Midvaal Local Municipality
PO Box 9, Meyerton, 1960
Tel: 016 360 7400
Fax: 016 360 7519
www.midvaal.gov.za

BID DOCUMENT

BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

FULL NAME OF BIDDER /CONTRACTOR/TENDERING ENTITY:			
CONTACT PERSON:			
TEL NO:		**CELL NO:**	
FAX NO:		**EMAIL:**	
CENTRAL SUPPLIER DATABASE (CSD) NO:			
MIDVAAL VENDOR NO. (NOT COMPULSORY):			
COMPULSORY BRIEFING SESSION:			
DATE:	**27 MAY 2025**	**TIME:**	**10h00**
VENUE:	**Midvaal Engineering Services (Opposite Randvaal Clinic), 56 Rooibok Street, Highbury, Randvaal. USE GPS Coordinates: -26.515083, 28.044598**		
BID CLOSING:			
DATE:	**12 JUNE 2025**	**TIME:**	**10H00**
TOTAL BID PRICE/VALUE (INCLUDING VAT) (R):	**N/A**	***Mark "X" if Rates Based***	X
PREFERENCE POINTS CLAIMED:		**B-BBEE RATING LEVEL:**	

This document consists of one combined volume with overall page numbers from 1 to 289

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NOTE:
All writing to be done in this document must be in black to facilitate clear photocopying.

MIDVAAL LOCAL MUNICIPALITY
P O Box 9
MEYERTON
1960

BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

SECTION 1:
T1 – TENDER CONDITIONS

CONTENTS: TENDER CONDITIONS

LIST OF TABLES - TENDER CONDITIONS

T1.1 – TENDER NOTICE AND INVITATION TO TENDER

T1.1. TENDER NOTICE AND INVITATION TO TENDER

Contractors are invited to tender for the appointment of a service provider for the electrification of formal and informal settlements in Midvaal Local Municipality on an as and when required basis from 1 July 2025 to 30 June 2028. This includes the supply, delivery, installation, testing, commissioning, and hand over of all equipment, as specified.

It is estimated that tenderers should have a CIDB contractor grading of 6EP or 5EP PE or higher. 5EP Potentially Emerging Enterprises who satisfy criteria stated in the Tender Data may submit Tender offers.

Preferences are offered to tenderers who have suitable experience and suitably qualified employees and resources to render the services.

The council reserves the right to accept any bid or part thereof and does not bind itself to accept the lowest or any bid and not to consider any bid not suitably endorsed or comprehensively completed.
Bids completed in pencil or re-typed will be regarded as invalid bids. Bids must also be submitted in full, i.e with all pages attached, failure thereof will result in your bid being disqualified.

Responsive bids will then be evaluated on 80/20 preference point system as prescribed by the Preferential Procurement Regulations, 2022.

Bids will be evaluated and adjudicated according to the following criteria:
• relevant specifications and technical proposals,
• value for money,
• capability to execute the contract,
• Midvaal SCM policy, PPPFA, PPPFA regulations and any other relevant legislation's,
• As well as any supporting documents where required and local content (if applicable).

PLEASE NOTE:
All tenders must be submitted on the official forms (not to be re-typed). Only original signed tender documents will be accepted.
Bids must be completed in black ink. No correction fluid will be allowed. All alterations must be crossed out and initialled.
Where a compulsory briefing session is required, it is the onus of the bidder to attend and arrive on time. Late arrivals will not be allowed to sign the attendance register and will be deemed to be absent. No bids will be considered from bidders Who did not attend the briefing session.
Midvaal Local Municipality will not accept any bid with missing pages and not fully completed with the required attachments.
Only tenderers who have read and signed the provisions of the rules and specifications which are included in the bid documents, are eligible to submit tenders.

A non-refundable tender deposit of R630.70 payable by proof of deposit or cash is required on collection of the Tender documents.

Alternatively, direct deposits can be made:

Midvaal Local Municipality
Bank : Nedbank
Account number 1224797469
Branch : Central Gauteng

*Please use the bid/tender number as reference and remember to bring proof of payment for collection of bid document.

Tender documents will be available for purchase during working hours between 07:30 – 15:00.

A non-refundable tender deposit of R630.70 payable by proof of deposit or cash is required on collection of the tender document. Payment for the document can be made at the municipality's rates and taxes hall during office hours Monday – Friday, 07:30 – 15:00, or alternatively direct deposits (no cheques accepted) to:

Midvaal Local Municipality
Bank: Nedbank
Account Number: 1224797469
Branch: Central Gauteng
NB: Please use the bid/tender number as reference and remember to bring proof of payment for collection of bid documents.

A compulsory clarification meeting with representatives of the Employer will take place at Midvaal Engineering Services, 56 Rooibok Street, Highbury, Meyerton, 1961.
(GPS Co-ordinates: -26.515083, 28.044598 on 27 May 2025, starting at 10h00).

The closing time for receipt of tenders is 10h00 on Thursday, 12 June 2025.

Emailed and late tenders will not be accepted.

Tenders may only be submitted on the tender documentation that is issued.

Requirements for sealing, addressing, delivering, opening and assessment of Tenders are stated in the Tender Data.

Tender with Bid No. 8/2/2/444 (2025-2028) was publicly advertised.

The Employer is not obliged to accept the lowest or any tender and reserves the right to re-negotiate tender rates.

T1.1.1. MBD 1 - INVITATION TO BID – PART A

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE MIDVAAL LOCAL MUNICIPALITY					
BID NUMBER:	8/2/2/444 (2025-2028	CLOSING DATE:	**12 JUNE 2025**	CLOSING TIME:	**10:00**
DESCRIPTION	BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028				
THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT					

BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT:

MIDVAAL LOCAL MUNICIPALITY				
25 MITCHELL STREET				
MEYERTON				
1961				
SUPPLIER INFORMATION				
NAME OF BIDDER				
POSTAL ADDRESS				
STREET ADDRESS				
TELEPHONE NUMBER	CODE		NUMBER	
CELLPHONE NUMBER				
FACSIMILE NUMBER	CODE		NUMBER	
E-MAIL ADDRESS				
VAT REGISTRATION NUMBER				
CSD NUMBER				
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE [TICK APPLICABLE BOX]	☐ Yes ☐ No		B-BBEE STATUS LEVEL SWORN AFFIDAVIT	☐ Yes ☐ No
[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]				

ARE YOU THE ACCREDITED REPRESENTATIVE *IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?*	☐Yes ☐No [IF YES ENCLOSE PROOF]	***ARE YOU A FOREIGN BASED SUPPLIER FOR*** *THE GOODS /SERVICES /WORKS OFFERED?*	☐Yes ☐No [IF YES, ANSWER PART B:3]
TOTAL NUMBER OF ITEMS OFFERED		*N/A*	*N/A*
SIGNATURE OF BIDDER		*DATE*	
CAPACITY UNDER WHICH THIS BID IS SIGNED			

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:		**TECHNICAL INFORMATION MAY BE DIRECTED TO:**	
DEPARTMENT	**SUPPLY CHAIN MANAGEMENT**	**TECHNICAL**	
CONTACT PERSON	**SCM**	CONTACT PERSON	**Technical Enquiry**
TELEPHONE NUMBER	**016 360 7609**	TELEPHONE NUMBER	**010 496 3125**
FACSIMILE NUMBER	**N/A**	FACSIMILE NUMBER	**N/A**
E-MAIL ADDRESS	**tenders@midvaal.gov.za**	E-MAIL ADDRESS	**tenders@midvaal.gov.za**

T1.1.2. MBD 1 – TERMS & CONDITIONS FOR BIDDING – PART B

1. BID SUBMISSION:	
1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.	
1.2. ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR ONLINE.	
1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, THE GENERAL CONDITIONS OF NTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.	
2. TAX COMPLIANCE REQUIREMENTS	
2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.	
2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VIEW THE TAXPAYER'S PROFILE AND TAX STATUS.	
2.3 APPLICATION FOR THE TAX COMPLIANCE STATUS (TCS) CERTIFICATE OR PIN MAY ALSO BE MADE VIA E-FILING. IN ORDER TO USE THIS PROVISION, TAXPAYERS WILL NEED TO REGISTER WITH SARS AS E-FILERS THROUGH THE WEBSITE WWW.SARS.GOV.ZA.	
2.4 FOREIGN SUPPLIERS MUST COMPLETE THE PRE-AWARD QUESTIONNAIRE IN PART B:3.	
2.5 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.	
2.6 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.	
2.7 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.	
3. QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS	
3.1. IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?	☐ YES ☐NO
3.2. DOES THE ENTITY HAVE A BRANCH IN THE RSA?	☐ YES ☐ NO
3.3. DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?	☐ YES ☐ NO
3.4. DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?	☐ YES ☐ NO
3.5. IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?	☐ YES ☐ NO
IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 ABOVE.	

NB: FAILURE TO PROVIDE ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.

NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE.

SIGNATURE OF BIDDER: ……..……

CAPACITY UNDER WHICH THIS BID IS SIGNED: ……..……

DATE: ……..……

T1.1.3. REFERENCE NUMBER AND TITLE

The contract number and title shall be:

BID NO: 8/2/2/444 (6EP/5EPPE): BID FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

T1.1.4. BRIEF DESCRIPTION OF THE WORKS

The Contractor, to be appointed by Midvaal Local Municipality, will undertake the full scope of work which, at high level, comprises of the supply, delivery, installation, testing, commissioning, and handing over, complete with auxiliary equipment.
of:

- Construction of 11 kV overhead network
- Construction of 400 V overhead network
- Installation of Service Connections.

T1.1.5. SUBMISSION AND VALIDITY OF TENDERS

Tenders are to be delivered to:

THE TENDER BOX: BLOCK A
CIVIC CENTRE
25 MITCHELL STREET
MEYERTON
1961

Tenders are to be submitted in a robust sealed parcel clearly marked as follows:

BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

BID NO : 8/2/2/444 (6EP/5EPPE OR HIGHER)

CLOSING DATE : 12 JUNE 2025 at 10H00

NAME OF TENDERER : _____

The name of the Tenderer shall appear prominently on the cover of the parcel.

Tenders will not be considered unless all relevant schedules and Form of Tender contained herein have been completed.

Any alternative offers which the Tenderer may wish to submit may be presented on their official stationary, but it shall be understood that such offers shall be subject to all the conditions set out in this document and the bill of quantity must be price to consider alternative offers.

Tenderer`s Condition of Sale or Contract printed on their own stationary will be disregarded and it shall be clearly understood that the Conditions which shall apply shall be those contained in these documents unless the Tenderer specifically absolves himself from any such conditions on the form "Alterations by Tenderer" contained in this document.

On no account shall any alterations be made to the text of these documents, or any pages removed from the binding

Tenders received after the closing date and time shall not be considered.

Faxed, e-mailed or telephonic tenders will NOT be accepted.

Tenders are to be valid for a period as indicated in the Special Provisions of the Conditions of Contract from the date of submission.

Tender prices shall remain fixed and firm for the entire validity period.

The Tenderer shall submit one completed original tender document.

T1.1.6. COMPULSORY SITE BRIEFING

A compulsory clarification meeting with representatives of Midvaal Local Municipality will take place on Tuesday, 27 May 2025 at 10h00 at:

MIDVAAL ENGINEERING SERVICES
56 Rooibok Street
Highbury
Meyerton
1961

GPS Co-ordinates: -26.515083, 28.044598

SIGNATURE CONTRACTOR / SUPPLIER

T1.2 – TENDER DATA

T1.2. TENDER DATA

The Contractor shall supply, install and commission all material for this project and deliver the project up to the final handing over stage, including the Defects Notification Period.

Note: The tenderer must allow for construction over multiple years as from the date of tender award up to the 30 June 2028 as funding is made available. The tender shall allow for all de-establishment and re-establishment costs, including renewal of assurances and insurances in the relevant sections of the BOQ.

The Contract shall include all costs entailed in the detail design and preparation of all manufacturing drawings as specified in Clause 3.1.11 in Section 5, all costs of supplying and delivering the Works to site, all costs entailed in commissioning the Works, handing over of the Works to the relevant authority, all supervision, labour, tools, and materials necessary for erecting and testing of the works.

The Contract shall also include a warranty period, as indicated in the Contract Data under the Conditions of Contract (Defects Notification Period), all in accordance with the Conditions of Contract and Schedule of Requirements. The Contractor shall supply, install, and commission all material for this project and deliver the project up to the final handing over stage, including the Defects Notification Period.

The tender document shall be accompanied with the relevant tender returnables as stipulated.

The following conditions will apply to this project:

a) The contract shall be executed by means of labour-intensive construction methods for the purpose of including local labour.
b) The tenders will be adjudicated according to Midvaal Local Municipality's SCM Policy.
c) Progress payment shall be done according to period progress and payment for material may only be done for material on and off site and as certified by the Engineer and approved by the employer's representative according to their measurements.

T1.2.1. TENDER VALIDITY

The tender offer validity shall be 90 calendar days.

T1.2.2. DOCUMENTS

The Tender Documents comprise of a complete set which includes one (1) bound volume: (Ref. No. 8/2/2/444 (2025-2028)) containing consecutively numbered pages per section scheduled in the List(s) of Contents, and drawings which are listed in the drawings section of the document and included as an annexure.

Tenderers are advised to check the number of pages in the Tender Document and verify the inclusion of all drawings listed. If any pages or drawings are missing or duplicated, or if there are any discrepancies or obvious errors noticed, the Tenderer is liable for any errors and ambiguities in the tender submitted. The Tenderer shall immediately request clarification.

T1.2.3. CONSULTING ENGINEERS

The Employer will appoint a Consulting Engineer per works/purchase order. This shall be advised per project.

TECHNICAL AND SUPPLY CHAIN ENQUIRIES MAY BE DIRECTED TO:

E-Mail : tenders@midvaal.gov.za

Queries shall be in writing and no queries will be entertained within seven (7) calendar days of the tender closing date.

T1.2.4. PROGRAMME & CASH FLOW

Tenderers are required to submit programmes for the main activities of each section of work as well as a proposed cash flow.

The program shall indicate the following items as a minimum:
1. Commencement date
2. Date for right of access to, and possession of, the site
3. Preparation and submission of the Contractor documents
4. Time for site establishment
5. Time for obtaining H & S permit (if required)
6. Procurement
7. Manufacture of equipment
8. Factory Acceptance Testing
9. Delivery to site
10. Construction / Erection
11. Installation
12. Site Acceptance Testing
13. Testing and Commissioning
14. Handover
15. “Float” for unforeseen delays

T1.2.5. COMPLIANCE WITH SPECIFICATIONS AND STANDARDS

The Tenderer is responsible for the aptitude and efficiency of the proposal submitted, which is offered as a complete working unit, it follows that the tenderer is entirely responsible for the inclusion in the tender offer for every item of plant and every accessory which may be necessary including the means of fixture into its required position, and also including all measures required by any Act or Regulation in force governing the operations of electrical equipment, wiring and installations. It is also incumbent on the Tenderer to make provision in the tender offer for the highest quality of workmanship, in both the manufacture of the equipment and its accessories, and in the erection thereof.

If it is found, whilst the plant is being erected or when it is about to be commissioned or during its test period or period of warranty, that any item necessary for the continuous and efficient operations of the Works to the full capacity required was omitted from the tender or was included, but has since been found not to be entirely satisfactory, or that the workmanship during manufacture or erection was not of the best standard, it shall be the responsibility of the Tenderer to supply such an item, replace it with a satisfactory one, or re-erect any portion of the Works, as the case may be, at his/her own expense.

Under the provisions above, it follows that there shall be no extras of any kind except such extras as may be ordered in writings by the Engineer to be supplied or erected by way of additional plant or accessories, or such extras which may arise as a result of the building work not having been carried out in conformity with the working drawings supplied by the Contractor.

T1.2.6. ASSESSMENT OF TENDERS

Tenders will be adjudicated solely on the information submitted with the tender before tender closure. No alteration shall be considered after tender closure. The Engineer / Adjudicator reserves the right to adjust obvious arithmetic errors in the Bill of Quantities and subsequent calculation of the total tender amount. Tenders shall firstly be evaluated for responsiveness which requires full compliance to compulsory returnables, to be deemed responsive. Responsive tenders shall be evaluated for functionality.

Responsive tenders scoring above the minimum functionality threshold shall be evaluated in accordance with the Preferential Procurement Policy Framework Act (2000), to determine the preferred bidder.

T1.2.7. ACCEPTANCE OF TENDERS

The successful tenderer shall enter into a Contract with the Employer, in accordance with the Conditions of Contract, for the execution of the specified works.

The Employer does not bind himself to accept the lowest or any tender or to give any explanation for decisions made in connection with the tenders, further, the Employer reserves the right not to award the contract.

The Employer reserves the right to accept any one or more or all of the sections of the Works as specified in this document, and that no liability is accepted for any expenses incurred by a tenderer in submitting a tender offer. The Employer therefore reserves the right to scale down the project to fall within the values of the available funds even if the reduced Scope of Works exceeds 20 % of the tender amount. No alteration of unit prices will be allowed for scaling down on the project.

Limited, non-guaranteed funds are available for this project.

The tender shall be disqualified if the materials offered by the tenderer do not comply with the relevant specifications.

T1.2.8. IMPORTED AND LOCAL ITEMS OF PLANT

The Tenderer should take cognizance of the requirement for regarding local production and content as stipulated in the Preferential Procurement Policy Framework Act, Act No 5 of 2000, Preferential Procurement Regulations, 2022.

The Tenderer must furnish, with his/her tender, a summary of what plant he intends to import and which of it he intends to be locally manufactured.

The Tenderer should give Particulars of the premises where he intends locally manufactured items to be made and offer every facility to the Employer and the Engineer for inspecting such premises before

the tenders are considered, to enable the Employer and the Engineer to satisfy them that the facilities for manufacturing the items concerned are adequate.

T1.2.9. CURRENCY AND FOREIGN TENDERS

All prices quoted and all transactions are to be in the currency of the Republic of South Africa (South African Rand).

Tenders not domiciled in the Republic of South Africa (R.S.A.) shall state the name and address of their accredited or intended agents within the R.S.A, failure to do so will invalidate the tender.

T1.2.10. HEALTH AND SAFETY

The Tenderer shall comply with the provisions of the Occupational Health and Safety Act no 85 of 1993, as amended, and shall undertake to acquaint his/her employees with the provisions, regulations, duties, obligations, and prohibitions, and shall accept sole liability for due compliance with the duties, obligations and prohibitions and absolve the Employer from being obliged to comply with the aforesaid duties, obligations, and prohibitions.

T1.2.11. TECHNICAL FUNCTIONALITY

After evaluating tenders for responsiveness, the functionality of the tenderer will be evaluated and to qualify for the next round of evaluation, the tenderer must score a minimum threshold percentage. Only tenders scoring above the minimum threshold score will advance to the preferential procurement evaluation.

The responsiveness check determines if all information and documents required are submitted with the tender, non-responsive tenders shall not be considered for functionality evaluation. The functionality evaluation involves detailed adjudication of all forms, technical schedules, returnables etc. to be populated or included by the tenderer.

For the minimum requirements, refer to Section 2: T2 – Tender Form, under Returnables: Claim for Functionality.

T1.2.12. PREFERENTIAL PROCUREMENT

The following preference point systems are applicable to all bids in terms of the "PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000: PREFERENTIAL PROCUREMENT REGULATIONS, 2022":

- the 80/20 system for requirements with a Rand value equal to or above R 30 000.00 and up to R 50 000 000.00 (all applicable taxes included); and
- the 90/10 system for requirements with A Rand value above R 50 000 000.00 (all applicable taxes included)

The value of this bid is estimated not to exceed R 50 000 000 (all applicable taxes included) therefore the 80/20 system shall be applicable.
Preference points for this bid shall be awarded for:

- Price; and
- Specific Goals.

The maximum points for this bid are as follows:

	POINTS
PRICE	80
SPECIFIC GOALS	20
Total points for price and specific goals must not exceed	**100**

Failure on the part of a bidder to fill in and/or to sign this form and submit a B-BBEE Verification Certificate from a Verification Agency accredited by the South African Accreditation System (SANAS) or a sworn affidavit together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed. It shall further be noted that the sworn affidavit be provided by the authorised representative of the company. Affidavits from accounting firms will not be accepted.

Original or Certified copy of SANAS only accredited BBBEE certificate OR copy of BBBEE Sworn Affidavit must be attached. (Failure to submit Valid Certificate will result in your bid not being allocated Points for BBBEE).

The Employer reserves the right to request the bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the Employer.

T1.2.13. ELIGIBILITY TO TENDER

Only those tenderers who satisfy the following eligibility criteria shall be eligible to submit tenders:

a) The Tenderer or any of its directors/ shareholders is not listed on the Register of Tenderer Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004, as a person prohibited from doing business with the public sector.

b) Has the legal capacity to enter into the contract,

c) 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.

d) The Tenderer submits an original valid Tax Clearance Certificate/ or Tax Clearance Verification Pin issued by the South African Revenue Services or has made arrangements to meet outstanding tax obligations.

e) The Tenderer is registered with the CIDB with an appropriate category of registration.

f) The Tenderer has not:
- Abused the Employer's Supply Chain Management System; or
- Failed to perform on any previous contract and has been given a written notice to the effect.
- Failed to pay municipal rates ad taxes or service charges and such rates, taxes and charges are in arrears for more than three months.

g) There is no conflict of interest which may impact on the Tenderer's ability to perform the Contract in the best interests of the Employer or potentially compromise the tender process.

h) Competency of management and supervisory staff:
- Only tenderers with staff satisfying the requirements of the Scope of Works, are eligible to submit tender.

i) Joint ventures are eligible provided that:
- Every member of the joint venture is registered with the CIDB.
- The lead partner has a grading equal to or higher than the grading specified.
- The combined contractor grading designation calculated in accordance with the CIDB Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations.

T1.2.14. ALTERATIONS BY TENDERER

Tenderer's Condition of Sale or Contract printed on their own stationary will be disregarded, the Conditions which shall apply shall be those contained in these documents unless the Tenderer specifically absolves himself from any such conditions on the form "Alterations by Tenderer" contained in the "Alterations to Tender" table.

On no account shall any alterations be made to the text of these documents, or any pages removed from the binding.

Should the Tenderer desire to make any departures or modifications to the General Conditions of Contract, Specifications, Bill of Quantities or Drawings, or to qualify his/her tender in any way, he shall set out his/her proposals clearly in the table hereunder.

If no departures or modifications are desired, the Schedule hereunder is to be marked NIL and signed by the Tenderer.

FAILURE TO POPULATE AND SIGN *"Table 1: Alterations by tenderer"* SHALL RESULT IN THE TENDER OFFER BEING NON-RESPONSIVE.

Table 1: Alterations by tenderer

PAGE	CLAUSE OR ITEM

NAME & SIGNATURE OF TENDERER : ……..……...

DATE : ……..……...

NAME & SIGNATURE OF WITNESS : ……..……...

MIDVAAL LOCAL MUNICIPALITY
P O Box 9
MEYERTON
1960

BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

SECTION 2:
T2 - TENDER FORM

CONTENTS: TENDER FORM

List of Tables

TABLE OF CONTENTS: MBD FORMS (Compulsory)

T2.1 – LIST OF RETURNABLE DOCUMENTS

T2. TENDER FORM

T2.1. LIST OF RETURNABLE DOCUMENTS

It is a condition of tender that the tender must be accompanied with the following documentation.

T2.1.1. COMPULSORY RETURNABLES

NOTE:
Returnables not forming part of the tender document shall be compiled into a separate "returnables" file and submitted as a Volume 2 to the tender document.

Table 1: Table of Compulsory Returnables

NO	RETURNABLES	NOTES	COMPLIANCE (TICK)	
			YES	NO
1	Form of Offer	• Fully completed and signed in black ink pen.		
2	COID	• Proof of compliance with the Compensation for Occupational Injuries and Diseases Act 130 of 1993 (as amended)		
3	A copy of a CSD summary report **OR** CSD number.	• CSD full report or summary report OR CSD number.		
4	Proof of company registration documents with the Director's details must be attached.	• The company registration documents must indicate the company and Director's details.		
5	Fully completed MBD forms	• **Fully Completed and signed**, handwritten and in black ink pen.		
6	Audited Financial Statements signed by the **CA or Auditor & Director of the company** (MBD 5 form)	• If required by law submit audited financial statements for the past 3 years or since the date of establishment if established during the past 3 years.		
7	Joint Venture Agreement **ALL OF THE DOCUMENTS FROM ROWS 1 TO 6 ABOVE ARE REQUIRED FOR EACH COMPANY IN THE JV AGREEMENT.**	• If applicable submit a complete and signed JV agreement. • JV agreement stating who the lead partner is with the shared percentages. • Note: JV agreement must be as per CIDB Regulation of 2008 regulation 25 (5)(a), (b) and (6)		

NO	RETURNABLES	NOTES	COMPLIANCE (TICK)	
			YES	NO
8	In the event of a tenant renting a lease agreement **MUST** be attached for the **COMPANY AND DIRECTORS/TRUSTEES/ MEMBERS/SHAREHOLDERS.**	The lease agreement must include the following: • A valid copy of the lease agreement must be signed by (both Lessor and lessee). • The lease agreement must indicate dates of commencement and expiry or duration. • **NOTE:** The lease agreement for the company must indicate that the premises are for business purpose. • In a case where the lease agreement has expired and there is a clause indicating an automatic renewal the original lease agreement and a confirmation letter signed by Lessor must be attached. • In the occasion where the lease agreement has expired the original lease agreement **AND** extension must be attached with commencement and expiry dates or duration.		
9	Municipal rates and taxes for bidders who are from the rural areas for **the COMPANY AND DIRECTORS / TRUSTEES / MEMBERS / SHAREHOLDERS.**	• In the event that the bidder is from the rural area a letter from the municipality that the area is not liable to pay municipal rates and taxes **OR** a signed letter from the chief indicating that the bidder is from that particular rural/tribal area.		
10	BBBEE Certificate or Affidavit	• Valid SANAS only accredited BBBEE certificate **OR** valid copy of BBBEE Sworn Affidavit must be attached. (**Failure to submit Valid Certificate will result in your bid not being allocated Points for BBBEE**).		
11	CIDB Grading	• Copy of Company CIDB Grading designation 6EP/5EPPE or higher.		

NO	RETURNABLES	NOTES	COMPLIANCE (TICK)	
			YES	NO
12	Fully Completed BOQ	• BOQ completed in handwriting and black ink pen.		
13	Technical Schedules	• All technical A-B schedules populated and compliant to specification.		
		• GSE01 – Reticulation		
		• GSE08 – PVC Cable		
		• GSE19 – Pole Transformer		
		• GSE50 – MV Cable		
14	Confirmation by guarantor	• Confirmation letter to be provided by the tenderer's guarantor that the 10% performance security guarantee can be obtained in accordance with the condition of the contract.		
15	Programme	• Programme submitted according to the requirements of the Tender Conditions (T1.2.4)		
16	Certificate of Undertaking	• Certificate of Undertaking to be signed (T2.2.23)		

Table 2: Specific Goals

GOAL	WEIGHT		REQUIRED PROOF	SUBMITTED (TICK)	
				YES	NO
Local Enterprise ***(10 Points)***	10 Points, if the business operates within the jurisdiction of Midvaal Local Municipality		• Rates and Taxes statement in the name of the business, or that of its director(s); OR • Confirmation of the company's director(s) ward and voting district as per the IEC (Independent Electoral Commission of South Africa)		
	5 Points, if the business operates outside Midvaal but within the Sedibeng District jurisdiction				
	3 Points, if the business operates outside the Sedibeng jurisdiction				
	0 points for non-submission				
B-BBEE Status ***(10 Points)***	Status Contributor	Points	B-BBEE certificate: - issued by the DTIC (The Department of Trade and Industry and Competition) through CIPC; OR - from an accredited institution registered with SANAS; OR a valid sworn affidavit, as issued by the DTIC		
	1	10			
	2	8			
	3	6			
	4	5			
	5	4			
	6	3			
	7	2			
	8	1			

NB: *confirmation of the voting district can be obtained from https://www.elections.org.za/pw/Voter/Voter-Information*
A screenshot of the confirmation will be sufficient.

BIDDER'S AUTHORISED SIGNATORY:

Full Names and Surname: Signature:

_____ _____

T2.2 – RETURNABLE SCHEDULES

T2.2. RETURNABLE SCHEDULES

T2.2.1. CIDB REQUIREMENTS

In terms of Clause 3 of the Notes on the use of Standardized Procurement Documents for Engineering and Construction Works, October 2005, all Prime or Main Contractors must register with the Construction Industry Development Board (CIDB) according to Act 38 of 2000.

After receipt of an application the CIDB will grade the applicant according to experience in the various sections of works and financial capability.

The CIDB requirements for all contractors tendering on this project are as follows:

1. Tenderers and his subcontractor must be registered with the CIDB in an EP class of construction works.

2. Tenderers must have a CIBD Contractor Grading Designation of 6 EP/5 EPPE or higher. Please note that this tender will not be split and that no portion of the contract may be outsourced unless specified.

3. The tenderer shall submit the company profile and CIDB registration of the proposed sub-contractor for this project.

NAME & SIGNATURE OF TENDERER : ……..

DATE ……..

NAME & SIGNATURE OF WITNESS ……..

T2.2.2. MBD 4 – DECLARATION OF INTEREST

1. No bid will be accepted from persons in the service of the state[1].

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 bidder or their authorised representative declare their position relation to the evaluating/adjudicating authority.

3. A Person who is an advisor or consultant contracted with the municipality.

4. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid

4.1. Full Name of bidder or his or her representative:

_____

4.2. Identity Number:

4.3. Position occupied in the Company (director, trustee, shareholder[2]):

_____

4.4. Company Registration Number:

_____

4.5. Tax Reference Number

_____

4.6. VAT Registration Number

_____

4.7. The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.

4.8. Are you presently in the service of the state? **YES / NO**
If so, furnish particulars.

_____

_____

[1]MSCM Regulations: "in the service of the state" means to be –

(a) a member of –
- *any municipal council;*
- *any provincial legislature; or*
- *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) a 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.*

4.9. Have you been in the service of the state for the past twelve months? **YES / NO**
If so, furnish particulars.

_____

_____

4.10. 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**

If so, furnish particulars.

_____

_____

4.11. Are you aware of any relationship (family, friend, other) between any other bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid? **YES / NO**
If so, furnish particulars.

_____

_____

4.12. Are any of the company's directors, trustees, managers, principal shareholders, or stakeholders in service of the state? **YES / NO**
If so, furnish particulars.

_____

_____

4.13. Are any spouse, child or parent of the company's directors' trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**
If so, furnish particulars.

_____

_____

4.14. 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**
If so, furnish particulars.

_____

_____

5. Full details of directors / trustees / members / shareholders.

Full Name	Identity Number	State Employee Number

6. **Please note that The Federal Executive of the DA resolved as follows:**

"That no office-bearer or member of the professional staff of the Party, or any company, partnership, close corporation or similar juristic entity in which such office-bearer or member of the professional staff has an interest, may tender for or contract to provide any goods or services to any DA controlled government.

For the purposes of this resolution:

"office-bearer" means any public representative or member of the Federal Executive, a provincial executive, a provincial management committee, a regional executive or a constituency executive;

"an interest" means that the office bearer or member of the professional staff has a 5% of more stake; and

"member of the professional staff" means any person who has an employment contract with the Party, and includes any person who is employed by the Party but who is paid by an organ of state, but does not include any person paid a gratuity or honorarium for services rendered to the Party."

6.1. Are you or your company an office-bearer by means of any public representative or member of the Federal Executive, a provincial executive, a provincial management committee, a regional executive or a constituency executive? **YES / NO**
If so, furnish particulars.

_____

_____

6.2. Do you or your company have an interest by means that the office bearer or member of the professional staff has a 5% of more stakes? **YES / NO**
If so, furnish particulars.

_____

_____

6.3. Are you or your company a member of the professional staff by means any person who has an employment contract with the Party, and includes any person who is employed by the Party but who is paid by an organ of state, but does not include any person paid a gratuity or honorarium for services rendered to the Party? **YES / NO**
If so, furnish particulars.

_____

_____

CERTIFICATION

I, THE UNDERSIGNED (NAME) _____
CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT.

I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

_____	_____
SIGNATURE	**DATE**
_____	_____
POSITION	**NAME OF BIDDER**

T2.2.3. MBD 5 – DECLARATION FOR PROCUREMENT ABOVE R 10 MILLION (ALL APPLICABLE TAXES INCLUDED)

For all procurement expected to exceed R10 million (all applicable taxes included), bidders must complete the following questionnaire.

1. Are you by law required to prepare annual financial statements for auditing? **(YES/NO)**

   ……

   If yes, submit audited annual financial statements for the past three years or since the date of establishment if established during the past three years.

2. Do you have any outstanding undisputed commitments for municipal services towards any municipality for more than three months or any other service provider in respect of which payment is overdue for more than 30 days? **(YES/NO)**

   If no, this serves to certify that the bidder has no undisputed commitments for municipal services towards any municipality for more than three months or other service provider in respect of which payment is overdue for more than 30 days.

   If yes, provide particulars

   _____

   _____

3. Has any contract been awarded to you 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? **(YES/NO)**

   If yes, provide particulars

   _____

   _____

4. Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality / municipal entity is expected to be transferred out of the Republic? **(YES/NO)**

   If yes, provide particulars

   _____

   _____

CERTIFICATION

I, THE UNDERSIGNED (NAME) _____
CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT.

I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

_____	_____
SIGNATURE	**DATE**
_____	_____
POSITION	**NAME OF BIDDER**

T2.2.4. MBD 6.1 - PREFERENTIAL PROCUREMENT CLAIM FORM

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

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

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

---

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to all bids:

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

1.2 **To be completed by the organ of state**
(delete whichever is not applicable for this tender)

(a) The applicable preference point system for this tender is the 90/10 preference point system.

(b) The applicable preference point system for this tender is the 80/20 preference point system.

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

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:
(a) Price; and
(b) Specific Goals.

1.4 **To be completed by the organ of state**
The maximum points for this bid are allocated as follows:

	POINTS
PRICE	**80**
SPECIFIC GOALS	**20**
Total points for Price and SPECIFIC GOALS	**100**

1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

a) "**tender**" means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;

b) "**price**" means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;

c) "**rand value**" means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;

d) "**tender for income-generating contracts**" means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and

e) "**the Act**" means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1 POINTS AWARDED FOR PRICE

3.1.1 THE 80/20 PREFERENCE POINT SYSTEMS

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

80/20

$$Ps = \mathbf{8888}\,(1 - \frac{Pt - Pmin}{Pmin})$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

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

3.2.1 **POINTS AWARDED FOR PRICE**

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

80/20 **or** **90/10**

$$Ps = \mathbf{8888}\left(1 + \frac{Pt - P\,max}{P\,max}\right) \quad \text{or} \quad Ps = \mathbf{9988}\left(1 + \frac{Pt - P\,max}{Pmax}\right)$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

4.1 In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:

4.2 In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—

(a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or

(b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,

then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

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

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

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

The specific goals allocated points in terms of this tender	Number of points allocated (90/10 system) (To be completed by the organ of state)	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)
Locality		10		
BBBEE		10		

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3 Name of company/firm ……

4.4 Company registration number …….

4.5 TYPE OF COMPANY/ FIRM

- □ Partnership/Joint Venture / Consortium
- □ One person business/sole propriety
- □ Close corporation
- □ Public Company
- □ Personal Liability Company
- □ (Pty) Limited
- □ Non-Profit Company
- □ State Owned Company

[TICK APPLICABLE BOX]

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

i) The information furnished is true and correct;
ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –

a) disqualify the person from the tendering process;
b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;

c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the audi alteram partem (hear the other side) rule has been applied; and
e) forward the matter for criminal prosecution, if deemed necessary.

…….
SIGNATURE(S) OF TENDERER(S)

SURNAME AND NAME: …….

DATE: ……..……

ADDRESS: ……
……
……
……

T2.2.5. MBD 8 – DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

1. This Municipal Bidding Document must form part of all bids invited.

2. It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.

3. The bid of any bidder may be rejected if that bidder, or any of its directors have:
   a) abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
   b) been convicted for fraud or corruption during the past five years;
   c) willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
   d) been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).

4. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

Item	Question	Yes	No
4.1	Is the bidder or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector? (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 *audi alteram partem* rule was applied). **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.**	Yes ☐	No ☐
	If so, furnish particulars:		
Item	**Question**	**Yes**	**No**
4.2	Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)? **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.**	Yes ☐	No ☐

	If so, furnish particulars:		
4.3	Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes ☐	No ☐
	If so, furnish particulars:		
4.4	Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes ☐	No ☐
	If so, furnish particulars:		
4.5	Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes ☐	No ☐
	If so, furnish particulars:		

CERTIFICATION

I, THE UNDERSIGNED (NAME) _____
CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT.

I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

_____ _____
SIGNATURE **DATE**

_____ _____
POSITION **NAME OF BIDDER**

T2.2.6. MBD 9 - CERTIFICATE OF INDEPENDENT BID DETERMINATION

1. This Municipal Bidding Document (MBD) must form part of all bids[1] invited.

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

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

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

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

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

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

CERTIFICATE OF INDEPENDENT BID DETERMINATION (MBD 9)

I, the undersigned, in submitting the accompanying bid:

……..
(Bid Number and Description)

in response to the invitation for the bid made by:

……..
(Name of Municipality / Municipal Entity)

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

I certify, on behalf of:.....that:
(Name of Bidder)

1. I have read and I understand the contents of this Certificate;

2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;

3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;

4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;

5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
   a) has been requested to submit a bid in response to this bid invitation;
   b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
   c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder

6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement, or arrangement with any competitor. However, communication between partners in a joint venture or consortium[3] will not be construed as collusive bidding.

7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
   a) prices;
   b) geographical area where product or service will be rendered (market allocation)
   c) methods, factors or formulas used to calculate prices;
   d) the intention or decision to submit or not to submit, a bid;
   e) the submission of a bid which does not meet the specifications and conditions of the bid; or
   f) bidding with the intention not to win the bid.

8. In addition, there have been no consultations, communications, agreements, or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.

9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

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

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

…… ……
Signature Date

……. ...……
Position Name of Bidder

T2.2.7. FINANCIAL RESPONSIVENESS

I / We agree, if required, to furnish audited copies of the required financial statements, together with my / our Director's and Auditor's report, for the current, unaudited financial year, including management statements for each month, for consideration by the Employer.

T2.2.8.1. FINANCIAL INFORMATION

a) Turnover in the last three (3) financial years:

2022 / 2023: …….....

2023 / 2024: ……..

2024 / 2025: ……..

b) Financial Year starts on ……..…… and ends on ……

c) Average monthly **income** over the last three financial years: ……...

d) Average monthly **expenses** over the last three financial years: …….….

e) Average monthly **profit** over the last three financial years: ……...….

f) Average monthly **cash funds** over the last three financial years: …….

g) Value of the **largest** <u>completed</u> project in the last three years (excluding VAT):

R……

h) **Average** value of projects completed in the last five years (excluding VAT):

R…….

i) Highest (combined) total value of debtors at any given period during the last three financial years: R……..

j) Lowest (combined) total value of debtors at any given period during the last three financial years: R……..

k) Debtors at tender closing:

> Current (excl. VAT): …….

> 30 days (excl. VAT): …….

> 60 days (excl. VAT): …….

> 90 days (excl. VAT): …….

In excess of 120 days : …….
(excl. VAT)

l) Creditors at tender closing:

> Current (excl. VAT): …….

> 30 days (excl. VAT): …….

> 60 days (excl. VAT): …….

> 90 days (excl. VAT): …….

In excess of 120 days : …….
(excl. VAT)

m) Management statements for all months in the current financial year included: Yes / No
(delete which is not applicable)

n) Name of accountant : ……

Qualifications : ……

Signature : ……

Date : ……

SIGNED AT ……...

ON THIS……DAY OF.....2025.

ON BEHALF OF ……...

…….

SIGNATURE: …….

AS WITNESSES:

1. ……

2. ……

T2.2.8. PROGRAMME

1. Has the site been inspected by the Tenderer? YES / NO

2. Date of inspection …… ……

3. Has a thorough method study been made of the proposed execution of the project? YES / NO

4. Has a preliminary construction programme been prepared of the project and accompanying the tender? YES / NO

ALL PERIOD TO BE CALCULATED FROM DATE OF RECEIVING AN APPOINTMENT LETTER.

5. Period required to commence work: ..... days

6. Period required to establish site: ..... days

7. Period required for material delivery: ..... days

8. Period to first delivery of material: ..... days

9. Period to last delivery of material: ..... days

10. Period required to complete the project: ..... days
(Should be the same as the Letter of Tender AND the project programme)

I / We accept responsibility for late delivery of material and will enter into agreements with our suppliers of material to forward penalties accruing from claims due to late delivery of materials.

…… ……
Signature Date

……. ...……
Position Name of Bidder

T2.2.9. PREVIOUS EXPERIENCE

Particulars of projects of similar nature to that contained in this contract to which the Tenderer is at present committed and / or involved during the last 3 years to be submitted hereunder.

Table 3: Previous Experience

	PROJECT	PLACE	ENGINEER & TEL NO	CONTRACT AMOUNT	CONTRACT PERIOD	DATE COMPLETED	COMPLETION IN TIME (YES / NO)
1.							
2.							
3.							
4.							
5.							

Is the information provided in compliance with the POPI (Protection of Personal Information) Act?

Yes ☐
No ☐

…… ……
Signature Date

……. ……
Position Name of Bidder

T2.2.10. ESTIMATED MONTHLY EXPENDITURE (CASH FLOW)

The Tenderer shall, in the table below, state the estimated value of work to be completed every month, based on his preliminary program and his tendered unit rates. Amounts for contingencies and contract price adjustment shall not be included.

Table 4: Cash Flow

MONTH	VALUE
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	
SUBTOTAL	R
Plus: 5 % Retention	R
TOTAL	**R**

T2.2.11. DECLARATION OF LOCAL INVOLVEMENT

I / We..... the undersigned declare that it is the intent of

..... *(Firm's name in Block Letters)* to stimulate the local economy by providing employment to local residents as summarised below.

I / We are fully aware and understand that this declaration is legally binding, and that a detailed Local Involvement Program and Local Involvement Monthly Return will have to be submitted to the Engineer in accordance with the requirements and provisions stipulated in Clause 2.4 of the Detail Specification, and in the format prescribed by the Engineer.

Table 5: Local Involvement

LOCAL INVOLVEMENT	PART OR TYPE OF WORK	MONETARY VALUE (R)
Local Labour Content		R
Local Sub-Contractors		R
Material Purchased from Local Suppliers		R
Other (Specify)		R
TOTAL (Excl. VAT)		**R**

…… ……
Signature Date

……. ...……
Position Name of Bidder

T2.2.12. MATERIAL INFORMATION

Where a certain manufacturer's material or apparatus are mentioned in the drawings or specifications, such materials or apparatus shall be provided as specified, excepting where an alternative to this condition is allowed in the specifications. Where a detailed specification for material or apparatus is not provided, it shall be understood that all normal requirements for the use of such material or equipment shall apply.

Where certain products of a specified manufacturer are unobtainable, substitutes may be offered, but shall only be supplied after written consent has been given by the Employers Representative.

All apparatus, components, fittings, and material supplied and / or installed, whether expressly specified herein or not, shall confirm in respect of quality, manufacture, tests and performance, with the requirements of the South African Bureau of Standards and / or the appropriate current "British Standard Specifications and Addenda thereto", except where otherwise specified or permitted by the Employers Representative in writing.

The Employers Representative may order the elected contractor to supply and / or deliver and / or install any other make or manufacture of article(s) than that / those for which the contractor tendered. The unit total cost of such item(s) taken out, shall then be subtracted from the tender sum of the contractor and the unit total of such other apparatus, component parts, fittings and / or materials, with which these are replaced, if any, shall be added to the tender price.

The price of such items added or omitted shall be calculated by using the current general wholesale prices at which the Electrical Contractor can buy such equipment. The Employers Representative decision for the determination of such prices shall be final.

Installation work which has been started with certain materials and / or equipment shall be completed by using the same manufacture of articles or equipment throughout the whole project, for that specific application, unless specified otherwise.

……	……
Signature	Date
…….	...……
Position	Name of Bidder

NO CHANGE OF SUPPLIER OF MATERIALS AS QUOTED WILL BE CONSIDERED

Table 6: Equipment Delivery & Manufacturers

	DELIVERY PERIOD	TYPE	MANUFACTURER
Wooden Poles			
22 kV Insulators			
Powerline Hardware			
Conductor			
Stays			
Pole Boxes			
Ready Boards			
MV Assemblies			
LV Assemblies			
Energy Meters			

T2.2.13. IMPORTED EQUIPMENT

The tenderer shall, in the table below, state the value of equipment to be imported every month, based on his preliminary program and his tendered unit rates. Amounts for contingencies and contract price adjustment shall not be included.

Table 7: Imported Equipment

EQUIPMENT	MONTH	VALUE
	1	R
	2	R
	3	R
	4	R
	5	R
	6	R
	7	R
	8	R
	9	R
	10	R
	11	R
	12	R
	13	R
	14	R
	15	R
	16	R
	17	R
	18	R
	19	R
	20	R
	21	R
	22	R
	23	R
	24	R
	25	R
SUBTOTAL		R
TOTAL		**R**

T2.2.14. COMPOSITION OF TENDERER'S COMPANY

1. GENERAL

State whether the Tenderer is a company, a partnership, a person or a closed corporation.

Company		Partnership		Person		Closed Corporation	

2. INFORMATION TO BE PROVIDED

2.1 IF THE TENDERER IS A COMPANY:

a) Affix a certified copy of the Certificate of Incorporation to this page.

b) List the Directors and each Director's date of appointment:

Table 8: Directors' appointment dates

DIRECTORS	DATE OF APPOINTMENT
1.	
2.	
3.	
4.	
5.	
6.	

a) List the Shareholders and percentage of shareholding:

Table 9: Shareholders' percentages

SHAREHOLDERS	PERCENTAGE OF SHARE HOLDING
1.	
2.	
3.	
4.	
5.	
6.	

d) List all companies of which your Company is a shareholder and percentage shares:

Table 10: Company shareholding

COMPANIES	PERCENTAGE SHARES
1.	
2.	
3.	
4.	
5.	
6.	

2.2 IF THE TENDERER IS A PARTNERSHIP:

a) List the partners and state each partner's share in the partnership:

Table 11: Partnership shares

PARTNER	PARTNER'S SHARE
1.	
2.	
3.	
4.	
5.	
6.	

2.3 IF THE TENDERER IS A PERSON:

a) Provide the full name and qualifications of the person:

Table 12: Tenderer qualification

FULL NAME OF PERSON	QUALIFICATIONS
1.	
2.	
3.	
4.	
5.	
6.	

2.4 IF THE TENDERER IS A CLOSED CORPORATION:

a) State each member's share in the closed corporation:

Table 13: Member shares in Close Corporation

MEMBER	MEMBER'S SHARE
1.	
2.	
3.	
4.	
5.	
6.	

b) It shall be expected from the above members of the closed corporation in Clause 10.2.4.a) hereof to be responsible in their personal capacity for any transaction relating to this project.

3. SCHEDULE OF SUBCONTRACTORS:

Table 14: Complete Schedule of Sub-contractors

Name of Sub-contractor	Proposed Duties	% of Overall Scope	Experience (Years)
1.			
2.			
3.			
4.			
5.			
6.			
7.			

TOTAL PERCENTAGE SUB-CONTRACTING: ..... %

T2.2.15. POWER OF ATTORNEY

RESOLUTION PASSED BY THE BOARD OF DIRECTORS OF:

.....

.....

AT ..... ON THE ..... DAY OF ..... 20.....

RESOLVED

THAT .....

IN THE CAPACITY OF .....

is hereby authorised and empowered to sign the Tender and Contract Documents on behalf of the Company ..... for the supply, delivery, erection and testing of all Works covered in the attached document.

SIGNATURE: 1. .....

2. .....

CERTIFIED A TRUE COPY: .....

T2.2.16. CERTIFICATE OF CONVERSANCE WITH THE TENDER DOCUMENTS

I / We, the undersigned ..... hereby certify that I / We am / are fully conversant with the General and Special Conditions of Contract, Conditions of Tender, Specifications, Schedules of Quantities and Drawings.

