



public works
& infrastructure

Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

TENDER NO.: BL22/007

PROCUREMENT DOCUMENTS

FOR

TSEKI & TSESENG MAGISTRATE'S OFFICES: INSTALLATION OF BACK-UP GENERATOR

VOLUME 2 OF 3: RETURNABLE DOCUMENTS

DEPARTMENT OF PUBLIC WORKS

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ENQUIRIES

NAME: Mr C. VAN HEERDEN
TEL: 051 408 7490
REF:

NAME OF TENDERER: _____

CIDB NO.: _____

CSD NO.: _____

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T2.1 List of Returnable Documents

Document ID	Document Name	Document Type	Document Status	Document Location	Document Date	Document Author
T2.1.1	T2.1.1.1	T2.1.1.1.1	T2.1.1.1.1.1	T2.1.1.1.1.1.1	T2.1.1.1.1.1.1.1	T2.1.1.1.1.1.1.1.1
T2.1.2	T2.1.2.1	T2.1.2.1.1	T2.1.2.1.1.1	T2.1.2.1.1.1.1	T2.1.2.1.1.1.1.1	T2.1.2.1.1.1.1.1.1
T2.1.3	T2.1.3.1	T2.1.3.1.1	T2.1.3.1.1.1	T2.1.3.1.1.1.1	T2.1.3.1.1.1.1.1	T2.1.3.1.1.1.1.1.1
T2.1.4	T2.1.4.1	T2.1.4.1.1	T2.1.4.1.1.1	T2.1.4.1.1.1.1	T2.1.4.1.1.1.1.1	T2.1.4.1.1.1.1.1.1
T2.1.5	T2.1.5.1	T2.1.5.1.1	T2.1.5.1.1.1	T2.1.5.1.1.1.1	T2.1.5.1.1.1.1.1	T2.1.5.1.1.1.1.1.1
T2.1.6	T2.1.6.1	T2.1.6.1.1	T2.1.6.1.1.1	T2.1.6.1.1.1.1	T2.1.6.1.1.1.1.1	T2.1.6.1.1.1.1.1.1
T2.1.7	T2.1.7.1	T2.1.7.1.1	T2.1.7.1.1.1	T2.1.7.1.1.1.1	T2.1.7.1.1.1.1.1	T2.1.7.1.1.1.1.1.1
T2.1.8	T2.1.8.1	T2.1.8.1.1	T2.1.8.1.1.1	T2.1.8.1.1.1.1	T2.1.8.1.1.1.1.1	T2.1.8.1.1.1.1.1.1
T2.1.9	T2.1.9.1	T2.1.9.1.1	T2.1.9.1.1.1	T2.1.9.1.1.1.1	T2.1.9.1.1.1.1.1	T2.1.9.1.1.1.1.1.1
T2.1.10	T2.1.10.1	T2.1.10.1.1	T2.1.10.1.1.1	T2.1.10.1.1.1.1	T2.1.10.1.1.1.1.1	T2.1.10.1.1.1.1.1.1
T2.1.11	T2.1.11.1	T2.1.11.1.1	T2.1.11.1.1.1	T2.1.11.1.1.1.1	T2.1.11.1.1.1.1.1	T2.1.11.1.1.1.1.1.1
T2.1.12	T2.1.12.1	T2.1.12.1.1	T2.1.12.1.1.1	T2.1.12.1.1.1.1	T2.1.12.1.1.1.1.1	T2.1.12.1.1.1.1.1.1
T2.1.13	T2.1.13.1	T2.1.13.1.1	T2.1.13.1.1.1	T2.1.13.1.1.1.1	T2.1.13.1.1.1.1.1	T2.1.13.1.1.1.1.1.1
T2.1.14	T2.1.14.1	T2.1.14.1.1	T2.1.14.1.1.1	T2.1.14.1.1.1.1	T2.1.14.1.1.1.1.1	T2.1.14.1.1.1.1.1.1
T2.1.15	T2.1.15.1	T2.1.15.1.1	T2.1.15.1.1.1	T2.1.15.1.1.1.1	T2.1.15.1.1.1.1.1	T2.1.15.1.1.1.1.1.1
T2.1.16	T2.1.16.1	T2.1.16.1.1	T2.1.16.1.1.1	T2.1.16.1.1.1.1	T2.1.16.1.1.1.1.1	T2.1.16.1.1.1.1.1.1
T2.1.17	T2.1.17.1	T2.1.17.1.1	T2.1.17.1.1.1	T2.1.17.1.1.1.1	T2.1.17.1.1.1.1.1	T2.1.17.1.1.1.1.1.1
T2.1.18	T2.1.18.1	T2.1.18.1.1	T2.1.18.1.1.1	T2.1.18.1.1.1.1	T2.1.18.1.1.1.1.1	T2.1.18.1.1.1.1.1.1
T2.1.19	T2.1.19.1	T2.1.19.1.1	T2.1.19.1.1.1	T2.1.19.1.1.1.1	T2.1.19.1.1.1.1.1	T2.1.19.1.1.1.1.1.1
T2.1.20	T2.1.20.1	T2.1.20.1.1	T2.1.20.1.1.1	T2.1.20.1.1.1.1	T2.1.20.1.1.1.1.1	T2.1.20.1.1.1.1.1.1
T2.1.21	T2.1.21.1	T2.1.21.1.1	T2.1.21.1.1.1	T2.1.21.1.1.1.1	T2.1.21.1.1.1.1.1	T2.1.21.1.1.1.1.1.1
T2.1.22	T2.1.22.1	T2.1.22.1.1	T2.1.22.1.1.1	T2.1.22.1.1.1.1	T2.1.22.1.1.1.1.1	T2.1.22.1.1.1.1.1.1
T2.1.23	T2.1.23.1	T2.1.23.1.1	T2.1.23.1.1.1	T2.1.23.1.1.1.1	T2.1.23.1.1.1.1.1	T2.1.23.1.1.1.1.1.1
T2.1.24	T2.1.24.1	T2.1.24.1.1	T2.1.24.1.1.1	T2.1.24.1.1.1.1	T2.1.24.1.1.1.1.1	T2.1.24.1.1.1.1.1.1
T2.1.25	T2.1.25.1	T2.1.25.1.1	T2.1.25.1.1.1	T2.1.25.1.1.1.1	T2.1.25.1.1.1.1.1	T2.1.25.1.1.1.1.1.1
T2.1.26	T2.1.26.1	T2.1.26.1.1	T2.1.26.1.1.1	T2.1.26.1.1.1.1	T2.1.26.1.1.1.1.1	T2.1.26.1.1.1.1.1.1
T2.1.27	T2.1.27.1	T2.1.27.1.1	T2.1.27.1.1.1	T2.1.27.1.1.1.1	T2.1.27.1.1.1.1.1	T2.1.27.1.1.1.1.1.1
T2.1.28	T2.1.28.1	T2.1.28.1.1	T2.1.28.1.1.1	T2.1.28.1.1.1.1	T2.1.28.1.1.1.1.1	T2.1.28.1.1.1.1.1.1
T2.1.29	T2.1.29.1	T2.1.29.1.1	T2.1.29.1.1.1	T2.1.29.1.1.1.1	T2.1.29.1.1.1.1.1	T2.1.29.1.1.1.1.1.1
T2.1.30	T2.1.30.1	T2.1.30.1.1	T2.1.30.1.1.1	T2.1.30.1.1.1.1	T2.1.30.1.1.1.1.1	T2.1.30.1.1.1.1.1.1
T2.1.31	T2.1.31.1	T2.1.31.1.1	T2.1.31.1.1.1	T2.1.31.1.1.1.1	T2.1.31.1.1.1.1.1	T2.1.31.1.1.1.1.1.1
T2.1.32	T2.1.32.1	T2.1.32.1.1	T2.1.32.1.1.1	T2.1.32.1.1.1.1	T2.1.32.1.1.1.1.1	T2.1.32.1.1.1.1.1.1
T2.1.33	T2.1.33.1	T2.1.33.1.1	T2.1.33.1.1.1	T2.1.33.1.1.1.1	T2.1.33.1.1.1.1.1	T2.1.33.1.1.1.1.1.1
T2.1.34	T2.1.34.1	T2.1.34.1.1	T2.1.34.1.1.1	T2.1.34.1.1.1.1	T2.1.34.1.1.1.1.1	T2.1.34.1.1.1.1.1.1
T2.1.35	T2.1.35.1	T2.1.35.1.1	T2.1.35.1.1.1	T2.1.35.1.1.1.1	T2.1.35.1.1.1.1.1	T2.1.35.1.1.1.1.1.1
T2.1.36	T2.1.36.1	T2.1.36.1.1	T2.1.36.1.1.1	T2.1.36.1.1.1.1	T2.1.36.1.1.1.1.1	T2.1.36.1.1.1.1.1.1
T2.1.37	T2.1.37.1	T2.1.37.1.1	T2.1.37.1.1.1	T2.1.37.1.1.1.1	T2.1.37.1.1.1.1.1	T2.1.37.1.1.1.1.1.1
T2.1.38	T2.1.38.1	T2.1.38.1.1	T2.1.38.1.1.1	T2.1.38.1.1.1.1	T2.1.38.1.1.1.1.1	T2.1.38.1.1.1.1.1.1
T2.1.39	T2.1.39.1	T2.1.39.1.1	T2.1.39.1.1.1	T2.1.39.1.1.1.1	T2.1.39.1.1.1.1.1	T2.1.39.1.1.1.1.1.1
T2.1.40	T2.1.40.1	T2.1.40.1.1	T2.1.40.1.1.1	T2.1.40.1.1.1.1	T2.1.40.1.1.1.1.1	T2.1.40.1.1.1.1.1.1
T2.1.41	T2.1.41.1	T2.1.41.1.1	T2.1.41.1.1.1	T2.1.41.1.1.1.1	T2.1.41.1.1.1.1.1	T2.1.41.1.1.1.1.1.1
T2.1.42	T2.1.42.1	T2.1.42.1.1	T2.1.42.1.1.1	T2.1.42.1.1.1.1	T2.1.42.1.1.1.1.1	T2.1.42.1.1.1.1.1.1
T2.1.43	T2.1.43.1	T2.1.43.1.1	T2.1.43.1.1.1	T2.1.43.1.1.1.1	T2.1.43.1.1.1.1.1	T2.1.43.1.1.1.1.1.1
T2.1.44	T2.1.44.1	T2.1.44.1.1	T2.1.44.1.1.1	T2.1.44.1.1.1.1	T2.1.44.1.1.1.1.1	T2.1.44.1.1.1.1.1.1
T2.1.45	T2.1.45.1	T2.1.45.1.1	T2.1.45.1.1.1	T2.1.45.1.1.1.1	T2.1.45.1.1.1.1.1	T2.1.45.1.1.1.1.1.1

PA-09 (EC): LIST OF RETURNABLE DOCUMENTS

Project title:	Tseki and Tseseng Magistrates Offices: Installation of back-up generator		
Tender / Quote no:	BL22/007	Reference no:	
Receipt Number:			

1. RETURNABLE DOCUMENTS REQUIRED FOR TENDER EVALUATION PURPOSES

Note: Failure to submit the applicable documents will result in the tender offer being disqualified from further consideration.

Tender document name	Number of pages issued	Returnable document
Form of Offer and Acceptance (DPW-07 EC)	4 Pages	Yes
Declaration of Interest and Tenderer's Past Supply Chain Management Practices (PA-11)	4 Pages	Yes
Resolution of Board of Directors (PA-15.1) (if applicable)	1 Page	Yes
Resolution of Board of Directors to enter into Consortia or JV's (PA-15.2) (if applicable)	2 Pages	Yes
Special Resolution of Consortia or JV's (PA-15.3) (if applicable)	3 Pages	Yes
Preference points claim form in terms of the Preferential Procurement Regulations 2017 (PA – 16)	5 Pages	Yes
Certificate of independent Bid Determination (PA – 20)	4 Pages	Yes
Declaration Certificate for Local Production and Content for designated sectors (PA – 36 and Annexure/s C)		Yes
Fully completed Declaration of Designated Groups for Preferential Procurement (PA 40)	2 Pages	Yes
Registration on National Treasury's Central Supplier Database (CSD).	-	Yes
Particulars of Tenderer's Projects (DPW-09 EC)	2 Pages	Yes
Site Inspection Meeting Certificate (DPW-16 EC) (if applicable).	1 Page	No
Record of attending compulsory virtual bid clarification / site inspection meeting (if applicable).	1 Page	No
Record of Addenda to tender documents (DPW-21 EC)	1 Page	Yes
Site Inspection Meeting Certificate (DPW-16 EC) (if applicable)	1 Page	No
Proof of 30% Subcontracting participation and related documents in terms of the Preferential Procurement Regulations 2017 (if applicable).		No
PA36: Declaration Certificate for Local Production and Content for Designated sectors	4 Pages	Yes
Steel products (1 annex C,D,E)	4 Pages	Yes
Low voltage electrical cables (2 annex C,D,E)	4 Pages	Yes
HDPE pipes (3 annex C,D,E)	3 Pages	Yes
Valve products (4 annex C,D,E)	3 Pages	Yes
Declaration of cement local content	1 Page	Yes

* In compliance with the requirements of the CIDB SFU Annexure G

Tender no: **BL22/007**

2. ADDITIONAL RETURNABLE DOCUMENTS REQUIRED FOR TENDER EVALUATION PURPOSES

Note: Failure to submit the applicable documents will result in the Tenderer having to submit same upon request within a stipulated time and if not complied with, will result in the tender offer being disqualified from further consideration. [See also C.2.18 of the Standard Conditions of Tender]

Tender document name	Number of pages issued	Returnable document
Any <u>additional</u> information required to complete a risk assessment (if applicable)	-	Yes

3. RETURNABLE DOCUMENTS THAT WILL BE INCORPORATED INTO THE CONTRACT

Note: Failure to submit the applicable documents will result in the Tenderer having to submit same upon request within a stipulated time and if not complied with, will result in the tender offer being disqualified from further consideration. [See also C.2.18 of the Standard Conditions of Tender]

Tender document name	Number of pages issued	Returnable document
Schedule of proposed sub-contractors (DPW-15 EC) (if applicable)	1 Page	Yes
Particulars of Electrical Contractor (DPW-22 EC) (if applicable)	1 Page	Yes
Mechanical / Electrical / Security Work material and equipment schedules (if applicable)	124 Pages	Yes
Schedule for Imported Materials and Equipment (DPW-23 EC) (if applicable)	1 Page	Yes

4. OTHER DOCUMENTS THAT WILL BE INCORPORATED INTO THE CONTRACT

(Insert a tick in the "Returnable document" column to indicate which documents must be returned with the tender)

Note: Failure to submit the applicable documents will result in the tender offer being disqualified from further consideration.

