary equipment have been erected and connected up on site, the Contractor shall carry out to the satisfaction of the Engineer such tests as may be required to prove compliance with the Specification, independently of any tests carried out at the manufacturer's works.

50.6.16.2 Not more than eight weeks after the award of the tender and at least four weeks prior to the commencement of any installation work envisaged in terms of the tender, the Contractor shall submit for the approval of the Engineer his detailed site test proposals for the switchgear installations, together with details of the test equipment and methods that he proposes to use. Subject to approval of the tests, these will be written by the Engineer into an overall programme of tests, which will be issued to all directly concerned prior to the starting date for the tests.

50.6.16.3 The Engineer shall have the right to witness all tests, and the results must be available to him as the tests proceed. He may recommend waiving of some tests, or may add further tests if considered necessary to prove compliance with the Specification.

50.6.16.4 Clear records of all tests necessary before the plant and equipment can be regarded as ready to be first connected to the Employer's system shall be maintained by the Contractor and submitted to the Engineer in duplicate (one copy being for the Employer). Both the Employer's and the Engineer require this information before the plant and equipment will be accepted for initial energising.

- 50.6.16.5 Initial energising and all subsequent 'live' tests will be directed by the Engineer, and carried out jointly by the Employer, Contractor and Engineer. They will be subject to the Employer's standard safety procedures, and all operational switching will be carried out by the Employer according to a detailed programme which the Engineer will prepare and which will be agreed in advance between all three parties.
- 50.6.16.6 During these 'live' tests the Contractor shall remain responsible for the performance of his plant and equipment.
- 50.6.16.7 A record of the results of the tests in this category will be made available to the Contractor by the Engineer.
- 50.6.16.8 The Contractor shall submit to the Engineer for approval a list of recommended settings for all protection and other types of automatic equipment, not less than thirteen weeks before such equipment is required in commercial service. Where the settings involve discrimination with settings of an existing network or plant and equipment supplied under a separate contract, the relevant information will be supplied to the Contractor.

50.6.17 Minimum Acceptable Site Tests

The Site Tests, full details of which are to be submitted by the Contractor after the Contract has been placed, shall include those tests described in outline below, as appropriate to the switchgear installed.

50.6.17.1 Switchgear

- 50.6.17.1.1 All switchgear, once installed on site, shall be subjected by the purchaser to an 80% power frequency voltage test in accordance with SANS 62271-200. Furthermore, power cables connected to the switchgear shall be tested at a value specified for cables complying with SANS 10198-13 for XLPE cables and SANS 97 for PILC cables, for the same system voltage as the switchgear.
- 50.6.17.1.2 All mechanical and electrical operation tests shall be carried out in accordance with SANS 62271-200.
- 50.6.17.1.3 The resistance test on all primary connections shall be done at not less than 50 A and up to the rated current of the circuit.
- 50.6.17.1.4 Vacuum checks by means of an a.c., r.m.s. or d.c. withstand test across open contacts shall be done.
- 50.6.17.1.5 Manual closing and opening operation and emergency hand operation.
- 50.6.17.1.6 SF6 pressure monitoring and leakage tests.
- 50.6.17.1.7 Complete electrical functional tests, and circuit IR tests.
- 50.6.17.1.8 Closing and opening at reduced voltage.
- 50.6.17.1.9 Check of position indicators and operation counters.
- 50.6.17.1.10 Motor protection relay tests.

50.6.17.2 Circuit Breakers

Commissioning tests as specified in SANS 62271-100 shall be undertaken.

The following additional tests shall also be undertaken:

- 50.6.17.2.1 Coil resistance measurements of close coils, trip coils, anti-pumping relay and interlock relays.
- 50.6.17.2.2 Vacuum checks by means of an a.c., r.m.s. or d.c. withstand test across open contacts shall be done.
- 50.6.17.2.3 Voltage tests.
- 50.6.17.2.4 Complete electrical functional tests, and circuit IR tests.
- 50.6.17.2.5 Closing and opening at reduced voltage.
- 50.6.17.2.6 Check of position indicators and operation counters.

- 50.6.17.3 Electro-Magnetic Voltage Transformers
 - 50.6.17.3.1 General checks of insulators, earth strap connections, pressure relief diaphragm and terminal box venting and sealing.
 - 50.6.17.3.2 Insulation resistance tests to earth and between primary and secondary windings.
 - 50.6.17.3.3 No-load test with normal applied voltage on secondary terminals for minimum of 30 minutes. Measure secondary output volts with the VT energized at primary voltage.
 - 50.6.17.3.4 Phasing tests.

- 50.6.17.4 Electrical Interlocks
 - 50.6.17.4.1 Check local auxiliary switch chains.
 - 50.6.17.4.2 Check auxiliary switch chains for parallel operation.
 - 50.6.17.4.3 Electrical bolts operational tests at standing battery volts.

- 50.6.17.5 Current Transformers
 - 50.6.17.5.1 General check of insulators, earth connectors and terminal identification.
 - 50.6.17.5.2 Magnetisation curve, polarity, ratio, secondary winding resistance tests.

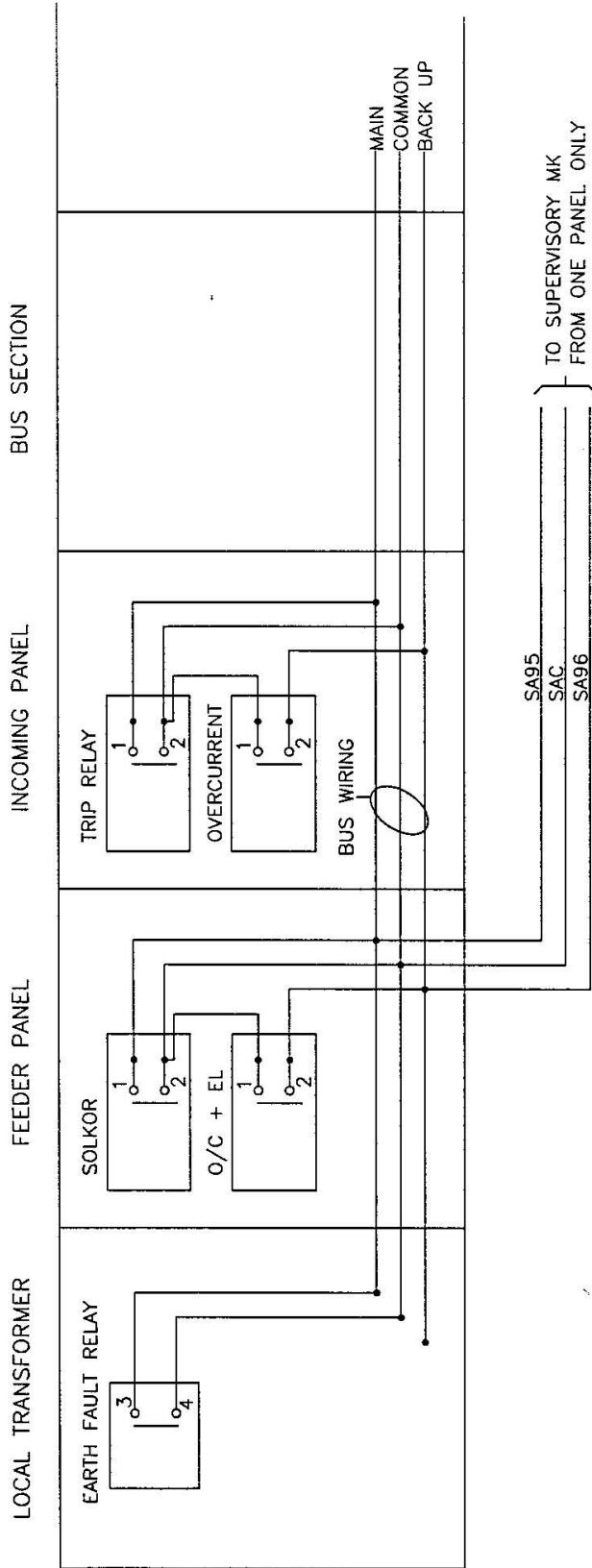
- 50.6.17.6 Protection Basic Tests
 - 50.6.17.6.1 Insulation resistance of all secondary circuits (current and voltage transformers, control, indication and alarm circuits, etc).
 - 50.6.17.6.2 Primary injection of current transformer circuits, including overall injection of differential protection circuits, to prove all connections and to check ratios, fault settings, stability and phase identification.
 - 50.6.17.6.3 Secondary injection of voltage transformer circuits.
 - 50.6.17.6.4 Secondary injection of ac and dc relays to check their operating characteristics.

- 50.6.17.6.5 Complete functional tests of tripping, alarm, control, indication and protection circuits, including testing and verification of correct performance of the SCADA system.
- 50.6.17.6.6 Operation of tripping elements at reduced dc. voltage. Phasing tests (of main plant and equipment) prior to making alive. Measurement of secondary currents and voltages on load.
- 50.6.17.7 Batteries and Associated Equipment
- 50.6.17.7.1 Constant Voltage Float Charger
After adjusting the constant voltage float charger to give the specified battery terminal voltage when the battery is fully charged and the normal load is connected, the charger shall be switched off and the battery allowed to discharge to the specified terminal voltage. The charger shall then be switched on and the initial current (load plus charging current) measured. This shall not be greater than the value specified. The time taken for the battery to reach 80% of full charge shall also be measured and this shall not be more than 24 hours.
- 50.6.17.7.2 Battery
A capacity test shall be carried out in accordance with the manufacturers' recommendations.
- 50.6.17.7.3 Boost Charging
Following the battery capacity test the fully discharged battery shall be fully recharged to the manufacturer's recommendations by means of the boost charging facility. During the charging period frequent measurements of charging current and electrolyte temperature shall be taken to ensure the battery manufacturer's recommended maximum values are not exceeded. Measurements shall be taken to ensure the dc voltage at the distribution board does not exceed the specified value at any time during the boost charge cycle.
- 50.6.17.8 Power and control cables routine site tests

After laying and jointing all power and control cables shall withstand and satisfactorily comply with all the tests specified in the appropriate Standard Specifications.
- 50.6.17.9 Substation Control System and LAN Tests at Site (SAT)
- 50.6.17.9.1 After the plant and ancillary equipment have been erected and connected up on site, the Contractor shall carry out to the satisfaction of the Engineer such tests as may be required to prove compliance with the Specification, independently of any tests carried out at the manufacturer's works.
- 50.6.17.9.2 The Contractor shall conduct such tests prior to the formal SAT to satisfy himself as to the correctness of the Works.
- 50.6.17.9.3 The Engineer shall have the right to witness all SAT tests, and the results must be available to him as the tests proceed.
- 50.6.17.9.4 The proposed preSAT and SAT shall be submitted to the Engineer for approval not later than one month prior to the date of the tests.
- 50.6.17.9.5 The Contractor shall submit notice of the tests, in accordance with the Conditions of Contract, in writing 14 days prior to the date on which the tests are to commence.
- 50.6.17.9.6 Site test reports acceptable to the Engineer shall be submitted before the Taking Over Certificate shall be issued.
- 50.6.18 System Tests

- 50.6.18.1 Where special system tests are required the Contractor may be expected to participate in such tests in so far as the Works are concerned, and to provide suitable instrumentation. The tests themselves and the extent of the Contractor's participation in them will form the subject of special agreement.
- 50.6.18.2 The programme for system tests will be issued by the Engineer, who will be responsible for their overall direction.

LMT SWITCHBOARD



NOTE:

USE SPARE N/O CONTACTS ON RELAYS

ALL WIRE TO BE 1,5mm² GREY

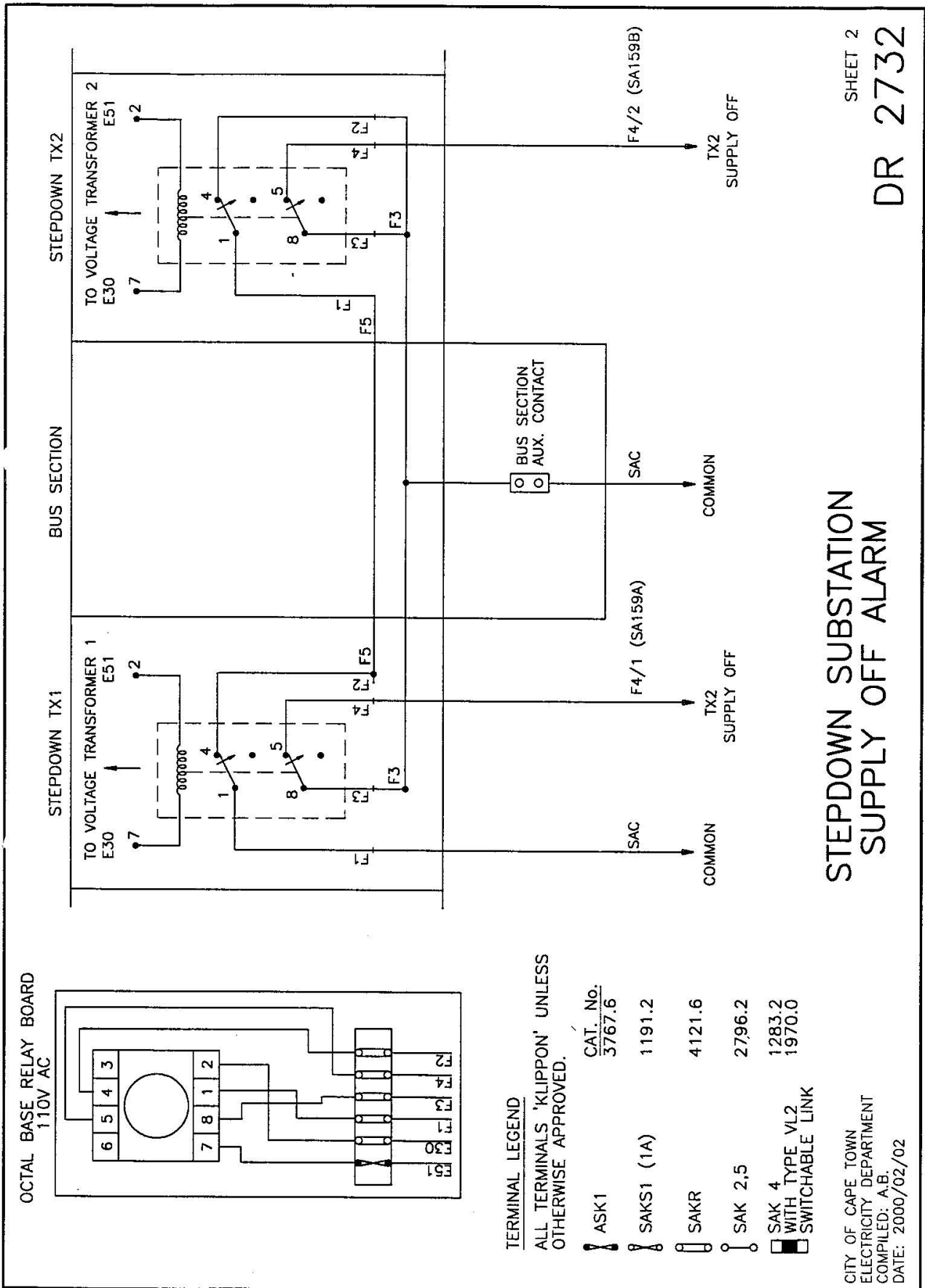
INSTALL OR UTILIZE 3 SPARE TERMINALS IN EACH PANEL

**STEPDOWN SUBSTATIONS MAIN AND
BACK UP PROTECTION ALARMS.**

SHEET 1

DR 2732

CITY OF CAPE TOWN
ELECTRICITY DEPARTMENT
COMPILED: A.B.
DATE: 2000/02/02



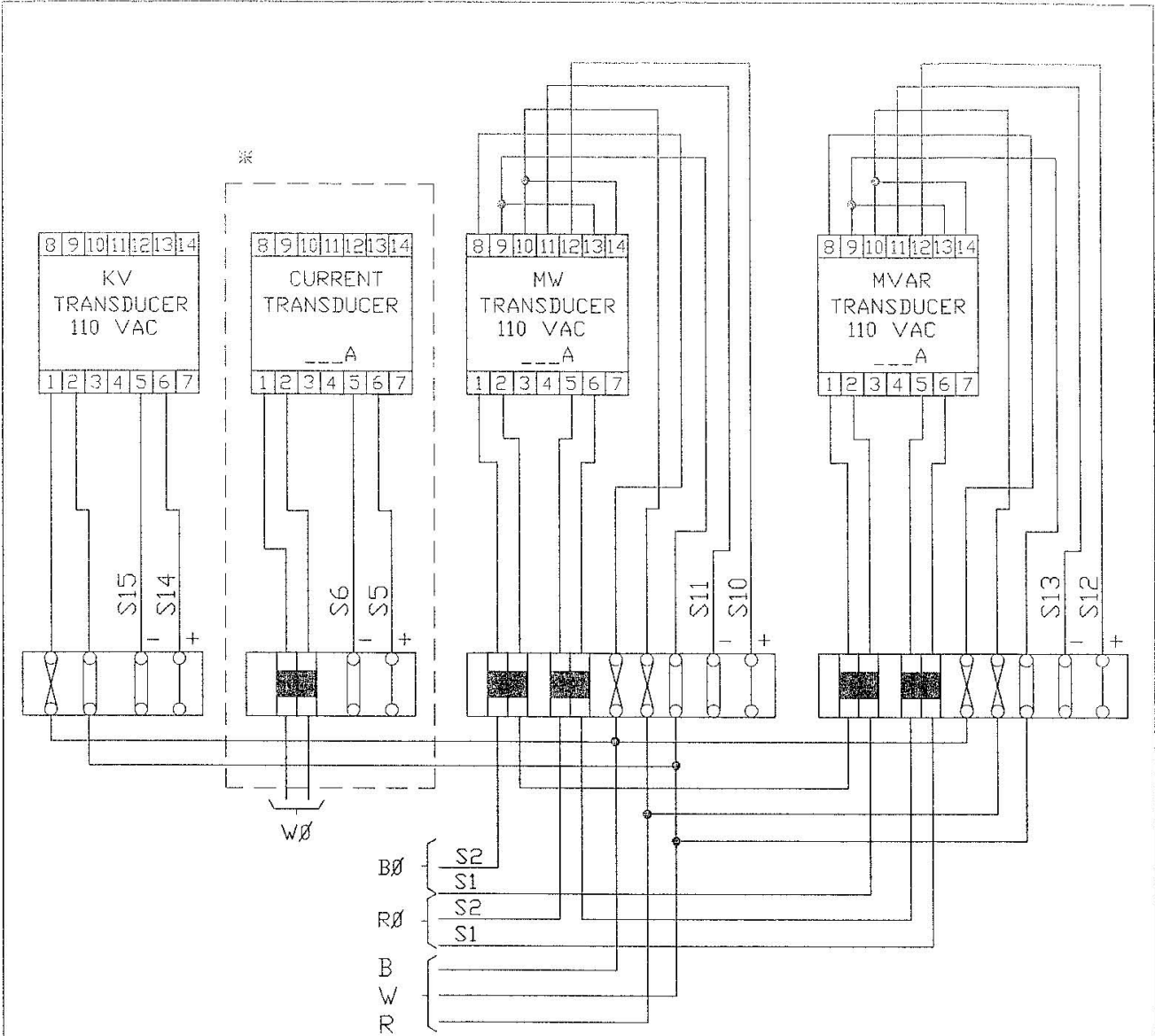
STEPDOWN SUBSTATION SUPPLY OFF ALARM

SHEET 2
DR 2732

TERMINAL LEGEND
ALL TERMINALS 'KLIPPON' UNLESS OTHERWISE APPROVED.

Symbol	CAT. No.
ASK1	3767.6
SAKS1 (1A)	1191.2
SAKR	4121.6
SAK 2,5	2796.2
SAK 4 WITH TYPE VL2 SWITCHABLE LINK	1283.2 1970.0

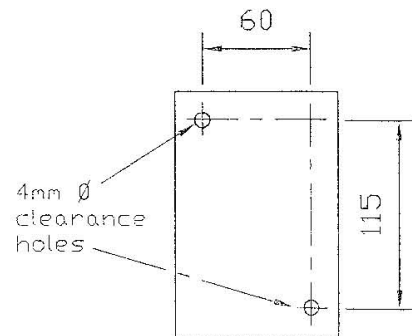
CITY OF CAPE TOWN
ELECTRICITY DEPARTMENT
COMPILED: A.B.
DATE: 2000/02/02



NOTE: ALL CURRENT CONNECTIONS FROM OVERCURRENT CT'S.

* CURRENT TRANSDUCER ONLY ON OUTGOING SOLKOR/OVERCURRENT PROTECTED PANELS. VOLTAGE, CURRENT, MW AND MVAR TRANSDUCERS ON INCOMING TRANSF. PANELS.

TERMINALS TO BE IN ORDER AS SHOWN BUT CAN BE GROUPED WITH OTHER PANEL TERMINALS IN AN ACCESSIBLE POSITION

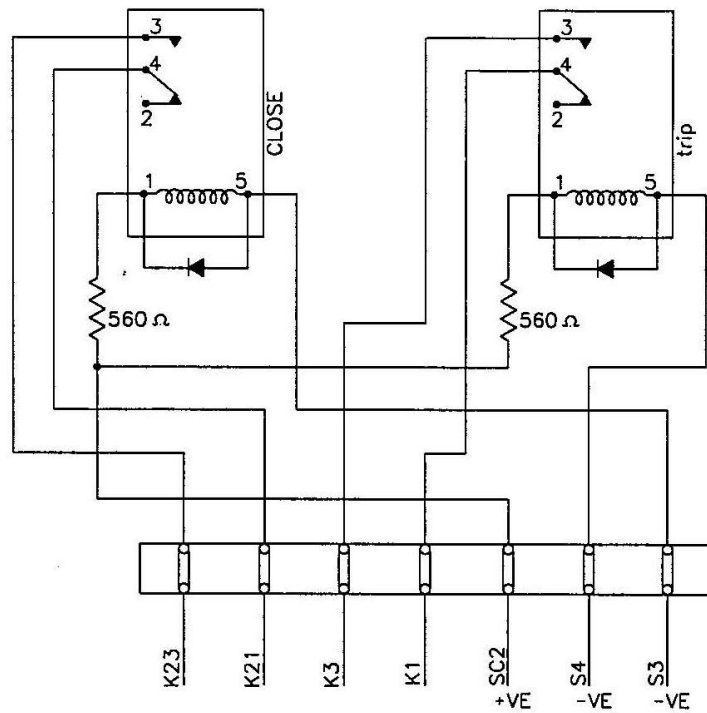


TRANSDUCER MOUNTING DIAGRAM

CITY OF CAPE TOWN
ELECTRICITY DEPT.
DRAWN: A.B.
1984.10.19.






TRANSDUCER CONNECTIONS

DR 2732
SHEET 4



TERMINAL LEGEND

ALL TERMINALS 'KLIPPON' UNLESS OTHERWISE APPROVED.

	ASK1	CAT. No. 3767.6
	SAKS1 (1A)	1191.2
	SAKR	4121.6
	SAK 2,5	2796.2
	SAK 4 WITH TYPE VL2 SWITCHABLE LINK	1283.2 1970.0

DIODE: TYPE F4

RELAYS:

OMRON TYPE GSR-117 P-V-US
WITH 24V dc COIL (1100 Ω)
IN SERIES WITH 560 Ω RESISTOR.

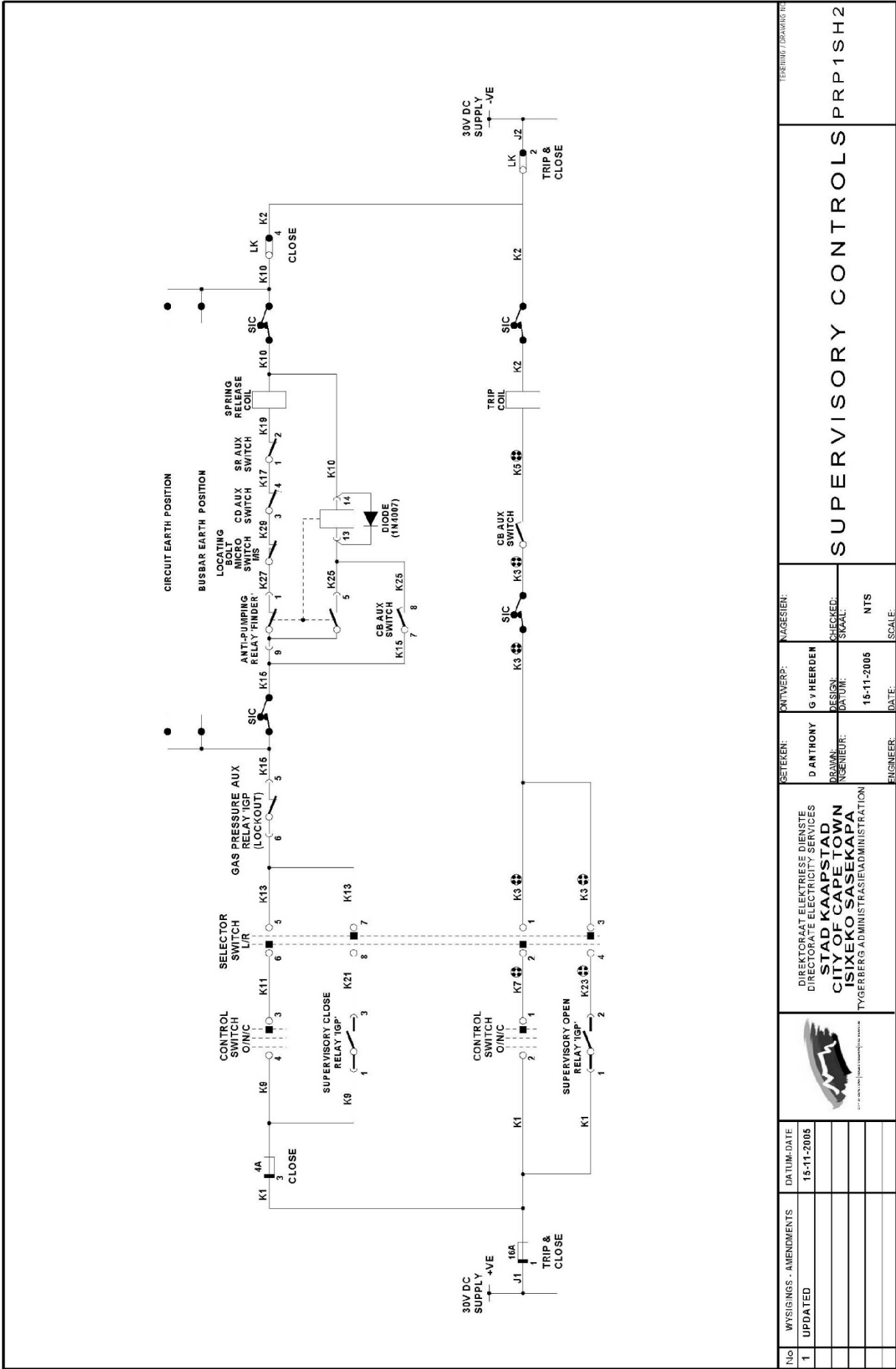
SUPERVISORY INTERPOSING CONTROL RELAYS

CITY OF CAPE TOWN
ELECTRICITY DEPARTMENT
COMPILED: A.B.
DATE: 2000/02/02

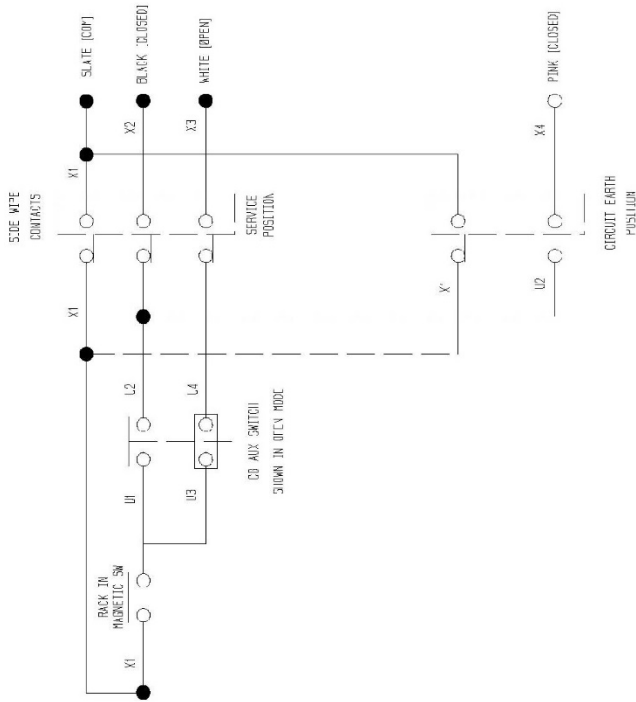
SHEET 5

DR 2732

<p>SPECIFICATIONS</p> <p>CURRENT: PYRAMID INSTRUMENTATION TYPE CAZLDG 6 INPUT 0.6A OUTPUT 4.20mA Hz 50 EXT. LOAD <750 OHM CLASS 0.5 AUX SUPPLY 230V COMPLY TO IEC 60688</p> <p>VOLTS: PYRAMID INSTRUMENTATION INPUT 0-125V AC OUTPUT 4-20mA Hz 50 EXT. LOAD <750 OHM CLASS 0.5 AUX SUPPLY 230V AC COMPLY TO IEC 60688</p> <p>U.V. RELAY: R HOMBERY VOLTAGE MONITOR SP 201</p> <p>LATCHING RELAY: OMRON MK2KP 30 V DC</p>		<p>DRAWING NO: PRP 1SHT1</p>
<p>CITY OF CAPE TOWN ELECTRICITY SERVICES</p>	<p>DRAWN: G.WILLIAMS DESIGN: CHECKED: F.DOWMING</p>	<p>DATE: 26-08-98 SCALE: N.T.S.</p>
<p>No</p>	<p>AMENDMENTS</p>	<p>DATE</p>
<p>1</p>	<p>30V DC WAS 24V DC.</p>	<p>14-11-2005</p>
<p>2</p>	<p>TRANSDUCER SPEC'S ADDED</p>	<p>14-11-2005</p>
<p>3</p>	<p>SPECIFICATIONS AMENDED</p>	<p>16-11-2005</p>

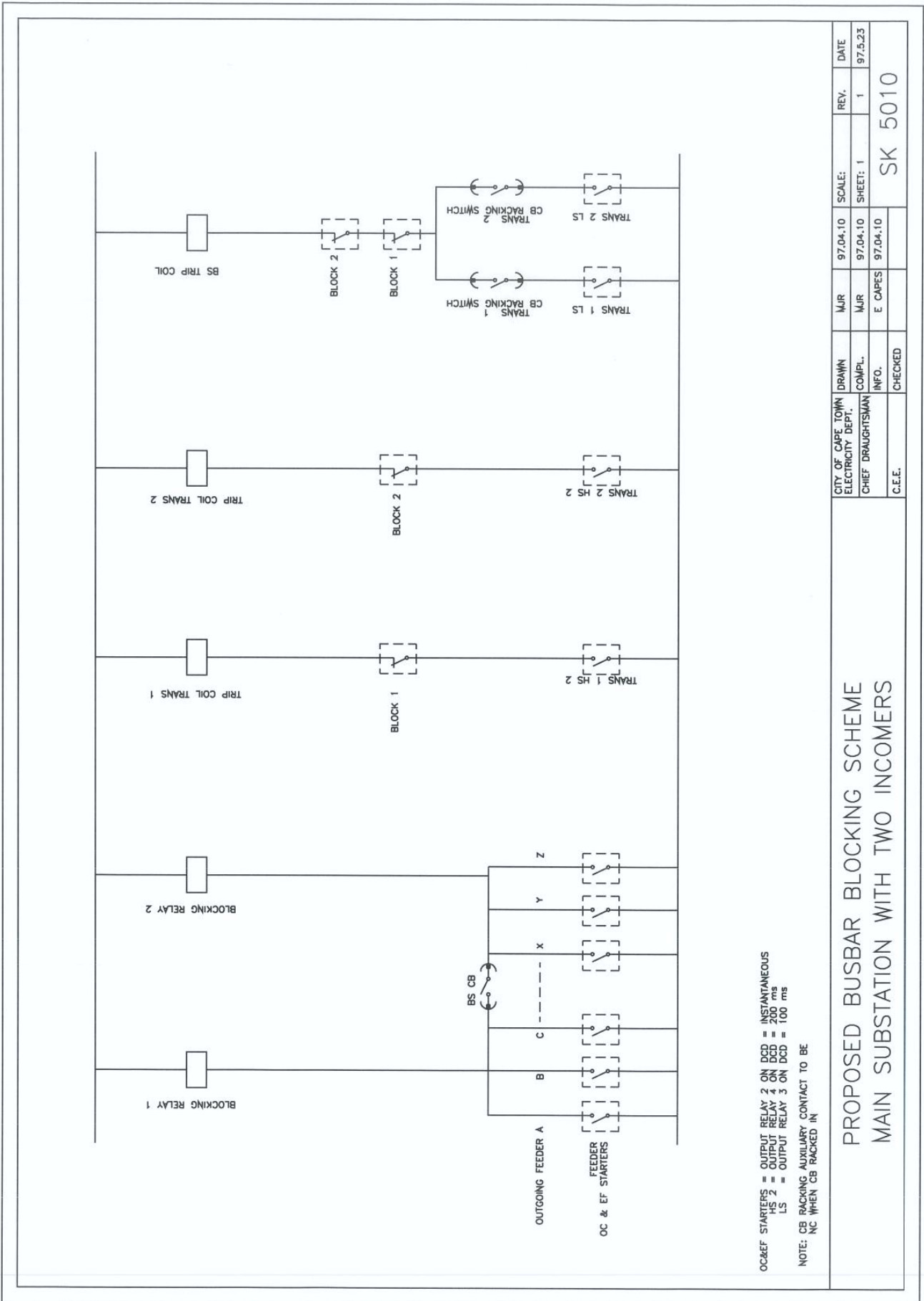


TENDER NO: 15G/2026/27		TENDERING DRAWING NO:	
SUPERVISORY CONTROLS PRP1SH2		SUPERVISORY CONTROLS PRP1SH2	
NO	WYSIGINGS - AMENDMENTS	DA TITIM-DATE	DATE
1	UPDATED	15-11-2005	15-11-2005
DIREKTORAAT ELEKTRIESE DIENSTE DIRECTORATE ELECTRICITY SERVICES STAD KAAPSTAD CITY OF CAPE TOWN ISIXEKO SASEKAPA TYGEBERG ADMINISTRASIEADMINISTRATIE		SETEKEN: ONTVERRER: NAGESIEN: DESIGNER: CHECKED: DRAWN: DATE:	D ANTHONY G V HEERDEN DA YUNI NTS 15-11-2005 NTS