I / We declare that I / We am / are satisfied with the description of the work and the explanations furnished by the Engineer, and that I / We fully understand the nature and extent of the work required to be executed, as specified and according to the intent of the Contract.

I / We declare that all the equipment offered in my / our tender comply to the Specifications of these Tender Documents and that the relevant Data Sheets have been completed correctly and in full.

I / We have ascertained all factors which may have a bearing on the execution of the works and the costs thereof.

SIGNED AT ..... ON BEHALF OF THE FIRM .....

ON THIS ..... DAY OF ..... 20.....

SIGNATURE .....

CAPACITY .....

T2.2.17. CERTIFICATE OF CONVERSANCE WITH THE PROJECT PHASING

I / We, the undersigned ..... hereby acknowledge that the project will be phased over multiple years as from the date of tender award up to June 2025.

I / We, the undersigned .....hereby further acknowledge that I / We am / are fully conversant that the funding is not guaranteed, and the construction works will be subject to the availability of funds.

I / We declare that I / We has / have adequately allowed for all costs associated with site de-establishing and site re-establishment over multiple years as from the date of tender award up to June 2026.

I / We declare that I / We am / are fully conversant with the envisaged Scope of Works for phases.

I / We, the undersigned .....hereby acknowledge that the Scope of Works for phases might be adjusted in excess of 20 % as dictated by the funds allocations and that our unit rates will remain fixed.

SIGNED AT ……

ON BEHALF OF THE FIRM ……..

ON THIS ……. DAY OF……. 20……

SIGNATURE ……..

CAPACITY ……..

T2.2.18. CLAIM FUNCTIONALITY POINTS

For the first round of the evaluation of the tender will be minimum requirements valuated as envisaged below and in order to qualify for pricing and specific goals of evaluation, the tenders must meet the minimum requirements as outlined below. Failure to adhere to the below, the tenders will not be evaluated further.

Table 20: MINIMUM REQUIREMENTS

No.	DESCRIPTION	ATTACHED (YES/NO)	ACCEPTED/NOT ACCEPTED (FOR OFFICIAL USE ONLY)
1	Bidders to submit a minimum of three (3) **both appointment letters and corresponding completion/practical completion certificates** indicating previous experience in the construction of MV & LV reticulation projects within the last 10 years (2015 to date). *Note: High Voltage (HV): 44 kV to 132 kV* *Medium Voltage (MV): 3.3 kV to 33 kV* *Low Voltage (LV): ≤ 1000 V* *Phased completion certificates for one appointment letter will be considered as only one project*.		
2	Bidders must submit a comprehensive CV of **Site Supervisor** with minimum of 4 years' experience in construction of both MV and LV reticulation.		
	AND Bidders must attach a minimum of National Diploma NQF Level 6 in Electrical Engineering. (Attach CV and copy of qualification)		
3	Bidders must submit a comprehensive CV of **Contract Manager** with minimum of 4 years' experience in project management of construction of both MV and LV reticulation.		
	AND Bidders must attach a valid ECSA registration as Pr Eng or Pr Tech Eng or valid SACPCMP registration certificate as a Pr CPM or Pr CM. (Attach CV and copy ECSA/SACPCMP certificate)		
4	Bidders must submit a comprehensive CV of **SHEQ Officer** with minimum of 4 years' experience in safety management.		
	AND Bidders must attach a valid SACPCMP registration certificate as Pr CHSA or CHSO. (Attach CV and copy SACPCMP certificate)		

…… ……

Signature Date

……. ……

Position Name of Bidder

T2.2.19. CONSENT AND ACKNOWLEDGMENTS IN TERMS OF THE PROTECTION OF PERSONAL INFORMATION ACT 2013 (POPI)

This section sets out how personal information will be collected, used and protected by MLM, as required by the Protection of Personal Information Act. The use of the words "the individual" for the purposes of this document shall be a reference to any individual communicating with MLM and/or concluding any agreement, registration or application, with the inclusion of each of those individuals referred to or included in terms of such agreement, registration or application.

1. What is personal information?

The personal information that MLM requires relate to names and surnames, birth dates, identity numbers, passport numbers, demographic information, education information, occupation information, health information, addresses, memberships, and personal and work email and contact details.

2. What is the purpose of the collection, use and disclosure (the processing) of personal information?

MLM is legally obligated to collect, use and disclose personal information for the purposes of:

- reporting MLM initiatives to the Gauteng Provincial Treasury and Sedibeng District Municipality;
- reporting to National Treasury all contracts awarded;
- obtaining information related to Tax Compliance information from SARS;
- Verifying information on the National Treasury database of defaulters;
- evaluating and processing applications for registration on the database;
- compiling statistics and other reports;
- providing personalised communications;
- complying with the law; and/or
- for a purpose that is ancillary to the above. Personal information will not be processed for a purpose other than what is identified (the purpose) above without obtaining consent beforehand.

3. How will MLM process personal information?

MLM will only collect personal information for the purpose as stated above. Information will be collected in the following manner:

- directly from the individual;
- from service providers who provided with services or goods to MLM;
- from MLM's own records relating to previous supply of services or goods; and/or
- from a relevant public or equivalent entity.

4. To whom will personal information be disclosed?

The personal information may be disclosed to other relevant public or other entities on whose behalf we act as intermediaries, other third parties referred to above in relation to the purpose or who are sources of personal information, service providers such as professional bodies who operate across the borders of this country (transborder flow of information) where personal information must be sent in order to provide the information and/or services and/or benefits requested or applied for. In the event of another party/ies acquiring all of or a portion of MLM's mandate or functions, personal information will be disclosed to that party but they will equally be obliged as we are, to protect personal information in terms of this policy and the law.

5. Consent and Permission to process personal information:

I hereby agree with the policy and provide authorisation to MLM to process the personal information provided for the purpose stated.

- I understand that withholding of or failure to disclose personal information will result in MLM being unable to perform its functions and/or any services or benefits I may require from MLM.
- Where I shared personal information of individuals other than myself with MLM I hereby provide consent on their behalf to the collection, use and disclosure of their personal information in terms of this personal information policy and I warrant that I am authorised to give this consent on their behalf.
- To this end, I indemnify and hold MLM not responsible in respect of any claims by any other person on whose behalf I have consented, against MLM should they claim that I was not so authorised.
- I understand that in terms of POPI and other laws of the country, there are instances where my express consent is not necessary in order to permit the processing of personal information, which may be related to police investigations, litigation or when personal information is publicly available.
- I will not hold MLM responsible for any improper or unauthorised use of personal information that is beyond its reasonable control.

6. Rights regarding the processing of personal information:

- The individual may withdraw consent to the processing of personal information at any time, and should they wish to do so, must provide MLM with reasonable notice to this effect. Please note that withdrawal of consent is still subject to the terms and conditions of any contract that is in place. Should the withdrawal of consent result in the interference of legal obligations, then such withdrawal will only be effective if MLM agrees to same in writing. MLM specifically draws to the attention that the withdrawal of consent may result in it being unable to provide the requested information and/or services and/or financial or other benefits.
- In order to withdraw consent, please contact the Information Officer at Johannesm@midvaal.gov.za
- A copy of the full MLM policy is available at our offices, situated at Head Office, 25 Mitchell Street, Meyerton, 1961, South Africa.

- Individuals are encouraged to ensure that where personal information has changed in any respect to notify MLM so that our records may be updated. MLM will largely rely on the individual to ensure that personal information is correct and accurate.
- The individual have the right to access their personal information that MLM may have in its possession and are entitled to request the identity of which third parties have received and/or processed personal information for the purpose. Please note however, that any request in this regard may be declined if:
  - the information comes under legal privilege in the course of litigation,
  - the disclosure of personal information in the form that it is processed may result in the disclosure of confidential or proprietary information,
  - giving access may cause a third party to refuse to provide similar information to MLM,
  - the information was collected in furtherance of an investigation or legal dispute, instituted or being contemplated,
  - the information as it is disclosed may result in the disclosure of another person's information,
  - the information contains an opinion about another person and that person has not consented, and/or
  - the disclosure is prohibited by law.

7. Requesting access and lodging of complaints:

- Please submit any requests for access to personal information in writing to MLM's information officer at Johannesm@midvaal.gov.za
- With any request for access to personal information, MLM will require the individual to provide personal information in order to verify identification and therefore the right to access the information.
- There may be a reasonable charge for providing copies of the information requested.
- If any request has not been addressed to satisfaction a complaint may be lodged at the office of the Information Regulator.

…… ……
Signature Date

……. ...……
Position Name of Bidder

T2.2.20. MUNICIPAL SERVICES, RATES AND TAXES CLEARANCE CERTIFICATE FOR SUPPLY CHAIN MANAGEMENT PURPOSE

The purpose of this form is to obtain prove that municipal services, rates and taxes of the service provider are not more than three months in arrears with the relevant municipality / landlord in the municipal area where the service provider conduct his / her business.

Where bidders are not owners of a property and cannot submit a copy of the municipal account, the following must be completed together with a duly signed lease agreement:

(TO BE COMPLETED BY THE LANDLORD)			
Name of the Landlord:			
Property Physical Address:			
Please tick below		**Yes**	**No**
Rental:	in arrears for more than 3 months		
Municipal services:	in arrears for more than 3 months		
Landlord Signature:			
Date: _____ **Landlord's business stamp here (where applicable)**			

MUNICIPAL SERVICES, RATES AND TAXES CLEARANCE CERTIFICATE, OR LEASE AGREEMENT MUST BE ATTACHED BEHIND THIS PAGE.

T2.2.21. MIDVAAL LOCAL MUNICIPALITY INDEMNITY

1. The Contractor hereby agrees to indemnify, hold harmless and defend Midvaal Local Municipality and their officers, employees, agents and representatives, from and against the following liabilities arising as a result of the execution of the work:

    1.1 Any liability with regard to claims by governmental authorities or others for non-compliance by Contractor of any Act of Parliament, law, ordinance, regulation or by-law made by a lawful authority provided that such compliance therewith was required for the execution of the Contract or at Law.

    1.2 Any liability arising from actual or alleged public or private nuisance arising out of negligent acts or omissions to act of Contractor or its Subcontractors, or of their employees.

    1.3 Any liability arising from loss or damage to Contractor and/or Subcontractor's equipment and their other property on site.

    1.4 Any liability arising from claims with regard to the death of/or injury or sickness or disease to Contractor' employees or the death of/or injury or sickness or disease to third parties.

    1.5 Any liability arising from any loss of/or damage to property belonging to a third party.

    1.6 Any liability arising from actual or asserted infringement or improper appropriation or use of patents, copyrights, proprietary information or know- how in respect of the work designed by/or under the responsibility of the Contractor.

    1.7 Any liability arising from the death or injury or loss or damage to property of third parties or Midvaal Local Municipality's property as a result of the negligent acts or omissions of contractors or its subcontractor's employees.

    1.8 Contractor shall indemnify Midvaal Local Municipality against all claims, proceedings, damages and costs of whatsoever nature arising out of contravention of environmental legislation.

I, ... the undersigned (duly authorised to sign) hereby declare that I have read and understood the abovementioned and agree to all the above.

BIDDER'S AUTHORISED SIGNATORY:

…… ……

Full Names and Surname Signature

T2.2.22. CERTIFICATE OF UNDERTAKING

I, the undersigned, in submitting the accompanying bid:

BID NO: 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

response to the invitation for the bid made by:

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

I certify, on behalf of:

_____ that:

(Name of Bidder)

1. I will ensure that all plant and equipment indicated in the table below will be made available by myself (the bidder) upon award of contract for the entire duration of the contract as and when required for the purpose of executing the works. In the event of not owning the plant and / or equipment I will lease the required plant and equipment for use on an as and when required basis.

Description
1x 8t crane truck
2x LDV
Running blocks
10t Crimper

2. It is my (the bidder) responsibility to ensure that all plant and equipment available will be in good working condition and will not be older than 15 years (2010).

……... ……
Signature Date

……. …….
Position Name of Bidder

T2.2.23. PERFORMANCE MANAGEMENT SYSTEM

The Municipal Finance Management Act (No. 56 of 2003) Section 116 (2) (d) determines that a Municipality must enter into a Performance Management System (PMS) with all service providers.

CONTRACT	THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028	
BIDDER		
TERM OF CONTRACT	From date of award to June 2028	**TENDER NUMBER: 8/2/2/444 (6EP/5EPPE OR HIGHER)**
PERIOD OF ASSESSMENT		**RESPONSIBLE OFFICIALS: Director: Electrical**

KEY PERFORMANCE AREA	KEY PERFORMANCE INDICATOR	RESPONSIBLE PERSON & TARGET DATE	OUTCOME OF PERFORMANCE ASSESSMENT	RECTIFICATION MEASURES TO BE IMPLEMENTED IN THE CASE OF REPORTED DEVIATIONS	AGREED RECTIFICATION MEASURES TO COMPLY
KEY DELIVERABLES AS PER TENDER SPECIFICATIONS					
Project Initiation	Scheduled vs actual date	Contractor / Consultant	Complaint / Non-Compliant		
Quality Assurance	Inspection reports	Contractor / Consultant	Complaint / Non-Compliant		
Occupational Health and Safety	Scheduled Meetings	Contractor / Consultant	Complaint / Non-Compliant		
Compliance	SANS 1200	Contractor / Consultant	Complaint / Non-Compliant		
Adherence to set Milestones	Gant Chart	Contractor / Consultant	Complaint / Non-Compliant		
Local Support and Training	Value	Contractor / Consultant	Complaint / Non-Compliant		

Accepted and agreed upon:

ON BEHALF OF **CONTRACTOR**	ON BEHALF OF **CONSULTANT**	ON BEHALF OF **MIDVAAL**
DATE	**DATE**	**DATE**

T2.2.24. TECHNICAL SCHEDULES

The Technical Schedules shall be populated by the contractor / OEM. Failure to complete any schedule may result in the bid submitted being disqualified.

At no stage during the delivery of the works may the contractor change supplier / manufacturer without the written consent from the Engineer.

TECHNICAL A-B SCHEDULES:
Schedule A: Purchaser's specific requirements
Schedule B: Particulars of equipment to be supplied (to be completed by tenderer)

SIGNED ON BEHALF OF TENDERER: : ……...

COMPANY NAME : ……...

NAME IN BLOCK LETTERS : ……...

DATE : ……...

GSE01 – TECHNICAL SCHEDULE
ELECTRICAL

OVERHEAD RETICULATION
(22kV and below)

TABLE OF CONTENTS

TABLE OF TABLES

NO TABLE OF FIGURES ENTRIES FOUND.

TABLE OF FIGURES

NO TABLE OF FIGURES ENTRIES FOUND.

1. GENERAL

The general requirements for Overhead Power Lines (22kV and below) are covered by sans 10280.

The detailed project requirements shall be covered in the Project Specifications, Drawings and Bill of Quantities.

2. TECHNICAL DATA SCHEDULES

2.1. MV CONDUCTORS

- Supplier : ……...…...
- Code name : ……..
- Material of conductor : ……..
- Number and diameter of wires : ……..……...……..
- Delivery period : .....weeks
- In accordance with the specification : ..... Yes/ No

2.2. LV CONDUCTORS

- Supplier : ……...…...
- Code name : ……..
- Material of conductor : ……..
- Number and diameter of wires : ……..……...……..
- Delivery period : .....weeks
- In accordance with the specification : ..... Yes/ No

2.3. HOUSE CONNECTION CONDUCTORS

- Supplier : ……...…...
- Code name : ……..
- Material of conductor : ……..
- Number and diameter of wires : ……..……...……..
- Delivery period : .....weeks

- In accordance with the specification : ..... Yes/ No

2.4. INSULATORS

2.4.1. LONG ROD INSULATORS (22 KV)

- Material : ……..
- Insulator type number : ……..
- Maximum working load : ……..
- Minimum failing load : ……..
- Outside diameter : ……..
- Distance between centre of unit : .....mm
- Mass of unit : .....kg
- Minimum dry flashover : .....kV
- Minimum wet flashover : .....kV
- Minimum puncture voltage : .....kV
- In accordance with the specification : .....Yes / No

2.4.2. POST INSULATORS (22 KV)

- Material : ……..
- Insulator type number : ……..
- Maximum working load : ……..
- Minimum failing load : ……..
- Outside diameter : ……..
- Distance between centre of unit : .....mm
- Mass of unit : .....kg
- Minimum dry flashover : .....kV
- Minimum wet flashover : .....kV

- Minimum puncture voltage : .....kV
- In accordance with the specification : .....Yes / No

2.5. POLES

- Supplier : ……..
- Delivery Period : ……..
- Type (wood, concrete, steel, etc.) : ……..
- If wood – please specify : ……..
- MPa : ……..
- Tip Load (if applicable) : ……..

2.6. STAYS WIRE

- Number and diameter of wires : ……..……...……..

2.7. STAY ROD

- Type : ……..
- Size : ……..……...……..
- Stay plate size : .....weeks
- In accordance with the specification : ..... Yes/ No

2.8. SURGE ARRESTORS (11 KV)

- Manufacturer : ……..
- Type : ……..……...……..
- Nominal rating : ……..……...……..
- In accordance with the specification : ..... Yes/ No

2.9. ON-LOAD LINKS

- Manufacturer : ……..
- Type : ……..……...……..

- Current rating : .....Ampere
- In accordance with the specification : ..... Yes/ No

2.10. OFF-LOAD HUKLINKS

- Manufacturer : ……..
- Type : ……..……...……..
- Current rating : .....Ampere
- In accordance with the specification : ..... Yes/ No

2.11. PREFORM DEAD-END TERMINATIONS

- Manufacturer : ……..
- Type : ……..……...……..
- In accordance with the specification : ..... Yes/ No

2.12. CLEVIS THIMBLE CLAMPS

- Manufacturer : ……..
- Type : ……..……...……..
- In accordance with the specification : ..... Yes/ No

2.13. PARALLEL GROOVE CLAMPS

- Manufacturer : ……..
- Type : ……..……...……..
- In accordance with the specification : ..... Yes/ No

2.14. PREFORM TOP TIES

- Manufacturer : ……..
- Type : ……..……...……..
- In accordance with the specification : ..... Yes/ No

2.15. PREFORM SIDE TIES

- Manufacturer : ……..
- Type : ……..……...……..
- In accordance with the specification : ..... Yes/ No

2.16. PREFORM ARCING HORNS

- Manufacturer : ……..
- Type : ……..……...……..
- In accordance with the specification : ..... Yes/ No

2.17. PREFORM WRAPLOCK TIES

- Manufacturer : ……..
- Type : ……..……...……..
- In accordance with the specification : ..... Yes/ No

2.18. PREFORM FULL TENSION SPLICES

- Manufacturer : ……..
- Type : ……..……...……..
- In accordance with the specification : ..... Yes/ No

2.19. PORCELAIN POST INSULATOR CAPLESS

- Manufacturer : ……..
- Type : ……..……...……..
- In accordance with the specification : ..... Yes/ No

2.20. MV STAY INSULATOR

- Manufacturer : ……..
- Type : ……..……...……..
- In accordance with the specification : ..... Yes/ No

SIGNED ON BEHALF OF TENDERER

COMPANY NAME : ……

SIGNATURE : ……

NAME IN BLOCK LETTERS : ……

DATE : ……

---ooOoo---

GSE08 – TECHNICAL SCHEDULE ELECTRICAL

PVC INSULATED CABLES

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GSE08 – TECHNICAL SCHEDULE ELECTRICAL

PVC INSULATED CABLES

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NO TABLE OF FIGURES ENTRIES FOUND.

1. GENERAL

The general minimum cable requirements for Low Voltage (600/1 000 V) power cable systems for underground electrical distribution are covered by NRS 074 and SANS 1507.

The detail project requirements shall be covered in the Project Specification, Drawings and Bill of Quantities.

2. TECHNICAL A & B SCHEDULE

Schedule A: Purchaser's specific requirements
Schedule B: Particulars of equipment to be supplied (to be completed by tenderer)

Table 1: 4 mm^2 LV PVC Cable Technical Schedule

Item	Sub-clause	Description	Unit	Schedule A	Schedule B
B.1	4.3.1.2	Conductor size required	mm^2	4	xxxxxxxx
	4.3.1.2	Prospective symmetrical fault current	kA	0.507	xxxxxxxx
	4.3.1.2	Maximum fault duration (1 or 3)	s	1	xxxxxxxx
B.2	4.3.3.1	Number of cores required		2	xxxxxxxx
B.3	4.3.5.1	Are armoured cables required? If yes, state details.		Yes SWA + ECC	xxxxxxxx
B.4	4.3.5.2	Prospective earth fault level	kA	2.249	xxxxxxxx
	4.3.5.2	Maximum fault duration	s	1	xxxxxxxx

Table 2: 6 mm^2 LV PVC Cable Technical Schedule

Item	Sub-clause	Description	Unit	Schedule A	Schedule B
B.1	4.3.1.2	Conductor size required	mm^2	6	xxxxxxxx
	4.3.1.2	Prospective symmetrical fault current	kA	0.757	xxxxxxxx
	4.3.1.2	Maximum fault duration (1 or 3)	s	1	xxxxxxxx
B.2	4.3.3.1	Number of cores required		2	xxxxxxxx
B.3	4.3.5.1	Are armoured cables required? If yes, state details.		Yes SWA + ECC	xxxxxxxx
B.4	4.3.5.2	Prospective earth fault level	kA	2.509	xxxxxxxx
	4.3.5.2	Maximum fault duration	s	1	xxxxxxxx

Table 3: 10 mm^2 LV PVC Cable Technical Schedule

Item	Sub-clause	Description	Unit	Schedule A	Schedule B
B.1	4.3.1.2	Conductor size required	mm^2	10	xxxxxxxx
	4.3.1.2	Prospective symmetrical fault current	kA	1.274	xxxxxxxx
	4.3.1.2	Maximum fault duration (1 or 3)	s	1	xxxxxxxx
B.2	4.3.3.1	Number of cores required		2	xxxxxxxx
B.3	4.3.5.1	Are armoured cables required? If yes, state details.		Yes SWA + ECC	xxxxxxxx
B.4	4.3.5.2	Prospective earth fault level	kA	2.903	xxxxxxxx
	4.3.5.2	Maximum fault duration	s	1	xxxxxxxx

3. TECHNICAL A-B SCHEDULES (ACCESSORIES)

Schedule A: Purchaser's specific requirements
Schedule B: Particulars of equipment to be supplied (to be completed by tenderer)

Table 4: LV PVC Cable Accessory Technical Schedule

Item	Sub-clause of NRS 074-2	Description		Schedule A	Schedule B
1	4.1.1	Joints to be supplied with suitable range taking torque shear ferrules in accordance with NRS 075		No	xxxxxxxxxx
2	4.1.2	Type of insulation **Type of accessory**		xxxxxxxxxx	
3	4.1.2	Cast resin joint		Yes	xxxxxxxxxx
		Number of cores		2 & 4	
		Conductor size	mm^2	10 & 16	
		Quantity		See BoQ	
4	4.1.3	Heat shrink joint		No	xxxxxxxxxx
		Number of cores		xxxxxxxxxx	xxxxxxxxxx
		Conductor size	mm^2	xxxxxxxxxx	xxxxxxxxxx
		Quantity		xxxxxxxxxx	xxxxxxxxxx

Item	Sub-clause of NRS 074-2	Description		Schedule A	Schedule B
5	4.2.2	Outdoor termination kits		Yes	xxxxxxxxxx
		Number of cores		2	
		Conductor size	mm^2	4, 6 & 10	
		Earthing connection required		Yes	xxxxxxxxxx
		Quantity		See BoQ	xxxxxxxxxx
6	4.2.2.2	Terminations to be supplied with suitable range taking torque shear lugs in accordance with NRS 075		No	xxxxxxxxxx
7	4.4	Cable glands		Yes	xxxxxxxxxx
		Cable conductor size	mm^2	4, 6 & 10	
		Number of cores		2	
		Quantity		See BoQ	xxxxxxxxxx
8	4.4.1.2	Type of mechanical cable gland required		Adjustable	xxxxxxxxxx
9	4.5	Lugs		Yes	xxxxxxxxxx
		Conductor size (uncompacted)	mm^2	4, 6 & 10	
		Quantity		See BoQ	xxxxxxxxxx
		Ferrules		Yes	xxxxxxxxxx
10	6.1 (h)	Details of identification tag offered		xxxxxxxxxxx	
11	6.3.1	Language preference for installation instructions		English	xxxxxxxxxx

4. TECHNICAL A-B DEVIATION SCHEDULE

Table 5: LV PVC Cable Deviation Schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost effective than the specification.		
Item	**Sub-clause SANS1029**	**Proposed deviation**

SIGNED ON BEHALF OF TENDERER

COMPANY NAME : ……

SIGNATURE : ……

NAME IN BLOCK LETTERS : ……

DATE : ……

---ooOoo---

GSE19 – TECHNICAL SCHEDULE ELECTRICAL

DISTRIBUTION TRANSFORMERS POLE AND GROUND-MOUNTED TRANSFORMERS UP TO 33KV AND 1MVA

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NO TABLE OF FIGURES ENTRIES FOUND.

1. GENERAL

The general requirements for pole and ground mounted distribution power transformers rated up to 33 kV and 1 MVA are covered by Eskom specification 240-45395762 and SANS 780.

The detail project requirements shall be covered in the Project Specification, Drawings and Bill of Quantities.

2. TECHNICAL A & B SCHEDULE

Schedule A: Purchaser's specific requirements
Schedule B: Particulars of equipment to be supplied (to be completed by tenderer)

Table 1: Technical Schedule

Sub Clause of SANS 780	Description	Schedule A	Schedule B
	Number of units required		
	a) firm	1	xxxxxxxxxx
	b) optional	0	xxxxxxxxxx
4	Nominal rating	100 & 200 kVA	xxxxxxxxxx
	Rating of low-voltage neutral terminal, if other than as specified kVA	xxxxxxxxxx	xxxxxxxxxx
4.5	Primary voltage V	11 000	xxxxxxxxxx
	Secondary voltage V	420 / 242	xxxxxxxxxx
	Number of phases	Three-phase	xxxxxxxxxx
4.6	Insulation level (see table 3)	xxxxxxxxxx	xxxxxxxxxx
	a) medium-voltage kV	95	
	b) low-voltage kV	30	
5.2	Tapping's	Yes	xxxxxxxxxx
4.8	Losses, if other than as specified	xxxxxxxxxx	xxxxxxxxxx
	a) no-load losses W	xxxxxxxxxx	
	b) load losses W	xxxxxxxxxx	
6.1.3	Vector symbol	Dyn11	xxxxxxxxxx

Sub Clause of SANS 780	Description	Schedule A	Schedule B
8.3	Dimensions	xxxxxxxxxx	xxxxxxxxxx
	a) overall height mm	1 500 mm	
	b) overall length mm	1 500 mm	
	c) overall width mm	1 080 mm	
	d) Total mass kg	900	
8.4	Constructional details and fittings (see table 4)	Pole Mounted	xxxxxxxxxx
8.9	Tank type	Sealed	Plain/radiators/ corrugated
8.9.4	Expansion Space %	xxxxxxxxxx	
8.9.6	Tank cases of sealed transformer to be bolted if so agreed	No	
8.9.11	Pressure-relief device	No	
8.10	Conservator	No	xxxxxxxxxx
8.13.1	The type of arrangement required in an air- filled arrangement	xxxxxxxxxx	
8.13.2	Number and type of connection required		xxxxxxxxxx
8.14	Terminations	LV-Cable Box MV-Outdoor	xxxxxxxxxx
	Medium-voltage bushings:	xxxxxxxxxx	xxxxxxxxxx
	a) material	xxxxxxxxxx	
	b) creepage distance mm	31mm/kV	
	BIL kV	95	
	Low-voltage bushings	0.420	
	a) material	xxxxxxxxxx	
	b) creepage distance mm	31mm/kV	
	BIL kV	95	
	Number of conductors per terminal kV	xxxxxxxxxx	

Sub Clause of SANS 780	Description	Schedule A	Schedule B
	Position of bushings	xxxxxxxxxx	
8.14.2	The form of protection against accidental contact with an MV overhead line connection		
8.14.3	The mounting position of bushings		xxxxxxxxxx
8.15	Mounting of an MV surge arrester on a transformer with outdoor bushings		xxxxxxxxxx
8.16	Breather type	xxxxxxxxxx	
8.17	Oil-level gauge (<400 kVA sealed)	Yes	xxxxxxxxxx
8.20	Under base	Flat	xxxxxxxxxx
8.20.4	Fixing hole spacing details	xxxxxxxxxx	
8.20.5	Ground-mounted transformers	xxxxxxxxxx	xxxxxxxxxx
8.21	Details of jacking pads for transformers smaller than 630 kVA	xxxxxxxxxx	
8.23	Corrosive environment	High	xxxxxxxxxx
	Colours of finishing coats, if different from standard	Avocado Green	
8.24.1	Insulating material, if other than as specified	Oil	
8.24.3	Cooling method	ONAN	xxxxxxxxxx
8.25.1	Overload protection %	Yes	
	Open / close convention, if other than as specified	?	
8.25.2	MV fuse	Yes	xxxxxxxxxx
8.26	Number of phases, rated primary and secondary no-load voltages	xxxxxxxxxx	
8.27	Impedance voltage, if other than as specified	4,5 %	
10	Tests	xxxxxxxxxx	xxxxxxxxxx
10.2	Number of copies of routine test results to be provided	Five	xxxxxxxxxx
10.3	Details of previous type test results	xxxxxxxxxx	
		xxxxxxxxxx	

Sub Clause of SANS 780	Description	Schedule A	Schedule B
	Type test certificate serial numbers and dates	xxxxxxxxxx	
10.3.3	The sequence of panels of depth exceeding 260 mm in the corrugated tank fatigue test	xxxxxxxxxx	
10.4.1	Short-circuit withstand test required	Yes – provide type test results	xxxxxxxxxx
10.4.3	Sound level determination required	Yes – provide type test results	xxxxxxxxxx
	Winding Material	Aluminium	xxxxxxxxxx
	Manufacturer	xxxxxxxxxx	

Part 2 – Optional Fittings

Sub Clause of SANS 780	Description	Schedule A	Schedule B
C.1	Current transformers	No	xxxxxxxxxx
	a) type required (mounting details)	xxxxxxxxxx	xxxxxxxxxx
	b) ratio	xxxxxxxxxx	xxxxxxxxxx
C.2	Gas-actuated and oil-actuated relay	No	xxxxxxxxxx
	Type	xxxxxxxxxx	
C.3	Thermometer pockets	Yes	xxxxxxxxxx
C.4	Indicating thermometer	Yes	xxxxxxxxxx
C.4.2	Type of indicating thermometer		
C.4.4	Alarm contacts details		
C.6	Wheels and axles, if required	No	xxxxxxxxxx
	Turns ratio of windings at rated voltage	xxxxxxxxxx	
	Turns ratio corresponding to tappings	xxxxxxxxxx	
	Tapped winding	MV	
	Load loss at rated current corrected to a reference temperature of 75 °C W	xxxxxxxxxx	

Sub Clause of SANS 780	Description	Schedule A	Schedule B
	Impedance voltage related to the principal % tapping	4.75%	
	Internal winding connection symbol	xxxxxxxxxx	

Part 3 – Particulars of transformer for parallel operation

Sub Clause of SANS 780	Description	Schedule A	Schedule B
	Turns ratio of windings at rated voltage	N/A	xxxxxxxxxx
	Turns ratio corresponding to tappings	N/A	xxxxxxxxxx
	Tapped winding	N/A	xxxxxxxxxx
	Load loss at rated current corrected to a reference temperature of 75 °C W	N/A	xxxxxxxxxx
	Impedance voltage related to the principal tapping %	N/A	xxxxxxxxxx
	Internal winding connection symbol	N/A	xxxxxxxxxx

3. TECHNICAL A-B DEVIATION SCHEDULE (DISTRIBUTION TRFR)

Table 2: Distribution Transformer Deviation Schedule

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost effective than the specification.		
Item	**Sub-clause SANS1029**	**Proposed deviation**

SIGNED ON BEHALF OF TENDERER

COMPANY NAME : ……

SIGNATURE : ……

NAME IN BLOCK LETTERS : ……

DATE : ……

---ooOoo---

GSE50 – TECHNICAL SCHEDULE
ELECTRICAL

MV CABLES

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1. GENERAL

The general requirements for Medium Voltage Cables are covered by NRS 013:2007 as amended.

Respective manufacturing standards:
SANS 97 (Paper insulated cables)
SANS 1339 (XLPE Cables)

Cables shall comply with the relevant SANS manufacturing standard and test voltages as prescribed by SANS10198-13 shall be applied during testing and commissioning.

The detailed project requirements shall be covered in the Project Specifications, Drawings and Bill of Quantities.

2. TECHNICAL A & B SCHEDULE - MV PILC CABLES

Schedule A: Purchaser's specific requirements
Schedule B: Particulars of equipment to be supplied (to be completed by tenderer)

Table 1: Technical Schedule – 185 mm^2 3C, Alu, PILC

Item	Subclause	Description		Schedule A	Schedule B
C.1	4.1.3 (a)	Type of insulation (paper or XLPE)		PILC	
	4.1.3 (b)	Number of cores (one or three)		Three	
	4.1.3 (c)	Cable operating voltage	kV	11	
	4.1.3 (d)	Conductor material (copper or aluminium)		Aluminium	
	4.1.3 (e)	Conductor size	mm^2	240	
	4.1.3 (f)	Symmetrical fault level (1 s)	kA	22.5	
	4.1.3 (g)	Earth fault level (1 s)	kA	30.7	
	4.1.5 (a)	Manufacturer’s name		xxxxxxxxxx	
	4.1.5 (b)	Country of origin		xxxxxxxxxx	
	4.1.5 (c)	Minimum bending radius during pulling	mm	xxxxxxxxxx	
	4.1.5 (d)	Minimum bending radius at termination	mm	xxxxxxxxxx	
	4.1.5 (e)	Maximum pulling tension	N	xxxxxxxxxx	
	4.1.5 (f)	Drum diameter over lagging	mm	xxxxxxxxxx	
	4.1.5 (g)	Overall width of drum	mm	xxxxxxxxxx	
	4.1.5 (h)	Diameter of spindle hole	mm	xxxxxxxxxx	

Item	Subclause	Description		Schedule A	Schedule B
	4.1.5 (i)	Gross mass of cable and drum	kg	xxxxxxxxxx	
	4.1.5 (j)	Mass of cable only	kg/m	xxxxxxxxxx	
	4.1.6	Details of any deviations from specification		xxxxxxxxxx	
	4.2.1	Are screened or belted cables required?		xxxxxxxxxx	
	4.2.4.1 / 4.2.42	Wire armouring required?		Yes	
	4.3.1.2	Type B cable required		N/A	
	4.3.4.1	Type of wire armouring required?		SWA	
	4.2.5(PILC) 4.3.5(XLPE)	Type of outer sheath required?		FR PVC	
C.2	5.2	Are routine test certificates required?	Yes/No	Yes	
C.3	6.1.1.1 (e)	Details of any unique sequence of alphanumeric characters required			
	6.2.2	Is a treated drum required?	Yes/No	No	
	6.2.3	Length of cable on drum if not 300 m for three-core or 500 m for single-core	m	300 m	
C.4	7	Is documentation required? <u>With tender:</u> - Type test certificate - Cable composition table (material & dimensions) and cross-sectional dwg. <u>Prior to delivery:</u> - Factory test certificate per cable drum	Yes/No	Yes	

3. TECHNICAL A & B DEVIATION SCHEDULE – MV XLPE CABLES

Table 2: Deviation Schedule – 185 mm^2 3C, Alu, PILC

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

SIGNED ON BEHALF OF TENDERER

COMPANY NAME : ……

SIGNATURE : ……

NAME IN BLOCK LETTERS : ……

DATE : ……

---ooOoo---

MIDVAAL LOCAL MUNICIPALITY
P O Box 9
MEYERTON
1960

BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

SECTION 3:
C1 – CONDITIONS OF CONTRACT

CONTENTS – CONDITIONS OF CONTRACT

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C1.1 – FORM OF OFFER AND ACCEPTANCE

C1. CONDITIONS OF CONTRACT

C1.1. FORM OF OFFER AND ACCEPTANCE

C1.1.1. LETTER OF TENDER (MBD 3.1)

Tenderers are required to fill up all the blank spaces in this Tender Form and Appendices.

MIDVAAL LOCAL MUNICIPALITY
P O Box 9
MEYERTON
1960

BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

We have examined the Conditions of Contract, Specifications, Drawings, Bill of Quantities, Schedules, the attached Appendix and Addenda for the execution of the above-named Works. We offer to execute and complete the Works and remedy any defects therein in conformity with this Tender which includes all these documents, for the sum of:

TOTAL TENDER AMOUNT (VAT is included) **TIME FOR COMPLETION**
(Carried over from summary of Bill of Quantities)

R ....weeks

TENDER AMOUNT IN WORDS.....

.....

We accept your suggestions for the appointment of the Dispute Avoidance and Adjudication Board, as set out in the Schedule.

We agree to abide by this Tender for a period of **ninety (90)** days from the date of submission and it shall remain binding upon us and may be accepted at any time before that date. We acknowledge that the Appendix forms part of this Letter of Tender. We further agree to carry all costs incurred by the Employer in the securing of a suitable alternative Tender, if we should withdraw this Tender before the expiry of the tender validity period, which may include the difference between my/our tender price and the tender price of the next suitable tender.

We undertake, if our tender is accepted, to commence with the Works on receipt of your order and to complete and deliver the Works comprised in the Contract in accordance with the programme set out in the Conditions of Contract, or as mutually agreed between ourselves, the Engineer and the Employer, before acceptance of tender.

We undertake to provide all necessary information, descriptive material, operational procedures, drawings, special circuits where necessary, attend all meetings as required to permit the Engineer to prepare further documents for the Works and to administer the contract to its completion. We further

undertake to provide the above data when required by the Employer and the Engineer to ensure that the proposed programme is adhered to. If this offer is accepted, we will provide the specified Performance Security from an accredited FICA/approved NCR Institution, to be jointly and severally bound in a sum of ten percent (10 %) as per the financial year funding allocation or as otherwise indicated by Midvaal Local Municipality for the due performance of the Contract, to commence the Works as soon as is reasonably practicable after the Commencement Date, and to complete the Works in accordance with the above-named documents within the Time for Completion.

Unless and until a formal Agreement is prepared and executed this Letter of Tender, together with your written acceptance thereof, shall constitute a binding contract between us.

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

We understand that you are not bound to accept the lowest or any tender you may receive and that the tender may be accepted as a whole or partially and that certain items, which may not be required, may be omitted from the Bill of Quantities.

Signature…….. in the capacity of ……..

Duly authorised to sign tenders for and on behalf of …….....

…….....

Address: ……..

……..……

Date : ……..

NOTE: THE TOTAL TENDER PRICE IS FOR TENDER PURPOSE ONLY

C1.1.2. FORM OF AGREEMENT

This Agreement made the ..... day of ..... 20.....

between

MIDVAAL LOCAL MUNICIPALITY
herein represented by

.....
(here after called "the Employer") of the one part and

(COMPANY) .....

herein represented by

(NAME) .....
(here after called "the Contractor") of the other part

WHEREAS the Employer is desirous that certain Works, hereafter called the Contract Works, should be provided, and executed, by the Contractor

viz.

BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

and has appointed …….. of the firm …….. as the Engineer for the purposes thereof (here after called the "Engineer") and has accepted a Tender by the Contractor for the provision, execution, and maintenance of such Works under the direction and to the reasonable satisfaction of the Engineer in the sum of

….....

….....

…….
(here after called "the Contract Sum")

THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract here after referred to.

2. The Conditions of Contract applicable to this agreement is the FIDIC Conditions of Contract for Building and Engineering Works designed by the Employer, Second Edition 2017.

3. The following documents shall be deemed to form and be read and construed as part of this Agreement viz:

   a) The Letter of Acceptance dated ……..……..…….
   b) The Letter of Tender dated ……..……..
   c) The Conditions of Contract – Part 1: General Conditions of Contract
   d) The Conditions of Contract – Part 2: Contract Data
   e) The Specifications / Scope of Work
   f) The Drawings, and
   g) The Completed Schedules

1. The Contractor hereby undertakes to execute and complete the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

2. The Employer hereby covenants to pay the Contractor in consideration of the provision, execution and completion of the Works and the remedying of defects therein the Contract sum, or such other sum as may become payable under the provisions of the Contract at the time and in the manner prescribed by the Contract.

In Witness whereof the parties hereto have caused this Agreement to be executed the day and year first before written in accordance with their respective laws.

SIGNATURE: …….	SIGNATURE: ……
SIGNED BY: ……..	SIGNED BY: …….
*For and on behalf of the **EMPLOYER***	*for and on behalf of the **CONTRACTOR***
in the presence of	*in the presence of*
Witness *(sign)*:……	Witness *(sign)*:..…….....
Name : ……	Name: …….
Address: ……	Address: …….

Date: ……. Date: …….…….

C1.1.3. PRO-FORMA LETTER OF ACCEPTANCE

Our ref.: BID NO: 8/2/2/444 (2025-2028)

(Date) ….....

P O Box ….....

….....

….....

For the attention of: Mr ….....

Sir,

BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

1. I have pleasure in informing you that *the Employer* have decided to accept your tender, dated *day-month-year* for the above contract.

2. Your contract amount can be composed as follows:

Nett amount of tender *Min/Plus: Correction of calculation errors (Refer to item .....)*	R *R*
Nett amended tender amount Plus: Amount allowed for contingencies Plus: Amount allowed for escalation	R R R
SUBTOTAL Plus: VAT	R R
TOTAL ACCEPTED CONTRACT AMOUNT	**R**

NOTE: THE TOTAL TENDER PRICE IS FOR TENDER PURPOSE ONLY

3. Your attention is drawn to the fact that the above PROVISIONAL AMOUNTS for escalation in costs and for contingencies shall only be spent at the discretion of the Engineer and will fall away in part or in whole if not required. We also emphasize that prior to any variation, official approval must be given.

4. The date of commencement of the contract is *day-month-year*, on which day you were informed that your tender was accepted. Furthermore, in terms of the..... months completion period, the completion date of the entire works will be *day-month-year (after allowing for 3 weeks builders holiday).*

5. The site will be handed over to you on *day-month-year* at..... It is requested that your authorized representative attend this meeting for the signing of the document.

6. The Conditions of Contract applicable for administering the project shall be the FIDIC "Red Book" 2017 (ISBN 978-2-88432-084-9), with the General Conditions of Contract (Part 1) and Contract Data (Part 2) as included in the tender documentation.

7. You must furnish us with the following documents or information within the time periods given:

7.1. The Performance Security, correctly completed in duplicate, by a Bank, Insurance, or other FICA approved / NCR institution, in the amount set out in the Appendix to Tender, which must remain valid until the date of issue of the Performance Certificate with Final Completion of the project. The provision in respect of the surety amount, as contained in the Contract Data is 10% of the available funding for the financial year or the contract amount indicated on the Purchase Order i.e. R……., which can be reduced by 50% with issuing of the Taking Over Certificate. The Contractor shall produce a draft Performance Security within 14 days of the commencement date and the Final Performance Security within 28 days of the commencement date.

8. Proof that you have provided, as prescribed by Clause 19 of the Conditions of Contract, adequate insurance in the joint names of the Employer and Contractor as summarised below:

8.1. Insurance cover against loss or damage for the replacement value plus 15% of the works (Contract sum plus 15 % = R .....) valid until the date of the Taking-Over Certificate plus 28 days – Sub-clause 19.2.1.

8.2. Insurance cover to the full replacement value of the Goods and other things brought to site by the Contractor, valid until they are no longer required for the Works – Sub-clause 19.2.2.

8.3. Insurance cover against liability for breach of professional duty for any designs by the Contractor for the permanent Works – Sub-clause 19.2.3.

8.4. Insurance against liability for claims, damages, losses, and expenses resulting in injury, sickness, disease, or death of any person employed by the Contractor or any of the Contractor's other personnel – Sub-clause 19.2.4 and 19.2.5.

8.5. In accordance with South African practice, third party liability insurance against any claims, damages, losses, and expenses during the execution of the Works – Sub-clause 19.2.6.

9. You are hereby informed that no payments will be made to you before the completed Performance Security has been returned to us.

10. We confirm that the Employer will not accept any responsibility or liability for making good on any claims or losses resulting from your failure to adequately insure as required in par 8 and 9 above.

11. The following general conditions are applicable to this contract:

11.1. The defects liability period or period of maintenance of the Works, as described in Clause 11 of the Conditions of Contract is twelve months from the issuing of the Taking-Over Certificate for the Works, and another twelve months for the Goods taken from the issuing of the Performance Security.

11.2. The liquidated damages payable in respect of late completion of the Works as described in Clause 8.8 of the Conditions of Contract, is R ..... per working day, to a maximum of R.....

12. In terms of the Occupational Health and Safety Act, 85/1993, it is required that you appoint a Safety Officer who must sign the "Written Agreement on Occupational Health and Safety" as well as Safety on Construction Site forms, taking full responsibility of the work carried out on site. He must also compile and submit a Health and Safety Plan and Risk Assessment forming part of the Safety, Health, Environmental and Quality (SHEQ) file. The SHEQ file must contain all appointments of the workforce, duly signed by your company MD or delegated person, and complete list of equipment required to execute the project scope with valid roadworthiness and calibration certificates. No work will be permitted on site until approval of the Health & Safety part of the SHEQ file by the Employer or his Safety Representative.

13. Your attention is finally drawn to the fact that our firm, being the Employer's Consulting Engineers, will administer this project. Consequently, any negotiations that may become necessary during the execution of the work regarding rates, additions, omissions, escalation in costs, etc. will only be carried on with our firm.

14. We respectfully point out that time is of the essence in the completion of this contract. You are earnestly requested to take every effort to ensure the timeous completion of the work or, if in any way possible, to improve thereon.

15. As stated in the Tender Form, this Letter of Acceptance will form part of the FORM OF AGREEMENT between the *Employer* and *Contractor*.

16. We trust that you will carry out the work with earnestness and to the best of your ability. You are assured of our complete co-operation in all aspects of this contract.

Sincerely,

MIDVAAL LOCAL MUNICIPALITY

MUNICIPAL MANAGER

C1.2 – PART 1: GENERAL CONDITIONS OF CONTRACT

C1.2. GENERAL CONDITIONS OF CONTRACT (PART 1)

CONDITIONS OF CONTRACT IN ACCORDANCE WITH THE FIDIC CONDITIONS OF CONTRACT FOR CONSTRUCTION FOR BUILDING AND ENGINEERING WORKS DESIGNED BY THE EMPLOYER

FIDIC ® SECOND EDITION 2017

The Conditions of Contract comprises of two parts of which Part 1 is the General Conditions of Contract and Part 2 the Particular Conditions of Contract. Furthermore, the Particular Conditions comprise of the Particular Conditions Part A – Contract Data and the Particular Conditions Part B – Special Provisions.

Under the usual arrangement of this Contract, the Contractor is responsible for the construction, in accordance with the design of the Employer, of building and/or engineering Works. These Conditions allow that the Contractor may be required to design a proportion or element of the Permanent Works.

GENERAL CONDITIONS OF CONTRACT: PART 1

The Conditions of Contract comprise of:

"GENERAL CONDITIONS"

Which form part of the:

"CONDITIONS OF CONTRACT FOR CONSTRUCTION FOR BUILDING AND ENGINEERING WORKS DESIGNED BY THE EMPLOYER"

[Second Edition 2017, as published by the Fédération Internationale des Ingénieurs-Conseils (FIDIC)(ISBN 978-2-88432-084-9)]

(Copy obtainable at cost from CESA)

SIGNATURE: …….

SIGNED BY: ……. DATE: …….
(for and on behalf of the Contractor)

PARTICULAR CONDITIONS OF CONTRACT: PART 2

The Conditions of Contract further comprise of the following "Particular Conditions of Contract" (PCC), the General Conditions of Contract shall be amended by the Particular Conditions of Contract as detailed herein.

These "Particular Conditions of Contract" forms an integral part of the Contract, and they supersede conditions contained elsewhere in the documents.

The Particular Conditions of Contract comprise of two sub-parts viz:

PART 2 A: CONTRACT DATA

PART 2 B: SPECIAL PROVISIONS

C1.3 – PART 2A: CONTRACT DATA

C1.3. GENERAL CONDITIONS OF CONTRACT (PART 2A)

PART 2A: PARTICULAR CONDITIONS – CONTRACT DATA

The following Contract Data lays down specific information required by certain Sub-Clauses in the General Condition of Contract. Tenderers shall not amend the Contract data as provided unless instruction is given to populate data i.e., *"Tenderer to complete"*.