Tender document name	Number of pages issued	Returnable document
Priced Bills of Quantities / Lump Sum Document (complete document inclusive of all parts)	55 Pages	☒ Yes ☐ No
Fully priced and completed sectional summary- and final summary pages with the tender.	Pages	☐ Yes ☐ No
	Pages	☐ Yes ☐ No

	Pages	☐ Yes ☐ No
<i>insert document name</i>	Pages	☐ Yes ☐ No

Tender no: **BL22/007**

5. ADDITIONAL INFORMATION THAT MAY BE REQUIRED FOR TENDER EVALUATION PURPOSES

Legal Status of Tendering Entity: If the Tendering Entity is:	Documentation to be submitted with the tender, or which may be required during the tender evaluation:
a. A close corporation, incorporated prior to 1 May 2011 under the Close Corporations Act, 1984 (Act 69 of 1984, as amended)	Copies of the Founding Statement – CK1
b. A profit company duly registered as a private company. [including a profit company that meets the criteria for a private company, whose Memorandum of Incorporation states that the company is a personal liability company in terms of Section 8(2)(c) of the Companies Act, 2008 (Act 71 of 2008, as amended)].	Copies of: i. Certificate of Incorporation – CM1; ii. Shareholding Certificates of all Shareholders of the company, plus a signed statement of the company's Auditor, certifying each Shareholder's ownership / shareholding percentage relative to the total; and/or iii. Memorandum of Incorporation in the case of a personal liability company.
c. A profit company duly registered as a private company in which any, or all, shares are held by one or more other close corporation(s) or company(ies) duly registered as profit or non-profit company(ies).	Copies of documents referred to in a. and/or b. above in respect of all such close corporation(s) and/or company(ies).
d. A profit company duly registered as a public company.	Copy of Certificate of Incorporation – CM1, and a signed statement of the company's Secretary or Auditor confirming that the company is a public company.
e. A non-profit company, incorporated in terms of Section 10 and Schedule 1 of the Companies Act, 2008 (Act 71 of 2008, as amended).	Copies of: i the Founding Statement – CK1; and ii the Memorandum of Incorporation setting out the object of the company, indicating the public benefit, cultural or social activity, or communal or group interest.
f. A natural person, sole proprietor or a Partnership	Copy(ies) of the Identity Document(s) of: i. such natural person/ sole proprietor, or each of the Partners to the Partnership.
g. A Trust	Deed of Trust duly indicating names of the Trustee(s) and Beneficiary (ies) as well as the purpose of the Trust and the mandate of the Trustees.

Signed by the Tenderer:

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Name of representative	Signature	Date
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C1.1 Form of Offer and Acceptance

DPW-07 (EC): FORM OF OFFER AND ACCEPTANCE

Project title:	<i>Tseki and Tseseng Magistrate's Offices: Installation of back-up generators</i>		
Tender / Quotation no:	BL22/007	Reference no:	

OFFER

The Employer, identified in the acceptance signature block, has solicited offers to enter into a contract for the procurement of:

A back-up generator for Tseki Magistrates Court & a back-up generator for Tseseng Magistrates Court

The Tenderer, identified in the offer signature block, has examined the documents listed in the tender data and addenda thereto as listed in the returnable schedules, and by submitting this offer has accepted the conditions of tender.

By the representative of the Tenderer, deemed to be duly authorized, signing this part of this form of offer and acceptance, the Tenderer offers to perform all of the obligations and liabilities of the Contractor under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of contract identified in the contract data.

THE TOTAL OFFER INCLUSIVE OF ALL APPLICABLE TAXES (All applicable taxes" includes value- added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies) **IS:**

Rand (in words):	
Rand in figures:	R

The amount in words takes precedence over the amount in figures. The award of the tender may be subjected to further price negotiation with the preferred tenderer(s). The negotiated and agreed price will be considered for acceptance as **a firm and final offer**.

This offer may be accepted by the Employer by signing the acceptance part of **this form of offer and acceptance** and returning one copy of this document to the Tenderer before the end of the period of **validity stated in the tender data**, whereupon the Tenderer becomes the party named as the Contractor in the **conditions of contract identified in the contract data**.

THIS OFFER IS MADE BY THE FOLLOWING LEGAL ENTITY: (cross out block which is not applicable)

Company or Close Corporation: And: Whose Registration Number is: And: Whose Income Tax Reference Number is: CSD supplier number:	OR	Natural Person or Partnership: Whose Identity Number(s) is/are: Whose Income Tax Reference Number is/are: CSD supplier number:
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*Any reference to words "Bid" or "Bidder" herein and/or in any other documentation shall be construed to have the same meaning as the words "Tender" or "Tenderer".

**Any reference to the words "payment reduction" herein shall be construed to have the same meaning as the word "retention"

Tender / Quotation no: BL22/007

AND WHO IS (if applicable):	
Trading under the name and style of:	
AND WHO IS:	
Represented herein, and who is duly authorised to do so, by: Mr/Mrs/Ms: In his/her capacity as:	Note: A Resolution / Power of Attorney, signed by all the Directors / Members / Partners of the Legal Entity must accompany this Offer, authorising the Representative to make this offer.

SIGNED FOR THE TENDERER:

Name of representative	Signature	Date

WITNESSED BY:

Name of witness	Signature	Date

This Offer is in respect of: (Please indicate with an "X" in the appropriate block)

- The official documents ☐
 The official alternative ☐
 Own alternative (only if documentation makes provision therefore) ☐

(N.B.: Separate Offer and Acceptance forms are to be completed for the main and for each alternative offer)

SECURITY OFFERED:

- (a) the Tenderer accepts that in respect of contracts up to R1 million, a payment reduction** of 5% of the contact value (excluding VAT) will be applicable and will be deducted by the Employer in terms of the applicable conditions of contract
- (b) in respect of contracts above R1 million, the Tenderer offers to provide security as indicated below:
- (1) cash deposit of 10 % of the Contract Sum (excluding VAT) Yes ☐ No ☐
 - (2) variable construction guarantee of 10 % of the Contract Sum (excluding VAT) Yes ☐ No ☐
 - (3) payment reduction of 10% of the value certified in the payment certificate (excluding VAT) Yes ☐ No ☐
 - (4) cash deposit of 5% of the Contract Sum (excluding VAT) and a payment reduction of 5% of the value certified in the payment certificate (excluding VAT) Yes ☐ No ☐
 - (5) fixed construction guarantee of 5% of the Contract Sum (excluding VAT) and a payment reduction of 5% of the value certified in the payment certificate (excluding VAT) Yes ☐ No ☐

NB. Guarantees submitted must be issued by either an insurance company duly registered in terms of the Insurance Act [Long-Term Insurance Act, 1998 (Act 52 of 1998) or Short-Term Insurance Act, 1998 (Act 35 of 1998)] or by a bank duly registered in terms of the Banks Act, 1990 (Act 94 of 1990) on the pro-forma referred to above. No alterations or amendments of the wording of the pro-forma will be accepted.

*Any reference to words "Bid" or "Bidder" herein and/or in any other documentation shall be construed to have the same meaning as the words "Tender" or "Tenderer".

**Any reference to the words "payment reduction" herein shall be construed to have the same meaning as the word "retention"

Tender / Quotation no: BL22/007

The Tenderer elects as its *domicilium citandi et executandi* in the Republic of South Africa, where any and all legal notices may be served, as (physical address):

Other Contact Details of the Tenderer are:

Telephone No. Cellular Phone No.

Fax No.

Postal address

Banker Branch.....

Registration No of Tenderer at Department of Labour

CIDB Registration Number:

ACCEPTANCE

By signing this part of this form of offer and acceptance, the Employer identified below accepts the Tenderer's offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the conditions of contract identified in the contract data. Acceptance of the Tenderer's offer shall form an agreement between the Employer and the Tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract are contained in:

Part C1 Agreement and contract data, (which includes this agreement)

Part C2 Pricing data

Part C3 Scope of work

Part C4 Site information and drawings and documents or parts thereof, which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the tender schedules as well as any changes to the terms of the offer agreed by the Tenderer and the Employer during this process of offer and acceptance, are contained in the schedule of deviations attached to and forming part of this agreement. No amendments to or deviations from said documents are valid unless contained in this schedule.

The Tenderer shall within two weeks after receiving a completed copy of this agreement, including the schedule of deviations (if any), contact the Employer's agent (whose details are given in the contract data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the conditions of contract identified in the contract data. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy of this document, including the schedule of deviations (if any). Unless the tenderer (now contractor) within five (5) working days of the date of such receipt notifies the employer in writing of any reason why he/she cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the parties.

For the Employer:

Name of signatory	Signature	Date

*Any reference to words "Bid" or "Bidder" herein and/or in any other documentation shall be construed to have the same meaning as the words "Tender" or "Tenderer".

**Any reference to the words "payment reduction" herein shall be construed to have the same meaning as the word "retention"
 For Internal & External Use

Tender / Quotation no: BL22/007

Name of Organisation:	Department of Public Works and Infrastructure
Address of Organisation:	18 PRESIDENT BRAND STREET ,BLOEMFONTEIN

WITNESSED BY:

Name of witness	Signature	Date

Schedule of Deviations

1.1.1. Subject:
Detail:
1.1.2. Subject:
Detail:
1.1.3. Subject:
Detail:
1.1.4. Subject:
Detail:
1.1.5. Subject:
Detail:
1.1.6. Subject:
Detail:

By the duly authorised representatives signing this agreement, the Employer and the Tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the tender data and addenda thereto as listed in the tender schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the Tenderer and the Employer during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the Tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this agreement.

*Any reference to words "Bid" or "Bidder" herein and/or in any other documentation shall be construed to have the same meaning as the words "Tender" or "Tenderer".

**Any reference to the words "payment reduction" herein shall be construed to have the same meaning as the word "retention"

C2.2 Bills of Quantities

DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE



**public works
& infrastructure**

**Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA**

BILLS OF QUANTITIES

Comprising of:

Section 1 - Preliminaries and General

Section 2 - Bill of Quantities: Tseki Magistrates Court

Section 3 - Bill of Quantities: Tseseng Magistrates Court

Section 4 - Final Summary

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	PART 1A: PRELIMINARY AND GENERAL The agreement is to be the General Conditions of Contract (GCC 2010) (Second Edition), Published by the SA Institution of Civil Engineering. The preliminaries are to be the Construction and management requirements for works contracts - Part 1: General engineering and construction works (SANS 1921 -1: 2004 Edition 1) prepared by Standards South Africa and shall be deemed to be incorporated herein. Tenderers are referred to the abovementioned documents for the full intent and meaning of each clause thereof (hereinafter referred to by heading and clause number only) for which such allowance must be made as may be considered necessary. Where standard clauses or alternatives are not entirely applicable to this contract such modifications, corrections or supplements as will apply are given under each relevant clause heading. Where any item is not relevant to this specific contract such items is marked N/A (signifying "not applicable"). Adjustment of the preliminaries: each item priced, is to be allocated to one or more of the three categories, where "F" denotes a fixed amount (amount not to be varied), "V" denotes an amount variable in proportion to value and "T" denotes an amount in proportion to time. Time (T) related Preliminaries will only be adjusted for omissions or additions, issued by the Employer, or delays caused by the Employer, for which variation and extension of time has been granted. SECTION A: GENERAL CONDITIONS OF CONTRACT A1 General (Clause 1) F: V: T: A2 Basis of Contract (Clause 2) F: V: T: A3 Engineer (Clause 3) F: V: T: A4 Contractor's General Obligation (Clause 4) F: V: T:				
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
A5	Time and Related Matters (Clause 5) F: V: T:	Item			
A6	Payment and Related Matters (Clause 6) F: V: T:	Item			
A7	Quality and Related Matters (Clause 7) F: V: T:	Item			
A8	Risk and Related Matters (Clause 8) F: V: T:	Item			
A9	Termination of Contract (Clause 9) F: V: T:	Item			
A10	Claims and Disputes (Clause 10) F: V: T:	Item			
	SECTION B: SANS 1921-1:2004 (Edition 1): CONSTRUCTION AND MANAGEMENT REQUIREMENTS FOR WORKS CONTRACTS: PART 1				
B1	Scope F: V: T:	Item			
B2	Normative references F: V: T:	Item			
B3	Definitions F: V: T:	Item			
B4	Requirements for construction and management F: V: T:	Item			
B4.1	General F: V: T:	Item			
B4.2	Responsibilities for design and construction F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
B4.3	Planning, programme and method statements F: V: T:	Item			
B4.4	Quality assurance F: V: T:	Item			
B4.5	Settling out F: V: T:	Item			
B4.6	Management and disposal of water F: V: T:	Item			
B4.7	Blasting F: V: T:	Item			
B4.8	Works adjacent to services and structures F: V: T:	Item			
B4.9	Management of the works and site F: V: T:	Item			
B4.10	Earthworks F: V: T:	Item			
B4.11	Testing F: V: T:	Item			
B4.12	Materials, samples and fabrication drawings F: V: T:	Item			
B4.13	Equipment F: V: T:	Item			
B4.14	Site establishment F: V: T:	Item			
B4.15	Survey control F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
B4.16	Temporary works F: V: T:	Item			
B4.17	Existing services F: V: T:	Item			
B4.18	Health and safety F: V: T:	Item			
B4.19	Environmental requirements F: V: T:	Item			
B4.20	Alterations, additions, extentions and modifications to existing works F: V: T:	Item			
B4.21	Inspection of adjoining structures, services, buildings and property. F: V: T:	Item			
B4.22	Attendance on nominated and selected subcontractors F: V: T:	Item			N/A
	SECTION C: SCOPE OF WORK IN ACCORDANCE WITH SANS 10403 (The reference to clauses refer to table B.1 of SANS 1921-1:2004)				
C1	Cerification by recognised bodies - (Clause 4.4) F: V: T:	Item			
C2	Agrément - (Clause 4.5) F: V: T:	Item			
C3	Other services and facilities - (Clause 4.8) F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
C4	Recording of weather - (Clause 5.2) F: V: T:	Item			
C5	Management meetings - (Clause 5.3) F: V: T:	Item			
C6	Daily records - (Clause 5.6) F: V: T:	Item			
C7	Permits - (Clause 5.9) F: V: T:	Item			
C8	Proof of compliance with the law - (Clause 5.10) F: V: T:	Item			
	SECTION D: SPECIFICATION DATA ASSOCIATED WITH SANS 1921-1:2004 (Table A.1)				
D1	Requirements for drawings, information and calculations for which the contractor is responsible - (Clause 4.1.7) F: V: T:	Item			
D2	The planning, programme and method statements- (Clause 4.3) F: V: T:	Item			
D3	Samples of materials. Workmanships and finishes - (Clause 4.12.1) F: V: T:	Item			
D4	Fabrication drawings that the contractor is to provide and deliver to the employer - (Clause 4.12.2) F: V: T:	Item			
D5	Office for the foreman - (Clause 4.14.3) F: V: T:	Item			N/A
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
D6	Telephone - (Clause 4.14.3) F: V: T:	Item			N/A
D7	Office for inspector of works - (Clause 4.14.3) F: V: T:	Item			N/A
D8	Telephone in office for inspector of works - (Clause 4.14.3) F: V: T:	Item			N/A
D9	Provision and erection of signboards - (Clause 4.14.6) F: V: T:	Item			
D10	Termination, diversion or maintenance of existing services - (Clause 4.17.1) F: V: T:	Item			
D11	Services which are known to exist - (Clause 4.17.3) F: V: T:	Item			
D12	Detection apparatus - (Clause 4.17.4) F: V: T:	Item			
D13	Additional health and safety requirements - (Clause 4.18) F: V: T:	Item			
	SECTION E: SPECIFIC PRELIMINARIES (Section E contains specific preliminaries items which apply to this contract except where "N/A" (Not applicable) appears against the item.				
E1	WORKING OVER THE WEEKEND Contractor to make allowance to work over the weekend in order to allow for the disconnection of utilities and the connection of the generator. The weekend to be used for disconnection and connection and must be communicated to the Department two weeks in advance. F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
E2	SITE INSTRUCTIONS Site instructions issued on site are to be recorded in triplicate in a Site Instruction book which is to be maintained on site by the Contractor F: V: T:	Item			
E3	PLANT RECORD At every site meeting, the Contractor shall provide the Engineer/Principal agent with a written record, in schedule form, reflecting the number, type and capacity of all plant, excluding hand tools, currently used on the works. F: V: T:	Item			
E4	SITE OFFICE The Contractor is to allow for the provision and removal of a site office in accordance with the Principal Agent's requirements. To accommodate 6 persons. F: V: T:	Item			
E5	TRADE NAMES Wherever a Trade Name for any product has been described in the Bill of Quantities, the Bidder's attention is drawn to the fact that any other product of equal quality may be used, subject to the written approval of the Principal Agent being obtained prior to the closing date for the submission of the Bids. F: V: T:	Item			
E6	INACCURATE AND DEFECTIVE WORK EXECUTED UNDER PREVIOUS CONTRACT The contractor shall, after taking possession of the site and before commencing the work, check all levels, liners, profiles and the like and satisfy himself as to the dimensional accuracy of all work executed under the previous contract which may affect his work. Should any inaccurate or defective work be found, the contractor shall immediately notify the principal agent in writing requesting his instructions with regard thereto and afford every facility to those rectifying such inaccurate or defective work. F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
E7	VIEWING THE SITE IN SECURITY AREAS If the site is situated in a security area and the bidder must arrange with the Authorities to obtain permission to enter the site for Bidding purposes. F: V: T:	Item			
E8	COMMENCEMENT OF WORKS IN SECURITY AREAS If the works falls within a security area, the contractor must arrange with the Authorities and give the necessary notices before commencement of the works. Should the contractor fail to make such arrangements, admission to the site may be refused and any additional costs will be for the contractor's account. F: V: T:	Item			
E9	ENTRANCE PERMITS TO SECURITY AREAS If the works falls within a security area, the contractor shall obtain entrance permits for his personnel and workmen entering the area and shall comply with all regulations and instructions which be issued from the time to time regarding the protection of persons and property under the control of the Authority. F: V: T:	Item			
E10	PROHIBITION ON TAKING PHOTOGRAPHS In terms of article 119 of the Defence Act, 44 of 1957, it is prohibited to sketch or to take photographs of any military site or installation or any building or civil works thereon or to be in possession of a camera or other apparatus used for taking photographs, except when authorised thereto by or on behalf of the Minister The same prohibition is also applicable to all Correctional Institutions in terms of article 44.1 of the Correctional Services Act 8 of 1959. F: V: T:	Item			
E11	TOILET FACILITIES Allow for the supply and removal of portable toilet facilities. The contractor is to maintain the cleanliness of the facilities throughout the contract period. The contractor must provide enough toilets for his/her entire workforce. F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
E12	MANAGEMENT OF WATER Water for Construction puposes must be obtained from alternative water sources (i.e. supply other than water that is produced and distributed by a regulated water service authority from a licensed water treatment works for human consumption), e.g. dams, rivers, boreholes, springs, rainwater harvesting, recycled sewerage water, etc. The alternative water source shall not be of an inferior quality/ standard than that required for construction purposes. The client reserves the right through his agents to test such supplies or request certificates confirming the grade and nature of the water supply. Relevant knowledge of the respective area will be an advantage. F: V: T:	Item			
E13	OCCUPATIONAL HEALTH AND SAFETY ACT & CONSTRUCTION REGULATIONS It is required of the Contractor to thoroughly study the Health and Safety specification that must be read together with and is deemed to be incorporated under this section of the Bill of Quantities. Provision for pricing thereof is made under items E12.1 to E12.15 hereafter and it is explicitly pointed out that all requirements of the aforementioned specification are deemed to be priced hereunder, as the said items represent the only method of measurement and no additional items or extras to the contract in this regard shall be entertained. The contractor must take note that compliance with the Occupational Health and Safety Act, Construction Regulations and Health and Safety specification is compulsory. In the event of partial or total non-compliance, the Principal Agent , notwithstanding the provisions of Clause 6 of Section 1: Preliminaries (Part A) or any other clause to the contrary, reserves the right to delay issuing any progress payment certificate until the Contractor provides satisfactory proof of compliance. The Contractor shall not be entitled to any compensation of whatsoever nature, including interest, due to such delay of payment. All references hereafter are to Regulations of the Construction Regulations, 2003 issued under the Occupational Health and Safety Act, 1993 (Act No 85 of 1993).				
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
	The contractor shall, in submitting his bid, demonstrate that he has made provision for the cost of compliance with the specified health and safety requirements, the Act and the Construction Regulations. F: V: T:	Item			
E13.1	NOTIFICATION OF CONSTRUCTION WORK (Construction Regulations 3) The contractor shall, before commencing work, notify the Department of Labour of the intend construction work in terms o Regulation 3. The Contractor shall submit the notification in writing, on the appropriate form, prior to commencement of work. F: V: T:	Item			
E13.2	HEALTH AND SAFETY PLAN (Construction regulations 5.4) The Contractor shall provide and demonstrate to the Principal Agent a suitable and sufficiently documented health and safety plan based on the Act, Construction Regulations and the health and safety specification, which shall be applied from the date of commencement of and for the duration of the construction work. The Contractor shall ensure that a copy of the health and safety plan is available on request to an employee, inspector, sub contractor or principal agent all in terms of Regulation 5. F: V: T:	Item			
E13.3	REGISTRATION WITH THE COMPENSATION FUND (Construction Regulations 5.3 f) The Contractor shall provide proof of his registration and good standing with the Compensation Fund or a licensed compensation insurer prior to the commencement of work F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
E13.4	HEALTH AND SAFETY FILE (Construction Regulation 5.7) The contractor shall ensure that a health and safety file, which shall include all documentation required in terms of health and safety specification, the Act and the Construction Regulations, is opened and kept on site and made available to the Principal Agent or inspector upon request. Upon completion of the works, the contractor shall hand over a consolidated health and safety file to the principal agent. F: V: T:	Item			
E13.5	SUPERVISION OF CONSTRUCTION WORK (Safety officer) (Construction Regulation 6) The Contractor shall appoint a full-time competent employee in writing as the construction supervisor, with the duty of supervising the construction work. The Contractor shall appoint a full-time or part-time construction safety officer in writing to assist in the control of all safety related aspects on the site. Such appointments are required to ensure that at all times the requirements of the Act and Construction Regulations are adhered to. Refer to Regulation 6. F: V: T:	Item			
E13.6	RISK ASSESSMENT AND SAFETY POLICY (Construction Regulation 7) Before commencing work the Contractor shall cause a risk assessment to be performed by a competent person appointed in writing and the risk assessment shall form part of the health and safety plan. A copy of the risk assessment shall be available on site at all times for inspection. The Contractor shall at all time carry out the works in a manner to avoid the risk of bodily harm to persons or risk of damage to any property. He shall take all precautions regarding training of employees in any hazards and the related work procedures, health and safety induction training of employees, visitors or any other persons entering the site and provide personal protective equipment to all employees and visitors to site which are necessary and adequate to eliminate any conditions which contribute to the risk of injury to persons or damage to property in terms of Regulation 7. F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
E13.7	SIGNIFICANT HAZARD IDENTIFICATION RISK ASSESSMENT PREPARED BY THE DESIGN CONSULTANTS The Contractor shall allow for additional financial provision, if any, to take the necessary precautions regarding the significant hazards and risks identified and assessed by the design consultants. F: V: T:	Item			N/A
E13.8	ADDITIONAL FINANCIAL PROVISION The Contractor shall allow for additional financial provision, if any, to comply with the requirements of the Occupational Health and Safety Act (Act No 85 of 1993) and the Construction Regulations issued there under which have not been specifically elsewhere. F: V: T:	Item			
E13.9	FALL PROTECTION PLAN (Construction Regulation 8) The Contractor shall, before commencing any construction work submit a fall protection plan identified all steps to be taken in order to ensure the continued adherence to the fall protection plan and shall include a risk assessment of all work carried out from a relevant position. The fall protection plan shall form part of the health and safety plan and file. F: V: T:	Item			
E13.10	PHYSICAL AND PSYCHOLOGICAL FITNESS (Construction Regulation 8.2 (b)) The Contractor and sub-contractor shall before commencing any construction work submit proof of his employees that shall carried out work from an elevated position their physical and psychological fitness and shall be recorded in the health and safety file. F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
E13.11	CONSTRUCTION VEHICLES AND MOBILE PLANT (Construction Regulations 21) The Contractor and sub-contractors shall ensure that all operated workers received training and been certified competent to operate such vehicles, and are physical and psychological fit to operate such construction vehicles and mobile plants and shall be recorded in the health and safety file. F: V: T:	Item			
E13.12	TRAINING (Construction Regulation 8 (c)) The Contractor and sub-contractor shall, before commencing any construction work, submit his training program of all his employees. This program shall form part of the health and safety plan. F: V: T:	Item			
E13.13	DEMOLITION WORK (Construction Regulations 12) The Contractor shall, before any demolition work shall be carried out, submit all methods of demolition to be used. This method shall form part of the health and safety plan and file. F: V: T:	Item			
E13.14	REMOVAL AND DISPOSAL OF ASBESTOS MATERIAL (Asbestos Regulation) The principle contractor shall appoint a contractor that is registered with the Department of Labour as an AIA. The contractor must allow for: NOTIFICATION OF ASBESTOS PROCESSING PERSONAL PROTECTIVE EQUIPMENT PACKAGING AND TRANSPORT AND STORAGE TO DISPOSAL SITE DEMOLITION WORK LABELLING, INFORMATION, ETC. F: V: T:	Item			N/A
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
E13.15	RISK COMPLIANCE AREAS (As Outlined In "Volume Three": Covid-19 Guidelines for Management of Risk on Construction Sites and Covid-19 addendum (Item 1-12) attached to Health and Safety specification) · Disinfection of the workplace at regular intervals as outlined within the Guidelines "Annexure A" Workplace Preparation Procedure; · Ensure Staff and Security Staff have PPEs (i.e. masks,gloves, sanitisers, etc.) · Installed thermal scanners to check temperature of all staff and visitors. Ensure training of Security Staff for use of thermal scanners. Register to be implemented for staff and visitors to site with identification criteria "ID number, Name, Age, Health Status and Contact details"; · Isolation room identified/constructed on site; · Ensure sanitisers and soap are available in locker rooms for staff; · Ensure staff or visitors are wearing masks before entering; · Ensure social distance on site; · Notification about the restriction of the number of people allowed on site at one time; · Disinfection of rooms for meetings and strictly keeping to social distancing and wearing masks; · Plans to rotate work force on percentage allowable on site to comply with regulations; · Permits issued by Authorising Authority for Work Force and vehicles for Cross Provincial and District Borders F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
E14	IMPLEMENTATION OF LABOUR-INTENSIVE INFRASTRUCTURE PROJECTS UNDER THE EXPANDED PUBLIC WORKS PROGRAMME (EPWP) The contractor shall comply with all the requirements of the "Code of Good Practice for Employment and Conditions of Work for Special Public Works Programmes" issued in terms of the "Basic Conditions of Employment Act, 1997 (Act No 75 of 1997)" and the related "Ministerial Determination", for the employment of locally employed temporary workers on a labour intensive infrastructure project under the Expanded Public Works Programme (EPWP) The contractor shall maintain daily records with regard to the workers employed and shall, on a monthly basis, submit a report (Contract, ID Copy, Attendance register, Proof of payment) to the principal agent in the prescribed format. Compulsory indicators such as the project budget, actual project expenditure, number of job opportunities created, demographic characteristics of workers employed, minimum daily wage rate, number of person-days of employment created and number of training person-days, shall be included in said report, all as defined in the "Guidelines for the Implementation of Labour-Intensive Infrastructure Projects under the Expanded Public Works Programme (EPWP)" Provision for pricing of compliance with the aforementioned is made under this clause and it is explicitly pointed out that all that all requirements in respect of the aforementioned are deemed to be priced hereunder and no additional claims in this regard shall be entertained F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
E14.1	DECLARATION - EPWP PROGRAMME The contractor must adhere to all rules, regulations and requirements regarding the EPWP programme, specifically but not limited to the following: 1. Labour intensive construction methods (LIC) 1.1 Comply to implementation of LIC BOQ items specified elsewhere in the tender documents 2. Recruitment and placement of local labourers 2.1 Recruitment and placement of minimum 5 (Five) local labourers 2.2 Comply with applicable wage order/determination or agreement, in terms of labour relations act or wage act 3. Comply with EPWP monthly reporting requirements Monthly prepare and submit below EPWP reports attached to monthly payments certificate 3.1 All employees and EPWP participants contracts 3.2 All employees and EPWP participants certified SA ID copies 3.3 All employees and EPWP attendance register 3.4 All employees and EPWP proof of payment 3.5 EPWP reports populated on standard templates 4. Penalties for non compliance Acknowledge non compliance penalty of 20% of the value of the works on items where unauthorised use of plant was used to carry out work which was used to carry out work which was to be done labour-intensively F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
E15	HIV/AIDS AWARENESS It is required of the contractor to thoroughly study the HIV/AIDS Specification (PW 1544) of the Department that must be read together with and is deemed to be incorporated under this Section of the Bills of Quantities. Provision for pricing of HIV/AIDS awareness is made under items E14.1 to E14.5 hereafter and it is explicitly pointed out that all requirements of the aforementioned specification are deemed to be priced hereunder, as the said items represent the only method of measurement and no additional items or extras to the contract in this regard shall be entertained The contractor must take note that compliance with the HIV/AIDS Specification is compulsory. In the event of partial or total non-compliance, the principal agent, notwithstanding the provisions of Clause A 31.0 of Section A or any other clause to the contrary, reserves the right to delay issuing any progress payment certificate until the contractor provides satisfactory proof of compliance. The contractor shall not be entitled to any compensation of whatsoever nature, including interest, due to such delay of payment				
E15.1	AWARENESS CHAMPION Selection, appointment, briefing and making available of an Awareness Champion including provision of all relevant services, all in accordance with the HIV/AIDS Specification F: V: T:	Item			
E15.2	AWARENESS WORKSHOPS Selection and appointment of a competent Service Provider approved by the principal agent, provision of a Service Provider Workshop Plan and a suitable venue, conducting of awareness workshops by means of traditional and/or modern multimedia techniques, including follow-up courses, making available all tuition material and performing assessment procedures, all in accordance with the HIV/AIDS Specification F: V: T:	Item			
	CARRIED FORWARD				