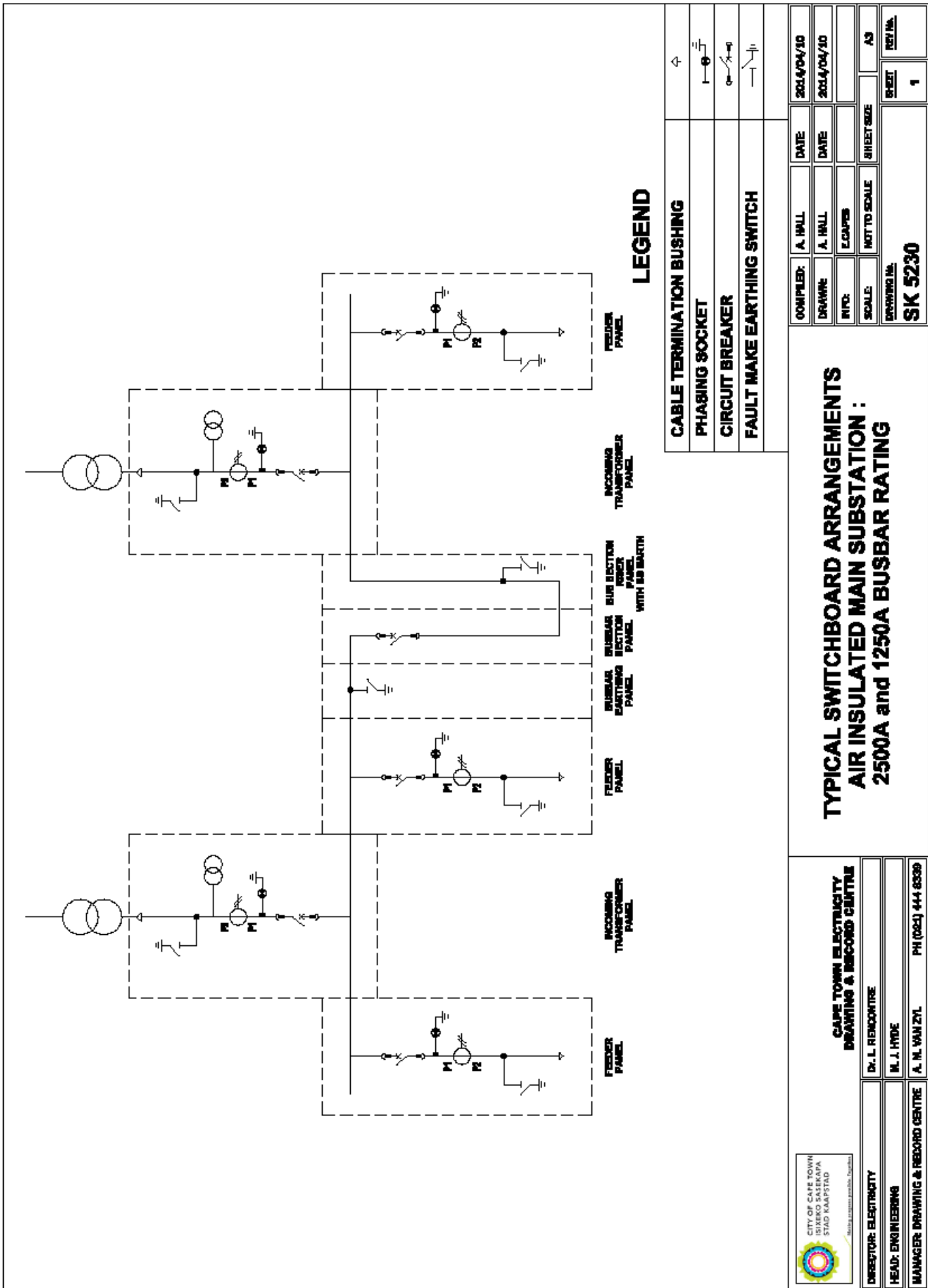
No	AMENDMENTS	DATE

CITY OF CAPE TOWN ELECTRICITY SERVICES	DRAWN:	G. WILLIAMS	ENGINEER:	
	DESIGN:		DATE:	26-08-98
CB SUPERVISORY ALARM INDICATION BREAKER STATUS INDICATION	CHECKED:	F. DOWNING	SCALE:	N.T.S.
	DRAWING NO:	PRP 1SHT3		



CITY OF CAPE TOWN ELECTRICITY DEPT.	DRAWN	MUR	SCALE:	REV.	DATE
CHIEF DRAUGHTSMAN	COMPL.	MUR	97.04.10	1	97.5.23
C.E.E.	INFO.	E CAPES	97.04.10		
	CHECKED				

PROPOSED BUSBAR BLOCKING SCHEME
 MAIN SUBSTATION WITH TWO INCOMERS
 SK 5010



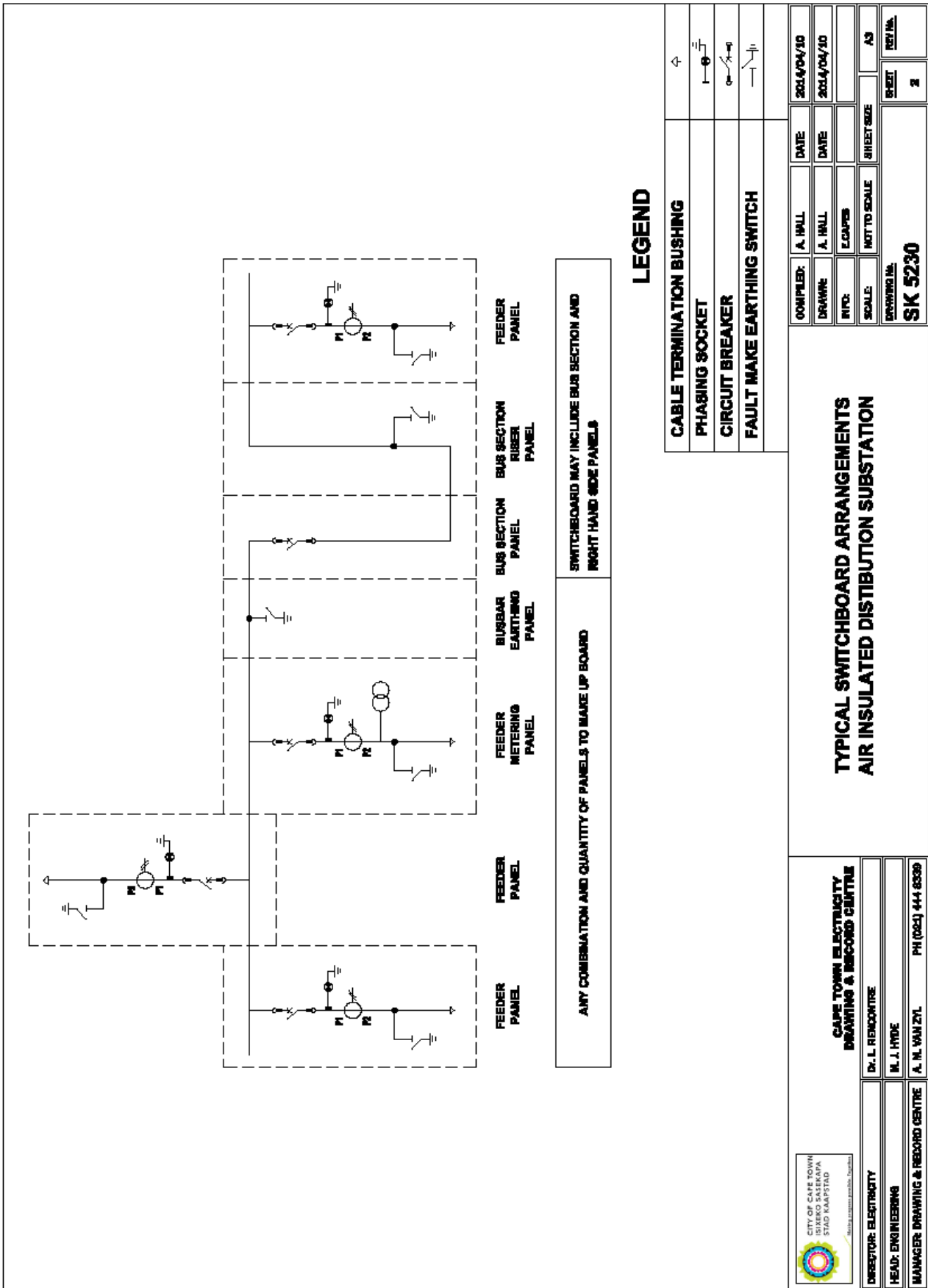
**TYPICAL SWITCHBOARD ARRANGEMENTS
AIR INSULATED MAIN SUBSTATION :
2500A and 1250A BUSBAR RATING**



CITY OF CAPE TOWN
SIKEXO SAZENAPA
STAD KAAPSTAD
Municipal Engineering Services Department

DIRECTOR: ELECTRICITY	Dr. L. RENKONTRE
HEAD: ENGINEERING	M. J. HYDE
MANAGER: DRAWING & RECORD CENTRE	A. N. VAN ZYL
	PH (021) 444 8389

COMPILED:	A. HALL	DATE:	2024/04/10
DRAWN:	A. HALL	DATE:	2024/04/10
REV:	E.CAPES		
SCALE:	NOT TO SCALE	SHEET SIZE:	A3
DRAWING NO.	SK 5230		
		SHEET	1
		REV. NO.	



LEGEND

CABLE TERMINATION BUSHING	
PHASING SOCKET	
CIRCUIT BREAKER	
FAULT MAKE EARTHING SWITCH	

ANY COMBINATION AND QUANTITY OF PANELS TO MAKE UP BOARD

SWITCHBOARD MAY INCLUDE BUS SECTION AND RIGHT HAND SIDE PANELS

**TYPICAL SWITCHBOARD ARRANGEMENTS
AIR INSULATED DISTRIBUTION SUBSTATION**



**CAPE TOWN ELECTRICITY
DRAWING & RECORD CENTRE**

DIRECTOR: ELECTRICITY
HEAD: ENGINEERING
MANAGER: DRAWING & RECORD CENTRE

DR. L. RENCONTRE
M. J. HYDE
A. N. VAN ZYL

PH (021) 444 8339

COMPILED:	A. HALL	DATE:	2024/04/10
DRAWN:	A. HALL	DATE:	2024/04/10
REV:	LOAPS	SHEET SIZE:	A3
SCALE:	NOT TO SCALE	SHEET NO.:	2
DRAWING NO.:	SK 5230		
REV. NO.:			

51 TAKING-OVER CERTIFICATE

51.1 A formal document in construction activities that signifies substantial completion of the works, allowing the employer to take possession and use the building. It essentially marks the transition of responsibility for the works from the contractor to the employer.

52 WORKS PROJECT TEMPLATE

52.1 Annexure 1 is an example template of a Works Project Document and shall include the items listed below but should not be limited to:

52.1.1 Scope of Work

52.1.2 Bill of Quantity

52.1.3 A Site-Specific Risk Assessment

52.1.4 Health and Safety Plan

52.1.5 Site HSE Organogram

52.1.6 Training Records

52.1.7 Toolbox Talks

52.1.8 Emergency Contact Details

52.1.9 Authorisation & Appointment Letters

53 ORIGINAL EQUIPMENT MANUFACTURERS (OEM) AND THEIR AUTHORISED RESELLER/DISTRIBUTOR

53.1 Tenderers who are not the OEMs of the equipment offered (Category B), ie. the tenderer receives a quotation from an OEM or a supplier/distributor, must provide a Letter of Authorisation from the OEM verifying that they are an authorised reseller or distributor of the equipment.

53.2 The letter from the OEM must state that the tenderer is an authorized reseller or distributor for the duration of the contract and confirming the extension of the guarantees and warranties to the City of Cape Town.

53.3 Tenderers who received a quotation from a supplier/distributor who is not the manufacturer of the equipment offered, must also provide the required Letter of Authorisation from the relevant manufacturer to that supplier/distributor to the tenderer, demonstrating the full supply chain of the equipment offered. This is a contract condition and may be requested at any time before contract start, to confirm the supply chain.

53.4 The letter(s) will be provided by close of tender.

54 EMPLOYMENT OF PRIVATE ARMED SECURITY PERSONNEL

1.1 All security staff employed by the Contractor on behalf of the CCT or at any CCT property must be registered with Private Security Industry Regulatory Authority (PSiRA). Proof of such registration must be made available to the CCT or its agent, upon request.

- 1.2 The rate for the Private Armed Security must include all necessary services for the duration of work on site in High Risk Areas.
- 1.3 The Contractor must submit a request to the Engineer, for the use of Private Armed Security. The request must include a detailed risk assessment and project plan outlining when Contractor staff will be onsite requiring such security. This request will be to the approval of the Engineer.

Annexure 1: Typical Works Project Document

Works Project (Name / Description)	Extension/Repair board of 2 panel(s) at the: PROJECT SUBSTATION		
Project Site / substation	PROJECT SUBSTATION		
Location of works address	Project Substation, Project Street, Project Suburb, Cape Town		
Short Project Name	SHORT PROJECT NAME		
Works Project Number	15G -A000		
Contract Number	15G/2026/27		
Contract Name:	TERM TENDER FOR SUPPLY, INSTALLATION, REPAIR AND COMMISSIONING OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS		
Contract Items: (choose)	ITEM A: Extensions		
Name of Contractor	----		
Performance guarantee of:	R.....Item A OR R..... for Item B	shall be provided for this contract.	
Cumulative performance guarantee minimum of	of the total accepted Contract Amount.	
WORKS PROJECT CONTRACT DOCUMENT MADE AVAILABLE	01 August 202X		
Works Project Contract Document available venue	Reception desk at City of Cape Town Transmission System Development, Bloemhof Centre, Bellville		
Compulsory Works project meeting Time:	10:00	Date:	25 August 202X
Works Project Meeting Venue	Venue of compulsory Works Project Meeting, Cape Town		
Submission closing time	12:00	Date:	30 August 202X
Submission closing venue	City of Cape Town Distribution System Development, Bloemhof Centre, Bellville		
Project Start Date	15 September 202X		
Site access date	15 September 202X		
Project Completion date	30 September 202X		
Time for completion (days)	14	(counting all days from site access to completion)	
Employer's agent / Project Manager	Ms.		
PM Designation	PPO - Electricity: DSD		
PM tel	021 444	PM Fax	021 444.....
PM Email@capetown.gov.za		
PM Address	2nd floor: DSD City of Cape Town Electricity Services Head Office		

	Bloemhof Complex Bloemhof Road BELLVILLE 7530																																								
Engineer's name and address	The Manager: Engineering – 2nd Floor, Electricity Services Head Office, Bloemhof Road, Bellville, 7530																																								
Site Access and Permits	Electricity HV – Substations South Department, Contact person: Mr ----- (Superintendent), Tel no. 021 --- ----.																																								
Employer's objective:	DSD: Substation Extension for growth in Area East																																								
DETAILED DESCRIPTION OF THE WORKS	The installation of																																								
The work comprises:	<p>1.1.1 Installing two (2) 630A panels.</p> <p>1.1.2 Installation of panel heaters on 7 panels.</p> <p>1.1.3 Detailed condition assessment of 5 panels.</p> <p>1.1.4 Installation of canon socket and remote trip/close facilities on 7 panels.</p> <p>1.1.5 Upgrading of circuit breaker auxiliary supply voltage from 30V dc to 110V dc on 5 panels.</p> <p>1.1.6 Installation of 110V dc battery tripping unit.</p> <p>1.1.7 Installation of arc rated doors on 5 panels.</p> <p>1.1.8 Installation of arc vented rear covers on 5 panels.</p> <p>1.1.9 Installation of end blast covers</p> <p>1.1.10 Supply and install multicore cabling and earthing complete.</p> <p>Note if panels or equipment will be free-issued, etc.</p>																																								
Current Panel Layout	<p style="text-align: center;">SUBSTATION NAME: PROJECT SUBSTATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Panel No</th> <th style="width: 35%;">Name/ Description</th> <th style="width: 15%;">Switchgear</th> <th style="width: 15%;">CT Ratio's</th> <th style="width: 25%;">Relays</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>SPARE</td> <td style="text-align: center;">---</td> <td style="text-align: center;">400/5</td> <td>Solkor</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Protea Road</td> <td style="text-align: center;">---</td> <td style="text-align: center;">400/5</td> <td>Solkor, DCC</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Local Trans 1</td> <td style="text-align: center;">---</td> <td style="text-align: center;">50/5</td> <td>4B3</td> </tr> <tr> <td style="text-align: center;">4</td> <td>Mosque Lane</td> <td style="text-align: center;">---</td> <td style="text-align: center;">400/5</td> <td>Solkor</td> </tr> <tr> <td style="text-align: center;">5</td> <td>Trans 2</td> <td style="text-align: center;">---</td> <td style="text-align: center;">50/5</td> <td>Solkor</td> </tr> </tbody> </table> <p style="text-align: center;"><i>Panel numbers from Left to Right</i></p>	Panel No	Name/ Description	Switchgear	CT Ratio's	Relays	1	SPARE	---	400/5	Solkor	2	Protea Road	---	400/5	Solkor, DCC	3	Local Trans 1	---	50/5	4B3	4	Mosque Lane	---	400/5	Solkor	5	Trans 2	---	50/5	Solkor										
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SITE SPECIFIC ENVIRONMENTAL CONDITIONS AND RISKS	<p>a) No ablution facilities for use by contractor staff. To be provided by Contractor.</p> <p>b) Substation ground is secured by a fence with a lockable gate.</p> <p>c) All waste to be removed from site by the Contractor on completion of Work.</p>																																								
SITE SPECIFIC HAZARDS AND RISKS	<p>H9.1 Structures (CR 11)</p> <p>H9.2 Temporary works (CR 12)</p>																																								

	<p>H9.3 Excavation work (CR 13)</p> <p>H9.4 Demolition work (CR 14)</p> <p>H9.5 Scaffolding (CR 16)</p> <p>H9.6 Cranes (CR 22)</p> <p>H9.7 Construction vehicles and mobile plant (equipment) (CR 23)</p> <p>H9.8 Electrical installations and machinery (CR 24)</p> <p>H9.9 Flammable liquids (CR 25)</p> <p>H9.10 Confined spaces</p> <p>H9.11 Working in close proximity to live electrical equipment</p> <p>Work will be executed in close proximity to live electrical equipment. The City will indicate where this equipment is situated and the contractor is to ensure that all staff is aware of the risks associated with working in these conditions and how to mitigate/avoid these risks.</p>
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C.6 SPECIAL CONDITIONS OF CONTRACT

The following Special Conditions of Contract, referring to the National Treasury – Conditions of Contract (revised July 2010), are applicable to this agreement.

1. Definitions

Insert new clause 1.1A with the following:

- 1.1A “Commencement Date” means the date the Supplier confirms receipt from the Purchaser of 1 (one) complete, signed copy of the Contract, including the *Schedule of Deviations* (if any), or the date of the expiry date of the previous Contract date:
- 1.1B “Conditions of Contract” means the general conditions of contract and special conditions of contract including all other contract data incorporated by reference.

Delete Clause 1.15 and substitute with the following

- 1.15 The word ‘Goods’ is to be replaced everywhere it occurs in the GCC with the phrase ‘Goods and / or Services’ which means all of the equipment, machinery, materials, services, products, consumables, etc. that the Supplier is required to deliver to the Purchaser under the agreement. This definition shall also be applicable, as the context requires, anywhere where the words “supplies” and “services” occurs in the GCC.

Delete Clause 1.19 and substitute with the following

- 1.19 The word ‘Order’ is to be replaced everywhere it occurs in the GCC with the words ‘Purchase Order’ which means the official purchase order authorised and released on the Purchaser’s SAP System.

Delete Clause 1.21 and substitute with the following:

- 1.21 ‘Purchaser’ means the City of Cape Town. The address of the Purchaser is **12 Hertzog Boulevard, Cape Town, 8001** (chosen domicilium citandi et executandi).

Add the following after Clause 1.25:

- 1.26 ‘Supplier’ means the provider of Goods and / or Services with whom the Contract is concluded also referred to as “contractor” in the GCC.
- 1.27 "Intellectual Property" means any and all intellectual property rights of any nature anywhere in the world whether registered, registerable or otherwise, including patents, trademarks, registered designs and domain names, applications for any of the foregoing, trade or business names, copyright and rights in the nature of copyright, design rights, rights in databases, know-how, trade secrets and any other intellectual property rights which subsist in computer software, computer programs, websites, documents, information, techniques, business methods, drawings, logos, instruction manuals, lists and procedures and particulars of customers, marketing methods and procedures and advertising literature, including the "look and feel" of any websites
- 1.28 “Working Day” means Monday to Friday excluding weekends and Public Holidays (in the Republic of South Africa).

3. General Obligations

Delete Clause 3.2 in its entirety and replace with the following clauses.

- 3.2 The Parties will be liable to each other arising out of or in connection with any breach of the obligations detailed or implied in this contract, subject to clause 28.
- 3.3 If the Supplier is a joint venture, all parties in a joint venture or consortium shall be jointly and severally liable to the Purchaser in terms of the Contract and shall carry individually the minimum levels of insurance stated in the Contract, if any.

- 3.4 The Parties shall comply with all laws, regulations and bylaws of local or other authorities having jurisdiction regarding the Delivery of the Goods and/or Services and give all notices and pay all charges required by such authorities.
- 3.4.1 The Parties agree that this Contract shall also be subject to the CCT's Supply Chain Management Policy ("SCM Policy") that was applicable on the date the bid was advertised as amended from time to time. **If the Purchaser adopts a new SCM Policy which contemplates that any clause therein would apply to the Contract emanating from this tender, such clause shall also be applicable to the Contract.** Please refer to this document contained on the CCT's website.
- 3.4.2 Abuse of the supply chain management system is not permitted and may result in termination of the Contract, restriction of the Supplier, and/or the exercise by the CCT of any other remedies available to it as described in the SCM Policy or in law.
- 3.5 The **Supplier** shall:
- 3.5.1 Arrange for the documents listed below to be provided to the Purchaser prior to the issuing of the Purchase Order by the Purchaser and no later than the periods as set out in the Contract:
- a) Proof of Insurance (Refer to Clause 11) or Insurance Broker's Warrantee,
 - b) Letter of good standing from the Compensation Commissioner, or a licensed compensation insurer (Refer to Clause 11),
 - c) Initial delivery programme, and
 - d) Other requirements as detailed in the Contract.
- 3.5.2 Only when notified of the acceptance of the bid on the Date of Commencement of Contract, the Supplier shall commence with and carry out the Delivery of the Goods and/or Services in accordance with the Contract, to the satisfaction, of the Purchaser.
- 3.5.3 Provide all of the necessary materials, labour, plant and equipment required for the delivery of the Goods and/or Services including any temporary services that may be required.
- 3.5.4 Insure his workmen and employees against death or injury arising out of the delivery of the Goods.
- 3.5.5 Be continuously represented during the Delivery of the Goods and/or Services by a competent representative duly authorised to execute instructions.
- 3.5.6 In the event of a loss resulting in a claim against the insurance policies stated in clause 11, pay the first amount (excess) as required by the insurance policy.
- 3.5.7 Comply with all written instructions from the Purchaser subject to clause 18.
- 3.5.8 Complete and Deliver the goods within the period stated in clause 10, or any extensions thereof in terms of clause 21.
- 3.5.9 Make good at his own expense, all incomplete and defective Goods during the warranty period.
- 3.5.10 Pay to the Purchaser any penalty for delay as due on demand by the Purchaser. The Supplier hereby consents to such amounts being deducted from any payment due to the Supplier.
- 3.5.11 **Comply with the provisions of the OHS Act & all relevant regulations.**
- 3.5.12 Comply with all laws relating to wages and conditions generally governing the employment of labour in the Cape Town area and any applicable Bargaining Council agreements.
- 3.5.13 Deliver the Goods in accordance with the Contract and with all reasonable care, diligence and skill in accordance with generally accepted professional techniques and standards.
- 3.6 The **Purchaser** shall:
- 3.6.1 Issue Purchaser Orders for the Goods and/or Services required under this Contract. No liability for

payment will ensue for arising out of the Delivery of the Goods and/or Services, unless a Purchase Order has been issued to the Supplier.

- 3.6.2 Make payment to the Supplier for the Goods and/or Services as set out herein.
- 3.6.3 Take possession of the Goods and /or Services upon Delivery by the Supplier.
- 3.6.4 Regularly inspect the Goods to establish that it is being delivered in compliance with the Contract.
- 3.6.5 Give any instructions and/or explanations and/or variations to the Supplier including any relevant advice to assist the Supplier to understand the Contract.
- 3.6.6 Grant or refuse any extension of time requested by the Supplier of the period stated in clause 10.
- 3.6.7 Inspect the Goods and/or Services to determine if, in the opinion of the Purchaser, it has been delivered in compliance with the Contract, alternatively in such a state that it can be properly used for the purpose for which it was intended.
- 3.6.8 Brief the Supplier and issue all documents, information, etc. in accordance with the contract.

5. Use of contract documents and information; inspection, copyright, confidentiality, etc.

Add the following after clause 5.4:

- 5.5 Copyright of all documents prepared by the Supplier in accordance with the relevant provisions of the Copyright Act (Act 98 of 1978) relating to the Contract shall be vested in the Purchaser. Where copyright is vested in the Supplier, the Purchaser shall be entitled to use the documents or copy them only for the purposes for which they are intended in regard to the agreement and need not obtain the Supplier's permission to copy it for such use. Where copyright is vested in the Purchaser, the Supplier shall not be liable in any way for the use of any of the information other than as originally intended in terms of the agreement and the Purchaser hereby indemnifies the Supplier against any claim which may be made against it by any person / entity, arising from the use of such documentation for other purposes.

The ownership of data and factual information collected by the Supplier and paid for by the Purchaser shall, after payment, vest with the Purchaser.

- 5.6 **Publicity and publication**
The Supplier shall not release public or media statements or publish material related to the services or agreement within two (2) years of Delivery of the Goods, without the written approval of the Purchaser, which approval shall not be unreasonably withheld.
- 5.7 **Confidentiality**
Both Parties shall keep all information obtained by them in the context of the agreement, confidential and shall not divulge it without the written approval of the other Party.
- 5.8 **Intellectual Property**
 - 5.8.1 The Supplier acknowledges that it shall not acquire any right, title or interest in or to the Intellectual Property of the Purchaser.
 - 5.8.2 The Supplier hereby assigns to the Purchaser, all Intellectual Property created, developed or otherwise brought into existence by it for the purposes of the agreement, unless the Parties expressly agree otherwise in writing.
 - 5.8.3 The Supplier shall, and warrants that it shall:
 - 5.8.3.1 Not be entitled to use the Purchaser's Intellectual Property for any purpose other than as contemplated in the agreement;
 - 5.8.3.2 not modify, add to, change or alter the Purchaser's Intellectual Property, or any information or data related thereto, nor may the Supplier produce any product as a result of, including and/or arising from

any such information, data and Intellectual Property, and in the event that it does produce any such product, the product shall be, and be deemed in law to be, owned by the Purchaser;

- 5.8.3.3 Not apply for or obtain registration of any domain name, trademark or design which is similar to any Intellectual Property of the Purchaser;
- 5.8.3.4 Comply with all reasonable directions or instructions given to it by the Purchaser in relation to the form and manner of use of the CCT Intellectual Property, including without limitation, any brand guidelines which the Purchaser may provide to the Supplier from time to time;
- 5.8.3.5 Ensure that its employees, directors, members and contractors comply strictly with the provisions of this Clause 5.5.8.4 above unless the Purchaser expressly agrees to the contrary, in writing and only after obtaining due internal authority for such agreement.
- 5.8.4 The Supplier represents and warrants to the Purchaser that, in providing Goods and/or Services for the duration of the agreement it will not infringe or make unauthorised use of the Intellectual Property rights of any third party and hereby indemnifies the Purchaser from any claims, liability, loss, damages, costs, and expenses arising from the infringement or unauthorised use by the Supplier of any third party's Intellectual Property rights.
- 5.8.5 Upon expiry of the contract period and in the event that the Contract is terminated, ended or is declared void, any and all of the Purchaser's Intellectual Property, and any and all information and data related thereto, shall be immediately handed over to the Purchaser by the Supplier and no copies thereof shall be retained by the Supplier unless the Purchaser expressly and in writing, after obtaining due internal authority, agrees otherwise.

Add the following after clause 5.8:

5.9 Protection of Personal Information Act of 2013

By submitting a tender to the Purchaser, (and by concluding any ensuing related agreement with the City of Cape Town, if applicable), the Tenderer thereby acknowledges and unconditionally agrees:

- 5.9.1 that the tenderer has been informed of the purpose of the collection and processing of its personal information as defined in the Protection of Personal Information Act of 2013 ("POPIA"), which, for the avoidance of doubt is for, and in relation to, the tender process and the negotiation, conclusion, performance and enforcement of the ensuing agreement, if applicable, as well as for the City of Cape Town's reporting purposes;
- 5.9.2 to the collection and processing of the tenderer's personal information by the City of Cape Town and agrees to make available to the City of Cape Town, all information reasonably required by the City of Cape Town for the above purposes;
- 5.9.3 that the personal information the City of Cape Town collects from the tenderer or about the tenderer may be further processed for other activities and/or purposes which are lawful, reasonable, relevant and not excessive in relation to the purposes set out above, for which it was originally collected;
- 5.9.4 that, the tenderer indemnifies the City of Cape Town and its officials, employees, and directors and undertakes to keep the City of Cape Town and its officials, employees, and directors indemnified in respect of any claim, loss, demands, liability, costs and expenses of whatsoever nature which may be made against the City of Cape Town (including the costs incurred in defending or contesting any such claim) in relation to the tenderer or the tenderer's employees', representatives' and/or sub-Suppliers' non-compliance with POPIA and/or the City of Cape Town's failure to obtain the tenderer's consent or to notify the tenderer of the reason for the processing of the tenderer's personal information;
- 5.9.5 to the disclosure of the tenderer's personal information by the City of Cape Town to any third party, where the City of Cape Town has a legal or contractual obligation to disclose such personal information to the third party (or a legitimate interest exists therein);
- 5.9.6 that, under POPIA, the tenderer may request to access, confirm, request the correction, destruction, or deletion of, or request a description of, personal information held by the City of Cape Town in relation to you, subject to applicable law; and

that under POPIA, subject to applicable law, the tenderer also has the right to be notified of a personal information breach and the right to object to, or restrict, the City of Cape Town's processing of its personal information.

5.10 **PERFORMANCE MONITORING**

5.10.1 As required by section 116(2)(b) of the Local Government: Municipal Financial Management Act 56 of 2003, the CCT shall monitor the performance of the Supplier on at least a monthly basis, and the Supplier agrees to provide the CCT with its full cooperation in this regard.

7. Performance Security

Delete clause 7.1 and replace with the following:

7.1 Within 14 (fourteen) days of Commencement Date the Supplier shall furnish to the Purchaser the performance security:

7.1.1 The required Guarantee Sum per Item (A, B, C, D & E) for projects involving site installation will be as follows:

Item A: R150 000,00

Item B: R750 000,00

Item C: R150 000,00

Item D: R250 000,00

Item E: R250 000,00

Being 7 percent of the Contract price or such other applicable amount.

7.1.2 The Performance Security/Guarantee furnished shall be issued by an Approved Financial Institution listed in the Pro Forma Performance Security/Guarantee as at 28 February 2023 (being institutions approved for issue of contract guarantees by the Purchaser).

Delete clause 7.3 and replace with the following:

7.3 The performance security shall be furnished strictly in accordance with the terms and conditions set out in Form of Performance Security/ Guarantee.

Delete clause 7.4 and replace with the following:

7.4 The performance security will be discharged by the Purchaser and returned to the Supplier strictly in accordance with the terms and conditions set out in the Performance Security/ Guarantee.

A

8. Inspections, tests and analyses

Delete Clause 8.2 and substitute with the following:

8.2 If it is a bid condition that Goods and/or Services to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or Supplier shall be open, at all reasonable hours, for inspection by a representative of the Purchaser or an organisation acting on behalf of the Purchaser.

10. Delivery and documents

Delete clauses 10.1 and 10.2 and replace with the following:

10.1 Delivery of the goods shall be made by the Supplier in accordance with the terms specified in the contract. The time for Delivery of the goods shall be the date as stated on the Purchase Order. In the case of agreements for Delivery of goods in terms of framework or panel agreements, Purchase Orders for the supply and delivery of goods may be raised up until the expiry of a framework or panel agreement, provided that the goods can be delivered within 30 (thirty) days of expiry of the framework or panel agreement. In this context, the "goods" does not include services and carries its ordinary meaning. All Purchase Orders other than for the supply and Delivery of goods (i.e. supply of services, professional services or constructions works), must be completed prior to the expiry of the contract period.

10.2 The Purchaser shall determine, in its sole discretion, whether the Goods and/or Services have been delivered in compliance with the Contract, alternatively in such a state that it can be properly used for the purpose for which it was intended. When the Purchaser determines that the Goods and/or Services have been satisfactorily delivered, the Purchaser must issue an appropriate certification, or written approval, to that effect. Invoicing may only occur, and must be dated, on or after the date of such written acceptance of the Goods.

11. Insurance

Add the following after clause 11.1:

11.2 Without limiting the obligations of the Supplier in terms of this Contract, the Supplier shall effect and maintain the following additional insurances:

11.2.1 Public liability insurances, in the name of the Supplier, covering the Supplier and the Purchaser against liability for the death of or injury to any person, or loss of or damage to any property, arising out of or in the course of this Contract, in an amount not less than **[R20 million]** for any single claim;

11.2.2 Motor Vehicle Liability Insurance, in respect of all vehicles owned and / or leased by the Supplier, comprising (as a minimum) "Balance of Third Party" Risks including Passenger Liability Indemnity;

11.2.3 Registration / insurance in terms of the Compensation for Occupational Injuries and Disease Act, Act 130 of 1993. This can either take the form of a certified copy of a valid Letter of Good Standing issued by the Compensation Commissioner, or proof of insurance with a licenced compensation insurer, from either the Supplier's broker or the insurance company itself (see the Pro Forma Insurance Broker's Warranty).