SUB-CLAUSE	DATA TO BE GIVEN	DATA
1.1.19	Where the Contract allows for Cost Plus Profit, percentage profit to be added to the Cost:	5 %
1.1.27	Defects Notification Period (DNP)	365 days *(From the date of issuing the Taking-Over Certificate)*
1.1.31	Employer's name and address	**MIDVAAL LOCAL MUNICIPALITY** 25 Mitchell Street Meyerton 1961
1.1.35	Engineer's name and address	
1.1.85	Time for Completion *(Tenderer to Complete)*	…… *(period to correspond with the letter of tender and programme submitted with the tender)*
1.3(a)(ii)	Agreed methods of electronic transmission	e-mail
1.3(d)	Address of Employer for communications	**MIDVAAL LOCAL MUNICIPALITY** 25 Mitchell Street Meyerton 1961
1.3(d)	Address of Engineer for communications	
1.3(d)	Address of Contractor for communications *(Tenderer to Complete)*	…… …… ……
1.4	Contract shall be governed by the law of:	The contract shall be governed, construed, and interpreted in accordance with the Laws of the Republic of South Africa.
1.4	Ruling language	English

SUB-CLAUSE	DATA TO BE GIVEN	DATA
1.4	Language for communications	English
1.8	Number of document copies to the Contractor Number of <u>additional</u> paper copies of Contractor's Documents Documents to be kept on site by the Contractor	One paper original to the Employer. At least one copy of: a. the Contract; b. Contractor's records as per Sub-Clause 6.10 [*Contractor's Records*] and Sub-Clause 20.2.3 [*Contemporary Records*]; c. publications named in the Specification / Scope of Works, such as Eskom's standards and D-DT drawings; d. the Contractor's documents, such as ordering and delivering schedules; e. the Drawings; f. all Variations, Indices, Instructions, Minutes and other communication given under the Contract; g. the Project Programme; h. Wayleaves and Approvals; and i. Safety, Health, Environmental and Quality documents.
2.1	After receiving the Letter of Acceptance, the Contractor shall be given right of access to all or part of the Site within	14 days, the Contractor shall receive a Site Handover Certificate.
2.4	Employer's financial arrangements	Phase over multiple financial years.
2.5	Site data and items of reference	Included under "C4 – Site Information"
2.6	List of Employer-Supplied Material and / or Employer's Equipment	Not Applicable
4.1	Contractor's general obligations	Sub-Clause 4.1 (a) to (h) applies – The Contract requires the Contractor to provide detail designs, according to specifications, for all equipment, whether the detail design is executed by the Contractor or an OEM. The Contractor is responsible for any deficiencies in manufacturing designs or drawings.
4.2	Performance Security (as percentages of the Accepted Contract Amount in Currencies):	
	- Percent	10 % - reduced to 5% following the issuing of the Taking-Over Certificate
	- Currency	ZAR
4.3	Name of the Contractor's Representative during performance of the Contract *(Tenderer to Complete)*	……
4.6	Co-operation	The Contractor shall provide training for the operation and maintenance of the Works to the Employer's personnel.
4.7.2	Period for notification by the Contractor of errors in the items of reference	28 days

SUB-CLAUSE	DATA TO BE GIVEN	DATA
4.8	Time for submission of the Health and Safety Manual	Within 21 days of the commencement date
4.9	Time for submission of the Quality Management System documents	Within 28 days of the commencement date
4.16	Transport of Goods notice	The Contractor shall give no less than 21 days' notice to the Engineer before the delivery date of any Goods to site
4.19	Period of payment by the Contractor for temporary utilities	Monthly *(the Contractor is to provide for all utilities required, i.e. water, electricity, toilets, wireless communication, etc.)*
5.1(a)	Maximum allowable accumulated value of work subcontracted (as a percentage of the Accepted Contract Amount)	20 %
5.1(b)	Parts of the Works for which subcontracting is not permitted	- Erection of primary plant equipment - Installation of control cabling into the control room - Stringing of overhead conductor
6.5	Normal working hours on the Site	- Monday to Friday from 07:00 to 17:00 - Saturday from 07h00 to 13h00 - No Sundays - No public holidays (Note: work outside normal working hours required for power outages)
6.6	Facilities to be provided for Staff and Labour	Contractor to provide for accommodation and welfare facilities for the Contractor's personnel.
6.12	List of the Contractor's key personnel	Project / Contracts Manager: …… Health and Safety Officer: …… ORHVS Qualified Site Supervisor: …… Company Accountant: …….
7.2	Period for the Contractor to submit samples to the Engineer	Within 28 days of the commencement date
7.3	Period for notification by the Contractor to the Engineer whenever any Plant, Materials or Work is ready for inspection	14 days
7.4	Period for notification by the Contractor to the Engineer whenever any Plant, Materials or Work is ready for testing	14 days
7.7	Payment shall be certified as a percentage of the material rate for material delivered to site.	80 % Payment shall only be certified for equipment delivered to site. (80% to be considered for Materials off-site, subject to prior approval).

SUB-CLAUSE	DATA TO BE GIVEN	DATA
8.1	Commencement Date	Date of the Letter of Acceptance, as stated in the Letter of Acceptance, or 14 days from the date of the Letter of Acceptance. The Engineer shall give at least 14 days' notice to the Contractor stating the commencement date. The commencement date shall be no more than 42 days after the Contractor receives the Letter of Acceptance. The Contractor shall commence the execution of the Works on, or as soon as is reasonably practicable, after the commencement date and shall then proceed with the Works with due expedition and without delay.
8.3	Period for submission of the Programme by the Contractor to the Engineer	Within 28 days of the commencement date
8.8	Delay Damages payable for each day of delay	0.5 % of the Contract amount per calendar day.
8.8	Maximum amount of Delay Damages	10 % of final contract sum.
9.1	Completion test rectification Period by Contractor to Engineer	Test programme no less than 42 days before commencing with completion tests and 21 days' notice before starting completion tests
11.1	Defects Notification Period	For the Works, 365 days from the issuing of the Taking-Over Certificate for the Works, and for the Goods another 365 days after the issuing of the Performance Certificate.
11.11	Period for clearance of the site	Within 28 days of issuing the Performance Certificate
12.2	Method of measurement	Net actual quantities measured in accordance with the Bill of Quantities
12.3	Percentage profit	As stated under 1.1.19 above
13.4(b)(ii)	Percentage rate to be applied to Provisional Sums for overhead charges and profit	0 % if the Employer enters into a direct payment agreement with a subcontractor or nominated subcontractor, otherwise 5 %.

SUB-CLAUSE	DATA TO BE GIVEN	DATA
13.7	Adjustments for Changes in Cost:	**Contract Price Adjustment (CPA) will not be applicable to this contract as whole but will be partially apply to items allowed in the CPA Items Table.** The contract prices are fixed and firm for the first year of the contract. The Contractor must therefore allow for escalation in cost in his unit prices. Provision will however only be made for escalation on only the long lead items listed in the table below.

Table 1: CPA Items

EQUIPMENT	FOREIGN CURRENCY	COUNTRY OF ORIGIN
Labour (after 12 months)		
Distribution Transformer (after 12 months)		
Electrical Material (after 12 months)		
Cables (after 12 months)		

The above list of material and/or equipment will be subject to the formulae and conditions contained in the special provisions of the particular conditions of contract.

14.2	Total amount of Advance Payment (as a percentage of Accepted Contract Amount)	Not applicable
14.2	Currency or currencies of Advance Payment	Not applicable
14.2.3	Percentage deductions for the repayment of the advance Payment	Not applicable
14.3	Period of payment	Monthly The procedure for payment to be addresses with the project kick-off.
14.3	Application for Interim Payment	The Contractor shall submit a Statement and Progress report to the Engineer on the 15th of each month.
14.3(iii)	Percentage of retention	Retention shall be withheld for payments due by the Employer to the Contractor: - 10% of each Statement value certified for interim payment, until 5% of the Contract value is accumulated as retention, for the duration of the executions of the works; - 50% of the 5% accumulated retention amount is released on issuing of the Taking-Over Certificate; - The remaining 50% of the 5% previously accumulated retention is released on issue of the Final Completion Certificate (Performance Certificate as per sub-clause 11.9);
14.3(iii)	Limit of Retention Money (as a percentage of Accepted Contract Amount)	As stipulated in 14.3 (iii) of the Contract Data.
14.5(b)(i)	Plant and Materials for payment when shipped	Not applicable

SUB-CLAUSE	DATA TO BE GIVEN	DATA
14.5(c)(i)	Plant and Materials for payment when delivered to the site	Not applicable
14.6.2	Minimum amount of Interim Payment Certificate (IPC)	R 200 000.00
14.7(a)	Period for payment of Advance Payment to the Contractor	Not applicable
14.7(b)(i)	Period for the Employer to make interim payments to the Contractor under Sub-Clause 14.13 *(Interim Payment)*	As per the General Conditions: 30 days after the Director: Electrical approves the Contractor's invoice
14.7(b)(ii)	Period for the Employer to make interim payments to the Contractor under Sub-Clause 14.13 *(Final Interim Payment)*	As per the General Conditions: 30 days after the Director: Electrical approves the Contractor's invoice
14.7(c)	Period for the Employer to make final payment to the Contractor *(Final Payment)*	As per the General Conditions: 30 days after the Director: Electrical approves the Contractor's invoice
14.8	Financing charges for delayed payment (percentage points above the average bank short-term lending rate as referred to under sub-paragraph (a)	As per the General Conditions: Reserve Bank Repo Rate
14.13	Period within which the Engineer shall issue the Employer with a Final Payment Certificate (FPC) under Sub-Clause 14.13 *(Final Payment)*	As per the General Conditions: 28 days after the Engineer receives the Final Statement.
14.15	Currencies for payment of Contract Price	ZAR
14.15(a)(i)	Proportions or amounts of Local and Foreign Currencies are:	
	- Local *(Contractor to complete)*	……..
	- Foreign *(Contractor to complete)*	……..
14.15(c)	Currencies and proportions for payment of Delay Damages	ZAR

SUB-CLAUSE	DATA TO BE GIVEN	DATA
14.15(f)	Rates of exchange	This clause is not applicable to fixed rate contracts The Rates of Exchange in Foreign Currency (at date of tender submission) for the purpose of this contract: i. 1 US Dollar: R …… ii. 1 Euro: R …… iii. 1 British Pound: R …… iv. 1 Chinese RMB (Yuan): R …… v. 1 Japanese Yen: R …… The Tenderer must allow for changes in the Rate of Exchange in his unit prices. Provision will however be made for Rate of Exchange changes on only long lead items listed in the table below. Rate of exchange will apply to imported material to cater for upward and downward fluctuations in cost.

Table 2: RoE equipment table

EQUIPMENT	FOREIGN CURRENCY	COUNTRY OF ORIGIN

Note - The country of manufacturing origin's exchange rate shall be used i.e., a USD – ZAR exchange rate will not be accepted for equipment not manufactured in the USA.

17.2(d)	Forces of nature, the risks of which are allocated to the Contractor	Abnormal weather. Refer to the Annexure to PCC - Rainfall
19.1	Permitted deductible limits:	
	- Insurance required for the Works and Goods	R 20 000.00
	- Insurance required for liability for breach of professional duty	R 20 000.00
	- Insurance required against liability for fitness for purpose (if any is required)	R 20 000.00
	- Insurance required for injury to persons and damage to property	R 20 000.00
	- Insurance required for injury to employees	R 20 000.00
	- Other insurances required by Laws and by Local Practice	……. ……..
19.2(1)(b)	Additional amount to be insured in the joint name of the Contractor and the Employer	As per the General Conditions: 15%

SUB-CLAUSE	DATA TO BE GIVEN	DATA
19.2(1)(iv)	List of Exceptional Risks which shall not be excluded from the insurance cover for the Works	Force majeure, community unrest, riot, political
19.2.2	Extent of insurance required for Goods	Full replacement value plus delivery to site
19.2.3(a)	Amount of insurance required for liability for breach of professional duty	R 5 000 000.00
19.2.3(b)	Insurance required against liability for fitness for purpose	Yes
19.2.3	Period of insurance required for liability for breach of professional duty	From the commencement date to the date of the Performance Certificate
19.2.4	Amount of insurance required for injury to persons and damage to property	Minimum amount of R 5 000 000,00 insurance for third party liability per event.
19.2.6	Other insurances required by Laws and by local practice *(Tenderer to complete)*	……
21.1	Time for appointment of DAAB	28 Days after dispute is declared
21.1	The DAAB shall comprise	One (1) Member
21.1	List of proposed members of DAAB	
	- Proposed by Employer	1. ……
	- Proposed by Contractor	1. ……
21.2	Appointing entity (official) for DAAB members	The President of FIDIC or a person appointed by the President

I, ..., on behalf of the Company,

……., hereby acknowledge and accept the Conditions of Contract as set out in the table above.

SIGNATURE: …….

SIGNED BY: ……... DATE: ……
(for and on behalf of the Contractor)

C1.4 – PART 2B: SPECIAL PROVISIONS

C1.4. PARTICULAR CONDITIONS (PART 2 B) – SPECIAL PROVISIONS

The Conditions of Contract further comprise of the following Special Provisions as part of the Particular Conditions of Contract, the General Conditions of Contract shall be amended by the Special Provisions as detailed herein.

These Special Provisions forms an integral part of the Particular Conditions of Contract and the Contract and supersedes overrides any other provisions contained elsewhere in the documents.

The following clauses of the "Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer" Second Edition 2017, published by the Fédération Internationale des Ingénieurs-Conseils (FIDIC) (ISBN 978-2-88432-084-9) shall be amended as follows:

CLAUSE DESCRIPTION	CLAUSE NO	AMENDMENT
1. GENERAL PROVISIONS		
DEFINITIONS	1.1.31	"Employer" also means the Company, Subsidiary or Succession in Title or stated in the Contract Data.
	1.1.35	"Engineer" means an Engineer duly authorised by the Company, Subsidiary or Succession in Title stated in the Contract Data.
	1.1.7	Add to this sub-clause: The **Commencement Date** shall be defined under Sub-Clause 8.1 and shall be notified in the Contract Data or the Letter of Acceptance. Access to the site shall be granted on the Commencement Date.
LIMITATION OF LIABILITY	1.15	Notwithstanding the provisions of this Clause, the Contractors Limit of Liability in terms of defects shall be 5 years.
2. THE EMPLOYER		
EMPLOYER'S FINANCIAL ARRANGEMENTS	2.4	The Employer shall only be obliged to provide reasonable evidence that financial arrangements have been made and are being made, if there is a dispute arising from non-payment of a certificate or of any amounts payable to the Contractor or if the Employer intends to make material changes notwithstanding the provisions of this sub-clause. In all other cases, the Employer shall not be bound to provide the requested information.
EMPLOYER-SUPPLIED MATERIALS AND EMPLOYER'S EQUIPMENT	2.6	Add to this sub-clause: After this visual inspection, the Employer-Supplied / free-issue materials shall come under the care, custody, and control of the Contractor at which point, except where otherwise stated in the Contract, all risk in such free-issue materials shall also pass to the Contractor and shall remain with the Contractor unless and until the said free-issue materials are returned to the custody and control of the Employer.
3. THE ENGINEER		
ENGINEER'S DUTIES AND AUTHORITY	3.2	Add to this sub-clause: The Engineer shall require approval from the Employer on any matter, which affects extension of time or variation to the

CLAUSE DESCRIPTION	CLAUSE NO	AMENDMENT
		Contract Price. Variations of the project scope that is covered by contingency amounts requires the Engineers and Employers approval. If the Contractor receives any instructions from the Engineer that fall outside of these conditions, he shall obtain written confirmation from the Employer before proceeding.
DELEGATION BY THE ENGINEER	3.4	Add to the end of this sub-clause: No oral representation shall be made by the Contractor to the Engineer through the Engineers Representative. The authority to delegate expressly excludes the delegation of powers to vary the Works in terms of Sub-Clause 13.1 [Right to Vary].
ENGINEERS INSTRUCTIONS	3.5	Add to this sub-clause: No oral instructions may be accepted from the Engineer unless these are recorded in writing by the Contractor who then obtains confirmation from the Engineer by means of a signature or confirmation in minutes within 7 days of the instruction being issued, or prior to commencing work on the item in question.
REPLACEMENT OF THE ENGINEER	3.6	Add to this sub-clause: In the unforeseen situation where the Engineer or Engineers representative is not available to complete the Works, the Employer will advise the Contractor immediately upon knowledge of such an event and will give notice to the Contractor within 7 days of the details of the proposed replacement.
4. <u>THE CONTRACTOR</u>		
PERFORMANCE SECURITY	4.2	Add to this sub-clause: With the Employers consent, the Engineer will hold the original Performance Security for safekeeping. The following stipulations shall be included in the performance security: (i) A statement that the performance security may be called on by means of written instruction by the Engineer; (ii) The person's name, contact details and address to which the Engineer's instruction to call on the performance security must be addressed; (iii) A statement confirming the period from the date of the Engineer's instruction to call on the performance security, until the security amount is paid to the Employer (period to be less than 56 days); (iv) Cancellation of the performance security shall be subject to approval by the Engineer; and (v) Specific inclusion of the 12-month defect notification period. The following is added at the end of this Sub-Clause: Should the Contractor fail to provide the said security within the specified time the Employer, in his sole discretion, may either: - (a) Withhold payment from the Contractor until the amount withheld is equal the Performance Security Amount stipulated in the Contract Data (as percentages of the

CLAUSE DESCRIPTION	CLAUSE NO	AMENDMENT
		Accepted Contract Amount) over and above the normal retention, or (b) Proceed to issue notice in terms of Clause 15 [Termination by Employer] and recover costs from the Contractor.
CONTRACTORS REPRESENTATIVE	4.3	Add to this sub-clause: "Without derogating from the generality of the foregoing, the Contractor's Representative shall, at the Contractor's cost, implement forthwith any additional safety precautions which the Engineer may consider necessary for the proper protection of the Contractor's employees engaged in the Works. Work to which such additional precautions will apply shall be suspended pending the implementation of such precautions.
QUALITY ASSURANCE	4.9	Add to this sub-clause under 4.9.3 General provisions: Testing frequency of all materials shall be in accordance with the relevant clause of the Specifications or as specified on the construction drawings. The Engineer will have the right to visit the manufacturing location for the purpose of audit, surveillance, or inspection during the manufacturing of the Materials/Plant to verify the Contractor's quality management. In the event of the Material/Plant being rejected due to non-compliance with the specification, workmanship and/or other valid reasons, then the cost of rectification as well as the Engineer's time-based cost and re-inspection cost shall be for the account of the Contractor.
SUFFICIENCY OF THE ACCEPTED CONTRACT AMOUNT	4.11	The following is added at the end of this Sub-Clause: Without derogating from the generality of the foregoing, no claim by the Contractor for additional payment will be entertained which is consequent upon any misunderstanding or the allegation, or fact that it was supplied with incorrect information by any person, or its failure to obtain correct information as to any matter affecting its accepted tender or the execution of the Works to be provided, nor will any such misunderstanding, or the obtaining of incorrect information, or the failure to obtain correct information, relieve it from any risk or responsibility for the due fulfilment of its obligations in terms of the Contract.
PROGRESS REPORTS	4.20	Add to this sub-clause: Progress reports shall include updating of drawings issued by the Engineer to as-built drawings as the work progresses.
WAIVER OF CONTRACTOR'S LIEN	4.24	The following additional Sub-Clause 4.24 is added to the end of Clause 4: The Contractor waives, in favour of the Employer, any lien or right of retention that is or may be held in respect of the Works

CLAUSE DESCRIPTION	CLAUSE NO	AMENDMENT
		to be executed on the Site. The Contractor shall ensure that it procures similar waivers from its subcontractors.
5. SUBCONTRACTING		
NOMINATED SUBCONTRACTORS	5.2	The following additional Sub-Clause 5.2.5 is added to the end of Clause 5.2: 5.2.5 Direct Payment with nominated sub-contractors The Employer may enter into a direct payment agreement with a nominated sub-contractor. The Contractors profit shall not be paid to the Contractor if: i) The Contractor does not pay the subcontractor's invoice after receiving payment for work certified by the Engineer. ii) The Employer and nominated sub-contractor enter into a direct payment agreement and the Contractor performs no managerial function related to the works by the nominated sub-contractor.
6. STAFF AND LABOUR		
WORKING HOURS	6.5	Add to this sub-clause: As stipulated in sub-clause 6.5 (c) execution of work on any day including holidays at any time will be required, without additional remuneration to the Contractor, for power outages and other unavoidable circumstances.
HEALTH AND SAFETY	6.7	Add to this sub-clause: A Health and Safety plan shall be furnished by the Contractor within 14 days after Letter of Acceptance.
CONTRACTOR'S PERSONNEL	6.9	In addition to the items listed under headings (a) to (f), The Engineer may require the Contractor to remove any person who is in contravention of the provisions of the: • Environmental Management Plan • Client Safety Specification • The provisions of any statutory Act, i.e., OHS. Within seven (7) working days of signature of Letter Acceptance, the Contractor is required to furnish the Employer with a safety plan, risk assessment report and safe work procedures. Prior to commencement of site activities, the entire workforce to be located on site may be required to attend a Health and Safety Induction at the premises of the Employer. The Contractor shall ensure that all requirements set aside by the Occupational Health and Safety Act, and Construction Regulation are fulfilled.

CLAUSE DESCRIPTION	CLAUSE NO	AMENDMENT
7. PLANT, MATERIALS AND WORKMANSHIP		
MANNER OF EXECUTION	7.1	Add the following to Clause (d): All work shall be completed in accordance with the Specifications and drawings to be read in conjunction with all appropriate SANS or SABS, NRS, IEC, BC, IEEE and ANSI codes or guidelines prepared by authorities representing specialised industries.
OWNERSHIP OF PLANT AND MATERIALS	7.7	Add to this sub-clause: Before making any payment for Plant and Materials defined in this Clause, the Contractor is to provide the Employer with a Cession of ownership in a format to be agreed 14 days prior to the payment certificate. Payment thereof will be limited to materials stored where the following conditions are met: • Materials have not been prematurely delivered. • Materials are stored and protected adequately on site or an approved location. • Proof of payment for such materials is made available by the Contractor. After payment of the rate stipulated in the Contract Data, the ownership of material shall be ceded to the Employer.
8. COMMENCEMENT, DELAYS AND SUSPENSION		
COMMENCEMENT OF THE WORKS	8.1	Further to the provisions of this Clause, notwithstanding the agreed date for the commencement of the works, none of the activities related to project execution may begin until such time as the required proofs is received in respect of: • Insurances • Performance Guarantees • Approved SHEQ file The notice by the Engineer of the Commencement Date is recorded in the Contract Data. Access to the site shall be granted on the Commencement Date.
PROGRAMME	8.3	The first paragraph of this Clause is amended to read 14 days in place of 28 days. Add to this sub-clause: The programme shall provide for a minimum of two weeks “slack” in order to cater for unforeseen delays.

CLAUSE DESCRIPTION	CLAUSE NO	AMENDMENT
		The programme shall be submitted in the form of a Microsoft Projects Gantt Chart (version 2007 or newer)
EXTENSION OF TIME FOR COMPLETION	8.5	Add to this sub-clause: No extension of time for completion will be granted on account of normal inclement weather, but extension of time shall be determined for abnormal rainfall or wet conditions separately for each calendar month or part thereof in accordance with the Annexure to the Conditions of Contract applicable to Rainfall. The Contractor shall not be entitled to an extension of the Time for Completion to the extent that completion would, in the circumstances, in any event have been delayed by a cause not listed in sub-clause 8.5.
DELAY DAMAGES (PENALTIES)	8.8	Add to this sub-clause: Penalties shall be applied against Contractor according to Detailed Program submitted as per sub-clause 8.3
9. TESTS ON COMPLETION		
CONTRACTOR'S OBLIGATIONS	9.1	Add to this sub-clause: The Contractor shall provide a complete set of As-Built drawings and documentation to the Engineer in an approved format together with all the test results as called for in the various sections of the Specifications, Schedules, and Drawings.
10. EMPLOYER'S TAKING OVER		
TAKING OVER OF THE WORKS AND SECTIONS	10.1	Notwithstanding the various provisions of this Clause, if the Employer is a private entity, it is the Contractors responsibility to ensure that all works are completed, inspected, and approved to the satisfaction of the relevant authority.
11. DEFECTS AFTER TAKING OVER		
12. MEASUREMENT AND VALUATION		
EVALUATION	12.3	This Sub-Clause is amended as follows: • The percentage in sub-paragraph (b)(i) is amended to 20% • The percentage in sub-paragraph (b)(ii) is amended to 1.0% • The percentage in sub-paragraph (b)(iii) is amended to 5.0% Add to this sub-clause: The provisions for measurement are as per the Bill of Quantities and payment shall be made according to the progress on site and for material delivered to site before 7 days prior to the Contractor's Application for Interim Payment.

CLAUSE DESCRIPTION	CLAUSE NO	AMENDMENT
		The percentage payment of the material rate for material delivered to site is indicated in the Particular Conditions of Contract sub-clause 7.7.
13. VARIATIONS AND ADJUSTMENTS		
RIGHT TO VARY	13.1	Add to this sub-clause: The Employer reserves the right, in terms of the Clause, to request the Contractor to undertake Variations to the Contract outside the boundaries of the site but within the property boundary of land owned by the Employer.
VARIATIONS	13.3	Add to this sub-clause: All variations to the contract shall be priced in accordance with the rates agreed in the Contract Agreement for items where rates are available for work of similar nature.
ADJUSTMENTS FOR CHANGES IN COST	13.7	CPA will only be applicable for labour and material in Year 2 and Year 3, and the following conditions shall apply: (a) No CPA claims will be accepted which are submitted later than 60 days from the date of the Payment Certification of the applicable equipment. (b) CPA claims submitted on the basis of one or more provisional indices, shall be treated as final claims. (c) CPA claims shall have a fixed portion of the Contract Unit Rate Price which shall not be subject to Price adjustment, if the fixed portion is not specifically detailed the fixed portion value shall default to 15% of the applicable rate. This percentage shall be applied to the cost adjustment of each item. (d) No CPA shall apply to early or advance payments certified. The following SEIFSA price adjustment will be applicable to these items for fluctuations in cost of labour and material (excluding cables).

(i) FLUCTUATIONS IN COST FOR LABOUR

If the project is phased fluctuation in cost of all labour for subsequent phases shall be calculated in accordance with the following formula:

$$P = Po \times [x + a1\,(\frac{Lt1}{Lo1}) + a2\,(\frac{Lt2}{Lo2})]$$

Where,

P = Contract price after adjustment.

Po = Contract price after at tender stage.

x = 15 % Fixed Portion.

a1 = 75 % Table C-3: Actual Labour Cost (All Hourly Paid Employees).

Lo1 = SEIFSA Index of Actual Labour Cost (All Hourly Paid Employees) for the month of April 2025.

Lt1 = SEIFSA Index of Actual Labour Cost (All Hourly Paid Employees) for the month in which the work was performed.

a2 = 10 % Table D-3: CPI (Consumer Price Index).

Lo2 = Statistics SA Consumer Price Index for the month of April 2025.

Lt2 = Statistics SA Consumer Price Index for the month in which the work was performed.

(ii) FLUCTUATIONS IN COST FOR DISTRIBUTION TRANSFORMER

Fluctuation in cost of all labour and material for the power transformer shall be calculated in accordance with the following formula:

$$P = Po \times [x + a1\,(\frac{Lt1}{Lo1}) + b1\,(\frac{Mt1}{Mo1}) + b2\,(\frac{Mt2}{Mo2}) + b3\,(\frac{Mt3}{Mo3}) + b4\,(\frac{Mt4}{Mo4}) + b5\,(\frac{Mt5}{Mo5}) + b6\,(\frac{Mt6}{Mo6}) + b7\,(\frac{Mt7}{Mo7}) + b8\,(\frac{Mt8}{Mo8})]$$

Where,

P = Contract price after adjustment.

Po = Contract price after at tender stage.

x = 15 % Fixed Portion.

a1 = 21 % Table C-3: Actual Labour Cost (All Hourly Paid Employees).

Lo1 = SEIFSA Index of Actual Labour Cost (All Hourly Paid Employees) for the month of April 2025.

Lt1 = SEIFSA Index of Actual Labour Cost (All Hourly Paid Employees) for the month two month prior to the month in which the goods are ready for dispatch.

b1 = 12 % Table E-EX: Steel (Cold Rolled Plates).

Mo1 = SEIFSA Index of Domestic Producers Price Steel (Cold Rolled Plates) for the month April 2025.

Mt1 = SEIFSA Index of Domestic Producers Price Steel (Cold Rolled Plates) for the month three months prior to the month in which the goods are ready for dispatch.

b2 = 21 % Table F: Copper RCP (Metric ton) or Table R: Aluminium (Melting Ingot)

Mo2 = SEIFSA Index of Metal Prices (Copper RCP: Metric ton) or Table R: Aluminium (Melting Ingot) for the month of April 2025.

Mt2 = SEIFSA Index of Metal Prices (Copper RCP: Metric ton) or Table R: Aluminium (Melting Ingot) for the month three months prior to the month in which the goods are ready for dispatch.

B3 = 0.5 % Table G-1: Engineering input prices (Electrical Engineering).

Mo3 = SEIFSA Index of Engineering input price (Electrical Engineering) for the month of April 2025.

Mt3 = SEIFSA Index of Engineering input price (Electrical Engineering) for the month two months prior to the month in which the goods are ready for dispatch.

b4 = 2 % Table J-3(A): Bushing.

Mo4 = SEIFSA Index of Distribution Transformer (Bushing) for the month prior to tender closing – April 2025.

Mt4 = SEIFSA Index of Distribution Transformer (Bushing) for the month two months prior to the month in which the goods are ready for dispatch.

b5 = 6 % Table J-3(A): Insulation.

Mo5 = SEIFSA Index of Distribution Transformer (Insulation) for the month of April 2025.

Mt5 = SEIFSA Index of Distribution Transformer (Insulation) for the month two months prior to the month in which the goods are ready for dispatch.

b6 = 0.5 % Table J-3(A): Tapswitch

Mo6 = SEIFSA Index of Distribution Transformer (Tapswitch) for the month of April 2025.

Mt6 = SEIFSA Index of Distribution Transformer (Tapswitch) for the month two months prior to the month in which the goods are ready for dispatch.

b7 = 16 % Table J-3(A): Electrical Steel: Standard Grade.

Mo7 = SEIFSA Index of Distribution Transformer (Electrical Steel: Standard Grade) for the month of April 2025.

Mt7 = SEIFSA Index of Distribution Transformer (Electrical Steel: Standard Grade) for the month two months prior to the month in which the goods are ready for dispatch.

b8 = 6 % Table J-3(A): Transformer Oil.

Mo8 = SEIFSA Index of Distribution Transformer (Transformer Oil) for the month of April 2025.

Mt8 = SEIFSA Index of Distribution Transformer (Transformer Oil) for the month two months prior to the month in which the goods are ready for dispatch.

(iii) <u>FLUCTUATIONS IN COST FOR ELECTRICAL MATERIAL</u>

If the project is phased fluctuation in cost of all material for subsequent phases shall be calculated in accordance with the following formula:

$$P = Po \times [x + a1\,(\frac{Lt1}{Lo1}) + b1\,(\frac{Mt1}{Mo1})]$$

Where,

P = Contract price after adjustment.

Po = Contract price after at tender stage.

x = 15 % Fixed Portion.

a1 = 15 % Table C-3: Actual Labour Cost (All Hourly Paid Employees).

Lo1 = SEIFSA Index of Actual Labour Cost (All Hourly Paid Employees) for the month of April 2025.

Lt1 = SEIFSA Index of Actual Labour Cost (All Hourly Paid Employees) for the prior month to the month in which the goods are ready for dispatch.

b1 = 70 % Table G-1: Engineering input prices (Electrical Engineering).

Mo1 = SEIFSA Index of Engineering input price (Electrical Engineering) for the month of April 2025.

Mt1 = SEIFSA Index of Engineering input price (Electrical Engineering) for the prior month to the month in which the goods are ready for dispatch.

(iv) FLUCTUATIONS IN COST FOR CABLES

Due to the volatility of material, labour and other costs, prices are based on those costs ruling as published by Price Waterhouse Coopers (auditors) and the Associations of Cable Manufacturers of South Africa for cables and steel core prices as published by SCAW South Africa materials, the Steel and Engineering Industries Federation of South Africa (SEIFSA) Table C4 – for labour. The adjustment formula applicable is as follows:

$$AP = T \pm (CxV + XXxV + LxV + HxV + PxV + SxV + SCxV + DC)$$

Where,

AP = Adjusted price per kilometre.

T = Tender price per kilometre.

C = Copper price (see note 1).

X = Aluminium price (see note 1).

L = Labour and other related services (see note 2)

P = PVC price (see note 1).

H = XLPE price (see note 1).

S = Steel wire price (see note1).

SC = Steel core (see note 1) – (ACSR).

V = Relevant variation factor per kilometre.

D = Cable drum cost (see note 3).

DC = DAP costs (see note 3).

Note 1 – Difference between base price on which quoted prices are based and the ruling price the time of adjustment
Note 2 – Difference between base index on which quoted prices are based and the ruling index (alternatively the last published index) at the time of adjustment.
Note 3 – Difference between base cost (Rand/km cable) on which tender prices are based and the cost at the time of adjustment.

*All prices and costs shall be in South African Rand (ZAR)

Clause Description	Clause No	Amendment
14. CONTRACT PRICE AND PAYMENT		
ADVANCE PAYMENT	14.2.1 – 14.2.3	This advance payment sub-clause shall not apply to this contract. However, should the Employer agree, an upfront payment can be negotiated, whereby the Contractor will be required to issue the Employer with a guarantee for the exact amount of the upfront payment. The costs involved to obtain this guarantee will be for the Contractor's account.
APPLICATION FOR INTERIM PAYMENT CERTIFICATES	14.3	A single copy of the Contractor Statement in an electronic format will be deemed adequate. An original, hard copy, invoice shall be raised by the Contractor upon Certification of the Contractors Claim by the Engineer. This Sub-Clause is amended as follows: • Delete the words "end of the period" in the first paragraph and replace with "7 days prior to the 25th day of each month." Add the following at the end of this Sub-Clause: • In the event that the Contractor fails to submit a Statement on time, any late submission will only be evaluated in the next month.
SCHEDULE OF PAYMENTS	14.4	The content of this Clause is not applicable. The Contractor shall submit together with the Programme an estimated Cash Flow based on tasks in the Programme.
CURRENCIES OF PAYMENT (Rate of Exchange)	14.15 (f)	If the Contract Data under the Particular Conditions of Contract makes allowance for Rate of Exchange Adjustment for long lead items, these conditions shall apply: (a) No RoE claims will be accepted which are submitted later than 60 days from the date of the Payment Certification of the applicable equipment. (b) RoE claims submitted on the basis of one or more provisional indices, shall be treated as final claims. (c) No RoE shall apply to early or advance payments certified. (e) The country of manufacturing origin's exchange rate shall be used i.e., a USD – ZAR exchange rate will not be accepted for equipment not manufactured in the USA. (f) No Cost Adjustment will be applicable to this contract as whole. The Tenderer must therefore allow for changes in the Rate of Exchange in his unit prices. However, provision will be made for Rate of Exchange adjustments only on long lead items listed in the Contract Data. Rate of exchange will only apply to imported material, to cater for upward and downward fluctuations in cost.
ISSUE OF INTERIM PAYMENT CERTIFICATES	14.6	The content of sub-clause 14.6.1 is amended as follows: The Engineer will issue the Interim Payment Certificate within 7 - 28 days after the receipt of the Statement and supporting documentation
15. TERMINATION BY EMPLOYER		
16. SUSPENSION AND TERMINATION BY CONTRACTOR		
17. CARE OF THE WORKS AND INDEMNITIES		
18. EXCEPTIONAL EVENTS		
EXCEPTIONAL EVENTS	18.1	Add this sub-clause: It is explicitly noted that no claims by the Contractor will be entertained for work stoppages due to riot, commotion, disorder, any blockade, or embargo, strikes or lock outs by local labourers which are in the employ of the Contractor. If the Contractor has not reasonable provided against foreseeable community unrest stoppages by including a community desk, any claims by

Clause Description	Clause No	Amendment
		the Contractor shall not be entertained for stoppages caused by persons other than the Contractor's personnel. Note: for an event to be classified as an "exceptional event", the requirements of all four sub-paragraphs (i) to (iv) of clause 18.1 must be satisfied.

19. INSURANCE

20. EMPLOYER'S AND CONTRACTOR'S CLAIMS

21. DISPUTES AND ARBITRATION

CONSTITUTION OF THE DAAB	21.1	The DAAB shall be adhoc in the event where dispute(s) arise between parties

22. ADDITIONAL GENERAL PROVISIONS

These conditions are adopted from Clause 5 of the FIDIC Conditions of Contract for EPC/Turnkey Projects. (First Edition 1999)

PERIOD OF VALIDITY OF TENDER	22.1	Add this sub-clause: The period of the tender validity shall be 90 days, with extension by mutual agreement between the Employer, Engineer, and the Contractor
TAX INVOICES	22.2	Add this sub-clause: The Contractor shall issue an invoice to the Employer for all amounts to be paid to the Contractor under the Contract. If VAT is payable on any amount certified by the Engineer for payment under the Contract, the Contractor shall ensure that the invoice complies with the requirements of a Tax Invoice under the Value Added Tax Act no. 89 of 1991 (as amended). No payment shall be made by the Employer on invoices not meeting this requirement and the Employer shall not be liable for interest for such non-payment.
EMPLOYER'S RIGHT TO STEP-IN	22.3	Add this sub-clause: If the Contractor fails to carry out any obligation under the Contract and fails to make good the failure and remedy it despite being required to do so by the Engineer by notice under Sub-Clause 15.1 [Notice to Correct] (within the specified reasonable time), the Employer, without prejudice to its other rights, powers and remedies under the Contract or in law, shall be entitled to make good the failure and remedy it either himself or via other persons, and the reasonable costs of doing so shall be for the account of the Contractor. The Contractor shall co-operate with the Employer and facilitate and permit the use of all required Goods, information, materials and other matter (including Contractor's Documents and all other drawings, CAD files, technical data, models, plans, designs, diagrams, evaluations, details, specifications, schedules, reports, calculation results, manuals or other documents or recorded information (electronic or otherwise) which have been or are at any time prepared by or on behalf of the Contractor under the Contract or otherwise for and/or in connection with the Works) and shall generally do all things required by the Engineer to achieve this end.
LIMITATION OF ENTITLEMENT WHERE CONTRACTOR IS CULPABLE	22.4	Add this sub-clause: Notwithstanding anything to the contrary, the Contractor shall not be entitled to any extension of time or additional payment or other compensation if and to the extent: (a) The cause, event or circumstance giving rise thereto is attributable to the negligence, error or default of the Contractor or any Subcontractor. (b) The Contractor fails to take all reasonable steps to mitigate the effects of the cause, event or circumstance giving rise thereto.

Clause Description	Clause No	Amendment
RECORD AND DATA KEEPING	22.5	Add this sub-clause: The Contractor shall maintain all data, records, electronic communications and documentation relating to this Contract and keep full and proper records and accounts in connection with the Works (whether contained in documents or in electronic format), during the execution of the Works and for a period of 5 (five) years after the latest of the expiry dates of the Defects Notification Periods (or the earlier termination of the Contract for any reason whatsoever, as the case may be) and shall ensure that all Subcontractors do likewise. The Employer's Personnel and the Employer's other authorised representatives and agents shall be entitled to examine, audit, copy and inspect all such books, records, systems, processes, procedures, and documents at all reasonable times during the execution of the Works and during the said 5 (five) year period in order to verify compliance by the Contractor with its obligations, and/or to assess any entitlement or claimed entitlement of the Contractor under the Contract. The Contractor shall provide access to all such books, records, systems, data, and documents of the Contractor and to any premises and personnel of the Contractor for this purpose and shall co-operate and render all assistance requested by the Employer's Personnel and the Employer's other authorised representatives and agents. All data, communications, records, and accounts are to be kept in a lockable storeroom and adequately protects against loss which includes, but is not limited to, fire, theft, vermin, etc.
DAMAGES FOR THE LATE SUPPLY OF DOCUMENTATION	22.6	Add this sub-clause: If the Contractor fails to provide any of the documents listed by the dates specified in the Contract, the Contractor shall pay damages to the Employer for this default. **These damages shall be the same amount stated in the Contract Data under sub-clause 8.8 for delay damages, which shall be paid for each day which shall elapse between the time the document in question was to have been delivered and when it was actually delivered**. These damages shall not relieve the Contractor from his obligations to provide the said document, or to complete the Works, or from any other duties, obligations, or responsibilities which he may have under the Contract.
RETESTING & RE-INSPECTION	22.7	If the works or any Section fails to pass any Progress Tests, Completion Tests, Progress Inspections, Completion or Take Over Inspection, the Engineer may require such Tests and Inspections to be repeated on the same terms and conditions. All costs to which the Employer may be put due to repetition of the Tests under this sub-clause shall be deducted from the Contract price. The Contractor shall be liable to pay R 20 000.00 penalty to the Engineer for scheduled inspections or tests failed, per failure, for time wasted.

Clause Description	Clause No	Amendment
GENERAL DESIGN OBLIGATIONS	23.1	The Contractor shall be deemed to have scrutinised, prior to the Base Date (28 days before the Tender Closing Date), the Engineer's Requirements (including design criteria and calculations, if any). The Contractor shall be responsible for the design of parts of the Works and for the accuracy of such Engineer's Requirements (including design criteria and calculations), except as stated below The Engineer shall not be responsible for any error, inaccuracy, or omission of any kind in the Engineer's Requirements as originally included in the Contract and shall not be deemed to have given any representation of accuracy or completeness of any data or information, except as stated below. Any data or information received by the Contractor, from the Engineer, Engineer or otherwise shall not relieve the Contractor from his responsibility for the design and execution of the Works. However, the Engineer shall be responsible for the correctness of the following portions of the Engineer's Requirements and of the following data and information provided by (or on behalf of) the Engineer. a) Portions, data, and information which are stated in the Contract as being immutable or the responsibility of the Engineer, b) Definitions of intended purposes of the Works or any parts thereof, c) Criteria for the testing and performance of the completed Works, and d) Portions, data, and information which cannot be verified by the Contractor, except as otherwise stated in the Contract.
CONTRACTOR'S DOCUMENTS	23.2	The Contractor's Documents shall comprise the technical documents specified in the Engineer's Requirements, documents required to satisfy all regulatory approvals, and the as-built documents requirements, and operation and maintenance manual requirements. Unless otherwise stated in the Engineer's Requirement, the Contractor's Documents shall be written in the language for communications defined in Sub-Clause 1.4 (Law and Language). The Contractor shall prepare all Contractor's Documents and shall also prepare any other documents necessary to instruct the Contractor's Personnel. Each review period shall not exceed 21 days, calculated from the date on which the Engineer receives a Contractor's Document. The Contractor's Documents shall state the level of compliance with the Contract, or the extent to which it does not comply. The Engineer may, within the review period, give notice to the Contractor that a Contractor's Document fails (to the extend stated) to comply with the Contract. If a Contractor's Document so fails to comply, it shall be rectified, resubmitted, and reviewed in accordance with the Sub-Clause, at the Contractor's cost.

Clause Description	Clause No	Amendment
		For each part of the Works, and except to the extent that the Parties otherwise agree: a) Execution of such part of the Works shall not commence prior to the expiry of the review periods for all the Contractor's Documents which are relevant to its design and execution. b) Execution of such part of the Works shall be in accordance with these Contractor's Documents, as submitted for review; and c) If the Contractor wishes to modify any design or document which has previously been submitted for review, the Contractor shall immediately give notice to the Engineer. Thereafter, the Contractor shall submit revised documents to the Engineer in accordance with the above procedure. Any such agreement (under the preceding paragraph) or any review (under this Sub-Clause or otherwise) shall not relieve the Contractor from any obligation or responsibility.
CONTRACTOR'S UNDERTAKING	23.3	The Contractor undertakes that the design, the Contractor's Documents, the execution, and the completed Works will be in accordance with: a) The Laws in the Country, and b) The documents forming the Contract, as altered, or modified by Variations.
TECHNICAL STANDARDS AND REGULATIONS	23.4	The design, the Contractor's Documents, the execution, and the completed Works shall comply with the Country's technical standards, building, construction and environmental Laws, Laws applicable to the product being produced from the Works, and other standards specified in the Engineer 's Requirements, applicable to the Works, or defined by the applicable Laws. All these Laws shall, in respect of the Works and each Section, be those prevailing when the Works or Section are taken over by the Engineer under Clause 10 (Engineer's Taking Over). References in the Contract to published standards shall be understood to be references to the edition applicable on the Base Date, unless stated otherwise. If changed or new applicable standards come into force in the Country after the Base Date, the Contractor shall give notice to the Engineer and (if appropriate) submit proposals for compliance. In the event that: a) The Engineer determines that compliance is required, and b) The proposals for compliance constitute a variation, then the Engineer shall initiate a Variation in accordance with Clause 13 (Variations and Adjustments).
TRAINING	23.5	The Contractor shall carry out the training of Engineer's Personnel in the operation and maintenance of the Works. If the Contract specifies training which is to be carried out before taking-over, under Sub-Clause 10.1 (Taking Over of the Works and Sections) until this training has been completed.

Clause Description	Clause No	Amendment
AS-BUILT DOCUMENTS	23.6	The Contractor shall prepare, and keep up to date, a complete set of "as-built" records of the execution of the Works, showing the exact as-built locations, sizes and details of the work as executed. These records shall be kept on the Site and shall be used exclusively for the purposes of this Sub-Clause. Two copies shall be supplied to the Engineer prior to the commencement of the Tests on Completion. In addition, the Contractor shall supply to the Engineer as-built drawings of the Works, showing all Works as executed, and submit them to the Engineer for review under Sub-Clause 5.2 (Contractor's Documents). The Contractor shall obtain the consent of the Engineer as to their size, the referencing system, and other relevant details. Prior to the issue of any Taking-Over Certificate, the Contractor shall supply to the Engineer the specified numbers and types of copies of the relevant as-built drawings. In accordance with the Engineer's Requirements. The Works shall not be completed for the purposes of taking-over under Sub-Clause 10.1 (Taking Over of the Works and Sections) until the Engineer has received these documents.
OPERATION AND MAINTENANCE MANUALS	23.7	Prior to commencement of the Tests on Completion, the Contractor shall supply to the Engineer provisional operation and maintenance manuals in sufficient detail for the Engineer to operate, maintain, dismantle, reassemble, adjust, and repair the Plant. The Works shall not be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 (Taking Over of the Works and Sections) until the Engineer has received final operation and maintenance manuals in such detail, and any other manuals specified in the Engineer's Requirements for these purposed.
DESIGN ERROR	23.8	If errors, omissions, ambiguities, inconsistencies, inadequacies, or other defects are found in the Contractor's Document, they and the Works shall be corrected at the Contractor's cost, notwithstanding any consent or approval under the Clause.

Note: The Contractor is advised to extend the liability for penalties to equipment manufacturers in order to cover the Contractor's liability if the project is delayed due to delayed manufacturing.

C1.4.1. ANNEXURE TO PCC – RAINFALL

No extension of the completion time will be granted in respect of normal rainfall. Extension will only be granted in respect of abnormal rainfall or abnormally wet conditions in accordance with the formula set out hereunder:

In the event of an extension being granted in accordance with the formula, no additional payment will be granted in respect of the "time related" items scheduled in Section 6:

Preliminary and General of the Schedule of Quantities nor for any other costs incurred.

$V = (Nw - Nn)\frac{Rw}{Rn}$, if $N_w > N_n$ and where

V = Extension of time in calendar days in respect of any particular month

N_w = Actual number of days during the corresponding month during which precipitation exceeds 10 mm

N_n = Average number of days during the corresponding month during which precipitation exceeded 10 mm

R_w = Actual rainfall during the corresponding calendar month

R_n = Average rainfall recorded during the corresponding calendar month

Calculations will be done for each month. Calculations for part of a month are carried out using pro rata figures for N_n and R_n. If R_w / R_n is greater than 2,5, its value shall be taken as 2,5.