SECTION 1: PRELIMINARIES AND GENERAL

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
E15.3	POSTERS, BOOKLETS, VIDEOS, ETC. Provision, displaying, maintaining and replacing when necessary of four plastic laminated posters, booklets and educational videos, etc. for the duration of the construction period, all in accordance with the HIV/AIDS Specification F: V: T:	Item			
E15.4	ACCESS TO CONDOMS Provision and maintenance of condom dispensers fixed in position, including male and female condoms, replenishing male and female condoms on a daily basis as required for the duration of the construction period, all in accordance with the HIV/AIDS Specification F: V: T:	Item			
E15.5	MONITORING Monitoring HIV/AIDS awareness of workers, providing the principal agent with access to information including making available all reports, thoroughly completed and reflecting the correct information, for the duration of the construction period and close out, all in accordance with the HIV/AIDS Specification F: V: T:	Item			
E16	CONSTRUCTION VEHICLES FOR DELIVERY OF EQUIPMENT Allow for vehicles such as truck cranes, forklifts, etc for the moving of the generator into place and delivery of other necessary equipment for the project. F: V: T:	Item			
	CARRIED FORWARD TO SECTION 4 SUMMARY				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	ELECTRICAL WORK ELECTRICAL INSTALLATIONS, PART IN GENERAL CONFINED POSITION AND PART IN PATCHES, INCLUDING SMALL QUANTITIES, ALL NECESSARY CAREFUL CUTTING IN, DISCONNECTING, MAKING GOOD, NEW MATERIALS, JUNCTIONS BETWEEN NEW WITH EXISTING MATERIALS, PREPARATION OF EXISTING TO RECEIVE NEW MATERIALS AND REMOVAL FROM SITE, ETC, WHERE APPLICABLE (REMOVAL OF EXISTING AND RELATED PREPARATION FOR NEW MATERIALS, WHERE APPLICABLE AND UNLESS OTHERWISE DESCRIBED, ELSEWHERE) THE BILL OF QUANTITIES MUST BE READ TOGETHER WITH THE SUPPLEMENTARY SPECIFICATION FOR THE ELECTRICAL INSTALLATION AND GENERATOR INSTALLATION INCLUDED IN THE TENDER DOCUMENT BILL 1: LOW VOLTAGE CABLES BILL OF QUANTITIES PERTAINING TO LOW VOLTAGE CABLES, TRENCHING, TERMINATION, JOINTING, CABLE GLANDS, TOGETHER WITH ALL ACCESSORIES REQUIRED FOR THE INSTALLATION. ALL CABLES TO HAVE MARKINGS ON IT INDICATING THE SIZE OF THE CABLE. CABLES WITHOUT THE MARKING WILL NOT BE ACCEPTED. (CABLES QUANTITIES TO BE REMEASURED ON SITE) 600/1000 VOLT PVC/PVC/SWA/PVC/ECC COPPER THROUGH SLEEVES, LAID IN TRENCHES, WIREWAYS, ETC. (TRENCHING AND BACK FILLING MEASURED ELSEWHERE) 1 Supply and install 185mm² 4 core cable PVC/SWA m 80 2 Supply and install 150mm² 4 core cable PVC/SWA m 5 3 Supply and install 10mm² 2 core cable + Earth m 15 BARE COPPER EARTH WIRE PULLED THROUGH SLEEVES, LAID IN TRENCHES, WIREWAYS, ETC. 4 Supply and install 95mm² bare copper earth wire m 80				
	CARRIED FORWARD				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
5	Supply and install 10mm ² bare copper earth wire CABLE TERMINATIONS COMPLETE FOR 600/1000 PVC/PVC/SWA/PVC/ECC COPPER CABLES.	m	15		
6	Complete termination for 185mm ² 4 core PVC/PVC/SWA/PVC/ECC cable, including glands and rubber shrouds, lugs, bolts, nuts, washers and terminating onto busbars/terminals, etc.	No	4		
7	Complete termination for 150mm ² 4 core PVC/PVC/SWA/PVC/ECC cable, including glands and rubber shrouds, lugs, bolts, nuts, washers and terminating onto busbars/terminals, etc.	No	4		
8	Complete termination for 10mm ² 2 core +Earth cable, including glands and rubber shrouds, lugs, bolts, nuts, washers and terminating onto busbars/terminals, etc.	No	2		
9	Complete termination for 95mm ² bare copper earth wire cable including glands and rubber shrouds, lugs, bolts, nuts, washers and terminating onto busbars/terminals, etc.	No	4		
10	Complete termination for 10mm ² bare copper earth wire cable including glands and rubber shrouds, lugs, bolts, nuts, washers and terminating onto busbars/terminals, etc.	No	2		
11	Supply and install complete 185mm ² cable joint. Jointing of cable is to be done according to manufacturer's specifications. EXCAVATIONS IN EARTH FOR CABLE AND SLEEVE TRENCHES INCLUDING TEMPORARY SUPPORT OF SIDES, KEEPING EXCAVATIONS CLEAN AND DRY, BACKFILLING AND COMPACTION TO THE SPECIFICATION OF THE PRINCIPAL AGENT. TRENCHES SHALL ONLY BE DONE IF CABLES CANNOT BE ROUTED THROUGH EXISTING SLEEVES.	No	1		
	CARRIED FORWARD				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
	TRENCHES FOR POWER AND CONTROL CABLES				
12	Cable or sleeve trenches not exceeding 1 meter deep - excavated in earth (LIC)	m3	30		
13	Cable or sleeve trenches not exceeding 1 meter deep - soft rock (extra over) (LIC)	m3	4		
14	Cable or sleeve trenches not exceeding 1 meter deep - hard rock (extra over) (LIC)	m3	1		
15	Select from excavated material and install a sand bedding in trench 200mm deep and 450mm wide (100mm sand bedding above and 100mm below cable) (LIC)	m3	6		
16	Backfilling of trenches with excavated soil after cables have been laid and tested complete with compacting of backfilling, levelling-off of trenches and removing and dumping of surplus excavated material. (LIC)	m3	22		
17	Risk of collapse of trench and hole excavation sides not exceeding 1,5m deep	m2	30		
18	Keeping excavations free of all water	Item	1		
	TRENCHES FOR MIMIC PANEL CABLES				
19	Remove carefully existing paving brick and set aside (LIC)	m2	16		
20	Breaking up and removing unreinforced concrete in 100mm thick surface beds (LIC)	m2	3		
21	Excavate 500mm deep and 450mm wide earth. Soil to be removed in 100mm layers and kept aside for backfilling. (LIC)	m3	8		
22	Select from excavated material and install a soil bedding in trench 300mm deep and 450mm wide (200mm sand bedding above and 100mm below cable). Compaction every 100mm. (LIC)	m3	5		
	CARRIED FORWARD				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
23	Backfilling of trenches with excavated soil after cables have been laid and tested complete with compacting of backfilling, levelling-off of trenches and removing and dumping of surplus excavated material. (LIC)	m3	4		
24	60mm rectangular precast concrete pavers laid to herringbone pattern with 20mm clean river sand bed	m2	2		
25	200mm edging on and including 200x150mm thick unreinforced concrete bedding including excavation, formwork, etc.	m	4		
26	Approved weedkiller as per manufacturers specifications under paving	m2	16		
27	25MPa/19mm concrete surface beds	m3	3		
28	Finishing top surfaces of concrete surface beds smooth with wood float	m2	7		
	SUPPLY AND INSTALL THE FOLLOWING HDPE				
29	Supply and install 110mm HDPE sleeve	m	80		
30	Supply and install 50mm HDPE sleeve	m	120		
31	Supply and install 90 degree 110mm HDPE elbow	No	2		
32	Supply and install 90 degree 50mm HDPE elbow	No	4		
	SUNDRIES:				
33	LT cable route maker tape placed above low voltage cable between 0,4m to 0,3m below ground level.	m	200		
34	Danger tape placed around cable trench.	m	300		
35	Test and commission the complete reticulation installation	Item			
	BILL 1 CARRIED FORWARD TO SECTION 2 SUMMARY				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BILL 2: DISTRIBUTION BOARDS AND KIOSK BILLS OF QUANTITIES PERTAINING TO DISTRIBUTION BOARDS AND EQUIPMENT OF THE ELECTRICAL INSTALLATIONS: SUPPLY, INSTALL AND COMMISSION THE FOLLOWING EQUIPMENT TO EXISTING DISTRIBUTION BOARD. COMPLETE WITH ALL WIRING, TERMINALS, LABELS, NEW TYPED LEGEND CARD, ETC. THE INSTALLATION TO COMPLY WITH THE LATEST SANS 10142-1: THE WIRING OF PREMISES FOR LOW VOLTAGE INSTALLATIONS. ALLOW FOR TESTING, BALANCING AND COMMISSIONING OF THE COMPLETE INSTALLATION OF THE FOLLOWING DB'S Distribution board: DB Main (Existing)				
36	Allow for test, balance, tracing of circuits, commission and service of existing, additional and new circuits on DB Main as well as providing a legend card, engraved labels indicating circuits, where DB is fed from and cable size, blanks, warning labels and conductor sizes.	Item	1		
37	Epoxy powder coat existing DB front panel to department specification colour.	Item	1		
38	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the DB	Item	1		
39	Allow for earthing and bonding	Item	1		
	Equipment to be installed:				
40	Supply and install 30A 1P + N 6kA circuit breaker	No	1		
	Distribution board: DB A (Existing)				
41	Epoxy powder coat existing DB front panel to department specification colour.	Item	1		
	CARRIED FORWARD				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
	Distribution board: DB Old server board (Existing)				
42	Epoxy powder coat existing DB front panel to department specification colour.	Item	1		
	Distribution board: DB Guard house (Existing)				
43	Epoxy powder coat existing DB framework, door, etc. to department specification colour.	Item	1		
	Distribution board: DB UPS (New)				
44	Allow for test, balance, tracing of circuits, commission and service of existing, additional and new circuits on DB UPS as well as providing a legend card, engraved labels indicating circuits, where DB is fed from and cable size, blanks, warning labels and conductor sizes. including rerouting existing server plug circuits to DB UPS. Shop drawings to be produced for approval.	Item	1		
45	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the DB	Item	1		
46	Allow for earthing and bonding	Item	1		
	Equipment to be installed:				
47	Supply and install 30A 1P + N 6kA circuit breaker	No	1		
48	Supply and install 20A 1P 6kA circuit breaker	No	3		
49	DB- UPS: Surface mount metal enclosure 8 way (Colour blue)	No	1		
	Kiosk: DK Main (New)				
50	Allow for test, balance, tracing of circuits, commission and service of existing, additional and new circuits on the kiosk as well as providing a legend card, engraved labels indicating circuits, where Kiosk is fed from and cable size, blanks, warning labels and conductor sizes. Shop drawings to be produced for approval.	Item	1		
	CARRIED FORWARD				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
51	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the Kiosk	Item	1		
52	Earthing and bonding of kiosk, including earth mats and earth rods.	Item	1		
	Equipment to be installed:				
53	Supply and install 300A 3P 25kA circuit breaker (Normal section)	No	2		
54	Relocate and install existing energy meter from DB Main to kiosk (Normal section). NOTE: The contractor is to liaise with the local electricity supplier to have the meter relocated. Officials from the local electricity supplier is to be present during the commissioning.	No	1		
55	Supply and install automatic changeover system for the 165 Kva generator to be supplied, including circuit breakers, contactors, and all necessary equipment for the load to be switched at the kiosk and not at the generator.	No	1		
56	2,5mm ² 7 core cable in HDPE sleeve from generator to kiosk to operate the changerover switch. To be installed in the same trench as power cable. Including terminations. (HDPE sleeve measured elsewhere)	m	80		
57	4mm ² 4 core cable in HDPE sleeve from generator to kiosk to operate the changerover switch. To be installed in the same trench as power cable. Including terminations. (HDPE sleeve measured elsewhere)	m	80		
58	Supply and install C3R12 lockable kiosk on 300mm high concrete plinth, to be weatherproof in department specified colour.	No	1		
59	Excavation and preparing ground for for weatherproof kiosk. (LIC)	Item	1		
	BILL 2 CARRIED FORWARD TO SECTION 2 SUMMARY				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BILL 3: GENERATOR BILLS OF QUANTITIES PERTAINING TO THE GENERATOR OF THE ELECTRICAL INSTALLATIONS PLEASE REFER TO SUPPLEMENTARY GENERATOR SPECIFICATIONS WHEN PRICING AS IT IS DESCRIBED IN FULL WHAT IS REQUIRED OF THE COMPLETE GENERATOR INSTALLATION. IMPORTANT: NO DEPOSIT FOR GENERATORS WILL BE PAID BY CLIENT. PAYMENT MAY BE CLAIMED FOR MATERIAL (GENERATORS) ON SITE BUT CONTRACTOR WILL STILL BE LIABLE FOR INSURANCE OF MATERIAL UNTIL ELECTRICAL INSTALLATION IS COMPLETED. WRITTEN PROOF OF ORDER WILL BE REQUIRED WITHIN ONE WEEK FROM DATE OF APPOINTMENT.				
60	Supply and install a new silent weatherproof 165 kVA generator on steel skids, including fuel tank for 24 hours operation at 100% load. The generator installation is to also include all fittings, auxiliary wiring, electric fuel pump with 3m hose, batteries, fuel filtration, alternator, local sounders and main control panel. The generator should also be lockable and padlocks with keys to be provided. Three sets of operating manuals are also to be provided. The generator is to be factory tested. The supply and installation of the generator will be inclusive of all other necessary equipment and items needed for the successful installation of the generator. Refer to generator specifications for detailed requirements. Lockable and removable panels are to be incorporated to allow access and not be obstructed from opening by the bund wall and steel palisade fence.	No	1		
61	Supply and install a mimic panel in the control room as described in the generator specifications.	No	1		
62	Supply and install 2,5 mm 7 core cable in HDPE sleeve for the mimic panel including terminations, and all necessary fixing items. (Trenching and HDPE sleeve measured elsewhere).	m	60		
	CARRIED FORWARD				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
63	Guarentee and maintenance for one year after works completion, including supply consumables, filters, oil, etc. for the sucessful maintenance of the generator as per manufacturer's recommendations, including emergency calls.	Item	1		
64	Earthing and bonding of generator as required in the specifications NOTE: CHANGEOVER SWITCH TO BE LOCATED IN KIOSK. PLEASE REFER TO BILL FOR DISTRIBUTION BOARDS AND KIOSK THE PLINTH TO BE CONSTRUCTED IS TO HOLD 110% OF THE FUEL CAPACITY. THE PLINTH DIMENSIONS ARE TO BE (LxBxH) 3500MMx2000MMx200MM WITH A 130MM WALL RISE ON THE SIDES TO FORM A BUND WALL. A 32MM LEVER BALL STOP VALVE SHALL ALSO BE INSTALLED AT ONE END OF THE PLINTH TO FACILITATE DRAINAGE. THE PLINTH FLOORING SHOULD SLOPE SLIGHTLY TO THE BALL VALVE. THE GROUND IS TO BE EXCAVATED AND PREPARED FOR THE CASTING OF THE PLINTH. THE FINAL LOCATION OF THE PLINTH IS TO BE DETERMINED ON SITE. THE PLINTH SHALL CURE FOR A MINIMUM OF SEVEN DAYS BEFORE THE GENERATOR IS PLACED. BEFORE THE PLINTH IS TO BE CAST, A 110MM HDPE SLEEVE MUST BE PLACED FOR CABLE RECTICULATION.SHOP DRAWINGS FOR PLINTH TO BE SUPPLIED.THE CONTRACTOR IS TO SUPPLY THE DRAWINGS FOR THE PLINTH AS REQUIRED. PAVING IS TO BE LAID AROUND THE PLINTH 1M AWAY FROM THE GENERATOR SIDES. Excavating in earth situated within the following successive depth ranges:	Item	1		
65	0 m up to 2 m (LIC) Pavement layer constructed from imported material	m3	6		
66	G7 gravel base (unstabilized gravel) compacted to 97% MOD AASHTO desity	m3	3		
	CARRIED FORWARD				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
	Cast insitu concrete plinth with mesh ref 193				
67	Class 30/19 concrete	m3	2		
68	Type 193 fabric reinforcement	m2	7		
69	Finishing top surfaces of concrete surface beds smooth with wood float	m2	7		
	Brickwork for bund wall:				
70	One brick walls plastered on the inside and outside	m2	2		
71	External cement plaster on brick wall wood floated	m2	2		
	Curing of concrete				
72	Cover with impermeable sheeting (plastic or similar) for at least 7 days	m2	10		
	Formwork to provide surface finish to:				
73	Smooth formwork to sides of edges, risers and ends not exceeding 300mm wide	m	11		
	Concrete block paving:				
74	60mm thick, Class 2, type S-A bricks laid in a herringbone pattern with 20mm thick bedding sand	m2	9		
75	200mm edging on and including 200x100mm thick unreinforced concrete bedding including, excavations, formwork, etc.	m	12		
76	Approved weed killer applied as per manufacturers specifications under paving	m2	22		
	Piping				
77	Supply and install a 32mm copper pipe	m	1		
78	Extra over copper pipes for 32mm fittings	No	4		
	CARRIED FORWARD				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
79	Supply and install 32mm level ball stop valve through bund wall A 1.8 METER HIGH THREE SPOKE STEEL PALISADE FENCE SHALL BE ERECTED AROUND THE GENERATOR, PLINTH AND PAVING AT A DISTANCE OF 1 METER AWAY FROM THE GENERATOR. A 1 METER WIDE PEDESTRIAN GATE SHALL BE INSTALLED AS WELL. STEEL PALISADE POLES SHALL BE INSTALLED ACCORDING TO MANUFACTURER RECOMMENDATIONS. THE CONTRACTOR IS TO SUPPLY DRAWINGS OF THE FENCE BEFORE INSTALLATION.	no	1		
80	Supply and install galvanised steel palisade fence with devil fork, to surround generator paving area and all necessary fixing accessories.	m	17		
81	Supply and install 76x76mm 1,8m high galvanised steel palisade fencing poles	No	9		
82	300x300x6mm galvanised steel baseplate for palisade poles, including fixing bolts to concrete on four corners of each baseplate	No	9		
83	PVC caps for palisade poles	No	9		
84	Supply and install concrete base for galvanised steel palisade poles of 300mmX300mm and 600mm deep, including excavations. Fence poles to be fixed into concrete base according to manufacturer recommendations.	No	9		
85	Supply and install 1m wide and 1,8m high galvanised steel palisade pedestrian gate including padlock and three sets of keys, and all necessary fixing materials including hinges and locking mechanism.	No	1		
	BILL 3 CARRIED FORWARD TO SECTION 2 SUMMARY				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BILL 4: SMALL POWER INSTALLATION				
	BILLS OF QUANTITIES PERTAINING TO SMALL POWER ELECTRICAL INSTALLATIONS				
	CONDUITS AS DESCRIBED IN ELECTRICAL SPECIFICATION: BLACK ENAMELLED STEEL CONDUIT PLACED IN POSITION FOR CASTING INTO CONCRETE SLABS, SURFACE BEDS, SCREEDS, FOR BUILDING INTO BRICKWORK, SURFACE MOUNTED ON BRICK WALLS AND FIXED IN CEILING VOIDS AND DRY WALL PARTITIONING.				
86	Supply and install 25mm ² galvanised steel conduit complete with all accessories and wall fixing saddles spaced at 1m intervals	m	1		
87	Supply and install 20mm ² galvanised steel conduit complete with all accessories and wallfixing saddles spaced at 1m intervals	m	31		
	NEW CONDUIT BOXES AND FITTINGS: PLACED IN POSITION FOR CASTING INTO CONCRETE, FINISHED BRICKWORK, OR CEILING, INCLUDING LOCKNUTS AND BUSHES.				
88	Side entry round conduit box for 20mm diameter conduit (average 1 to 4-way)	No	4		
89	Side entry round conduit box for 25mm diameter conduit (average 1 to 4-way)	No	2		
	NEW PVC INSULATED CONDUCTORS: PVC INSULATED STRANDED COPPER CONDUCTOR DRAWN INTO WIRE WAYS, CONDUITS, ETC.				
90	2,5mm ² PVC housewire	m	10		
91	4,0mm ² PVC housewire	m	50		
92	6mm ² PVC housewire	m	1		
	NEW BARE COPPER EARTH CONDUCTORS: BARE STRANDED COPPER CONDUCTOR DRAWN INTO WIRE WAYS, CONDUITS, ETC.				
93	2,5mm ² bare copper wire	m	25		
	CARRIED FORWARD				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
94	4,0mm ² bare copper wire	m	1		
95	16mm ² bare copper wire	m	20		
	TRUNKING, SERVICE CHANNELS, POWER SKIRTINGS, ETC:				
	APPROVED GALVANISED STEEL TRUNKING FOR WIRING MOUNTED ON WALL AND IN ROOF, INCLUDING ALL MOUNTING ACCESSORIES COLOUR TO MATCH WALL.				
96	Supply and install 76x51mm 1mm thick galvanised steel trunking with cover including all wall fixing accessories, fixed at 0,5m intervals	m	10		
97	Supply and install 90 degree elbow for 76x51mm 1mm thick galvanised steel trunking with cover including fixing accessories	No	4		
98	Supply and install 2 compartment power skirting to match existing in server room	m	5		
	NEW SWITCHED SOCKET OUTLETS: APPROVED SWITCHED SOCKET OUTLETS, ETC. COMPLETE WITH COVER PLATED FIXED IN FLUSHBOX AS SPECIFIED.				
99	Type 1D: 230V 16 A 3-pin socket single-outlet unit mounted to existing powerskirting with faceplate and mounting accessories	No	4		
	BILL 4 CARRIED FORWARD TO SECTION 2 SUMMARY				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BILL 5: FIRE EXTINGUISHER				
	BILLS OF QUANTITIES PERTAINING TO FIRE EXTINGUISHING EQUIPMENT				
100	Supply and install 9kg DCP fire extinguisher with weatherproof housing and fire extinguisher signage. To be mounted on steel palisade fence with galvanised steel bolts.	No	1		
	BILL 5				
	CARRIED FORWARD TO SECTION 2 SUMMARY				