11.2.4 Not Applicable

11.2.5 In the event of under insurance or the insurer's repudiation of any claim for whatever reason, the Purchaser will retain its right of recourse against the Supplier.

11.3 The Supplier shall be obliged to furnish the Purchaser with proof of such insurance as the Purchaser may require from time to time for the duration of this Contract. Evidence that the insurances have been effected in terms of this clause, shall be either in the form of an insurance broker's warranty worded precisely as per the pro forma version contained in the Pro forma Insurance Broker's Warranty or copies of the insurance policies.

15. Warranty

Add to Clause 15.2:

15.2 The warranty for this Contract shall remain valid for **twelve (12) months** from date of Delivery of the Goods and/or Services.

16. Payment

Delete Clause 16.1 in its entirety and replace with the following:

16.1 Payment of invoices will be made:

16.1.1 Within 30 (thirty) days of receiving the relevant invoice or statement from the Supplier, unless otherwise prescribed for certain categories of expenditure or specific contractual requirements in accordance with any other applicable policies of the Purchaser.

16.1.2 Notwithstanding anything contained above, the Purchaser shall not be liable for payment of any invoice that pre-dates the date of delivery of any Goods and/or Services.

Delete Clause 16.2 in its entirety and replace with the following:

16.2 The Supplier shall furnish the purchaser's Accounts Payable Department with an original tax invoice, clearly

showing the amount due in respect of each and every claim for payment.

Add the following after clause 16.4

16.5 Notwithstanding any amount stated on the Purchase Order, the Supplier shall only be entitled to payment for Goods and/or Services actually delivered in terms of the Specification and Drawings, or any variations thereof made in accordance with clause 18. Any contingency sum included shall be for the sole use, and at the discretion, of the Purchaser.

16.6 Not Applicable

17. Prices

Add the following after clause 17.1

17.2 If as a result of an award of a contract beyond the original tender validity period, the contract execution will be completed beyond a period of twelve (12) months from the expiry of the original tender validity period, then the contract may be subject to contract price adjustment for that period beyond such twelve (12) months. An appropriate contract price adjustment formula will be determined by the Purchaser delegated authority if such was not included in the bid documents.

17.3 If as a result of any extension of time granted, the contract execution will be completed beyond a period of twelve (12) months from the expiry of the original tender validity period, then contract price adjustment may apply to that period beyond such twelve (12) months. An appropriate contract price adjustment formula will be determined by the Director: Supply Chain Management if such was not included in the bid documents.

17.4 The prices for the goods and/or Services delivered and services performed **shall be subject to contract price adjustment in terms of Schedule F.1 Contract Price Adjustment and/or Rate of Exchange Variations.**

18. Contract Amendments

Delete the heading of clause 18 and replace with the following:

18. Contract Amendments and Variations

Add the following to clause 18.1:

Variations means changes to the Goods and/or Services, extension of the contract period or increases in the value of the Contract as a result of written instructions issued by the Purchaser to the Supplier. Such changes are subject to prior approval by the Purchaser's delegated authority. Should the Supplier deliver any Goods not described in a written instruction from the Purchaser, the Purchaser's liability for payment shall no arise until such time as the change has been duly approved and such approval communicated to the Purchaser.

20. Subcontracts

Add the following after clause 20.1:

20.2 The Supplier shall be liable for the acts, defaults and negligence of any subcontractor, his agents or employees as fully as if they were the acts, defaults or negligence of the Supplier.

20.3 Any appointment of a subcontractor shall not amount to a contract between the Purchaser and the subcontractor, or a responsibility or liability on the part of the Purchaser to the subcontractor and shall not relieve the Supplier from any liability or obligation under the Contract.

21. Delays in the supplier's performance

Delete Clause 21.2 in its entirety and replace with the following:

21.2 If at any time during the performance of obligations contained in the Contract the Supplier or its subcontractors should encounter conditions beyond their reasonable control which impede the timely delivery of the Goods and/or Services, the Supplier shall notify the Purchaser in writing, within 7 (seven) days of first having become aware of these conditions, of the facts of the delay, its cause(s) and its probable duration. As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation, and may at his discretion extend the time for Delivery.

Where additional time is granted, the Purchaser shall also determine whether or not the Supplier is entitled to payment for additional costs in respect thereof. The principle to be applied in this regard is that where the Purchaser or any of its agents are responsible for the delay, reasonable costs shall be paid. In respect of delays that were beyond the reasonable control of both the Supplier and the Purchaser, additional time only (no costs) will be granted.

The Purchaser shall notify the Supplier in writing of his decision(s) in the above regard.

21.3 No provision in this Contract shall be deemed to prohibit the obtaining of Goods and/or Services from a national department, provincial department, or a local authority.

22. Penalties

Delete clause 22.1 and replace with the following:

22.1 Subject to GCC Clause 25, if the Supplier fails to deliver any or all of the Goods and/or Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from amounts payable, as a penalty, a sum as stated herein for each day of the delay until actual Delivery or performance.

The penalty for this contract shall be as follows:

- a) For Works Projects 0,1 % (one tenth of one percent) of the final Contract Price of the delayed Section per day of each Works Project that is delayed.
- b) For equipment ordered to stock and delivered to Stores 0,5 % (one half of one percent) of the final contract price of the equipment per week that the equipment is delayed.

No such penalties shall exceed 10% of the value of the overdue goods concerned.

22.2 The Purchaser shall, without prejudice to its other remedies under the contract, deduct from amounts payable, financial penalties as contained on the Preference Schedule for breaches of the conditions upon which preference points were awarded.

23. Termination for default

Delete the heading of clause 23 and replace with the following:

23. Termination

Add the following to the end of clause 23.1:

If the Supplier fails to remedy the breach in terms of such notice.

Add the following after clause 23.7:

23.8 In addition to the grounds for termination due to default by the Supplier, the Contract may also be terminated:

23.8.1 Upon the death of the Supplier who was a Sole Proprietor, or a sole member of a Close Corporation, in which case the contract will terminate forthwith.

23.8.2 If the Parties, by mutual agreement, terminate the Contract.

23.8.3 If a material irregularity vitiates the procurement process leading to the conclusion of the Contract, rendering the procurement process and the conclusion of the resulting Contract unfair, inequitable, non-transparent, uncompetitive or not cost-effective the Contract may be terminated by the Purchaser (upon conclusion of applicable processes by the City Manager as described in the Purchaser's SCM Policy).

23.8.4 Reputational risk or harm to the Purchaser

The Purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, may terminate the contract if the implementation of the contract may result in reputational risk or harm to the Purchaser as a result of (inter alia):

- a) reports of poor governance and/or unethical behaviour;
- b) association with known notorious individuals and family of notorious individuals;
- c) poor performance issues, known to the Purchaser
- d) negative social media reports;
- e) adverse assurance (e.g. due diligence) report outcomes; or
- f) circumstances where the relevant vendor has employed, or is directed by, anyone who was previously employed in the service of the state (as defined in clause 1.53), where the person is or was negatively implicated in any SCM irregularity.

By or in relation to the Supplier, the Contract may be terminated by the Purchaser after providing notice to the Supplier.

23.9 If the Contract is terminated in terms of clause 23.8, all obligations that were due and enforceable prior to the date of the termination, must be performed by the relevant Party.

26. Termination for insolvency

Delete clause 26.1 and replace with the following:

26.1 In the event of the Supplier becoming bankrupt or otherwise insolvent the Purchaser may elect to:

26.1.1 At any time, terminate the Contract by giving written notice to the Supplier; or

26.1.2 Accept a Supplier's proposal (via the liquidator) to render delivery utilising the appropriate contractual mechanisms or takes steps to ensure its rights are protected and any negative impact on service delivery is mitigated.

26.2 In the event of the Purchaser electing to cancel the Contract in accordance with clause 26.1.1 above, the Purchaser shall make payment of all verified and signed off invoices. In the event of there being any dispute in respect of any outstanding invoices such dispute shall be dealt with in accordance with the dispute resolution mechanism in the Contract.

27. Settlement of Disputes

Amend clause 27.1 as follows:

27.1 If any dispute or difference of any kind whatsoever, with the exception of termination in terms of clause 23 arises between the Purchaser and the Supplier in connection with or arising out of the Contract, the Parties shall make every effort to resolve such dispute or difference amicably, by mutual consultation.

Delete Clause 27.2 in its entirety and replace with the following:

27.2 Should the Parties fail to resolve any dispute by way of mutual consultation, either party shall be entitled to refer the matter for mediation before an independent and impartial person appointed by the City Manager in accordance with Regulation 50(1) of the Local Government: Municipal Finance Management Act, 56 of 2003 – Municipal Supply Chain Management Regulations (Notice 868 of 2005). Such referral shall be done by either party giving written notice to the other of its intention to commence with mediation. No mediation may be commenced unless such notice is given to the other party.

Irrespective whether the mediation resolves the dispute, the Parties shall bear their own costs concerning the mediation and share the costs of the mediator and related costs equally.

The mediator shall agree the procedures, representation and dates for the mediation process with the Parties. The mediator may meet the Parties together or individually to enable a settlement.

Where the Parties reach settlement of the dispute or any part thereof, the mediator shall record such agreement and on signing thereof by the Parties the agreement shall be final and binding.

Save for reference to any portion of any settlement or decision which has been agreed to be final and binding on the Parties, no reference shall be made by or on behalf of either party in any subsequent court proceedings, to any outcome of an amicable settlement by mutual consultation, or the fact that any particular evidence was given, or to any submission, statement or admission made in the course of amicable settlement by mutual consultation or mediation.

28. Limitation of Liability

Delete clause 28.1 (a) and (b) and replace with the following:

- (a) notwithstanding any provision to the contrary contained in this contract, neither the supplier nor any of its officers, directors, employees, agents contractors, consultants or other representatives shall be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect, incidental, special or consequential loss or damage of any kind, including without limitation the loss of use, loss of production, or loss of profits or interest costs, loss of goodwill, lost or damaged data or software, costs of substitute products/services and/or loss of business or business opportunities (whether foreseeable or unforeseeable), provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser;
- (b) the aggregate liability of the Supplier to the Purchaser, whether under the Contract, in tort or otherwise, shall not exceed the sums insured in terms of clause 11 in respect of insurable events, or where no such amounts are stated, to an amount equal to twice the Contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

Add the following after clause 28.1:

28.2 Without detracting from, and in addition to, any of the other indemnities in this Contract, the Supplier shall be solely liable for and hereby indemnifies and holds harmless the Purchaser against all claims, charges, damages, costs, actions, liability, demands and/or proceedings and expense in connection with:

- a) personal injury or loss of life to any individual;
- b) loss of or damage to property;

arising from, out of, or in connection with the performance by the Supplier in terms of this Contract, save to the extent caused by the gross negligence or wilful misconduct of the Purchaser.

28.3 The Supplier and/or its employees, agents, concessionaires, suppliers, sub-contractors or customers shall not have any claim of any nature against the purchaser for any loss, damage, injury or death which any of them may directly or indirectly suffer, whether or not such loss, damages, injury or death is caused through negligence of the Purchaser or its agents or employees.

28.4 Notwithstanding anything to the contrary contained in this Contract, under no circumstances whatsoever, including as a result of its negligent (including grossly negligent) acts or omissions or those of its servants, agents or contractors or other persons for whom in law it may be liable, shall any party or its servants (in whose favour this constitutes a *stipulatio alteri*) be liable for any indirect, extrinsic, special, penal, punitive, exemplary or consequential loss or damage of any kind whatsoever, whether or not the loss was actually foreseen or reasonably foreseeable), sustained by the other party, its directors and/or servants, including but not limited to any loss of profits, loss of operation time, corruption or loss of information and/or loss of contracts.

28.5 Each party agrees to waive all claims against the other insofar as the aggregate of compensation which might otherwise be payable exceeds the aforesaid maximum amounts payable.

31. Notices

Delete clauses 31.1 and 31.2 and replace with the following:

- 31.1 Any notice, request, consent, approvals or other communications made between the Parties pursuant to the Contract shall be in writing and forwarded to the addresses specified in the Contract and may be given as set out hereunder and shall be deemed to have been received when:
- a) hand delivered – on the day delivery of delivery or the next Working Day,
 - b) sent by registered mail – five (5) Working Days after mailing,
 - c) sent by email or telefax – one (1) Working Day after transmission.

32. Taxes and Duties

Delete the final sentence of 32.3 and replace with the following:

. In this regard, it is the responsibility of the Tenderer to submit evidence in the form of a valid Tax Compliance Status PIN issued by SARS to the CCT at the Supplier Management Unit located within the Supplier Management / Registration Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town (Tel 021 400 9242/3/4/5), or included with this tender.

Add the following after clause 32.3:

32.4 The VAT registration number of the CCT is 4500193497.

ADDITIONAL CONDITIONS OF CONTRACT

Add the following Clause after Clause 34:

35. Reporting Obligations

35.1 The Supplier shall complete, sign and submit with each delivery note, all the documents as required in the Specifications including Monthly Project Labour Reports (Annexure B). Any failure in this regard may result in a delay in the processing of payments.

36. Protection of personal information

36.1 The supplier acknowledges that it will be processing personal information as defined in the Protection of Personal Information Act No. 4 of 2013 relating to City customers, on behalf of the City. Accordingly, it undertakes to ensure compliance with the Act in respect of its processing activities. In particular, it undertakes to keep such information confidential and not to disclose it unless required by law or in the course of the proper performance of its duties. Furthermore, it undertakes to maintain security measures as envisaged in Sections 19 and 21 of the Act. The requirements of this apply to all agents and subcontractors acting on behalf of tenderers and must be included in all contracts between tenderers and their agents or subcontractors.

37. Percentage of retention

37.1 10% reducing to 5% upon the issue of a Taking-Over Certificate provided that for Works Projects less than or equal to R200 000 (incl. VAT) retention is waived.

37.2 No retention will be deducted for equipment delivered to Stores.

C.7 GENERAL CONDITIONS OF CONTRACT

(National Treasury - General Conditions of Contract (revised July 2010))

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1. Definitions

1. The following terms shall be interpreted as indicated:

- 1.1 'Closing time' means the date and hour specified in the bidding documents for the receipt of bids.
- 1.2 'Contract' means the written agreement entered into between the purchaser and the supplier, as recorded in the contract form signed by the Parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
- 1.3 'Contract price' means the price payable to the supplier under the contract for the full and proper performance of his or her contractual obligations.
- 1.4 'Corrupt practice' means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.
- 1.5 'Countervailing duties' are imposed in cases in which an enterprise abroad is subsidised by its government and encouraged to market its products internationally.

- 1.6 'Country of origin' means the place where the goods were mined, grown or produced or from which the services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembly of components, a commercially recognised new product results that is substantially different in basic characteristics or in purpose or utility from its components.
- 1.7 'Day' means calendar day.
- 1.8 'Delivery' means delivery in compliance with the conditions of the contract or order.
- 1.9 'Delivery ex stock' means immediate delivery directly from stock actually on hand.
- 1.10 'Delivery into consignee's store or to his site' means delivered and unloaded in the specified store or depot or on the specified site in compliance with the conditions of the contract or order, the supplier bearing all risks and charges involved until the supplies are so delivered and a valid receipt is obtained.
- 1.11 'Dumping' occurs when a private enterprise abroad markets its goods on its own initiative in the RSA at lower prices than that of the country of origin, and which action has the potential to harm the local industries in the RSA.
- 1.12 'Force majeure' means an event beyond the control of the supplier, not involving the supplier's fault or negligence, and not foreseeable. Such events may include, but are not restricted to, acts of the purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
- 1.13 'Fraudulent practice' means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any bidder, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial, non-competitive levels and to deprive the bidder of the benefits of free and open competition.
- 1.14 'GCC' means the General Conditions of Contract.
- 1.15 'Goods' means all of the equipment, machinery, and/or other materials that the supplier is required to supply to the purchaser under the contract.
- 1.16 'Imported content' means that portion of the bidding price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or his subcontractors) and which costs are inclusive of the costs abroad, plus freight and other direct importation costs such as landing costs, dock dues, import duty, sales duty or other similar tax or duty at the South African place of entry as well as transportation and handling charges to the factory in the Republic where the supplies covered by the bid will be manufactured.
- 1.17 'Local content' means that portion of the bidding price which is not included in the imported content, provided that local manufacture does take place.
- 1.18 'Manufacture' means the production of products in a factory using labour, materials, components and machinery, and includes other, related value-adding activities.
- 1.19 'Order' means an official written order issued for the supply of goods or works or the rendering of a service.
- 1.20 'Project site', where applicable, means the place indicated in bidding documents.
- 1.21 'Purchaser' means the organisation purchasing the goods.
- 1.22 'Republic' means the Republic of South Africa.
- 1.23 'SCC' means the Special Conditions of Contract.

1.24 'Services' means those functional services ancillary to the supply of the goods, such as transportation and any other incidental services, such as installation, commissioning, provision of technical assistance, training, catering, gardening, security, maintenance, and other such obligations of the supplier covered under the contract.

1.25 'Written' or 'in writing' means handwritten in ink or any form of electronic or mechanical writing.

2. Application

2.1 These general conditions are applicable to all bids, contracts and orders, including bids for functional and professional services, sales, hiring, letting and the granting or acquiring of rights, but excluding immovable property, unless otherwise indicated in the bidding documents.

2.2 Where applicable, special conditions of contract are also laid down to cover specific supplies, services or works.

2.3 Where such special conditions of contract are in conflict with these general conditions, the special conditions shall apply.

3. General

3.1 Unless otherwise indicated in the bidding documents, the purchaser shall not be liable for any expense incurred in the preparation and submission of a bid. Where applicable, a non-refundable fee for documents may be charged.

3.2 With certain exceptions, invitations to bid are only published in the Government Tender Bulletin. The Government Tender Bulletin may be obtained directly from the Government Printer, Private Bag X85, Pretoria 0001, or accessed electronically from www.treasury.gov.za.

4. Standards

4.1 The goods supplied shall conform to the standards mentioned in the bidding documents and specifications.

5. Use of contract documents and information; inspection.

5.1 The supplier shall not, without the purchaser's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the purchaser in connection therewith, to any person other than a person employed by the supplier in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only as far as may be necessary for the purposes of such performance.

5.2 The supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC clause 5.1, except for purposes of performing the contract.

5.3 Any document, other than the contract itself, mentioned in GCC clause 5.1 shall remain the property of the purchaser and shall be returned (all copies) to the purchaser on completion of the supplier's performance under the contract if so required by the purchaser.

5.4 The supplier shall permit the purchaser to inspect the supplier's records relating to the performance of the supplier and to have them audited by auditors appointed by the purchaser, if so required by the purchaser.

6. Patent rights

6.1 The supplier shall indemnify the purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from the use of the goods or any part thereof by the purchaser.

7. Performance Security

7.1 Within 30 (thirty) days of receipt of the notification of contract award, the successful bidder shall furnish to the purchaser the performance security of the amount specified in the SCC.

- 7.2 The proceeds of the performance security shall be payable to the purchaser as compensation for any loss resulting from the supplier's failure to complete his obligations under the contract.
- 7.3 The performance security shall be denominated in the currency of the contract or in a freely convertible currency acceptable to the purchaser, and shall be in one of the following forms:
- a) a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the purchaser's country or abroad, acceptable to the purchaser, in the form provided in the bidding documents or another form acceptable to the purchaser; or
 - b) A cashier's or certified cheque.
- 7.4 The performance security will be discharged by the purchaser and returned to the supplier not later than 30 (thirty) days following the date of completion of the supplier's performance obligations under the contract, including any warranty obligations, unless otherwise specified in the SCC.

8. Inspections, tests and analyses

- 8.1 All pre-bidding testing will be for the account of the bidder.
- 8.2 If it is a bid condition that supplies to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or contractor shall be open, at all reasonable hours, for inspection by a representative of the Department or an organisation acting on behalf of the Department.
- 8.3 If there are no inspection requirements indicated in the bidding documents and no mention of such is made in the contract, but during the contract period it is decided that inspections shall be carried out, the purchaser shall itself make the necessary arrangements, including payment arrangements with the testing authority concerned.
- 8.4 If the inspections, tests and analyses referred to in clauses 8.2 and 8.3 show the supplies to be in accordance with the contract requirements, the cost of the inspections, tests and analyses shall be defrayed by the purchaser.
- 8.5 Where the supplies or services referred to in clauses 8.2 and 8.3 do not comply with the contract requirements, irrespective of whether such supplies or services are accepted or not, the cost in connection with these inspections, tests or analyses shall be defrayed by the supplier.
- 8.6 Supplies and services which are referred to in clauses 8.2 and 8.3 and which do not comply with the contract requirements may be rejected.
- 8.7 Any contract supplies may on or after delivery be inspected, tested or analysed and may be rejected if found not to comply with the requirements of the contract. Such rejected supplies shall be held at the cost and risk of the supplier, who shall, when called upon, remove them immediately at his own cost and forthwith substitute them with supplies which do comply with the requirements of the contract. Failing such removal, the rejected supplies shall be returned at the suppliers cost and risk. Should the supplier fail to provide the substitute supplies forthwith, the purchaser may, without giving the supplier further opportunity to substitute the rejected supplies, purchase such supplies as may be necessary at the expense of the supplier.
- 8.8 The provisions of clauses 8.4 to 8.7 shall not prejudice the right of the purchaser to cancel the contract on account of a breach of the conditions thereof, or to act in terms of Clause 23 of the GCC.

9. Packing

- 9.1 The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing, case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.

9.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract, including additional requirements, if any, specified in the SCC, and in any subsequent instructions ordered by the purchaser.

10. Delivery and documents

10.1 Delivery of the goods shall be made by the supplier in accordance with the terms specified in the contract. The details of shipping and/or other documents to be furnished by the supplier are specified in the SCC.

10.2 Documents to be submitted by the supplier are specified in the SCC.

11. Insurance

11.1 The goods supplied under the contract shall be fully insured, in a freely convertible currency, against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the SCC.

12. Transportation

12.1 Should a price other than an all-inclusive delivered price be required, this shall be specified in the SCC.

13. Incidental Services

13.1 The supplier may be required to provide any or all of the following services, including additional services (if any) specified in the SCC:

- (a) performance or supervision of on-site assembly, and/or commissioning of the supplied goods;
- (b) furnishing of tools required for the assembly and/or maintenance of the supplied goods;
- (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods;
- (d) performance or supervision or maintenance and/or repair of the supplied goods, for a period of time agreed by the Parties, provided that this service shall not relieve the supplier of any warranty obligations under this contract; and
- (e) training of the purchaser's personnel, at the supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied goods.

13.2 Prices charged by the supplier for incidental services, if not included in the contract price for the goods, shall be agreed upon in advance by the Parties and shall not exceed the prevailing rates charged to other Parties by the supplier for similar services.

14. Spare parts

14.1 As specified in the SCC, the supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the supplier:

- (a) such spare parts as the purchaser may elect to purchase from the supplier, provided that this election shall not relieve the supplier of any warranty obligations under the contract; and
- (b) in the event of termination of production of the spare parts:
 - (i) Advance notification to the purchaser of the pending termination, in sufficient time to permit the purchaser to procure needed requirements; and
 - (ii) following such termination, furnishing at no cost to the purchaser, the blueprints, drawings, and specifications of the spare parts, if requested.

15. Warranty

15.1 The supplier warrants that the goods supplied under the contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that all goods supplied under this contract shall have no defect arising from design, materials, or workmanship (except when the design and/or material is required by the purchaser's specifications), or from any act or omission of the supplier, that may develop under normal use of the supplied goods in the conditions prevailing in the country of final destination.

15.2 This warranty shall remain valid for 12 (twelve) months after the goods, or any portion thereof, as the case may be, have been delivered to and accepted at the final destination indicated in the contract, or for 18 (eighteen) months after the date of shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise in the SCC.

15.3 The purchaser shall notify the supplier promptly, in writing, of any claims arising under this warranty.

15.4 Upon receipt of such notice, the supplier shall, within the period specified in the SCC and with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the purchaser.

15.5 If the supplier, having been notified, fails to remedy the defect(s) within the period specified in the SCC, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expense and without prejudice to any other rights which the purchaser may have against the supplier under the contract.

16. Payment

16.1 The method and conditions of payment to be made to the supplier under this contract shall be specified in the SCC.

16.2 The supplier shall furnish the purchaser with an invoice accompanied by a copy of the delivery note and upon fulfilment of any other obligations stipulated in the contract.

16.3 Payments shall be made promptly by the purchaser, but in no case later than 30 (thirty) days after submission of an invoice or claim by the supplier.

16.4 Payment will be made in Rand unless otherwise stipulated in the SCC.

17. Prices

17.1 Prices charged by the supplier for goods delivered and services performed under the contract shall not vary from the prices tendered by the supplier in his bid, with the exception of any price adjustments authorized in the SCC or in the purchaser's request for bid validity extension, as the case may be.

18. Contract Amendments

18.1 No variation in or modification of the terms of the contract shall be made except by written amendment signed by the Parties concerned.

19. Assignment

19.1 The supplier shall not assign, in whole or in part, its obligations to perform under the contract, except with the purchaser's prior written consent.

20. Subcontracts

20.1 The supplier shall notify the purchaser in writing of all subcontracts awarded under this contract if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the supplier from any liability or obligation under the contract.

21. Delays in the supplier's performance

21.1 Delivery of the goods and performance of services shall be made by the supplier in accordance with the time schedule prescribed by the purchaser in the contract.

21.2 If at any time during the performance of the contract, the supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services, the supplier shall promptly notify the purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may at his or her discretion extend the supplier's time for performance, with or without the imposition of penalties, in which case the extension shall be ratified by the Parties by amendment of contract.

- 21.3 No provision in a contract shall be deemed to prohibit the obtaining of supplies or services from a national department, provincial department, or a local authority.
- 21.4 The right is reserved to procure, outside of the contract, small quantities of supplies; or to have minor essential services executed if an emergency arises, or the supplier's point of supply is not situated at or near the place where the supplies are required, or the supplier's services are not readily available.
- 21.5 Except as provided under GCC Clause 25, a delay by the supplier in the performance of its delivery obligations shall render the supplier liable to the imposition of penalties, pursuant to GCC Clause 22, unless an extension of time is agreed upon pursuant to GCC Clause 21.2 without the application of penalties.
- 21.6 Upon any delay beyond the delivery period in the case of a supplies contract, the purchaser shall, without cancelling the contract, be entitled to purchase supplies of a similar quality and up to the same quantity in substitution of the goods not supplied in conformity with the contract and to return any goods delivered later at the supplier's expense and risk, or to cancel the contract and buy such goods as may be required to complete the contract and, without prejudice to his other rights, be entitled to claim damages from the supplier.

22. Penalties

- 22.1 Subject to GCC Clause 25, if the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services, using the current prime interest rate, calculated for each day of the delay until actual delivery or performance. The purchaser may also consider termination of the contract pursuant to GCC Clause 23.

23. Termination for default

- 23.1 The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part:
- (a) if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract, or within any extension thereof granted by the purchaser pursuant to GCC Clause 21.2;
 - (b) if the supplier fails to perform any other obligation(s) under the contract; or
 - (c) if the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract.
- 23.2 In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms and in such manner as it deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar goods, works or services. However, the supplier shall continue performance of the contract to the extent not terminated.
- 23.3 Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years.
- 23.4 If a purchaser intends imposing a restriction on a supplier or any person associated with the supplier, the supplier will be allowed a time period of not more than 14 (fourteen) days to provide reasons why the envisaged restriction should not be imposed. Should the supplier fail to respond within the stipulated 14 (fourteen) days the purchaser may regard the intended penalty as not objected against and may impose it on the supplier.
- 23.5 Any restriction imposed on any person by the Accounting Officer/Authority will, at the discretion of the Accounting Officer/Authority, also be applicable to any other enterprise or any partner, manager, director or other person who wholly or partly exercises or exercised or may exercise control over the enterprise of the first-mentioned person, and with which enterprise or person the first-mentioned person is or was, in the opinion of the Accounting Officer/Authority, actively associated.

23.6 If a restriction is imposed, the purchaser must, within 5 (five) working days of such imposition, furnish the National Treasury with the following information:

- (i) the name and address of the supplier and/or person restricted by the purchaser;
- (ii) the date of commencement of the restriction;
- (iii) the period of restriction; and
- (iv) the reasons for the restriction.

These details will be loaded in the National Treasury's central database of suppliers or persons prohibited from doing business with the public sector.

23.7 If a court of law convicts a person of an offence as contemplated in sections 12 or 13 of the Prevention and Combating of Corrupt Activities Act, Act 12 of 2004, the court may also rule that such person's name be endorsed on the Register for Tender Defaulters. When a person's name has been endorsed on the Register, the person will be prohibited from doing business with the public sector for a period of not less than five years and not more than 10 years. The National Treasury is empowered to determine the period of restriction, and each case will be dealt with on its own merits. According to section 32 of the Act the Register must be open to the public. The Register can be perused on the National Treasury website.

24. Anti-dumping and countervailing duties and rights

24.1 When, after the date of bid, provisional payments are required, or anti-dumping or countervailing duties are imposed, or the amount of a provisional payment or anti-dumping or countervailing right is increased in respect of any dumped or subsidised import, the State is not liable for any amount so required or imposed, or for the amount of any such increase. When, after the said date, such a provisional payment is no longer required or any such anti-dumping or countervailing right is abolished, or where the amount of such provisional payment or any such right is reduced, any such favourable difference shall, on demand, be paid forthwith by the contractor to the State, or the State may deduct such amounts from moneys (if any) which may otherwise be due to the contractor in regard to supplies or services which he or she delivered or rendered, or is to deliver or render in terms of the contract or any other contract or any other amount which may be due to him or her.

25. Force majeure

25.1 Notwithstanding the provisions of GCC Clauses 22 and 23, the supplier shall not be liable for forfeiture of its performance security, damages, or termination for default if, and to the extent that, his delay in performance or other failure to perform his obligations under the contract is the result of an event of force majeure.

25.2 If a force majeure situation arises, the supplier shall notify the purchaser promptly, in writing, of such condition and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event.

26. Termination for insolvency

26.1 The purchaser may at any time terminate the contract by giving written notice to the supplier if the supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser.

27. Settlement of Disputes

27.1 If any dispute or difference of any kind whatsoever arises between the purchaser and the supplier in connection with or arising out of the contract, the Parties shall make every effort to resolve such dispute or difference amicably, by mutual consultation.

27.2 If, after 30 (thirty) days, the Parties have failed to resolve their dispute or difference by such mutual consultation, then either the purchaser or the supplier may give notice to the other party of his intention to commence with mediation. No mediation in respect of this matter may be commenced unless such notice is given to the other party.

27.3 Should it not be possible to settle a dispute by means of mediation, it may be settled in a South African court of law.

27.4 Mediation proceedings shall be conducted in accordance with the rules of procedure specified in the SCC.

27.5 Notwithstanding any reference to mediation and/or court proceedings herein,

- (a) the Parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and
- (b) the purchaser shall pay the supplier any monies due to the supplier.

28. Limitation of Liability

28.1 Except in cases of criminal negligence or wilful misconduct, and in the case of infringement pursuant to Clause 6:

- (a) the supplier shall not be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser; and
- (b) the aggregate liability of the supplier to the purchaser, whether under the contract, in tort or otherwise, shall not exceed the total contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

29. Governing language

29.1 The contract shall be written in English. All correspondence and other documents pertaining to the contract that is exchanged by the Parties shall also be written in English.

30. Applicable Law

30.1 The contract shall be interpreted in accordance with South African laws, unless otherwise specified in the SCC.

31. Notices

31.1 Every written acceptance of a bid shall be posted to the supplier concerned by registered or certified mail, and any other notice to him shall be posted by ordinary mail, to the address furnished in his bid or to the address notified later by him in writing; and such posting shall be deemed to be proper service of such notice.

31.2 The time mentioned in the contract documents for performing any act after such aforesaid notice has been given, shall be reckoned from the date of posting of such notice.

32. Taxes and Duties

32.1 A foreign supplier shall be entirely responsible for all taxes, stamp duties, licence fees, and other such levies imposed outside the purchaser's country.

32.2 A local supplier shall be entirely responsible for all taxes, duties, licence fees, etc., incurred until delivery of the contracted goods to the purchaser.

32.3 No contract shall be concluded with any bidder whose tax matters are not in order. Prior to the award of a bid the Department must be in possession of a tax clearance certificate submitted by the bidder. This certificate must be an original issued by the South African Revenue Services.

33. National Industrial Participation (NIP) Programme

33.1 The NIP Programme administered by the Department of Trade and Industry shall be applicable to all contracts that are subject to the NIP obligation.

34 Prohibition of Restrictive practices

- 34.1 In terms of section 4 (1) (b) (iii) of the Competition Act, Act 89 of 1998, as amended, an agreement between or concerted practice by firms, or a decision by an association of firms, is prohibited if it is between Parties in a horizontal relationship and if a bidder(s) is/are or a contractor(s) was/were involved in collusive bidding (or bid rigging).
- 34.2 If a bidder(s) or contractor(s), based on reasonable grounds or evidence obtained by the purchaser, has/have engaged in the restrictive practice referred to above, the purchaser may refer the matter to the Competition Commission for investigation and possible imposition of administrative penalties as contemplated in the Competition Act, Act 89 of 1998.
- 34.3 If a bidder(s) or contractor(s) has/have been found guilty by the Competition Commission of the restrictive practice referred to above, the purchaser may, in addition and without prejudice to any other remedy provided for, invalidate the bid(s) for such item(s) offered, and/or terminate the contract in whole or part, and/or restrict the bidder(s) or contractor(s) from conducting business with the public sector for a period not exceeding 10 (ten) years and/or claim damages from the bidder(s) or contractor(s) concerned.

C.8 ANNEXURES

Annexure A – Pro Forma Insurance Broker’s Warranty



Letterhead of supplier’s Insurance Broker

Date _____

CCT
City Manager
Civic Centre
12 Hertzog Boulevard
Cape Town
8000

Dear Sir

TENDER NO.: 2023/24

TENDER DESCRIPTION:

NAME OF SUPPLIER: _____

I, the undersigned, do hereby confirm and warrant that all the insurances required in terms of the abovementioned contract have been issued and/or in the case of blanket/umbrella policies, have been endorsed to reflect the interests of the CCT with regard to the abovementioned contract, and that all the insurances and endorsements, etc., are all in accordance with the requirements of the contract.