If any month Nw is smaller than Nn, no extension of time will be granted for that month.

The following values of Nn and Rn shall be used for this Contract. They are based on figures supplied by the Weather Bureau, for the Meyerton area.

Table 3: Average monthly rainfall

MONTH	AVERAGE NUMBER RAIN DAYS	Nn AVERAGE NUMBER OF DAYS EXCEEDING 10 MM	Rn AVERAGE RAINFALL IN MM
JANUARY	13	4	127,3
FEBRUARY	9	2	72,5
MARCH	9	3	74,6
APRIL	7	2	54,0
MAY	3	0	16,7
JUNE	1	0	9,1
JULY	1	0	8,6
AUGUST	1	0	8,2
SEPTEMBER	3	1	22,7
OCTOBER	9	3	66,5
NOVEMBER	12	3	100,3
DECEMBER	11	3	103,4

AVERAGE PER YEAR: 663,9

C1.4.2. ANNEXURE TO PCC – SCHEDULE OF SUB-CONTRACTORS

The Tenderer shall list below any Sub-Contractors he wishes to employ to carry out part(s) of the work.

The acceptance of this tender shall not be construed as being approval of all or any of the listed Sub-Contractors. Should any or all of the Sub-Contractors not be approved subsequent to the acceptance of the tender, it shall in no way invalidate this tender, and the tendered unit rates for the various items of work shall remain final and binding even in the event of a Sub-Contractor not listed below being approved by the Employer.

Table 4: Schedule of Sub-contractors

PART OR TYPE OF WORK	PROPOSED SUB-CONTRACTOR	WORK RECENTLY EXECUTED BY SUB-CONTRACTOR

**This table must correspond with Table 2 in Section T2.2 Returnable Schedules*

……..
SIGNED ON BEHALF OF TENDERER

DATE: ……

C1.4.3. ANNEXURE TO PCC – SCHEDULE OF NOMINATED SUB-CONTRACTORS

Not Applicable.

……..
SIGNED ON BEHALF OF TENDERER

DATE: ……

C1.5 – FORM OF SECURITIES

C1.5. FORM OF SECURITIES

C1.5.1. EXAMPLE - PERFORMANCE SECURITY/SURETY BOND

Name of Contract / Contract No.: ……..

Name and address of Beneficiary (the "Employer"): …….

…….

We have been informed that …..……. [*insert name of the Contractor*] (hereinafter called the "Principal"), is your Contractor under such Contract, which requires him / her to obtain a Performance Security.

By this Bond, ……..

……. [*insert name and address of Contractor*]

(Who is your Contractor under such Contract) as Principal and: ……..

……. [*insert name and address of Guarantor*] as Guarantor are irrevocably held and firmly bound to the Beneficiary in the total amount of

…….…… (10%) ……

……. [*insert in figures and words the maximum amount payable and the currency in which it is payable]* (the "Bond Amount") for the due performance of all such Principal's obligations and liabilities under the above-named Contract.

[Such Bond Amount shall be reduced by _50__ % upon the issue of the Taking-Over Certificate for the whole of the Works under Clause 10 of the Conditions of Contract.]

This Bond shall become effective on the Commencement Date defined in the Contract.

Upon Default by the Principal to perform any contractual obligation, or upon the occurrence of any of the events and circumstances listed in Sub-Clause 15.2.1 of the Conditions of Contract, the Guarantor shall satisfy and discharge the damages sustained by the Beneficiary due to such Default, event, or circumstances *[and shall not be entitled to perform the principal's obligations under the Contract.]*. However, the total liability of the Guarantor shall not exceed the Bond Amount.

The obligations and liabilities of the Guarantor shall not be discharged by any allowance of time or other indulgence whatsoever by the Beneficiary to the Principal, or by any variation or suspension of the Works to be executed under the Contract, or by any amendments to the Contract or to the

constitution of the Principal or the Beneficiary, or by any other matters, whether with or without the knowledge or consent of the Guarantor.

Any claim under this Bond must be received by the Guarantor on or before ……

…….
[*insert the date six months after the expected expiry of the Defects Notification Period for the Works*] (the "Expiry Date"), when this Bond shall expire and shall be returned to the Guarantor.

The benefit of this Bond may be assigned subject to the provisions for assignment of the Contract, and subject to the receipt by the Guarantor of evidence of full compliance with such provisions.

The Bond shall be governed by the law of.....[*insert the law governing the Bond*] being the same country (or another jurisdiction) as that which governs the Contract. This Bond incorporates and shall be subject to the Uniform Rules for Contract Bonds, published as number 524 by the International Chamber of Commerce, and words used in this Bond shall bear the meanings set out in such Rules.

Whereas this Bond has been issued by the Principal and the Guarantor on .....[*date*]

Signatures for and on behalf of the Principal:

……..	……
(signature)	*(signature)*
……..	……
(name)	*(name)*

Date: ……..

Signatures for and on behalf of the Guarantor:

……..	……
(signature)	*(signature)*
……..	……
(name)	*(name)*

Date: ……..

NOTE: Payment shall be executed within 30 days of receiving instruction from the Engineer.

C1.5: FORM OF SECURITIES

Instruction to be addressed to the following person's attention:

Name : ……..

Telephone : ……..

E-mail : ……..

The address for submission of the Engineer's instruction to call upon the bond for payment:

Name : ……..

Telephone : ……..

E-mail : ……..

Address : ……..

C1.5.2. EXAMPLE SITE HANDOVER CERTIFICATE – BEGINNING OF THE WORKS

PROJECT..... *[Insert Project Name]*

CONTRACT NO .....*[Insert Project Number]*

SCOPE OF WORKS.....*[Insert Project Description]*

The site for the works, as stated above, is herewith handed over by the Employer/Local Authority namely..... ,

to the appointed Contractor for the works, namely, ……..…….

The Contractor shall become *"the Mandatory"* when the Occupational Health and Safety Agreement is signed, with regards to Section 37(2) of the OHS Act 85 of 1993.

The Contractor shall take full responsibility for all aspects related to the above works and all portions thereof. The Employer/Local Authority shall remain responsible for related aspects and areas not affected by the Scope of Works. All infrastructure established as part of the works shall remain the responsibility of the Contractor until the site/works is handed over to the Employer / Local Authority.

Should the Contractor remove from site due to any contractual obligations not being met by the Employer/Local Authority, the Contractor shall notify the Employer/Local Authority that the Employer/Local Authority shall take over responsibility of the site until the relevant contractual obligations are met by the Employer/Local Authority.

SECTION OF WORK: [*Insert Project Scope/Section of Work]*

CONTRACTOR'S REPRESENTATIVE.....*(Full names)*

CONTRACTOR'S FIRM .....*(Company)*

EMPLOYER / LOCAL AUTHORITY'S REPRESENTATIVE.....*(Full Names)*

EMPLOYER / LOCAL AUTHORITY.....*(Company)*

CONSULTING ENGINEER'S REPRESENTATIVE..... ***(Pr. xx.)***

CONSULTING ENGINEER'S FIRM :.....*(Company)*

DATE : …… 20 ……..

……..	……..
SIGNATURE (LOCAL AUTHORITY/CLIENT)	SIGNATURE (CONTRACTOR)
……..	……..
SIGNATURE (CONSULTING ENGINEER)	WITNESS

MIDVAAL LOCAL MUNICIPALITY
P O Box 9
MEYERTON
1960

BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

SECTION 4:
C2 – BILL OF QUANTITIES

CONTENTS – BILL OF QUANTIES

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C2.1 – PRICING INSTRUCTION

C2. BILL OF QUANTITIES

C2.1. PRICING INSTRUCTION

C2.1.1. PREAMBLE

1. This Schedule of Quantities forms part of the Contract Documents as listed in the Schedule of Documents and shall be read in conjunction with the General Conditions, the Specifications and the Drawings and must be submitted, duly completed, on the closing date of Tenders.

2. The short description of items in the Bill of Quantities are for identification purposes only, the work covered by the items being fully specified in the relevant clauses in the Specifications. The Tenderer must therefore allow in the unit price for ordering, obtaining, supplying, delivering to site, installation, and commissioning of the relevant equipment with their accessories.

3. Except where Sum Amounts are required or where Provisional Amounts have been indicated, the Tenderer shall enter an applicable rate in the Rate Column of the Schedule of Quantities for each scheduled item. He shall also enter an applicable sum in the Amount Column for each scheduled item. Should the Schedule not be completed in the manner herein specified, the tender may either be rejected, or the Contractor will not be paid for items against which rates or sum amounts, as applicable, have not been entered. In the event of the latter procedure items not paid for will be regarded as covered by other rates entered in the Schedule of Quantities.

4. Tenderers must complete the Schedule of Quantities and fill in the unit rates for material and labour as well as total amount for each item. The unit rate is for a single item only. Errors of the arithmetic calculation to calculate the total amount, as entered in the Schedule may be corrected by the Employer but rates will be binding.

   An example of the calculations are as follows:

ITEM	DESCRIPTION	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
1	Supply and install a 9 m wood pole	No	100	R20,00	R100,00	R12 000,00
2	Excavate pole hole	m^3	100	R50,00	R0,00	R5 000,00
3	Supply and install 10 mm^2, 3-core cable	m	50	R5,00	R20,00	R1 250,00
4	Head office overhead cost	Sum	1	-	-	R15 000,00
TOTAL CARRIED FORWARD TO SUMMARY						**R33 250,00**

5. Tenderers are advised to check their items extensions and total additions as too many arithmetical errors occurring in the priced Schedule of Quantities will disqualify the Tenderer. Under no circumstances shall the Tenderer be permitted to change the specified quantities in the QTY column which will result in rejecting the tender or changing the quantity to the initial value and correcting the arithmetic's. If the Tenderer disagree with the quantity, he must do so by means of an accompanied letter with full description and reference to the particular item.

6. The quantities reflected in the Schedule of Quantities are approximate only and do not necessarily represent the actual amount of work to be done. Allowance for off-cuts and scrap shall be allowed for in the unit rates. The Contract Price for the completed Contract shall be computed from the actual quantities of authorised work done to the satisfaction of the Engineer valued at the prices

tendered against the respective items in the Bill of Quantities and shall include such authorised provisional amounts and items of extra work as have become payable in terms of the Contract Documents. Extra material shall not be paid for and shall be removed from site.

7. The Contractor shall submit equipment technical data sheets and measured quantities for approval prior to placing any equipment orders. This information shall be submitted by the Contractor to the Engineering within 14 days of being appointed.

8. Unit prices quoted in the Schedule of Quantities must include for such small installation materials as are required for the complete installation in accordance with the Specifications.

9. Payment based on the rates tendered in the Schedule shall cover all the services and incidentals included in the works covered by the Contract and shall be made in accordance with the General Conditions, the Specifications and the Agreement pertaining to the Contract.

10. Where the Contractor is required to furnish detailed drawings and designs or other information in terms of the Contract Documents, all costs shall be deemed to have been provided for and included in the unit rates and sum amounts tendered for the items scheduled in the Schedule of Quantities and separate additional payment will not be made.

11. Writing in the Schedule must be done in black to facilitate clear photocopying.

12. The Contractor shall keep record of all material delivered to site and shall submit such record to the Engineer at every site inspection. Material not installed shall be kept in the site yard or store and the material shall be kept readily available for inspection.

13. Application for payment, accompanied by supporting documentation, shall be submitted to the Engineer on a predetermined date which date shall be a suitable date in each month, agreed upon by all parties concerned with the payment. Claims for additional work in a particular month, for which no written instruction has not yet been issued, if applicable, must also accompany the monthly application for payment. Late claims will not be considered.

14. **All unit rates and sum amounts shall exclude Value Added Tax, as applicable from 1 October 1991 and in accordance with the ruling rate as laid down by the Government, and all prices shall be quoted in South African currency.**

15. The Contractor's attention is drawn to the fact that the allowance for PROVISIONAL AMOUNTS/SUMS for escalation in costs and allowance for contingencies shall only be spent at the discretion of the Engineer and will fall away in part or in whole if not required. It is emphasized that prior to any variation, official approval must be granted.

16. Bidders must keep a copy of the completed excel spreadsheet BOQ which may be required during the evaluation processes. Failure to comply with the above-mentioned terms and conditions will deem your bid disqualified.

SIGNATURE: …….

SIGNED BY: ……. DATE: …….

C2.2 – BILL OF QUANTITIES

C2.2. BILL OF QUANTITIES

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT RATE	TOTAL
1.	**PRELIMINARIES AND GENERAL**					
	Amount allowed for all expenses, regarding the following:					
1.1	**CONTRACTUAL REQUIREMENTS - FIXED AMOUNT**	SANS 1200A				
1.1.1	Nett price for the fulfilment of the Tender Requirements, Conditions of Contract and Performance Security/Security Bond.					
	Performance Security to remain valid until date of issue of the Final Completion Certificate or within 28 days after					
	expiry Defects Notification Period (Contractor to indicate the % based on a yearly budget of R 10 000 000)	8.3.1	%			
1.1.2	Insurance of the Works in the **joint** names of the Employer and Contractor, Insurance of the Construction Plant to its full replacement	8.3.1				
	value and Third Party Insurance (Contractor to indicate the % based on a yearly budget of R 10 000 000)		%			
1.1.3	Site establishment, which includes site office, site store, laydown area, temporary housing, security fence, sanitary, toilets, obtaining					
	water, electrical connection, etc. (Contractor to indicate the % based on a yearly budget of R 10 000 000)	8.3.2.2a)	%			
1.1.4	Pegging and surveying of the route by a qualified surveyor: MV route including all pole positions, anchors, stand boundaries for cable					
	positions, etc.	5.1.1	Sum	1		
1.1.5	Pegging and surveying of the route by a qualified surveyor: LV route including all terminal pole and bend points, etc.	5.1.1	Sum	1		
1.1.6	Pegging and surveying of the route by a qualified surveyor: Informal settlement to determine pole positions, anchors, stand boundaries					
	for cable positions, etc.	5.1.1	Sum	1		
1.1.7	Surveying of the as-built route by a qualified surveyor: MV route including all pole positions, anchors, stand boundaries for cable					
	positions, etc.	5.1.1	Sum	1		
1.1.8	Reinstating of missing S.G. pegs prior to construction of any works and obtaining Surveyors Certificate of Compliance by a					
	Professional Land Surveyor	5.1.2	Sum	1		
1.1.9	Determining and locating of existing services as well as management of wayleaves throughout the delivery of					
	the works,	8.3.3	Sum	1		
1.1.10	Erecting of temporary obstructions and barricades	8.3.3	Sum	1		
1.1.11	CONSTRUCTION NOTICE BOARD (mm. 2600 X 1600)	8.3.2.1c)	Each	1		
1.1.12	Cleaning of the site, removal of all refuse, rubble, rock, etc. prior to handing over of every phase	8.3.4	Sum	1		
1.1.13.1	Obtaining access to the Eskom Website (//scot.eskom.co.za) for access to the relevant Eskom Standards and					
	compile a site manual complete with all relevant Eskom DT drawings	8.3.3	Sum	1	R 2 100.00	R 2 100.00
1.1.13.2	Overheads, charges and profit on Item 1.1.13.1 above (Maximum of 10 % allowed)		%			
1.1.14	Tools, material, safety clothing, and the appropriate PPE for the labourers (incl. local labourers) to conduct their work					
	in accordance with safety requirements	8.3.2.2f)	Sum	1		
1.1.15	Medical evaluation and induction cost for all staff	8.3.3	Sum	1		

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT RATE	TOTAL
1.1.16	As built drawings and manuals (5 x sets). As builts to include surveying of the works by a qualified surveyor, i.e. MV and LV					
	conductors, equipment positions and any relevant site information (drawings to be issued in CAD format)	8.3.3	Sum	1		
1.1.17	Removal from site following completion of the Works	8.3.4	Sum	1		
1.1.18	Temporary removal from site for an undetermined period following completion of a section of the work and					
	re-establishment to complete the remainder of the Works	8.3.3	Sum	1		
1.1.19	Compile a detailed Quality Control Program for construction activities	8.3.3	Sum	1		
1.1.20	SEQUENCE OF WORK					
	Allow adequately to adhere to Municipalities switching procedures, obtaining and signing of permits,					
	arranging outages, giving notices	8.3.3	Days	1		
1.2	**COMPLY WITH THE FOLLOWING SAFETY, HEALTH, ENVIRONMENTAL AND**					
	QUALITY (SHEQ) REQUIREMENTS - FIXED AMOUNT					
1.2.1	Compile a Health and Safety Plan (H & S Plan)	Section 5 C3.1.11.10	Sum	1		
1.2.2	Compile a Risk Assessment for activities (RA)	Section 5 C3.1.11.10	Sum	1		
1.2.3	Comply with Environmental Management Plan (EMP)	Section 5 C3.1.11.10	Sum	1		
1.2.4	Submit proof of calibration of equipment, e.g. Crimper, HV test apparatus, breaking failure test of	Section 5 C3.1.11.10				
	terminations and joints of ACSR OH Lines etc.		Sum	1		
1.2.5	Compile a SHEQ File to also include all the above distinct sections	Section 5 C3.1.11.10	Sum	1		
1.2.6	Construction work notification and permit application (assist the Employer to obtain a construction permit)	Section 5 C3.1.11.10	Sum	1		
1.3	**TOTAL TIME RELATED COST BASED ON MONTHLY EXPENDITURE - ADJUSTABLE**					
	WITH CONTRACT PERIOD		Sum	1		
	The running cost of the project related to the contract period, which will also be used to adjust the cost if an					
	event occurs that becomes the Employers Risk					
1.3.1	Head office overhead cost and contractual obligations	8.4.4	Month	1		
1.3.2	Site overhead cost	8.4.3	Month	1		
1.3.3	Material-store cost on site	8.4.2.2a)	Month	1		
1.3.4	Material-store cost off site	8.4.2.2a)	Month	1		
1.3.5	Maintenance of setting out of the works by a qualified surveyor	8.4.5	Month	1		

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT RATE	TOTAL
1.3.6	Contracts Manager/ Contractor's Representative : Office and Site based	8.4.4	Month	1		
1.3.7	Health, Safety and Environmental Officer	8.4.3	Month	1		
1.3.8	Site Supervisor / Planner : Office and Site based	8.4.3	Month	1		
1.3.9	Site Agent and SHE Representative: Site based	8.4.3	Month	1		
1.3.10	Comply with SHEQ requirements by Safety Officer e.g. regular review and update of Health and Safety File	8.4.3	Month	1		
1.3.11	Site offices cost , including ablution facilities, site administration, transport, accommodation etc.	8.4.2.2a)	Month	1		
1.3.12	Periodic medical, fitness and induction costs	8.4.5	Month	1		
1.3.13	Security for site camp and work on site	8.4.5	Month	1		
1.3.14	Local labour management cost for:	8.4.5	Month	1		
1.3.14.1	Overhead cost to manage SMME's that will execute a portion of the contract (30% of labour portion)	8.4.5	Month	1		
1.3.14.2	Community Liaison Officer (R 7 500.00 p/month)	8.4.5	Month	1	R 7 500.00	R 7 500.00
1.3.14.3	Overheads, charges and profit on item 1.3.14.2 (Maximum of 10 % allowed)		%			
1.3.14.4	Community liaison and communication (R 500/month)	8.4.5	Month	1	R 500.00	R 500.00
1.3.14.5	Overheads, charges and profit on item 1.3.14.4 (Maximum of 10 % allowed)		%			
1.3.14.6	Employment of EPWP workers for the duration of the project (10 Workers @ R 180 p/day per worker)	8.4.5	Month	Prov Sum	R 39 150.00	R 39 150.00
	.					
13.14.7	Management of EPWP workers, overheads, charges and profit on item 1.3.14.6 (Maximum of 10 % allowed)		%			
1.3.14.6	Training of semi-skilled labourers	8.4.5	Month	1		
1.4	**COMPLY WITH THE FOLLOWING SHEQ REQUIREMENTS- TIME RELATED**					
1.4.1	Monthly review and update the Health and Safety Plan (H & S Plan)	Section 5 C3.1.11.10	Month	1		
1.4.2	Monthly review and update the Risk Assessment for activities (RA)	Section 5 C3.1.11.10	Month	1		
1.4.3	Monthly review and update the Environmental Management Plan (EMP)	Section 5 C3.1.11.10	Month	1		
1.5	**BUSH CLEARING**					
1.5.1	Remove and grub large trees and tree stumps and spoil off site of girth. Contractor to identify extend of	Section 5				

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT RATE	TOTAL
	bush clearing required for this phase.	C3.1.14	Sum	1		
1.5.2	Rehabilitation of grass after completion, repair all fences, gates and damage resulted from construction	Section 5				
	or use of land.	C3.1.14	Sum	1		
1.5.3	Interaction with property owners regarding the use of access routes on farms and property as well as	Section 5				
	settling of disputes.	C3.1.14	Sum	1		
1.7	**ITEMS NOT COVERED ELSEWHERE**					
1.7.1	Provisonal Amount allow for additional works instructed by the Engineer and Employer		Prov Sum	1	R 3 500 000.00	R 3 500 000.00
1.7.2	Provisonal Amount allow for escalation for Year 2 and 3		Prov Sum	1	R 1 750 000.00	R 1 750 000.00
	TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES					

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
2.	**MV NETWORK**						
2.1	**MV POLE LENGTHS**						
	Supply , transport to site and pole position, off-loading and planting of the following poles:						
2.1.1	9 m hollow spun concrete pole (TIP LOAD : 10 kN) (Transformer Pole)	D-DT-0003	Each	1			
2.1.2	11 m hollow spun concrete pole (8.5 kN)	D-DT-0017	Each	1			
2.1.3	11 m hollow spun concrete pole (10 kN)	D-DT-0017	Each	1			
2.1.4	11 m hollow spun concrete pole (TIP LOAD : 10 kN) (Terminal Pole with Kit						
	Bracket & 3ph Switch Disconnector)	D-DT-0017	Each	1			
2.1.5	11 m hollow spun concrete pole (TIP LOAD : 10 kN) (Transformer Pole)	D-DT-0017	Each	1			
2.1.6	11 m hollow spun concrete pole (17 kN)	D-DT-0017	Each	1			
2.1.7	12 m hollow spun concrete pole (TIP LOAD : 10 kN)	D-DT-0015	Each	1			
2.1.8	9 m wooden pole 180 - 199 mm dia top	D-DT-0055	Each	1			
2.1.9	11 m wooden pole 160 - 179 mm dia top	D-DT-0051	Each	1			
2.1.10	11 m wooden pole 180 - 199 mm dia top	D-DT-0051	Each	1			
2.1.11	11 m wooden pole 200 - 219 mm dia top	D-DT-0051	Each	1			
2.1.12	12 m wooden pole 180 - 199 mm dia top	D-DT-0051	Each	1			
2.1.13	12 m wooden pole 200 - 219 mm dia top	D-DT-0051	Each	1			
2.1.14	3,5 m cross-arm	D-DT-0063	Each	5			
2.1.15	1,3 m cross-arm		Each	5			
2.2	**MV STRUCTURES**						
	Supply, transport to site and pole postion, off-loading and dressing of the following						
	MV structures:						
	Note: Pricing shall make provision for a terminations and clamping-in on conductor						
2.2.1	Intermediate Assembly Staggered Vertical 0 deg	D-DT-1710	Each	1			
2.2.2	Strain Assembly Vertical 0 deg deviation	D-DT-1713	Each	1			
2.2.3	Strain Assembly Vertical 10-30 deg deviation	D-DT-1714	Each	1			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
2.2.4	Strain Assembly Vertical 30-60 deg deviation	D-DT-1715	Each	1			
2.2.5	Strain Assembly Vertical 60-90 deg deviation	D-DT-1745	Each	1			
2.2.6	Terminal Assembly	D-DT-1716	Each	1			
2.2.7	T-off assembly from intermediate vertical	D-DT-1801	Each	1			
2.3	**MV ANCHORS**						
	Supply and install complete MV stay rod assembly:						
2.3.1	Complete stay rod assembly	D-DT-0341	Each	1			
2.3.2	Concrete Strut for 9 m Concrete Pole	D-DT-0351	Each	1			
2.3.3	Concrete Strut for 11 m Concrete Pole	D-DT-0351	Each	1			
2.3.4	Concrete Strut for 12 m Concrete Pole	D-DT-0351	Each	1			
2.3.5	Concrete Strut for 9 m Wooden Pole	D-DT-0351	Each	1			
2.3.6	Concrete Strut for 11 m Wooden Pole	D-DT-0351	Each	1			
2.3.7	Concrete Strut for 12 m Wooden Pole	D-DT-0351	Each	1			
2.3.8	MV Flying Stay	D-DT-0343	Each	1			
2.4	**MV POLE EXCAVATIONS**						
	Excavate holes, backfilling, compaction to initial soil conditions and dispose of burden						
	for the following structures (Claims for hard rock or blasting must be approved by the						
	Engineer or his Representative). Hole sizes as follows:						
2.4.1	**9 m hollow spun concrete pole (TIP LOAD : 10 kN) (Transformer Pole)**						
2.4.1.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.4.1.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.4.1.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.4.1.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.4.2	**11 m hollow spun concrete pole (8.5 kN)**						
2.4.2.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
2.4.2.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.4.2.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.4.2.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.4.3	**11 m hollow spun concrete pole (10 kN)**						
2.4.3.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.4.3.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.4.3.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.4.3.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.4.4	**11 m hollow spun concrete pole (17 kN)**						
2.4.2.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.4.2.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.4.2.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.4.2.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.4.5	**9 m wooden pole 180 - 199 mm dia top**						
2.4.5.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.4.5.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.4.5.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.4.5.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.4.6	**11 m wooden pole 160 - 179 mm dia top**						
2.4.6.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.4.6.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.4.6.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.4.6.4	Submersed - excavation and backfill	D-DT-0332	Each	1			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
2.4.7	**11 m wooden pole 180 - 199 mm dia top**						
2.4.7.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.4.7.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.4.7.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.4.7.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.4.8	**11 m wooden pole 200 - 219 mm dia top**						
2.4.8.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.4.8.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.4.8.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.4.8.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.4.9	**12 m wooden pole 180 - 199 mm dia top**						
2.4.9.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.4.9.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.4.9.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.4.9.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.4.10	**12 m wooden pole 200 - 219 mm dia top**						
2.4.10.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.4.10.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.4.10.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.4.10.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.5	**MV ANCHORS**						
2.5.1	**Stay Hole Excavations**						
2.5.1.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.5.1.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.5.1.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
2.5.1.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.5.2	**Concrete Strut for 9 m Concrete Pole**						
2.5.2.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.5.2.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.5.2.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.5.2.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.5.3	**Concrete Strut for 11 m Concrete Pole**						
2.5.3.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.5.3.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.5.3.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.5.3.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.5.4	**Concrete Strut for 12 m Concrete Pole**						
2.5.4.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.5.4.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.5.4.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.5.4.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.5.5	**Concrete Strut for 9 m Wooden Pole**						
2.5.5.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.5.5.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.5.5.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.5.5.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.5.6	**Concrete Strut for 11 m Wooden Pole**						
2.5.6.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.5.6.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
2.5.6.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.5.6.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.5.7	**Concrete Strut for 12 m Wooden Pole**						
2.5.7.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
2.5.7.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
2.5.7.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
2.5.7.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
2.6	**TRANSFORMERS**						
	Supply, transport to site, off-loading, installation, connection, testing and commissioning of the following						
	Pole Transformers:						
2.6.1	100 kVA, 11kV / 420 Transformer as specified in PSE19 of Section 5 (With Shunt Trip)	PSE 19	Each	1			
2.6.2	200 kVA, 11kV / 420 Transformer as specified in PSE19 of Section 5 (With Shunt Trip)	PSE 19	Each	1			
2.6.3	100 kVA, 11kV / 420 Transformer as specified in PSE19 of Section 5 (Without Shunt Trip)	PSE 19	Each	1			
2.6.4	200 kVA, 11kV / 420 Transformer as specified in PSE19 of Section 5 (Without Shunt Trip)	PSE 19	Each	1			
2.6.5	Supply, delivery and installation of transformer platform complete with bolts, washers and nuts	D-DT-1861	Each	1			
	(excluding poles)						
2.7	**LOAD BREAKS**						
	Supply, installation, connection, testing and commissioning of the following load breaks:						
2.7.1	Drop-out fuses 10 amp assembly with 10 amp fuses	D-DT-1852	Set	1			
2.7.2	Drop-out fuses 20 amp assembly with 20 amp fuses	D-DT-1852	Set	1			
2.7.3	On-load huklink 24 kV 200 amp, 3ph. Combined isolator and strain insulator	D-DT-1855	Set	1			
2.7.4	Tri-switch assembly, 3 ph, load break, 200 amp (Link Stick operated)	D-DT-1857	Each	1			
2.7.5	Supply, delivery and installation of 200 A, 3-pole MCB with shunt trip to be fitted						
	on transformer	PSE 01	Set	1			
2.7.6	Supply, delivery and installation of LV Fuses Morsdorfers 160A	D-DT-0309	Each	1			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
2.8	**EARTHING**						
	Conduct earthing survey, test pole footing earth and if required install additional earthing						
2.8.1	Bonding of structures	D-DT-0310	Each	1			
2.8.2	Conduct pole footing earth resistance tests and submit test results to Engineer	PSE 01	Each	1			
2.8.3	Three point star earthing (TPS)						
2.8.3.1	Supply and install TPS earthing MV Transformers and at poles as per Engineers instruction	D-DT-0640	Each	1			
2.8.3.2	Supply and install TPS earthing LV Transformers and at poles as per Engineers instruction	0627 & 0637	Each	1			
2.8.4	Single earth spike:						
	Supply and install 1,8 m x 16 mm copper earth rod in pole hole and connect to wire strand	D-DT-0637	Each	1			
2.8.5	Conductive Concrete:						
	Drill hole, supply and install conductive concrete including 1,8 m x 16 mm copper earth spike	PSE 01	Each	1			
2.9	**CONDUCTORS**						
	Supply, deliver, stringing and tensioning of the following bare conductor and aerial bundle						
	conductor (ABC)						
	Note: Length is for all three phases and include line regulation						
2.9.1	Phase conductor - Single Hare	D-DT-3136	m	1			
2.9.2	Phase conductor - Single Fox	D-DT-3136	m	1			
2.10	**JOINTS**						
	Supply, deliver and installation of the following compression joints and ABC joints. (Subject						
	to Approval)						
2.10.1	Phase conductor - Single Hare	D-DT-3073	Each	1			
2.10.1	Phase conductor - Single Fox	D-DT-3073	Each	1			
2.11	**POLE IDENTIFICATION LABELS**						
	Supply and install pole identification labels on entire line. Stencil pole number 2m above ground level with						
	black paint on yellow background - stencil size 80mm	PSE 01	Each	1			
2.12	**DOCUMENTATION**						
	Complete all parts of the Construction Handbook that applies to the construction of the line	PSE 01	Each	1			
2.13	**TESTING AND COMMISSIONING**						
	Pressure testing and commissioning of the network	PSE 01	Each	1			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
	TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES						

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
3.	**MLV NETWORK**						
3.1	**LV POLE LENGTHS**						
	Supply, Transport to site and pole position, off-loading and planting of the						
	following concrete poles						
3.1.1	9 m hollow spun concrete pole (TIP LOAD : 5.5 kN)	D-DT-0003	Each	1			
3.1.2	9m wooden pole (140 to 159 mm)	D-DT-0055	Each	1			
3.1.3	9m wooden pole (160 to 179 mm)	D-DT-0055	Each	1			
3.2	**LV STRUCTURES**						
	Supply, transport to site and pole postion, off-loading and dressing of the						
	following LV structures						
3.2.1	Intermediate/Suspension (0 - 30 deg)	D-DT-1100	Each	1			
3.2.2	Strain assembly (0 - 60 deg)	D-DT-1121	Each	1			
3.2.3	Strain assembly (60 - 90 deg)	D-DT-1122	Each	1			
3.2.4	Terminal assembly	D-DT-1120	Each	1			
3.2.5	T-off assembly from intermediate	D-DT-1140	Each	1			
3.2.6	T-off assembly from strain	D-DT-1142	Each	1			
3.2.7	Cross intermediate-intermediate assembly	D-DT-1141	Each	1			
3.2.8	Cross intermediate-strain assembly	D-DT-1143	Each	1			
3.3	**LV ANCHORS**						
	Supply and install complete LV stay rod assembly						
3.3.1	Complete stay rod assembly	D-DT-0341	Each	1			
3.3.2	Strut for 9 m LV Concrete Pole	D-DT-0351	Each	1			
3.3.3	Strut for 9 m LV Wooden Pole	D-DT-0351	Each	1			
3.3.4	LV Flying Stay	D-DT-0343	Each	1			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
3.4	**LV POLE EXCAVATIONS**						
3.4.1	**9 m hollow spun concrete pole (TIP LOAD : 5.5 kN)**						
3.4.1.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
3.4.1.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
3.4.1.3	Very Hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
3.4.1.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
3.4.2	**9m wooden pole (140 to 159 mm)**						
3.4.2.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
3.4.2.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
3.4.2.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
3.4.2.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
3.4.3	**9m wooden pole (160 to 179 mm)**						
3.4.3.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
3.4.3.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
3.4.3.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
3.4.3.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
3.5	**LV ANCHORS**						
3.5.1	**LV Stay Hole Excavations**						
3.5.1.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
3.5.1.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
3.5.1.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
3.5.1.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
3.5.2	**Strut pole for 9 m Concrete Pole**						

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
3.5.2.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
3.5.2.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
3.5.2.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
3.5.2.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
3.5.3	**Strut pole for 9 m Wooden Pole**						
3.5.3.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
3.5.3.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
3.5.3.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
3.5.3.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
3.5.4	**LV Flying Stay Hole Excavations**						
3.5.4.1	Soft rock and soil - (excavation and backfill)	D-DT-0332	Each	1			
3.5.4.2	Hard rock (Compressor) - excavation and backfill	D-DT-0332	Each	1			
3.5.4.3	Very hard rock (Blasting) - excavation and backfill	D-DT-0332	Each	1			
3.5.4.4	Submersed - excavation and backfill	D-DT-0332	Each	1			
3.5.5	**EXTRA-OVER ITEMS FOR EXCAVATIONS**						
3.5.5.1	Soft rock and soil - (excavation and backfill)	PSE 09	m^3	1			
3.5.5.2	Hard rock (Compressor) - excavation and backfill	PSE 09	m^3	1			
3.5.5.3	Blasting	PSE 09	m^3	1			
3.5.5.4	Auger drill	PSE 11	Each	1			
3.5.5.5	Rock drill	PSE 11	Each	1			
3.6	**CONDUCTORS**						
	Supply, deliver, stringing and tensioning of the following bare conductor and aerial bundle						

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
	conductor (ABC)						
	Note: Length is for all three phases and include line regulation						
3.6.1	3 x 35 mm sq aerial bundle conductor + bare neutral conductor	D-DT-3141	m	1			
3.6.2	3 x 70 mm sq aerial bundle conductor + bare neutral conductor	D-DT-3141	m	1			
3.7	**SERVICE CONNECTION BOXES**						
	Supply, transport to site, off-loading, installation, connection, testing and						
	commissioning of the following						
3.7.1	1-4 way Service Distribution pole top box (4 x 30 A 1ph circuit breakers)	D-DT-3055	Each	1			
3.7.2	1-8 way Service Distribution pole top box (8 x 30 A 1ph circuit breakers)	D-DT-3055	Each	1			
3.7.3	30 A MCB, slow curve 1, 5 kA	PSE 01	Each	1			
3.7.4	Clip-in LV lightning arrester	PSE 01	Each	1			
3.7.5	Complete pole top box and house connection "sample" assembly prior to construction	PSE 01	Each	1			
3.8	**JOINTS**						
	Supply, deliver and installation of the following compression joints and ABC joints						
	(Subject to Approval)						
3.8.1	3 x 35 mm sq aerial bundle conductor + bare neutral conductor	D-DT-3089	Each	1			
3.8.2	3 x 70 mm sq aerial bundle conductor + bare neutral conductor	D-DT-3089	Each	1			
3.9	**POLE IDENTIFICATION LABELS**						
	Supply and install pole identification labels on entire line. Stencil pole number 2m above						
	ground level with black paint on yellow background - stencil size 80mm	PSE 01	Each	1			
3.10	**DOCUMENTATION**						
	Complete all parts of the Construction Handbook that applies to the construction of the line	PSE 01	Each	1			
3.11	**TESTING AND COMMISSIONING**						
	Pressure testing and commissioning of the network	PSE 01	Each	1			
	TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES						

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
4.	**SERVICE CONNECTIONS**						
4.1	**HOUSE CONNECTIONS**						
4.1.1	Supply, delivery, installation and commissioning of ready boards complete with						
	light-fitting and lamp as specified	PSE 01	Each	1			
4.1.2	Supply, delivery, installation and commissioning of complete Conlog Split Single Phase						
	DIN-Rail mounted prepaid meter as specified in Clause 2.7 of PSe01 of Section V:						
4.1.2.1	Conlog WBEC44 Split Single Phase DIN-Rail mounted meter with RF communications	PSE 01	Each	1			
4.1.2.2	Customer Interface Unit and Customer Card	PSE 01	Each	1			
4.1.3	Supply and installation of weather proof type York wall mounted box with wooden backing plate to						
	accommodate prepaid meter on outside of house	PSE 01	Each	1			
4.1.4	Supply and installation of Airdac strain clamps complete for fixing at shack with pigtail hook						
	or bracket suitable for concrete pole mounting	PSE 01	Each	1			
4.1.5	Supply and install pigtail bolt assembly (M10 x 280 mm)	PSE 01	Each	1			
4.1.6	Supply and installation of 5 m concrete shack pole complete with excavation and with Airdac						
	strain clamp	PSE 01	Each	1			
4.1.7	Supply and installation of 7 m concrete shack pole complete with excavation and with Airdac						
	strain clamp	PSE 01	Each	1			
4.1.8	Supply and installation of 9 m concrete shack pole complete with excavation and with Airdac						
	strain clamp	PSE 01	Each	1			
4.1.9	Supply and installation of 5 m wooden shack pole complete with excavation and with Airdac						
	strain clamp	PSE 01	Each	1			
4.1.10	Supply and installation of 7 m wooden shack pole complete with excavation and with Airdac						
	strain clamp	PSE 01	Each	1			
4.1.11	Supply and installation of 9 m wooden shack pole complete with excavation and with Airdac						
	strain clamp	PSE 01	Each	1			
4.1.12	Supply and Install Airdac compression gland suitable for zinc plate mounting	PSE 01	Each	0			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
4.1.13	Supply and installation of 2,0 m x 25 mm dia protection (kicking) pipe fixed with saddles						
	against the wall of the house	PSE 01	Each	1			
4.1.14	200mm dia x 9 000mm galvanised kicking pipe filled with Bentonite	PSE 01	Each	1			
4.2	**LOCAL SUBCONTRACTORS**						
	Allow R 350,00 / house connection for labour of local subcontractors	PSE 100	Each	1			
4.3	**LV CABLE**						
	Supply, transport to site, off-loading, installation, testing and commissioning of the						
	following LV cable:						
4.3.1	Supply, delivery, installation and connecting of 4m² concentric Airdac cable with seperate						
	neutral and earth (SNE) (No communication cores) as specified	D-DT-3140	m	1			
4.3.2	Supply, delivery, installation and connecting of 6m² concentric Airdac cable with seperate						
	neutral and earth (SNE) (No communication cores) as specified	D-DT-3140	m	1			
4.3.3	Supply, delivery, installation and connecting of 10m² concentric Airdac cable with seperate						
	neutral and earth (SNE) (No communication cores) as specified	D-DT-3140	m	1			
4.3.4	4 mm², Copper, 2 core, PVC, SWA + ECC	PSE 08	m	1			
4.3.5	6 mm², Copper, 2 core, PVC, SWA + ECC	PSE 08	m	1			
4.3.6	10 mm², Copper, 2 core, PVC, SWA + ECC	PSE 08	m	1			
4.4	**LV CABLE ENDS**						
	Supply, delivery, making off and commissioning of cable ends complete with lugs, labelling,						
	ect for the following sizes of cables (cable ends to be suitable for cable glands):						
4.4.1	4m² concentric Airdac cable	PSE 08	Each	1			
4.4.2	4m² concentric Airdac cable	PSE 08	Each	1			
4.4.3	4m² concentric Airdac cable	PSE 08	Each	1			
4.4.4	4 mm², Copper, 2 core, PVC, SWA + ECC	PSE 08	Each	1			
4.4.5	6 mm², Copper, 2 core, PVC, SWA + ECC	PSE 08	Each	1			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
4.4.6	10 mm², Copper, 2 core, PVC, SWA + ECC	PSE 08	Each	1			
4.5	**LV CABLE JOINT**						
	Supply, delivery, making off and commissioning of cable ends complete with lugs, labelling,						
	ect for the following sizes of cables (Cable ends to be suitable for cable glands):						
4.5.1	4 mm², Copper, 2 core, PVC, SWA + ECC	PSE 08	Each	1			
4.5.2	6 mm², Copper, 2 core, PVC, SWA + ECC	PSE 08	Each	1			
4.5.3	10 mm², Copper, 2 core, PVC, SWA + ECC	PSE 08	Each	1			
4.6	**CABLE TRENCH**						
	Excavation, backfilling and consolidation of cable trenches:						
4.6.1	Soft rock and soil - (excavation and backfill)	PSE 09	m	1			
4.6.2	Hard rock (Compressor) - excavation and backfill	PSE 09	m	1			
4.6.3	Very hard rock (Blasting) - excavation and backfill	PSE 09	m	1			
4.7	**BEDDING**						
	Supply and installation of a 1.2 m.K/W bedding layer per running meter of soft sieved soil in trenches						
	as well as backfilling and consolidation as specified	PSE 09	m	1			
4.8	**DANGER TAPE**						
	Supply and installation of danger tape to a depth of 300 mm	PSE 09	m	1			
4.9	**CONCRETE SLAB**						
	Supply and install concrete slabs for cable protection (300*1000*25) in cable trench at						
	300mm depth	PSE 09	Each	1			
4.10	**CABLE ROUTE MARKER**						
	Supply and install concrete cable route marker	PSE 09	Each	1			
4.11	**SLEEVES**						
	Supply and install 110 mm dia PVC sleeves at all road crossings	PSE 09	m	1			
4.12	**DOCUMENTATION**						
	Complete all parts of the Construction Handbook that applies to the construction of the line	PSE 01	Each	1			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
4.13	**TESTING AND COMMISSIONING**						
	Testing and quality control of house connection installation and issuing of a certificate of compliance						
	for each house connection by an accredited person as specified	PSE 01	Each	1			
	TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES						

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
5.	**MV CABLE WORKS**						
5.1	**MV CABLE**						
	Supply, delivery, installation, testing and commissioning of the following MV cable:						
5.1.1	240 mm² x 3 core, Aluminium, 11 / 6.35 kV PILC SWA PVC sheath according to						
	SANS 97 Table 18	PSE 50	m	1			
5.2	**INDOOR MV CABLE ENDS**						
	Supply, making off and commissioning of MV cable ends equal or similar to						
	Raychem/Jointmaster:						
5.2.1	240 mm² x 3 core PILCSWA	PSE 50	Each	1			
5.3	**OUTDOOR MV CABLE ENDS**						
	Supply, installation, connection of the following cable termination structure, danger						
	signs, bardbed wire, stainless strapping suitable for cable make off and ancilliers:						
5.3.1	Galvanised cable termination structure (including post insulators)	D-DT-0852	Each	1			
5.3.2	11 kV, 10 kA surge arrestor	0850 & 0852	Each	1			
5.3.3	Ganged 3ph Switch Disconnector (Link Stick Operated - Single Pole mounted)	D-DT-1857	Each	1			
5.3.4	240 mm² x 3 core PILCSWA MV cable ends equal or similar to Raychem/Jointmaster	PSE 50	Each	1			
5.3.5	200mm dia x 10 000mm galvanised kicking pipe filled with Bentonite		Each	1			
5.4	**MV CABLE JOINTS**						
	Supply, making off and commissioning of cable joints equal or similar to Raytech joints:						
5.4.1	240 mm² x 3 core PILCSWA	PSE 50	Each	1			
5.5	**CABLE TRENCH**						
	Excavation, backfilling and consolidation of cable trenches:						
5.5.1	Soft rock and soil - (excavation and backfill)	PSE 09	m	1			
5.5.2	Hard rock (Compressor) - excavation and backfill	PSE 09	m	1			
5.5.3	Very hard rock (Blasting) - excavation and backfill	PSE 09	m	1			
5.6	**BEDDING**						
	Supply and installation of a 1.2 m.K/W bedding layer per running meter of soft sieved soil in trenches						
	as well as backfilling and consolidation as specified	PSE 09	m	1			

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
5.7	**DANGER TAPE**						
	Supply and installation of danger tape to a depth of 300 mm	PSE 09	m	1			
5.9	**CONCRETE SLAB**						
	Supply and install concrete slabs for cable protection (300*1000*25) in cable trench						
	at 300mm depth	PSE 09	Each	1			
5.10	**CABLE ROUTE MARKER**						
	Supply and install concrete cable route marker	PSE 09	Each	1			
5.11	**SLEEVES**						
5.11.1	Supply and install 110 mm dia PVC sleeves at all road crossings	PSE 09	m	1			
5.11.2	Cut surface with angle grinder, backfill with soilcrete and repair surface with tarmacadam	PSE 09	m	1			
5.11.3	Cut surface with angle grinder, backfill with soilcrete and repair surface with cement	PSE 09	m	1			
5.11.4	Remove paving/slabs, backfill with soilcrete and reinstate paving/slabs to match						
	surrounding area	PSE 09	m	1			
5.11.5	ROAD CROSSING, SLEEVES / DUCTS & DIRECTIONAL DRILLING:						
	Supply and install class 6, 160 mm dia HDPE sleeves at all road crossings	PSE 09	m	1			
5.11.5	Fixtures at end of sleeves (approved method), Bentonite sealing after installations & Cap seals	PSE 09	Each	1			
5.12	**DOCUMENTATION**						
	Complete all parts of the Construction Handbook that applies to the construction of the line	PSE 09	Each	1			
5.13	**TESTING AND COMMISSIONING**						
	Pressure testing and commissioning of the network	PSE 09	Each	1			
	TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES						

ITEM	DESCRIPTION	REF	UNIT	QTY	UNIT LABOUR RATE	UNIT MATERIAL RATE	TOTAL
6.	**DAY WORKS**						
	Note: This section only provides for day works on an a As and When required basis.						
6.1	ORHVS Supervisor : Normal Hours	T2.2.10	Hourly Rate	1			
6.2	ORHVS Supervisor : Overtime	T2.2.10	Hourly Rate	1			
6.3	ORHVS Supervisor : Sunday	T2.2.10	Hourly Rate	1			
6.4	Supervisor : Normal Hours	T2.2.10	Hourly Rate	1			
6.5	Supervisor : Overtime	T2.2.10	Hourly Rate	1			
6.6	Supervisor : Sunday	T2.2.10	Hourly Rate	1			
6.7	Artisan : Normal Hours	T2.2.10	Hourly Rate	1			
6.8	Artisan : Overtime	T2.2.10	Hourly Rate	1			
6.9	Artisan : Sunday	T2.2.10	Hourly Rate	1			
6.10	Semi-skilled : Normal Hours	T2.2.10	Hourly Rate	1			
6.11	Semi-skilled : Overtime	T2.2.10	Hourly Rate	1			
6.12	Semi-skilled : Sunday	T2.2.10	Hourly Rate	1			
6.13	Labour or unskilled : Normal Hours	T2.2.10	Hourly Rate	1			
6.14	Labour or unskilled : Overtime	T2.2.10	Hourly Rate	1			
6.15	Labour or unskilled : Sunday	T2.2.10	Hourly Rate	1			
6.16	Transport cost per km for vehicles less than 1 ton	T2.2.10	km	1			
6.17	Transport cost per km for vehicles more than 1 ton	T2.2.10	km	1			
	TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES						

THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

SUMMARY

ITEM NO	DESCRIPTION	LIST	PRICE
1	PRELIMINARIES AND GENERAL	LIST A	
2	MV NETWORK	LIST B	
3	LV NETWORK	LIST C	
4	SERVICE CONNECTIONS	LIST D	
5	MV CABLE WORKS	LIST E	
6	DAY WORKS	LIST F	
	SUBTOTAL A		
	PLUS: VAT		
	TOTAL TENDER PRICES - SUBTOTAL B & VAT **(Carried forward to Section 3, Part C1.1, Page 1 of tender document)**		

TENDERER'S SIGNATURE:….....