SECTION 2: BILL OF QUANTITIES - TSEKI MAGISTRATES COURT

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Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	ELECTRICAL WORK ELECTRICAL INSTALLATIONS, PART IN GENERAL CONFINED POSITION AND PART IN PATCHES, INCLUDING SMALL QUANTITIES, ALL NECESSARY CAREFUL CUTTING IN, DISCONNECTING, MAKING GOOD, NEW MATERIALS, JUNCTIONS BETWEEN NEW WITH EXISTING MATERIALS, PREPARATION OF EXISTING TO RECEIVE NEW MATERIALS AND REMOVAL FROM SITE, ETC, WHERE APPLICABLE (REMOVAL OF EXISTING AND RELATED PREPARATION FOR NEW MATERIALS, WHERE APPLICABLE AND UNLESS OTHERWISE DESCRIBED, ELSEWHERE) THE BILL OF QUANTITIES MUST BE READ TOGETHER WITH THE SUPPLEMENTRY SPECIFICATION FOR THE ELECTRICAL INSTALLATION AND GENERATOR INSTALLATION INCLUDED IN THE TENDER DOCUMENT BILL 1: LOW VOLTAGE CABLES BILL OF QUANTITIES PERTAINING TO LOW VOLTAGE CABLES,TRENCHING, TERMINATION, JOINTING, CABLE GLANDS , TOGETHER WITH ALL ACCESSORIES REQUIRED FOR THE INSTALLATION . ALL CABLES TO HAVE MARKINGS ON IT INDICATING THE SIZE OF THE CABLE. CABLES WITHOUT THE MARKING WILL NOT BE ACCEPTED. (CABLES TO BE REMEASURED ON SITE) 600/1000 VOLT PVC/PVC/SWA/PVC/ECC COPPER PULLED THROUGH SLEEVES, LAID IN TRENCHES, WIREWAYS, ETC.(TRENCHING AND BACK FILLING MEASURED ELSEWHERE)				
1	Supply and install 50mm ² 4 core cable PVC/SWA	m	45		
2	Supply and install 35mm ² 4 core cable PVC/SWA	m	1		
3	Supply and install 6mm ² 2 core cable + Earth	m	40		
	BARE COPPER EARTH WIRE PULLED THROUGH SLEEVES, LAID IN TRENCHES, WIREWAYS, ETC.				
4	Supply and install 16mm ² bare copper earth wire	m	100		
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
5	Supply and install 6mm ² bare copper earth wire	m	50		
	CABLE TERMINATIONS COMPLETE FOR 600/1000 VOLT PVC/PVC/SWA/PVC/ECC COPPER CABLES.				
6	Complete termination for 50mm ² 4 core PVC/PVC/SWA /PVC/ECC cable, including glands and rubber shrouds, lugs, bolts, nuts, washers and terminating onto busbars/ terminals, etc.	No	4		
7	Complete termination for 35mm ² 4 core PVC/PVC/SWA /PVC/ECC cable, including glands and rubber shrouds, lugs, bolts, nuts, washers and terminating onto busbars/ terminals, etc.	No	4		
8	Complete termination for 6mm ² 2 core +Earth cable, including glands and rubber shrouds, lugs, bolts, nuts, washers and terminating onto busbars/terminals, etc.	No	4		
9	Complete termination for 16mm ² bare copper earth wire cable including glands and rubber shrouds, lugs, bolts, nuts, washers and terminating onto busbars/terminals, etc.	No	12		
10	Complete termination for 6mm ² bare copper earth wire cable including glands and rubber shrouds, lugs, bolts, nuts, washers and terminating onto busbars/terminals, etc.	No	4		
	EXCAVATIONS IN EARTH FOR CABLE AND SLEEVE TRENCHES INCLUDING TEMPORARY SUPPORT OF SIDES,KEEPING EXCAVATIONS CLEAN AND DRY, BACKFILLING AND COMPACTION TO THE SPECIFICATION OF THE PRINCIPAL AGENT. TRENCHES SHALL ONLY BE DONE IF CABLES CANNOT BE ROUTED THROUGH EXISTING SLEEVES.				
	TRENCHES FOR POWER AND CONTROL CABLES				
11	Cable or sleeve trenches not exceeding 1 meter deep - in earth (LIC)	m ³	18		
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
12	Cable or sleeve trenches not exceeding 1 meter deep - soft rock (LIC)	m3	4		
13	Cable or sleeve trenches not exceeding 1 meter deep - hard rock (LIC)	m3	1		
14	Select from excavated material and install a sand bedding in trench 200mm deep and 450mm wide (100mm sand bedding above and 100mm below cable) (LIC)	m3	5		
15	Backfilling of trenches with excavated soil after cables have been laid and tested complete with compacting of backfilling, levelling-off of trenches and removing and dumping of surplus excavated material (LIC)	m3	15		
16	Risk of collapse of trench and hole excavation sides not exceeding 1,5m deep	m2	18		
17	Keeping excavations free of all water other than subterranean water	Item	1		
	TRENCHES FOR MIMIC PANEL CABLES				
18	Remove carefully existing paving brick and set aside (LIC)	m2	7		
19	Breaking up and removing unreinforced concrete in 100mm thick surface beds (LIC)	m2	7		
20	Excavate 500mm deep and 450mm wide earth. Soil to be removed in 100mm layers and kept aside for backfilling. (LIC)	m3	3		
21	Select from excavated material and install a soil bedding in trench 300mm deep and 450mm wide (200mm sand bedding above and 100mm below cable). Compaction every 100mm. (LIC)	m3	2		
22	Backfilling of trenches with excavated soil after cables have been laid and tested complete with compacting of backfilling, levelling-off of trenches and removing and dumping of surplus excavated material. (LIC)	m3	1		
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
23	60mm rectangular precast concrete pavers laid to herringbone pattern with 20mm clean river sand bed	m2	6		
24	200mm edging on and including 200x150mm thick unreinforced concrete bedding including excavation, formwork, etc.	m	4		
25	Approved weedkiller as per manufacturers specifications under paving	m2	6		
	SUPPLY AND INSTALL THE FOLLOWING HDPE				
26	Supply and install 110mm HDPE sleeve	m	40		
27	Supply and install 50mm HDPE sleeve	m	20		
28	Supply and install 90 degree 110mm HDPE elbow	No	2		
29	Supply and install 90 degree 50mm HDPE elbow	No	2		
	SUNDRIES:				
30	LT cable route maker tape placed above low voltage cable between 0,4m to 0,3m below ground level.	m	100		
31	Danger tape placed around cable trench.	m	160		
32	Test and commission the complete reticulation installation	Item			
	BILL 1				
	CARRIED FORWARD TO SECTION 3 SUMMARY				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BILL 2: DISTRIBUTION BOARDS AND KIOSK BILLS OF QUANTITIES PERTAINING TO DISTRIBUTION BOARDS AND EQUIPMENT OF THE ELECTRICAL INSTALLATIONS: SUPPLY, INSTALL AND COMMISSION THE FOLLOWING EQUIPMENT TO EXISTING DISTRIBUTION BOARD. COMPLETE WITH ALL WIRING, TERMINALS, LABELS, NEW TYPED LEGEND CARD, ETC. THE INSTALLATION TO COMPLY WITH THE LATEST SANS 10142-1: THE WIRING OF PREMISES FOR LOW VOLTAGE INSTALLATIONS. ALLOW FOR TESTING, BALANCING AND COMMISSIONING OF THE COMPLETE INSTALLATION OF THE FOLLOWING DB'S Distribution board:DB Main(Existing to be rewired)				
33	Allow for test, balance, tracing of circuits, commission and service of existing, additional and new circuits on DB Main as well as providing a legend card, engraved labels indicating circuits, where DB is fed from and cable size, blanks, warning labels and conductor sizes.	Item	1		
34	Service existing DB to accept new equipment by providing new front panel to existing DB, busbars, terminals, etc.	Item	1		
35	Epoxy powder coat existing DB framework, door, etc. to department specification colour.	Item	1		
36	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the DB	Item	1		
37	Allow for earthing and bonding	Item	1		
	Equipment to be installed:				
38	Supply and install 150A 3P 15kA circuit breaker	No	1		
39	Supply and install 63A 3P 6kA circuit breaker	No	1		
40	Supply and install 63A 3P + N 6kA E/L circuit breaker	No	1		
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
41	Supply and install 63A 1P + N 6kA E/L circuit breaker	No	6		
42	Supply and install 63A 1P 6kA circuit breaker	No	6		
43	Supply and install 40A 1P 6kA circuit breaker	No	2		
44	Supply and install 30A 1P + N 6kA circuit breaker	No	1		
45	Supply and install 30A 1P 6kA circuit breaker	No	1		
46	Supply and install 25A 1P 6kA circuit breaker	No	1		
47	Supply and install 20A 1P 6kA circuit breaker	No	12		
48	Supply and install 10A 1P 6kA circuit breaker	No	15		
49	Supply and install 63A 3P 6kA switch disconnector	No	1		
50	Supply and install type 2 surge arrestor 40 kA 3P + N with indication	No	1		
	Distribution board: DB Air-conditioner (Existing)				
51	Allow for test, balance, tracing of circuits, commission and service of existing, additional and new circuits on DB Main as well as providing a legend card, engraved labels indicating circuits, where DB is fed from and cable size, blanks, warning labels and conductor sizes.	Item	1		
52	Epoxy powder coat existing DB to department specification colour.	Item	1		
53	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the DB	Item	1		
54	Allow for earthing and bonding	Item	1		
	Distribution board: DB Server (Existing)				
55	Allow for test, balance, tracing of circuits, commission and service of existing, additional and new circuits on DB Main as well as providing a legend card, engraved labels indicating circuits, where DB is fed from and cable size, blanks, warning labels and conductor sizes.	Item	1		
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
56	Epoxy powder coat existing DB. to department specification colour.	Item	1		
57	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the DB	Item	1		
58	Allow for earthing and bonding	Item	1		
	Distribution board: DB Guard house (Existing)				
59	Allow for test, balance, tracing of circuits, commission and service of existing, additional and new circuits on DB Main as well as providing a legend card, engraved labels indicating circuits, where DB is fed from and cable size, blanks, warning labels and conductor sizes.	Item	1		
60	Epoxy powder coat existing DB framework, door, etc. to department specification colour.	Item	1		
61	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the DB	Item	1		
62	Allow for earthing and bonding	Item	1		
	Equipment to be installed:				
63	Supply and install 40A 1P + N 6kA circuit breaker	No	1		
64	Supply and install 63A 1P +N 6kA E/L circuit breaker	No	1		
65	Supply and install 20A 1P 6kA circuit breaker	No	2		
66	Supply and install 10A 1P 6kA circuit breaker	No	2		
67	Supply and install type 2 surge arrestor 40KA 1P + N	No	1		
	Distribution board: DB UPS (New)				
68	Allow for test, balance, tracing of circuits, commission and service of existing, additional and new circuits on DB Main as well as providing a legend card, engraved labels indicating circuits, where DB is fed from and cable size, blanks, warning labels and conductor sizes.	Item	1		
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
69	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the DB Equipment to be installed:	Item	1		
70	Supply and install 30A 1P + N 6kA circuit breaker	No	1		
71	Supply and install 20A 1P 6kA circuit breaker	No	4		
72	Supply and install surface mount distribution board	No	1		
73	Supply and install type 2 surge arrestor 40KA 1P + N	No	1		
74	Allow for earthing and bonding Distribution board: DB Outhouse (New)	Item	1		
75	Allow for test, balance, tracing of circuits, commission and service of existing, additional and new circuits on DB Main as well as providing a legend card, engraved labels indicating circuits, where DB is fed from and cable size, blanks, warning labels and conductor sizes.	Item	1		
76	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the DB	Item	1		
77	Allow for the safe disconnection of the existing cable that feeds the Outhouse from source and the Outhouse. Local supply authorities to be contacted to verify the cable that feeds the Outhouse and obtain permission to disconnect. Equipment to be installed:	Item	1		
78	Supply and install 40A 1P + N 6kA circuit breaker	No	1		
79	Supply and install 63A 1P + N 6kA E/L circuit breaker	No	1		
80	Supply and install 20A 1P 6kA circuit breaker	No	2		
81	Supply and install 10A 1P 6kA circuit breaker	No	2		
82	Supply and install type 2 surge arrestor 40KA 1P + N	No	1		
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
83	Supply and install surface mount distribution board Kiosk: DK Outdoor lights (Existing)	No	1		
84	Epoxy powder coat existing Kiosk to department specification colour.	Item	1		
85	Allow for test, balance, tracing of circuits, commission and service of existing, additional and new circuits on the kiosk as well as providing a legend card, engraved labels indicating circuits, where Kiosk is fed from and cable size, blanks, warning labels and conductor sizes.	Item	1		
86	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the Kiosk	Item	1		
87	Allow for earthing and bonding Equipment to be installed:	Item	1		
88	Supply and install 40A 3P contactor. To be connected to day/night switch	No	1		
89	Supply and install day/night switch	No	1		
90	Supply and install 5A 1P 6KA circuit breaker Kiosk: DK Main (New)	No	10		