I furthermore confirm that all premiums in the above regard have been paid.

Yours faithfully

Signed: _____

For: _____ (Supplier’s Insurance Broker)

Annexure B – Monthly Project Labour Report

ANNEX 1

CITY OF CAPE TOWN MONTHLY PROJECT LABOUR REPORT



Instructions for completing and submitting forms

General

- 1 The Monthly Project Labour Reports must be completed in full, using typed, proper case characters; alternatively, should a computer not be available, handwritten in black ink.
- 2 Incomplete / incorrect / illegible forms will not be accepted.
- 3 Any conditions relating to targeted labour stipulated in the Contract (in the case of contracted out services or works) shall apply to the completion and submission of these forms.
- 4 This document is available in Microsoft Excel format upon request from the City's EPWP office, tel 021 400 9406, email EPWPLR@capetown.gov.za.

Project Details

- 5 If a field is not applicable insert the letters: NA
- 6 Only the Project Number supplied by the Corporate EPWP Office must be inserted. The Project Number can be obtained from the Coordinator or Project Manager or from the e-mail address in point 4 above.
- 7 On completion of the contract or works project the anticipated end date must be updated to reflect the actual end date.

Beneficiary Details and Work Information

- 8 Care must be taken to ensure that beneficiary details correspond accurately with the beneficiary's ID document.

- 9 A new beneficiary is one in respect of which a new employment contract is signed in the current month. A certified ID copy must accompany this labour report on submission.
- 10 Was the beneficiary sourced from the City's job seeker database?
- 11 The contract end date as stated in the beneficiary's employment contract.
- 12 Where a beneficiary has not worked in a particular month, the beneficiary's name shall not be reflected on this form at all for the month in question.
- 13 Training will be recorded separately from normal working days and together shall not exceed the maximum of 23 days per month
- 14 Workers earning more than the maximum daily rate (currently R450 excluding any benefits) shall not be reflected on this form at all.

Submission of Forms

- 15 Signed hardcopy forms must be scanned and submitted to the City's project manager in electronic (.pdf) format, together with the completed form in Microsoft Excel format.
- 16 Scanned copies of all applicable supporting documentation must be submitted along with each monthly project labour report. Copies of employment contracts and ID documents are only required in respect of new beneficiaries.
- 17 If a computer is not available hardcopy forms and supporting documentation will be accepted.

PROJECT DETAILS

Numbers in cells below e.g (6) refer to the relevant instruction above for completing and submitting forms

CONTRACT OR WORKS PROJECT NAME: (6)		EPWP SUPPLIED PROJECT NUMBER: (6)										
DIRECTORATE:		DEPARTMENT:										
CONTRACTOR OR VENDOR NAME:		CONTRACTOR OR VENDOR E-MAIL ADDRESS:										
CONTRACTOR OR VENDOR CONTACT PERSON:		CONTRACTOR OR VENDOR TEL. NUMBER:										
		CELL WORK										
PROJECT LABOUR REPORT CURRENT MONTH (mark with "X")												
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR

ACTUAL START DATE (yyyy/mm/dd)						ANTICIPATED / ACTUAL END DATE (yyyy/mm/dd) (7)					
TOTAL PROJECT EXPENDITURE / VALUE OF WORK DONE TO-DATE (INCLUDING ALL COSTS, BUT EXCLUDING VAT)											
R											

ANNEX 1 (continued)

MONTHLY PROJECT LABOUR REPORT



BENEFICIARY DETAILS AND WORK INFORMATION

CONTRACT OR WORKS PROJECT NUMBER:				Year		Month		Sheet				
								1 of				
No.	(8) First name	(8) Surname	(8) ID number	(9) New Beneficiary (Y/N)	Gender (M/F)	Disabled (Y/N)	(10) Job seeker database (Y/N)	Contract start date (DDMMYY)	(11) Contract end date (DDMMYY)	(12) No. days worked this month (excl. training)	(13) Training days	(14) Rate of pay per day (R - c)
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
										0	0 R	-
Declared by Contractor or Vendor to be true and correct:		Name			Signature							
		Date										
Received by Employer's Agent / Representative:		Name			Signature							
		Date										

Annexure C - Pro Forma Performance Security/ Guarantee

GUARANTEE PERFORMANCE SECURITY

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means:

Physical address of Guarantor:

"Supplier" means:

"Contract Sum" means: The accepted tender amount (INCLUSIVE OF VAT) of R

Amount in words:

"Guaranteed Sum" means: The maximum amount of R.....

Amount in words:

"Contract" means: The agreement made in terms of the Form of Offer and Acceptance for tender no ...and such amendments or additions to the contract as may be agreed in writing between the Parties.

PERFORMANCE GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.
2. The Guarantor's period of liability shall be from and including the date of issue of this Guarantee/Performance Security up to and including the termination of the Contract or the date of payment in full of the Guaranteed Sum, whichever occurs first.
3. The Guarantor hereby acknowledges that:
 - 3.1 any reference in this Guarantee/Performance to "Contract" is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;
 - 3.2 Its obligation under this Guarantee/Performance Security is restricted to the payment of money.
4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the CCT the sum due and payable upon receipt of the documents identified in 4.1 to 4.2:
 - 4.1 A copy of a first written demand issued by the CCT to the Supplier stating that payment of a sum which is due and payable has not been made by the Supplier in terms of the Contract and failing such payment within seven (7) calendar days, the CCT intends to call upon the Guarantor to make payment in terms of 4.2;
 - 4.2 A first written demand issued by the CCT to the Guarantor at the Guarantor's physical address with a copy to the Supplier stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum has still not been paid.
5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the CCT the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the CCT to the Guarantor at the Guarantor's physical address calling up this Guarantee / Performance Security, such demand stating that:
 - 5.1 The Contract has been terminated due to the Supplier's default and that this Guarantee/Performance Security is called up in terms of 5; or
 - 5.2 a provisional or final sequestration or liquidation court order has been granted against the Supplier and that the Guarantee/Performance Guarantee is called up in terms of 5; and

- 5.3 *The aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.*
- 6. *It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.*
- 7. *Where the Guarantor has made payment in terms of 5, the CCT shall upon the termination date of the Contract, submit an expense account to the Guarantor showing how all monies received in terms of this Guarantee/Performance Security have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Guarantee/Performance Security shall bear interest at the prime overdraft rate of the CCT's bank compounded monthly and calculated from the date payment was made by the Guarantor to the CCT until the date of refund.*
- 8. *Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.*
- 9. *The CCT shall have the absolute right to arrange its affairs with the Supplier in any manner which the CCT may deem fit and the Guarantor shall not have the right to claim his release from this Guarantee /Performance Security on account of any conduct alleged to be prejudicial to the Guarantor.*
- 10. *The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.*
- 11. *This Guarantee/Performance Security is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee / Performance Security shall be returned to the Guarantor after it has expired.*
- 12. *This Guarantee/Performance Security, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.*
- 13. *Where this Guarantee/Performance Security is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.*

Signed at

Date

Guarantor's signatory (1)

Capacity

Guarantor's signatory (2)

Capacity

Witness signatory (1)

Witness signatory (2)

**Annexure D - Pro Forma Advance Payment Guarantee
Not Applicable**

Approved Financial Institution as at 13 August 2025:

1.1 National Banks

ABSA Bank Limited
Firstrand Bank Limited
Investec Bank Limited
Nedbank Limited
Standard Bank of South Africa Limited

1.2 International Banks (with branches in South Africa)

Barclays Bank PLC
Citibank NA
Credit Agricole Corporate and Investment Bank
HSBC Bank PLC
JPMorgan Chase Bank
Societe Generale
Standard Chartered Bank

1.3 Insurance Companies

American International Group Inc (AIG)
Bryte Insurance Company Limited
Coface SA
Compass Insurance Company Limited
Credit Guarantee Insurance Corporation of Africa Limited Guardrisk Insurance Company Limited
Hollard Insurance Company Limited
Infiniti Insurance Limited
Lombard Insurance Company Limited
Old Mutual Alternative Risk Transfer Insure Limited (OMART Insure) New National Assurance Company Limited
PSG Konsult Ltd (previously Absa Insurance)
Regent Insurance Company Limited
Renasa Insurance Company Limited
Santam Limite

F.1: Contract Price Adjustment and/or Rate of Exchange Variation

1. TENDER CONDITIONS

- 1.1 The Contract Price Adjustment (CPA) mechanism and/or provisions relating to Rate of Exchange (RoE) Variation, contained in this schedule is compulsory and binding on all Tenderers/Suppliers and this schedule (the parts relevant to the particular tender) must be completed by all Tenderers / Suppliers.
- 1.2 Tenderers/Suppliers are not permitted to amend, vary, alter or delete this schedule or any part thereof unless otherwise stated in this schedule.
- 1.3 Tenderers are not permitted to offer fixed and firm prices except as provided for in the Price Schedule.

2. CPA PROVISIONS SELECTION

- 2.1 The prices stipulated on the Price Schedule are subject to adjustment as set out below.
- 2.2 Tenderer to indicate the specific CPA and/or RoE provisions applicable to their bid by marking the relevant checkboxes below. Tenderers to note that the CPA and/or RoE provisions are not exclusive and multiple CPA Types can exist if the bid contains both local and foreign exchange based pricing. In such cases the CPA and/or ROE provision applies only to that particular portion of the tendered price.
- 2.3 The CPA and/or RoE provisions applicable to this tender and resulting contract are to be indicated below by checking the relevant boxes (with multiple selections only where indicated permissible):

	<u>Indicate option</u> ↓	<u>CPA Type</u>	<u>Period</u>	<u>Refer to Section</u>
A	N/A	FIRM PRICES as per Pricing Schedule	Annual	<i>Pricing Schedule C.4 and Schedule F.1 (A)</i>
<u>LOCAL (RSA) TENDER CONTENT:</u>				
EITHER				
B	<input type="checkbox"/>	SEIFSA Index based CPA	Quarterly Ad-hoc	<i>Schedule F.1 (B): Part 1 - TABLE F.1 (B).1 Part 2 - TABLE F.1 (B).2 Part 3 - TABLE F.1 (B).3 Part 4 - TABLE F.1 (B).4</i>
OR				
C	<input type="checkbox"/>	Pricelist / Quotation Based CPA	Quarterly	<i>Schedule F.1 (C)</i>
OR				
D	N/A	STATS SA CPI Index Based CPA	Annually	<i>Schedule F.1 (D)</i>
OR/AND				
E	N/A	Sectorial Determination 1:Contract Cleaning Sector	Annually	<i>Schedule F.1 (E)</i>
OR				
E	N/A	Sectorial Determination 6: Private Security Sector	Annually	<i>Schedule F.1 (E)</i>
<u>IMPORTED GOODS AND / OR COMPONENTS (IF APPLICABLE)</u>				
F	<input type="checkbox"/>	ROE based CPA	Ad-Hoc	<i>Schedule F.1 (F)</i>
AND (IF REQUIRED), EITHER				
G	<input type="checkbox"/>	Pricelist / Quotation based CPA	Ad-Hoc / Periodic	<i>Schedule F.1 (G)</i>
OR				
H	<input type="checkbox"/>	Overseas CPI / PPI index based CPA	Ad-Hoc / Periodic	<i>Schedule F.1 (H)</i>

2.4 CPA and/or RoE provisions marked as **not applicable** is not relevant and will not apply to this tender and resulting contract.

3. CONTRACT CPA APPLICATIONS AND ADMINISTRATION

- 3.1 Any claim for variation in the contract price (either CPA or RoE adjustments) must be submitted in writing:
- i. By letter to: Director, Mr Edgar Capes, City of Cape Town,
P O Box 655, Cape Town, 8000 or
 - ii. By email to: EAMCPA.Request@capetown.gov.za

at least 14 days prior to the month upon which the adjustment would become effective in the case of prices being set in advance, and as soon as relevant indices are available and no later than 60 days after the date of delivery of goods or the completion of the project (i.e. date of issue of the Taking-Over Certificate, if applicable) in the case of adjustments being claimed retrospectively for Goods or Services. The latter case is only applicable where specifically provided for in the CPA provisions.

- 3.2 When submitting a request for CPA and/or RoE adjustment the Supplier shall indicate the Rand Value claimed for each item listed on C.4 - Price Schedule, clearly indicating the item number as per C.4 - Price Schedule. Percentage increases will not be considered. A mere notification of a request for CPA without stating the new price claimed for each item shall, for the purpose of this clause, not be regarded as a valid request.
- 3.3 The CCT reserves the right to request the Supplier to submit auditor's certificates or such other documentary proof as it may require in order to verify a claim for CPA or RoE adjustments. Price adjustments will not be processed until such time as the Supplier submits such auditor's certificates or other documentary proof to the CCT. Should the Supplier fail to submit the auditor's certificates or other documentary proof to the CCT within 30 days from the written request, it shall be presumed that the Supplier has abandoned his request.
- 3.4 The CCT reserves the right to withhold payment of any claim for adjustment while only provisional figures are available and until such time as the final (revised) figures are issued by the relevant authority.
- 3.5 The CCT will confirm in writing once processing of the CPA or RoE adjustments have been completed including the effective date of the adjustments.
- 3.6 Where pricelist-based and other non-index based CPA requests are investigated and found to be not reasonable and market related, the CCT reserves the right to reject such requests. Where disputes arise with respect to such rejected requests the CCT reserves the right to procure the Goods from other available Suppliers until such time as the dispute is resolved.
- 3.7 Unless indicated otherwise in the relevant schedule below, all Purchase Orders issued on or after the effective date of the adjustment shall be issued at, and the Goods or Services supplied, invoiced and paid for at the adjusted prices. The relevant adjustment will not be applied to Purchase Orders issued prior to the effective date.

F.1 (A) – FIRM PRICES

NOT APPLICABLE

F.1 (B) LOCAL SOUTH AFRICAN CONTENT – SEIFSA INDICES

Part 1: SEIFSA BASE MATERIAL AND LABOUR PRICES - MV Switchgear and Equipment (FOR)

The following clause are applicable to SIEFSA based CPA in respect to **MV Switchgear and Equipment**:

1. Tenderers/Suppliers that are manufacturers of the tendered goods and that indicate CPA provision above based on SEIFSA Indices shall comply with the conditions specified below and shall complete Table F.1 (B).1: SEIFSA Base Material and Labour Prices in full.
2. Material, labour and / or road freight price variation shall be calculated based upon the SEIFSA base material, labour and / or road freight prices / indices and the price proportions indicated by the Tenderer/Supplier for the Goods tendered, as detailed in Table F.1 (B).1: SEIFSA Base Material and Labour Prices.
3. For items that are also subject to RoE and / or Overseas Pricelist / Quotation based CPA, the SEIFSA index based CPA **shall apply only to the South African Content portion**.
4. A minimum of 10% of the **South African Content portion** of the tender price shall be fixed and free of variation for the duration of the contract.
5. The contract price per item shall be adjusted **quarterly** in advance of placement of orders, and the adjusted contract price shall be applicable for purchase orders placed during the following full calendar month.
6. Fluctuations in the prices of raw materials, labour and road freight will be acceptable for the item price in C.4 Price Schedule, CPA calculations.
7. The base month for CPA calculations shall be the calendar month prior to the month of the closing date for tenders, and SEIFSA indices published in this month shall be used.
8. Adjusted contract prices per item shall be calculated based upon the SEIFSA indices published in the calendar month of application for the amended item contract prices.
9. Material and labour price variation shall be calculated based upon the SEIFSA base material and labour indices and the stipulated price proportions as detailed in Table F.1 (B).1.
10. The process process to be followed by Tenderers/Suppliers for claims for CPA in terms of SEIFSA for **MV Switchgear and Equipment** must be as follows:
 - a) The Tenderers/Suppliers must approach the CCT in writing during the week following the third Friday of each of the **February, May, August and November** month with an application for the adjustment of the contract prices in C.4 Price Schedule and the amended prices to be applicable to the contract during the following quarter.
 - b) The application shall be based upon the SEIFSA indices published during the calendar month of application (those published on the Monday following the third Friday of the month and detailing the latest available indices) and shall detail the proposed adjusted unit prices for the Items and include detailed calculations indicating how the adjusted unit prices per item have been established.
 - c) Calculations of the CPA shall use the original tendered unit rates, the base indices, the indices published in the calendar month of application and the SEIFSA formula and shall contain no other factors or adjustments.
 - d) The CCT will check and approve the proposed unit prices for the following month prior to the last day of the month of application. The CCT will notify the Tenderers/Suppliers in writing of approval of the proposed prices.
 - e) All purchase orders for the contracted Items issued during a month shall be issued, invoiced and paid at the contract unit prices approved for that month and no further SEIFSA based contract price adjustment claims will be considered, irrespective of the actual month of delivery and whether or not deliveries were subject to any manufacturing or delivery delays.
 - f) The required delivery dates for orders placed by the Employer for the contracted Items will be determined based upon the date of issue of the purchase order and the contract delivery period. Delays in the delivery of the Items for orders placed by the CCT shall not entitle the Tenderers

/Suppliers to any amendment of the approved contract price adjustment applicable to that order.

- g) Failure by the Tenderers/Suppliers to submit claims for CPA within the timeframes detailed above will result in the unit rates for the items concerned being determined by the CCT in accordance with the published SEIFSA indices. The CCT however reserves the right in such a case not to amend the unit rates for the item if it is not to the CCT's advantage.
- h) The successful Tenderers/Suppliers shall immediately upon notification of commencement date of contract (or date of issue of first PO) submit written application for approval of adjustment to the contract prices in C.4 Price Schedule that shall be applicable during the first calendar month of the contract. This application will be assessed in accordance with the process laid out above in order to determine approved contract prices for the first calendar month of the contract.
- i) Failure to submit such application within two working weeks of commencement of contract shall result in the tendered unit prices in C.4 Price Schedule being applied for orders placed during the first calendar month of the contract.
- j) Application for CPA thereafter shall follow the process detailed above.

Part 2: SEIFSA BASE MATERIAL AND LABOUR PRICES – Installation and Site Work

The following clauses are applicable to SIEFSA based CPA in respect to Installation and Site Work:

1. Installation and Site Work must comprise of General Requirements and Conditions, Health and Safety, Environmental Management, Sundries, and all other items as described in C.4 Price Schedule (Schedule of Quantities in Works Project Document), namely:
 - a. Items: A1.1 – A5.5.7
 - b. Items: B1.1 – B5.5.7
 - c. Items: C1.1 – C5.5.7
 - d. Items: D1.1 – D5.5.7
 - e. Items: E1.1 – E5.5.7
2. Tenderers/Suppliers must comply with the conditions specified below and must complete Table F.1 (B).2: SEIFSA Base Material and Labour Prices – **Installation and Site Work** in full.
3. Material, labour and / or road freight price variation must be calculated based upon the SEIFSA base material, labour and / or road freight prices / indices and the price proportions indicated by the Tenderer/Supplier for the Goods tendered, as detailed in Table F.1 (B).2: SEIFSA Base Material and Labour Prices - **Installation and Site Work**
4. A minimum of 10% of the South African Content portion of the tender price must be fixed and free of variation for the duration of the contract.
5. No Contract price adjustment must be applied to the total values in respect of providing the Performance Security – Surety Bond and Insurances.
6. The contract price per Works Project Document must be adjusted after Works Project completion.
7. No claims for adjustments for changes in cost will be accepted which are submitted later than 60 days after Works Project completion (i.e. date of issue of the Taking-Over Certificate).
8. The base month for CPA calculations must be the calendar month prior to the month of the closing date for tenders, and SEIFSA indices published in this month must be used.
9. Adjusted contract prices per Works Project Document must be calculated based upon the SEIFSA indices published in the month in which Works Project is completed (i.e. month in which Taking-Over Certificate is issued).
10. Material and labour price variation must be calculated based upon the SEIFSA base material and labour indices and the stipulated price proportions as detailed in Table F.1 (B).2.

TABLE F.1 (B).1: SEIFSA BASE MATERIAL AND LABOUR PRICES - MV Switchgear and Equipment (FOR)**Formula(e) for FOR price adjustment on MV Switchgear and Equipment manufactured in South Africa:**

For any variation in the cost of labour and materials the Contract Price must be adjusted in accordance with the formula(e) utilising the published SEIFSA indices which is stated hereunder:

$$P = Po(0,1 + a*L/Lo + b*C/Co + c*S/So + d*EM/EMo + e*K/Ko)$$

Where:

P = Adjusted Price

Po = Original Price

10% - Fixed

And:

<u>% of tender price subject to adjustment</u>	<u>Index Symbol</u>	<u>SEIFSA index on which basis the price will be adjusted for any variation</u>
a%	Lo = base index L = Final Index	Labour – SEIFSA Table C3 or Table C3(a)
b %	Co C	Republic Copper Price - SEIFSA Table F Metric Ton
c %	So S	Steel Price Index (all Types) - SEIFSA Table E-EX Hot Rolled Sheets
d %	EMo EM	Electrical Engineering Materials - SEIFSA Table G1
e %	Ko K	Consumer Price Index (CPI) - SEIFSA Table D4

TABLE F.1 (B).1: SEIFSA BASE MATERIAL AND LABOUR PRICES - MV Switchgear and Equipment (FOR)
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ITEM A: AIR INSULATED SWITCHGEAR FOR EXTENSION OF EXISTING ABB UNIGEAR ZACB INSTALLATIONS

Where Tender prices are subject to adjustment the prices quoted shall be subject to price variation based upon the SEIFSA base prices or indices for materials and labour detailed below.

For the purposes of this tender the **base month** shall be **July 2026**

	Labour - a	Republic Copper Price - b	Steel Price Index (all Types) - c	Electrical Engineering Materials - d	Consumer Price Index (CPI) - e	Labour - a
SEIFSA Table No:	Table C3 or Table C3(a)	Table F Metric Ton	Table E-EX Hot Rolled Sheets	Table G1	Table D4	Table C3 or Table C3(a)
SEIFSA ITEM DESCRIPTION:						
Base Month Price / Index:						

TENDERER/SUPPLIER TO NOTE:

- a) This Schedule is only applicable if the Tenderer/Supplier is the Manufacturer of the Goods
- b) A Minimum of 10% of the tendered local South African price must remain fixed.

Schedule of formula (e):

	Fixed	a %	b %	c %	d %	e %
MV Switchgear and Equipment (FOR) Items: A1.1 – A1.40	10 %					

* Tenderer must insert the appropriate % in each cell such that each row = 100% incl. the fixed portion. Failure to insert any % must be considered fixed and NOT subject to adjustment.

TABLE F.1 (B).1: SEIFSA BASE MATERIAL AND LABOUR PRICES - MV Switchgear and Equipment (FOR)**ITEM B: INTERNAL ARC RATED AIR INSULATED 12kV SWITCHGEAR FOR NEW INSTALLATIONS**

Where Tender prices are subject to adjustment the prices quoted shall be subject to price variation based upon the SEIFSA base prices or indices for materials and labour detailed below.

For the purposes of this tender the **base month** shall be **July 2026**

	Labour - a	Republic Copper Price - b	Steel Price Index (all Types) - c	Electrical Engineering Materials - d	Consumer Price Index (CPI) - e	Labour - a
SEIFSA Table No:	Table C3 or Table C3(a)	Table F Metric Ton	Table E-EX Hot Rolled Sheets	Table G1	Table D4	Table C3 or Table C3(a)
SEIFSA ITEM DESCRIPTION:						
Base Month Price / Index:						

TENDERER/SUPPLIER TO NOTE:

- a) This Schedule is only applicable if the Tenderer/Supplier is the Manufacturer of the Goods
- b) A Minimum of 10% of the tendered local South African price must remain fixed.

Schedule of formula (e):

	Fixed	a %	b %	c %	d %	e %
MV Switchgear and Equipment (FOR) Items: B1.1 – B1.27	10 %					

* Tenderer must insert the appropriate % in each cell such that each row = 100% incl. the fixed portion. Failure to insert any % must be considered fixed and NOT subject to adjustment.

TABLE F.1 (B).1: SEIFSA BASE MATERIAL AND LABOUR PRICES - MV Switchgear and Equipment (FOR)**ITEM C: GAS INSULATED SWITCHGEAR FOR EXTENSION OF EXISTING ABB ZX0.2 INSTALLATIONS**

Where Tender prices are subject to adjustment the prices quoted shall be subject to price variation based upon the SEIFSA base prices or indices for materials and labour detailed below.

For the purposes of this tender the **base month** shall be **July 2026**

	Labour - a	Republic Copper Price - b	Steel Price Index (all Types) - c	Electrical Engineering Materials - d	Consumer Price Index (CPI) - e	Labour - a
SEIFSA Table No:	Table C3 or Table C3(a)	Table F Metric Ton	Table E-EX Hot Rolled Sheets	Table G1	Table D4	Table C3 or Table C3(a)
SEIFSA ITEM DESCRIPTION:						
Base Month Price / Index:						

TENDERER/SUPPLIER TO NOTE:

- a) This Schedule is only applicable if the Tenderer/Supplier is the Manufacturer of the Goods
- b) A Minimum of 10% of the tendered local South African price must remain fixed.

Schedule of formula (e):

	Fixed	a %	b %	c %	d %	e %
MV Switchgear and Equipment (FOR) Items: C1.1 - C1.28	10 %					

* Tenderer must insert the appropriate % in each cell such that each row = 100% incl. the fixed portion. Failure to insert any % must be considered fixed and NOT subject to adjustment.

TABLE F.1 (B).1: SEIFSA BASE MATERIAL AND LABOUR PRICES - MV Switchgear and Equipment (FOR)**ITEM D: INTERNAL ARC RATED GAS 12kV SWITCHGEAR FOR NEW INSTALLATIONS**

Where Tender prices are subject to adjustment the prices quoted shall be subject to price variation based upon the SEIFSA base prices or indices for materials and labour detailed below.

For the purposes of this tender the **base month** shall be **July 2026**

	Labour - a	Republic Copper Price - b	Steel Price Index (all Types) - c	Electrical Engineering Materials - d	Consumer Price Index (CPI) - e	Labour - a
SEIFSA Table No:	Table C3 or Table C3(a)	Table F Metric Ton	Table E-EX Hot Rolled Sheets	Table G1	Table D4	Table C3 or Table C3(a)
SEIFSA ITEM DESCRIPTION:						
Base Month Price / Index:						

TENDERER/SUPPLIER TO NOTE:

- a) This Schedule is only applicable if the Tenderer/Supplier is the Manufacturer of the Goods
- b) A Minimum of 10% of the tendered local South African price must remain fixed.

Schedule of formula (e):

	Fixed	a %	b %	c %	d %	e %
MV Switchgear and Equipment (FOR) Items: D1.1 - D1.30	10 %					

* Tenderer must insert the appropriate % in each cell such that each row = 100% incl. the fixed portion. Failure to insert any % must be considered fixed and NOT subject to adjustment.

TABLE F.1 (B).1: SEIFSA BASE MATERIAL AND LABOUR PRICES - MV Switchgear and Equipment (FOR)**ITEM E: INTERNAL ARC RATED SOLID-DIELECTRIC INSULATED 12kV SWITCHGEAR (SIS) FOR NEW INSTALLATIONS**

Where Tender prices are subject to adjustment the prices quoted shall be subject to price variation based upon the SEIFSA base prices or indices for materials and labour detailed below.

For the purposes of this tender the **base month** shall be **July 2026**

	Labour - a	Republic Copper Price - b	Steel Price Index (all Types) - c	Electrical Engineering Materials - d	Consumer Price Index (CPI) - e	Labour - a
SEIFSA Table No:	Table C3 or Table C3(a)	Table F Metric Ton	Table E-EX Hot Rolled Sheets	Table G1	Table D4	Table C3 or Table C3(a)
SEIFSA ITEM DESCRIPTION:						
Base Month Price / Index:						

TENDERER/SUPPLIER TO NOTE:

- a) This Schedule is only applicable if the Tenderer/Supplier is the Manufacturer of the Goods
- b) A Minimum of 10% of the tendered local South African price must remain fixed.

Schedule of formula (e):

	Fixed	a %	b %	c %	d %	e %
MV Switchgear and Equipment (FOR) Items: E1.1 - E1.30	10 %					

* Tenderer must insert the appropriate % in each cell such that each row = 100% incl. the fixed portion. Failure to insert any % must be considered fixed and NOT subject to adjustment.

TABLE F.1 (B).2: SEIFSA BASE MATERIAL AND LABOUR PRICES – Installation and Site Work

ITEM A: AIR INSULATED SWITCHGEAR FOR EXTENSION OF EXISTING ABB UNIGEAR ZACB INSTALLATIONS

Where Tender prices are subject to adjustment the prices quoted must be subject to price variation based upon the SEIFSA base prices or indices for materials and labour detailed below.

For the purposes of this tender the **base month** must be **July 2026**

	Labour - a	Republic Copper Price - b	Steel Price Index (all Types) - c	Electrical Engineering Materials - d	Consumer Price Index (CPI) - e
SEIFSA Table No:	Table C3 or Table C3(a)	Table F Metric Ton	Table E-EX Hot Rolled Sheets	Table G1	Table D4
SEIFSA ITEM DESCRIPTION:					
Base Month Price / Index:					

TENDERER/SUPPLIER TO NOTE:

- a) **A Minimum of 10% of the tendered local South African price must remain fixed.**

	Fixed	a %	b %	c %	d %	e %
Installation and Site Work	10 %					

TABLE F.1 (B).2: SEIFSA BASE MATERIAL AND LABOUR PRICES – Installation and Site Work

ITEM B: INTERNAL ARC RATED AIR INSULATED 12kV SWITCHGEAR FOR NEW INSTALLATIONS

Where Tender prices are subject to adjustment the prices quoted must be subject to price variation based upon the SEIFSA base prices or indices for materials and labour detailed below.

For the purposes of this tender the **base month** must be **July 2026**

	Labour - a	Republic Copper Price - b	Steel Price Index (all Types) - c	Electrical Engineering Materials - d	Consumer Price Index (CPI) - e
SEIFSA Table No:	Table C3 or Table C3(a)	Table F Metric Ton	Table E-EX Hot Rolled Sheets	Table G1	Table D4
SEIFSA ITEM DESCRIPTION:					
Base Month Price / Index:					

TENDERER/SUPPLIER TO NOTE:

- a) **A Minimum of 10% of the tendered local South African price must remain fixed.**

	Fixed	a %	b %	c %	d %	e %
Installation and Site Work	10 %					

TABLE F.1 (B).2: SEIFSA BASE MATERIAL AND LABOUR PRICES – Installation and Site Work

ITEM C: GAS INSULATED SWITCHGEAR FOR EXTENSION OF EXISTING ABB ZX0.2 INSTALLATIONS

Where Tender prices are subject to adjustment the prices quoted must be subject to price variation based upon the SEIFSA base prices or indices for materials and labour detailed below.

For the purposes of this tender the **base month** must be **July 2026**

	Labour - a	Republic Copper Price - b	Steel Price Index (all Types) - c	Electrical Engineering Materials - d	Consumer Price Index (CPI) - e
SEIFSA Table No:	Table C3 or Table C3(a)	Table F Metric Ton	Table E-EX Hot Rolled Sheets	Table G1	Table D4
SEIFSA ITEM DESCRIPTION:					
Base Month Price / Index:					

TENDERER/SUPPLIER TO NOTE:

- a) **A Minimum of 10% of the tendered local South African price must remain fixed.**

	Fixed	a %	b %	c %	d %	e %
Installation and Site Work	10 %					

TABLE F.1 (B).2: SEIFSA BASE MATERIAL AND LABOUR PRICES – Installation and Site Work

ITEM D: INTERNAL ARC RATED GAS 12kV SWITCHGEAR FOR NEW INSTALLATIONS

Where Tender prices are subject to adjustment the prices quoted must be subject to price variation based upon the SEIFSA base prices or indices for materials and labour detailed below.

For the purposes of this tender the **base month** must be **July 2026**

	Labour - a	Republic Copper Price - b	Steel Price Index (all Types) - c	Electrical Engineering Materials - d	Consumer Price Index (CPI) - e
SEIFSA Table No:	Table C3 or Table C3(a)	Table F Metric Ton	Table E-EX Hot Rolled Sheets	Table G1	Table D4
SEIFSA ITEM DESCRIPTION:					
Base Month Price / Index:					

TENDERER/SUPPLIER TO NOTE:

- a) **A Minimum of 10% of the tendered local South African price must remain fixed.**

	Fixed	a %	b %	c %	d %	e %
Installation and Site Work	10 %					

TABLE F.1 (B).2: SEIFSA BASE MATERIAL AND LABOUR PRICES – Installation and Site Work**ITEM E: INTERNAL ARC RATED SOLID-DIELECTRIC INSULATED 12kV SWITCHGEAR (SIS) FOR NEW INSTALLATIONS**

Where Tender prices are subject to adjustment the prices quoted must be subject to price variation based upon the SEIFSA base prices or indices for materials and labour detailed below.

For the purposes of this tender the **base month** must be **July 2026**

	Labour - a	Republic Copper Price - b	Steel Price Index (all Types) - c	Electrical Engineering Materials - d	Consumer Price Index (CPI) - e
SEIFSA Table No:	Table C3 or Table C3(a)	Table F Metric Ton	Table E-EX Hot Rolled Sheets	Table G1	Table D4
SEIFSA ITEM DESCRIPTION:					
Base Month Price / Index:					

TENDERER/SUPPLIER TO NOTE:

- a) **A Minimum of 10% of the tendered local South African price must remain fixed.**

	Fixed	a %	b %	c %	d %	e %
Installation and Site Work	10 %					

F.1 (C) LOCAL SOUTH AFRICAN CONTENT - SUPPLIER/ MANUFACTURER PRICE LIST/QUOTATIONS

1. Tenderers /Suppliers that are not the manufacturer or original supplier of the tendered goods and whose tender prices are based on the price list/quotation of another company (manufacturer or other supplier) may apply Supplier / Manufacturer Pricelist / Quotation based CPA.
2. In such cases the Tenderer is required to submit with his tender a copy of the original Supplier / Manufacturer Pricelist / Quotation upon which his tender prices are based. Such pricelist / Quotation is required to be on the Letterhead of the Supplier / Manufacture, is to be dated, referenced and signed, and is to provide clear reference to the tender number and is required to clearly reference each item quoted to the respective Tender Item Number indicated in C.4 Price Schedule.
3. The tenderer shall further confirm the Manufacturer / supplier, Quotation date and reference number and applicable tender Items by completing Table F.1(C).1 below.