COMPANY NAME:….....

ADDRESS:….....

NOTE: - TENDERERS ARE RESPONSIBLE TO INSERT ALL EXCEL FORMULAS AND CHECK FOR ARITHMETIC ERRORS
- THE TENDERER SHALL POPULATE THE BILL OF QUANTITIES BY HAND IN THE BID SUBMISSION DOCUMENT
- THE TENDERER SHALL EMAIL THE POPULATED BOQ IN PDF AND RAW EXCEL FORMAT TO SUPPLY CHAIN @
- TENDERS@MIDVAAL.GOV.ZA AT THE TENDER CLOSING TIME (FOR EVALUATION PURPOSES)
- **THE TOTAL TENDER PRICE IS FOR TENDER PURPOSE ONLY**

MIDVAAL LOCAL MUNICIPALITY
P O Box 9
MEYERTON
1960

BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

SECTION 5:
C3 – SCOPE OF WORKS / SPECIFICATIONS
C4 – SITE INFORMATION

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C3 – SCOPE OF WORKS

C3. SCOPE OF WORKS

This scope of work institutes information that specifies and describes the goods, services, or engineering and construction works which are to be provided and any other requirements and constraints relating to the manner in which the contract work is to be performed.

The Scope of Works includes four distinct sub-sections namely:
- C3.1 – Project Specifications
- C3.2 – General Specifications
- C3.2 – Technical Schedules

The Contractor must allow in his tender price, for the supply, delivery of material on site, installation and commissioning of the works as specified in this document. The onus is on the Contractor to ensure that he received a complete document as indicated in the Index.

Any discrepancies shall be clarified by the Tenderer prior to the enquiry closing date.

DESCRIPTION OF THE WORKS

The works entails the construction of a MV & LV reticulation networks for unelectrified formal and informal dwelling in the Midvaal Local Municipality.

The project will be funded by the Department of Mineral Resources and Energy (DMRE) and will after completion be handed over to Midvaal Local Municipality for commercial operation and maintenance.

Midvaal Local Municipality has limited funding available for the project and the construction will be executed over a multiple municipal financial years.

All the material shall be supplied by the tenderer which includes the manufacturing, according to Eskom Specification, transporting to site, offload, installation, and commissioning will all be undertaken by the successful tenderer. Prior to energizing, commissioning certificates must be submitted by the OEM for the 11 kV pole mounted transformers.

Preparation of all detail's designs, manufacturing drawings and documentations for approval specified throughout the enquiry document shall initiate once the successful Contractor has received a Letter of Acceptance.

The scope of works is outlined below.

Table 1: High level primary plant scope of work

1.	Survey and peg all MV structure positions. Only survey and peg the terminal and strain LV structures. Survey and peg the erven boundaries.
2.	Bush Clearing.
3.	Excavation of MV & LV pole holes.
4.	Excavation of MV & LV stay holes.
5.	Excavation of MV & LV cable trenches.
6.	Dressing of poles.
7.	Planting of poles.

8. Planting of stays and struts (including temporary construction stays).
9. Stringing of the MV & LV conductor.
10. Installation of MV & LV cables.
11. Installation of pole mounted transformers.
12. Installation of pole top boxes.
13. Installation of Readyboards and issue CoC.
14. Testing of MV & LV Network.
15. Commissioning of MV & LV Network.

CONSTRAINTS WITH EXECUTION OF THE WORKS

a) Any variation or modification with a cost implication must be approved by the Project Manager before work can commence. No late claim will be entertained.

b) The handing over document must be signed and handover must take place 7 days prior to the official energising of the project.

c) No work shall be permitted to proceed without the work being surveyed & pegged by the Contractor (subject to the Engineer's approval).

d) The Contractor must adhere to Safety Requirements. Further safety requirements are as follows:
- Only harnesses and no safety belts must be used in alleviated positions.
- No labourers will be allowed to stay on site. A night watch shall be appointed to guard the site at night.
- No short pants will be allowed on site.
- Safety clothes suitable for the specific task must be always worn.
- Toilet facilities are available on site; no temporary toilets will be allowed.
- Day visitors will be able to enter with a visitor's card.
- Hard hats and safety boots are compulsory on the construction site.
- All operators must be trained and competent.
- All equipment must be in a good working order.
- The Contractor must have a first-aid kit on site and all injuries must be reported.
- The Contractor must keep complete record of all man hours.

e) The tenderer shall provide three complete sets of all special tools for the equipment supplied. The tenderer shall further provide a list of spare parts which it is recommended and should be kept by the Employer. Spares, which the employer decides to order, shall be delivered simultaneously with the rest of the equipment and shall be separately packed and appropriately marked.

The spares must be handed over to the Client before the issuing of the Taking Over Certificate and may not be used by the Contractor for maintenance or for replacement of components which must be replaced due to defects during the Defects Liability Period or for the replacement of any item which is still under guarantee.

C3.1 – PROJECT SPECIFICATIONS

C3.1. PROJECT SPECIFICATIONS

This specification deals with the technical installation aspects relating to this project.

Any discrepancy between the Particular Specification, Bill of Quantities and Drawings must be reported to the Engineer who will clarify such contradiction before closing of tender.

If any discrepancies exist between parts of this document, the following order of preference will take place:

a) Drawings
b) Bill of Quantities
c) Project Specifications
d) General specifications

C3.1.1. DEFINITIONS

For the purposes of this document, terms used herein or in accompanying documents shall have the following meaning:

"Agreement" shall mean the agreement entered between the Employer and the Contractor for the execution of the accepted Tender Price or accepted quotation. Under this contract this means the FIDIC Condition of Contract and other contract documents.

"Bills of Quantities" or **"Schedule of Quantities"** or **"Pricing Schedules"** shall mean the document attached to a Tender Document or Quotation in which the quantities of work, labour, materials, and articles required for the execution of the contract will be entered, together with the rates or prices for such items.

"Calendar Days" means twenty-four (24) hour days commencing at midnight (00:00) which include working and non-working days.

"Certificate of Final Completion" means a certificate issued by the Engineer to the Contractor stating the date on which final completion of the works was achieved.

"Certificate of Practical Completion" means a certificate issued by the Engineer to the Contractor stating the date on which practical completion of the works was achieved.

"Certificate of Works Completion" means a certificate issued by the Engineer to the Contractor stating the date on which works completion of the works was achieved

"Contractor" shall mean the Employer has accepted the person or persons, partnership, firm or company, whose tender for the work referred to in the Contract or who has or have signed the contract and shall include his or their heirs, executors, administrators, judicial managers, trustees, successors in title and duly appointed representatives.

"Contract" or **"Contract Documents"** shall mean and include the Conditions of Tender, General Conditions of Contract, Special Conditions of Contract, Project Specifications, Schedules of Quantities or Pricing Schedules or Bills of Quantities, Schedule of Prices for Variations, Drawings, Form of Tender, Letter of Acceptance and the Agreement to follow thereon and shall include such printed matter or explanatory memorandum submitted by a Tenderer with his tender as may be acceptable to the Employer;

"Contract Price" or **"Contract Sum"** shall mean the amount entered in the Form of Tender for the whole of the Works done or materials supplied for the Works, subject to additions or deductions as may be made in terms of the Contract.

"Construction Equipment" shall mean all the materials, machinery, implements, tackle, vehicles, barrows, tools, etc. provided by the Contractor, for the due performance of the Contract, but not essentially forming part of the Contract.

"Drawings" shall mean the drawings, sketches, diagrams, maps, plans, sections and other delineations which accompany or are referred to in the Contract Documents, and which have been signed by the Engineer and such further drawings as may be issued or approved by the Engineer relating to the works, whether such further drawings indicate variations of the Works, whether by way of addition, alteration or omission, or merely elaborate the signed Drawings in greater detail.

"Employer" or the **"Client"** shall mean the Owner of the completed Works or the official body who acts as the representative of the Owner and shall include their duly appointed representatives.

"Engineer" shall mean the Engineer duly appointed by the Employer to act on his behalf for the purpose of a Contract. Under this contract the Engineer might act as the Principle Agent

"In writing" shall mean type written script or printed communication matter transmitted via land mail or via e-mail, or delivered by hand, to the Engineer.

"OEM" shall mean the Original Equipment Manufacturer for any product or equipment required as part of this project.

"Order in Writing" shall mean any printed, typewritten, or written document or letter signed by the Engineer and addressed to the Contractor for the purpose of his guidance and directions.

"Plant", **"Work"** or **"Works"** shall mean all equipment, plant, materials, articles, matters and items comprised by, described in, or referred to in the Contract Documents and which are to be manufactured and/or delivered, constructed, erected, and completed. These shall include all those details which are not particularly mentioned in the aforesaid Documents, nor shown upon the Drawings, but which are requisite for the perfect completion of each and every one of the several parts, and all additional Works that may be ordered to be executed according to the true intent and meaning of the Contract plus the maintenance for the prescribed period.

"Schedule of Prices for Variations" shall mean the schedules attached to a Contract Document or Quotation in which the amounts to be added to or deducted from the Contract Amounts are entered according to whether the items mentioned in the said schedule are extra to or omitted from the Contract as may be provided for in the General Conditions of Contract.

"Site" shall mean the land and/or place to which Works is to be delivered or where work is to be executed or carried out under a Contract and any other land and/or place acquired or used by the Contractor in connection therewith, and includes any place wherever anything is manufactured, excavated or stored for the purpose of carrying out a Contract, together with so much of the area surroundings the said place or places as the Contractor shall with the consent of the Engineer actually use in connection with the Works otherwise than merely for the purpose of access to the said place or places.

"Specification" shall mean the section in the Contract document in which the detail method and standard of executing the Work and the nature of the materials to be used or supplied are described.

"Standard Practice" shall mean the methods and means of working normally as employed by the Employer.

"Sub-Contractor" shall mean the person or persons, partnership, firm or company named in the Contract for any part of the Work or to whom any part of the Contract has been sublet with the consent in writing of the Engineer and the legal representatives, successors and assigns of such person or persons, partnership, firm or company and all specialists, merchants, tradesmen or others executing any Work or supplying any goods for which prime cost prices or provisional sums are included in the Specification or Bill of Quantities and Prices who may at any time be nominated, selected or approved by the Engineer;

"Tests on Completion" shall mean such tests as are prescribed by the Specification to be made by the Contractor before the Works is taken over by the Employer.

Words imparting the singular only shall also include the plural and vice versa where the context so requires. The headings or notes in these General Requirements shall not be deemed to be part thereof or be taken into consideration in the interpretation or construction thereof or of the Contract.

C3.1.2. SITE ESTABLISHMENT

The specific Contractor shall supply, transport, and off-load his own facilities such as sheds, water, electricity, lighting, etc. on the site. The Contractor shall also be responsible for removing all facilities established on site after his work is completed.

It shall be expected from the Electrical Contractor to erect a site office with surrounding fence. The surrounding fence to be 1,8 m high, with Y shape frame on top and equipped with barbed wired. Lockable gates must form part of the surrounding fence. This site yard must therefore provide adequate security to all material stored, even if it means that the Contractor must provide for a trench alongside the fence. The site office must be equipped with furniture for meeting purposes and the Contractor must decide to have a full-time security guard, keeping close watch over all material stored in this yard. Pin boards shall be provided in site facilities to accommodate all project and construction drawings.

Contractor must make arrangements to have a full-time security guard, keeping close watch over all material stored in this yard. The Contractor must also provide for all the necessary sanitary toilets, water, rain gauge etc.
The Contractor shall cater for his own water, electricity, and sanitation requirements.

The Contractor must also erect a name board, with a size of 2 800 mm x 3 222 mm, at a suitable place to be pointed out by the Engineer. For further details, refer to the drawing of the name board which forms part of this project specification.

The Engineer will indicate the preferred site; the onus is on the contractor to verify if the proposed site is suitable. If applicable, the Contractor shall submit a Site Establishment application to the Building and Land Use Department on the prescribed application form of the Municipality which can be obtained from the Building and Land Use Department.

C3.1.3. SITE INSTRUCTION BOOK

The Contractor shall make provision for a site instruction book (triplicate pages) which shall be always kept in the site office. All instructions and variations shall be written in this site instruction book by the Engineer while attending the site. The onus will be on the Contractor to confirm such instructions and variations in writing, if the Engineer neglects to do so within 14 days after the issuing of this instruction, especially if it has a cost implication.

C3.1.4. SECURITY

The Contractor must arrange 24-hour security with a reputable security company to protect the construction works. The Contractor must take cognisance that he will be responsible for any material theft and the replacement thereof until the date of signing of the Handing Over Certificate.

C3.1.5. DRAWINGS

The tenderer shall ensure that accurate as-built records are kept of all infrastructure installed or relocated during the contract. A marked-up set of drawings shall also be kept and updated by the tenderer. This information shall be supplied to the Engineer's Representative on a regular basis. All information in possession of the tenderer required by the Engineer and/or the Engineer`s Representative to complete the as built/record drawings, shall be submitted to the Engineer's Representative before a Certificate of Completion will be issued.

C3.1.6. REQUIREMENTS FOR THE PROGRAMME

It is essential for the tenderer to refer to the General Conditions of Contract for certain requirement for the programme.

This tender must be accompanied by a detailed programme based on prior experience and accounting for site conditions. The programme must also make provision for delivery dates of material as quoted by their suppliers. The Contractor must take cognisance of the fact that he/she will be responsible for late delivery of material, except if the supplier can prove that late delivery was beyond their control. The Engineer and the Employer reserves the right to alter the programme to meet the priorities of the Client. These amendments will be such, that the Contractor will still be able to complete the works within the tendered construction time.

Based on the above, the tender must be accompanied by a cash flow report. This information is required for adjudication of the tender and to determine the escalation on the project when applicable. This will also assist the Contractor in putting his/her tender together and finalizing his/her tender price.

When compiling the project programme attention shall be given to the Health and Safety file which may require a permit application before the construction can initiate. Adequate allowance for this process shall be included in the programme if needed.

The Engineer or Project Manager, and his Clerk of Works (if applicable) will have full access to the site and the Clerk of Works (if applicable) is expected to visit the site once a week. A formal site meeting or site inspection will be conducted every second week on a rotational basis.

It shall be expected from the Contractor to forward a weekly progress report to the Project Manager which must be emailed to his office every Friday.

The Contractor must also indicate his/her labour force and equipment on site in this report.

The Contractor must submit a progress report at each monthly, scheduled site meeting based on this original program. The actual and scheduled progress must be clearly indicated in the report. The Contractor must also indicate his/her labour force and equipment on site in this report.

The programme must be, based on the following anticipated dates:

Tender award - 90 days after the tender closing date.
Commencement date - 28 days after tender award
Completion date - To be determined by tenderer.

The programme must also indicate the following:

- Time for site establishment.
- Procurement.
- Survey of MV & LV routes.
- Bush Clearing
- Excavation of MV & LV Poles and stays/struts.
- Dressing of MV & LV Poles.
- Planting of MV & LV Poles and stays/struts.
- Stringing of MV & LV conductor.
- Excavation of MV & LV cable trench.
- Installation of MV & LV cable.
- Testing of MV & LV Network.
- Commissioning of MV & LV Network.
- "Float" for unforeseen delays.
- Handover.

The Contractor must take cognisance that time is of the essence must also allow for normal rainfall during this period in his programme.

Expected delivery date of long lead material must be recorded in the section of this document containing forms to be completed.

C3.1.7. TIME FOR COMPLETION

The Contractor must allow sufficient time in his/her contract working period for delays due to climate and weather according to the average rainfall for this area, as indicated in the special conditions of contract.

Extensions of time will only be granted if evidence can be provided that the delays were caused by abnormal weather conditions. Claims for rework will not be considered and is an issue for insurance. The Contractor shall however allow slack in the construction programme to cater for any unforeseen circumstances.

The penalty for late completion of the works is indicated in the contract conditions and it is emphasized that time is of the essence. Commencement of the contract will be as indicated in the acceptance letter.

The Taking Over Certificate will not be signed prior to receipt of all as-built information as detailed in this specification. This may result in penalties.

C3.1.8. SURVEY

The Contractor must appoint a qualified Land Surveyor to peg the Mv & LV line routes including the positions of the stays. It will be a further requirement that the appointed surveyor verify the constructability of the network and the Contractor shall immediately inform the Engineer if areas are found that may cause construction difficulty.

Prior to commencement of any phase of the project as indicated on the drawings, the Contractor must do a thorough survey to ensure that all pegs applicable to this project are installed. Missing pegs must be reported in writing to the Engineer. The Contractor will be responsible for re-installing all missing pegs, not reported, at his/her own expense on the day of handover of a particular phase.

Any cadastral pegs, where applicable, which are removed accidentally or intentionally by the Contractor in the course of his/her activities, shall immediately be reported to the Engineer.

The Employer's land surveyor shall re-install such pegs at the expense of the Contractor, or the Contractor shall appoint a Professional Land Surveyor to reinstate these pegs. The Contractor must issue a certificate obtained from a professional land surveyor to verify that all pegs are installed to correctly set out the works. A CAD drawing indicating all pegs set out shall be submitted to the Engineer to overlay on the construction drawings in order to confirm the correctness of the pegs set out.

The Contractor shall, after completion of the contract, employ a land surveyor acceptable to the Engineer and Employer to certify the correctness of the constructed infrastructure. This certificate must be submitted to the Engineer.

C3.1.9. FINAL INSPECTION

After completion of each section of the project, the Tenderer must perform an internal, thorough inspection on all the work done, to satisfy himself that the work complies with the specifications, and then apply in writing to the Engineer for a final inspection.

The application for the final inspection must be accompanied by the as-built drawings. The installation will not be approved before submission of the as-built drawings.

The Tenderer will be liable to pay the Engineer a penalty fee of R 20 000,00 excluding VAT for each re-inspection.

C3.1.10. QUALIFIED PERSONNEL

The Tenderer must submit a list of the staff allocated to this project with proof of their qualifications and experience in the construction and erection of MV and LV reticulation networks.

The Tenderer shall also submit a certificate issued by the Inspector of Occupational Health and Safety, indicating that he is fully competent performing electrical construction work and will therefore be fully responsible for the construction of the works. No work will be allowed before submission of these documents.

The Tenderer shall provide the Employer and Engineer with the names of the supervisory personnel on site before commencement of the contract works.

If the Contractor, during any stage of the contract and for whatever reason, desires to change the supervisory personnel on site, he will do so in writing to the Employer and Engineer. Failure to do this will result in the Engineer halting the contract works until such time the necessary documentation is provided. Any such delays will not be considered by the Engineer for late completion of the contract.

C3.1.11. CONTRACTOR'S RESPONSIBILITY

C3.1.11.1. GENERAL

Until the Contract Works have been completed or deemed to have been completed, the Contractor shall be responsible (subject to the Memorandum of Agreement and the Conditions of Contract) for the Contract Works, whether under construction, during tests, or in use for service.

The handling and storage of materials and equipment near the erection site prior to installation shall be done in a tidy and safe manner. The Contractor shall at his own expense, keep the site area allocated to him, and the erection area of the Contract Works, reasonably clean and shall remove all waste material as it accumulates, and as directed by the Engineer from time to time. There shall be no Safety, Health, Environmental or Quality impact due to the installations carried out and the Contractor shall take full responsibility for all construction methodologies.

Storage of materials shall not be permitted without prior approval, and the Contractor shall take all necessary steps to protect any materials stored on the site.

When the work is completed, the Contractor shall remove all rubbish and debris, unused materials, temporary erections, and plant and shall leave the site of the work clear. The Contractor shall also make good at his own expense, any damage caused to buildings, plant or property belonging to the owner of the works.

C3.1.11.2. ORDERING OF MATERIAL AND EQUIPMENT

All the material shall be supplied by the tenderer, which includes fabrication, according to the relevant standards and specification, transporting to site, off-loading on site, installation and commissioning which will all be undertaken by the successful tenderer.

The offloading and safekeeping of material off-site is the responsibility of the Contractor.

The successful Tenderer shall attend meetings at venues and at times, as may be arranged by the Engineer, after having been advised that his/her Tender has been accepted, for the purpose of coordinating the technical requirements and the time frame of the project, so that orders can be placed for the correct materials.

Contractors must note that materials and equipment on long delivery shall be ordered well in advance as late deliveries will be the Contractors sole responsibility. Any applicable escalation on equipment or materials ordered late will be calculated using indices as specified by the Employer. If, for some reason, late deliveries are found to be to the advantage of the Employer, the Contractor will be instructed in writing regarding the delay in ordering of such materials.

Unless otherwise indicated or stated, all units of measurement indicated in the Pricing Schedules, Schedule of Quantities or Bills of Quantities are metric units.

The linear quantities of wire, conduit, trunking, cables, switchgear, fittings etc. as given in the Pricing Schedules, Schedule of Quantities or Bills of Quantities a measured from drawings for Contract document compiling purposes. Contractors can thus not accept that such quantities are accurate when materials are ordered. Before ordering any equipment, materials and cables, the measurements must be finalised on site and must be confirmed with the Engineer. The accuracy or inaccuracy of the Bill of Quantities will not influence the validity of the tender.

At the end of the Contract period a final re-measurement, based on actual quantities, will be done. Any excess cable or material will be for the account of the contractor and payment for excess cable or material will not be considered.

If such measurements cannot be taken at the onset of the Contract, the Contractor shall obtain approval from the Engineer to order the required materials that may cause delays or additional cost due to escalation before ordering such materials as allowed for in the Pricing Schedules, Schedule of Quantities or Bills of Quantities.

C3.1.11.3. WORKSHOP ASSEMBLY

To avoid problems with the erection and installation activities on site, components, equipment, and sub-assemblies must be pre-assembled in the place of manufacture to ensure proper fitting and operation on site.
Such pre-assemblies which are to be tested in the place of manufacture, shall be set up in a simulated mode, using the specified peripheral equipment as far as possible in a temporary connected condition to simulate site conditions as accurately as possible. This requirement is applicable to field equipment for electrical and electronic installations.

The purpose of such preliminary testing, shall further be done to check whether the equipment complies with predetermined set values and shall produce certain predetermined set results, as set out in the various parts of the document.

Measurements of equipment shall be taken into consideration to ensure that such equipment and materials can be handled on site and can be placed into the specified positions.

Additional costs or delays resulting from failure on the part of the Contractor to check access conditions, positions, openings, etc., will be for the Contractors account.

Individual units of equipment shall be clearly marked by employing an identification code in such a manner that actual re-assembly, erection, and installation on site can be done in the minimum of time with a minimum of fitting and adjusting on site.
Equipment should be delivered to site in the largest sub-assemblies that are practical.

Equipment of the same type shall all be obtained from one manufacturer and sub-components shall be changeable. Prior to manufacture, the Contractor shall ascertain the critical dimensions of points of entry to the building.

The Engineer may, upon request by the Contractor, inspect existing installations of prototype assemblies in the factory to determine whether the extent and workmanship of such units are of the required standard for the particular Contract. This may be done to obviate the possibility of having to replace unacceptable equipment already installed.

C3.1.11.4. DELIVERY OF EQUIPMENT

The Contractor shall make the necessary arrangements to get all equipment delivered to site in accordance with the Programme of the Works and in an undamaged condition.

The Contractor shall pack equipment and material for transport and delivery in soundly constructed crates or other packages fitted with removable lids or openings for inspection.

All parts of the equipment prior to packaging, shall have been thoroughly protected to preclude damage during transport and storage.

Any damage that may occur in transit or storage must be repaired, corrected, or replaced by the Contractor before such materials or equipment is installed. Any parts of items found to be defective after installation on site, shall be replaced or repaired at the Contractor's expense, to the Engineer's approval

The Contractor shall be responsible for the acquisition of any insurance cover that may be required for equipment in transit and temporary storage on and off site.
All the lifting and erection equipment required by the Contractor to off-load, install, or erect equipment on site is deemed to have been allowed for by the Contractor in the Contract price, as no assistance in this regard will be provided by the Employer or other Contractors.

If no item has been measured in the Pricing Schedules, Schedule of Quantities or Bills of Quantities for such handling equipment, the rate of the item to be handled shall include such handling costs.

Materials stored off-site must be repacked or protected, after inspection, to provide the necessary protection thereof for transport to site.

C3.1.11.5. MATERIAL MANAGEMENT

The Contractor will be fully responsible for the transporting of all materials and equipment to the off-site storage facility or on-site and will provide the off-loading, rigging, lifting, handling and placement thereof into the permanent position as planned for the equipment. The Employer will not provide any assistance or equipment for the placing of equipment into position or materials

The Contractor shall administer this material according to store bookkeeping system by means of computer aid. A stock taking report shall be submitted to the Project Manager on a two-weekly basis.

It will at all times be assumed that the Contractor has ensured upon issue of material that no visible damage has occurred to it. In the case of damaged material, acceptance will be refused. If a dispute arises, the Executive Director: Engineering of Midvaal Local Municipality shall be called in for a decision. Damage material found on site will be replaced at the cost of the Contractor and no extension of the contract time will be granted for the extra delivery time.

All material must comply with the requirements of the latest revised SANS or IEC Standards.

In the event that offered material do not comply or fails the specified tests, the contractor shall at his cost replace the material or equipment that do not comply or has failed the specified tests. All replacement equipment or material shall comply with the relevant specifications.

C3.1.11.6. OFF-SITE HANDLING OF MATERIALS AND SAFETY

Equipment and materials stored off-site shall be stored in a safe, dry, and clean environment and shall be protected against damage, from the elements and theft. Electrical and electronic equipment shall not be assembled, stored, or tested in areas where grinding, welding, or painting work takes place. Damaged equipment and materials, stored in factories or stores of the Contractor, will be rejected upon inspection.

Areas in stores or places of manufacture for testing or inspections of equipment and materials by the Engineer shall be clean and safe for the purpose of testing or inspections. Floors must be free of loose materials, dirt, and debris.

Equipment and materials will not be inspected in noisy or dirty environments and not in areas where welding, grinding, and painting or any other manufacturing processes are underway. Testing or inspections will not be undertaken in hazardous or explosive atmospheres.

Materials stored in the stores of the Contractor or in alternate storage space, and which is acceptable to the Engineer for off-site certification for payment, shall only be certified for payment under the conditions as laid down in this document.

C3.1.11.7. ON-SITE HANDLING OF MATERIALS AND SAFETY

Equipment and materials stored on site shall be stored in a safe, dry, and clean environment and shall be protected against damage, from the elements and theft.

Heavy materials shall be stored in a manner as not to create a danger to other Contractors or to the Employer or the Engineer.

Small materials shall not be left lying around on site. Expensive, small items such as instrumentation or electronic components shall be kept under lock and key until the installation thereof.

Storerooms used by the Contractor shall be kept locked to prevent unnecessary loss of materials.

Redundant material, which is the property of the Employer, shall be removed from site and either be reused elsewhere or returned to the Employer through the relevant processes. If clear directions are not available in this regard, the Contractor shall obtain instructions for the removal of the equipment from the Engineer. No redundant material shall become the property of the Contractor or any other party and shall remain the property of the Employer unless decided otherwise by the Employer.

C3.1.11.8. RE-LABELLING

The Contractor shall be responsible to attend to all labelling requirements that arise with any system installation. All labelling requirements shall be allowed for in the unit rates of the Contractors priced bill of quantities. A schedule of labels shall be compiled by the Contractor and submitted to the Engineer for approval.

C3.1.11.9. CONSTRUCTION METHODS

Before initiating any construction, the Contractor shall compile a list of all defects per sectional area and verify such defects alongside a duly authorized representative. The repair of any damage not listed shall be the full responsibility of the Contractor, the Employer shall under no circumstances be held

responsible for payment of damages done by the Contractor or damages not listed prior to initiating construction.

Where the Contractor will perform trench work, it shall be the Contractor's responsibility to request that the employer scans the trench for any existing services, especially cables at substations. The Contractor shall mark the trench positions clearly by means of chalking.

The Contractor shall ensure that all wayleaves are approved prior to commencement of any work and shall be responsible for marinating any pre-approved wayleaves.

C3.1.11.10. SITE SAFETY

NOTE: Tenderer's and Contractors must ensure that they have read and understood the requirements of this document.

The requirements of the Occupational Health and Safety Act, Act 85 of 1993 and the requirements of SANS 10142-1 (or the latest edition thereof) shall be complied with as far as site safety is concerned. Excavations shall be barricaded, backfilled, and compacted as soon as possible after excavating to allow safe passage for persons and traffic on site.

Contractors shall not allow any workers to work in excavations deeper than 1m, unless the sides of the excavations are properly shored and supported, especially in sandy or wet soil conditions.

Open manholes shall be barricaded.

Deep waterlogged excavations shall be pumped empty as soon as possible after flooding or shall be solidly barricaded until pumped dry.

Open, live, or unsafe power connections shall not be left unguarded or unprotected.

The construction site shall be kept clean and tidy on a daily basis.

Off-cuts and rubbish shall be removed from the site and deposited in the designated dumping place on a daily basis.

The Contractor shall adhere to all safety rules and regulations as may be in existence on a site or as may be required by the Employer or the Engineer. The Contractor shall also ensure that their workforce on site adhere to safety rules.

Contractor shall not drive or allow a vehicle or machine to be driven close to excavations. Contractor shall keep all power connections and/or live equipment with voltages above 50V, temporary or permanent, in a good and safe condition and shall keep all doors, shutters and covers closed on such equipment, during construction, testing and commissioning and shall take all steps to prevent accidental contact of live equipment by any person.

The Contractor shall take control over any power cable or power circuit connected from equipment installed by him, or under his control and which operates at a voltage higher than 50V. The Contractor shall not energise such a cable or circuit and shall not grant permission to any other person on the site to energise such a cable or circuit without first having made sure that such action does not create a dangerous situation.

The Contractor shall not connect any portion of an installation to the point of supply of a Supply Authority without first having complied with the requirements and regulations of such an Authority as far as tests, certification or clearance from the Authority is concerned and not until permission is obtained from the Engineer in this regard.

Any damage to equipment of other contractors or the Employer due to equipment being supplied by such an unauthorized power connection shall be for the account of the Contractor for this Contract.

The Contractor shall not energise any portion of an installation until the earth points of power equipment in such installation have been properly bonded and earthed to a known good earth point with a value of 5 ohm or less, referred to zero, as tested with a null balance megger.

C3.1.11.11. EXISTING SERVICES

The tenderer should take note of existing cables and other services. The services may be buried and cannot be accurately pinpointed. Therefore, all excavations must be done with care.

The tenderer shall acquaint himself with the position of all the existing services such as storm water pipes, water mains, sewer mains, gas pipes, telephone cables, etc. before any excavations are commenced. For this purpose, he shall approach the Engineer's representative, the local municipal authority, and any other authority, which may be involved, in writing.

The Electrical Contractor shall accept full responsibility for any damage caused by excavation work, whether caused directly or indirectly and whether written permission has been granted for machine excavation or blasting, or not.

Repair of damaged services undertaken by the Electrical Contractor shall be to the satisfaction of the owner of the service. The cost of repair work undertaken by the owners of the service as well as consequential losses due to the damaging of the service will be recovered from payments due to the Electrical Contractor without notice unless proof of direct payment to the owners can be produced.

The Contractor shall report any damaging of existing services immediately to the Engineer as well as the owner of the service, irrespective of whether the damage is considered a minor damage or not. Apart from reporting damage, an entry shall be made in the site diary, indicating the time of occurrence, extent of the damage, time reported, and names of the persons reported to at the Consulting Engineers as well as Owners of the service.

Penalties shall be levied for damage caused to existing services caused under the following circumstances:

a) Damage due to machine excavation or blasting without the written permission of the Engineer.
b) Damage which the Contractor failed to report to the Engineer as well as the owners of the service, or which the Contractor failed to enter comprehensively in the site diary.
c) The penalties referred to above, shall be 100 % of the cost of repair work carried out by the owner of the service as well as 100 % of the value of consequential losses as calculated by the owners of the service. Any such penalties shall be recovered from any payments due to the Contractor

C3.1.11.12. DESIGN RESPONSIBILITY

Preparation of all detail's designs, manufacturing drawings and documentations for approval specified throughout the enquiry document shall initiate once the successful tenderer has received a Letter of Acceptance.

The tenderer shall be responsible for furnishing all equipment detailed designs as well as the protection schemes based on the specification. The tenderer shall submit the initial design drawings to the Engineer for a design review and the allowed duration for the design review by the Engineer shall be 10 working days and excluding the day when the designs are submitted for approval. The design freeze will be only granted after approval by the Engineer. The tenderer shall submit all outline drawings and design details including requested supporting documents within a reasonable time frame and prior to the commencement of the equipment manufacturing.

It is envisaged that detail design of the following but not limited to will be required:

- 11/0.42 kV transformer.

The following documentation and drawings shall be submitted for approval:

- All primary plant equipment drawings.

Note: all drawings shall be submitted in hard and soft copy – soft copies shall be in editable dxf / dgn format.

Five sets of the following information are required on completion of the works:

- Operation and Maintenance manuals.
- Commissioning Reports.
- Design Drawings.
- Factory Acceptance Testing Reports.
- Commissioning Reports.
- As-built drawings.
- Soft copy of all documentation

C3.1.11.13. FACTORY TESTS AND INSPECTIONS

The tenderer will also be responsible for arranging Factory Acceptance Tests (FAT) at the OEM, which will be attended by the designated Employers Personnel and the Engineers Representative/s.

All completed equipment shall be subjected to an internal Acceptance Testing to be performed by the manufacturer, to satisfy himself that the equipment complies with the specifications.

The Contractor shall inform the Engineer of equipment tests or any part of an installation in the place of manufacture or on site is ready for inspections or tests. The Engineer shall be given sufficient notice in advance of inspections or tests and final dates and times of such inspection will then be confirmed with the Contractor by the Engineer. The inspection or testing of manufactured equipment in a factory by the Contractor or by any other test facility in the presence of the Engineer must not be regarded as acceptance of responsibility by the Engineer for the correct performance of such equipment on site.

The OEM shall issue a list of all proposed tests to be conducted during the FAT to the Engineer for approval. The manufacturer shall issue a list of all proposed tests to be conducted during the FAT to the Engineer for approval 12 weeks prior to the scheduled FAT.
The Contractor shall provide a clean and safe testing area in the place of manufacture of any equipment to be tested and inspected by the Engineer. The area shall be open and accessible, and tests or inspection will not be carried out in cramped or dangerous areas. No tests or inspections will be carried out in areas where overhead cranes or hoists are in operation.

All live equipment shall either be screened off or enclosed so that inspecting persons are not endangered during such tests or inspections. Inspections or tests will not be carried out near paint areas, paint booths, ovens, grinding or polishing areas or on equipment which are still under construction.

Tests will not be done by the Engineer in areas where a normal conversation cannot take place due to background noise. Test equipment, test leads, clean writing top space and all other facilities shall be provided for the Engineer during such tests. The Engineer reserves the right to instruct the Contractor to carry out the re-testing of any equipment which does not pass the first inspection or test.

The Tenderer will be liable to pay the Engineer a penalty fee of R 20 000,00 excluding VAT for the purpose of any re-testing of equipment which failed to pass the first or a previous test and the penalty fee will be for the account of the Contractor. Any delays in Contract time caused by failures of inspections or tests will also be for the account of the Contractor.

The factory tests shall be done as far as possible with full control conditions as may be experienced on site. All remote controls of equipment must be simulated during these tests by using temporary connected toggle switches to replace remote field devices such as sensors, switches, contacts, etc. Temporary simulated signals for the future field instrumentation or signals for future controls and field instrumentation must be available during the factory tests and must be fully operative and all field signals must be simulated during these tests by using appropriate signal generators or signal sources.

The following equipment shall be subjected to Factory Acceptance Testing:
- 11/0.42 kV Transformers.

If any of the equipment specified is manufactured and/or assembled outside the Gauteng Province or South Africa, the tenderer shall make all the necessary arrangements for three (3) Engineer representatives and three (3) Employer representatives and one (1) Contractor representative to witness the FAT at the manufacturer. The cost thereof shall be for the account of the tenderer. The tenderer shall include into his unit rates of the FAT for flights to and from the manufacturer, accommodation in a four (4) star hotel or guest house, breakfast, lunch, and dinner as well as local transport to and from the manufacturer to the accommodation. It will further be a requirement that separate rooms are booked for the representatives that will be attending the FAT.

C3.1.11.14. TRAINING OF PERSONNEL

The training of personnel of the Employer or User of the Works shall only be applicable to the Contract.

Training provided by the Contractor and OEM shall be directly applicable to the actual equipment to be used at the installation. Training shall be carried out on site and at the OEM's works. The priced unit rates in the bill of quantities shall allow for all travel, accommodation and living expenses.

All the training shall be presented by the OEM and allowed for by the contractor in the bill of quantity's unit rates.

Operators of the installed equipment shall be trained by The Contractor to operate the equipment and controls safely and successfully.

This training course shall include the training of technical personnel of the Employer during the installation period and commissioning stages of equipment on site to make the technical staff and or skilled operators completely conversant with the installed equipment and the use thereof.

The Employer thus reserves the right to appoint certain staff to the Contractor's team during the installation and commissioning phase of the work for training as described in the previous paragraph. The Employer will bear the cost of salaries, accommodation and other allowances and traveling expenses of its personnel, but all other expenses to allow the personnel to attend the said training on site shall be borne by the Contractor.

The Employer may also decide to request the Contractor to make use of the ability of the staff of the Employer to assist with physical installation and commissioning work, and in such instance the Engineer will instruct the Contractor accordingly.

The Contractor shall provide all course material including manuals and training data in this case and shall present well prepared lectures of the courses in locations which suite the Employer.

Advanced training courses shall proceed within one month after date of first hand-over of the particular section of the Works.

The Contractor shall price the items allowed for training in the Bill of Quantities of the tender document.

At conclusion of any training period, either for the operation and maintenance of equipment, or for advanced software and programming, the Contractor shall issue the necessary certificates at the end of the course and/or a signed statement to the effect that these training sessions were adequate.

The tenderer shall also be responsible for arranging formal training by the agency, distributor, or accredited supplier for all specified equipment offsite as well as on site, which will be attended by the Maintenance Personnel of the Employer and the Engineers Representatives. The offsite training shall be held at a premise of the supplier. The number of delegates will be as specified in the BoQ.

Training shall be provided in a classroom environment, the OEM shall provide relays or equipment for each delegate attending the training session which will allow for practical interaction with various control, monitoring and measuring equipment. Training material shall include the necessary equipment manuals and software.

Training content shall be approved by the original equipment supplier if the supplier is not the original equipment manufacturer.

Training shall as a minimum have the following objectives.

- Enable the trainee to operate the equipment with confidence.
- Ensure that equipment shall be correctly maintained.

C3.1.12. PAYMENTS

Payment application will be assessed once a month and the claim must be agreed to and approved by the Engineer. The claim must reach the Engineer's office 7 calendar days prior to the agreed invoice submission date.

The Engineer will not issue any certificate for interim payment of any equipment and material that is stored on or off site in such a way as to hinder inspection thereof.

The Employer reserves the right to be under no obligation to pay for material delivered to or off site and shall take preference for payment to the Contractor after commissioning of the works. The Contractor shall price the preliminary and general section if the bill of quantities adequately allowing for all overhead costs during the construction period.

Materials or equipment stored on or off site and packed in crates or boxes must be opened for inspection and the serial numbers, types or quantities must be easily identifiable by the Engineer before payment for such materials will be processed.

Payment will further not be certified for small materials such as short pieces of cable, conduit, wire, conduit boxes, saddles, screws, etc., that are stored on or off site. Payment for such materials will only be certified once the materials have been built in, installed, or commissioned. In special cases, 80% payment for material on site may be considered subject to approval.

Interim payment will only be considered subject to the following conditions:

a) The equipment must be complete and in a ready state for installation or commissioning. Loose components which are not yet built into, or which will form part of the large materials mentioned in the previous paragraph, will not be considered for payment. (An example hereof is, for instance, instruments that must be fitted in a cabinet and are still in separate storage.)

b) The materials which are to be type tested, performance tested, or safety tested should have already passed inspections and/ or tests by the Contractor and/or the supplier of the equipment.

c) The Contractor shall, prior to submitting interim payment claims, procure financial assurance by means of the guarantee from a registered bank, on the form provided by the Engineer, and equal to the total amount of payments to be made to the Contractor.

d) The total value of such guarantee, provided by the Contractor to the Employer, may be varied by the Contractor, with the consent of the Employer, from time to time provided that the Employer will be covered at all times to the total amount paid by the Employer to the Contractor for items not yet built into the Works.

The guarantee will lapse 24 months after signed acceptance without reservation by the Engineer and Employer and all the said equipment and/or materials have been built into the permanent Works.
The material must be stored in a cordoned off area in the stores of the Contractor and a notice must be affixed to this area stating that the materials stored in that area are the property of the Employer. The area must be safe and not near flammable liquids or explosive equipment and must be kept clean and dry.

C3.1.13. PROJECT SPECIFICATION

The following project specifications are integral parts to this project specification, some of which may be included under separate cover:

PSE 01 – Overhead Reticulation
PSE 08 – PVC Insulated Cables
PSE 09 – Installation of Cables
PSE 18 – Distribution Transformers
PSE 50 – Medium Voltage Cables
PSE 100 – Using of Manpower

As part of achieving a standard specification countrywide and with Eskom playing a leading role in the compilation thereof, Eskom's specifications have been used throughout this document.

Please note that all references to Eskom will be regarded as Midvaal Local Municipality.

It is therefore required that all tenderers must have access to the Eskom specification, via the Eskom Web at https://scot.eskom.co.za/. Please note that a fee is payable to Eskom for this service.

Application can be made to:
- Mrs Brenda Morrison
- Assistant Officer
- Tel: (011) 629 5266
- Fax: (086) 662 6387
- E-mail: Brenda.morrison@eskom.co.za

I / We, the undersigned ..... hereby acknowledge that copies of the above documents are included in the tender document and confirm that I / We fully understand them and the consequences of non-compliance.

SIGNED AT …….. ON BEHALF OF THE FIRM …….

ON THIS …….. DAY OF …… 20…….

NAME: ……

SIGNATURE: ……..…

CAPACITY: ……

C3.1.14. OVERHEAD RETICULATION (PSE 01)

C3.1.14.1. GENERAL

This specification covers the supply, delivery and installation of overhead reticulation networks that is suitable for use on Medium Voltage Network up to 22 kV and Low Voltage Network of 420/242 V (three-phase four wire), 50 Hz systems.

C3.1.14.2. DRAWINGS

This is a list of all the drawings referenced or described, the list includes drawings which are standard and may not be attached but which are part of the PROJECT SPECIFICATIONS.

Table 2: Drawings

Title	Number	Rev	Attached Y/N
9 m CONCRETE POLE	D-DT-0003	17	N
11 m CONCRETE POLE	D-DT-0017	1	N
12 m CONCRETE POLE	D-DT-0015	3	N
9 m WOODEN POLE	D-DT-0055	1	N
11 m WOODEN POLE	D-DT-0051	17	N
12 m WOODEN POLE	D-DT-0053	15	N
LV & MV TYPE 1, 2 AND 3 TYPE SOILS POLE FOUNDATION ARRANGEMENT	D-DT-0330	6	N
LV AND MV POLE PLANTING DEPTH DETAILS	D-DT-0332	8	N
LV AND MV STAY ASSEMBLY	D-DT-0341	17	N
LV AND MV STRUT ASSEMBLY	D-DT-0342	4	N
LV AND MV FLYING STAY ASSEMBLY	D-DT-04343	4	N
LV AND MV STAY ROD INSTALLATION NON-AUGURED HOLES	D-DT-0350	13	N
WOOD POLE / WOOD STRUT POLE FOOT PLATE AND SOIL ANCHOR ASSEMBLY	D-DT-0351	5	N
CABLE TERMINATION FROM SUBSTATION ONTO STRAIN TERMINAL GENERAL ARRANGEMENT	D-DT-0850 SHEET 4	12	N
CABLE OVERHEAD CABLE SUPPORT BRACKET FOR STATION CLASS S.A.'S	D-DT-0852	6	N
EQUIPMENT MOUNTING ASSEMBLY SURGE ARRESTER	D-DT-0261	4	N

EQUIPMENT MOUNTING ASSEMBLY SINGLE PLATFORM (SHEET 1 - 2)	D-DT-0271	4	N
EARTHING TRF SINGLE POLE MOUNTING (MV & LV ELECTRODE AT TRF) (SHEET 1 - 2)	D-DT-0627	7	N
EARTHING (ALT 1) LV ABC RETICULATION EARTHING (AT TRF) (SHEET 1 - 2)	D-DT-0637	7	N
TRANSFORMER 100-200KVA 2 POLE PLATFORM MOUNTED (H-POLE) EARTHING DETAILS (SHEET 1-2)	D-DT-1861	2	N
11kV & 22kV DISTRIBUTION TRANSFORMERS 1 & 3 PHASE	D-DT-3021	11	N
CONDUCTOR, STRANDED	D-DT-3136	13	N
THREE PHASE BARE NEUTRAL ABC SUSPENSION ASSEMBLY (0 - 30 DEG) WOOD POLE	D-DT-1100	4	N
THREE PHASE BARE NEUTRAL ABC TERMINAL ASSEMBLY WOOD POLE	D-DT-1120	5	N
THREE PHASE BARE NEUTRAL ABC STRAIN ASSEMBLY (0 - 60 DEG) WOOD POLE	D-DT-1121	5	N
THREE PHASE BARE NEUTRAL ABC STRAIN ASSEMBLY (60 - 90 DEG) WOOD POLE	D-DT-1122	5	N
THREE PHASE BARE NEUTRAL ABC T-OFF ASSEMBLY FROM INTERMEDIATE WOOD POLE	D-DT-1140	5	N
THREE PHASE BARE NEUTRAL ABC CROSS INTERMEDIATE – INTERMEDIATE ASSEMBLY WOOD POLE (SHEET 1 -2)	D-DT-1141	5	N
THREE PHASE BARE NEUTRAL ABC T-OFF ASSEMBLY FROM STRAIN WOOD POLE	D-DT-1142	5	N
THREE PHASE BARE NEUTRAL ABC CROSS INTERMEDIATE – STRAIN ASSEMBLY WOOD POLE	D-DT-1143	5	N
BOX, POLE TOP DIST 4 + 8 WAY (SHEET 1 - 11)	D-DT-3055	24	N
COND, AERIAL BUND XLPE (SHEET 1 - 4)	D-DT-3141	12	N
THREE PHASE LV FUSE HOLDER CONNECTION (SHEET 1 – 4)	D-DT-0309	6	N
LV FUSE HOLDER 1 000 V (SHEET 1 – 6)	D-DT-3182	12	N
NEUTRAL S/A 6KV, 10KA	D-DT-3088	9	N
SERVICE CONNECTION TO HOUSE (SHEET 1 - 5)	D-DT-0360	16	N
CABLE 1 kV SERVICE CONCENTRIC CU	D-DT-3140	12	N
UNDERGROUND SERVICES CONNECTION	D-DT-0367	5	N
METERING UNIT + ELECTRICITY DISPENSERS (SHEET 1 - 16)	D-DT-3145	7	N

C3.1.14.3. GENERAL REQUIREMENTS

The LV wooden poles shall be 7 m and 9 m respectively in length and shall comply with SANS 754 and NRS 073. Only Eucalyptus poles with a fibre stress of 63 MPa and with a minimum pole top diameter specified in the bill of Quantities shall be used.

C3.1.14.4. EXCAVATIONS

Excavations for pole holes and stays are indicated below and must comply with the requirements of NRS 092 and SANS 1200 DA. The Contractor must allow in his excavation rate for over excavations due to blasting, removing of additional rock etc.

The hole sizes are as follows:

Table 3: Hole Sizes

	12 m pole	**11 m pole**	**9 m pole**	**7 m pole**	**5 m pole**	**Stay 1,5 m rod (LV Stay)**	**Stay 2,0 m rod (MV Stay)**
Width	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Breadth	0,6	0,6	0,6	0,6	0,6	0,6	0,6
Depth	2	1,8	1,5	1,3	1,0	1,3 (max)	2,15(max)
Excavation (m3)	1,44	1,296	1,080	0,936	0,720	0,936	1,44
Add bags of cement to excavated soil	3	2	1	1	1	1	2

All poles must be planted at a distance of 0,5 m from the stand boundary as indicated on the drawings. Special care must be taken not to damage any existing services. In the event of hard rock nearby existing services, the Contractor shall make use of a compressor air drill to do excavations.