91	Allow for test, balance, tracing of circuits, commission and service of existing, additional and new circuits on the kiosk as well as providing a legend card, engraved labels indicating circuits, where Kiosk is fed from and cable size, blanks, warning labels and conductor sizes.	Item	1		
92	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the Kiosk	Item	1		
93	Earthing and bonding of kiosk including earth mats and earth rods	Item	1		
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
	Equipment to be installed:				
94	Supply and install 200A 3P 25kA circuit breaker (Normal section)	No	1		
95	Supply and install 40A 1P + N 15kA circuit breaker (Emergency section)	No	1		
96	Relocate and install existing energy meter from DB Main to kiosk (Normal section).NOTE: The contractor is to liaise with the local electricity supplier to have the meter relocated. Officials from the local electricity supplier is to be present during the commissioning.	No	1		
97	Supply and install automatic changeover system for the 80 Kva generator to be supplied, including circuit breakers, contactors, and all necessary equipment for the load to be switched at the kiosk and not at the generator.	No	1		
98	2,5mm 7 core cable in HDPE sleeve from generator to kiosk to operate the changerover switch. To be installed in the same trench as power cable. Including terminations	m	40		
99	4mm 4 core cable in HDPE sleeve from generator to kiosk to operate the changerover switch. To be installed in the same trench as power cable. Including terminations	m	40		
100	Supply and install C3R12 lockable kiosk on 300mm high concrete plinth, to be weatherproof in department specified colour.	No	1		
101	Excavation and preparing ground for for weatherproof kiosk. (LIC)	Item	1		
	Pole mounted DB				
102	Supply and installed pole mounted DB for housing main circuit breaker to facility. DB to be weatherproof.	Item	1		
103	Allow for supplying the Principal Agent at completion with a certificate of compliance as specified for the work carried out on the db	Item	1		
	BILL 2 CARRIED FORWARD TO SECTION 3 SUMMARY				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BILL 3: LIGHT FITTINGS OF ELECTRICAL INSTALLATION BILLS OF QUANTITIES PERTAINING TO LIGHT FITTINGS OF THE ELECTRICAL INSTALLATIONS THIS BILL MUST BE READ IN CONJUNCTION WITH THE ELECTRICALSPECIFICATIONS PROVIDED IN THE TENDER DOCUMENT SUPPLY, INSTALL AND COMMISSION NEW LUMINAIRES COMPLETE WITH LAMPS, INTERNAL WIRING, CONNECTIONS, ETC AS SPECIFIED				
104	Type A - 1200mm Flourescent light fitting with 2x36W bulbs in cool white.	No	10		
105	Type B - 12W LED round wall/ceiling light with black base. Colour temp 4000k. To match existing	No	10		
106	Type C - The rectangular luminaire and Trim ring is manufactured of a high-Pressure die-cast marine grade aluminium. Colour black. The dimensions shall be 341mm * 195mm * 105mm. The base and trim are Finished with epoxy powder coating. The Diffuser shall be an opal non-discolouring High impact acrylic injection molded Diffuser. Ip 65. Mains connection: 220...240v. Pf 0.95, 50hz, rated input power: 9w, 1370 Lumen, cri >80, 4000k, 60000hr lifetime, Luminaire shall bear the sans 60598-2-1 Safety mark.	No	3		
107	Type D - The luminaire base and trim ring is manufactured of a high-pressure die-cast marine grade aluminium. The base and trim are finished with epoxy powder coating. Opal non-discolouring high impact acrylic injection molded diffuser. Vandal resistance. IP 65. It shall be designed to operate LEDs of (9W).	No	6		
108	Type E - 25W Square industrial bulkhead, die cast aluminium body and diffuser framefinished in a thermos setting epoxy powder. The diffuser to be clear polycarbonate, colour temperature of 4000K. IP 65	No	7		
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
109	Type F - 2X26W bottom pole mounted light fitting. To match existing. IP 65. Colour temperature 4000k. 230 V +/- 10%. Including all control gear and mounting accessories needed to mount on existing pole. SERVICE EXISTING LUMINAIRES COMPLETE WITH LAMPS, INTERNAL WIRING, CONNECTIONS, CLEANING OF DIFFUSER, ETC AS SPECIFIED REFER TO SPECIFICATIONS TO DETERMINE LIGHT FITTING.	No	13		
110	Type A	No	1		
111	Type B	No	1		
112	Type C	No	1		
113	Type E	No	1		
114	Type F	No	1		
	BILL 3 CARRIED FORWARD TO SECTION 3 SUMMARY				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BILL 4: GENERATOR BILLS OF QUANTITIES PERTAINING TO THE THE ELECTRICAL INSTALLATIONS PLEASE REFER TO SUPPLEMENTARY GENERATOR SPECIFICATIONS WHEN PRICING AS IT IS WHAT IS REQUIRED OF THE COMPLETE GENERATOR INSTALLATION.				
115	Supply and install a new silent weatherproof 80 kVA generator on steel skids, including fuel tank for 24 hours operation at 100% load. The generator installation is to also include all fittings, auxiliary wiring, electric fuel pump with 3m hose, batteries, fuel filtration, alternator, local sounders and main control panel. The generator should also be lockable and padlocks with keys to be provided. Three sets of operating manuals are also to be provided. The generator is to be factory tested. The supply and installation of the generator will be inclusive of all other necessary equipment and items needed for the successful installation of the generator. Refer to generator specifications for detailed requirements.	No	1		
116	Supply and install a mimic panel in the control room as described in the generator specifications.	No	1		
117	Supply and install 2,5 mm 7 core cable for the mimic panel including terminations, and all necessary fixing items. (Trenching measured elsewhere).	m	45		
118	Guarentee and maintenance for one year after works completion, including supply consumables, filters, oil, etc. for the successful maintenance of the generator as per manufacturer's recommendations, including emergency calls.	Item			
119	Earthing and bonding of generator as required in the specifications	Item			
	NOTE: CHANGEOVER LOAD TO BE DONE IN KIOSK. PLEASE REFER TO BILL FOR DISTRIBUTION BOARDS AND KIOSK				
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
	THE PLINTH TO BE CONSTRUCTED IS TO HOLD 110% OF THE FUEL CAPACITY. THE PLINTH DIMENSIONS ARE TO BE (LxBxH) 3500MMx 2000MMx200MM WITH A 130MM WALL RISE ON THE SIDES TO FORM A BUND WALL. A 32MM BALL VALVE SHALL ALSO BE INSTALLED AT ONE END OF THE PLINTH TO FACILITATE DRAINAGE. THE PLINTH FLOORING SHOULD SLOPE SLIGHTLY TO THE BALL VALVE. THE GROUND IS TO BE EXCAVATED AND PREPARED FOR THE CASTING OF THE PLINTH. THE FINAL LOCATION OF THE PLINTH IS TO BE DETERMINED ON SITE. THE PLINTH SHALL CURE FOR A MINIMUM OF SEVEN DAYS BEFORE THE GENERATOR IS PLACED. BEFORE THE PLINTH IS TO BE CAST, A 110MM HDPE SLEEVE MUST BE PLACED FOR CABLE RECTICULATION. PAVING IS TO BE LAID AROUND THE PLINTH 1M AWAY FROM THE GENERATOR SIDES. Excavating in earth situated within the following successive depth ranges: 120 0 m up to 2 m (LIC) Pavement layer constructed from imported material 121 G7 gravel base (unstabilized gravel) compacted to 97% MOD AASHTO desity Cast insitu concrete plinth with mesh ref 193 122 Class 30/19 concrete 123 Type 193 fabric reinforcement 124 Finishing top surfaces of concrete surface beds smooth with wood float Brickwork for bund wall: 125 One brick wall plastered on the inside and outside 126 External cement plaster on brick wall wood floated				
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
	Curing of concrete				
127	Cover with impermeable sheeting (plastic or similar) for at least 7 days	m2	9		
	Formwork to provide surface finish to:				
128	Smooth formwork to sides of edges, risers and ends not exceeding 300mm wide	m	11		
	Concrete block paving:				
129	60mm thick, Class 2, type S-A bricks laid in a herringbone pattern with 20mm thick bedding sand	m2	6		
130	200mm edging on and including 200x100mm thick unreinforced concrete bedding including, excavations, formwork, etc.	m	12		
131	Approved weed killer applied as per manufacturers specifications under paving	m2	22		
	Piping				
132	Supply and install a 32mm copper pipe	m	0.3		
133	Extra over copper pipes for 32mm fittings	No	4		
134	Supply and install 32mm lever ball stop valve through bund wall	no	1		
	Concrete kerbing-channelling combination				
135	Figure 3 kerb in accordance with SANS 927.	m	10		
136	Cast in situ class concrete 30/19 V drains, 95mm thick with mesh ref 395, 1m wide	m3	1		
	BILL 4 CARRIED FORWARD TO SECTION 3 SUMMARY				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BILL 5: SMALL POWER INSTALLATION BILLS OF QUANTITIES PERTAINING TO SMALL POWER ELECTRICAL INSTALLATIONS CONDUITS AS DESCRIBED IN ELECTRICAL SPECIFICATION: BLACKENAMELLED STEEL CONDUIT PLACED IN POSITION FOR CASTING INTO CONCRETE SLABS, SURFACE BEDS, SCREEDS, FOR BUILDING INTO BRICKWORK, SURFACE MOUNTED ON BRICK WALLS AND FIXED IN CEILING VOIDS AND DRY WALL PARTITIONING.				
137	Supply and install 25mm galvanised steel conduit complete with all accessories and wall fixing saddles spaced at 1m intervals	m	20		
138	Supply and install 20mm galvanised steel conduit complete with all accessories and wall fixing saddles spaced at 1m intervals	m	31		
	NEW CONDUIT BOXES AND FITTINGS: PLACED IN POSITION FOR CASTING INTO CONCRETE, BUILDING OR CHASED INTO EXISTING FINISHED BRICKWORK, OR CEILING, INCLUDING LOCKNUTS AND BUSHES.				
139	Side entry round conduit box for 20mm diameter conduit (average 1 to 4-way)	No	10		
140	Side entry round conduit box for 25mm diameter conduit (average 1 to 4-way)	No	2		
	EXPANSION BOXES: SUPPLY AND INSTALL FLUSH MOUNTED GALVANISED STEEL EXPANSION BOXES COMPLETE WITH STEEL PAINTED COVERS, TERMINATION OF ALL CONDUITS, ETC.				
141	100 x 50 mm Galvanised box	No	4		
142	100 x 100mm galvanised box	No	4		
	NEW PVC INSULATED CONDUCTORS: PVC INSULATED STRANDED COPPER CONDUCTOR DRAWN INTO WIRE WAYS, CONDUITS, ETC.				
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
143	2,5mm ² PVC housewire	m	200		
144	4,0mm ² PVC housewire	m	200		
145	6mm ² PVC housewire	m	40		
	NEW BARE COPPER EARTH CONDUCTORS: BARE STRANDED COPPER CONDUCTOR DRAWN INTO WIRE WAYS, CONDUITS, ETC.				
146	2,5mm ² bare copper wire	m	200		
147	4,0mm ² bare copper wire	m	200		
	TRUNKING, SERVICE CHANNELS, POWER SKIRTINGS, ETC:				
	APPROVED GALVANISED STEEL TRUNKING FOR WIRING MOUNTED ON WALL AND IN ROOF, INCLUDING ALL MOUNTING ACCESSORIES COLOUR TO MATCH WALL.				
148	Supply and install 76x25mm 1mm thick galvanised steel trunking with cover including all wall fixing accessories, fixed at 0,5m intervals	m	10		
149	Supply and install 90 degree elbow for 76x25mm 1mm thick galvanised steel trunking with cover including fixing accessories	No	2		
	NEW LIGHT SWITCHES: SWITCHES COMPLETE WITH STEEL COVER PLATE FIXED IN FLUSH BOX AS SPECIFIED				
150	230 V 16A One lever one way switch	No	15		
151	230 V 16A Two lever one way switch	No	5		
152	230 V 16A Three lever one way switch	No	2		
153	230 V 16A One lever two way switch	No	2		
	CARRIED FORWARD				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BROUGHT FORWARD				
	NEW SWITCHED SOCKET OUTLETS: APPROVED SWITCHED SOCKETOUTLETS, ETC. COMPLETE WITH COVER PLATED FIXED IN FLUSHBOX AS SPECIFIED.				
154	Type 1A: 230V 16 A 3-pin socket single-outlet unit mounted to 100 x 100 x 50mm outlet box	No	15		
155	Type 1B: 230V 16 A 3-pin Euro socket outlet unit mounted to 100 x 100 x 50mm outlet box	No	10		
156	Type 1C: 230V 16 A 3-pin socket double-outlet unit mounted to 100 x 100 x 50mm outlet box	No	10		
157	Type 1D: 230V 16 A 3-pin socket single-outlet unit mounted to existing power skirting with faceplate and mounting accessories	No	4		
	NEW ISOLATORS: SUPPLY , INSTALL AND COMMISSION NEW ISOLATOR OUTLETS COMPLETE WITH COVER PLATE FIXED IN FLUSHBOX OR SURFACE MOUNT				
158	30A double pole weatherproof isolator	No	4		
	BILL 5 CARRIED FORWARD TO SECTION 3 SUMMARY				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
	BILL 6: FIRE EXTINGUISHER				
	BILLS OF QUANTITIES PERTAINING TO FIRE EXTINGUISHING EQUIPMENT				
159	Supply and install 9kg DCP fire extinguisher with weatherproof housing and fire extinguisher signage. To be mounted on generator housing.	No	1		
	BILL 6				
	CARRIED FORWARD TO SECTION 3 SUMMARY				