Table F.1(C).1: Price Schedule information for Manufacturers/Suppliers Price List(s)/Quotation

Manufacturer/ Supplier Name	Price List Information		
	Price List/Quotation Date.	Price List/Quotation Reference Number	Pricelist applicable to Items as per C.4 Price Schedule

4. During the contract period, the Tenderer (now Supplier) must submit the request for price adjustment based on increases in pricelists of manufacturers/suppliers prior to the effective date of the increase in the pricelist.
5. The effective date of any price adjustment granted will be the first day of the month following the month during which the fully substantiated application for contract price adjustment is submitted or, by agreement between the Tenderer/Supplier and the CCT, a subsequent date on which the price adjustment will become effective.
6. In instances where the Supplier's price adjustment claimed is less than entitled, the lesser price will be accepted.

7. Purchase orders placed prior to the effective date of any price increase shall be placed at the previously agreed price, not the claimed adjusted price.
8. Only the difference in source supplier / manufacturer pricelist (actual cost, not percentage) may be adjusted and under no circumstances may the Tenderer/Supplier increase their profit margin.
9. The Tenderer/Supplier shall, when submitting claims for contract price adjustment, submit all of the documentation indicated below a minimum of two weeks prior to the effective date of the contract price adjustment:
 - a) Copies of price lists upon which original tender prices were based (refer to clause 2, Table F.1(C).1 above) clearly indicating the item(s) according to C.4 Price Schedule.
 - b) The new price list (*from the same Supplier / Manufacturer as originally tendered*) on the relevant manufacturer/suppliers letterhead (with pamphlets, brochures and e-mail communication) clearly indicating the item(s) according to C.4 Price Schedule.
 - c) Detailed calculations indicating how the “adjusted” price was calculated. The calculations must be submitted in Excel, together with a signed, “PDF” version of the Excel spreadsheet. The example below – Table F.1(C).2, is what is required.
 - d) A covering letter on the Supplier's letterhead requesting the CPA with the effective date of the claim.
10. The CCT will consider the request and either refer the request back for correction or additional information or approve the request.
11. The CCT will assess such pricelist based CPA claims against market pricing and indices and other input pricing indicators and will only approve such claims that are confirmed to be reasonable and market related with reference to the source pricing information provided with the tender and with the CPA application
12. Approval of the CPA request including confirmation of the effective date, will be communicated to the Supplier in writing together with a list of the approved adjusted rates. The effective date will be as per clause 3 above.
13. The successful Tenderer/Supplier shall immediately upon notification of the commencement date of contract submit written application for approval of any adjusted unit prices for the Goods that may have been notified by the Supplier / Manufacturer of the Goods, together with the required supporting documentation. This application will be assessed in accordance with the process laid out above in order to determine approved contract prices at the commencement of the contract.
14. Failure to submit such application within two working weeks of commencement of contract shall result in the tendered unit prices being applied for initial orders placed following commencement of the contract.
15. In the event of a Supplier changing their Supplier / Manufacturer during the tenure of the contract, no request for price variations will be considered unless the Supplier has obtained prior approval from the City for the change of Supplier / Manufacturer. Such approval shall include technical approval by the Engineer of the goods supplied by the replacement Supplier / Manufacturer. Technical approval by the Engineer shall be a prerequisite for any change of Supplier / Manufacturer.

Table F.1(C).2 – Pro Forma Table for Adjustments in price where the Supplier is not the Manufacturer)

C.4 Price Schedule Item No.	Original Tender Price	Previous and New Price List Information					New Contract Price (Excl. VAT)
		Manufacturer/Supplier	Material no.	Price as per previous Manufacturer/Supplier Price List (Excl. Vat) Price List Date:_____	Price as per new Supplier/Manufacturer Price List (Excl. Vat) Price List Date:_____	Difference between the previous and new manufacturer Price list (C)-(B)	
	(A)			(B)	(C)	(D)	(A)+(D)

**When submitting the first request for price adjustment, use the tender price as per C.4 Price Schedule.*

F.1 (D) LOCAL SOUTH AFRICAN CONTENT - STATS SA CONSUMER PRICE INDEX

NOT APPLICABLE

F.1 (E) LOCAL SOUTH AFRICAN CONTENT – SECTORIAL DETERMINATION

NOT APPLICABLE

F.1 (F) GOODS AND/OR COMPONENTS IMPORTED FROM OUTSIDE OF SOUTH AFRICA RATE OF EXCHANGE PRICE VARIATIONS
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1. Subject to the above, when tendered prices of certain items in C.4 Price Schedule are subject to adjustment for changes in the cost of goods and/or components imported from outside of South Africa, the Tenderer must (as part of the bid submission) provide a list of such items and other information as required in Table F.1 (F).2 below and include it in the bid submission.
2. Only tenderers who are the direct importer of the goods may claim rate of exchange price variations.

Table F.1 (F).1: Information required for prices subject to Rate of Exchange adjustments

Exchange Rate on which tender is based:	_____ 1 : Rand _____
Exchange Rate on which tender is based: (if more than one currency)	_____ 1 : Rand _____
Exchange Rate on which tender is based: (if more than one currency)	_____ 1 : Rand _____
Name of Bank	
Date of quoted rate of exchange	
Documentation relevant to calculation of adjustments based on Rate of Exchange (Mark with "x")	
Bill of Lading	
Waybill	
Customs invoice	
Other: _____	

TABLE F.1 (F).2: Price Basis for Imported Resources

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination	Rate of Exchange as at Base Date*	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
A1.1	12 kV, 25 kA, 630 A, 400/300/5 Distribution Feeder panels										
A1.2	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels										
A1.3	12 kV, 25 kA 1250 A, 1250/5 Distribution Bus-section panels										
A1.4	12 kV, 25 kA, 1250 A Distribution Busbar Riser panels										
A1.5	12 kV, 25 kA, 1250 A Distribution Busbar earthing panels										
A1.6	12 kV, 25 kA, 630 A, 400/300/5 Main Substation Feeder panels with 1250 A busbars										
A1.7	12 kV, 25 kA, 1250 A, 1250/1 Main Substation Incoming Transformer panels										
A1.8	12 kV, 25 kA, 1250 A, Main Substation Bus-section panels										
A1.9	12 kV, 25 kA, 1250 A Main Substation Busbar Riser panels										
A1.10	12 kV, 25 kA, 1250 A Main Substation Busbar earthing										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
	panels										
A1.11	12 kV, 25 kA, 630 A, 400/300/5 Main Substation Feeder panels with 2500 A busbars										
A1.12	12 kV, 25 kA, 2500 A, 2500/1 Main Substation Incoming Transformer panels										
A1.13	12 kV, 25 kA, 2500 A, 2500/1 Main Substation Bus-section panels										
A1.14	12 kV, 25 kA, 2500 A Main Substation Busbar Riser panels										
A1.15	12 kV, 25 kA, 2500 A Main Substation Busbar earthing panels										
A1.16	Insulated 1250 A busbars, set of three.										
A1.17	Insulated 2500 A busbars, set of three.										
A1.18	11 000 / 110 V, 15 VA, Class 0,5 Voltage transformers										
A1.19	11 000 / 110 V, 15 VA, Class 0,2 Voltage transformers										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination	Rate of Exchange as at Base Date*	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
A1.20	630 / 1250 A Circuit breaker trolleys										
A1.21	2500 A Circuit breaker trolleys										
A1.22	Primary test trucks										
A1.23	Exhaust ducting, Indoor, per exhaust, standard length complete with joints and end units										
A1.24	Exhaust ducting, outdoor, per exhaust, standard length complete with joints and end units										
A1.25	Exhaust ducting, Indoor, 1 metre extension piece										
A1.26	Exhaust ducting, Outdoor, 1 metre extension piece										
A1.27	Exhaust duct wall finishing plate										
A1.28	D-duct plenum for retrofit to compact duct Unigear panels, complete										
A1.29	Compact duct plenum for retrofit to D-duct Unigear panels, complete										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination	Rate of Exchange as at Base Date*	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
		(A)	(B)	(C)		(D)		(E)		(F)	(G)
A1.30	Busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, left side, complete.										
A1.31	Busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, right side, complete.										
A1.32	Manual operating, racking and spring charge handles and accessories for switchgear operation, set of one of each (Tenderer to itemise in detail)										
A1.33	Wall mounted cubicle for operating handles and accessories for switchgear operation, per switchboard.										
A1.34	Arc detection fibre, made-up complete with arc detection point sensor and V-pin connectors, one metre length										
A1.35	Black jacketed arc detection fibre (without fittings), per metre										
A1.36	Clear jacketed fibre arc flash detection sensor for busbar loop detectors, made-up complete with										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	% (D)	Rand (E)	% (F)	Rand (G)	Customs Duty Tariff Reference	Value in Rand for South African Content (H)	(I)
	2x V-pin connectors, one metre length										
A1.37	Clear jacketed fibre arc flash detection sensor (without fittings) for busbar loop detector, per metre										
A1.38	Ruggedized multi-mode OM4 Ethernet communication fibre, made-up complete with LC connectors, one metre length										
A1.39	Ruggedized multi-mode OM4 Ethernet communication fibre (without fittings), per metre										
A1.40	Manufacture, supply and delivery to site of galvanised steel floor frames and associated fasteners for affixing switchgear to floor frame, as specified, per switch-panel										
B1.1	12 kV, 25 kA, 630 A, 400/300/5 Distribution Feeder panels										
B1.2.	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels										
B1.3	12 kV, 25 kA 1250 A, 1250/5 Distribution Bus-section panels										
B1.4	12 kV, 25 kA, 1250 A Distribution Busbar Riser panels										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
B1.5	12 kV, 25 kA, 1250 A Distribution Busbar earthing panels										
B1.6	Insulated 1250 A Busbars, set of three										
B1.7	11 000 / 110 V, 15 VA, Class 0,5 voltage transformers										
B1.8	11 000 / 110 V, 15 VA, Class 0,2 voltage transformers										
B1.9	Circuit breaker trolleys										
B1.10	Primary test trucks										
B1.11	Exhaust ducting, Indoor, per exhaust, std length complete with joints and end units										
B1.12	Exhaust ducting, outdoor, per exhaust, standard length complete with joints and end units										
B1.13	Exhaust ducting, Indoor, 1 metre extension piece										
B1.14	Exhaust ducting, Outdoor, 1 metre extension piece										
B1.15	Exhaust duct wall finishing plate										
B1.16	Switchboard exhaust ducting end-plenum, if required										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination	Rate of Exchange as at Base Date*	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand	%	Rand	Customs Duty Tariff Reference	Value in Rand for South African Content	(G)
		(A)	(B)	(C)		(D)		(E)		(F)	
B1.17	Feeder Panel busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, left side, complete.										
B1.18	Feeder panel busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, right side, complete.										
B1.19	Busbar Earth Panel busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, left side, complete (if different from Feeder Panel end covers).										
B1.20	Busbar Earth Panel busbar compartment end cover, gas plenum end cover and switchboard cosmetic end cover, right side, complete (if different from Feeder Panel end covers).										
B1.21	Manual operating, racking and spring charge handles and accessories for switchgear										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination	Rate of Exchange as at Base Date*	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
	operation, set of one of each										
B1.22	Wall mounted cubicle for operating handles and accessories for switchgear operation, per switchboard.										
B1.23	Clear jacketed fibre arc flash detection sensor for busbar loop detectors, made-up complete with 2x V-pin connectors, one metre length										
B1.24	Clear jacketed fibre arc flash detection sensor (without fittings) for busbar loop detector, per metre										
B1.25	Ruggedized multi-mode OM4 Ethernet communication fibre, made-up complete with LC connectors, one metre length										
B1.26	Ruggedized multi-mode OM4 Ethernet communication fibre (without fittings), per metre										
B1.27	Manufacture, supply and delivery to site of galvanised steel floor frames and associated fasteners										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	 (G)
	for affixing switchgear to floor frame, as specified, per switch-panel										
C1.1	12 kV, 25 kA, 630 A, 400/300/1 Distribution Feeder panels										
C1.2	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels, complete with VT										
C1.3	12 kV, 25 kA 1250 A, 1250/1 Distribution Bus-section panels										
C1.4	12 kV, 25 kA ZX0.2 Busbar Riser panels										
C1.5	12 kV, 25 kA Busbar earthing panels										
C1.6	Screened Type C end adapter for external busbars, as specified, per set of three complete										
C1.7	Screened Type C cross adapter for external busbars, as specified										
C1.8	Screened Type C dead end cap for external busbars, as specified										
C1.9	Screened 1250 A external busbar, as specified, per set of three complete										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
C1.10	Exhaust ducting, Indoor, per exhaust, standard length complete with joints and end units										
C1.11	Exhaust ducting, outdoor, per exhaust, standard length complete with joints and end units										
C1.12	Exhaust ducting, Indoor, 1 metre extension piece										
C1.13	Exhaust ducting, Outdoor, 1 metre extension piece										
C1.14	Exhaust duct wall finishing plate										
C1.15	Feeder panel switchboard gas plenum end cover and cosmetic end cover, left side, complete										
C1.16	Feeder panel switchboard gas plenum end cover and cosmetic end cover, right side, complete										
C1.17	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if different from Feeder Panel end covers), left side, complete										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination	Rate of Exchange as at Base Date*	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
C1.18	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if different from Feeder Panel end covers), right side, complete										
C1.19	Manual operating and spring charge handles and accessories for switchgear operation, set of one of each (Tenderer to itemise in detail)										
C1.20	Accessories, fittings and adapters for emergency gas re-pressurisation, as specified										
C1.21	Wall mounted cubicle for operating handles, test probes, gas handling and re-pressurisation equipment and accessories for switchgear operation, per switchboard.										
C1.22	Arc detection fibre, complete with arc detection point sensor and V-Pin connector, one metre length										
C1.23	Black jacketed arc detection fibre (without fittings), per metre										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	 (G)
C1.24	Clear jacketed fibre arc flash detection sensor for busbar loop detectors, made-up complete with 2x V-Pin connectors, one metre length										
C1.25	Clear jacketed fibre arc flash detection sensor (without fittings) for busbar loop detector, per metre										
C1.26	Ruggedized multi-mode OM4 Ethernet communication fibre, made-up complete with LC connectors, one metre length										
C1.27	Ruggedized multi-mode OM4 Ethernet communication fibre (without fittings), per metre										
C1.28	Manufacture, supply and delivery to site of galvanised steel floor frames and associated fasteners for affixing switchgear to floor frame, as specified, per switch-panel										
D1.1	12 kV, 25 kA, 630 A, 400/300/1 Distribution Feeder panels										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination	Rate of Exchange as at Base Date*	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
D1.2.	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels, complete with VT										
D1.3	12 kV, 25 kA 1250 A, 1250/1 Distribution Bus-section panels										
D1.4	12 kV, 25 kA Busbar Riser panels (if separate from Bus Section Panel)										
D1.5	12 kV, 25 kA Busbar earthing panels (for switchboards WITHOUT B/Sec panels fitted)										
D1.6	Screened busbar couplings for in-line busbar connections (where applicable), as specified										
D1.7	Screened busbar end blanking plugs and cover plates for in-line busbar connections (where applicable), as specified										
D1.8	Screened Type C end adapter for external busbars (where applicable), as specified, per set of three complete										
D1.9	Screened Type C cross adapter for external busbars (where										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
	applicable), as specified										
D1.10	Screened Type C dead end cap for external busbars (where applicable), as specified										
D1.11	Screened 1250 A external busbar (where applicable), as specified, per set of three complete										
D1.12	Exhaust ducting, Indoor, per exhaust, standard length complete with joints and end units										
D1.13	Exhaust ducting, outdoor, per exhaust, standard length complete with joints and end units										
D1.14	Exhaust ducting, Indoor, 1 metre extension piece										
D1.15	Exhaust ducting, Outdoor, 1 metre extension piece										
D1.16	Exhaust duct wall finishing plate										
D1.17	Switchboard exhaust ducting end-plenum, if required										
D1.18	Feeder panel switchboard gas plenum end cover and cosmetic										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
	end cover (if required), left side, complete										
D1.19	Feeder panel switchboard gas plenum end cover and cosmetic end cover (if required), right side, complete										
D1.20	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if required and different from Feeder Panel end covers), left side, complete										
D1.21	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if required and different from Feeder Panel end covers), right side, complete										
D1.22	Manual operating and spring charge handles and accessories for switchgear operation, set of one of each (Tenderer to itemise in detail)										
D1.23	Primary cable test equipment / cable test probes, where applicable										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
D1.24	Accessories, fittings and adapters for emergency gas re-pressurisation, as specified										
D1.25	Wall mounted cubicle for operating handles, test probes, gas handling and re-pressurisation equipment and accessories for switchgear operation, per switchboard.										
D1.26	Clear jacketed fibre arc flash detection sensor for busbar loop detectors, made-up complete with 2x V-Pin connectors, one metre length										
D1.27	Clear jacketed fibre arc flash detection sensor (without fittings) for busbar loop detector, per metre										
D1.28	Ruggedized multi-mode OM4 Ethernet communication fibre, made-up complete with LC connectors, one metre length										
D1.29	Ruggedized multi-mode OM4 Ethernet communication fibre (without fittings), per metre										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
D1.30	Manufacture, supply and delivery to site of galvanised steel floor frames and associated fasteners for affixing switchgear to floor frame, as specified, per switch-panel										
E1.1	12 kV, 25 kA, 630 A, 400/300/1 Distribution Feeder panels										
E1.2	12 kV, 25 kA, 630 A, 400/200/1 Distribution Feeder metering panels, complete with VT										
E1.3	12 kV, 25 kA 1250 A, 1250/1 Distribution Bus-section panels										
E1.4	12 kV, 25 kA Busbar Riser panels (if separate from Bus Section Panel)										
E1.5	12 kV, 25 kA Busbar earthing panels (for switchboards WITHOUT B/Sec panels fitted)										
E1.6	Screened busbar couplings for in-line busbar connections (where applicable), as specified										
E1.7	Screened busbar end blanking plugs and cover plates for in-line										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
	busbar connections (where applicable), as specified										
E1.8	Screened Type C end adapter for external busbars (where applicable), as specified, per set of three complete										
E1.9	Screened Type C cross adapter for external busbars (where applicable), as specified										
E1.10	Screened Type C dead end cap for external busbars (where applicable), as specified										
E1.11	Screened 1250 A external busbar (where applicable), as specified, per set of three complete										
E1.12	Exhaust ducting, Indoor, per exhaust, standard length complete with joints and end units										
E1.13	Exhaust ducting, outdoor, per exhaust, standard length complete with joints and end units										
E1.14	Exhaust ducting, Indoor, 1 metre										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
	extension piece										
E1.15	Exhaust ducting, Outdoor, 1 metre extension piece										
E1.16	Exhaust duct wall finishing plate										
E1.17	Switchboard exhaust ducting end-plenum, if required										
E1.18	Feeder panel switchboard gas plenum end cover and cosmetic end cover (if required), left side, complete										
E1.19	Feeder panel switchboard gas plenum end cover and cosmetic end cover (if required), right side, complete										
E1.20	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if required and different from Feeder Panel end covers), left side, complete										
E1.21	Busbar Earth panel switchboard gas plenum end cover and cosmetic end cover (if required and different from Feeder Panel end covers), right side, complete										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination	Rate of Exchange as at Base Date*	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand	%	Rand	Customs Duty Tariff Reference	Value in Rand for South African Content	(G)
		(A)	(B)	(C)		(D)		(E)		(F)	
E1.22	Manual operating and spring charge handles and accessories for switchgear operation, set of one of each (Tenderer to itemise in detail)										
E1.23	Primary cable test equipment / cable test probes, where applicable										
E1.24	Accessories, fittings and adapters for emergency gas re-pressurisation, as specified										
E1.25	Wall mounted cubicle for operating handles, test probes, gas handling and re-pressurisation equipment and accessories for switchgear operation, per switchboard.										
E1.26	Clear jacketed fibre arc flash detection sensor for busbar loop detectors, made-up complete with 2x V-Pin connectors, one metre length										
E1.27	Clear jacketed fibre arc flash detection sensor (without fittings) for busbar loop detector,										

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination	Rate of Exchange as at Base Date*	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)
	per metre										
E1.28	Ruggedized multi-mode OM4 Ethernet communication fibre, made-up complete with LC connectors, one metre length										
E1.29	Ruggedized multi-mode OM4 Ethernet communication fibre (without fittings), per metre										
E1.30	Manufacture, supply and delivery to site of galvanised steel floor frames and associated fasteners for affixing switchgear to floor frame, as specified, per switch-panel										

* Base Date: 7 (seven) calendar days before tender closing.

- Any items/resources not inserted in Table F.1 (F).2 above, are deemed to be manufactured / supplied in South Africa and is not subject to adjustment in terms of variation in rate of exchange.
- The price adjustment for variations in the cost of plant and materials imported from outside of South Africa shall be based on the information contained on the schedule titled "Price Basis for Imported Resources" (Table F.1 (F).2). The Rand value of goods and components comprising entirely or partly imported content that is inserted on the Table F.1(F).2 titled "Price Basis for Imported Resources" (column (G)) shall be the rate tendered in the Pricing Schedule C.4, and shall be the value in foreign currency (column (A)) converted to South African Rand (column (C)) by using the closing spot selling rate on the Base Date (seven calendar days before tender closing date) rounded to the second decimal place (column (B)), to which shall be added any Customs Surcharge and Customs Duty applicable at that date (columns (D) and (E)) and any South African manufactured or added content (column (F)). Any mark-up by the Tenderer or other costs not detailed above shall

be entirely contained within the South African Content (Column (F)).

5. Column A of Table F.1 (F).2 shall detail the actual quotation for the imported Goods or components, and shall be substantiated by the original source quotation for such Goods or components. (Source quotation from foreign supplier/manufacturer, see Schedule F.1 (G), Table F.1 (G).1 below). No Supplier mark-up on the foreign currency value of such imported Goods or components is permissible. All Supplier mark-up shall be included in the South African content, Column F of Table F.1 (F).2 above.
6. Based on the evidence provided in Clause 5 above, the value in Rand inserted in column (C) on the schedule titled "Price Basis for Imported Resources" shall be recalculated using the forward cover rate obtained, and any increase or decrease in the Rand value defined in this clause shall be adjusted accordingly, subject to Clause 7 below.
7. The adjustments shall be calculated upon the value in foreign currency in the Supplier's forward cover contract, provided that, should this value exceed the value in foreign currency inserted in column (A) of on the schedule titled "Price Basis for Imported Resources", then the value in column (A) shall be used (or any adjusted value approved in accordance with Schedule F.1 (G) below).
8. Any increase or decrease in the Rand value between the amounts of Customs Surcharge and Customs Duty inserted in on the schedule titled "Price Basis for Imported Resources" and those amounts actually paid to the Customs and Excise Authorities, which are due to changes in the percentage rates applicable or to the foreign exchange rate used by the authorities, shall be adjusted accordingly.
9. The Tenderer shall state the Customs Duty Tariff Reference applicable to each item and the Supplier shall advise the CCT's Agent of any changes which occur.
10. Suppliers shall take out Forward Cover covering the foreign exchange component of the cost of any imported portion of the Goods ordered on each purchase order issued by the Employer.
11. The process to be followed by Suppliers for claims for Rate of Exchange Variations shall be as follows:
 - a) The Supplier shall within seven working days from the date of receipt of the purchase order arrange for cover or recovering forward by way of a contract with a bank which is an authorised foreign exchange dealer, the foreign exchange component of the cost of any imported goods and components inserted by the Tenderer on the scheduled titled "Price Basis for Imported Resources" (Table F.1 (F).2), and submit such Forward Cover quotation to the City for approval.
 - b) Upon receipt of the quotation for Forward Cover from the bank, the Supplier must forward the quote ideally, within 15 minutes of receiving it from their banker to the CCT: **EAMCPA.Request@capetown.gov.za** and Contract Manager: Patrick.O'Halloran@capetown.gov.za. This is to ensure that the time difference from generation of the quotation for Forward Cover to finalising the Forward Cover with the Bank, is kept to a minimum due to the change in the exchange rate throughout the day.
 - c) The Contract Manager will forward the quotation to the CCT Treasury Department immediately for their consideration and approval. The cut-off time for receipt of quotations for Forward Cover will be 14h00. It must be noted that if this deadline will not be achieved, it is recommended that the quotation process be undertaken on the following day which should fall within the 7 days of receipt of the purchase order.
 - d) Only once the Forward Cover quotation rate has been approve by CCT Treasury Department, may the Supplier finalise the Forward Cover contract with their bank at the rate approved by the CCT Treasury Department for that Purchase Order and forward a copy of the contract to the CCT via email: **EAMCPA.Request@capetown.gov.za** and Contract Manager: Patrick.O'Halloran@capetown.gov.za.
 - e) The Forward Cover quotation envisaged above shall have the CCT purchase order number and a Forward Cover Contract (FCC) Value Date that is directly

based upon the required delivery date for the imported Goods or components necessary in order to meet the Contract Delivery Period. Future FCC Value Dates beyond the Contract Delivery Period shall not be acceptable.

12. On delivery of the goods to the City the Supplier shall submit the following documentation to the CCT via email: **EAMCPA.Request@capetown.gov.za** and Contract Manager: **Patrick.O'Halloran@capetown.gov.za**:
 - a) The Bill of Lading/Waybill/Customs Invoice (clearly indicating the items as identified on the purchase order).
 - b) Calculations detailing the difference in the rate of exchange at the time of entry and the date of tender. These shall be submitted on a covering letter.
 - c) The invoice / credit note for the Rate of Exchange adjustment applicable to the specific order.
13. In exceptional circumstances, and subject to the Employer's explicit approval, Rate of Exchange variations on Goods or components that are imported in bulk in advance in fulfilment of the contract requirements or to create buffer stocks, but not specifically in response to specific purchase orders placed by the Employer in accordance with the contract, shall be based upon whichever of the following two methodologies is more advantageous to the Employer:
 - a) Methodology 1: A spot quotation for the Forward Cover Contract rate for the imported portion of the Goods, based upon the FCC Value Date for the particular purchase order(s), as outlined in clause 11 above.
 - b) Methodology 2: The actual Rate of Exchange cost variations incurred in fulfilment of the purchase order(s), fully substantiated by detailed Bills of Lading and Customs Invoice applicable to the particular Goods delivered. The applicable Rate of Exchange shall be the rate as defined on the Customs Invoice for the imported Goods.
 - c) Determination of the more advantageous methodology shall be conducted and approved following delivery of the imported Goods or components to the Supplier but prior to delivery of the Goods to the Employer.
14. Approval of the process detailed in Clause 13 and sub-clauses above shall be on an order by order basis and application shall be submitted, with required supporting documents, immediately on receipt of the relevant purchase order(s).

F.1. (G) GOODS AND/OR COMPONENTS IMPORTED FROM OUTSIDE OF SOUTH AFRICA - MANUFACTURER/SUPPLIER PRICE/QUOTATION LIST
--

1. Manufacturer's / Supplier's Pricelist / Quotation Based CPA – Imported Goods or Components:

- 1.1 Tenderers with imported Goods or Components may claim contract price adjustment based on the overseas SUPPLIER'S / MANUFACTURER'S PRICE LISTS/ QUOTATION from the supplier or manufacturer of the tendered items.
- 1.2 In such cases the Tenderer is required to submit with his tender a copy of the original overseas Supplier / Manufacturer Pricelist / Quotation upon which his tender prices are based. Such pricelist / Quotation is required to be on the Letterhead of the Supplier / Manufacture, is to be dated, referenced and signed, and is to provide clear reference to the tender number or unambiguously indicate the relevant component.
- 1.3 The Tenderer is required to clearly reference each item quoted to the respective Tender Item Number indicated in C.4 Price Schedule by completing Table F.1 (G).1 below.

Table F.1 (G).1: Price Schedule information for Imported Goods or Components - Manufacturers/Suppliers Price List(s)/Quotation

Manufacturer/ Supplier Name	Price List Information		
	Price List/Quotation Date.	Price List/Quotation Reference Number	Pricelist applicable to Items as per C.4 Price Schedule

- 1.4 During the contract period, the Tenderer (now Supplier) must submit the request for price adjustment based on increases in pricelists of manufacturers/suppliers prior to the effective date of the increase in the pricelist.
- 1.5 The effective date of any price adjustment granted will be the first day of the month following the month during which the fully substantiated application for contract price adjustment is submitted or, by agreement between the Tenderer/Supplier and the CCT, a subsequent date on which the price adjustment will become effective.

- 1.6 In instances where the Supplier's price adjustment claimed is less than entitled, the lesser price will be accepted.
- 1.7 Only the difference in source supplier / manufacturer pricelist (actual cost, not percentage) may be adjusted and under no circumstances may the Tenderer/Supplier increase their profit margin.
- 1.8 The Tenderer/Supplier shall, when submitting claims for contract price adjustment, submit all of the documentation indicated below a minimum of two weeks prior to the effective date of the contract price adjustment:
- a) Copies of price lists upon which original tender prices were based (refer to Clause 1.2, Table F.1 (G).1 above) clearly indicating the item(s) according to C.4 Price Schedule.
 - b) The new price list (*from the same Supplier / Manufacturer as originally tendered*) on the relevant manufacturer/suppliers letterhead (with pamphlets, brochures and e-mail communication) clearly indicating the item(s) according to C.4 Price Schedule.
 - c) Submit detailed calculations indicating how the "new" price is calculated. The calculations must be submitted in Excel, together with a signed, "PDF" version of the Excel spreadsheet. The example below – Table F.1(G).2, is what is required.
 - d) A covering letter on the Supplier's letterhead requesting the CPA with the effective date of the claim.
- 1.9 The CCT will consider the request and either refer the request back for correction or additional information or approve the request.
- 1.10 The CCT will assess such pricelist based CPA claims and will only approve such claims that are confirmed to be reasonable and market related with reference to the source pricing information provided with the tender and with the CPA application
- 1.11 Approval of the CPA request including confirmation of the effective date, will be communicated to the Supplier in writing. The effective date will be as per clause 1.3 above.
- 1.12 The successful Tenderer/Supplier shall immediately upon notification of the commencement date of contract submit written application for approval of any adjusted unit prices for the Goods that may have been notified by the Supplier / Manufacturer of the Goods, together with the required supporting documentation. This application will be assessed in accordance with the process laid out above in order to determine approved contract prices at the commencement of the contract.
- 1.13 Failure to submit such application within two working weeks of commencement of contract shall result in the tendered unit prices being applied for initial orders placed following commencement of the contract.
- 1.14 In the event of a Supplier changing their Supplier / Manufacturer during the tenure of the contract, no request for price variations will be considered unless the Supplier has obtained prior approval from the City for the change of Supplier / Manufacturer. Such approval shall include technical approval by the Engineer of the goods supplied by the replacement Supplier / Manufacturer. Technical approval by the Engineer shall be a prerequisite for any change of Supplier / Manufacturer.

Table F.1(G).2 – Pro Forma Table for Adjustments in price for Imported Goods or Components - Manufacturers/Suppliers Price List(s)/Quotation

C.4 Price Schedule Item No.	Original Tender Price (A)	Previous and New Price List Information					New Contract Price (Excl. VAT) (A)+(D)
		Manufacturer/ Supplier	Material no.	Price as per previous Manufacturer/ Supplier Price List (Excl. Vat) Price List Date: _____ (B)	Price as per new Supplier/ Manufacturer Price List (Excl. Vat) Price List Date: _____ (C)	Difference between the previous and new manufacturer Price list (C)-(B) (D)	
A1.1							
A1.2							
A1.3							
A1.4							
A1.5							
A1.6							
A1.7							
A1.8							
A1.9							
A1.10							
A1.11							
A1.12							
A1.13							
A1.14							
A1.15							

A1.16							
A1.17							
A1.18							
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A1.22							
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A1.25							
A1.26							
A1.27							
A1.28							
A1.29							
A1.30							
A1.31							
A1.32							
A1.33							
A1.34							
A1.35							
A1.36							
A1.37							
A1.38							

A1.39							
A1.40							
B1.1							
B1.2.							
B1.3							
B1.4							
B1.5							
B1.6							
B1.7							
B1.8							
B1.9							
B1.10							
B1.11							
B1.12							
B1.13							
B1.14							
B1.15							
B1.16							
B1.17							
B1.18							
B1.19							
B1.20							
B1.21							

B1.22							
B1.23							
B1.24							
B1.25							
B1.26							
B1.27							
C1.1							
C1.2							
C1.3							
C1.4							
C1.5							
C1.6							
C1.7							
C1.8							
C1.9							
C1.10							
C1.11							
C1.12							
C1.13							
C1.14							
C1.15							
C1.16							
C1.17							

C1.18							
C1.19							
C1.20							
C1.21							
C1.22							
C1.23							
C1.24							
C1.25							
C1.26							
C1.27							
C1.28							
D1.1							
D1.2.							
D1.3							
D1.4							
D1.5							
D1.6							
D1.7							
D1.8							
D1.9							
D1.10							
D1.11							
D1.12							

D1.13							
D1.14							
D1.15							
D1.16							
D1.17							
D1.18							
D1.19							
D1.20							
D1.21							
D1.22							
D1.23							
D1.24							
D1.25							
D1.26							
D1.27							
D1.28							
D1.29							
D1.30							
E1.1							
E1.2							
E1.3							
E1.4							
E1.5							

E1.6							
E1.7							
E1.8							
E1.9							
E1.10							
E1.11							
E1.12							
E1.13							
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E1.28							

E1.29							
E1.30							

OR

2. **Supplier Price List Variations for Suppliers Supplying Goods Imported by Another Party**

- 2.1 The Tenderers (now Supplier) that are not the director importer of the manufactured goods/components, and intend to purchase the goods from another supplier who in turn is importing the goods, may apply for Supplier / Manufacturer Pricelist / Quotation based CPA imported by a another Party.
- 2.2 In such cases the Tenderer is required to submit with his tender a copy of the original Supplier / Manufacturer Pricelist / Quotation upon which his tender prices are based. Such pricelist / Quotation is required to be on the Letterhead of the Supplier / Manufacture, is to be dated, referenced and signed, and is to provide clear reference to the tender number, exchange rate on which the quote is based and is required to clearly reference each item quoted to the respective Tender Item Number indicated in C.4 Price Schedule.
- 2.3 The tenderer shall further confirm the Manufacturer / supplier, Quotation date, exchange rate at date of quote and reference number and applicable tender Items by completing Table F.1(G).3 below.