The maximum distance the eye of the stay may protrude out of the ground is 150mm. The minimum distance between the stay plate and the poles are as follows:

a) 7,0 : 5 m
b) 9,0 : 6 m
c) 11,0 m : 7,5 m

All stays shall be installed as indicated on Eskom drawing D-DT-0350. The stay hole shall be backfilled and compacted as specified in Eskom Standard 240-75883148.

C3.1.14.5. EXPLOSIVES:

The Contractor is to make adequate provision for blasting which, together with the necessary storage and handling of explosives, shall be carried out in strict accordance with the Explosives Act (No 26 of 1956, as amended) and Regulations. Care shall be taken that no damage is caused to existing works and property, and adequate protection shall be provided to prevent blasted materials scattered about. The size of charges shall be the minimum necessary for the purpose. The Contractor shall be solely responsible for damage and injury caused by or during blasting and shall make good at his own expense, and to the satisfaction of the Engineer, any unnecessary shattering of rock or disturbance of the surrounding ground.

Careless use of explosives will render the Contractor liable to be forbidden for further use of explosives.

Blasting will not be permitted in any situation where it is likely to endanger any existing foundation, structure or service and in such situation material must be removed by drilling and wedging or barring or by any other approved method which will not cause damage.

At least one working day before commencing drilling and blasting operations on any new section of the works, the necessary safety precautions shall be arranged by the Contractor.

No blasting is to be done before permission has been granted from the Engineer.

C3.1.14.6. MARKING OF CONCRETE POLES

The Contractor shall be responsible for providing numbering labels on all concrete poles.

The numbering labels shall be manufactured from galvanised sheet steel of minimum thickness 0,8 mm.

The numbering labels shall be fixed to poles at a height of 2,0 m above ground level, facing towards the street, by means of galvanised 10 mm strap on the upper and lower side of the label.

The numbers shall be 10 mm high and be punched with a number and letter punch as indicated on the house connection drawings.

An additional numbering label shall be mounted on all MV poles. The number labels shall be fixed at a height of 2.5m above the ground level. The label shall be sheet metal, yellow painted with black letters. The letter size shall be 28mm x 15mm.

The Contractor shall be responsible for providing numbering labels on all concrete poles.

The numbering labels shall be manufactured from galvanised sheet steel of minimum thickness 0,8 mm.

The numbering labels shall be suitably fixed to poles at a height of 2,0 m above ground level, facing towards the street.

C3.1.14.7. POLE MOUNTED TRANSFORMERS

The pole mounted transformers must comply with the requirements of GSE19.

The transformer shall be installed at a height of 6 m minimum clearance between ground level and bushings.

As shown on the project drawings, all 100 and 200 kVA transformers shall be mounted on an 11 m and 9 m H-pole configuration, complete with 10 A dropout fuses mounted on a cross arm. If 200 kVA transformers are specified it shall be supplied with 20 A dropout fuses. The dropout fuse cross arm shall be mounted 1 100 mm above the transformer bushings.

The Contractor must take special care to adjust the length of all tails to ensure that they are not too long or too short. The Contractor must obtain approval from the Engineer after completion with the first transformer installation and before proceeding with the rest.

All metal parts of the transformer shall be connected to the MV earthing system.

The 35mm² ABC shall be protected by means of 160 A LV fuses mounted beneath the transformer with the appropriate bracket assembly as shown on drawing D-DT-0309 and D-DT-3182. The 70mm² ABC shall be protected by 2 x 160A LV fuses, or 1 x 315A LV fuse. Each fuse holder shall have a dedicated 70 mm² ABC jumper to the transformer.

The Contractor must take special care to use bi-metallic lugs to terminate the Aluminium cable onto the transformer LV copper bushing. The use of density paste in the lugs is also recommended to keep the moisture out.

C3.1.14.8. MV OVERHEAD RETICULATION

The MV overhead reticulation shall comply with the latest revision of the Medium Voltage Reticulation Standard, Part 4 as compiled by Eskom as well as the SANS and NRS specifications.

The various codes used on the drawings are according to the specification and the quality of material, construction procedures and the related items shall all be according to Eskom Specifications.

The MV network consists of Hare conductor mounted on 11 m wood poles with tip loads as specified in the Bill of Quantities in a staggered vertical configuration. The transformer H-pole structure poles shall be 11 m and 9 m concrete poles.

C3.1.14.9. LV OVERHEAD RETICULATION

The LV overhead reticulation shall comply with the latest revision of the Low Voltage Reticulation Standard, Part 3 as compiled by Eskom, SANS and NRS specifications as well as the general specifications as envisaged below. The various codes used on the drawings are according to the Specification and the quality of material, construction procedures and the related items shall all be according to the Eskom Specifications.

The LV aerial bundle conductor (ABC) layout is shown on the drawings. The LV bundle conductor shall consist of 3 phase conductors and 1 bare neutral conductor and one auxiliary core for the street lighting. The sizes of the conductor required are shown in the Bill of Quantities and the drawings.

C3.1.14.10. POLE MOUNTED DISTRIBUTION BOARD

The pole top box shall be equal or similar to Power Process Systems type HEX type manufactured from 1.5 mm Stainless Steel with stainless steel concealed hinges and a 3 way locking system with square panel lock. The pole top shall be fitted to the pole with stainless steel straps, connected to the ABC with suitable piercing connectors (phase + neutral + earth). Cognizance must be taken that the pole top box will deviate from the Eskom Standard and shall be equipped with 2, 3, 4, 5 or 6 Miniature Circuit Breakers (MCB) 5 kA, 30 A, slow curve 1 with a tag or label of the erf number.

A clip-in surge arrestor shall be installed per MCB in the pole top box enclosure. All wiring in the pole top box shall be 6 mm² for the phase and 6 mm² for the neutral and shall be pre-wired in the factory.

Wires between the ABC and pole top box shall be 16 mm², UV protected and of suitable lengths. The pole top box must be locked with a special tool or key and must be dust proof.

The Contractor must also supply and install Conlog wBEC44 Split Single Phase DIN-Rail mounted with Radio Frequency (RF) communication. This meter must be supplied complete with customer interface unit and customer card. The contractor will be responsible for the management of these meters.

The Conlog meters shall be installed in the pole top box and shall be sealed with a lead seal and tagged or labelled with the erf number. The latch in the meter shall be set to trip at 25 A.

The three-phase pole top box shall therefore be equipped with the following:

a) 80 A, 5 kA, Curve 1 three phase MCB with cable sleeve tag of the erf number.
b) Conlog Split Three Phase meter with RF communication with cable sleeve tag of the erf number and lead seal.
c) Clip-in Surge arrestor.
d) 3 x Live, l x Neutral and 1 x Earth busbar.
e) 3 x 16 mm², Cu conductor, UV protected.
f) 16 mm² PVC wiring for the phase and the neutral.
g) Compression glands.
h) DIN rails.

The single-phase 1-4 way and 1-8 way pole top box shall therefore be equipped with the following:

i) 30 A, 5 kA, Curve 1 MCB with cable sleeve tag of the erf number.
j) Conlog wBEC44 Split Single Phase DIN-Rail mounted with RF communication with cable sleeve tag of the erf number and lead seal.
k) Clip-in Surge arrestor.
l) 1 x Live, l x Neutral and 1 x Earth busbar.
m) 3 x 16 mm², Cu conductor, UV protected.
n) 6 mm² PVC wiring for the phase and the neutral.
o) Compression glands.
p) DIN rails.

C3.1.14.11. EARTHING

The earthing must comply with the requirements of Eskom standard DST 34-1985. MV and LV earthing shall be separated at the miniature substation. A minimum separation distance of 5 m shall be maintained between the MV and LV earth electrodes.

The maximum earth resistance for the MV shall be 30 ohms and the maximum earth resistance for the LV shall be 10 ohms.

Earthing shall be done by four 1,8 m x 16 mm diameter copper earth rods installed in a three point star configuration. Refer to drawing D-DT-0627 and D-DT-0637 for detail.

The Contractor must obtain a null-balance megger and do an earthing survey which is to be tabled and submitted to the Engineer prior to final inspection. If an acceptable earthing value cannot be obtained, additional earthing electrodes or conductive concrete shall be installed as an extra to the contract.

C3.1.14.12. LIGHTNING IMPULSE WITHSTAND

The network design allows for a Basic Insulation Level of 300 kV, which will be achieved by means of bonding on all medium voltage and shared structures.

In accordance with Eskom 03TB-034, the conditions that system components are designed to meet are:

a) To withstand indefinitely the normal and maximum system operating voltages at supply frequency.
b) To withstand temporary supply frequency over-voltages up to the rated short duration power frequency withstand voltage.
c) To withstand lightning impulse over-voltages up to the rated withstand level
d) To restore the insulation level after a flashover.

All dressed structures shall have equipotential bonding between insulators, bonding wire shall be 3x3.5 galvanised steel wire. The same wire shall be nailed to wood poles up to the butt end of the pole to serve as a lightning down-wire.

A 500 mm BIL gap shall be maintained below the medium voltage insulators. At the top and bottom of the gap steel banded strapping shall be installed where the down-wire discontinues.

For share structure a second gap of 50 mm shall be maintained at 100mm below the low voltage equipment. The 500mm gap shall not be within 100mm of any low voltage equipment.

Stayed structures do not require a down-wire to be fixed to the pole, the anchor(s) serve as bonding. To achieve the required BIL only longrod fibreglass stay insulator shall be permitted in accordance with D-DT-3144.

C3.1.14.13. READY BOARDS

The ready boards supplied under this contract shall comply with SANS 1619 and shall be equipped as follows:

a) 1 x 40A Earth leakage switch
b) 1 x 20 A Single pole circuit breaker (5kA curve 2)
c) 1 x 10 A Single pole circuit breaker (5 kA curve 2)
d) 2 x 16 A Plug outlets
e) 1 x 5 A Plug outlet for light circuit
f) 1 x Light switch
g) 1 x Bulkhead luminaries and lamp
h) Mounting material like rails and expandable wall plugs

One socket shall comply with the requirements of SANS 164-2.

The ready board shall be complete with mounting brackets to facilitate the interface of the prepayment meter. When the ready board is fixed to a shanty, 6 mm sink bolts and nuts shall be used with 20 mm square washers.

A light-fitting, complete with 20 W energy saver lamp and 5 m cabtyre shall be issued to every customer.

C3.1.14.14. AIRDAC

The Contractor shall supply and install 10 mm² Split concentric service cable (Airdac) with separate neutral and earth for the house connections. Communication cores are not required.

The Airdac shall comply with SANS 063. The house connection cable shall be installed underground.

C3.1.14.15. TESTING AND COMMISSIONING

CERTIFICATE OF COMPLIANCE: COC
Occupational Health and Safety Act (OHS Act) Electrical Installation regulations, 1992 (EIR) Certificate of Compliance: Annex 1 (COC).

In terms of the above-mentioned requirements every electrical installation shall be inspected, tested and a COC issued to the owner and the supplier shall ensure that a COC has been issued before connecting the supply.

NOTE: In terms of the EIR 6(2) a COC must be issued before connecting the supply, but in order to carry out the tests, it is necessary to have the supply connected to the installation. This anomaly has been referred to the Chief inspector and he accepts that the supply can be connected for testing, but if there is any reason for not being able to issue the COC than the supply must be disconnected immediate.

ELECTRICAL TESTS:

a) Voltage level tests:
The voltage level and polarity of the installation can be measured and recorded.

b) Test to ensure that wires have not been crossed:
Install a temporary earth spike of at least 300 mm, outside the dwelling. Connect a lead wire to the earth spike and measure the voltage between the temporary earth and the dwelling earth and neutral. If any reading is recorded the conductors are crossed and no COC shall be issued.

c) Insulation resistance test:
Disconnect the circuit breaker and record the result in M Ω between live and earth.

d) Earth fault loop impedance test:
Bridge the earth leakage circuit breaker. Plug the loop tester into ready board. The loop tester should indicate the voltage and correct polarity. Switch is to 20 Ω or 200 Ω and inject 25 A current. Record the reading on the test form.

e) Operation of the earth-leakage protection device and circuit breaker by plugging an ELCB tester into the ready board in increase milliamps until circuit breaker trips. Record results.

VISUAL INSPECTIONS:
A visual inspection shall be carried out for each service connection and installation by an accredited person signing the COC. This person shall be responsible for the quality control and shall be introduced to the Engineer and this quality control shall be his only task and function.

The Contractor shall supply the Engineer with the following information before any payments shall be made in an Excel spreadsheet format:

a) Stand number
b) Customer name and surname
c) Customer ID Number
d) Prepayment meter number
e) Customer Interface Unit number
f) Seal number
g) COC number
h) Length of House connection cable
i) Completion Date

This information shall be recorded on Lyon and Partners type connection slips that will be issued to the successful contractor.

PROGRESS REPORT

Commencement date: (Scheduled)……..……

(Actual)……

Original contract working period : .....weeks
Delays granted : .....working days
Revised contract working period : .....weeks

	Delivery date of material		Installation date of material	
Activity	Scheduled	Actual	Scheduled	Actual
Site establishment				
Excavations: MV Cable trench				
Excavations: LV pole holes				
Excavations: LV Stay holes				
MV Overhead FOX Conductor				
Minisub				
LV cable ABC: 70 mm²				
LV cable ABC: 35 mm²				
Service connections				
MV cable installed				
LV poles planted				
LV stays planted				
Earthing				
Commissioning				

CASH FLOW		
CASH FLOW BASED ON COMMENCEMENT DATE :		
	SCHEDULED	**ACTUAL**
Month 1	R	R
Month 2	R	R
Month 3	R	R
Month 4	R	R
Month 5	R	R
Month 6	R	R

LABOUR FORCE	QUANTITY	MACHINERY DESCRIPTION	QUANTITY
Site Agent			
Qualified electrician			
Semi-skilled labourers			
Unskilled labourers			
Local labour hired			

*Note: All scheduled information to be completed by Tenderer.

ELECTRICAL TESTS AND INSPECTION

To ensure the safe and reliable operation of an urban reticulation system the following visual inspections, and tests must be done before and after energising. Results must be recorded on the attached record sheets.

VISUAL INSPECTIONS

The visual inspection is to make sure that the as Build System is in conformance with the design.

- INSTALLATION LAYOUT
  - Does the installation and layout drawing correspond?

- TRANSFORMERS
  - Is minisub installed as per Layout Drawing?
  - Is minisub installed labelled as per the Electrification Standard?
  - Is the ABC neutral insulated on the transformer pole as per Drawing D-DT-0308?
  - Is the LV breaker labelled as per the Electrification Standard?
  - Is the minisub earthed?

- Is earthing leads protected on wood poles?

- LV FEEDERS
  - Are all LV stays bonded to earth as per drawing D-DT-0120, D-DT-0121 and D-DT-0122 or its equivalent drawings?
  - Is neutral bonded on all conductive poles as per D-DT-0305, D-DT-0306 and D-DT-0307?
  - Is the services take off (phases) equally distributed along the feeder as indicated on the Layout Drawing?
  - Are the clearances to ground and to shared services according to the Electrification Standard?
  - Are the shear heads of all IPC's off?
  - Is end caps on phase cores at termination points?
  - Is bundle strapped at attachment points to avoid unravelling of the bundle?
  - Is neutral and earth leads to the service distribution boxes separately connected on the neutral as per D-DT-0180?
  - Is the following points earthed:
    - All T-offs?
    - All terminal points?
    - Intervals not exceeding 150 m?
    - All LV poles one span away from transformer installations?
  - Are all concrete poles planted with broad face in line?

- SERVICE CONNECTIONS
  - Does the Service Cable continue into the back of the BEC as per the Electrification Standard?
  - Has a certificate of compliance been issued to all connected customers as per Electrical Installation regulations?
  - Are the customers satisfied with placing of the Ready Boards as per the Electrification Standard?
  - Is the installation in the customers dwelling neat and tidy?
  - Is BEC installed as per the Electrification Standard?

ELECTRICAL TESTS:

- INSULATION RESISTANCE TESTS
  - Disconnect the LV Feeders at the Transformer. With all pole top box MCB's switched off use a 5 kV Megger and Megger between each phase and earth as well as between phases. Care must be taken to discharge the ABC before disconnection of Megger leads. Record Readings in attached test results sheet.
  - Expected results is 5 MΩ between phases and 5 MΩ between phase and neutral.

- VOLTAGE LEVEL TESTS
  - With the pole top box MCB's switched off the feeder shall be energized and the voltages measured at the terminal poles and recorded.
  - The individual pole top MCB's can now be switched on and the polarity of all the installations from each pole tested as well as the Voltage level in each house.
  - Polarity at the pole top boxes shall be tested by measuring the Voltage between the phase bar and the earth stud on the pole as well as between the earth bar and the earth stud and the neutral bar and the earth stud only in the first instance a voltage should be measured.
  - After all consumers are switched on the voltage at the terminal poles must be recorded again.

EARTH ELECTRODE RESISTANCE TEST

Measurement of earth resistance

The best and most accurate method for measurement of relatively small earth electrode systems is described below and the method illustrated in Figure C.2, Connections for earth electrode resistance measurement - 61,8 % method.

- Identify the earth electrode to be tested. Establish the physical layout of the earthing system and type of electrodes being used, for example in the figure the earth electrode is a combination of horizontal counterpoise (trench) electrodes and vertical rods.

- Disconnect the earth electrode from the earthed equipment, preferably at the point where the wire from the equipment connects to the earth electrode.

- Identify the position of the current probe C2. Measurement should be exercised away from the line of any known trench earth, metallic pipe or underground cables. The distance between the electrode under test and the current probe C2 should be five times the biggest of the earth spike length, counterpoise length or the longest diagonal of the earthing system but not less than 30 m.

- Set the potential probe P2 in line with the tested electrode and the current probe C2 at a distance equal to 0,6 of the distance to the current probe. Water the area around the current probe C2 to reduce its resistance thus reducing its influence on the measurement.
- Connect the Earth Tester terminals C1 and P1 to the tested electrode, terminal P2 to the potential probe P2 and the terminal C2 to the current probe C2. Operate the Earth Tester and obtain the resistance reading.

- Repeat the measurements for potential electrode set up at the distances shown in the illustration, i e 0,2; 0,4; 0,5; 0,7 and 0,8 of the distance to the current electrode.

- The values obtained by measurement at the six positions (R2 to R6) should be recorded (Table C.1: Earth electrode resistance - 61,8 % method measurement results).

- The resistance of the electrode under test is equal to the value obtained from the graph and corresponding to the distance of 0,618X.

Alternatively calculate four values of R using the following formulas:-

a) R = - 0,1187R1 - ,4667R2 + 1,9816R4 - 0,3961R6
b) R = - 2,6108R2 + 0,0508R3 - 0,1626R4 - 0,2774R6
c) R = - 1,8871R2 + 1,1148R3 + 3,6837R4 - 1,9114R5
d) R = - 6,5225R3 + 3,6816R4 - 6,8803R5 + 0,7210R6.

Four values of R, obtained from calculations, should substantially agree and an average of the results may then be calculated. However it is possible that the result from equation (a) will be less accurate than the others. If the result of (a) does prove to be at variance with the others it can be ignored and an average obtained from the three more agreeable figures.

VISUAL INSPECTION RECORD SHEET

INSTALLATION DRAWING NUMBER

……

DESCRIPTION		YES	NO	N/A
TRANSFORMERS				
1	Is transformer installation labelled as per the Electrification Standard?			
2	Is the ABC neutral insulated on the transformer pole as per Drawing D-DT-0308?			
3	Is the LV breaker labelled as per the Electrification Standards?			
4	Is the minisub earthed?			
LV FEEDERS				
1	Is all LV stays bonded as per D-DT-0120, D-DT-0121 and D-DT-0122 or ITS equivalent drawings?			
2	Is neutral bonded on all conductive poles as per D-DT-0305, D-DT-0306, D-DT-0307?			
3	Is the services take offs (phases) equally distributed along the feeder as indicated on the Layout Drawings?			
4	Are the clearances to ground and to shared services according to the Electrification Standard?			
5	Is the shear heads of all IPC's off?			
6	Are end caps on phase cores at termination points?			
7	Is bundle strapped at attachment points to avoid unravelling of the bundle?			
8	Is neutral and earth leads to the service distribution boxes separately connected on the neutral as per D-DT-0180?			
9	Is the following points earthed? 1. All T-offs 2. All terminal points? 3. All intervals is not exceeding 150 m? 4. All LV poles one span away from transformer installations?			
10	Is all concrete poles planted with broad face in line?			
SERVICE CONNECTIONS				
1	Does the Service Cable continue into the back of the BEC as per the Electrification Standard?			
2	Has a certificate of compliance been issued to all connected customers as per Electrical Installation regulations of the MOS Act dated 1992-10-23. Regulations R2920 Clause 3.(1)?			
3	Is the customer satisfied with placing of the Ready Boards as per the Electrification Standard?			
4	Does the ready-board contain a SANS 164-2 socket?			
5	Is the installation in the customers dwelling neat and tidy?			
6	Is BEC installed as per Clause 6.6, Part 3 Section 2 of the Electrification Standard?			

TRANSFORMER INSTALLATION AND COMMISSIONING RECORD SHEET

TOWNSHIP RETICULATION SCHEME: ……

DATE: ……...

TESTERS NAME: ……..

ADDRESS: ……..

……..

……..

TEL NR: ……..

TRANSFORMER NR: ……..

MV VOLTAGE: …… kV.

LV ABC INSULATION RESISTANCE

R-W	..... MΩ	at	5 kV
W-B	..... MΩ	at	5 kV
B-R	..... MΩ	at	5 kV
R-N	..... MΩ	at	2,5 kV
W-N	..... MΩ	at	2,5 kV
V-N	..... MΩ	at	2,5 kV

Instrument used …….. Instrument Nr …….

NO LOAD VOLTAGE LEVELS AT TERMINAL POINTS ON

FEEDER 1

R-N	..... Volts	R-W	.....Volts
W-N	..... Volts	W-B	.....Volts
B-N	..... Volts	B-R	.....Volts

FEEDER 2

R-N	..... Volts	R-W	.....Volts
W-N	..... Volts	W-B	.....Volts
B-N	..... Volts	B-R	.....Volts

FEEDER 3

R-N ..... Volts R-W.....Volts
W-N ..... Volts W-B.....Volts
B-N ..... Volts B-R.....Volts

VOLTAGE TESTS AT HOUSES

Is it within statutory limits: …….. YES..... NO

FULL LOAD VOLTAGE LEVELS AT TERMINAL POINTS ON

FEEDER 1

R-N ..... Volts R-W ..... Volts
W-N ..... Volts W-B ..... Volts
B-N ..... Volts B-R ..... Volts

FEEDER 2

R-N ..... Volts R-W ..... Volts
W-N ..... Volts W-B ..... Volts
B-N ..... Volts B-R ..... Volts

FEEDER 3

R-N ..... Volts R-W ..... Volts
W-N ..... Volts W-B ..... Volts
B-N ..... Volts B-R ..... Volts

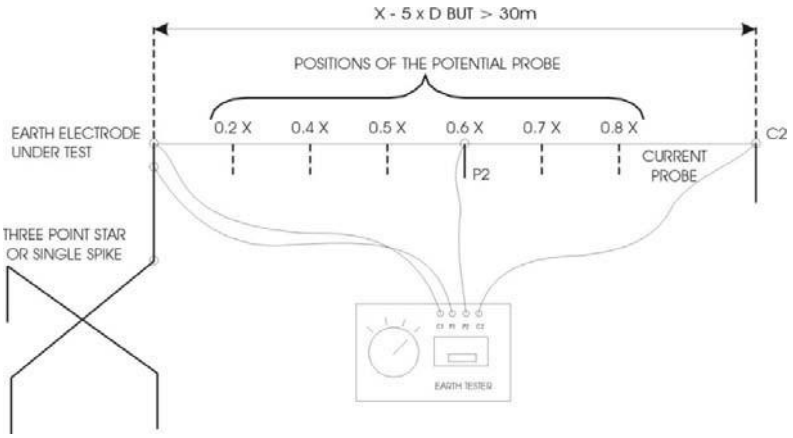

Figure 1: Connections for earth electrode resistance measurement - 61.8% method

Table 4: Earth electrode resistance - 61,8 % method

COMMENTS	REFERENCE	POSITION	ISTANCE (M)	RESISTANCE (M)
	R1	0,2X		
	R2	0,4X		
	R3	0,5X		
	R4	0,6X		
	R(T)	0,618X		
	R5	0,7X		
	R6	0,8X		

Table 5: Earth electrode resistance - 61,8 % method measurement results

R	=	0,1187 R1 - 0,4667 R2 + 1,9816 R4 - 0,3961 R6 =	..... ohm
R	=	2,6108 R2 + 0,0508 R3 - 0,1626 R4 - 0,2774 R6 =	..... ohm
R	=	1,8871 R2 + 1,1148 R3 + 3,6837 R4 - 1,9114 R5 =	.....ohm
R	=	6,5225 R3 + 13,6816 R4 - 6,8803 R5 + 0,7210 R6 =	.....ohm

C3.1.15. LV PVC INSULATED LV CABLES (PSE 08)

All low voltage cables to be supplied and installed as part of this Contract, shall be of the PVC/PVC/SWA/PVC type in accordance with NRS 074. All such cables shall be of the new material and shall bear the SANS mark.

All cables shall be properly glanded off at the Pole Top Boxes and Ready Boards. Pratley glands will be provided with the associated rubber boots properly applied to prevent the ingress of water into the armouring.

The following cables sizes are required:

House Connections : 4 mm^2 SNE Airdac
: 6 mm^2 SNE Airdac
: 10 mm^2 SNE Airdac
: 4 mm^2, 2C, Cu, PVC, SWA +ECC
: 6 mm^2, 3C, Cu, PVC, SWA +ECC
: 10 mm^2, 2C, Cu, PVC, SWA +ECC

C3.1.16. INSTALLATION OF CABLES (PSE 09)

C3.1.16.1. GENERAL

The cable must be installed as per the general requirement specified in GSE 09 and as shown on the project drawings.

Cable installation shall comply with SANS 10198-8, latest Edition

C3.1.16.2. EXCAVATION AND BACKFILL

Where cables are installed directly in ground the excavations for cable trenches shall comply with GSE 09 and will be as follows:

Width	:	450 mm
Length	:	Length of cable
Installation depth (MV)	:	1 000 mm
Installation depth (LV)	:	800 mm
Road crossings depth	:	1 500 mm

Determination of the thermal resistivity of soil to be used as bedding shall be in accordance with SANS 101985-5:2004. The on-site method is preferred and shall be performed per batch of imported soil. Imported soil delivered to site shall be screened with sand to prevent the soil from washing away in raining conditions.

The bedding layer around the cable installation shall be imported loam soil with a thermal resistivity of 1.2 K.m/W, test certificates for the bedding shall be provided. A bedding layer of 50 mm shall be installed prior to cable laying and a blanket layer of 150 mm following laying of cables. Bedding thermal resistivity tests shall be submitted by the Contractor to the Engineer for approval.

Where very hard rock and hard rock are encountered, the prior approval of the Engineer shall be obtained before proceeding with the excavation. This requirement is stipulated in order to afford the Engineer the opportunity to determine whether an alternative cable route is justified. Claims for hard or soft rock must be classified by the Engineer or his representative before proceeding with excavations.

The classification shall be as follows:

a) Very hard rock : shall mean rock that can only be excavated by means of explosives other chemical means.

b) Hard rock : shall mean granite, quartzitic sandstone, slate and rock of similar or greater hardness, solid shale and boulders, in general, requiring the use of jackhammers and other mechanical means of excavations.

c) Soft rock : shall mean rock that can be loosened and removed by hand-pick and shovel including rock that can be excavated by means of a TLB or similar.

d) Earth : shall mean material more easily excavated by means of hand-picking or shovelling such as gravel, earth, turf, scale, sand, silt and clay

Table 6: Soil Types (SANS 10198-5)

SOIL TYPE	DESCRIPTION	THERMAL RESISTIVITY	SUITABLE FOR BEDDING & BLANKET	SUITABLE FOR BACKFILL
Chalk	Soft white / grey porous	Low (wet) High (dry)	No (if drying out is likely)	Yes
Clay	Dense, compact, greasy to touch when wet, shrinks while drying	Low (good)	No	Yes
Loam	Reddish to dark brown (may contain organic matter), crumbles well – can be well compacted	Satisfactory (good)	Yes	Yes
Mine Sand	Highly corrosive	Low (good)	Used with caution	Used with caution
Ouklip	Decomposed granite, varying in particle size	Low (undisturbed) High (disturbed)	No	If mixed with loam/ clay
Peat (humus)	Mainly organic material, black /dark brown	High (when dry)	No	Used with caution
Sand (sea / river)	Crumbly, spherical particles and gritty to touch even when wet, cannot be easily compacted	High (when dry)	No (unless mixed with loam/ clay)	If mixed with loam/ clay

The bottom of the trenches must be even and shall follow the contour of the natural ground level.

The Electrical Contractor must clean the “trench”, remove all rocks before the installation of the bedding layer.

The Contractor shall not commence with the backfilling of trenches without prior notification to the Engineer so that the cable installation may be inspected. Should the Contractor fail to give a timeous notification, the trenches shall be re-opened at the Contractor's cost. Such an inspection will not be unreasonably delayed.

After installation of the cables, the Contractor shall be responsible for backfilling and compaction of all these trenches to original compaction with suitable soil. The maximum allowable diameter of stones present in the backfill material is 20 mm. This must be done to the satisfaction of the Engineer and Employer.

The backfill shall be compacted in layers of 150 mm and sufficient allowance shall be made for final settlement.

Compactions certificates shall be provided every 100 m proving compaction of the cable trench is the same or better than adjacent undisturbed soil (i.e., two compaction tests every 100 m). The contractor shall care not to damage the cables during compaction testing

It should be noted that excavate soil to be used for backfilling shall be as specified in GSE 09. Where the soil excavated is not suitable for backfilling, the Contractor shall import backfilling from elsewhere and make all the necessary arrangements to do so. The cost of importing soil for backfilling purposes shall be included in the unit rates for excavation and backfilling. All excavations in hard rock shall imply that excavate material is not suitable for backfilling and these excavations shall be priced accordingly.

MV and LV distribution cables must be measured on site before ordering of any cable. The cable lengths must be submitted to the Engineer on the day of the first site meeting.

C3.1.16.3. EXPLOSIVES

No guarantee is given or implied that blasting will not be required.

Written approval shall be obtained from the Engineer prior to any blasting.

Should blasting be necessary, written approval shall be obtained from the Engineer. Should blasting be approved by the Engineer, the Contractor shall obtain the necessary authority from the relevant Government Engineers and Local Authorities.

The Contractor is to make adequate provision for blasting which, together with the necessary storage and handling of explosives, shall be carried out in strict accordance with the Explosives Act (No 26 of 1956, as amended) and Regulations. Care shall be taken that no damage is caused to existing works and property, and adequate protection shall be provided to prevent blasted materials scattered about. The size of charges shall be the minimum necessary for the purpose. The Contractor shall be solely responsible for damage and injury caused by or during blasting and shall make good at his own expense, and to the satisfaction of the Engineer, any unnecessary shattering of rock or disturbance of the surrounding ground. Careless use of explosives will render the Contractor liable to be forbidden for further use of explosives.

Blasting will not be permitted in any situation where it is likely to endanger any existing foundation, structure or service and in such situation, material must be removed by drilling and wedging or barring or by any other approved method which will not cause damage.

At least one working day before commencing drilling and blasting operations on any new section of the works, the necessary safety precautions shall be arranged by the Contractor. No blasting is to be done before permission has been granted from the Engineer.

C3.1.16.4. OTHER SERVICES

The tenderer should take note of the existing cables and other services. The services may be buried and cannot be accurately pin pointed. Therefore, all excavations must be done with care.

The tenderer shall acquaint himself with the position of all the existing services such as storm water pipes, water mains, sewer mains, gas pipes, telephone cables, etc. before any excavations are commenced. For this purpose, he shall approach the Engineer's representative, the local municipal authority and any other authority which may be involved, in writing.

The Contractor will be held responsible for damage to any existing services brought to his attention by the Engineer and the tenderer shall be responsible for the cost of repairs.

Cables shall be protected in accordance with SANS10198-8 from other services when running parallel or crossing.

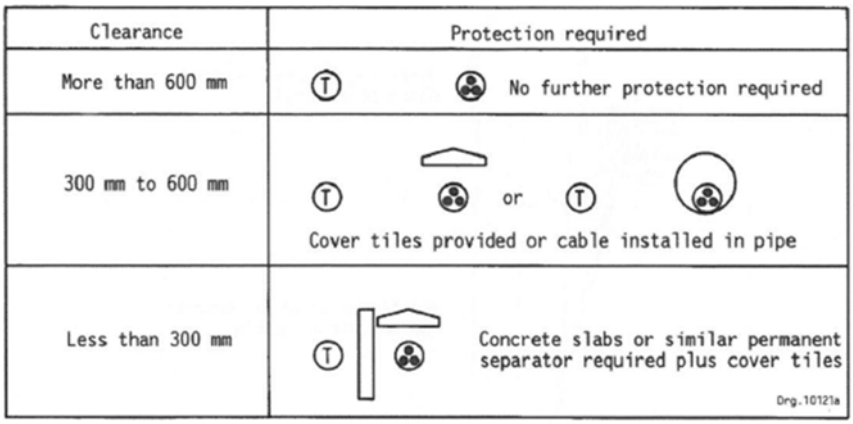

Figure 2: Power cable running parallel to telecommunication cable

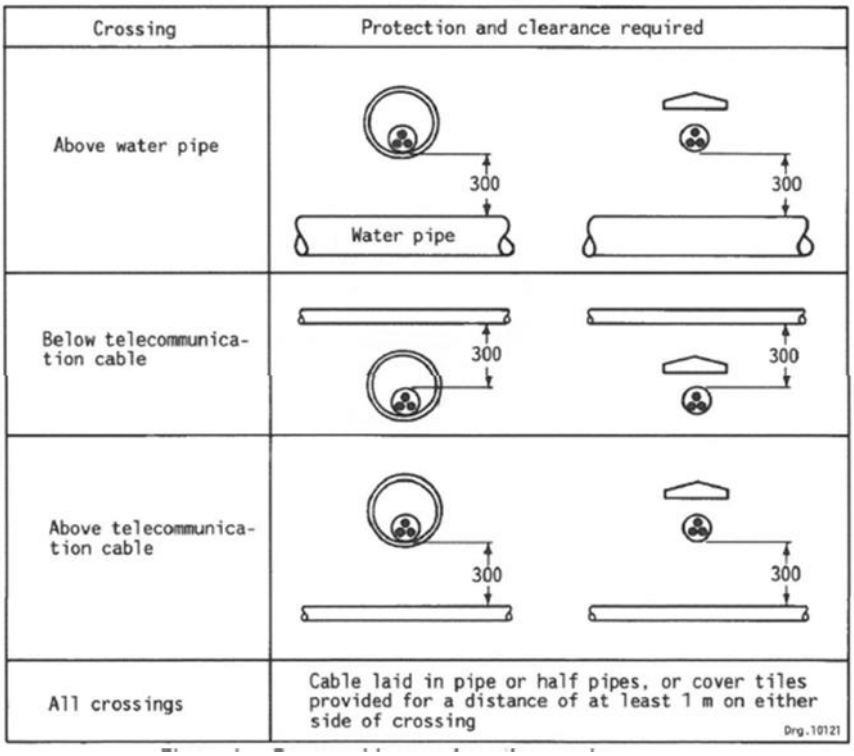

Figure 3: Power cable crossing other services

C3.1.16.5. SLEEVES

Heavy-duty cable sleeves (Class 6 HDPE), 160 mm dia, with draw wires will be installed at all road crossings and/or entrances, to a depth of 1 500 mm below surface. Inspection holes must be provided on the side of the road and/or entrances to ensure that no sleeves are damaged after the road and/or entrances have been compacted, or to replace damaged sleeves at a very early stage.

Sleeve positions are indicated on the project drawings.

All sleeves shall cross roads and railway tracks at right angles.

Sleeves shall extend at least 1 m beyond the railway line reserve boundary or as specified by Transnet. In the case of roads and/or entrances, the sleeves shall extend at least 1.5 m beyond the road edge or kerb on both sides of the road and/or entrance. All sleeves shall be graded 1:400 for water drainage

Sleeves shall be joined in accordance with the manufacturer's instructions where required.

For ease of cable installation and to prevent sliding, the sleeve end shall be appropriately fixed to the ground by either casting into concrete blocks or by using heavy-duty sandbags for weight with steel “droppers” as anchors.

The ends of all sleeves shall be sealed with a non-hardening watertight compound after the installation of cables. All sleeves intended for future use shall likewise be sealed.

Where main MV supply cables are installed into sleeves, such sleeves shall be filled with a bentonite mixture to assist with thermal dissipation.

C3.1.16.6. DIRECTIONAL DRILLING

160 mm Diameter heavy duty uPVC / HDPE cable sleeves will be installed at all road crossings, to a depth of 1 500 mm below the roads and/or entrance surface. Crossings of tar roads and/or tarred entrance shall be drilled by means of hydraulic or motorised equipment in order to install sleeves in these holes. The widths of the roads and/or entrances to be crossed are indicated on the drawings. Sleeves must be inspected for damage before the installation of the cable. The sleeves shall extend at least 1.5 m beyond the road and/or entrance edge or curb on both sides of the road and/or entrance. All sleeves shall be graded 1:400 for water drainage.

The ends of all sleeves shall be sealed with a non-hardening watertight compound after the installation of cables. All sleeves intended for future use shall likewise be sealed.

C3.1.16.7. ROUTE MARKERS

Cable markers shall be installed at the beginning and end of a cable run (e.g. where a cable enters a substation or building) at all changes of direction, above all joints, above cable pipe entries and exits and at intervals not exceeding 50 m along the cable route.

The cable route marker shall consist of a tapered concrete block with base dimensions of 250 x 250 mm and 300 mm in length. The cable route marker shall be equipped with metal plates shall be cast into the tops of the blocks in such a manner that they cannot be prised loose. The wording "ELECTRIC CABLE/ELEKTRIESE KABEL" shall be stamped on the brass plates as well as direction arrows and the cable voltage rating.

Cable markers shall be installed on the surface along all the underground routes and shall project 100 mm above normal ground level unless the projected markers could be a hazard to pedestrian or other traffic in which case they shall be installed flush with the surface.

The position of cable markers shall be indicated on the "as-built" drawings.

All cable ends must be labelled with a lead or copper tag indicating:
a) Cable size, e.g. 185 mm2, MV
b) Fed from -- to --,

C3.1.16.8. INSPECTION OF CABLES AND CABLE TRENCHES

The Contractor shall not commence with the backfilling of trenches without prior notification to the Engineer so that the cable installation may be inspected. Should the Contractor fail to give a timeous notification, the trenches shall be re-opened at the Contractor's cost. Such an inspection will not be unreasonably delayed. After the cable trench has been refilled and compacted, the Contractor must level the sidewalks and remove all excess soil and refuse.

A logbook, in triplicate, shall be kept by the Contractor on the site, in which each part of the installation that has been inspected can be recorded after inspection and approval.

C3.1.16.9. SECURITY

The Contractor must arrange 24-hour security with a reputable security company to protect the cable for the duration of exposed cable. The Contractor must take cognisance that he will be responsible for any cable theft and replacement of stolen cable.

C3.1.16.10. TESTING

All cables shall be pressured tested by the Contractor in accordance with the relevant standard for XLPE, PILC, LV PVC cables respectively.

For bedding thermal resistivity tests shall by submitted by the Contractor to the Engineer for approval.

Compaction tests shall be performed by the Contractor every 80m (trench compaction shall be equal or better than undisturbed soil).

Factory test certificates for all cables shall be provided by the Contractor.

Commissioning test certificates for all cables shall be provided by the Contractor.
Joint and termination certificates accompanied with a coordinate list of all joints shall be provided by the Contractor.

C3.1.17. DISTRIBUTION TRANSFROMERS (PSE 19)

C3.1.17.1. GENERAL

This specification covers the manufacture of distribution transformers for general reticulation and distribution systems in normal environmental conditions for 50 Hz, three-phase, 11 kV (nominal) primary and three-phase four-wire 420 Volt (nominal) secondary systems.

The distribution transformers to be supplied shall comply with the latest Eskom Specification (240-45395762) “SPECIFIC REQUIREMENTS FOR DISTRIBUTION POLE AND GROUND- MOUNTED TRANSFORMERS UP TO 33KV AND 1MVA” and SANS 780.

C3.1.17.2. POLE MOUNTED TRANSFORMERS

The distribution transformers offered shall comply with the following specific requirements:

a) Number required : Eleven (11)
b) Dry type or oil immersed : Oil immersed
c) Rated Frequency : 50 Hz
d) Continuous maximum rating at rated voltage : 100 & 200 kVA
e) Vector Group : Dyn11
f) Nominal Impedance : 4.5 %
g) Primary Voltage : 11 000 V
h) Secondary Voltage : 420 V (3ph) / 242 V (1ph)
i) Colour : Avocado green, code C12 of SANS 1091.

The cooling system of the transformer shall be an Oil-Neutral and Air-Neutral (ONAN) system for the maximum transformer rating.

C3.1.17.3. WINDINGS

The winding insulation shall be either enamel or paper insulation.

All windings shall be constructed with aluminium conductors only.

C3.1.17.4. INSULATION

The transformer insulation shall be as given in the table below:

Table 7: Standard insulation level

1	2	3	4
Maximum system voltage U_m [kV]	**Rated primary voltage U_n [kV]**	**BIL [kV]**	**60 seconds power-frequency withstand voltage [kV]**
<1	<1	30	8
7.2	6.6	75	22
12	11	95	28
24	22	150	50
36	33	200	70

		No-load secondary voltage [V]	**BIL [kV]**	**60 seconds power-frequency withstand voltage [kV]**
Single-phase		242	30	8
Dual-phase		± 242	30	8
Three-phase		420	30	8
SWER Isolation	**Line terminal**	33 000	200	70
	Neutral terminal	-	30	8

C3.1.17.5. TRANSFORMER OIL

The transformer main tank oil insulation level shall be 70 kV per 2.5 mm for virgin oil prior to filling and 60 kV per 2.5 mm at time of taking over.

C3.1.17.6. TAPPING SWITCH

The three phase transformer shall have an off-circuit tapping switch mounted on the LV side of the transformer.

The tapping range shall be -5 %, -2.5 %, 0 %, +2.5 % , +5 %.

C3.1.17.7. BUSHINGS

The bushing shall comply with SANS 60137.

All bushings shall have a minimum creepage of 31mm/kV.

The lightning arresters will be mounted on the transformers below the transformer MV bushings.

C3.1.17.8. LV CABLER TERMINATION ENCLOSURES

The following deviation from the Eskom specification is required:

a) The Transformer LV bushings shall be fully enclosed within an air filled steel enclosure welded to the transformer tank. The door on the LV cubicle shall be equipped with screw locking mechanism equal to Eskom & City Power specification as used on the miniature substations.
b) The steel enclosure shall make provision for a LV Moulded Case Circuit Breaker and busbars to enable connection of the Aerial Bundle Conductor (ABC).
c) The pole mounted transformer shall be equipped with overload protection and shunt trip facility in the LV cubicle. Thermistor to be set at tripping the breaker with shunt trip coil at oil temperature of 95 °C.
d) The transformer manufacturer must specify the limit of overload capacity and which shall be used to trip the transformer via the temperature sensor. All wiring shall be completed in the factory.
e) A surge arrester in accordance with Eskom drawing D-DT-3088 shall be mounted on the earthing terminal in the LV cable termination enclosure and shall be connected to the neutral bushing terminal

C3.1.17.9. TESTING

The current transformer shall be tested as per the latest SANS 780 standard and test certificates provided.

C3.1.17.9.1. ROUTINE TESTS

The following routine tests shall be performed in accordance with IEC/SANS 60076-1 and SANS 780 on each transformer:

a) Measurement of winding resistance.
b) Measurement of voltage ratio and phase displacement.
c) Measurement of short-circuit impedance and load loss.
d) Measurement of no-load loss and current.
e) Separate source voltage test.

f) Induced overvoltage test.
g) Measurement of paint thickness.
h) Test for effectiveness of sealing.
i) Measurement of insulation resistance test.

The routine test shall be carried out at the cost of the OEM and the right is reserved that the tests is to bebe witnessed by the Employer and Engineering representative and is subject to Clause C3.1.11.13:

C3.1.17.9.2. TYPE TESTS

The following type tests shall be performed on each design and in accordance with SANS 60076-1 and SANS 780:
j) Temperature Rise Test.
k) Impulse Type Test.
l) Tank Stiffness Test.
m) Natural ageing and pollution performance test
n) Equivalent disturbing current test for SWER Transformers

The type certificates shall be submitted to the engineer prior to ordering the transformers.

The transformer test methodology and connection diagrams for testing shall be submitted together with the bid offer.

C3.1.18. MEDIUM VOLTAGE CABLES (PSE 50)

C3.1.18.1. GENERAL

The MV cable shall comply with the requirements of SANS 97, NRS 013 or SANS 1339.

The installation portion of works shall be in accordance with PSE 09, GSE 09 and the installation and laying of cable shall also be in accordance with SANS 10198-2:2016.

C3.1.18.2. JOINTS, TERMINATIONS AND ACCESORIES

The effect of a medium voltage cable accessory failure is generally severe in terms of customer outage as well as repair costs. It is therefore important to ensure that medium voltage cable accessories comply with specifications and are of high quality. To ensure the quality and performance of medium voltage cable accessories the stringent requirements of NRS 053 shall be adopted and applied to this project.

Paper Insulated cable joints and terminations shall be in accordance with SANS 10198-10:2010.

XLPE cable joints and terminations shall be in accordance with SANS 10199-09:1988.

C3.1.18.2.1. JOINTS

Heat Shrink Joint Master or Raytech / Raychem joints shall be used.

C3.1.18.2.2. TERMINATIONS AND ACCESORIES

Raytech / approved dry type terminations shall be used.

C3.1.18.3. IMPREGNATED PAPER INSULATED CABLE

Where the cable enters through any walls, roofs, or floors the openings created shall be such that the minimum bending radius of the cable is not exceeded. All such entries shall be sealed off by means of watertight compression seals.

System voltage	:	11 kV
Cable type	:	SANS 97 Table 18 - Belted - Three core paper Insulated lead covered PVC bedded and sheathed steel wire armoured.
Type of cable	:	3 Core
Installation condition	:	Single Undergrounds
Cross sectional area	:	240 mm²
Conductor material	:	Aluminium
Fault level	:	22.5 kA Symmetrical (1s) & 30.7 kA Earth Fault (1s)
Insulation	:	PILC
Bedding	:	FR PVC
Armour	:	Steel Wire armouring
Outer sheath	:	PVC
Water blocking	:	No
Theft identification	:	Provide theft identification in cable and emboss Midvaal Local Municipality property in outer PVC sheath

C3.1.18.4. XLPE INSULATED CABLE

Not Applicable

C3.1.18.5. TESTING AND COMMISSIONING

Testing and commissioning of cables following installation shall be in accordance with SANS 10198-13:2016. All commissioning tests shall be performed, which include:

- Insulation resistance
- Conductor resistance
- Overvoltage
- Diagnostic Testing
- Outer sheath test

C3.1.19. USING OF OWN MANPOWER (PSE 100)

It is a requirement of the Contract that the work be executed in such a manner as to maximize the use of labour in order to provide the local community with employment opportunities (where applicable) in accordance with the approved Council Policy and Guidelines.

It should be noted that the local labours can be from any area within the Midvaal Local Municipal area, which is within a reasonable distance from the construction site.

The Contractor shall only use skeleton staff and skilled staff for implementation of the project. The contactor shall appoint local labourers for all unskilled tasks. Should it proof to be impossible to identify people from the community to perform the expected tasks identified by the Contractor, written approval shall be obtained from the Engineer, or the community, prior to utilising his own manpower to complete the project. The Contractor's own personnel will be responsible for all specialised work.