Section 3: BILL OF QUANTITIES - TSESENG MAGISTRATES COURT

ITEM NO	DESCRIPTION	UNIT	QTY	RATE ZAR	AMOUNT ZAR
SECTION 3 SUMMARY					
Bill No:		Pg No:			Amount
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2	Distribution boards and kiosk		39-44		
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4	Generator		47-49		
5	Small power installation		50-52		
6	Fire extinguisher		53		
CARRIED FORWARD TO SECTION 4 SUMMARY					

SECTION 4: FINAL TENDERED SUMMARY

	SECTION 4 : FINAL SUMMARY							
Section					Amount			
1 Preliminaries and General								
2 Tseki Magistrates Court - Installation of generator								
3 Tsenseng Magistrates Court - Installation of generator								
TOTAL TENDERED VALUE EXCLUDING. VAT.								
15% VAT								
TOTAL TENDERED VALUE INCLUDING VAT. CARRIED TO FORM AND OFFER AND ACCEPTANCE DPW-07(EC)								



**REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF PUBLIC WORKS**

ELECTRICAL INSTALLATION SUPPLEMENTARY SPECIFICATION

FOR

TSEKI MAGISTRATES COURT: INSTALLATION OF GENERATOR

CONSISTING OF: ELECTRICAL WORK

PG

1: Electrical Installation

1 to 25

See separate documents for:

Generator Specifications

ELECTRICAL ENGINEER

DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE

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PART B: ELECTRICAL WORK

NOTICE TO TENDERERS

1. The tenderer for the principal contract shall submit additional information regarding the installer of the Electrical Installation and also complete the additional particulars of the electrical installer at the end of this document.
2. The tenderer shall also complete the material schedule at the end of this document when submitting his/her tender.