Table F.1 (G).3: Price Schedule information for Imported Goods or Components, imported by Another Party Manufacturers/Suppliers Price List(s)/Quotation

Price List Information				
Manufacturer/ Supplier Name	Price List/Quotation Date.	Price List/Quotation Reference Number	Exchange Rate on which quote is based	Pricelist applicable to Items as per C.4 Price Schedule
			_____ 1 : Rand _____	
			_____ 1 : Rand _____	
			_____ 1 : Rand _____	
			_____ 1 : Rand _____	

- 2.4 During the contract period, the Tenderer (now Supplier) must submit the request for price adjustment based on increases in pricelists of manufacturers/suppliers within seven calendar days of the date of the purchase order date.
- 2.5 The price adjustment claim will be fully substantiated and the approval will be limited to the relevant Purchase Order.
- 2.6 In instances where the Supplier's price adjustment claimed is less than entitled, the lesser price will be accepted.
- 2.7 Only the difference in source supplier / manufacturer pricelist (actual cost, not percentage) may be adjusted and under no circumstances may the

Tenderer/Supplier increase their profit margin.

- 2.8 The Tenderer/Supplier shall, when submitting claims for contract price adjustment, submit all of the documentation indicated below a minimum of seven (7) days from date of purchase order:
- a) Copies of price lists upon which original tender prices were based (refer to Clause 2.2, Table 2 above) clearly indicating the item(s) according to C.4 Price Schedule.
 - b) The new price list (*from the same Supplier / Manufacturer as originally tendered*) on the relevant manufacturer/suppliers letterhead (with pamphlets, brochures and e-mail communication) clearly indicating the item(s) according to C.4 Price Schedule.
 - c) Submit detailed calculations indicating how the “new” price is calculated.
 - d) A covering letter on the Supplier’s letterhead requesting the CPA with the effective date of the claim.
- 2.9 The CCT will consider the request and either refer the request back for correction or additional information or approve the request.
- 2.10 The CCT will assess such pricelist based CPA claims and will only approve such claims that are confirmed to be reasonable and market related with reference to the source pricing information provided with the tender and with the CPA application
- 2.11 Approval of the CPA request for the relevant Purchase Order (refer to clause 2.5 above), will be communicated to the Supplier in writing.

F.1. (H) GOODS AND/OR COMPONENTS IMPORTED FROM OUTSIDE OF SOUTH AFRICA - BASED ON FOREIGN INDICES
--

1. Adjustment for variation in labour and material Costs based on Indices in the country of manufacture.
 - 1.1 If the prices for imported Goods and/or components are not fixed, the Supplier shall in their Tender specify the formula for calculating Contract Price Adjustments normally used in the country of manufacture and the indices and relative proportions of labour and material on which his Tender prices are based. The imported goods and or components shall be adjusted annually in accordance with clause 18.2 below.
 - 1.2 The FOB adjustment in this CPA must be read with the values stipulated in the F.1 (F) (Column A) Schedule for Rate of Exchange.

2. Formula(e) for FOB price adjustment on goods and/or components ex-import:

Cost of goods and or components manufactured outside of South Africa and any foreign installation labour (FOB values in Table 2 titled “**Price Basis for Imported Resources**” (column (A))) will be fixed and firm except for variations in the rate of exchange and statutory obligations unless the following information is provided:

$$P = P_o(0,1 + 0,9N/No)$$

Where

P = Adjusted Price

P_o = Original Price

10% - Fixed

And:

No

Origin:

N

Foreign Published Index (similar to SEIFSA CPI/PPI) in country of

DETAIL: _____

PPI Reference Country:: _____

Base Month: _____

Published PPI for Base Month: _____

3. The FOB values in Table 2 titled “**Price Basis for Imported Resources**” (column (A)), shall remain fixed and firm for the first 12 calendar months from date of Commencement Date of Contract and Suppliers are not permitted to requests CPA during this period.

4. The FOB values will thereafter be subject to adjustment annually based on the average percentage of 12 months as published in the Foreign Published Index as follows:
 - 4.1 From the start of the 13th month to the end of the 24th month calculated as follows:
 - a) The base month for the price adjustment being three (3) calendar months prior to Commencement Date of Contract; and
 - b) The end month shall be three (3) calendar months prior to the 12th month.
 - 4.2 From the start of the 25th month to end of the 36th month calculated as follows:
 - a) The base month for the price adjustment shall be three (3) calendar months prior to the 13th month; and
 - b) The end month shall be three (3) calendar months prior to 24th month.
5. The average percentage increase in the published index will be calculated using the base month to the end month (both included) divided by the number of months. (12 months totalled/12 to achieve the average for the Foreign Published Index)

Schedule F.2: Certificate of Authority for Partnerships/ Joint Ventures/ Consortia

This schedule is to be completed if the tender is submitted by a partnership/joint venture/ consortium.

1. We, the undersigned, are submitting this tender offer as a partnership/ joint venture/ consortium and hereby authorize Mr/Ms _____, of the authorised entity _____, acting in the capacity of Lead Partner, to sign all documents in connection with the tender offer and any contract resulting from it on the partnership/joint venture/ consortium’s behalf.

2. By signing this schedule the partners to the partnership/joint venture/ consortium:
 - 2.1 warrant that the tender submitted is in accordance with the main business and objectives of the partnership/joint venture/ consortium;
 - 2.2 agree that the CCT shall make all payments in terms of this Contract into the following bank account of the Lead Partner:
 Account Holder: _____
 Financial Institution: _____
 Branch Code: _____
 Account No.: _____
 - 2.3 agree that in the event that there is a change in the partnership/ joint venture/ consortium and/or should a dispute arise between the partnership/joint venture/ consortium partners, that the CCT shall continue to make any/all payments due and payable in terms of the Contract into the aforesaid bank account until such time as the CCT is presented with a Court Order or an original agreement (signed by each and every partner of the partnership/joint venture/ consortium) notifying the CCT of the details of the new bank account into which it is required to make payment.
 - 2.4 agree that they shall be jointly and severally liable to the CCT for the due and proper fulfilment by the successful tenderer/supplier of its obligations in terms of the Contract as well as any damages suffered by the CCT as a result of breach by the successful tenderer/supplier. The partnership/joint venture/ consortium partners hereby renounce the benefits of excussion and division.

SIGNED BY THE PARTNERS OF THE PARTNERSHIP/ JOINT VENTURE/ CONSORTIUM		
NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
Lead partner		Signature..... Name..... Designation.....
		Signature..... Name..... Designation.....
		Signature..... Name..... Designation.....
		Signature..... Name..... Designation.....

Note: A copy of the Joint Venture Agreement shall be appended to *List of Other Documents Attached by Tenderer Schedule.*

Schedule F.3: Declaration for Procurement above R10 million

If the value of the transaction is expected to exceed R10 million (VAT included) the tenderer shall complete the following questionnaire, attach the necessary documents and sign this schedule:

1. Are you by law required to prepare annual financial statements for auditing? **(Please mark with X)**

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

If YES, submit audited annual financial statements:

- (i) For the past three years, or
(ii) Since the date of establishment of the tenderer (if established during the past three years)

By attaching such audited financial statements to **List of Other Documents Attached by Tenderer Schedule**.

2. Do you have any outstanding undisputed commitments for municipal services towards the CCT or other municipality in respect of which payment is overdue for more than 30 (thirty) days? **(Please mark with X)**

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

- 2.1 If NO, this serves to certify that the tenderer has no undisputed commitments for municipal services towards any municipality for more than three (3) (three) months in respect of which payment is overdue for more than 30 (thirty) days.

- 2.2 If YES, provide particulars:

--

3. Has any contract been awarded to you by an organ of state during the past five (5) years? **(Please mark with X)**

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

If YES, insert particulars in the table below including particulars of any material non-compliance or dispute concerning the execution of such contract. Alternatively attach the particulars to **List of Other Documents Attached by Tenderer** schedule in the same format as the table below:

Organ of State	Contract Description	Contract Period	Non-compliance/dispute (if any)

4. Will any portion of the goods or services be sourced from outside the Republic, and if so, what portion and whether any portion of payment from the CCT is expected to be transferred out of the Republic? **(Please mark with X)**

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

If YES, furnish particulars below

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

Signature
Print name:
On behalf of the tenderer (duly authorised)

Date

Schedule F.4: Preference Points Claim Form In Terms Of the 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

The applicable preference point system for this tender is the 90/10 preference point system.

- 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	90
SPECIFIC GOALS	10
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

The following definitions shall apply to this schedule:

- (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

POINTS AWARDED FOR PRICE

THE 90/10 PREFERENCE POINT SYSTEMS

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

90/10

$$Ps = 90 \left(1 - \frac{Pt - Pmin}{Pmin} \right)$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest 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 (SG) – Points Allocated and Claimed

Tenderers must indicate the preference points claimed for each specific goal applicable to them, for the purposes of this tender.

(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.)

The specific goals allocated points in terms of this tender	To be Completed by the Organ of State		To be Completed by the Tenderer	
	Number of points Allocated (90/10 system)	Number of points Allocated (80/20 system)	Number of points claimed (90/10 system)	Number of points claimed (80/20 system)
Promotion of Micro and Small Enterprises	4	8		-
Enterprise Supplier Development and Socio-Economic Development	3	6		-
Skills Development <u>OR</u> Employee Share Scheme	3	6		-

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 4.1 and 4.2, the Supplier 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 Supplier, 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 of Tenderer	Date	Name and Surname	Address

For official use.		
SIGNATURE OF CCT OFFICIALS AT TENDER OPENING		
1.	2.	3.

Table 2: Specific Goals – Declaration by the Tenderer

Tenderers must complete this table to declare the amounts and percentages applicable to the specific goals they are claiming.

NB: In completing Table 2 below, please consult Notes for Verification below

The specific goals allocated points in terms of this tender	To be Completed by the Tenderer	
	Refer to “Notes for verification”	Amount Declared (excluding VAT)
SG1 Promotion of Micro and Small Enterprises	(i) Total Turnover	
SG2 Enterprise Supplier Development and Socio Economic Development	(ii) Total Enterprise Supplier Development Expenditure	
	(iii) Total Socio Economic Development Expenditure	
	(iv) Total Expenditure	
SG3.1 Skills Development	(v) Total Skills Development Expenditure	
	(vi) Total Profit	
OR SG3.2 Employee Share Scheme	(vii) Employee Share Scheme Ownership %	

Tenderer Confirmation:

I confirm that the amounts declared in Table 2 above are accurate and in accordance with the *‘The Broad-Based Black Economic Empowerment (B-BBEE) Act 53 of 2003, as amended.* .

Signature of Tenderer (Authorised to represent the tenderer)	Date	Name and Surname	Address

Notes for Verification:

All amounts disclosed should be as per the most recent Annual Financial Statements (not older than 12 months) and defined as per the B-BBEE Act

- SG1 – Specific Goal 1

Promotion of Micro and Small Enterprises

(i) Total Turnover

Micro enterprises with a turnover of up to R20million and Small enterprises with a turnover up to R80 million, as per National Small Enterprise Act, 1996 (Act No.102 of 1996)

- SG2 – Specific Goal 2

Enterprise Supplier Development and Socio-Economic Development

(ii) Total Enterprise Supplier Development Expenditure

Qualifying expenditure as defined in the B-BBEE Act: Statement 400 "THE GENERAL PRINCIPLES FOR MEASURING ENTERPRISE AND SUPPLIER DEVELOPMENT"

(iii) Total Enterprise Socio Economic Development Expenditure

Qualifying expenditure as defined in the B-BBEE Act: Statement 500 "THE GENERAL PRINCIPLES FOR MEASURING THE SOCIO - ECONOMIC DEVELOPMENT ELEMENT"

(iv) Total Expenditure

Total Expenditure as per the most recent Annual Financial Statements (not older than 12 months)

- SG3.1 – Specific Goal 3

Skills Development

(v) Total Skills Development Expenditure

Qualifying expenditure as defined in the B-BBEE Act: Statement 300 "THE GENERAL PRINCIPLES FOR MEASURING SKILLS DEVELOPMENT"

(vi) Total Profit

Total Profit as per the most recent Annual Financial Statements (not older than 12 months)

- SG3.2 – Specific Goal 3

Employee Share Scheme

(vii) Employee Share Scheme Ownership %

Total employee ownership as per employee share certificate at the date of tender closing.

The below table (Table 3) must be completed by a B-BBEE Verification Agency (*Note 1) OR Commissioner of Oaths

(Refer to *Note 3.2 for the detailed declaration):

Table 3:

Signature and Stamp	Date	Name and Surname	Address

***Note 1**

1.1 Tendering entity that undergoes B-BBEE verification

- Where a tendering entity undergoes B-BBEE verification, a B-BBEE certificate valid as at the date of tender closing, must be attached to the bid submission or must be made available upon request within the specified period.
- All amounts disclosed in Table 2, should be amounts used in the B-BBEE verification process undergone by the tendering entity
- The B-BBEE verification agency must complete Table 3 above, to confirm the following amounts disclosed by the bidder in Table 2:
 - (ii) Total Enterprise Supplier Development Expenditure;
 - (iii) Total Socio Economic Development Expenditure;
 - (v) Total Skills Development Expenditure
- Where the tendering entity is a Joint Venture/ Consortium, the amounts in Table 2 must be consolidated, with an accompanying consolidated B-BBEE certificate valid as at the date of tender closing must be attached to the bid submission or must be made available upon request within the specified period.

1.2 If the tendering entity does not undergo B-BBEE verification and qualifies as a B-BBEE Qualifying Small Enterprise (QSE) and Exempted Micro-Enterprises (EME)

- Table 3 must be completed by a Commissioner of Oaths to confirm the following amounts disclosed by the bidder in Table 2:
 - (ii) Total Enterprise Supplier Development Expenditure;
 - (iii) Total Socio Economic Development Expenditure;
 - (v) Total Skills Development Expenditure

***Note 2**

2.1 The tendering entity must attach with the bid submission or must be made available upon request within the specified period; the most recent (where applicable) audited financial statements to enable validation of the following amounts disclosed by the bidder in Table 2:

- (i) Total Turnover
- (iv) Total Expenditure
- (vi) Total Profit

2.2 Companies who are required to be audited by legislation, must submit audited financial statements, not older than 12 months with the bid submission or must be made available upon request within the specified period.

***Note 3**

Sworn affidavit to be deposed by the Commissioner of Oaths to the QSE or EME.

I, the undersigned,

Full Name and Surname (Authorised to represent the tenderer)	
Identity Number	

Hereby declare under oath as follows

3.1 The contents of this statement are to the best of my knowledge a true reflection of facts.

3.2 I am a Member/ Director/ Owner of the following enterprise and am duly authorised to act on its behalf.

Enterprise Name:	
Trading Name (If Applicable):	
Registration Number:	
Enterprise Physical Address:	
Type of Entity (CC, Pty (Ltd), Sole Prop etc):	
Nature of Business:	

3.3 I hereby declare under oath that based on the Financial Statements / Management Accounts and information available on the latest financial year end _____

3.3.1 The annual Total Revenue was less than R50 000 000.00 (Fifty Million Rand);

3.3.2 The following amounts disclosed in Table 2 are accurate, complete, consistent with the BBBEE Act (see Notes for Verification) and based on the Financial Statements / Management Accounts and information available on the latest financial year end

As per Table 2	Amount Declared (excluding VAT)
(ii) Total Enterprise Supplier Development Expenditure	
(iii) Total Socio Economic Development Expenditure	
(iv) Total Expenditure	
(v) Total Skills Development Expenditure	
(vi) Total Profit	
(vii) Employee Share Scheme Ownership %	

3.4 I know and understand the contents of this affidavit and I have no objection to take the prescribed oath and consider the oath binding on my conscience and on the owners of the enterprise which I represent I this matter.

3.5 The sworn affidavit will be valid for a period of 12 months from the date signed by the commissioner.

Commissioner of Oaths
Signature, Date and Stamp

Deponent Signature and Date

3.6 KEY NOTES OF DETERMINING VALIDITY OF SWORN AFFIDAVITS

<p>BBBEE Certificates/ Sworn Affidavits</p>	<p>Returnable for declaration requirement must be attached with the bid submission or must be made available upon request within the specified period</p> <ul style="list-style-type: none"> - Certified and Valid copy of BBBEE Certificate issued by a SANAS Accredited Verification Agent, or - Certified and Valid copy of Sworn Affidavit for either EME or QSE (see key notes below to determine Validity of a Sworn Affidavit); or - Valid copy of BBBEE Certificate issued by CIPC for EME's only <p>KEY NOTES OF DETERMINING VALIDITY OF SWORN AFFIDAVITS</p> <p>Tenderers submitting Sworn Affidavits must ensure that the affidavits meet the following key pointers to ensure their validity:</p> <p>(a) Name/s of deponent as they appear in the identity document and the identity number.</p> <p>(b) Designation of the deponent as the Director/ Member must be indicated in order to know that person is duly authorised to depose of an affidavit (mark the applicable option).</p> <p>(c) Name of enterprise as per enterprise registration documents issued by CIPC, where applicable, and enterprise business address.</p> <p>(d) Amounts as per Table 2 must be inserted (No blank spaces to be left).</p> <p>(e) Indicate total revenue for the year under review and whether it is based on audited financial statements or management accounts (mark the applicable option).</p>
--	---

(f) Financial year end as per the enterprise's registration documents, which was used to determine the total revenue (financial year end to be stipulated by day/ month/ year).

(g) Date deponent signed and date of Commissioner of Oath must be the same.

(The sworn affidavit must be signed in the presence of the Commissioner of Oath.

Furthermore the Commissioner must also sign ad stamp).

(h) Commissioner of Oath cannot be an employee or ex officio of the enterprise because, a person cannot by law, commission a sworn affidavit in which they have an interest.

If the relevant documentation/ information as stipulated in the enquiry is not submitted and/or does not meet the above requirements; tenderers will be disqualified.

Schedule F.5: Declaration of Interest – State Employees (MBD 4 amended)

1. No bid will be accepted from:
 - 1.1 persons in the service of the state¹, or
 - 1.2 if the person is not a natural person, of which any director, manager or principal shareholder or stakeholder is in the service of the state, or
 - 1.3 from persons, or entities of which any director, manager or principal shareholder or stakeholder, has been in the service of the City of Cape Town (CCT) during the previous twelve (12) months, or
 - 1.4 from an entity who has employed a former CCT employee who was at a level of T14 of higher at the time of leaving the CCT's employ and involved in any of the CCT's bid committees for the bid submitted, if:
 - 1.4.1 the CCT employee left the CCT's employment voluntarily, during the previous twelve (12) months;
 - 1.5 a person who was a CCT employee, or an entity that employs a CCT employee, if
 - 1.5.1 the CCT employee left the CCT's employment whilst under investigation for alleged misconduct, or
 - 1.5.2 was facing disciplinary action or potential disciplinary action by the CCT, or
 - 1.5.3 was involved in a dispute against the CCT during the previous thirty six (36) months.

2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the tenderer or their authorised representative declare their position in relation to the evaluating/adjudicating authority.

3. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.
 - 3.1 Full Name of tenderer or his or her representative: _____
 - 3.2 Identity Number: _____
 - 3.3 Position occupied in the Company (director, trustee, shareholder²): _____
 - 3.4 Company or Close Corporation Registration Number: _____
 - 3.5 Tax Reference Number: _____
 - 3.6 VAT Registration Number: _____
 - 3.7 The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.
 - 3.8 Are you presently in the service of the state? **YES / NO**
 - 3.8.1 If yes, furnish particulars: _____
 - 3.9 Have you been in the service of the state for the past twelve months? **YES / NO**
 - 3.9.1 If yes, furnish particulars: _____
 - 3.10 Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid? **YES / NO**
 - 3.10.1 If yes, furnish particulars: _____
 - 3.11 Are you, aware of any relationship (family, friend, other) between any other tenderer and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid? **YES / NO**
 - 3.11.1 If yes, furnish particulars: _____
 - 3.12 Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**
 - 3.12.1 If yes, furnish particulars: _____
 - 3.13 Are any spouse, child or parent of the company's directors, trustees, managers, principle

shareholders or stakeholders in service of the state? **YES / NO**

3.13.1 If yes, furnish particulars: _____

3.14 Do you or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract? **YES / NO**

3.14.1 If yes, furnish particulars: _____

3.15 Have you, or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company been in the service of the CCT in the past twelve months? **YES / NO**

3.15.1 If yes, furnish particulars: _____

3.16 Do you have any employees who was in the service of the CCT at a level of T14 or higher at the time they left the employ of the CCT, and who was involved in any of the CCT's bid committees for this bid? **YES / NO**

3.16.1 If yes, furnish particulars: _____

4. Full details of directors / trustees / members / shareholders

Full Name	Identity Number	State Employee Number

If the above table does not sufficient to provide the details of all directors / trustees / shareholders, please append full details to the tender submission.

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

Signature

Print name:

Date

On behalf of the tenderer (duly authorised)

¹MSCM Regulations: "in the service of the state" means to be –

(a) a member of –

- (i) any municipal council;**
- (ii) any provincial legislature; or**
- (iii) the national Assembly or the national Council of provinces;**

(b) a member of the board of directors of any municipal entity;

(c) an official of any municipality or municipal entity;

(d) an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);

(e) an executive member of the accounting authority of any national or provincial public entity; or

(f) an employee of Parliament or a provincial legislature.

² Shareholder" means a person who owns shares in the company and is actively involved in the management of the company or business and exercises control over the company.

Schedule F.6: Conflict of Interest Declaration

1. The tenderer shall declare whether it has any conflict of interest in the transaction for which the tender is submitted. **(Please mark with X)**

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

- 1.1 If yes, the tenderer is required to set out the particulars in the table below:

2. The tenderer shall declare whether it has directly or through a representative or intermediary promised, offered or granted:

2.1 Any inducement or reward to the CCT for or in connection with the award of this contract; or

2.2 Any reward, gift, favour or hospitality to any official or any other role player involved in the implementation of the supply chain management policy. **(Please mark with X)**

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

If yes, the tenderer is required to set out the particulars in the table below:

Should the tenderer be aware of any corrupt or fraudulent transactions relating to the procurement process of the CCT, please contact the following:

The CCT's anti-corruption hotline at 0800 32 31 30 (toll free)

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

Signature
Print name:
On behalf of the tenderer (duly authorised)

Date

Schedule F.7: Declaration of Tenderer's Past Supply Chain Management Practices (MBD 8)

Where the entity tendering is a partnership/joint venture/consortium, each party to the partnership/joint venture/consortium must sign a declaration in terms of the Municipal Finance Management Act, Act 56 Of 2003, and attach it to this schedule.

1 The tender offer of any tenderer may be rejected if that tenderer or any of its directors/members have:

- a) abused the municipality's / municipal entity's supply chain management system or committed any fraudulent 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) or Database of Restricted Suppliers.

2 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

Item	Question	Yes	No
2.1	<p>Is the tenderer or any of its directors/members 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"/>
2.1.1	If so, furnish particulars:		
2.2	<p>Is the tenderer or any of its directors/members 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) or Database of Restricted Suppliers?</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"/>
2.2.1	If so, furnish particulars:		
2.3	<p>Was the tenderer or any of its directors/members 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?</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2.3.1	If so, furnish particulars:		

Item	Question	Yes	No
2.4	Does the tenderer 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?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2.4.1	If so, furnish particulars:		
2.5	Was any contract between the tenderer 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?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2.5.1	If so, furnish particulars:		

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

 Signature
 Print name:
 On behalf of the tenderer (duly authorised)

 Date

Schedule F.8: Authorisation for the Deduction of Outstanding Amounts Owed to the CCT

To: THE CITY MANAGER, City of Cape Town

From: _____
(Name of tenderer)

RE: AUTHORISATION FOR THE DEDUCTION OF OUTSTANDING AMOUNTS OWED TO THE CCT

The tenderer:

- a) hereby acknowledges that according to SCM Regulation 38(1)(d)(i) the City Manager may reject the tender of the tenderer if any municipal rates and taxes or municipal service charges owed by the tenderer (or any of its directors/members/partners) to the CCT, or to any other municipality or municipal entity, are in arrears for more than 3 (three) months; and
- b) therefore hereby agrees and authorises the CCT to deduct the full amount outstanding by the Tenderer or any of its directors/members/partners from any payment due to the tenderer; and
- c) confirms the information as set out in the tables below for the purpose of giving effect to b) above;

Physical Business address(es) of the tenderer	Municipal Account number(s)	Inside the CCT municipal boundary (Yes/No)

If there is not enough space for all the names, please attach the information to **List of other documents attached by tenderer** schedule in the same format:

Name of Director / Member / Partner	Identity Number	Physical residential address of Director / Member / Partner	Municipal Account number(s)	Inside the CCT municipal boundary (Yes/No)

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

Signature
Print name:
On behalf of the tenderer (duly authorised)

Date

Schedule F.9: Certificate of Independent Tender Determination

I, the undersigned, in submitting this tender number: **15G/2026/27** and tender description: **SUPPLY, INSTALLATION, COMMISSIONING AND REPAIR OF 12 KV INDOOR SWITCHGEAR AND ANCILLARY EQUIPMENT FOR NEW INTERNAL ARC RATED INSTALLATIONS** in response to the tender invitation made by THE CCT, do hereby make the following statements, which I certify to be true and complete in every respect:

I certify, on behalf of: _____ (Name of tenderer) that:

1. I have read and I understand the contents of this Certificate;
2. I understand that this tender will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorised by the tenderer to sign this Certificate, and to submit this tender, on behalf of the tenderer;
4. Each person whose signature appears on this tender has been authorised by the tenderer to determine the terms of, and to sign, the tender on behalf of the tenderer;
5. For the purposes of this Certificate and this tender, I understand that the word 'competitor' shall include any individual or organisation other than the tenderer, whether or not affiliated with the tenderer, who:
 - (a) has been requested to submit a tender in response to this tender invitation;
 - (b) could potentially submit a tender in response to this tender invitation, based on their qualifications, abilities or experience; and
 - (c) provides the same goods and services as the tenderer and/or is in the same line of business as the tenderer.
6. The tenderer has arrived at this tender independently from and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium¹ will not be construed as collusive price quoting.
7. In particular, without limiting the generality of paragraphs 5 and 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 tender;
 - (e) the submission of a tender which does not meet the specifications and conditions of the tender; or
 - (f) tendering with the intention not to win the contract.
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 tender invitation relates.
9. The terms of this tender have not been and will not be disclosed by the tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening or of the awarding of the contract.
10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to tenders and contracts, tenders 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, Act 89 of 1998, and/o/r 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 10 (ten) years in terms of the Prevention and Combating of Corrupt Activities Act, Act 12 of 2004, or any other applicable legislation.

Signature: _____

Date: _____

Print name: _____

On behalf of the tenderer (duly authorised)

(¹ Consortium: 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.)

Schedule F.11: List of Other Documents Attached By Tenderer
--

The tenderer has attached to this schedule, the following additional documentation:

	Date of Document	Title of Document or Description (refer to clauses / schedules of this tender document where applicable)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		

Attach additional pages if more space is required.

Signature: _____ Date: _____

Print name: _____

On behalf of the tenderer (duly authorised)

Schedule F.12: Record of Addenda to Tender Documents

We confirm that the following communications received from the CCT before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer:

	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
Attach additional pages if more space is required.		

Signature: _____

Date: _____

Print name: _____

On behalf of the tenderer (duly authorised)

Schedule F.13: Information to Be Provided With the Tender
--

The following information shall be provided with the Tender:

- a) Schedule F.13 A: Schedule of Manufacturer Information
- b) Schedule F.13 B: Schedule of Technical Data
- c) Schedule F.13 C: Schedule of Tenderer Installations History, Track Record of Equipment & Key Personnel Information
- d) Schedule F.13 D: Details of Experience, Quality Systems and After Sales Facilities in South Africa
- e) Schedule F.13 E: Departures from the Requirements of the Specification
- f) Schedule F.13 F: OEM, Quality and Environmental Certification
- g) Schedule F.13 G: Schedule of Type Tests or SABS certification
- h) Schedule F.13 H: Details of Switchgear Disposal
- i) Schedule F.13 I: Drawing Summary Sheet
- j) Schedule F.13 J: Method Statement of Previous Installations
- k) Schedule F.13 K: Commencement Date and Dates of Readiness for Inspection, Testing and Delivery
- l) Schedule F.13 L: Schedule of Sub-Contractors
- m) Schedule F.13 M: Schedule of Construction Equipment
- n) The various returnable documents required for supporting information in the Returnable Schedules, all other specified Returnables as detailed in the "Particulars" section of the Technical Specification, as well as all other returnables requested throughout this tender document. This includes, but is not limited to, the following (all of which should be listed in Schedule F.13):

Kindly ensure that documentation and drawings are clearly marked on each document (and in the titles of electronic files) with the Tender's Item Number(s) (unless it is a generally applicable document) that pertain to that attached document so as to enable a proper understanding and context of these supporting documents. Documents in soft/electronic copy shall be of adequate resolution to be fully legible.

- i. Brochures and information of Manufacturers to support Schedule F.13 A & C
- ii. Brochures and Data sheets to support Schedule F.13 B
- iii. OEM & Tenderer Quality Assurance documentation to support Schedule F.13 D
- iv. OEM ISO 9001 certificates to support Schedule F.13 F
- v. OEM Authorisation letters (OEM to Tenderer) or (OEM to Supplier & Supplier to Tenderer) to support Schedule F.13 F
- vi. Type Test Certificates or SABS Certificates to support Schedule F.13 G
Kindly provide the Schedules of Type Tests for the equipment offered in soft (electronic) copy (and at adequate resolution), clearly referencing the type test compliance as required in terms of the relevant specifications and then referencing on such document(s) to which item numbers in the tender it is applicable.
- vii. BBBEE Certificates or Affidavits
- viii. Tax PIN certificate
- ix. Quotations from OEM(s) or Supplier to Tenderer
Kindly provide a copy(s) of the original pricelist(s) upon which your tender is based (as referenced), noting that these must be signed, dated and on the supplier's letterhead, addressed to your company with the CCT tender number referenced, and clearly detailing a single price that is referenced to the relevant tender item number(s) as quoted for.
- x. COIDA letter of Good Standing or proof of Compensation Insurance
- xi. Proof of Public liability and other insurance required

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

Schedule F.13 A: Schedule of Manufacturer Information

(To be completed by Tenderer)

ITEM A: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT			
Metalclad switch panels			
Circuit breakers			
Vacuum interrupters			
Earth switches			
Current transformers			
Electromagnetic voltage transformers			
Busbars			
Internal support insulators and bushings			
Cable Bushings			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM A: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Contd)			
Internal arc ducting			
Circuit breaker mechanisms			
Motors for circuit breaker equipment			
Primary Test Trucks			
VDS and Electrical Phasing Devices			
Capacitive Dividers			
Canon Sockets			
Anti-condensation panel heaters			
Secondary jumpers			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

TEM A: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Contd)			
Circuit breaker closing coils			
Arc detection fibres			
Arc detection fibre fittings			
Multicore Cables			
Data Cable			
Earthing conductors			
Cable racks and cable ladders			
Other (Specify):			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM B: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT			
Metalclad switch panels			
Circuit breakers			
Vacuum interrupters			
Earth switches			
Current transformers			
Electromagnetic voltage transformers			
Busbars			
Internal support insulators and bushings			
Cable Bushings			
Internal arc ducting			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM B: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Metalclad switch panels			
Circuit breakers			
Vacuum interrupters			
Earth switches			
Current transformers			
Electromagnetic voltage transformers			
Busbars			
Internal support insulators and bushings			
Cable Bushings			
Internal arc ducting			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM B: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Circuit breaker mechanisms			
Motors for circuit breaker equipment			
Primary Test Trucks			
VDS and Electrical Phasing Devices			
Capacitive Dividers			
Canon Sockets			
Anti-condensation panel heaters			
Secondary jumpers			
Circuit breaker closing coils			
Arc detection fibres			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM B: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Arc detection fibre fittings			
Multicore Cables			
Data Cable			
Earthing conductors			
Cable racks and cable ladders			
Other (Specify):			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM C: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT			
Metalclad switch panels			
Circuit breakers			
Vacuum interrupters			
Earth switches			
Current transformers			
Electromagnetic voltage transformers			
Busbars			
Internal support insulators and bushings			
Cable Bushings			
Internal arc ducting			
SF ₆ gas density/pressure monitoring devices			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM C: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Metalclad switch panels			
Circuit breakers			
Vacuum interrupters			
Earth switches			
Current transformers			
Electromagnetic voltage transformers			
Busbars			
Internal support insulators and bushings			
Cable Bushings			
Internal arc ducting			
SF ₆ gas density/pressure monitoring devices			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM C: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Circuit breaker mechanisms			
Motors for circuit breaker equipment			
VDS and Electrical Phasing Devices			
Capacitive Dividers			
Canon Sockets			
Anti-condensation panel heaters			
Secondary jumpers			
Circuit breaker closing coils			
Arc detection fibres			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM C: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Arc detection fibre fittings			
Multicore Cables			
Data Cable			
Earthing conductors			
Cable racks and cable ladders			
Other (Specify):			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM D: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT			
Metalclad switch panels			
Circuit breakers			
Vacuum interrupters			
Earth switches			
Current transformers			
Electromagnetic voltage transformers			
Busbars			
Internal support insulators and bushings			
Cable Bushings			
Internal arc ducting			
SF ₆ gas density/pressure monitoring devices			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM D: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Metalclad switch panels			
Circuit breakers			
Vacuum interrupters			
Earth switches			
Current transformers			
Electromagnetic voltage transformers			
Busbars			
Internal support insulators and bushings			
Cable Bushings			
Internal arc ducting			
SF ₆ gas density/pressure monitoring devices			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM D: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Circuit breaker mechanisms			
Motors for circuit breaker equipment			
VDS and Electrical Phasing Devices			
Capacitive Dividers			
Canon Sockets			
Anti-condensation panel heaters			
Secondary jumpers			
Circuit breaker closing coils			
Arc detection fibres			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM D: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Arc detection fibre fittings			
Multicore Cables			
Data Cable			
Earthing conductors			
Cable racks and cable ladders			
Other (Specify):			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM E: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT			
Metalclad switch panels			
Circuit breakers			
Vacuum interrupters			
Earth switches			
Current transformers			
Electromagnetic voltage transformers			
Busbars			
Internal support insulators and bushings			
Cable Bushings			
Internal arc ducting			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM E: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Metalclad switch panels			
Circuit breakers			
Vacuum interrupters			
Earth switches			
Current transformers			
Electromagnetic voltage transformers			
Busbars			
Internal support insulators and bushings			
Cable Bushings			
Internal arc ducting			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM E: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Circuit breaker mechanisms			
Motors for circuit breaker equipment			
VDS and Electrical Phasing Devices			
Capacitive Dividers			
Canon Sockets			
Anti-condensation panel heaters			
Secondary jumpers			
Circuit breaker closing coils			
Arc detection fibres			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ITEM E: MANUFACTURERS AND PLACES OF MANUFACTURE, TESTING AND INSPECTION (Cont'd)