The Contractor shall therefore use only skilled labour of his own workforce. All other unskilled labour required shall be local labour.

The identification of the approved CLO to be appointed by the Contractor under the Contract shall be resolved by the Contractor, the particular Ward Councillors in collaboration with the Local Community in the form of a Project Steering Committee. It will be required, therefore, that the successful Tenderer (i.e. the Contractor) enter into a contract for the employment of the above- mentioned CLO, the parties to which will be the Contractor, the Local Authority and the CLO.

In order to achieve the recruitment of local labour, the Local Communities would establish, together with the Local Authority, a database of unemployed persons, indicating their specialized training, previous experience and employment, etc. The successful Tenderer will be required to follow the approved Council Policy and Guidelines and to liaise with the Member of the Mayoral: Engineering Services (MMC) in recruiting his/her workforce and will be required to produce weekly records suitably detailed to enable the Engineer/Employer, or his/her authorized representative, and the Local Communities to ascertain that the abovementioned labour requirements are achieved. The Contractor is required to provide informal skills training so that the required standard of workmanship is maintained. Any difficulty experienced by the Tenderer/Contractor in the procurement of the requirement percentages of local labour is to be referred immediately to the Engineer.

The contractor will also be required to report monthly on the amount of local labour in accordance with the EPWP program reporting formats which will be provided to the successful contractor.

C3.1.19.1. EXPECTED TASKS AND RESPONSIBILITIES

The different tasks and responsibilities are as follows:

C3.1.19.2. SERVICES REQUIRED

a) 1 x CLO - Community Liaison Officer
b) Unskilled labourers

The contractor shall provide for the necessary facilities for the workforce i.e. water, toilets, guard houses, stationary, PPE, identification etc.

C3.1.19.3. DUTIES, TASKS AND RESPONSIBILITIES

CLO

a) Represent the local community in matters concerning the use of local labour on the works and to assist with and facilitate communication between the Contractor, the Engineer and the local communities.
b) Ensure labourers obey Contractors instructions.
c) Terminate, retrench, expel and discipline workers
    - Not obeying Contractor's instructions
    - Refuse to work
    - Not reporting for work without excuse
    - Misbehave, steel, drink, intimidating etc. during working hours etc.
d) Settlement of disputes.
e) Obtain way leaves.
f) Any other reasonable instructions required by the Contractor, Project Manager or Employer.

LOCAL LABOUR

a) Perform and execute tasks such as:
   - Minor excavation work.
   - Excavation of cable trenches.
   - General unskilled labour.

b) Any other reasonable instructions required by the Contractor, Project Manager or Employer.

CONTRACTOR

a) Employ the CLO, security officers and local labour.
b) The period of appointment of the CLO shall be as stated in the Contract for Temporary Employment as a Community Liaison officer referred to below. The date of commencement of temporary employment of the CLO shall be as agreed with the Engineer.
c) Provide and supply all clothing, tools and materials to perform the tasks required.
d) Manage the workforce with the assistance of the CLO to ensure that the programme to carry out the work is met.
e) Manage all material. The Contractor will be responsible for the management, issuing and verification of all material.
f) Conduct and convene meetings on a daily base, to dish out work and tasks and to record progress.
g) To ensure all safety requirements are met.
h) Pay and remunerate the workforce once a month by means of a cash cheque and record all payments with relevant signatures.
i) The Contractor will register all local labourers for unemployment insurance.
j) Enter into written agreement with CLO and workforce and appoint workforce in writing in accordance with the relevant Midvaal Local Municipality procedure.

The contract shall be between the Contractor and the CLO and the local labour, all costs involved shall be borne by the Contractor and the tender shall be deemed to include for this.

C3.1.19.4. CONDITIONS OF EMPLOYMENT

a) Obey Contractors instructions.
b) Sign time sheets and report for work from Monday to Friday.
c) Work overtime if required by Contractor.
d) Working hours is 45 hours per week from 07:00 to 16:30 with 30 minutes lunch break from 12:00 to 12:30.
e) Payment will be effected according to attendance register, with no work no pay policy.
f) Payment will be done by means of a cash cheque once a month on the last Friday of the month at 14:00.
g) Unemployment insurance funds will be deducted.
h) Tax will be deducted if applicable and when deducted, IRP5 certificates will be issued.
i) Payment categories:
   - CLO- Estimated R 7 500,00 per month or pro rata for days working
   - Labourers- Estimated R 180 per day

   The above are estimated minimum amounts and shall be negotiated between the Contractor, Municipality relevant manpower. To prevent disputes arising any manpower shall not be paid more or paid less than the rates being used within the Municipal area.

j) Overtime will be paid according to time plus a third.

k) If the required progress is not met after actions taken by the CLO, the Contractor will have the right to strengthen his own workforce with the approval of the Project Manager.

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C3.2 – TECHNICAL SCHEDULES

C3.2. TECHNICAL SCHEDULES

The following list outlines the Technical Schedule for tendering which shall be populated by the contractor / OEM. Failure to complete any schedule may result in the bid submitted being disqualified.

At no stage during the delivery of the works may the contractor change supplier / manufacturer without the written consent from the Engineer.

C3.2.1. GSE01 – OVERHEAD RETICULATION (22 KV AND BELOW)

- Overhead Reticulation in accordance with NRS 092.

C3.2.2. GSE08 – PVC INSULATED CABLES

- 4 mm² 2 core PVC cable manufactured in accordance with SANS 1507 and NRS 074.
- 6 mm² 2 core PVC cable manufactured in accordance with SANS 1507 and NRS 074.
- 10 mm² 2 core PVC cable manufactured in accordance with SANS 1507 and NRS 074.

C3.2.3. GSE19 – DISTRIBUTION TRANSFORMERS

- 100 & 200 kVA 11 000/420 V Distribution Transformer in accordance with SANS 780.

C3.2.4. GSE50 – MEDIUM VOLTAGE CABLES

- 11 kV, 240 mm², 3C, Alu, PILC in accordance with SANS 97.

C3.3 – GENERAL SPECIFICATIONS

C3.3. GENERAL SPECIFICATIONS

C3.3.1. PREAMBLE

Note:

Failure to duly complete Technical Schedules in full will result in the disqualification of the tenderer's offer.

No change in supplier is permitted without a written application by the contractor and written consent by the Engineer. Should any change in supplier be noted at any stage during implementation of the project the Engineer will instruct the Contractor to revert back to suppliers as per the tender offer with any time and cost implications for the Contractors account.

It shall be noted that specifications are for the general use of project construction, certain sections or paragraphs may not be relevant to this particular contract in which case such irrelevant items are to be considered as not applicable. Any uncertainties shall be communicated to the Engineer. Where equivalent South African standards (SANS / NRS) exist, such standards are to be used in preference to foreign standards quoted.

The documents referenced contain provisions that constitutes requirements of this specification. 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.

I / We, the undersigned ..... hereby acknowledge that copies of the above documents are included in the tender document and confirm that I / We fully understand them and the consequences of non-compliance.

SIGNED AT …….. ON BEHALF OF THE FIRM …….

ON THIS …….. DAY OF ……. 20…….

NAME: ……

SIGNATURE: ……..…

CAPACITY: ……

Specification as listed below shall apply to this project:

C3.3.2. LAW - NATIONAL AND INTERNATIONAL STANDARDS

All IEC, NRS, SANS, ASCE, ISO codes and National Law applicable to the disciplines listed below shall apply to this project:

1) Electrical Cable Works
2) Civil reinforced concrete works
3) Building Works
4) High Voltage Works

ACT 31	Fencing Act.
ACT 73 1989	Environmental Conservation act.
ACT 85 1993	Machinery and Occupational Safety Act 85 of 1993 with special reference to Section 1 (Act & Regulations), Section 2 (Administrative Regulations), Section 6 (Electrical Installation Regulations) and Section 16 (General Safety Regulations)
ACT OHS 1993	Occupational Health and Safety Act 1993

GSE 08	PVC Insulated Cables
GSE 09	Installation of Cables
GSE 14	Inspections, Testing, Commissioning and Handing Over
GSE 15	Paint Standard

Standards are obtainable on the SABS Web store www.store.sabs.co.za.

C3.3.3. ESKOM SPECIFICATIONS / STANDARDS

In order to achieve a countrywide standard, the Eskom Specifications for outdoor substations will be applicable to this project. It is the responsibility of the tenderer to ensure that he/she obtains these specifications form the Eskom website (www.scot.eskom.co.za).

240-45395762 : Specific Requirements for distribution pole and ground-mounted transformers up to 33 kV and 1 MVA.

240-75883906 : Medium Voltage Reticulation Section 0: General Information and Requirements for Overhead Lines Up To 33kv Standard.

240-75884040 : Medium Voltage Reticulation Section 1 Light Conductors Particular Requirements for Overhead Lines up to 33 kV Standard.

240-56062768 : Distribution Class Metal Oxide Surge Arresters without Spark Gaps Specification

240-68973356 : Outdoor, Pole-Mounted, Distribution Single-Phase, Off-Load Disconnectors for MV Line Application with Removable Link for Nominal A.V. Voltages of 22 kV.

240-75257543 : Standard Specification for 22kV and 33kV, Pole-Mounted, Three-Phase, Gang-Operated Disconnectors

240-75655444 : Procedure for Installation of Line Surge Arresters up to 33kV

240-75881496 : Procedure for Handling, Auditing and Stacking of New Wooden Poles Standard

240-130615754 : Distribution Type – Part 2: Distribution Standard: Part 2: Earthing. Section 1: MV and LV Distribution System Earthing

C3.3.4. STANDARDS AND SPECIFICATIONS

The following National and International standards shall be adhered to and can be obtained through the SABS webstore.

C3.3.4.1. OVERHEAD RETICULATION

NRS 092 : Electricity Distribution - Guideline for the Construction of Medium-Voltage Overhead Power Lines of up to and including 22 kV, using poles with Bare and Aerial Bundled Conductors.

SANS 10280 : Overhead power lines for conditions prevailing in South Africa.

SANS 10280-1 : Overhead power lines for conditions prevailing in South Africa Part 1: Safety.

NRS33 : Electricity distribution - Guidelines for the application design, planning and construction of medium voltage overhead power lines up to and including 22 kV, using wooden pole structures and bare conductors.

NRS 092 : Electricity distribution - Guideline for the construction of medium-voltage overhead power lines of up to and including 22 kV, using poles with bare and aerial bundled conductors.

C3.3.4.2. POLES

SANS 754 : Eucalyptus poles, cross-arms and spacers for power distribution and communications systems

SABS 753 : Pine poles, cross-arms and spaces for power distribution, telephone systems & street lights.

SANS 470 : Concrete poles for telephone, power and lighting purposes.

NRS 038-1 : Electricity distribution - Concrete poles Part 1: Concrete poles for LV and MV overhead distribution systems.

C3.3.4.3. LINE HARDWARE

NRS 028 : Cable lugs and ferrules

NRS 018 : Fittings and connectors for LV overhead power lines using aerial bundled conductors, Part 1, 2, 3 & 5

NRS 020 : Aerial bundled conductor: Cable ties

SANS 61284 : Overhead lines - Requirements and tests for fittings.

NRS 028 : Crimped cable lugs and ferrules for copper and aluminium conductors.

C3.3.4.4. STAYS

NRS 022 : Stays and associated components

C3.3.4.5. CUT OUTS

NRS 035-1 : Outdoor distribution cut-outs Part 1: Drop-out fuse-link assemblies or solid-link assemblies - Pole-mounted types - For nominal a.c. voltages up to and including 33 kV

NRS035-2 : Outdoor distribution cut-outs Part 2: Expulsion fuse-links - For nominal a.c. voltages up to and including 33 kV.

C3.3.4.6. LV NETWORK

SANS 1619 : Small power distribution units (ready-boards) for single phase 230 V service connections.

NRS 032 : Service distribution box for pole mounting

C3.3.4.7. DISTRIBUTION TRANSFORMERS

SANS 780 : Distribution transformer

IEC 60076 : Power Transformers (all applicable parts)

IEC 60137 : Bushings for AC voltages above 1000V

C3.3.4.8. CABLES

NRS 074-1 : Low-voltage (600/1 000 V) cable systems for underground electrical distribution Part 1: Cables

NRS 074-2 : Low-voltage (600/1 000 V) cable systems for underground electrical distribution Part 2: Accessories

SANS 529 : Heat-resisting wiring cables.

SANS 1507-1 : Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1 900/3 300 V) Part 1: General.

SANS 1507-2 : Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1 900/3 300 V) Part 2: Wiring cables.

SANS 1507-3 : Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1 900/3 300 V) Part 3: PVC Distribution cables.

SANS 97 : Electric cables - Impregnated paper-insulated metalsheathed cables for rated voltages 3,3/3,3 kV to 19/33 kV (excluding pressure assisted cables).

SANS 1332 : Accessories for medium-voltage XLPE and impregnated paper-insulated power cables (3,8/6,6 kV to 19/33 kV).

SANS 1339 : Electric cables - Cross-linked polyethylene (XLPE) insulated cables for rated voltages 3,8/6,6 kV to 19/33 kV

SANS 60055-1 : Paper-insulated metal-sheathed cables for rated voltages up to 18/30 kV (with copper or aluminium conductors and excluding gas pressure and oil filled cables) – Part 1: Tests on cables and their accessories.

SANS 60502-4 : Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1,2 kV) up to 30 kV (Um = 36 kV) – Part 4: Test requirements on accessories for cables with rated voltages from 6 kV (Um = 7,2 kV) up to 30 kV (Um = 36 kV).

SANS 61442 : Electric cables: Test methods for accessories for power cables with rated voltages from 6 kV (Um – 7,2 kV) up to 30 kV (Um = 36 kV).

NRS 053 : Accessories for medium voltage power cables (3,8/6,6 kV to 19/33 kV).

SANS 876 : Cable terminations and live conductors within air insulated enclosures (insulation co-ordination) for rated a.c. voltages of 7,2 and up to and including 36 kV.

SANS 6138 (IEC 60332) : Resistance of cables and cords to flame propagation - Single vertical insulated cable or cord.

SANS 61089 : Round wire concentric lay overhead electrical stranded conductors

IEC 60228 : Conductor of insulated cables.

SANS 10198-1 : The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 1: Definitions and statutory requirements.

SANS 10198-5 : The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 5: Determination of thermal and electrical resistivity of soil.

SANS 10198-8 : The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 8: Cable laying and installation.

SANS 10198-9 : The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 9: Jointing and termination of extruded solid dielectric- insulated cables up to 3,3 kV.

SANS 10198-10 : The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 10: Jointing and termination of paper-insulated cables.

SANS 10198-11 : The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 11: Jointing and termination of screened polymeric- insulated cables.

SANS 10198-13 : The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 13: Testing, commissioning and fault location.

SANS 10198-14 : The selection, handling and installation of electric power cables of rating not exceeding 33 kV Part 14: Installation of aerial bundled conductor (ABC) cables.

IEC 60332 : Test on electrical cables under fire conditions

SANS 10142 : The wiring of premises

NRS 013:2007 : Medium-Voltage cables

NRS 074-1 : Low-voltage (600/1 000 V) cable systems for underground electrical distribution (all parts

SANS 6138 : Resistance of cables and cords to flame propagation - Single vertical (IEC 60332) insulated cable or cord.

SANS 1418 : Aerial bundled conductor systems (All parts).

C3.3.4.9. CONDUCTOR

SANS 182-2 : Conductors for overhead electrical transmission lines Part 2: Stranded aluminium conductors.

SANS 182-3 : Conductors for overhead electrical transmission lines Part 3: Aluminium conductors, steel-reinforced.

SANS 182-5 : Conductors for overhead electrical transmission lines Part 5: Zinc-coated steel wires for conductors and stays.

C3.3.4.10. EARTHING AND LIGHTNING PROTECTION SYSTEM

SANS 725/
IEEE 80 : Guide for safety in AC Substation Grounding

IEEE 81 : Guide for measuring earth resistivity, ground impedance and earth surface potentials of a ground system

SANS 10199 : The design and installation of an earth electrode

IEC 62305 : Protection against lightning

SANS 10292 : Earthing of low-voltage (LV) distribution systems

SANSA 10313 : Protection against lightning – Physical damage to structures and life hazards

NRS 060 : Code of Practice for clearances for electrical systems with rated voltages up to and including 145 kV, for the safety of persons

IEC 61024 : Protection of structures against lighting

C3.3.4.11. SURGE ARRESTERS

SANS 60099-1 : Surge arresters Part 1: Non-linear resistor type gapped surge arresters for a.c systems.

SANS 60099-4 : Surge arresters Part 4: Metal-oxide surge arresters without gaps for a.c. systems.

SANS 60099-5 : Surge arresters Part 5: Selection and application recommendations.

SANS 60099-6 : Surge arresters Part 6: Surge arresters containing both series and parallel gapped structures - Rated 52 kV and less.

SANS 60099-7 : Surge arresters Part 7: Glossary of terms and definitions from IEC publications 60099-1, 60099-4, 60099-6, 61643-1, 61643-12, 61643-21, 61643-311, 61643-321, 61643-331 and 61643-341.

C3.3.4.12. INSULATION

SANS 60305 : Insulators for overhead lines with a nominal voltage above 1 000 V - Ceramic or glass insulator units for a.c. systems - Characteristics of insulator units of the cap and pin type.

SANS 60383-1 : Insulators for overhead lines with a nominal voltage above 1 000 V Part 1: Ceramic or glass insulator units for a.c. systems - Definitions, test methods and acceptance criteria.

SANS 60383-2 : Insulators for overhead lines with a nominal voltage above 1 000 V Part 2: Insulator strings and insulator sets for a.c. systems - Definitions, test methods and acceptance criteria.

SANS 61109 : Insulators for overhead lines - Composite suspension and tension insulators for a.c. systems with a nominal voltage greater than 1 000 V - Definitions, test methods and acceptance criteria.

SANS 61211 : Insulators of ceramic material or glass for overhead lines with a nominal voltage greater than 1 000 V – Impulse puncture testing in air.

SANS 61467 : Insulators for overhead lines - Insulator strings and sets for lines with a nominal voltage greater than 1 000 V - AC power arc tests.

SANS 1019 : Standard voltages, currents and insulation levels for electricity supply

IEC 60273 : Characteristics of indoor and outdoor post insulators for systems with nominal voltages greater than 1000 V

IEC 60168 : Tests on indoor and outdoor post insulators of ceramic material or glass for systems greater than 1000 V

IEC 60815 : Selection and dimensioning of high-voltage insulators intended for use in polluted conditions

IEC 60168 : Tests on indoor and outdoor post insulators of ceramic material or glass for systems with nominal voltages greater than 1 000 V

IEC 60455 : Resin based reactive compounds used for electrical insulation

IEC 60071-1 : Insulation co-ordination

C3.3.4.13. ELECTROMAGNETIC COMPATIBILITY

IEC 61000-6-2 : Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments

IEC 61000-6-4 : Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments

IEC 61000-6-5 : Electromagnetic compatibility (EMC) – Part 6-5: Generic standards – Immunity for power station and substation

C3.3.4.14. METERING EQUIPMENT

IEC 62052 /
IEC 62053 : Electricity metering equipment (a.c.) [relevant parts]

IEC 62056-21 : (EMC) - Part 4-30: Testing and measurement techniques

I / We, the undersigned ..... hereby acknowledge that copies of the above documents are included in the tender document and confirm that I / We fully understand them and the consequences of non-compliance.

SIGNED AT …….. ON BEHALF OF THE FIRM …….

ON THIS …….. DAY OF ……. 20…….

NAME: ……

SIGNATURE: ……..…

CAPACITY: ……

GSE08 – GENERAL SPECIFICATION ELECTRICAL

PVC INSULATED CABLE

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1. GENERAL

This general specification covers the requirements for PVC-insulated cables for general installations under normal environmental conditions for distribution purposes.

2. CONSTRUCTION

Cables shall be manufactured in accordance with SANS 1507, shall come only from fresh stocks, and shall be constructed as follows:

a) Unarmoured cables : PVC-insulated/PVC-sheathed
b) Armoured cables : PVC-insulated/PVC-bedded/armoured/black extruded PVC outer sheath
c) Single core cables : PVC-insulated/unsheathed.

The conductors shall be of high conductivity annealed stranded copper and the cores may be shaped or circular.

The insulation shall be general purpose PVC, 600/1 000 V grade.

The bedding shall consist of a continuous impermeable sheath of PVC extruded to fit the core or cores closely and in the case of multi-core cables, to fill the interstices between the cores.

When armouring is specified it shall consist of one layer of galvanised steel wire in the case of multi-core cables and non-magnetic metallic wire in the case of single core cables. Aluminium strip or tape armouring is not acceptable.

Where specified, an earth continuity conductor shall be provided in the armouring in accordance with SANS 1507.

Table 1: NRS074-1:2017 Preferred conductor sizes

1	2
Number of cores	**Conductor size** mm^2
2	4, 6, 10 and 16
3	25 and 70
4	16, 25, 35, 70, 120, 150, 185 and 240

3. CABLE TERMINATIONS AND JOINTS

3.1. TERMINATIONS WITH HEAT-SHRINKABLE MATERIALS

The terminations shall make minimal, if any, use of insulating or stress relieving tapes. The use of electrical stress control and insulating tubing that is heat-shrunk onto the termination is preferred above other methods.

The heat-shrinkable and other materials used for the terminations shall be of a high quality and shall retain their electrical and mechanical properties without deterioration. The materials that gives lasting protection against ultraviolet radiation.

The cores of all cables terminated outdoors and the cores of 3,3 kV and higher voltage cables terminated indoors, shall be completely covered with a shrunk-on protective layer against surface tracking, ultraviolet radiation and weathering.

Outdoor terminations shall be designed to prevent flashover under wet or contaminated conditions and to ensure additional mechanical strength. This shall be achieved with shrunk-on insulating spacers and rain shields.

3.2. JOINTS WITH HEAT-SHRINKABLE MATERIALS

Heat-shrinkable materials may only be used in exceptional circumstances with the written permission of the Engineer.

The complete kit shall be packed in a container that is marked for the type of cable insulation and construction as well as the voltage range for which the materials are suitable.
An illustrated set of instructions for the installation of the materials shall accompany every kit.

The joints shall make minimal, if any, use of insulating or stress relieving tapes. The use of electrical stress control and insulating tubing that is heat-shrunk onto the joint is preferred above other methods.

The heat-shrinkable and other materials used for the terminations and joints shall be of a high quality and shall retain their electrical and mechanical properties without deterioration. The materials that gives lasting protection against ultraviolet radiation.

The electrical continuity of all the conductors, screens and armouring shall not be impaired by the joints and the earth continuity shall be accomplished within the joints, i e no external earth continuity conductor that will be subject to corrosion, is acceptable. The joints shall be completely covered by a watertight sheath to prevent corrosion.

In the case of joints in cables with an outer PVC anti-electrolysis sheath, the joints shall be subject to the same electrical insulation test as the outer sheath of the cable.

3.3. RESIN FILLED JOINTS

Resin filled joints is the preferred method for jointing of all LV cables.

The resin filled joint kit shall comprise a self-sealing plastic mould of high mechanical strength having sufficient connector space.

The exact amount of cold hardening resin shall be provided in a two-compartment plastic bag.

The resin shall have absolute minimum shrinkage.

The mould and resin shall be completely waterproof and non-hygroscopic and shall be resistant to ultraviolet radiation.

Joint kits shall be "SCOTCH CAST", "CELL PACK" or similar.

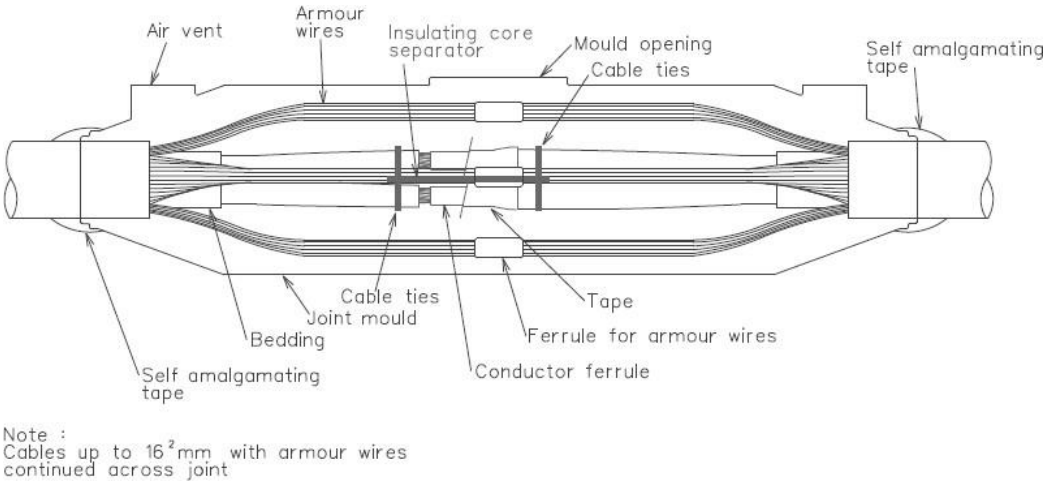

Figure 1: NRS074-2 Cast resin joint up to 16mm²

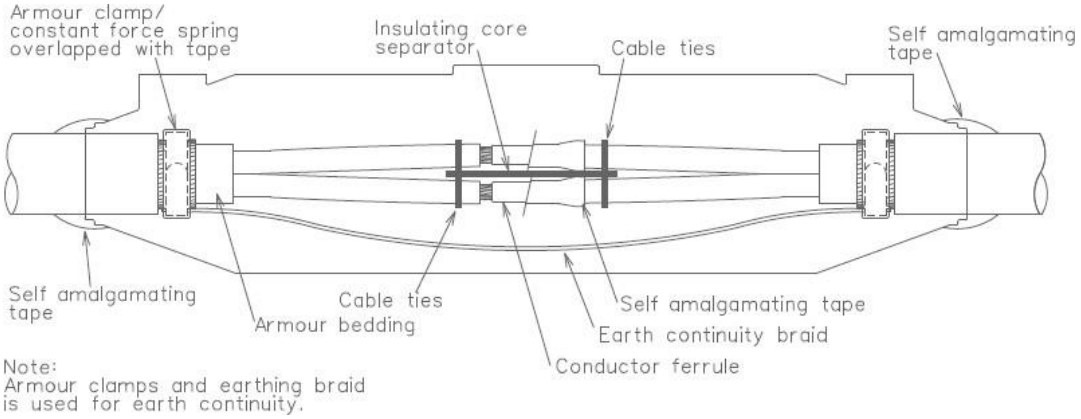

Figure 2: NRS074-2 Cast resin joint

3.4. CABLE BOX JOINTS

Cable boxes shall be manufactured of die cast aluminium material for normal conditions or glass fibre reinforced thermosetting compound where exposed to corrosive conditions.

The lid shall provide an absolute moisture barrier.

Boxes shall contain 2, 3 or 4 entries as required.

Unused entries shall be sealed with watertight blanking plugs.

Earth continuity shall be maintained through the box by means of the material of the box in the case of aluminium boxes or by means of earth straps and studs in the case of glass fibre reinforced boxes.

Cable boxes shall be "PRATLEY", "CCG HANDIFIT" or similar manufacture.

4. GLANDS FOR PVC-INSULATED CABLES

Glands to be used for terminating PVC/PVC/SWA/PVC cables shall be of the adjustable type and shall be the correct size for the particular cable and application.

Glands shall be suitable for general purpose 600/1 000V grade cable with steel armouring.

The glands shall be made of nickel-plated bronze or brass.

The glands shall consist of a barrel carrying a cone bush screwed into one end and a nickel-plated brass nipple carrying a nickel-plated brass or a heavy galvanised steel locknut screwed into the other end. The galvanising shall comply with SANS 121.

Non-watertight glands must be easily converted to watertight glands by means of a waterproofing shroud and inner seal kit. On the cable entry side of the barrel a concave groove shall be provided to accommodate the top rim of the waterproofing shroud.

The shrouds shall be made of non-deteriorating neoprene or other synthetic rubber, and shall be resistant to water, oil and sunlight. The shrouds shall fit tightly around the glands and cable.

Glands shall be provided with ISO threads and shall be suitable for the specified cable sizes.

Flameproof glands shall comply with SANS 808, Groups 1, 2a and 2b.

Suitable accessories shall be provided with glands to be used on ECC armoured cables to facilitate a bolted lug connection of the earth continuity conductors. Grooves cut into the barrel or cone bush to accommodate the earth continuity conductors are not acceptable.

For unarmoured cables the cone bush and compression ring of the gland shall be replaced with a synthetic rubber compression bush and ring to provide the required grip on the outer sheath of the cable.

All cables shall be properly glanded off within the miniature substation and within each of the appropriate distribution boards. Pratley glands will be provided with the associated rubber boots properly applied to prevent the ingress of water into the armouring.

5. CONNECTION OF CABLE CONDUCTORS

Conductor ends shall be fitted with suitably sized lugs, which may be of the bolted or crimped type. All lugs and ferrules shall comply with SANS 1803-1. Strands may not be cut from the end of the conductor to fit the lugs.

Contact surfaces shall be thoroughly cleaned and smoothed and fixing bolts shall match the hole size of the lug.

Cables that are connected to clamp type terminals where the clamping screws are not in direct contact with the conductor, need not be lugged but the correct terminal size shall be used.

Ferrules shall be used as far as possible where cable conductors are connected directly to equipment with screws against the conductor strands.
When cutting away insulation from cable conductors to fit into lugs, care shall be taken that no strands are left exposed. Under no circumstances may any of the conductor strands be cut away to fit into lugs.

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GSE09 – GENERAL SPECIFICATION ELECTRICAL

INSTALLATION OF CABLES

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1. GENERAL

This general specification covers the requirements for the installation of electric power cables of a rating not exceeding 33 kV.

All unarmoured cables shall be installed in metal trunking, sleeves or conduit unless clearly specified to the contrary.

2. CABLE ROUTE

The Contractor shall, before trenching commences, familiarise himself with the routes and site conditions and the procedure and order of doing the work shall be planned in conjunction with the general construction programme for other services and building requirements.

The Engineer reserves the right to alter any cable route or portion thereof in advance of cable laying. Payment in respect of any additional or wasted work involved shall be at the documented rates.
The removal of obstructions along the cable routes shall be subject to the approval of the Engineer.

3. COMPETENCE OF PERSONNEL

It is a definite requirement that the Contractor shall only employ personnel fully conversant with cable manufacturer's recommendations for joining and terminating cables.

4. IDENTIFICATION OF CABLES

Cables shall be identified at all terminations by means of punched metallic bands or marked with labels or tags. The use of PVC tape with punched characters is not acceptable.

The identification numbers of cables shall be shown on "as built" drawings of the Installation.

Phase colour clicks shall be installed to all MV pole terminations and MV switchgear terminations shall be clearly marked with coloured tape and painted discs. Painted stickers shall not be accepted.

5. EXCAVATIONS

The Contractor shall be responsible for all trenching excavations unless specified to the contrary.

As trench excavation progresses the contractor’s surveyor shall survey the trench position and submit in CAD format to the Engineer for approval prior to any cable being installed. Following installation of the cable the contractor’s surveyor shall survey the coordinates of all bends, joints and terminations and submit to the Engineer to include into the as-built information.

The Contractor shall acquaint himself with the position of all the existing services such as storm water pipes, water mains, sewer mains, gas pipes, telephone cables, etc. before any excavations are commenced. For this purpose, he shall approach the Engineer's representative, the Employers representative, the local municipal authority and any other authority which may be involved, in writing.

The Contractor shall take all the necessary precautions and provide the necessary barricading, warning signs and/or lights to ensure that the public and/or employees on site are not endangered. The Contractor shall ensure that the excavations will not endanger existing structures, roads, railways, other site constructions or other property. The maximum length of trench to be opened at any point in time is 350 m after which the respective cable shall be laid.

Trenching shall be programmed in advance and the approved programme shall not be departed from, except with the consent of the Engineer.

Trenches shall be as straight as possible and shall be excavated to the dimensions indicated in this specification.

The bottom of the trench shall be of smooth contour and shall follow the contour of the natural ground level, and shall have no sharp dips or rises which may cause tensile forces in the cable during backfilling.

The excavated material shall be placed adjacent to each trench in such a manner as to prevent nuisance, interference or damage to adjacent drains, gateways, trenches, water furrows, other works, properties or traffic. Where this is not possible the excavated materials shall be removed from site and returned for backfilling on completion of cable laying. Excavated material shall be placed at least 500 mm from the edge of the boundary side of the trench to prevent material falling back into the trench and to allow space to move along the trench.

Surplus material shall be removed from site and disposed of at the cost of the Contractor.

Trenches across roads, access ways or footpaths shall not be left open. If cables cannot be laid immediately the Contractor shall install temporary "bridges" or cover plates of sufficient strength to accommodate the traffic concerned.

The Contractor shall ensure proper repair of all surfaces to its prior condition (i.e. tar, paving, gardens, etc.)

In the event of damage to other services or structures during trenching operations the Contractor shall immediately notify the Engineer and institute repairs.

Where ground conditions are likely to reduce maximum current carrying capacities of cables or where the cables are likely to be subjected to chemical or other damage or electrolytic action, the Engineer shall be notified before installing the cables.

Extreme care shall be taken not to disturb surveyor's pegs. These pegs shall not be covered with

Prior to cable laying the trench shall be inspected thoroughly and all objects likely to cause damage to the cables either during or after laying shall be removed.

Where ground conditions are likely to reduce maximum current carrying capacities of cables or where the cables are likely to be subjected to chemical or other damage or electrolytic action, the Engineer shall be notified before installing the cables.

5.1. MEASUREMENTS

Excavation and backfill shall be certified in linear meter according to the trench dimensions specified, volumetric claims will not be entertained.

All measurements for payments shall be made jointly by the representatives of the Engineer and the Contractor shall obtain the signature of the Engineer's representative including approval of such measurements.

No allowance shall be made for the breaking away of the trench sides, other earth movements or for trenches excavated in excess of the stipulated dimensions.

The classification shall be as follows:

- Very hard rock : shall mean rock that can only be excavated by means of explosives.
- Hard rock : shall mean granite, quarzitic sandstone, slate and rock of similar or greater hardness, solid shale and boulders in general requiring the use of jack hammers and other mechanical means of excavations.
- Soft rock and earth : shall mean rock and earth that can be loosened and removed by hand-pick and shovel including materials that is easily loosened and removed by mechanical excavation (i.e. TLB).

Where very hard rock and hard rock are encountered, the prior approval of the Engineer shall be obtained before proceeding with the excavation. This requirement is stipulated in order to afford the Engineer the opportunity to determine whether an alternative cable route is justified.

All cable lengths indicated in the Detail Technical Specification and/or shown in the cable route drawings shall be regarded as estimates and are given for tendering purposes only. The successful tenderer shall measure actual cable lengths on site before ordering.

The final price for the supply and installation of all cables will be adjusted, on the basis of the actual lengths of installed cables, in accordance with the unit rates quoted at the time of tendering. Cable lengths shall be measured on site to the nearest 500 mm for this purpose and surplus cable will not be paid for.

5.2. TRENCH DIMENSIONS

Depending on the cable spacing specified the dimension shall be valid for the total trench depth. The width shall be increased where more cables are installed to allow for the spacing’s required between the cables.

Where trenches change direction or where cable slack is to be accommodated, the Contractor shall ensure that the requirements of the relevant SANS Specification regarding the bending radii of cables are met when determining trench widths.

5.3. JOINT HOLES

Where cable joints are required to be made in the course of a cable run, a joint hole shall be excavated of sufficient size to enable the cable jointer to work efficiently and unimpeded.

During outdoor jointing operations, the joint bays shall be adequately covered by tents of waterproof material suitably supported. Where necessary a trench shall be excavated around the bay to prevent the ingress of moisture. The sides of the hole shall be draped with small tarpaulin or plastic sheeting to prevent loose earth from falling in during jointing operations.

5.4. SHORING AND WATERLOGGING

The Contractor shall provide shoring for use in locations where there is a danger of the sides of the trench collapsing due to waterlogging or other ground conditions. Refer to the Machinery and Occupational Safety Act.

The strength of shoring must be adequate for site conditions prevailing and the shoring must be braced across the trench.

The Contractor shall provide all pumps and equipment required to remove accumulated water from trenches. Water or any other liquid removed shall be disposed of without any nuisance or hazard.

5.5. MECHANICAL EXCAVATORS

Power driven mechanical excavators may be used for trenching operations provided that they are not used in close proximity to the other plant, services or other installations likely to be damaged by the use of such machinery.

The use of power driven mechanical excavators shall be subject to the approval of the Engineer. Should the excavator produce trenches that exceed the required dimensions, payment based on volumetric excavation rates will be calculated on the required dimensions only.

5.6. EXPLOSIVES

No guarantee is given or implied that blasting will not be required. Written approval shall be obtained from the Engineer prior to any blasting.

Should blasting be necessary and approved by the Engineer, the Contractor shall obtain the necessary authority from the relevant Government Engineers and Local Authorities.

The Contractor is to make adequate provision for blasting which, together with the necessary storage and handling of explosives, shall be carried out in strict accordance with the Explosives Act (No 26 of 1956, as amended) and Regulations. Care shall be taken that no damage is caused to existing works and property, and adequate protection shall be provided to prevent blasted materials scattered about. The size of charges shall be the minimum necessary for the purpose. The Contractor shall be solely responsible for damage and injury caused by or during blasting and shall make good at his own expense, and to the satisfaction of the Engineer, any unnecessary shattering of rock or disturbance of the surrounding ground. Careless use of explosives will render the Contractor liable to be forbidden for further use of explosives.

Blasting will not be permitted in any situation where it is likely to endanger any existing foundation, structure or service and in such situation material must be removed by drilling and wedging or barring or by any other approved method that will not cause damage.

At least one working day before commencing drilling and blasting operations on any new section of the works, the Contractor shall arrange the necessary safety precautions. No blasting is to be done before permission has been granted from the Engineer.

6. BEDDING LAYER

Determination of the thermal resistivity of soil to be used as bedding shall be in accordance with SANS 101985-5:2004. The on-site method is preferred and shall be performed per batch of imported

soil. Imported soil delivered to site shall be screened with sand to prevent the soil from washing away in raining conditions. Bedding thermal resistivity tests shall by submitted by the Contractor to the Engineer for approval.

Where no suitable soil is available on site, the Contractor shall import fill from elsewhere and make all the necessary arrangements to do so. The cost of importing soil for bedding purposes shall be included in the unit rates for bedding. Where local excavated soil is used for bedding and adequate thermal resistivity is proven, the saving shall be given through to the Employer

7. BACKFILLING

The Contractor shall not commence with the backfilling of trenches without prior notification to the Engineer so that the cable installation may be inspected. Should the Contractor fail to give a timeous notification, the trenches shall be re-opened at the Contractor's cost. Such an inspection will not be unreasonably delayed.

A logbook with three copies per page shall be kept by the Contractor on the site, in which each part of the installation that has been inspected can be recorded after inspection and approval.

For all electric cables a coloured plastic marking tape shall be installed 400 mm above the cable unless otherwise specified. The tape shall be yellow, with a red skull and crossbones with the words "ELECTRIC CABLE/ELEKTRIESE KABEL". These markings shall not be more than 1 m apart from centre to centre.

8. INSTALLATION OF UNDERGROUND CABLES

8.1. INSTALLATION DEPTHS

Cables shall be installed at the following minimum depths below final ground level:

a) Up to 1 kV : 600 mm
b) Up to 11 kV : 1 000 mm

All cable depth measurements shall be made to the top of the cable when laid directly in ground or to the top of the duct or sleeve where these are provided.

The above depths shall apply to the top layer where cables are installed in layers.

The Contractor may only deviate from the above depths provided prior authority in writing has been obtained from the Engineer. In this event the cables shall be protected with a suitable concrete covering.

The depth of cable pipes or ducts beneath railway lines or roads shall be not less than 1,1 m below the formation level.

8.2. CABLE SPACINGS

Cables installed in the same trench shall be laid parallel to each other with the following minimum spacing between cables (LV: up to 1 kV; HV: 1 kV to 11 kV):

a) LV/LV : 2 cables diameters
b) LV/MV : 300 mm minimum
c) MV/MV : 300 mm minimum

Where MV and LV cables have to be installed in the same trench, the MV cable shall be laid on the one side of the trench at a depth of 1000 mm and then covered with 300 mm of soil. The LV cable shall then be laid on the other side of the trench, i.e. not above the HV cable, and then completely backfilled.

Cables for telephones, communication systems and other low voltage systems (less than 50 Volt) shall be separated from power cables by at least 1 m. All control or pilot cables shall be laid at least 300 mm from power cables.
Cables shall not be buried on top of each other unless layers are specified. The minimum spacing between layers shall be 200 mm.

Shielding specifications shall be requested by the Contractor from the Engineer where the cable installation crosses or runs parallel to non-electrical services.

8.3. CABLE LAYING

Except where ducts, tunnels or pipes are provided, cables shall be laid directly in the ground.

The cable shall be removed from the drum in such a manner that the cable is not subjected to twisting for tension exceeding that stipulated by the cable manufacturer.

Cable rollers shall be used as far as possible to run out cables. Rollers shall be spaced so that the length of cable in the trench will be totally suspended during the laying operation and sufficiently close to prevent undue sagging and the cable from touching the ground. Rollers shall also be placed in the trench in such a manner that they will not readily capsize. Laying of the cable next to the trench at N.G.L. and “dropping” / installing into the trench, shall not be accepted.

Cable rollers shall have no sharp projecting parts liable to damage the cables.

Winches with a pilot draw cable for cables 7/50mm^2, shall be compulsory.

Where cables have to be drawn around corners, well-lubricated skid plates shall be used. The skid plates shall be securely fixed between rollers and shall constantly be examined during cable laying operations.

The cable drum shall be placed in a convenient position and shall be placed on sound level structure to facilitate the unrolling of the cable.

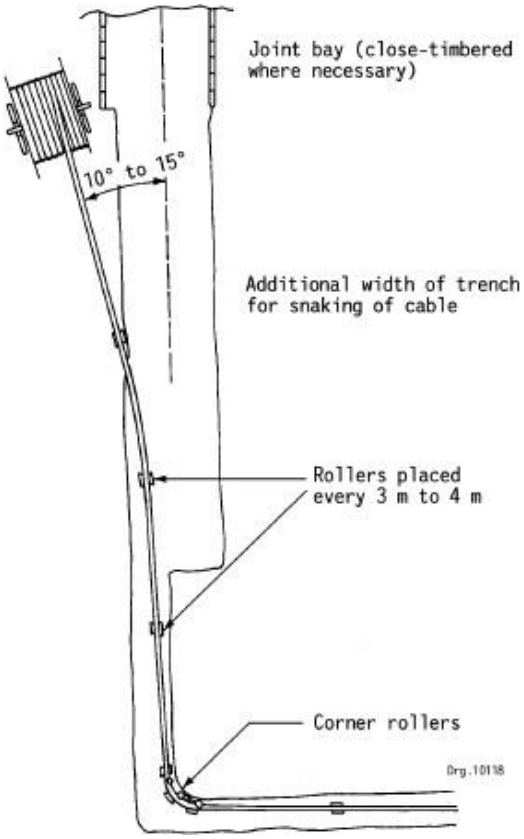

Figure 1: Roller and drum placement

Cables shall not be unrolled from cable drums if the ambient temperature is below 10°C, or the ambient temperature was lower than for the past 24 hours.

The cable drum shall be covered with a tarpaulin and heated with suitable lamps or heaters for at least 24 hours under close supervision. After heating the cable, the cable shall be installed quickly and carefully before the cable temperature drop below 10 °C.

To prevent cross-overs in joints, each length of cable shall be pulled in the same direction.

The cable shall be removed from the drum in such a manner that the cable is not subjected to twisting for tension exceeding that stipulated by the cable manufacturer, in addition the removed section of cable shall always leave the drum on the top side of the drum.

The rotation of the drum shall be controlled in order to ensure the correct pulling tension on the cable and to prevent any cable kinking or twisting when the pulling action is halted.

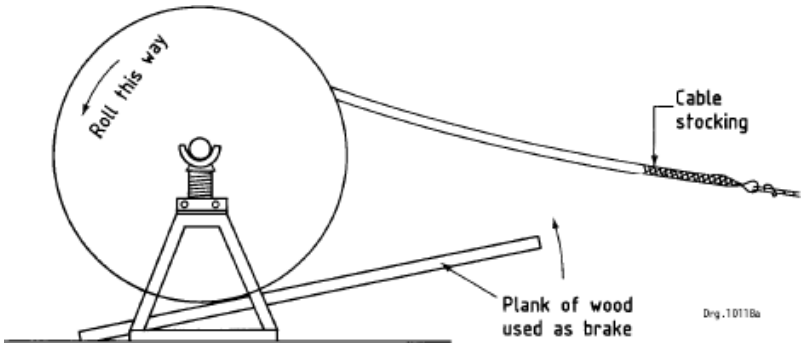

Figure 2: Arrangement of drum

The minimum bending radius of the cable shall be adhered to at all times. Failure to adhere to the minimum bending radius will result in the scrapping of the installed length of cable, and the Contractor shall replace the length of cable at his own cost.

Table 1: Minimum Bending Radii (SANS 97, SANS 1339 & SANS 1507)

Cable Type	Bending Radius up to 11 kV	Bending Radius 22 kV & 33 kV
Paper Insulated Cables		
Single Core	20 x cable dia	25 x cable dia
Multicore	12 x cable dia	15 x cable dia
PVC Insulated Cable (600/100 V)		
Multi and Single Core 16 to 50 mm²	8 x cable dia	-
Armoured Multi & Single Core ≥70 m	10 x cable dia	-
XLPE Insulated Cables		
Single Core	17 x cable dia	17 x cable dia
Multicore	15 x cable dia	15 x cable dia

Where practicable, snake the cables on either side of each joint position to relieve the joints of any thermomechanical stresses.

Cable sock or pulling eyes shall be used when the cable is installed by mechanical means. Cable socks shall not be used on oil-filled cables, the special eyes with access to the interior of cables, as provide by the manufacture shall be utilised.

The maximum allowable tension when pulling a cable by means of a cable sock shall be determine with the following formula:

- Steel Wire Armoured Cables : $F = 0.94 \times d^4 \times 10^{-6}$ kN
- Steel Tape Armoured or Unarmoured Cable : $F = 0.39 \times d^4 \times 10^{-6}$ kN
- Control and Communication Cables : $F = 0.26 \times d^4 \times 10^{-6}$ kN

where “d” is the overall cable diameter.

The maximum allowable tension when pulling a cable by means of a pulling eye attached to the conductors, shall be determine with the following formula:

- Copper : $F = 4.9 \times 10\text{-}2$ kN / mm²
- Aluminium : $F = 2.94 \times 10\text{-}2$ kN / mm²

where mm² is the conductor area.

It shall however be attempted to limit the pulling force required to a minimum to avoid stretching the outer layers of the cable.

It will be assumed that the price or rates contained in the tender includes for the installation of cables in pipes and ducts or below existing or newly installed services.

The Engineer shall be informed timeously of the intention to carry out all cable laying operations to allow an inspection of the works by the Engineer if so required.

8.4. INSTALLATION OF CABLES IN SLEEVES

Where cables have to be drawn through pipes or ducts, a suitable cable sock or pulling eye shall be used. Particular care shall be exercised to avoid abrasion, elongation or distortion of any kind.

Where cables cross under roads, railway tracks, other service areas, etc. and where cables enter buildings, the cables shall be installed in Class 6 HDPE/HPVC pipes.

Sleeves shall be joined in accordance with the manufacturer's instructions.

The sleeve shall be installed to a depth of 1 500 mm below surface and shall extent at least 1 500 mm beyond the crossing edge (i.e. road edge or servitude boundary). In case of railway crossings, the sleeve shall extent at least 1 500mm beyond the railway reserve edge.

Sleeves must be inspected for damage before the installation of the cable by means of inspection holes provided on each side of the crossing.

All sleeves shall be graded 1:400 for water drainage.

For ease of cable installation and to prevent sliding, the sleeve end shall be properly fixed to ground by either casting into concrete blocks or by using heavy-duty sand bags for weight with steel “droppers” as anchors.

Where main MV supply cables are installed into sleeves, such sleeves shall be filled with a bentonite mixture to assist with thermal dissipation.

The ends of all sleeves shall be sealed with a non-hardening watertight compound after the installation of cables. All sleeves intended for future use shall likewise be sealed.