Description	Manufacturer	Place of Manufacture	Place of Factory Acceptance Test
MAIN EQUIPMENT (Cont'd)			
Arc detection fibre fittings			
Multicore Cables			
Data Cable			
Earthing conductors			
Cable racks and cable ladders			
Other (Specify):			

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

Schedule F.13 B: Schedule of Technical Data
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(To be completed by Tenderer)

SWITCHGEAR

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
	EQUIPMENT OFFERED						
1.1	Manufacturer	-					
1.2	Equipment Type	-					
1.3	Model / Designation	-					
2	SWITCH PANELS						
2.1	Switch panel model/type designation	-					
2.2	Switch panel primary insulation type	-	AIS	AIS	GIS	GIS	SIS
2.3	Busbar arrangement	Single					
2.4	Withdrawable / non-withdrawable	CB withdrawable					
		CB Fixed Pattern					
2.5	Rated voltage	kV	12				
2.6	Rated frequency	Hz	50				

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)**SWITCHGEAR (Cont'd)**

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
2.7	Rated normal current:						
2.7.1	Busbars – All panels, except where otherwise specified A	1250					
2.7.2	Busbars – Main substation panels extensions, where specified (Items A1.11 to A1.15) A	2500					
2.7.3	Circuit breakers and switch panels:						
2.7.3.1	Distribution Feeder and Feeder Metering Panels A	630					
2.7.3.2	Distribution Bus-section Panels A	1250					
2.7.3.3	Main Substation Feeder Panels A	630					
2.7.3.4	Main Substation Incoming and Bus-section Panels, except where otherwise specified A	1250					
2.7.3.5	Main Substation Incoming and Bus-section Panels, where specified (Items A1.12 to A 1.13) A	2500					
2.8	Cross-section area of busbars: 1250 A mm ²	-					
2.9	Cross-section area of busbars: 2500 A mm ²	-					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)**SWITCHGEAR (Cont'd)**

Item No.	Description	Requirements	Particulars of Equipment Offered					
			Item A	Item B	Item C	Item D	Item E	
2.10	Basic insulation level:							
2.10.1	Rated short duration power frequency withstand (1 min) kV	28						
2.10.2	Peak lighting impulse withstand voltage kV	95						
2.11	Short time and peak current withstand:							
2.11.1	Rated short-circuit withstand of switchgear kA for 3 s	25						
2.11.2	Rated peak withstand current kA	62,5						
2.11.3	Rated making capacity of earthing switch kA	62,5						
2.12	Internal arc withstand classification:							
2.12.1	Rated short circuit for internal arc withstand kA	25						
2.12.2	Internal arc classification withstand accessibility and duration	AFLR 1 s						
2.12.3	Maximum available substation room height m	-	3,2	3,2	2,8	2,8	2,8	2,8
2.12.4	Required minimum switch room height (for tendered Switchgear) m	-						

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
2.13	Internal Arc Pressure Relief Facilities:	Enclosed overpressure relief ducting plenum Exhaust ducts out of switchroom - -					
2.13.1	Hot gas & overpressure relief type						
2.13.2	Exhausting of internal arc hot gasses and overpressure						
2.13.3	No of exhaust ducts per switchboard (Minimum)						
2.13.4	No of switch panels per exhaust duct (Maximum)						
2.13.5	Length of exhaust duct beyond rear of switchgear (i.e. Standard clearance from rear of switchgear to switch room back wall) m		1,0				
2.14	Switch panel width: Distribution AIS panels mm	$550 \leq \text{width} \leq 650$					
2.15	Switch panel width: Main Substation 2500A Incomer and Bus Section AIS panels mm						
2.16	Switch panel width: Distribution GIS panels mm	width ≤ 650					
2.17	Switch panel width: Distribution SIS panels mm	width ≤ 650					
2.18	Switch panel height: Distribution AIS panels mm	Refer Spec, Section 5.4					
2.19	Partition class	PM					
2.20	Loss of service continuity category	LSC2B					
		LSC2					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

SCHEDULE F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
2.21	Compartment access categories:						
2.21.1	Busbar compartment	Tool-based					
2.21.2	Cable compartment	Interlock & Tool-based					
2.21.3	CT compartment	Tool-based					
2.21.4	VT compartment	Interlock & Tool-based					
2.21.5	CB compartment – AIS Switch panels	Procedure-based with interlocking					
2.21.6	CB compartment – GIS (Item D) Switch panels	Tool-based accessible (For emergency Repairs only)					
2.21.7	CB compartment – SIS (Item E) Switch panels	Tool-based accessible (For emergency Repairs only)					
2.22	Insulation:						
2.22.1	Primary circuit in air insulated compartments fully covered with solid insulation material (No bare conductors/components?)	Yes	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
2.22.2	Type of switch panel primary circuit insulation	-					
2.22.3	Type of switch panel primary circuit connection insulation	-					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

SCHEDULE F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
2.23	Busbars						
2.23.1	AIS Switchgear busbars:						
2.23.1.1	Type of busbar insulation	Solid insulation to full service voltage					
2.23.1.2	Type of busbar connection insulation	Compound filled insulating shrouds					
2.23.2	GIS Switchgear busbars:						
2.23.2.1	Busbar type	External / Internal					
2.23.2.2	Type of busbar insulation	SF ₆ / Screened solid insulation Item D					
2.23.2.3	Type of busbar interconnection	Outer cone external busbar adapters / Inner cone busbar couplings					
2.23.3	SIS Switchgear busbars:						
2.23.3.1	Busbar type	External / Internal					
2.23.3.2	Type of busbar insulation	Screened solid insulation					
2.23.3.3	Type of busbar interconnection	Outer cone external busbar adapters / Inner cone busbar couplings					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
2.24	Degree of protection for indoor equipment:						
2.24.1	AIS Switchgear MV compartments:						
2.24.1.1	Normal	IP4X					
2.24.1.2	Enhanced for non-fully insulated systems	IP5X					
2.24.2	AIS Switchgear LV compartments	IP2X					
2.24.3	AIS Switchgear Exhaust Ducts, Outdoor	IP55					
2.24.4	GIS Switchgear gas insulated (Item D) MV compartments:	IP65					
2.24.5	GIS Switchgear accessible (Item D) MV compartments:	IP4X					
2.24.6	GIS Switchgear (Item D) LV compartments:	IP2X					
2.24.7	GIS Switchgear (Item D) Exhaust Ducts, Outdoor	IP55					
2.24.8	SIS Switchgear gas insulated (Item E) MV compartments:	IP65					
2.24.9	SIS Switchgear accessible (Item E) MV compartments:	IP4X					
2.24.10	SIS Switchgear (Item E) LV compartments:	IP2X					
2.24.11	SIS Switchgear (Item E) Exhaust Ducts, Outdoor	IP55					
2.25	Minimum specific creepage distance of switch panel (for non-fully insulated systems) mm/kV	25					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered					
			Item A	Item B	Item C	Item D	Item E	
2.26	Circuit breaker racking:							
2.26.1	Racking behind closed doors	Yes	YES/NO*	YES/NO*				
2.26.2	Is switch panel internal arc rating maintained during racking and in racked out position?	Yes	YES/NO*	YES/NO*				
2.26.3	Type of racking employed	Manual						
2.26.4	Racking motor rating (if provided additionally) A	-						
2.26.5	Racking motor rating (if provided additionally) V _{ac}	230						
2.27	Anti-condensation heaters:							
2.27.1	Manufacturer	-						
2.27.2	Make	-						
2.27.3	Rating (each) W	-						
2.27.4	Compartments panel heaters installed in:							
2.27.4.1	Busbar	-	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
2.27.4.2	Cable Termination	-	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
2.27.4.3	Circuit Breaker	-	YES/NO*	YES/NO*				
2.27.4.4	Current Transformer	-	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
2.28	Cable termination compartment:						
2.28.1	Segregated cable termination compartment	Required	YES/NO*	YES/NO*			
2.28.2	Provision for cable connections	Flag (Type 2) / Type C Bushings					
2.28.3	Minimum cable compartment height (Gland plate to connection centres):						
2.28.3.1	Type C bushings mm	650					
2.28.3.2	Cable connection busbars (Flags) mm	650					
2.28.3.3	Minimum clearance phase to earth mm	To SANS 876					
2.28.3.4	Minimum clearance between phases mm	To SANS 876					
2.29	Switch panel primary isolating contact orifice bushings:						
2.29.1	Manufacturer	-					
2.29.2	Type or Designation	-					
2.29.3	Material	-					
2.29.4	Routine PD tested in accordance with SANS 60270	Yes	YES/NO*	YES/NO*			

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
2.30	Switch panel bulkhead bushings:						
2.30.1	Manufacturer	-					
2.30.2	Type or Designation	-					
2.30.3	Material	-					
2.30.4	Routine pd tested in accordance with SANS 60270	Yes	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
2.31	Switch panel support insulators:						
2.31.1	Manufacturer	-					
2.31.2	Type or Designation	-					
2.31.3	Material	-					
2.31.4	Routine pd tested in accordance with SANS 60270	Yes	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
2.32	Cable termination Type C bushings (Where applicable):						
2.32.1	Manufacturer	-					
2.32.2	Type or Designation	-					
2.32.3	Material	-					
2.32.4	Routine pd tested in accordance with SANS 60270	Yes	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
2.33	Minimum factors of safety for Switchgear						
2.33.1	Busbars or other connections based on elastic limit	2,5					
2.33.2	Complete insulators ed on electro-mechanical test	2,5					
2.33.3	Insulator metal fittings based on elastic limit	2,5					
2.34	Finish of equipment						
2.34.1	All equipment	SANS 1091 G29 Light Grey or RAL7032					
2.34.2	Control and relay panels interior	White					
2.35	Method of levelling and fixing switchgear on switch room floor	Pre-installed steel mounting frame					
3	GIS Switch Panels						
3.1	SF ₆ Gas insulated compartments:						
3.1.1	Circuit breaker compartment	Yes			YES/NO*	YES/NO*	YES/NO*
3.1.2	Busbar compartment	-			YES/NO*	YES/NO*	YES/NO*

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
3.2	SF ₆ gas pressure & volume:						
3.2.1	Total volume of SF ₆ gas required, per compartment m ³	-					
3.2.2	Nominal filling gas pressure, at 20°C kPa	-					
3.2.3	Minimum gas pressure for operation, at 20°C kPa	-					
3.2.4	Minimum gas pressure for insulation, at 20°C kPa	-					
3.2.5	Gas pressure alarm level, at 20°C kPa	-					
3.2.6	Maximum leakage rate for any gas section (The leakage rate shall be the mass of gas lost per annum expressed as a percentage of the mass of gas in the section)	< 0,1% pa					
3.3	Type of enclosure for SF ₆ gas insulated compartments	Hermetically sealed stainless steel encapsulated					
3.4	Type of pressure relief device on SF ₆ gas insulated compartments	Diaphragm or plug venting to atmosphere					
3.5	Pressure relief Opening / rupturing pressure kPa	-					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
3.6	SF ₆ gas pressure & volume:						
3.6.1	Manufacturer	-					
3.6.2	Type	-					
3.6.3	Temperature Range °C	-					
3.6.4	Density Range kg/m ³	-					
3.6.5	Accuracy limit at 20 °C						
3.6.6	Are SF ₆ gas insulated compartments fully sectionalised	Yes			YES/NO*	YES/NO*	
4	CIRCUIT BREAKERS						
4.1	Circuit breaker manufacturer/model/type designation	-					
4.2	Interrupting medium	Vacuum					
4.3	Number of poles	3					
4.4	Class	Indoor					
4.5	Mechanical endurance class	M2					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
4.6	Electrical endurance class	E2					
4.7	Capacitive switching class	C2					
4.8	Normal operating sequence	O-3 min-CO-3 min-CO					
4.9	Circuit breaker fully insulated (i.e. Encapsulated)	Yes	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
4.10	Rated voltage kV	12					
4.11	Rated insulation level (peak) kV	95					
4.12	Rated frequency Hz	50					
4.13	Rated normal current:						
4.13.1	Feeder and Feeder Metering Panels A	630					
4.13.2	Bus-section Panels and Main substation Incoming Panels, except where otherwise specified A	1250					
4.13.3	Main Substation Bus-section and Incoming Panels, where specified (Items A1.12 to A 1.13) A	2500					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
4.14	Fault ratings:						
4.14.1	Rated short circuit breaking current kA	25					
4.14.2	Rated duration of short circuit s	3					
4.14.3	Symmetrical breaking capacity 3 ph/1 ph kA for 3s	25					
4.14.4	Asymmetrical breaking capacity kA	To SANS 62271-100					
4.14.5	Asymmetrical crest factor	2,5					
4.14.6	Rated short circuit making current kA _p	62,5					
4.14.7	Rated cable-charging breaking current A	25					
4.14.8	Circuit breaker rated ΣI^2t	-					
4.15	Rated maintenance free operations (normal service life) of vacuum interrupter at full service rating	20 000					
4.16	Rated no of operations of interrupter at rated short circuit breaking current	50					
4.17	Maximum chopping current A	5					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
4.18	Transient recovery voltage (TRV):						
4.18.1	First pole to clear factor	1,5					
4.18.2	Rated TRV(peak) kV	SANS 62271-100					
4.19	Electro-mechanical performance:						
4.19.1	Max opening time: Main contacts at full load current ms	-					
4.19.2	Max opening time: Main contacts at 25 kA ms	-					
4.19.3	Max opening time: Auxiliary contacts ms	-					
4.19.4	Maximum total break time at 25 kA i.e. trip coil initiation to final arc extinction ms	<75					
4.19.5	Maximum time interval between opening of first and last phase of three phase circuit breaker ms	3					
4.19.6	Maximum closing time: Main contacts ms	-					
4.19.7	Maximum closing time: Auxiliary contacts ms	-					
4.19.8	Maximum time interval between closure of first and last phase of three phase circuit breaker ms	3					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
4.19.9	Maximum temperature rise under normal load conditions °C	To BS 5311					
4.19.10	Voltage drop across terminals of a pole at normal current mV	15					
4.20	Operating mechanism : circuit breaker:						
4.20.1	Method of operation	Stored Energy					
4.20.2	Is the circuit breaker trip free or fixed trip?	Trip free					
4.20.3	Type of spring charging employed	Motorised with Manual back-up					
4.20.4	Spring charge motor rating A	-					
4.20.5	Spring charge motor rating V _{dc}	30 / 110 / Both					
4.20.6	Is manual spring charging behind closed doors?	-	YES/NO*	YES/NO*			
4.20.7	Is switch panel internal arc rating maintained during manual spring charging operation?	Yes	YES/NO*	YES/NO*			
4.20.8	Rated supply voltage of closing mechanism V _{dc}	30					
4.20.9	Rated supply voltage of closing mechanism V _{dc}	110					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
4.20.10	Maximum power drain of closing mechanism to close circuit breaker, at rated supply voltage W	-					
4.20.11	Rated supply voltage of opening mechanism V_{dc}	30					
4.20.12	Rated supply voltage of opening mechanism V_{dc}	110					
4.20.13	Maximum power drain of tripping mechanism to open circuit breaker, at rated supply voltage W	-					
4.21	Number and type of spare auxiliary switches %	Minimum 20%					
4.22	Current required at rated supply voltage by other auxiliaries A	-					
4.23	Construction features: circuit breakers:						
4.23.1	Type of main contacts	-					
4.23.2	Type of arcing-contacts and/or arc control device	-					
4.23.3	Mass of complete circuit breakerkg	-					
4.23.4	Number of breaks in series per pole	One					
4.23.5	Total length of break per pole mm	-					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
4.23.6	Minimum clearances and creepages in air:						
4.23.6.1	Between poles mm	To SANS 876					
4.23.6.2	To earth mm	To SANS 876					
4.23.7	Minimum clearance in interrupting medium:						
4.23.7.1	Between phases mm	-					
4.23.7.2	Between live parts and earth mm	-					
5	THREE POSITION DISCONNECTORS / EARTH SWITCHES						
5.1	Manufacturer/model/type designation						
5.2	Method of operation	Motor-operated and hand					
5.3	On / Off load operation	Off					
5.4	Disconnecter / Earth switch Class	M2					
5.5	Earth switch Class	E0					
5.6	Rated current	Same as circuit or busbar rating					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
5.7	Disconnecter / Earth switch rated short time current (Duration 3 sec) kA	25					
5.8	Disconnecter / Earth switch rated peak withstand current kA	62,5					
5.9	Max capacitive current that can be interrupted by disconnecter A	-					
5.10	Total time from initiation of opening operation until disconnecter fully open s	-					
5.11	Total time from initiation of earthing operation (from open position) until earth switch fully closed s						
5.12	Rated supply voltage of mechanism motor V _{dc}	30 or 110v					
5.13	Rated power of mechanism motor W	-					
5.14	Spare Auxiliary switches required:						
5.14.1	Disconnecter – N/O	2					
5.14.2	Disconnecter – N/C	2					
5.14.3	Earth Switch – N/O	2					
5.14.4	Earth Switch – N/C	2					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered					
			Item A	Item B	Item C	Item D	Item E	
6	CURRENT TRANSFORMERS							
6.1	Manufacturer and type designation	-						
6.2	Type of current transformer	-						
6.3	Current transformer insulation	-						
6.4	Type of primary winding (single turn or cascade)	-						
6.5	Rated primary current:							
6.5.1	Feeder and Feeder Metering Panels A	400						
6.5.2	Main Substation 1250 A Incomer Panels A	1250						
6.5.3	Main Substation 2500 A Incomer Panels A	2500						
6.5.4	Bus-section panels (1250 A) A	1250						
6.5.5	Bus-section panels (2500 A) A	2500						
6.6	Power frequency withstand voltage dry kV _{rms}	28						
6.7	Basic insulation level kV _p	95						
6.8	Rated short-time thermal current kA	25						
6.9	Rated continuous thermal current (% primary rating) %	120						
6.10	Voltage level for routine partial discharge test kV	As per SANS 61869-2						

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
6.11	Maximum permissible discharge level	pC As per SANS 61869-2					
6.12	Details of insulation materials	-					
6.13	Current transformer ratios and classes:						
6.13.1	AIS Feeder Panels:						
6.13.1.1	Solkor Rf protection	400/300/5 Class PX					
6.13.1.2	Overcurrent and earth fault protection and ammeter indication	400/5, 10 VA, Class 5P10					
6.13.2	GIS Feeder Panels:						
6.13.2.1	Solkor Rf protection	400/300/1 Class PX					
6.13.2.2	Overcurrent and earth fault protection and ammeter indication	400/1, 10 VA, Class 5P10					
6.13.3	SIS Feeder Panels:						
6.13.3.1	Solkor Rf protection	400/300/1 Class PX					
6.13.3.2	Overcurrent and earth fault protection and ammeter indication	400/1, 10 VA, Class 5P10					
6.13.4	AIS Feeder metering panels:						
6.13.4.1	Overcurrent and earth fault protection and ammeter indication	400/5, 10 VA, Class 5P10					
6.13.4.2	Metering	400/200/1, 10 VA, Class 0,5S ext 120% FS 10 Extended Burden					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
6.13.5	GIS Feeder metering panels:						
6.13.5.1	Overcurrent and earth fault protection and ammeter indication	400/1, 10 VA, Class 5P10					
6.13.5.2	Metering	400/200/1, 10 VA, Class 0,5S ext 120% FS 10 Extended Burden					
6.13.6	SIS Feeder metering panels:						
6.13.6.1	Overcurrent and earth fault protection and ammeter indication	400/1, 10 VA, Class 5P10					
6.13.6.2	Metering	400/200/1, 10 VA, Class 0,5S ext 120% FS 10 Extended Burden					
6.13.6.3	Design metering CT lead burden (measured at LV compt terminal block)	-					
6.13.7	AIS Bus section panels (1250 A) (Where Specified):						
6.13.7.1	Overcurrent and earth fault protection and ammeter indication	1250/5, 10 VA, Class 5P10					
6.13.8	GIS Bus section panels (1250 A) (Where Specified):						
6.13.8.1	Overcurrent and earth fault protection and ammeter indication	1250/1, 10 VA, Class 5P10					
6.13.9	SIS Bus section panels (1250 A) (Where Specified):						
6.13.9.1	Overcurrent and earth fault protection and ammeter indication	1250/1, 10 VA, Class 5P10					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
6.13.10	Main Substation 1250 A Incomer panels:						
6.13.10.1	Transformer differential protection	1250/1 Class PX					
6.13.10.2	Overcurrent and earth fault protection	1250/1 Class 5P10 10 VA					
6.13.10.3	Metering	1250/1 10 VA Class 0,2S, Ext 120% Security Factor 10					
6.13.11	Main Substation 2500 A Incomer panels:						
6.13.11.1	Transformer differential protection	2500/1 Class PX					
6.13.11.2	Overcurrent and earth fault protection	2500/1 Class 5P10 10 VA					
6.13.11.3	Metering	2500/1 10 VA Class 0,2S, Ext 120% Security Factor 10					
6.14	Class PX current transformers (Main Substation Panels):						
6.14.1	Minimum knee point voltage at 50 mA maximum exciting current: V	135					
6.14.2	Maximum exciting current at knee point voltage mA	-					
6.14.3	Maximum secondary resistance at 75°C Ω	To suit Solkor Rf					
6.14.4	Turns ratio error %	0,25					
6.14.5	Turns compensation	None					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
6.15	Class PX current transformers (Distribution panels):						
6.15.1	Minimum knee point voltage at 50 mA maximum exciting current (at 400/5 or 400/1 ratio): V	135					
6.15.2	Minimum knee point voltage at 50 mA maximum exciting current (at 300/5 or 300/1 ratio): V	140					
6.15.3	Maximum exciting current at knee point voltage mA	-					
6.15.4	Maximum secondary resistance at 75°C Ω	To suit Solkor Rf					
6.15.5	Turns ratio error %	0,25					
6.15.6	Turns compensation	None					
7	VOLTAGE TRANSFORMERS						
7.1	Maker's type number or identification	-					
7.2	Type of voltage transformer (electro-magnetic, capacitive cascade etc)	Electromagnetic					
7.3	Voltage transformer configuration	3Φ UVT / 3 x 1Φ EVT					
7.4	Type of insulation	Resin encapsulated					
7.5	Voltage transformers configuration:						
7.5.1	AIS Switchgear	Single common withdrawable carriage, feeder-connected					
7.5.2	GIS Switchgear	Plug-in single phase, feeder-connected					
7.5.3	SIS Switchgear	Plug-in single phase, feeder-connected					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered					
			Item A	Item B	Item C	Item D	Item E	
7.6	Ratio:							
7.6.1	Three phase unearthed voltage transformer V	11000:110						
7.6.2	Three single phase voltage transformers on common carriage / single phase voltage transformers V	$\frac{11000}{\sqrt{3}} : \frac{110}{\sqrt{3}}$						
7.7	Rated output VA	15						
7.8	Accuracy class	0,5 / 0,2, as specified						
7.9	Voltage factor	1,2 Continuous						
7.10	Discharge free	Yes	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
7.11	Lightning impulse withstand voltage kV _p	95						
7.12	Power frequency withstand voltage kV _{rms}	28						
7.13	Ferro-resonance:							
7.13.1	Method of suppressing ferro-resonance phenomena	-						
7.13.2	Tertiary open delta winding provided	Where required	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
7.13.3	Transformer protector device provided	Where required	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
7.13.4	Transformer protector make / model	-						

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
7.14	VT primary fuse make	-					
7.15	VT primary fuse rating	A	-				
7.16	VT secondary fuse make	-					
7.17	VT secondary fuse rating	A	-				
7.18	Total mass of voltage transformer	kg	-				
7.19	Voltage level for routine partial discharge test	kV	As per SANS 61869-3				
7.20	Maximum permissible discharge level	pC	As per SANS 61869-3				
7.21	Guarantee period	years	5				
8	CAPACITIVE VOLTAGE SENSING						
8.1	Method of voltage sensing	Capacitive Dividers					
8.2	Compliance with SANS 61243-5	Yes	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
8.3	Routine partial discharge testing in accordance with SANS 60270 – All items	Yes	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*
8.4	VDS Indication and Phasing Unit:						
8.4.1	Make	-					
8.4.2	Model	-					
8.4.3	Compliance with SANS 61243-5	Yes	YES/NO*	YES/NO*	YES/NO*	YES/NO*	YES/NO*

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
9	ASSOCIATED EQUIPMENT						
9.1	Maximum Demand Indicating Ammeters						
9.1.1	Make	-					
9.1.2	Model	-					
9.1.3	Size mm	100 x 100					
9.2	Voltmeters						
9.2.1	Make	-					
9.2.2	Model	-					
9.2.3	Indication range kV	7 to 13,5					
9.2.4	Size mm	150 x 150					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

F. 13 (B): SCHEDULE OF TECHNICAL DATA (Cont'd)

Item No.	Description	Requirements	Particulars of Equipment Offered				
			Item A	Item B	Item C	Item D	Item E
10	AUXILIARY SUPPLIES						
10.1	Auxiliary dc supply (AIS Distribution substations) V_{dc}	30					
10.2	Auxiliary dc supply (GIS Distribution substations) V_{dc}	110					
10.3	Auxiliary dc supply (SIS Distribution substations) V_{dc}	110					
10.4	Auxiliary dc supply (Main substations) V_{dc}	110					
10.5	Closing / tripping supply (AIS Distribution substations) V_{dc}	30					
10.6	Closing / tripping supply (GIS Distribution substations) V_{dc}	110					
10.7	Closing / tripping supply (SIS Distribution substations) V_{dc}	110					
10.8	Closing / tripping supply (Main substations) V_{dc}	110					
10.9	Intertripping supply (Main substations) V_{dc}	60					
10.10	Supervisory supply (Distribution substations) V_{dc}	24					
10.11	Supervisory supply (Main substations) V_{dc}	48					
10.12	Spring Charge Motors V_{dc}	30 / 110 \pm 10%					
10.13	Panel heaters V_{ac}	230 \pm 10%					
10.14	Nominal ac supply V_{ac}	230 \pm 10%					

(*Delete whichever is not applicable)

TENDERER'S SIGNATURE: _____

DATE: _____

Schedule F.13 C: Schedule of Tenderer Installations History, Track Record of Equipment & Key Personnel Information

SCHEDULE OF WORK EXPERIENCE OF TENDERER

The tenderer shall insert in the spaces provided below a list of similar completed contracts awarded to it and to each major sub-contractor, and those currently being undertaken. Attach additional pages if more space is required.

ITEM A (To be completed by Tenderers tendering for Item A)

Demonstrated Experience of Tenderer (Note: Refer to Specification - Section 20: Key Personnel & Competency)

Description	Quantity
Number of substation installations of equivalent scope / complexity completed by Tenderer or their sub-contractor during the past ten years comprising the MV AIS switchgear offered in this tender for the particular Item or equivalent MV AIS switchgear to that offered in this tender for the particular Item.	

TENDERER

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF WORK	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

EACH SUB-CONTRACTOR (ITEM A)

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF WORK	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:

Item A: Track Record of Equipment(Note: Refer to Specification - Section 20: Key Personnel & Competency)

MANUFACTURER NAME:

Description	Quantity
Total quantity manufactured, installed and commissioned to date (worldwide) of the MV AIS switch-panel type (incl design variants) offered with this tender.	
Total quantity manufactured, installed and commissioned to date (worldwide) of the MV vacuum interrupters offered with this tender (including those included above).	
Total quantity of substation installations in RSA of the MV AIS switch-panel type offered with this tender.	

MANUFACTURER (Past ten years)

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF PROJECT	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

SIGNED ON BEHALF OF TENDERER:

ITEM A: KEY PERSONNEL (To be completed by Tenderers tendering for Item A)

Note: Refer to Specification Section 20: Key Personnel & Competency

CONTRACTOR'S REPRESENTATIVE	NAME:			
	NQF LEVEL			
Number of Projects managed by Contractor's Representative in past ten years of the same or equivalent nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
Contractor's Representative has verified training and high level of experience in technical and commercial aspects of the project? (Evidence to be attached):			Yes / No:	
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

ITEM A: KEY PERSONNEL (Cont'd)

Note: Refer to Specification Section 20: Key Personnel & Competency

SITE AGENT	NAME: NQF LEVEL.....			
Number of Projects undertaken by the Site Agent in the past ten years in the installation and / or retrofitting of MV switchgear that are of a similar nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

Note: Refer to Specification Section 20: Key Personnel & Competency

FOREMAN	NAME: NQF LEVEL.....			
Number of Projects completed by Foreman in past 10 years in installation, retrofitting of MV AIS switchgear of the same or equivalent type offered and with scope equivalent to the Scope of Works (Quantity to right; Detail list below and attached):				
Has Foreman completed and qualified in appropriate formal training and is accredited by the switchgear OEM and fully competent in the particular switchgear installation and retrofit work envisaged in accordance with this specification? (Evidence to be attached):			Yes / No:	
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

ITEM A: KEY PERSONNEL (Cont'd)

Note: Refer to Specification Section 20: Key Personnel & Competency

COMMISSIONING ENGINEER	NAME: NQF LEVEL			
Number of Projects in past 10 years in which the Commissioning Engineer has fulfilled and executed all the commissioning duties and that were for MV or HV switchgear installation and retrofit projects of the same or equivalent nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

Note: Refer to Specification Section 20: Key Personnel & Competency

INSTALLATION TEAM MEMBERS

Does Installation Team comprise sufficient staff to carry out installation of a full switchboard of nine to fifteen switchpanels at a substation?:				Yes / No:	
Have all installation team members as a minimum completed and qualified in appropriate formal in-house training by the switchgear OEM and are all fully competent in the switchgear installation and retrofit work envisaged in accordance with this specification? (Evidence to be attached):				Yes / No:	
Have all installation team members over the past ten years completed at least 10 (ten) projects in the installation and / or retrofitting of MV AIS switchgear of the same or equivalent type to that offered? (Evidence to be attached):				Yes / No:	
Name	NQF Level	CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	YEAR COMPLETED
1					
2					
3					
4					
5					

6					
7					
8					

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF THE TENDERER:

ITEM B (To be completed by Tenderers tendering for Item B)

Demonstrated Experience of Tenderer (Note: Refer to Specification Section 20: Key Personnel & Competency)

Description	Quantity
Number of substation installations of equivalent scope / complexity completed by Tenderer or their sub-contractor during the past ten years comprising the MV AIS switchgear offered in this tender for the particular Item or equivalent MV AIS switchgear to that offered in this tender for the particular Item.	

TENDERER

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF WORK	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

EACH SUB-CONTRACTOR (ITEM B)

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF WORK	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:

Item B: Track Record of Equipment (Note: Refer to Specification Section 20: Key Personnel & Competency)

MANUFACTURER NAME:

Description	Quantity
Total quantity manufactured, installed and commissioned to date (worldwide) of the MV AIS switch-panel type (incl design variants) offered with this tender.	
Total quantity manufactured, installed and commissioned to date (worldwide) of the MV vacuum interrupters offered with this tender (including those included above).	
Total quantity of substation installations in RSA of the MV AIS switch-panel type offered with this tender.	

MANUFACTURER (Past ten years)

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF PROJECT	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

SIGNED ON BEHALF OF TENDERER:

ITEM B: KEY PERSONNEL (To be completed by Tenderers tendering for Item B)

Note: Refer to Specification Section 20: Key Personnel & Competency

<p>CONTRACTOR'S REPRESENTATIVE</p>	<p>NAME: NQF LEVEL.....</p>			
<p>Number of Projects managed by Contractor's Representative in past ten years of the same or equivalent nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):</p>				
<p>Contractor's Representative has verified training and high level of experience in technical and commercial aspects of the project? (Evidence to be attached):</p>			<p>Yes / No:</p>	
<p>CONTRACT & CLIENT</p>	<p>NATURE OF WORK</p>	<p>POSITION HELD</p>	<p>VALUE OF WORK</p>	<p>YEAR COMPLETED</p>

ITEM B: KEY PERSONNEL (Cont'd)

Note: Refer to Specification Section 20: Key Personnel & Competency

SITE AGENT	NAME: NQF LEVEL.....			
Number of Projects undertaken by the Site Agent in the past ten years in the installation and / or retrofitting of MV switchgear that are of a similar nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

Note: Refer to Specification Section 20: Key Personnel & Competency

FOREMAN	NAME: NQF LEVEL.....			
Number of Projects completed by Foreman in past 10 years in installation, retrofitting of MV AIS switchgear of the same or equivalent type offered and with scope equivalent to the Scope of Works (Quantity to right; Detail list below and attached):				
Has Foreman completed and qualified in appropriate formal training and is accredited by the switchgear OEM and fully competent in the particular switchgear installation and retrofit work envisaged in accordance with this specification? (Evidence to be attached):			Yes / No:	
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

ITEM B: KEY PERSONNEL (Cont'd)

Note: Refer to Specification Section 20: Key Personnel & Competency

COMMISSIONING ENGINEER	NAME: NQF LEVEL.....			
Number of Projects in past 10 years in which the Commissioning Engineer has fulfilled and executed all the commissioning duties and that were for MV or HV switchgear installation and retrofit projects of the same or equivalent nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

Note: Refer to Specification Section 20: Key Personnel & Competency

INSTALLATION TEAM MEMBERS						
Does Installation Team comprise sufficient staff to carry out installation of a full switchboard of nine to fifteen switchpanels at a substation?:					Yes / No:	
Have all installation team members as a minimum completed and qualified in appropriate formal in-house training by the switchgear OEM and are all fully competent in the switchgear installation and retrofit work envisaged in accordance with this specification? (Evidence to be attached):					Yes / No:	
Have all installation team members over the past ten years completed at least 10 (ten) projects in the installation and / or retrofitting of MV AIS switchgear of the same or equivalent type to that offered? (Evidence to be attached):					Yes / No:	
Name	NQF Level	CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	YEAR COMPLETED	
1						
2						
3						
4						
5						

6					
7					
8					

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF THE TENDERER:

ITEM C (To be completed by Tenderers tendering for Item C)

Demonstrated Experience of Tenderer (Note: Refer to Specification Section 20: Key Personnel & Competency)

Description	Quantity
Number of substation installations of equivalent scope / complexity completed by Tenderer or their sub-contractor during the past ten years comprising the MV GIS switchgear offered in this tender for the particular Item or equivalent MV GIS switchgear to that offered in this tender for the particular Item.	