For long pipe runs, the cable drum shall be setup above one of the joint bays and the cable shall be fed as shown in Figure 3. The cable shall not be pulled in a S formation, as this could lead to kinking of the cable

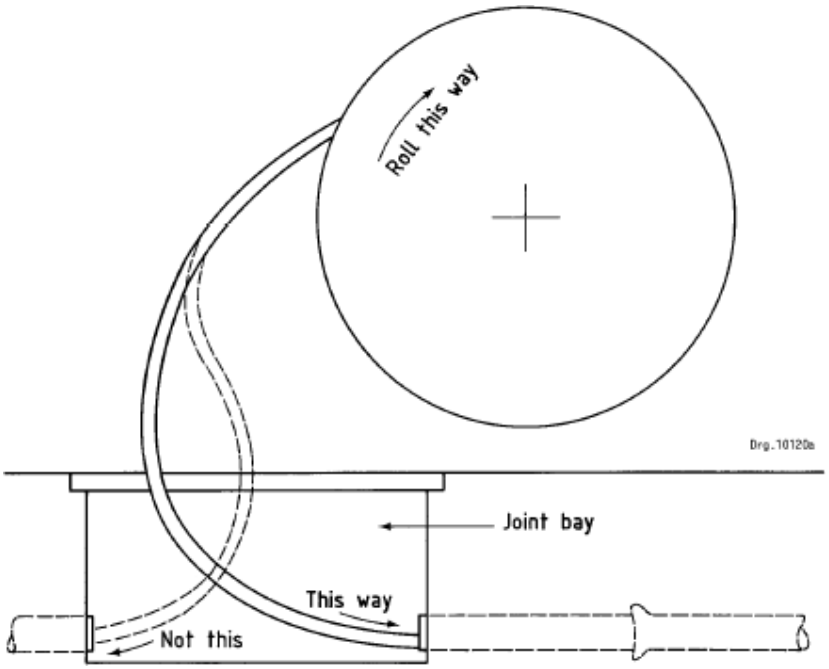

Figure 3: Cable in long run sleeve installation method

8.5. INSTALLATION OF CABLES IN CONCRETE TRENCHES

8.5.1. INSTALLATION

Cables shall be installed in one of the following ways, unless otherwise specified in the Bill of Quantities:

a) On horizontal cable trays.
b) On horizontal metal supports with suitable clamps.
c) On vertical cable trays or metal supports fixed to the side of the trench. The cables shall be clamped in position.

8.5.2. COVERS

The Contractor shall be responsible for the cutting or drilling and smoothing of holes for cables through chequer plates, concrete or other coverings as required.

Cables shall enter and exit the trench through sleeves protruding 300 mm beyond the covering. The sleeves shall be permanently secured in position and the open space between the cable and sleeves shall be sealed with a non-hardening, watertight compound.

8.5.3. FILLED TRENCHES

Where specified floor trenches shall be filled with a bedding layers specified.

If a bedding is specified, the cables shall be fixed to non-corroding supports.

Bedding filled trenches other than in substations shall be covered in one of the following ways:

a) Reinforced concrete covers.
b) Sand and cement screed.
c) Removable chequer plates in steel edge frames.

Method a) above shall be used where vehicular traffic may be encountered over trenches. Unless otherwise specified allowance for a mass of 2 tons shall be made.

8.6. FIXING OF CABLES TO TRAYS OR STRUCTURES

8.6.1. INSTALLATION

Cables may be installed in one of the following ways:
a) On horizontal cable trays.
b) Against vertical cable trays with suitable clamps.
c) Against horizontal or vertical metal supports or brackets with suitable clamps.
d) On clamps which are fixed to the structure.

8.6.2. CLAMPS

Suitable clamps (cleats) which will secure cables without damage shall be used. Metal clamps or drilled hard wood blocks (Meranti/Teak) shall be used. Due to heat, metal clamps will not be approved for outdoor installations.

Clamps shall consist of adjustable metal wings which clamp to a metal support, or consist of two halves that are bolted together. The correct clamp size to fit the cable shall be used (clamps to be pre-filed for specific cable O/D). Cables of different sizes may only be fixed by a common clamp when the clamp is specially made to accommodate the various cables.

8.6.3. SPACING OF SUPPORTS OF UNRESTRAINED CABLES

With an unrestrained installation, the distance between supports should be great enough to ensure that there will be obvious sag in each span between supports.

Large single core cables shall always be installed according to this method. Generally, single core cables with conductors exceeding a cross sectional area of 185 mm^2 should be supported at spacings in excess of 2 m since the sag between supports will safely accommodate any thermal expansion.

Reducing the spacing between the supports to 1,5 m or less shall be avoided at all costs, as expansion cannot be taken up by a change of sag and chances of sheath failure become considerable.

8.6.4. SPACING OF SUPPORTS OF RESTRAINED CABLES

With a restrained installation, the distance between supports is small enough to prevent any noticeable sag in the cable.

The maximum spacing between cleats (clamps) to which cables are fixed in horizontal and vertical cable routes shall be determined from Table 1 below. Additional cleats shall be installed at each bend or offset in the cable run. The maximum distance between supports or cleats for multicore control cables shall be 20 times the outside diameter of the cable with a maximum spacing of 550 mm for unarmoured cables and 30 times the outside diameter of the cable with a maximum spacing of 900 mm for armoured cables.

Table 2: Cleat spacing

CROSS SECTIONAL AREA OF CABLE CONDUCTORS (mm^2)	MAXIMUM SPACING OF SUPPORTS (CLEATS) (mm) FOR RESTRAINED CABLES			
	WIRE ARMOURED CABLES AND UNARMOURED CABLES		OTHER THAN WIRE ARMOURED CABLES AND UNARMOURED CABLES	
	HORIZONTAL CABLE ROUTE	VERTICAL CABLE ROUTE	HORIZONTAL CABLE ROUTE	VERTICAL CABLE ROUTES
1,5	450	750	300	400
2,5	450	750	300	400
4,0	600	750	300	400
6,0	600	750	300	400
10,0	750	900	400	450
16,0	750	1000	400	550
25,0	900	1000	450	550
35,0	900	1000	450	550
Bigger than 35,0	900	1000	450	550

8.7. GROUPING AND SPACING OF CABLES IN BUILDINGS AND STRUCTURES

8.7.1. SPACING CORRECTION FACTORS

Cables shall be as a rule spaced two cable diameters apart, for which no grouping correction factor need be applied.

8.7.2. CABLES ON DIFFERENT LEVELS

Where parallel cable runs are installed at different levels (e.g. on parallel cable trays) and where the spacing of the layers is not specified, a minimum spacing of 300 mm shall be maintained.

8.7.3. SINGLE CORE CABLES

Where single core cables are installed along a three-phase circuit, the cables shall be installed in trefoil formation and shall have a non-metallic bound at 300 mm intervals.

8.7.4. MEDIUM VOLTAGE CABLES

Medium voltage cables shall be separated from other cables and services throughout the installation and shall as far as possible be installed in separate floor trenches, pipes or metal channels. Where this is not feasible a minimum spacing of 500 mm shall be maintained.

8.7.5. CABLES FOR OTHER SERVICES

Cables for telephones, communication systems and other low voltage systems (less than 50 V) shall be separated from power cables. In building ducts a physical barrier shall be provided between power cables and cables for other services. Where armoured cables are used for such other services, they shall be installed on separate cable trays or shall otherwise be at least 1 m away from power cables. Where unarmoured cables are used for these other services, they shall be installed in separate conduits or metal channels.

9. TERMINATION AND JOINTING OF CABLES

9.1. GENERAL

Cable ends shall be terminated with glands or in cable boxes with the associated accessories such as clamps, shrouds, etc. complying in all respects to the Engineer's quality specification.

Connection of cables to switchgear shall always be effected in such a way that the various phases, seen from the front of the switchgear will be in the following positions:
a) No 1 conductor: left (red) (A)
b) No 2 conductor: centre (white) (B)
c) No 3 conductor: right (blue) (C)

Exposed armouring shall be covered with bitumen-based paint.

All cable ends shall be supplied with the necessary earth connection.

A P4000 "SANKEYSTRUT" channel or other approved means of support shall be provided to remove mechanical stress from the glands.

Cable cores shall be marked with heat-shrunk sleeves where necessary to identify the phases.

The current-carrying capacity and breakdown voltage of the cable end shall be the same as for the complete cable.

Cables shall be determined in accordance with the recommendations laid down by the manufacturers of the cables and glands employed.

All cable ends must be labelled with a lead or copper tag indicating:
a) Cable size, e.g. 185 mm^2, MV
b) Fed from Risiville S/S to Pole 1,

Termination certificates shall be provided by the Contractor.

9.2. TERMINATION OF PAPER-INSULATED CABLES

Where compound filled cable terminations are specified such ends shall be terminated in cable end boxes filled with bituminous, cold filling or resin oil semi-fluid compound or heat-shrinkable terminations.

The cable box compound / Penetrox shall be penetrol cable ends - soft solid petroleum jelly based insulating compound type LECTROL-DG Penetrol complete with Rand Mine type cable end with linen tape soaked in Mineral Insulating Oil as manufactured by Fuchs and distributed by CENTRALEC (Cable accessories & distributors).

Guroflex MV is not compatible with PILC cables and shall only be accepted with the application to XLPE cables.

Before terminating or jointing paper-insulated cables, a test to establish the presence of moisture must be carried out.

The following procedure may be followed:

a) Place an adequate quantity of cable impregnating oil in a suitable container and heat up to 130 ℃ ± 5 ℃.
b) Cut a small length (± 300 mm) of the cable concerned and remove the armouring and sheath, taking care not to handle the dielectric in any way.
c) Dip a section of the outer insulating impregnated paper (belt paper) in the heated oil, taking care not to contaminate the tapes with moisture from the hands. If frothing appears on the surface of the oil, this is a clear indication of the presence of moisture in the paper.
d) The same procedure should then be repeated on the insulating impregnated paper around the cores (especially those layers closest to the cores). Frothing will also indicate the presence of moisture.
e) Should only a small number of bubbles appear on the surface of the oil, this is an indication of air bubbles on the paper and not moisture since the presence of moisture will result in a series of bubbles rising to the surface of the oil for a number of seconds, until all the moisture has been removed.

The armouring shall be bonded to the main earth bar of the switchgear or transformer, but the bond shall be easily removable for testing purposes.

The lead sheath shall be wiped against the conical wiping gland.

All cut cable ends which will be exposed to the atmosphere for more than 2 hours shall be sealed and wiped to prevent penetration of moisture.

9.3. TERMINATION OF XLPE CABLES

A prefabricated system based on pre-moulded slip-on EPR stress cones is allowed.

The copper tapes of the earth screen on the cable shall be bonded to the main earth bar of the switchgear or transformer but the bond shall be easily removable for testing purposes.

The cable shall be firmly secured on the switchgear by means of a clamp to prevent mechanical stress on the cable and terminations.

9.4. TERMINATION OF PVC-INSULATED CABLES

The glands shall be fitted in accordance with the cable and gland manufacturer's instructions.

The correct size and type of gland shall be used for the particular cable and application.

9.5. CONNECTION OF CABLE CONDUCTORS

Suitable lugs shall be used, preferably solidly sweated to the cable conductor ends. Lugs may be crimped, using mechanical or pneumatic tools designed for this purpose, on condition that evidence is submitted that the method used complies with the performance requirements of BS 4579, Part 1: "COMPRESSION JOINTS IN COPPER".

Contact surfaces shall be thoroughly cleaned and smoothed and fixing bolts shall match the hole size of the lug.

Cables that are connected to clamp type terminals where the clamping screws are not in direct contact with the conductor, need not be lugged but the correct terminal size shall be used.

Ferrules shall be used as far as possible where cable conductors are connected directly to equipment with screws against the conductor strands.

When cutting away insulation from cable conductors to fit into lugs, care shall be taken that no strands are left exposed. Under no circumstances may any of the conductor strands be cut away to fit into lugs.

9.6. JOINTS

Joints in cable runs shall only be allowed to join two drums of cable in the event of cable runs of more than 300 m, or as authorised by the Engineer in writing.

Jointing shall be carried out strictly in accordance with the manufacturer's instructions and by personnel competent in jointing the types of cables used.

During outdoor jointing operations, the joint bays shall be adequately covered by tents of waterproof material suitably supported. Where necessary a trench shall be excavated around the bay to prevent the ingress of moisture. The sides of the hole shall be draped with small tarpaulin or plastic sheeting to prevent loose earth from falling in during jointing operations.

The joint shall not impair the anti-electrolysis characteristics of the cable.

The Contractor shall notify the Engineer timeously of the day on which jointing is to be carried out in order that an inspection may be arranged if so required. Any cable joint not inspected by the Engineer because of insufficient notice being given, shall be opened for inspection and redone at the discretion of the Engineer at the cost of the contractor.

Cable joints on XLPE-insulated cables shall be of the heat shrinkable type and shall be based on a pre-prefabricated system utilising pre-moulded slip-on stress cones.

Joints shall be fully water- and air tight and shall be free of voids and airpockets.

The crossing of cores in joints will not be permitted under any circumstances.

Joint certificates accompanied with a coordinate list of all joints shall be provided by the Contractor.

10. OTHER SERVICES

The Contractor shall acquaint himself with the position of all the existing services such as storm water pipes, water mains, sewer mains, gas pipes, telephone cables, etc. before any excavations are commenced. The services may buried and cannot be accurately pin-pointed. Therefore, all excavations must be done with care. For this purpose he shall approach the Engineer's representative, the local municipal authority and any other authority which may be involved, in writing.

The Contractor will be held responsible for damage to any existing services brought to his attention by the Engineer and the tenderer shall be responsible for the cost of repairs.

Cables shall be protected in accordance with SANS10198-8 from other services when running parallel or crossing.

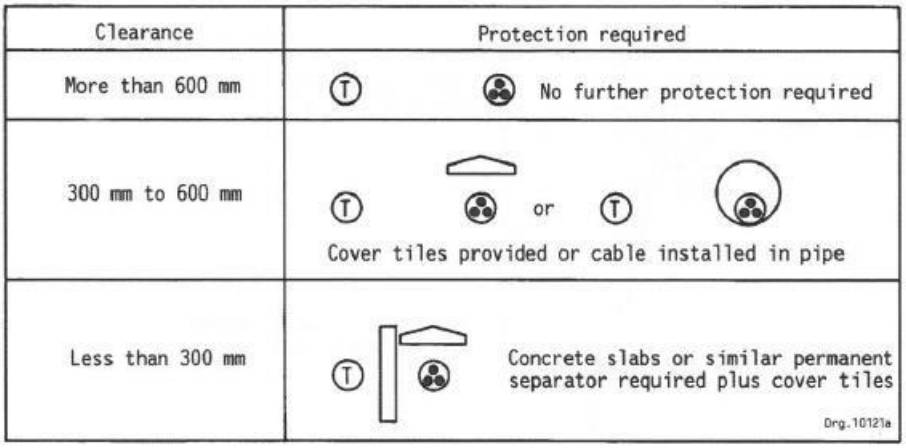

Figure 4: Power cable running parallel to telecommunication cable

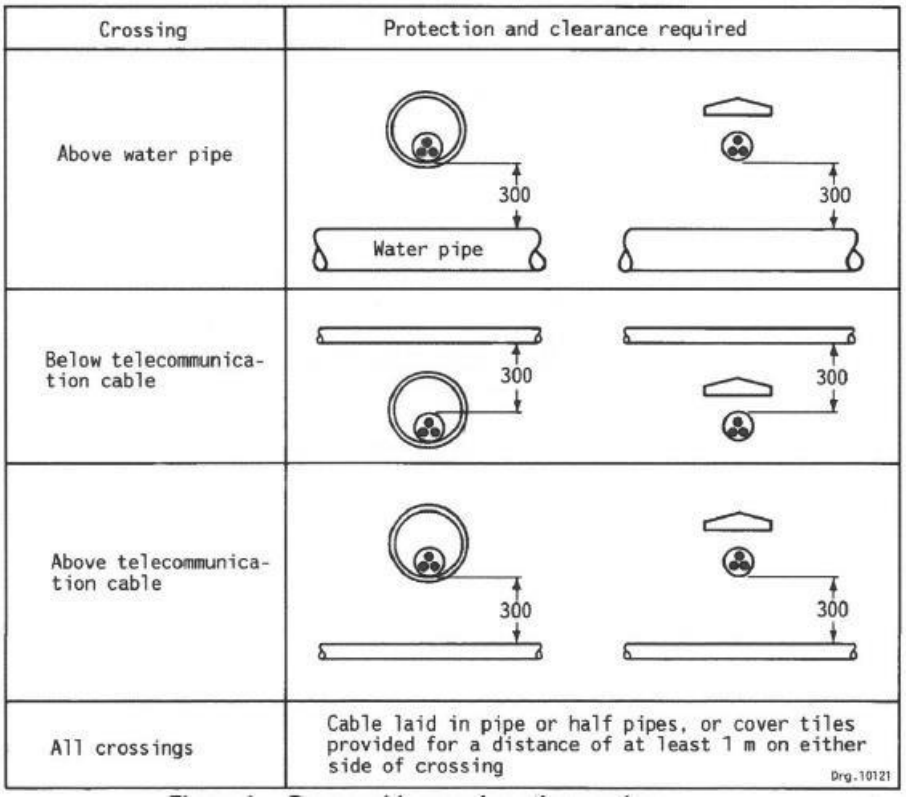

Figure 5: Power cable crossing other services

11. CABLE MARKERS

Cable markers shall be provided along all MV cable routes but need only be provided along LV cable routes where specified.

Cable markers shall consist of concrete blocks in the shape of truncated pyramids, approximately 300 mm high, 150 x 150 mm at the top and 250 x 250 mm at the bottom.

Metal plates shall be cast into the tops of the blocks in such a manner that they cannot be prised loose.

The wording "ELECTRIC CABLE/ELEKTRIESE KABEL" shall be stamped on the brass plates as well as direction arrows and the cable voltage rating.

Cable markers shall be installed on the surface along all the underground routes and shall project 35 mm above normal ground level unless the projected markers could be a hazard to pedestrian or other traffic in which case they shall be installed flush with the surface.

Cable markers shall be installed at the beginning and end of a cable run (e.g. where a cable enters a substation or building) at all changes of direction, above all joints, above cable pipe entries and exits and at intervals not exceeding 50 m along the cable route.

The position of cable markers shall be indicated on the "as built" drawings.

12. PROVINCIAL, NATIONAL ROAD OR RAILWAY CROSSINGS

The Contractor shall not trench beneath any railway tracks without the SAR Administration's supervision. The Contractor shall request the Engineer timeously to arrange for the necessary supervision. The cost of such supervision will be paid for by the Engineer.

The Engineer will arrange for the necessary wayleaves and permission to cross SAR property and railway tracks, or Provincial or National road reserves and Postal Authority approval of proposed cable routes. The Contractor shall be responsible for all wayleave costs, conditions and maintenance of wayleave validity.

The Contractor shall carry out the crossing installation in strict accordance with the SAR and Provincial Administration's requirements and stipulations. Where these requirements are in contradiction with this specification, the Engineer's ruling shall be sought.

The Contractor shall ensure that he will comply with the various Administrations' requirements regarding crossing of Provincial and National roads, especially with regard to the safeguarding of the public. The Contractor shall also provide proof of adequate insurance cover against any claim from any accident as a result of work done by the Contractor during the crossing operation. The Engineer shall also be indemnified from all liability in this regard.

The Contractor shall liaise with the various Administrations well in advance regarding the intended dates, times and expected duration of the crossing operations and obtain their approval of the programme and method of operation before commencing with the work.

13. TESTING

Factory test certificates for all MV cables shall be provided prior to delivery.

Type test certificates shall be provided by the contractor for cables to be used, certificates shall be in accordance with SANS 1507-3 (up to 1 kV) for PVC cables and SANS 97 (up to 11 kV) for XLPE cables and SANS 1339 for paper cables as well as the requirements of the Local and Supply Authorities.

All commissioning tests in accordance with SANS 10198-13 shall be performed following installation.

LV cables shall be tested by means of a suitable megger at 1 kV and the insulation resistance shall be tabulated and certified.

HV cables shall be pressure tested in accordance with the table below and the exact leakage current shall be tabulated and certified.

The Contractor shall make all arrangements, pay all fees and provide all equipment for these tests. The cost of testing shall have been included in the tender price.

The Contractor shall notify the Engineer timeously so that a representative of the Engineer may witness the tests.

Table 3: Commissioning test voltages for newly installed individually screened MV cables

1	2	3	4
Cable operating voltage	**VLF test voltage sine**	**VLF test voltage cosine rectangular**	**Power frequency test voltage**
kV	kV	kV	kV
6.6	11	16	8
11	19	27	13
22	38	54	25
33	57	80	38

NOTE 1: The voltages given are root mean square (r.m.s) values. The r.m.s. value of a cosine rectangular voltage is equal to the peak voltage.
NOTE 2: Where test levels cannot be achieved or where limitations are placed on the maximum test voltage by the equipment (e.g. switchgear) connected to the cable, a reduced voltage for an extended duration may need to be considered and agreed to.

Table 4: Commissioning test voltages for newly installed belted MV cables

1	2	3	4	5	6	7
Cable operating voltage	**Test Voltage**					
	Belted Cables					
	Between conductors			**From conductor to sheath**		
	VLF test voltage sine	**VLF test voltage cosine rectangular**	**Power frequency test voltage**	**VLF test voltage sine**	**VLF test voltage cosine rectangular**	**Power frequency test voltage**
kV	kV	kV	kV	kV	kV	kV
3,3/3,3	10	14	7	10	14	7
3,8/6,6	16	22	11	16	22	11
6,6/6,6	20	28	13	20	28	13
6,35/11	27	38	18	27	38	18
11/11	33	47	22	33	47	22

NOTE 1: The voltages given are root mean square (r.m.s.) values. The r.m.s. value of cosine rectangular voltage is equal to the peak voltage.

NOTE 2: Where test levels cannot be achieved or where limitations are placed on the maximum test voltage by the equipment (e.g. switchgear) connected to the cable, a reduced voltage for an extended duration may need to be considered and agreed to

NOTE 3: Single-phase test voltages used on site dictate that during the test on each core, the other cores, metallic screen and armouring should all be earthed. The test voltage will therefore be applied between the tested phase and the other phases, and at the same time between the tested phase and the metallic screen. Consequently, the between-conductors and from-conductor-to-sheath test voltages are equal.

14. COMPLETION

The Engineer reserves the right to inspect the installation at any stage during the course of construction. Such inspections will, however, not deem the portions inspected as being complete or accepted and the Contractor shall remain responsible for completing the installation fully in accordance with the Contract Documents.

The Contractor shall carry out a final "as built" survey of the cable routes and present to the Engineer "as built" route plans of the complete installation. The following information shall be reflected on the plans or submitted as separate schedules with the plans:

a) Overall length of each cable.
b) Locations (surveyed co-ordinates) of all joints (if any) in relation to permanent reference points. Dimensions shall be shown and the method of triangulation i.e., two dimensions to each joint, shall be used.
c) Identification of each cable and trans positioning points. The works will be deemed to be incomplete until all tests have been conducted successfully and all "as built" drawings and schedules have been handed to the Engineer.
d) Any deviations from a linear straight line due to obstructions.

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GSE14 – GENERAL SPECIFICATION ELECTRICAL

INSPECTION, TESTING AND HANDOVER

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1. MANUALS AND DATA RECORDS

All data pamphlets packed with equipment and other pamphlets, handbooks of equipment, operating instructions of equipment, drawings, etc., shall be kept in safe storage by the Contractor during the Contract period.

The Contractor shall also keep accurate records of all tests carried out on equipment and cables and of the test results achieved.

Records shall be kept of setting values of instrumentation and all readings taken during testing and commissioning, as well as records of all final adjustment readings or changed settings done during the maintenance period.

A comprehensive operational and maintenance hard copy manual shall be built up by the Contractor, using the data mentioned well as other data and descriptions as specified herein.

All drawings and diagrams shall be done in AUTOCAD 2010 (or later) format, and all text shall be submitted on the latest edition of Microsoft Word format. All tabular data shall be submitted on the latest edition of Microsoft Excel format. All pamphlet and brochure data shall be submitted in PDF format.

DXF files of other CAD programs can also be submitted, if these are suitable for conversion to AutoCAD format, without scrambling of text or graphics upon conversion.

The number of copies as scheduled in the Pricing Schedules or Bill of Quantities, of the manuals described herein, shall be made up by the Contractor. The quantity of copies required is normally not less than five (5).

The manuals shall be presented to the Engineer on the first day of "wet commissioning", if handover of the Works takes place on that day. The manuals shall be neatly housed in lever arch files and shall be in typewritten and/or printed format, properly indexed, with appropriate 2 or 3-layer card dividers between each section to facilitate ready reference.

A main index shall be placed in the beginning of each manual. The project name and project description shall appear at the top on the main index of the manual. Coloured dividers shall preferably be used.

The manuals and drawings shall cover all installation, operation, and maintenance schedule aspects of each item of equipment and all circuitry provided under this Contract, as specified.

The manuals, if approved, will be handed to the Employer or the representative of the Employer, so that the Works can be operated correctly and safely.
Any changes which may be necessary to the contents of the manual after the commissioning of the Works shall be done by the Contractor and sufficient copies of the altered data shall again be submitted to the Engineer for binding into the manuals. This process shall be repeated for the duration of the maintenance period or until the final certificate is issued by the Engineer for the project.

A "Practical Completion Certificate" and subsequent "Certificate of Commissioning" / "Handing over Certificate" will only be issued on receipt of accurate and final "as-built" drawings and documentation to the approval of the Engineer. Such documentation shall be presented to the Engineer on the first day of commissioning of the works. Any certification of "Practical Completion", "Commissioning"

or “Handing Over” of the works is subject to final approval of such documents and drawings by the Engineer.

Wherever manufacturer’s manuals refer to types of equipment other than the exact type as installed, the exact type shall be highlighted throughout such manuals.

2. DOCUMENTATION AND DRAWINGS

All documentation and drawings as specified in the general or equipment specification shall apply to this contract.

3. GENERAL REQUIREMENTS

A stringent requirement of a Contract is to have “as built” data when a contract is complete to ensure that:

a) The Employer knows where all the equipment and materials are installed
b) Fault finding in the system can be done in future
c) Alterations and additions can be undertaken in future by referring to the drawings to determine the built-in capacity of the system without having to determine this data on site.

It is therefore imperative for the Contractor to produce acceptable manufacturing drawings at the onset of a project so that equipment can be manufactured and ordered. Drawings such as layout drawings, single line diagrams, block diagrams, typical control diagrams, etc. are normally issued by the Engineer together with documents for tender purposes.

If no drawings or limited drawings are issued by the Engineer at tender stage or thereafter, the Contractor shall arrange a technical meeting or meetings with the Engineer to determine the exact scope of the work and shall then prepare the necessary drawings to enable him to manufacture the specified equipment. This shall include “shop” drawings, diagrams and/or constructional detail drawings.

The drawing or drawings prepared by the Contractor shall obviously make provision or include the drawings or standards normally used by the Contractor to produce acceptable quality of work. The Contractor shall further keep all drawings and diagrams prepared during the course of production and installation of the Works and shall present this to the Engineer on completion of the Contract. Such drawing shall at least consist of all the drawings the Contractor used for construction and installation work as well as all data of final positions and final settings of equipment.

All cable positions on the site of the Works shall be shown on layout drawings, together with dimensions taken on site from fixed points to show exact location of underground cables. Any diagrams (standards or specific) issued by the Engineer shall not be used by the Contractor for making up his own design drawings by adding data or wiring and terminal numbers to such diagrams.

The Contractor shall draw up and submit his own diagrams and general arrangement drawings in the formats and quantities as required by the Engineer. Hand drawn drawings will not be acceptable, except in the case where formal site layout plans are not available to mark-up equipment and cable positions. Drawings shall preferably be done in A3 booklet format and on the standard border and title block sheets of the Employer or the Engineer unless permission is granted in writing by the Engineer for other formats of title blocks.

All drawings shall be properly numbered with the numbering system required by the Employer or the Engineer and the number of the particular sheet and the total number of sheets shall be shown on each drawing.

The Contractor may use his own reference number in a separate block if the Engineer requires a special drawing numbering system. Standard drawing sheets in electronic format can be obtained from the Engineer, if available.

Electronic copies (soft copy), of all "as built" drawings prepared by the Contractor during the course of the Contract, as well as all electronic copies of software and descriptions of equipment, handbooks or sales data shall also be handed to the Engineer, together with the hard copy "as built" drawings and manuals, in quantities and formats as specified in the Project Specifications.

4. DRAWINGS FOR APPROVAL

A set of three (3) prints of the shop drawings for all equipment shall be submitted for approval before any of the aforementioned are manufactured.

3D Survey drawings of the existing infrastructure is available in .dwg format for this project. These drawings shall be made available to the contractor on which detail designs are to be populate for approval by the Engineer.

The following information shall be presented:

a) Single line diagrams for electrical, electronic and power circuits, showing rating of wiring, cables, switchgear, power supplies, current rating of all circuit breakers and fuses, VA rating of all power supplies, sizes, specifications and quantities of cables and cable cores with:
   - the rating, type number, catalogue number, ratio, class, etc. next to each component with the abbreviated reference number
   - the functions of each control circuit or section of control circuit, above each control group of components
   - the functions of each component on control diagrams below the component
   - wire and cable numbers for all control and power wiring together with the colours of all wires.

b) A general arrangement block diagram of the whole of the Works.
   - Overall dimensions together with material type and thickness used for the framework, doors and covers as well as the type and colour of finish of the material;
   - Front elevations and sections for all the panels and devices;
   - Positions of door locks, hinges, handles, vermin proofing, ventilation facilities, seals on doors and covers, etc.;
   - The IP ratings;
   - Placement positions of all front panel components on panels;
   - All labelling information for each component shall be shown in tabulated form on general arrangement drawings.

All drawings shall be done using NRS symbols and the applicable SANS standards for drawings plus any further requirements for drawings which may be bound into this document, and which may be required by the end user of the equipment.

The approval of drawings shall not relieve the Contractor of his responsibility to supply the works in according to the requirements of this specification and/or Project Specifications.

5. FINAL DRAWINGS AND INFORMATION

At least three (3) complete sets of "as built" drawings of all panels shall be submitted to the Engineer prior to the installation being handed over to the Employer.

A professional portfolio consisting of still images and details of the entire installation in operation shall be submitted.

A professional overview narrated video shall be submitted in editable soft copy format for marketing purposes

The drawings submitted shall preferably be in A3 format (in hard copy and on CD) and shall also be bound into the "Operational and Maintenance Manuals" as specified herein.

The following information shall be presented:

a) All the information as described in the section "Drawings for Approval", hereinbefore.
b) The final, updated drawings and diagrams specified showing the latest revisions after commissioning of the Works.
c) All final terminal strip numbers, numbers and colours of conductors connected to the terminal strips and numbers and colours of the conductors utilized for the internal wiring.
d) A separate schedule of all equipment with the name, manufacture, type, model- catalogue number of equipment, as well as the name, address, and telephone number of the supplier of each component.
e) All site and building layout drawings, showing sizes and positions of cables and equipment.
f) The site layout drawings showing cables shall be dimensioned using fixed points on site such as buildings, beacons, boundary walls, canals, poles, sumps, etc.

6. OPERATIONAL AND MAINTENANCE MANUALS

A minimum of three (3) complete sets (or as scheduled in the Schedules of Quantities) of operational and maintenance manuals for all specified Works.

Also refer to the section "Final Drawings" herein, regarding binding in of "as built" drawings into the required manuals.

7. DETAILED OPERATIONAL AND DESCRIPTIVE MANUAL

This manual shall contain the detailed descriptions of all equipment i.e., all proprietary assemblies, shall be provided to assist the user personnel of the Employer with advanced knowledge of the equipment for short-, medium- and long-term maintenance and operations of Works.

The descriptions must be complete in all respects and the Contractor shall also ensure that these manuals are prepared in such a manner that, in the opinion of the Engineer, a competent and qualified technician can trace any fault, identify any defective component, replace it with the correct spare part and follow, without difficulty, the exact function of every component.

To this end, care must be exercised to correlate the text with the circuit diagrams, to relate the diagrams one with another and to provide a simple method of diagnosis and test to be used wherever breakdowns

occur. The manuals shall also include block diagrams giving the layout of equipment as well as a description of the function and operation of every unit in the system.

The manuals shall be neatly prepared, in typewritten and/or printed format, indexed, with appropriate dividers between each section to facilitate ready reference. All documentation shall be presented in the English language.

The description shall, as a minimum requirement, include:

Operational and maintenance data, details of all assemblies or components of electrical and electronic equipment installed in the Works. Copies of operational manuals of manufacturers can be inserted in these descriptions. In the case of insufficient descriptions in manuals of manufacturers, the Contractor shall provide additional descriptions to enable maintenance of the equipment.

The descriptions shall include:

a) Technical details of all equipment installed
b) A complete description of the operation of all equipment.
c) A parts and spares list of every item of equipment together with a description of the item, the name, address and telephone number of the original supplier or wholesaler of the equipment. Brochures may be added as additional information but must not replace the data required.
d) Complete equipment schematics
e) All manufacturers' handbooks having reference to the equipment
f) Installation test and alignment procedures
g) All circuit diagrams
h) All interconnection and inter cabling diagrams
i) Complete trouble shooting procedures and any other information deemed necessary to permit rapid and efficient maintenance of any part of the equipment by a qualified technician.
j) Concrete Strength Test Result (7 & 28 days)
k) Commissioning Reports for LV Network.
l) Aiming Certificate.
m) Survey of illumination levels.

The operating procedures contained in the manuals shall contain the following detailed features in fully descriptive format:

a) Operating Procedures
    - Pre-power-up checks of all equipment
    - Routine running attention
    - Shutting down the works or parts thereof
    - Prolonged shut-down of the works
    - Re-commissioning of the works after repairs, maintenance or prolonged shut-down.

b) Maintenance
    - Routine maintenance procedures
        - Description
        - Schedule
    - Preventative maintenance

c) Fault Finding Procedures
    - Power supply faults

- Control faults
- Investigation procedure for detection of faults and remedies:
  - Symptom
  - Probable fault
  - Remedy

d) Safety Precautions
- The nature of each hazard
- The level of seriousness
- How to avoid the hazard
- The possible consequences of not avoiding the hazard

In the case of sealed assemblies or advanced assemblies of equipment that cannot be opened or maintained or repaired onsite, the Contractor shall provide sufficient data and instructions for the replacement of the assembly and shall further describe the measures which the user or operator of the works can follow to operate the Works in an emergency and, if necessary, operate the works manually, to overcome total shut-down or non-operation of the Works until a new replacement can be installed.

The descriptions for operational measures shall be of sufficient nature to enable safe operating conditions of the works and shall further not be of a nature which shall cause damage to other parts or sections of the Works:

a) A schedule of every item of equipment in the Works or panels together with a description of the item, part number, catalogue number, etc., as well as the name, address and telephone number of the original supplier or wholesaler of the equipment. Brochures may be added as additional information but must not replace the data required.
b) All as-built record drawings, including AC and/or DC schematic and wiring diagram drawings for the equipment. The wiring diagrams shall contain all the terminal numbers and wire numbers of all wiring in the Works. Also refer to "5 FINAL DRAWINGS" hereof. A4 drawings may be used in manuals but all text must be clearly legible. A3 drawing sizes are preferred.
c) Technical brochures and pamphlets of equipment as additional information.
d) Routine and type test certificates issued by factories.
e) All calibration and setting data of electronics and instrumentation. This data shall also contain all the embedded software, on disc or CD, issued together with the instruments as part and parcel of the selling price of instruments where the instruments cannot be purchased without the embedded software.

8. PHYSICAL INSPECTION PROCEDURE

Once the Contractor has completed the installation, written notice shall be given to the Engineer in order that a mutually acceptable date can be arranged for a joint inspection.

During the course of the inspection, the representative of the Engineer will compile a list of items (if any) requiring further attention. A copy of this list will be provided to the Contractor who will have a period of 7 days in which to rectify the offending items of the installation.

The Contractor shall then provide written notice that he is ready for an inspection of the remedial work to the offending items.

This procedure will continue until the entire installation has been completed to the satisfaction of the Engineer.

9. TESTING AND TEST EQUIPMENT

All materials and workmanship shall be of the respective kinds described in the Contract and in accordance with the Engineer's instructions and shall be subjected from time to time to such tests and by such persons as the Engineer may direct at the place of manufacture or fabrication or on the site or at all or any of such places. Except as otherwise provided in the Specification the Contractor shall supply such assistance, accommodation, instruments, machines, labour and materials as are normally required for examining, measuring and testing of any work and the quality, mass or quantity of any materials used and shall supply samples of materials before incorporation in the works for testing as may be selected and required by the Engineer.

All samples shall be supplied by the Contractor at his own cost if the supply thereof is clearly intended by or provided for in the Specification but if not, then at the cost of the Employer.

The cost of performing any test shall be borne by the Contractor if such test is clearly intended by or provided for in the Specification and (in the case of a test under load or a test to ascertain whether the design of any finished or partly finished work is appropriate for the purposes which it was intended to full fill if such is particularised in the Specification in sufficient detail to enable the Contractor to price or allow for the same in his Contract Price.

If any test is ordered by the Engineer which is either -

a) not so intended by or provided for; or
b) not so particularised; or
c) though so intended by or provided for is ordered by the Engineer to be carried out by an independent person or body at any other place than the site or the place of manufacture or fabrication of the materials or equipment tested;
d) Then the cost of such test shall be borne by the Contractor if the test shows the workmanship or materials not to be in accordance with the provisions of the Contract or the Engineer's instructions, but otherwise by the Employer.

The Contractor shall keep records of all the data of tests and shall submit this data to the Engineer upon completion of all tests. Tests carried out in the factory of the manufacturer or at a testing facility shall be done in accordance with the prescribed standards for such tests.

The applicable standards for such tests shall be SANS, BSI, IEC, DIN, NEMA or such acceptable standard as may be applicable to the product or equipment or assembly.
The Engineer will have the right to obtain a quotation from the Contractor for any special tests which are required by him and to instruct the Contractor to carry out such tests.

If equipment should fail a standard or prescribed standard test by a testing authority, the cost thereof shall be for the account of the Contractor.

10. SITE TESTS AND INSPECTIONS

The inspections of the Engineer of any part of an installation or Works on site does not exempt the Contractor from his responsibilities in terms of the Contract. The Engineer will only accept the completed installation work after having received all test results, commissioning results and certificates of compliance or test certificates on completion of the whole of the Works.

Any abnormal condition, beyond the control of the Contractor, which may come to the attention of the Contractor during any preliminary or final tests or commissioning procedures shall immediately be reported to the Engineer.

The Contractor shall not allow equipment of other contractors to stay connected to or operate with electric power from his installation if any equipment of other contractors do not operate normally or within the limits laid down by the manufacturer of equipment for other contractors.

11. COMMISSIONING

Commissioning on site shall include the following actions and shall be done with the Engineer present and shall require the presence of the Contractor for as long as it is necessary to carry out all the actions hereunder or as may be further required by the Engineer or the Client.

a) The system shall be connected to the power supplies and shall operate and communicate as specified in the Project Specification.
b) Power protection equipment shall be set by the Contractor in the presence of the Engineer. All the settings shall be recorded by the Contractor for handing over to the Engineer after commissioning.
c) All earthing installation work must be completed.
d) Communication signals and/or remote-control signals shall be tested to ensure that Works are integrated as a complete system and functioning correctly. The communication of signals between the site Works and a remote-control room or station shall be verified.
e) All safety checks and tests of power equipment must be completed.
f) The number of required maintenance and operational manuals (complete in all respects) shall be handed over to the Engineer.
g) The spares and tools (if applicable) shall be on site together with inventory sheets, ready for signature of the recipient party.
h) All panels and electronic equipment shall be clean and neat and wiring shall be neat and strapped. No loose hanging wiring will be acceptable.
i) All labelling shall be complete.
j) All cable trunking lids or covers shall be in place and all draw box covers and lids shall be screwed down.
k) A Certificate of Compliance for all 230V work shall have been handed to the power supply authority with a copy on site for the Engineer.
l) The Contractor shall hand all the test results of equipment which was logged by him together with the settings of such equipment to the Engineer. This information shall be made available on properly structured test sheets and log sheets and shall be dated and signed by the Contractor.
m) Any small items such as alterations to labels, faulty electronic equipment, etc. shall be recorded for repairs.
n) The Contractor shall then proceed with training of the operating personnel of the Employer as may be required in the Project Specification.

No last-minute repairs or installation work shall be done by the Contractor on the day of commissioning of the Works:

The successful completion of all the above shall be regarded as the “first hand over day” of the Works to the User or Owner of the installation. The retention period of the Works normally starts on that day, unless abnormal conditions prevent the handing over of the Works to the Client.

An abnormal occurrence preventing handing over will not be seen as failure of the Contractor in this respect. If the commissioning should have to be stopped or abandoned due to the failure of the Contractor to complete the Works and have the Works ready for inspection or as stated above, then the further costs for re-commissioning later will be for the Contractor's account. Such costs will include all the travelling, accommodation and time rate costs of the Engineer or the Client.
The Works will not be regarded as being commissioned if all of the above requirements are not met on the day of commissioning of the Works.

The Contractor shall only apply for inspection by the Engineer once the Contractor have completed his own inspections and rectified snags identified. For Site Acceptance testing should the works or equipment not be in a ready state to be commissioned the Engineers cost for all re-inspections shall be for the Contractors account according to the latest gazetted fee scales as provided by the Engineering Council of South Africa.

12. TRAINING OF PERSONNEL

The training of personnel of the Employer or User of the Works shall only be applicable to the Contract. Training provided by the Contractor and OEM shall be directly applicable to the actual equipment to be used at the installation. Training shall be carried out on site and at the OEM's works. The priced unit rates in the bill of quantities shall allow for all travel, accommodation and living expenses.

All of the training shall be presented by the OEM and allowed for by the contractor in the bill of quantity's unit rates.

Operators of the installed equipment shall be trained by The Contractor to safely and successfully operate the equipment and controls.

This training course shall include the training of technical personnel of the Employer during the installation period and commissioning stages of equipment on site to make the technical staff and or skilled operators completely conversant with the installed equipment and the use thereof.

The Employer thus reserves the right to appoint certain staff to the Contractor's team during the installation and commissioning phase of the work for training as described in the previous paragraph. The Employer will bear the cost of salaries, accommodation and other allowances and traveling expenses of its personnel, but all other expenses to allow the personnel to attend the said training on site shall be borne by the Contractor.

The Employer may also decide to request the Contractor to make use of the ability of the staff of the Employer to assist with physical installation and commissioning work, and in such instance the Engineer will instruct the Contractor accordingly.

The Contractor shall provide all course material including manuals and training data in this case, and shall present well prepared lectures of the courses in locations which suite the Employer.

Advanced training courses shall proceed within one month after date of first hand-over of the particular section of the Works.

The Contractor shall price the items allowed for training in the Bill of Quantities of the tender document.

At conclusion of any training period, either for the operation and maintenance of equipment, or for advanced software and programming, the Contractor shall issue the necessary certificates at the end of the course and/or a signed statement to the effect that these training sessions were adequate.
The tenderer shall also be responsible for arranging formal training by the agency, distributor or accredited supplier for all specified equipment offsite as well as on site, which will be attended by the Maintenance Personnel of the Employer and the Engineers Representatives. The offsite training shall be held at a premise of the supplier. The number of delegates will be as specified in the BoQ.

Training shall be provided in a class room environment, the OEM shall provide relays or equipment for each delegate attending the training session which will allow for practical interaction with various control, monitoring and measuring equipment. Training material shall include the necessary equipment manuals and software.

Training content shall be approved by the original equipment supplier if the supplier is not the original equipment manufacturer.

Training shall as a minimum have the following objectives.

- Enable the trainee to operate the equipment with confidence.
- Ensure that equipment shall be correctly maintained.

Training shall be provided for the following equipment:

- All IED’s in the substation
- All measuring equipment used in the substation
- All switchgear and operation sequences

The tenderer shall also arrange training and testing in the relevant ORHVS modules required to operate and maintain HV Voltage equipment. The ORHVS training shall be done at an accredited institution and an ORHVS Authorisation Certificate shall be issued to the successful delegates. Training shall be in accordance with all parts of NRS 040.

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GSE15 – GENERAL SPECIFICATION ELECTRICAL

PAINT STANDARD

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1. GENERAL

This specification covers the standard paint requirement for electrical equipment.

2. NORMATIVE REFERENCES

The following documents contain provisions that constitutes requirements of this specification. 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. Information on currently valid national and international standards can be obtained from the SABS Standards Division.

- SANS 1091 : National colour standard
- SANS 10064 : The preparation of steel surfaces for coating.

3. FINISH REQUIRED

Metalwork of electrical equipment such as switchboards, equipment enclosures, sheet steel luminaire components, purpose-made boxes, etc., shall be finished with a high-quality paint applied according to the best available method. Baked enamel, electrostatically applied powder coating or similar proven methods shall be used.

4. CORROSION RESISTANCE

Painted metal shall be corrosion resistant for a period of at least 168 hours when tested in accordance with the relevant SANS standard.

5. EDGES

Care shall be taken to ensure that all edges and corners are properly covered.

6. SURFACE PREPARATION

Surface preparation shall comply with SANS 10064. Prior to painting, all metal parts shall be thoroughly cleaned of rust, mill scale, grease, and foreign matter to a continuous metallic finish. Sand or shot blasting or acid pickling and washing shall be employed for this purpose.

7. BAKED ENAMEL FINISH

Immediately after cleaning all surfaces shall be covered by a rust inhibiting, tough, unbroken metal-phosphate film and then thoroughly dried.

Within forty-eight (48) hours after phosphating, a passivating layer consisting of a high-quality zinc chromate primer shall be applied, followed by two coats of high-quality alkyd-based baked enamel.

The minimum paint thickness after baking shall be 0,1 mm. The dry film thickness shall be increased in coastal areas.

The paint shall have an impact resistance of 5,65 J on cold-rolled steel plate and a scratch resistance of 2 kg.

8. POWDER COATED FINISH

Immediately after cleaning the metal parts shall be pre-heated and then covered by a micro structured paint powder applied electrostatically.

The paint shall be baked on and shall harden within 10 minutes at a temperature of 190°C.

The minimum paint thickness after baking shall be 0,1 mm. The dry film thickness shall be increased in coastal areas.

The paint cover shall have an impact resistance of 5,65 J on cold-rolled steel plate and a scratch resistance of 2 kg.

9. TOUCH-UP PAINT

In the case of switchboards and larger equipment enclosures, a tin of matching touch-up paint not smaller than 1 litre shall be provided.

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C4 – SITE INFORMATION

C4. SITE INFORMATION

The site falls within the jurisdiction of Midvaal Local Municipality.

The Contractor shall cater for his own water, electricity and sanitation requirements.

The onus will be on the Contractor to acquaint himself with the site conditions before the tender closing date.

It is recorded that the Contractor has, before signature of this Contract, carried out a site inspection in order to acquaint itself with the site conditions, access and all other matters relating to the site.

The contractor acknowledges that it has allowed for all conditions on site and agrees that extra claims arising from difficult site conditions in respect of transport, handling, loading, off-loading, labour, housing and any other matter relating to the site will not be entertained.

SIGNATURE OF TENDERER : ……..

DATE : ……..

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MIDVAAL LOCAL MUNICIPALITY
P O Box 9
MEYERTON
1960

BID 8/2/2/444 (6EP/5EPPE OR HIGHER) FOR THE APPOINTMENT OF A SERVICE PROVIDER FOR THE ELECTRIFICATION OF FORMAL AND INFORMAL SETTLEMENTS IN MIDVAAL LOCAL MUNICIPALITY ON AN AS AND WHEN REQUIRED BASIS FROM 1 JULY 2025 TO 30 JUNE 2028

SECTION 6:
ANNEXURES

LIST OF ANNEXURES

ANNEXURE 1: EMPLOYER HEALTH & SAFETY SPECIFICATION

ANNEXURE 2: EMPLOYER ENVIRONMENTAL MANAGEMENT PLAN

ANNEXURE 1:
HEALTH AND SAFETY SPECIFICATION

ANNEXURE 2:
ENVIRONMENTAL SPECIFICATION