TENDERER

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF WORK	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

EACH SUB-CONTRACTOR (ITEM C)

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF WORK	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:

Item C: Track Record of Equipment (Note: Refer to Specification Section 20: Key Personnel & Competency)

MANUFACTURER NAME:

Description	Quantity
Total quantity manufactured, installed and commissioned to date (worldwide) of the MV GIS switch-panel type (incl design variants) offered with this tender.	
Total quantity manufactured, installed and commissioned to date (worldwide) of the MV vacuum interrupters offered with this tender (including those included above).	
Total quantity of substation installations in RSA of the MV GIS switch-panel type offered with this tender.	

MANUFACTURER (Past ten years)

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF PROJECT	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

SIGNED ON BEHALF OF TENDERER:

ITEM C: KEY PERSONNEL (To be completed by Tenderers tendering for Item C)

Note: Refer to Specification Section 20: Key Personnel & Competency

CONTRACTOR'S REPRESENTATIVE	NAME: NQF LEVEL			
Number of Projects managed by Contractor's Representative in past ten years of the same or equivalent nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
Contractor's Representative has verified training and high level of experience in technical and commercial aspects of the project? (Evidence to be attached):			Yes / No:	
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

ITEM C: KEY PERSONNEL (Cont'd)

Note: Refer to Specification Section 20: Key Personnel & Competency

SITE AGENT	NAME:			
	NQF LEVEL.....			
Number of Projects undertaken by the Site Agent in the past ten years in the installation and / or retrofitting of MV switchgear that are of a similar nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

Note: Refer to Specification Section 20: Key Personnel & Competency

FOREMAN	NAME:				NQF
LEVEL.....					
Number of Projects completed by Foreman in past 10 years in installation, retrofitting of MV GIS switchgear of the same or equivalent type offered and with scope equivalent to the Scope of Works (Quantity to right; Detail list below and attached):					
Has Foreman completed and qualified in appropriate formal training and is accredited by the switchgear OEM and fully competent in the particular switchgear installation and retrofit work envisaged in accordance with this specification? (Evidence to be attached):			Yes / No:		
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED	

ITEM C: KEY PERSONNEL (Cont'd)

Note: Refer to Specification Section 20: Key Personnel & Competency

COMMISSIONING ENGINEER	NAME: NQF LEVEL.....			
Number of Projects in past 10 years in which the Commissioning Engineer has fulfilled and executed all the commissioning duties and that were for MV or HV switchgear installation and retrofit projects of the same or equivalent nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

Note: Refer to Specification Section 20: Key Personnel & Competency

INSTALLATION TEAM MEMBERS					
Does Installation Team comprise sufficient staff to carry out installation of a full switchboard of nine to fifteen switchpanels at a substation?:				Yes / No:	
Have all installation team members as a minimum completed and qualified in appropriate formal in-house training by the switchgear OEM and are all fully competent in the switchgear installation and retrofit work envisaged in accordance with this specification? (Evidence to be attached):				Yes / No:	
Have all installation team members over the past ten years completed at least 10 (ten) projects in the installation and / or retrofitting of MV GIS switchgear of the same or equivalent type to that offered? (Evidence to be attached):				Yes / No:	
Name	NQF Level	CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	YEAR COMPLETED
1					
2					
3					
4					
5					

6					
7					
8					

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF THE TENDERER:

ITEM D (To be completed by Tenderers tendering for Item D)

Demonstrated Experience of Tenderer (Note: Refer to Specification Section 20: Key Personnel & Competency)

Description	Quantity
Number of substation installations of equivalent scope / complexity completed by Tenderer or their sub-contractor during the past ten years comprising the MV GIS switchgear offered in this tender for the particular Item or equivalent MV GIS switchgear to that offered in this tender for the particular Item.	

TENDERER

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF WORK	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

EACH SUB-CONTRACTOR (ITEM D)

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF WORK	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:

Item D: Track Record of Equipment (Note: Refer to Specification Section 20: Key Personnel & Competency)

MANUFACTURER NAME:

Description	Quantity
Total quantity manufactured, installed and commissioned to date (worldwide) of the MV GIS switch-panel type (incl design variants) offered with this tender.	
Total quantity manufactured, installed and commissioned to date (worldwide) of the MV vacuum interrupters offered with this tender (including those included above).	
Total quantity of substation installations in RSA of the MV GIS switch-panel type offered with this tender.	

MANUFACTURER (Past ten years)

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF PROJECT	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

SIGNED ON BEHALF OF TENDERER:

ITEM D: KEY PERSONNEL (To be completed by Tenderers tendering for Item D)

Note: Refer to Specification Section 20: Key Personnel & Competency

CONTRACTOR'S REPRESENTATIVE	NAME: NQF			
		LEVEL		
Number of Projects managed by Contractor's Representative in past ten years of the same or equivalent nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
Contractor's Representative has verified training and high level of experience in technical and commercial aspects of the project? (Evidence to be attached):			Yes / No:	
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

ITEM D: KEY PERSONNEL (Cont'd)

Note: Refer to Specification Section 20: Key Personnel & Competency

SITE AGENT	NAME:			
	NQF LEVEL.....			
Number of Projects undertaken by the Site Agent in the past ten years in the installation and / or retrofitting of MV switchgear that are of a similar nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

Note: Refer to Specification Section 20: Key Personnel & Competency

FOREMAN	NAME:				NQF
LEVEL.....					
Number of Projects completed by Foreman in past 10 years in installation, retrofitting of MV GIS switchgear of the same or equivalent type offered and with scope equivalent to the Scope of Works (Quantity to right; Detail list below and attached):					
Has Foreman completed and qualified in appropriate formal training and is accredited by the switchgear OEM and fully competent in the particular switchgear installation and retrofit work envisaged in accordance with this specification? (Evidence to be attached):			Yes / No:		
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED	

ITEM D: KEY PERSONNEL (Cont'd)

Note: Refer to Specification Section 20: Key Personnel & Competency

COMMISSIONING ENGINEER	NAME: NQF LEVEL.....			
Number of Projects in past 10 years in which the Commissioning Engineer has fulfilled and executed all the commissioning duties and that were for MV or HV switchgear installation and retrofit projects of the same or equivalent nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

Note: Refer to Specification Section 20: Key Personnel & Competency**INSTALLATION TEAM MEMBERS**

Does Installation Team comprise sufficient staff to carry out installation of a full switchboard of nine to fifteen switchpanels at a substation?:				Yes / No:	
Have all installation team members as a minimum completed and qualified in appropriate formal in-house training by the switchgear OEM and are all fully competent in the switchgear installation and retrofit work envisaged in accordance with this specification? (Evidence to be attached):				Yes / No:	
Have all installation team members over the past ten years completed at least 10 (ten) projects in the installation and / or retrofitting of MV GIS switchgear of the same or equivalent type to that offered? (Evidence to be attached):				Yes / No:	
Name	NQF Level	CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	YEAR COMPLETED
1					
2					
3					
4					
5					

6					
7					
8					

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF THE TENDERER:

ITEM E (To be completed by Tenderers tendering for Item E)**Demonstrated Experience of Tenderer (Note: Refer to Specification Section 20: Key Personnel & Competency)**

Description	Quantity
Number of substation installations of equivalent scope / complexity completed by Tenderer or their sub-contractor during the past ten years comprising the MV SIS switchgear offered in this tender for the particular Item or equivalent MV SIS switchgear to that offered in this tender for the particular Item.	

TENDERER

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF WORK	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

EACH SUB-CONTRACTOR (ITEM E)

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF WORK	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:

Item E: Track Record of Equipment (Note: Refer to Specification Section 20: Key Personnel & Competency)

MANUFACTURER NAME:

Description	Quantity
Total quantity manufactured, installed and commissioned to date (worldwide) of the MV SIS switch-panel type (incl design variants) offered with this tender.	
Total quantity manufactured, installed and commissioned to date (worldwide) of the MV vacuum interrupters offered with this tender (including those included above).	
Total quantity of substation installations in RSA of the MV SIS switch-panel type offered with this tender.	

MANUFACTURER (Past ten years)

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	NATURE OF PROJECT	VALUE OF WORK R(m)	COMPLETION DATE
COMPLETED CONTRACTS				
CURRENT CONTRACTS				

SIGNED ON BEHALF OF TENDERER:

ITEM E: KEY PERSONNEL (To be completed by Tenderers tendering for Item E)

Note: Refer to Specification Section 20: Key Personnel & Competency

CONTRACTOR'S REPRESENTATIVE	NAME: NQF			
		LEVEL		
Number of Projects managed by Contractor's Representative in past ten years of the same or equivalent nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
Contractor's Representative has verified training and high level of experience in technical and commercial aspects of the project? (Evidence to be attached):			Yes / No:	
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

ITEM E: KEY PERSONNEL (Cont'd)

Note: Refer to Specification Section 20: Key Personnel & Competency

SITE AGENT	NAME:			
	NQF LEVEL.....			
Number of Projects undertaken by the Site Agent in the past ten years in the installation and / or retrofitting of MV switchgear that are of a similar nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

Note: Refer to Specification Section 20: Key Personnel & Competency

FOREMAN	NAME:				NQF
LEVEL.....					
Number of Projects completed by Foreman in past 10 years in installation, retrofitting of MV SIS switchgear of the same or equivalent type offered and with scope equivalent to the Scope of Works (Quantity to right; Detail list below and attached):					
Has Foreman completed and qualified in appropriate formal training and is accredited by the switchgear OEM and fully competent in the particular switchgear installation and retrofit work envisaged in accordance with this specification? (Evidence to be attached):			Yes / No:		
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED	

ITEM E: KEY PERSONNEL (Cont'd)

Note: Refer to Specification Section 20: Key Personnel & Competency

COMMISSIONING ENGINEER	NAME: NQF LEVEL.....			
Number of Projects in past 10 years in which the Commissioning Engineer has fulfilled and executed all the commissioning duties and that were for MV or HV switchgear installation and retrofit projects of the same or equivalent nature to that detailed in the Scope of Works (Quantity to right; Detail list below and attached):				
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

Note: Refer to Specification Section 20: Key Personnel & Competency**INSTALLATION TEAM MEMBERS**

Does Installation Team comprise sufficient staff to carry out installation of a full switchboard of nine to fifteen switchpanels at a substation?:				Yes / No:	
Have all installation team members as a minimum completed and qualified in appropriate formal in-house training by the switchgear OEM and are all fully competent in the switchgear installation and retrofit work envisaged in accordance with this specification? (Evidence to be attached):				Yes / No:	
Have all installation team members over the past ten years completed at least 10 (ten) projects in the installation and / or retrofitting of MV SIS switchgear of the same or equivalent type to that offered? (Evidence to be attached):				Yes / No:	
Name	NQF Level	CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	YEAR COMPLETED
1					
2					
3					
4					
5					

6					
7					
8					

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF THE TENDERER:

Schedule F.13 D: DETAILS OF EXPERIENCE, QUALITY SYSTEMS AND AFTER SALES FACILITIES IN SOUTH AFRICA

(To be completed by Tenderer about the TENDERER as well as OEM)

1	Name of Tenderer or Agent to support the offered equipment:	
2	Address	
3	Telephone Number and Area Code	
4	Manufacturing Location & Years established?	
5	Number of permanent resident technicians	
6	Does Technical Support & Repair facilities exist? Location of these facilities	
7	Are spare parts available in Republic	
8	Has a Quality Assurance system for the support facility been approved in terms of SANS/ISO 9001?	Yes/No
9	If not SANS/ISO 9001, a Quality Assurance Plan is required with details of the programme of quality control and inspection activities during manufacture, prior to delivery, on completion and installation, the equipment and works to ensure compliance with the requirements of the specification and tendered delivery times?	Document name, number or reference:
10	Company organogram with details for the positions of the Quality Assurance Department, the Project Manager for this Tender and the key Technical personnel with their qualifications and years of post-qualification experience relevant to this particular project listed and other staff where applicable?	Required
11	Other relevant details	

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

Schedule F.13 E: Departures from the Requirements of the Specification

(To be completed by Tenderer)

Item A: Air Insulated Switchgear for Extension of Existing ABB Unigear ZACB Installations

Clause	Departures from the requirements of this Specification with details of alternative proposals

Note: If the above is insufficient the Tenderer shall complete the Schedule by affixing completed numbered copies of Schedule F.13 E.

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

(To be completed by Tenderer)

Item B: Internal Arc Rated AIS 12 kV Switchgear for New Installations

Clause	Departures from the requirements of this Specification with details of alternative proposals

Note: If the above is insufficient the Tenderer shall complete the Schedule by affixing completed numbered copies of Schedule F.13 E.

TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

(To be completed by Tenderer)

Item C: Gas Insulated Switchgear for Extension of Existing ABB ZX0.2 Installations

Clause	Departures from the requirements of this Specification with details of alternative proposals

Note: If the above is insufficient the Tenderer shall complete the Schedule by affixing completed numbered copies of Schedule F.13 E.

TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

(To be completed by Tenderer)

Item D: Internal Arc Rated GIS 12 kV Switchgear for New Installations

Clause	Departures from the requirements of this Specification with details of alternative proposals

Note: If the above is insufficient the Tenderer shall complete the Schedule by affixing completed numbered copies of Schedule F.13 E.

TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

(To be completed by Tenderer)

Item E: Internal Arc Rated Solid-Dielectric Insulated 12 kV Switchgear (SIS) for New Installations

Clause	Departures from the requirements of this Specification with details of alternative proposals

Note: If the above is insufficient the Tenderer shall complete the Schedule by affixing completed numbered copies of Schedule F.13 E.

TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

Schedule F.13 F: OEM, Quality and Environmental Certification

ORIGINAL EQUIPMENT MANUFACTURER SUPPORT OF TENDERER CERTIFICATION

Item A: Air Insulated Switchgear for Extension of Existing ABB Unigear ZACB Installations

OEM Certification as authorised distributors or resellers.	Yes/No
<p style="text-align: center;">Attached Proof</p> <p>(Tenderers shall be an authorised distributor with the Original Equipment Manufacturer supported with a Letter/Certificate from OEM to authorise to distribute or resell their product.)</p>	<u>Document name, number or reference:</u>

OEM Certification to support supplied equipment.	Yes/No
<p style="text-align: center;">Attached Proof</p> <p>(Proven in form of a Letter/Certificate from OEM to authorise supplier to Support product.)</p>	<u>Document name, number or reference:</u>

QUALITY ASSURANCE CERTIFICATION OF MANUFACTURER

SANS/ISO 9001 or equivalent Quality Assurance Certification of MANUFACTURER of products	Yes/No
<p style="text-align: center;">Attached Proof Certificate</p>	<u>Document name, number or reference:</u>

ENVIRONMENTAL CERTIFICATION

SANS/ISO 14001 or equivalent Environmental Certification of Disposal companies attached	Yes/No
<p style="text-align: center;">Attached Proof Certificate</p>	<u>Document name, number or reference:</u>

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ORIGINAL EQUIPMENT MANUFACTURER SUPPORT OF TENDERER CERTIFICATION**Item B: Internal Arc Rated AIS 12 kV Switchgear for New Installations**

<p>OEM Certification as authorised distributors or resellers.</p> <p>Attached Proof (Tenderers shall be an authorised distributor with the Original Equipment Manufacturer supported with a Letter/Certificate from OEM to authorise to distribute or resell their product.)</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>
<p>OEM Certification to support supplied equipment.</p> <p>Attached Proof (Proven in form of a Letter/Certificate from OEM to authorise supplier to Support product.)</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>

QUALITY ASSURANCE CERTIFICATION OF MANUFACTURER

<p>SANS/ISO 9001 or equivalent Quality Assurance Certification of MANUFACTURER of products</p> <p>Attached Proof Certificate</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>
---	---

ENVIRONMENTAL CERTIFICATION

<p>SANS/ISO 14001 or equivalent Environmental Certification of Disposal companies attached</p> <p>Attached Proof Certificate</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>
---	---

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ORIGINAL EQUIPMENT MANUFACTURER SUPPORT OF TENDERER CERTIFICATION**Item C: Gas Insulated Switchgear for Extension of Existing ABB ZX0.2 Installations**

<p>OEM Certification as authorised distributors or resellers.</p> <p>Attached Proof (Tenderers shall be an authorised distributor with the Original Equipment Manufacturer supported with a Letter/Certificate from OEM to authorise to distribute or resell their product.)</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>
<p>OEM Certification to support supplied equipment.</p> <p>Attached Proof (Proven in form of a Letter/Certificate from OEM to authorise supplier to Support product.)</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>

QUALITY ASSURANCE CERTIFICATION OF MANUFACTURER

<p>SANS/ISO 9001 or equivalent Quality Assurance Certification of MANUFACTURER of products</p> <p>Attached Proof Certificate</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>
---	---

ENVIRONMENTAL CERTIFICATION

<p>SANS/ISO 14001 or equivalent Environmental Certification of Disposal companies attached</p> <p>Attached Proof Certificate</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>
<p>OEM's declaration of commitment to EOL responsibility.</p> <p>Attached Proof Undertaking from SF₆ Panel OEM to dispose of the SF₆ on tenderers behalf for the duration of contract and no extra cost to CCT as detailed in 11.2</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>

TENDERER NAME _____ SIGNED ON BEHALF OF TENDERER _____

ORIGINAL EQUIPMENT MANUFACTURER SUPPORT OF TENDERER CERTIFICATION**Item D: Internal Arc Rated GIS 12 kV Switchgear for New Installations**

<p>OEM Certification as authorised distributors or resellers.</p> <p>Attached Proof (Tenderers shall be an authorised distributor with the Original Equipment Manufacturer supported with a Letter/Certificate from OEM to authorise to distribute or resell their product.)</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>
<p>OEM Certification to support supplied equipment.</p> <p>Attached Proof (Proven in form of a Letter/Certificate from OEM to authorise supplier to Support product.)</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>

QUALITY ASSURANCE CERTIFICATION OF MANUFACTURER

<p>SANS/ISO 9001 or equivalent Quality Assurance Certification of MANUFACTURER of products</p> <p>Attached Proof Certificate</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>
---	---

ENVIRONMENTAL CERTIFICATION

<p>SANS/ISO 14001 or equivalent Environmental Certification of Disposal companies attached</p> <p>Attached Proof Certificate</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>
<p>OEM's declaration of commitment to EOL responsibility.</p> <p>Attached Proof Undertaking from SF₆ Panel OEM to dispose of the SF₆ on tenderers behalf for the duration of contract and no extra cost to CCT as detailed in 11.2</p>	<p>Yes/No</p> <hr/> <p><u>Document name, number or reference:</u></p>

TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

ORIGINAL EQUIPMENT MANUFACTURER SUPPORT OF TENDERER CERTIFICATION**Item E: Internal Arc Rated Solid-Dielectric Insulated 12 kV Switchgear (SIS) for New Installations**

OEM Certification as authorised distributors or resellers. Attached Proof (Tenderers shall be an authorised distributor with the Original Equipment Manufacturer supported with a Letter/Certificate from OEM to authorise to distribute or resell their product.)	Yes/No
	<u>Document name, number or reference:</u>
OEM Certification to support supplied equipment. Attached Proof (Proven in form of a Letter/Certificate from OEM to authorise supplier to Support product.)	Yes/No
	<u>Document name, number or reference:</u>

QUALITY ASSURANCE CERTIFICATION OF MANUFACTURER

SANS/ISO 9001 or equivalent Quality Assurance Certification of MANUFACTURER of products Attached Proof Certificate	Yes/No
	<u>Document name, number or reference:</u>

ENVIRONMENTAL CERTIFICATION

SANS/ISO 14001 or equivalent Environmental Certification of Disposal companies attached Attached Proof Certificate	Yes/No
	<u>Document name, number or reference:</u>

TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

Schedule F.13 H: DETAILS OF SWITCHGEAR DISPOSAL

(To be completed by Tenderer)

1	Tenderer name	
2	Address	
3	Telephone Number and Area Code	
4	Years established	
5	Original Equipment Manufacturer's name	
6	Address	
7	Telephone Number and Area Code	
8	Years established	
9	State whether and Environmental Management System has been approved in terms of SANS/ISO 14001. If yes, state registration No. , and date that registration expires.	YES / NO _____ _____
10	Does the OEM undertake to dispose of the SF ₆ on behalf of the tenderer in the event of the tenderer (distributor) not being able to dispose of the SF ₆ for the duration of this contract and that CCT shall not be liable or incur any cost?	YES / NO State attached proof:
11	Does the OEM declare their commitment and acceptance of responsibility for environmentally acceptable End of Life disposal of used Switchgear?	YES / NO State attached proof:
12	Is a Disposal Plan and Works Method Statements , detailing the quality assurance processes for the environmentally sound disposal of all used (redundant) SF ₆ compliant to environmentally acceptable best practices, attached to this Annexure?	YES / NO State attached proof:

TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

**Schedule F.13 J: METHOD STATEMENT OF PREVIOUS
INSTALLATIONS**

(To be completed by Tenderer)

The tenderer shall append their proposed work plan to this Schedule.

It should be noted that while a programme may form part of the required work plan, more than a programme is expected in response to this requirement. The work plan must indicate the approach and methodology that the tenderer intends following in order to reach the required outcomes. The work plan must show that the tenderer has appreciated the Scope of Work, and has good insight as to what actions or activities are required in order to comply with the Employer's objectives.

TENDERER NAME _____

SIGNED ON BEHALF OF TENDERER _____

Schedule F.13 K: Commencement Date and Dates of Readiness for Inspection, Testing and Delivery

(To be completed by Tenderer)

ITEM A: COMMENCEMENT DATE AND DATES OF READINESS FOR INSPECTION, TESTING AND DELIVERY

1	EQUIPMENT TO BE ORDERED AS AND WHEN REQUIRED OVER A PERIOD OF THREE YEARS	Weeks	
		Specified	Tendered
1.1	<u>Engineering Approval: Times from Contract Commencement Date within which:-</u>		
1.1.1	The drawings detailed in Part 49 of the specification (including Equipment arrangements, Equipment details, control and protection scheme schematic diagrams and details of auxiliary equipment) shall be submitted for approval	4	
1.2	<u>Equipment Manufacture, Testing and Delivery: Times from receipt of official Purchase Order (after completion of Engineering Approval) within which:</u>		
1.2.1	The ordering and delivery to factory of locally manufactured materials and sub-components shall be completed	-	
1.2.2	The ordering and delivery to factory of imported materials and sub-components shall be completed	-	
1.2.3	Manufacture at the manufacturer's works shall commence	-	
1.2.4	The equipment will be ready for factory inspection and testing	18	
1.2.5	The equipment will be delivered to the Employer's Stores	20	
1.3	<u>Equipment Installation and Testing per Substation: Times from issue and acceptance of Works Project Document and receipt of Official Purchase Order within which:</u>		
1.3.1	The Contractor will require access to the Site	2	
1.3.2	The equipment will be collected and delivered to Site	2	
1.3.3	Equipment erection will be completed	4	
1.3.4	The Works will be completed, tested and ready for commissioning and continuous use	6	

TENDERER'S SIGNATURE: _____

DATE: _____

ITEM B: COMMENCEMENT DATE AND DATES OF READINESS FOR INSPECTION, TESTING AND DELIVERY

1	EQUIPMENT TO BE ORDERED AS AND WHEN REQUIRED OVER A PERIOD OF THREE YEARS	Weeks	
		Specified	Tendered
1.1	<u>Engineering Approval: Times from Contract Commencement Date within which:-</u>		
1.1.1	The drawings detailed in Part 49 of the specification (including Equipment arrangements, Equipment details, control and protection scheme schematic diagrams and details of auxiliary equipment) shall be submitted for approval	4	
1.2	<u>Equipment Manufacture, Testing and Delivery: Times from receipt of official Purchase Order (after completion of Engineering Approval) within which:</u>		
1.2.1	The ordering and delivery to factory of locally manufactured materials and sub-components shall be completed	-	
1.2.2	The ordering and delivery to factory of imported materials and sub-components shall be completed	-	
1.2.3	Manufacture at the manufacturer's works shall commence	-	
1.2.4	The equipment will be ready for factory inspection and testing	18	
1.2.5	The equipment will be delivered to the Employer's Stores	20	
1.3	<u>Equipment Installation and Testing per Substation: Times from issue and acceptance of Works Project Document and receipt of Official Order within which:</u>		
1.3.1	The Contractor will require access to the Site	2	
1.3.2	The equipment will be collected and delivered to Site	2	
1.3.3	Equipment erection will be completed	4	
1.3.4	The Works will be completed, tested and ready for commissioning and continuous use	6	

TENDERER'S SIGNATURE: _____

DATE: _____

ITEM C: COMMENCEMENT DATE AND DATES OF READINESS FOR INSPECTION, TESTING AND DELIVERY

1	EQUIPMENT TO BE ORDERED AS AND WHEN REQUIRED OVER A PERIOD OF THREE YEARS	Weeks	
		Specified	Tendered
1.1	<u>Engineering Approval: Times from Contract Commencement Date within which:-</u>		
1.1.1	The drawings detailed in Part 49 of the specification (including Equipment arrangements, Equipment details, control and protection scheme schematic diagrams and details of auxiliary equipment) shall be submitted for approval	4	
1.2	<u>Equipment Manufacture, Testing and Delivery: Times from receipt of official Purchase Order (after completion of Engineering Approval) within which:</u>		
1.2.1	The ordering and delivery to factory of locally manufactured materials and sub-components shall be completed	-	
1.2.2	The ordering and delivery to factory of imported materials and sub-components shall be completed	-	
1.2.3	Manufacture at the manufacturer's works shall commence	-	
1.2.4	The equipment will be ready for factory inspection and testing	18	
1.2.5	The equipment will be delivered to the Employer's Stores	22	
1.3	<u>Equipment Installation and Testing per Substation: Times from issue and acceptance of Works Project Document and receipt of Official Order within which:</u>		
1.3.1	The Contractor will require access to the Site	2	
1.3.2	The equipment will be collected and delivered to Site	2	
1.3.3	Equipment erection will be completed	4	
1.3.4	The Works will be completed, tested and ready for commissioning and continuous use	6	

TENDERER'S SIGNATURE: _____

DATE: _____

ITEM D: COMMENCEMENT DATE AND DATES OF READINESS FOR INSPECTION, TESTING AND DELIVERY

1	EQUIPMENT TO BE ORDERED AS AND WHEN REQUIRED OVER A PERIOD OF THREE YEARS	Weeks	
		Specified	Tendered
1.1	Engineering Approval: Times from Contract Commencement Date within which:-		
1.1.1	The drawings detailed in Part 49 of the specification (including Equipment arrangements, Equipment details, control and protection scheme schematic diagrams and details of auxiliary equipment) shall be submitted for approval	4	
1.2	Equipment Manufacture, Testing and Delivery: Times from receipt of official Purchase Order (after completion of Engineering Approval) within which:		
1.2.1	The ordering and delivery to factory of locally manufactured materials and sub-components shall be completed	-	
1.2.2	The ordering and delivery to factory of imported materials and sub-components shall be completed	-	
1.2.3	Manufacture at the manufacturer's works shall commence	-	
1.2.4	The equipment will be ready for factory inspection and testing	18	
1.2.5	The equipment will be delivered to the Employer's Stores	22	
1.3	Equipment Installation and Testing per Substation: Times from issue and acceptance of Works Project Document and receipt of Official Order within which:		
1.3.1	The Contractor will require access to the Site	2	
1.3.2	The equipment will be collected and delivered to Site	2	
1.3.3	Equipment erection will be completed	4	
1.3.4	The Works will be completed, tested and ready for commissioning and continuous use	6	

TENDERER'S SIGNATURE: _____

DATE: _____

ITEM E: COMMENCEMENT DATE AND DATES OF READINESS FOR INSPECTION, TESTING AND DELIVERY

1	EQUIPMENT TO BE ORDERED AS AND WHEN REQUIRED OVER A PERIOD OF THREE YEARS	Weeks	
		Specified	Tendered
1.1	<u>Engineering Approval: Times from Contract Commencement Date within which:-</u>		
1.1.1	The drawings detailed in Part 49 of the specification (including Equipment arrangements, Equipment details, control and protection scheme schematic diagrams and details of auxiliary equipment) shall be submitted for approval	4	
1.2	<u>Equipment Manufacture, Testing and Delivery: Times from receipt of official Purchase Order (after completion of Engineering Approval) within which:</u>		
1.2.1	The ordering and delivery to factory of locally manufactured materials and sub-components shall be completed	-	
1.2.2	The ordering and delivery to factory of imported materials and sub-components shall be completed	-	
1.2.3	Manufacture at the manufacturer's works shall commence	-	
1.2.4	The equipment will be ready for factory inspection and testing	18	
1.2.5	The equipment will be delivered to the Employer's Stores	22	
1.3	<u>Equipment Installation and Testing per Substation: Times from issue and acceptance of Works Project Document and receipt of Official Order within which:</u>		
1.3.1	The Contractor will require access to the Site	2	
1.3.2	The equipment will be collected and delivered to Site	2	
1.3.3	Equipment erection will be completed	4	
1.3.4	The Works will be completed, tested and ready for commissioning and continuous use	6	

TENDERER'S SIGNATURE: _____

DATE: _____

Schedule F.13 L: Schedule of Sub-Contractors

We notify you that it is our intention to employ the following sub-contractors for work (excluding work covered by provisional sums and contingencies) in this contract.

Acceptance of this tender shall not be construed as approval of all or any of the listed sub-contractors. Should any of the sub-contractors not be approved subsequent to acceptance of the tender, this shall in no way invalidate the contract, and the tendered unit rates for the various items making up the work activities shall remain final and binding.

SUBCONTRACTORS (Item A)					
Category/type	Subcontractor Address/Contact Phone/Fax/Details Organisation/Firm	Name/ Person/ of Experience	Years established and experience	Work activities to be undertaken by the Sub-contractor	Estimated Value of Work (Rand)
E.g. Installation, commissioning, etc.					
TOTAL (Excluding VAT)					

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:

SUBCONTRACTORS (Item B)					
Category/type	Subcontractor Address/Contact Phone/Fax/Details Organisation/Firm	Name/ Person/ of Experience	Years established and experience	Work activities to be undertaken by the Sub-contractor	Estimated Value of Work (Rand)
E.g. Installation, commissioning, etc.					
TOTAL (Excluding VAT)					

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:

SUBCONTRACTORS (Item C)					
Category/type	Subcontractor Address/Contact Phone/Fax/Details Organisation/Firm	Name/ Person/ of Experience	Years established and experience	Work activities to be undertaken by the Sub-contractor	Estimated Value of Work (Rand)
E.g. Installation, commissioning, etc.					
TOTAL (Excluding VAT)					

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:

SUBCONTRACTORS (Item D)					
Category/type	Subcontractor Address/Contact Phone/Fax/Details Organisation/Firm	Name/ Person/ of Experience	Years established and experience	Work activities to be undertaken by the Sub-contractor	Estimated Value of Work (Rand)
E.g. Installation, commissioning, etc.					
TOTAL (Excluding VAT)					

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:

SUBCONTRACTORS (Item E)					
Category/type	Subcontractor Address/Contact Phone/Fax/Details Organisation/Firm	Name/ Person/ of Experience	Years established and experience	Work activities to be undertaken by the Sub-contractor	Estimated Value of Work (Rand)
E.g. Installation, commissioning, etc.					
TOTAL (Excluding VAT)					

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:

Schedule F.13 M: Schedule of Construction Equipment

The tenderer shall state below what construction equipment will be available for this Contract. The tenderer shall differentiate, if applicable, between construction equipment immediately available and construction equipment which will become available by virtue of outstanding orders, and indicate what further construction equipment will be acquired or hired for the work should he be awarded the Contract.

CONSTRUCTION EQUIPMENT IMMEDIATELY AVAILABLE

DESCRIPTION, SIZE, CAPACITY	NUMBER
E.g. Rigging equipment, crane trucks, test equipment, etc.	

CONSTRUCTION EQUIPMENT ON ORDER

(State details of arrangements made, with delivery dates)

DESCRIPTION, SIZE, CAPACITY	NUMBER

CONSTRUCTION EQUIPMENT THAT WILL BE ACQUIRED OR HIRED

(State details of delivery arrangements)

DESCRIPTION, SIZE, CAPACITY	NUMBER

Number of sheets appended by the tenderer to this Schedule (If nil, enter NIL).

SIGNED ON BEHALF OF TENDERER:

Schedule F.14: Appeal Application

Annexure 'B'

OFFICIAL RECEIPT
(Valid only if printend
By official cash
Receipting machine)

IRISITI ESESIKWENI
(Isemthethweni kuphela
xa ishicilelwe
Ngumatshini wokukhupa
irisiti osesikweni)

AMPTELIKE KWITANSIE
(Geldig alleenlik indien deur
amptelike kontantvangs
masjien gedruk)

GL DATA CAPTURE RECEIPT
(CASHIER TO RETAIN A COPY)

Receipt NO: _____

DATE: _____

SAP GL:

8	1	0	1	0	0
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PROFIT CENTRE:

1	3	0	5	0	0	0	1
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NAME/COMPANY NAME

AMOUNT

			R	3	0	0	-	0	0
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SERVICE DEPARTMENT DETAILS:

DEPARTMENT: LEGAL SERVICES: APPEALS UNIT

CONTACT PERSON: CHARLENE CEBEKHULU / MELANIE CLOETE

PHONE NO: 021 400 2503 / 021 400 3788

OFFICIAL RECEIPT
(Valid only if printend
By official cash
Receipting machine)

IRISITI ESESIKWENI
(Isemthethweni kuphela
xa ishicilelwe
Ngumatshini wokukhupa
irisiti osesikweni)

AMPTELIKE KWITANSIE
(Geldig alleenlik indien deur
amptelike kontantvangs
masjien gedruk)

GL DATA CAPTURE RECEIPT
(CASHIER TO RETAIN A COPY)

Receipt NO: _____

DATE: _____

SAP GL:

8	1	0	1	0	0
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PROFIT CENTRE:

1	3	0	5	0	0	0	1
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NAME/COMPANY NAME

AMOUNT

			R	3	0	0	-	0	0
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SERVICE DEPARTMENT DETAILS:

DEPARTMENT: LEGAL SERVICES: APPEALS UNIT

CONTACT PERSON: CHARLENE CEBEKHULU / MELANIE CLOETE

PHONE NO: 021 400 2503 / 021 400 3788