SPECIFICATION FOR ELECTRICAL WORK

PART 1 - GENERAL

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PART 1 - GENERAL

1 TESTS

After completion of the works and before practical completion is achieved, a full test will be carried out on the installation for a period of sufficient duration to determine the satisfactory working thereof. During this period the installations will be inspected and the Contractor shall make good, to the satisfaction of the Principle Agent/Electrical Engineer or the employer, any defects which may arise.

The Contractor shall provide all instruments and equipment required for testing and any water, power and fuel required for the commissioning and testing of the installations at completion.

2 MAINTENANCE OF INSTALLATIONS

With effect from the date of the Practical completion Certificate the Contractor shall at his own expense undertake the regular servicing of the installation during the maintenance period and shall make all adjustments necessary for the correct operation thereof.

If during the said period the installations is not in working order for any reason for which the Contractor is responsible, or if the installations develops defects, he shall immediately upon being notified thereof take steps to remedy the defects and make any necessary adjustments.

Should such stoppages however be so frequent as to become troublesome, or should the installations otherwise prove unsatisfactory during the said period the Contractor shall, if called upon by the Principle Agent/Electrical Engineer or the Employer, at his own expense replace the whole of the installations or such parts thereof as the Principal Agent/Electrical Engineer or the Employer may deem necessary with apparatus specified by the Principal Agent/Electrical Engineer or the Employer.

3 REGULATIONS

The installation shall be erected and tested in accordance with the Acts and Regulations as indicated in the scope of works

4 NOTICES AND FEES

The Contractor shall give all notices required by and pay all necessary fees, including any inspection fees, which may be due to the local Supply Authority.

On production of the official account, only the net amount of the fee charged by the Supply Authority for connection of the installation to the supply mains, will be refunded to the Contractor by the Employer.

5 SCHEDULE OF FITTINGS

In all instances where schedule of light, socket outlet and power points are attached to or included on the drawings, these schedules are to be regarded as forming part of the specification.

6 QUALITY OF MATERIALS

Only materials of first class quality shall be used and all materials shall be subject to the approval of the Employer. Departmental specifications for various materials to be used on this Contract are attached to and form part of this specification.

Wherever applicable the material is to comply with the relevant South African Bureau of Standards, specifications, or to IEC Specifications, where no SANS Specifications exist.

Materials wherever possible, must be of South African manufacture.

7 CONDUIT AND ACCESSORIES

The type of conduit and accessories required for the service, i.e. whether the conduit and accessories shall be of the screwed type, plain-end type or of the non-metallic type and whether metallic conduit shall be black enamelled or galvanised, is specified in Part 2 of this specification.

Unless other methods of installation are specified for certain circuits, the installation shall be in conduit throughout. No open wiring in roof spaces or elsewhere will be permitted.

The conduit and conduit accessories shall comply fully with the applicable SANS specifications as set out below and the conduit shall bear the mark of approval of the South African Bureau of Standards.

- a) Screwed metallic conduit and accessories: SANS 61386-1 and 21.
- b) Plain-end metallic conduit and accessories: SANS 61386-1 and 21.
- c) Non-metallic conduit and accessories: SANS 61386-1 and 21.

All conduit fittings except couplings, shall be of the inspection type. Where cast metal conduit accessories are used, these shall be of malleable iron. Zinc base fittings will not be allowed.

Bushes used for metallic conduit shall be brass and shall be provided in addition to locknuts at all points where the conduit terminates at switchboards, switch-boxes, draw-boxes, etc.

Draw-boxes are to be provided in accordance with the "Wiring Code" and wherever necessary to facilitate easy wiring.

For light and socket outlet circuits, the conduit used shall have an external diameter of 20mm. In all other instances the sizes of conduit shall be in accordance with the "Wiring Code" for the specified number and size of conductors, unless otherwise directed in part 2 of this specification or indicated on the drawings.

Only one manufactured type of conduit and conduit accessories will be permitted throughout the installation.

Running joints in screwed conduit are to be avoided as far as possible and all conduit systems shall be set or bent to the required angles. The use of normal bends must be kept to a minimum with exception of larger diameter conduits where the use of such bends is essential.

All metallic conduit shall be manufactured of mild steel with a minimum thickness of 1,2mm for plain-end conduit and 1,6mm in respect of screwed conduit.

Under no circumstances will conduit having a wall thickness of less than 1,6mm be allowed in screed laid on top of concrete slabs.

Bending and setting of conduit must be done with special bending apparatus manufactured for the purpose and which are obtainable from the manufacturers of the conduit systems. Damage to conduit resulting from the use of incorrect bending apparatus or methods applied must on indication by the Department's inspectorate staff, be completely removed and rectified and any wiring already drawn into such damaged conduits must be completely renewed at the Contractor's expense.

Conduit and conduit accessories used for flame-proof or explosion proof installations and for the suspension of luminaires as well as all load bearing conduit shall in all instances be of the metallic screwed type.

All conduit and accessories used in areas within 50 km of the coast shall be galvanised to SANS 32 and SANS 121.

Tenderers must ensure that general approval of the proposed conduit system to be used is obtained from the local electricity supply authority prior to the submission of their tender. Under no circumstances will consideration be given by the Department to any claim submitted by the Contractor, which may result from a lack of knowledge in regard to the supply authority's requirements.

8 CONDUIT IN ROOF SPACES

Conduit in roof spaces shall be installed parallel or at right angles to the roof members and shall be secured at intervals not exceeding 1,5m by means of saddles screwed to the roof timbers.

Nail or crampets will not be allowed.

Where non-metallic conduit has been specified for a particular service, the conduit shall be supported and fixed with saddles with a maximum spacing of 450 mm. The Contractor shall supply and install all additional supporting timbers in the roof space as required.

Under flat roofs, in false ceilings or where there is less than 0,9m of clearance, or should the ceilings be insulated with glass wool or other insulating material, the conduit shall be installed in such a manner as to allow for all wiring to be executed from below the ceilings.

Conduit runs from distribution boards shall, where possible terminate in fabricated sheet steel draw-boxes installed directly above or in close proximity to the boards.

9 SURFACE MOUNTED CONDUIT

Wherever possible, the conduit installation is to be concealed in the building work; however, where unavoidable or otherwise specified under Part 2 of the specification, conduit installed on the surface must be plumbed or levelled and only straight lengths shall be used.

The use of inspection bends is to be avoided and instead the conduit shall be set uniformly and inspection coupling used where necessary.

No threads will be permitted to show when the conduit installation is complete, except where running couplings have been employed.

Running couplings are only to be used where unavoidable, and shall be fitted with a sliced couplings as a lock nut.

Conduit is to be run on approved spaced saddles rigidly secured to the walls.

Alternatively, fittings, tees, boxes, couplings etc., are to be cut into the surface to allow the conduit to fit flush against the surface. Conduit is to be bedded into any wall irregularities to avoid gaps between the surface and the conduit.

Crossing of conduits is to be avoided, however, should it be necessary purpose-made metal boxes are to be provided at the junction. The finish of the boxes and positioning shall be in keeping with the general layout.

Where several conduits are installed side by side, they shall be evenly spaced and grouped under one purpose-made saddle.

Distribution boards, draw-boxes, industrial switches and socket outlets etc., shall be neatly recessed into the surface to avoid double sets.

In situations where there are no ceilings the conduits are to be run along the wall plates and the beams.

Painting of surface conduit shall match the colour of the adjacent wall finishes.

Only approved plugging materials such as aluminium inserts, fibre plugs, plastic plugs, etc., and round-head screws shall be used for fixing saddles, switches, socket outlets, etc., to walls, wood plugs and the plugging in joints in brick walls are not acceptable.

10 CONDUIT IN CONCRETE SLABS

In order not to delay building operations the Contractor must ensure that all conduits and other electrical equipment which are to be cast in the concrete columns and slabs are installed in good time.

The Contractor shall have a representative in attendance at all times when the casting of concrete takes place.

Draw-boxes, expansion joint boxes and round conduit boxes are to be provided where necessary. Sharp bends of any nature will not be allowed in concrete slabs.

Draw and/or inspection boxes shall be grouped under one common cover plate, and must preferable be installed in passages or male toilets.

All boxes, etc., are to be securely fixed to the shuttering to prevent displacement when concrete is cast. The conduit shall be supported and secured at regular intervals and installed as close as possible to the neutral axis of concrete slabs and/or beams.

Before any concrete slabs are cast, all conduit droppers to switchboards shall be neatly spaced and rigidly fixed.

11 FLEXIBLE CONNECTIONS FOR CONNECTING UP OF STOVES, MACHINES, ETC.

Flexible tubing connections shall be of galvanised steel construction, and in damp situations of the plastic

sheathed galvanised steel type. Other types may only be used subject to the prior approval of the Department's site electrical representative.

Connectors for coupling onto the flexible tubing shall be of the gland or screw-in types, manufactured of either brass or cadmium or zinc plated mild steel, and the connectors after having been fixed onto the tubing, shall be durable and mechanically sound.

Aluminium and zinc alloy connectors will not be acceptable.

12 WIRING:

Except where otherwise specified in Part 2 of this specification, wiring shall be carried out in conduit throughout. Only one circuit per conduit will be permitted.

No wiring shall be drawn into conduit until the conduit installation has been completed and all conduit ends provided with bushes. All conduits to be clear of moisture and debris before wiring is commenced.

Unless otherwise specified in Part 2 of this specification or indicated on the service drawings, the wiring of the installation shall be carried out in accordance with the "Wiring Code". Further to the requirements concerning the installation of earth conductors to certain light points as set out in the "Wiring Code", it is a specific requirement of this document that where plain-end metallic conduit or non-metallic conduit has been used, earth conductors must be provided and drawn into the conduit with the main conductors to all points, including all luminaires and switches throughout the installation.

Wiring for lighting circuits is to be carried out with 2,5mm² conductors and a 2,5mm²-earth conductor. For socket outlet circuits the wiring shall comprise 4mm² conductors and a 2,5mm²-earth conductor. In certain instances, as will be directed in Part 2 of this specification, the sizes of the aforementioned conductors may be increased for specified circuits. Sizes of conductors to be drawn into conduit in all other instances, such as feeders to distribution boards, power points etc., shall be as specified elsewhere in this specification or indicated on the drawings. Sizes of conductors not specified must be determined in accordance with the "Wiring Code".

The loop-in system shall be followed throughout, and no joints of any description will be permitted.

The wiring shall be done in PVC insulated 600/1000 V grade cable to SANS 1507.

Where cable ends connect onto switches, luminaires etc., the end strands must be neatly and tightly twisted together and firmly secured. Cutting away of wire strands of any cable will not be allowed.

13 SWITCHES AND SOCKET OUTLETS

All switches and switch-socket outlet combination units shall conform to the Department Quality Specifications, which form part of this specification.

No other than 16 A 3 pin sockets are to be used, unless other special purpose types are distinctly specified or shown on the drawings.

All light switches shall be installed at 1,4m above finished floor level and all socket outlets as directed in the Schedule of Fittings which forms part of this specification or alternatively the height of socket outlets may be indicated on the drawings.

14 SWITCHGEAR

Switchgear, which includes circuit breakers, iron-clad switches, interlocked switch-socket outlet units, contactors, time switches, etc., is to be in accordance with the Departmental Quality Specifications which form part of this specification and shall be equal and similar in quality to such brands as may be specified.

For uniform appearance of switchboards, only one approved make of each of the different classes of switchgear mentioned in the Quality Specifications shall be used throughout the installations.

15 SWITCHBOARDS

All boards shall be in accordance with the types as specified, be constructed according to the detail or type drawings and must be approved by the Employer before installation.

In all instances where provision is to be made on boards for the supply authority's main switch and/or metering equipment the contractor must ensure that all requirements of the authorities concerned in this respect are met.

Any construction or standard type aboard proposed, as an alternative to that specified must have the prior approval of the Employer.

All busbars, wiring, terminals, etc., are to be adequately insulated and all wiring is to enter the switchgear from the back of the board. The switchgear shall be mounted within the boards to give a flush front panel. Cable and boxes and other ancillary equipment must be provided where required.

Clearly engraved labels are to be mounted on or below every switch. The working of the labels in English, is to be according to the lay-out drawings or as directed by the Electrical Engineer and must be confirmed on site. Flush mounted boards to be installed with the top of the board 2,0m above the finished floor level.

16 WORKMANSHIP AND STAFF

Except in the case of electrical installations supplied by a single-phase electricity supply at the point of supply, an accredited person shall exercise general control over all electrical installation work being carried out.

The workmanship shall be of the highest grade and to the satisfaction of the Employer.

All inferior work shall, on indication by the Employer's inspecting officers, immediately be removed and rectified by and at the expense of the Contractor.

17 VERIFICATION AND CERTIFICATION OF ELECTRICAL INSTALLATION (CERTIFICATE OF COMPLIANCE AND TEST REPORT)

On completion of the service, a certificate of compliance must be issued to the Principal Agent/Electrical Engineer or Employer in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) in the format as set out in SANS 10142-1 & 2.

18 EARTHING OF INSTALLATION

18.1 MAIN EARTHING

The type of main earthing must be as required by the supply authority if other than the Employer, and in any event as directed by the Principal Agent/Electrical Engineer, who may require additional earthing to meet test standards.

Where required an earth mat shall be provided, the minimum size, unless otherwise specified, being 1,0m x 1,0m and consisting of 4mm diameter hard-drawn bare copper wires at 250mm centres, brazed at all intersections.

Alternatively or additionally earth rods or trench earths may be required as specified or directed by the Electrical Engineer.

Installations shall be effectively earthed in accordance with the "Wiring Code" and to the requirements of the supply authority. All earth conductors shall be stranded copper with or without green PVC installation.

Connection from the main earth bar on the main board must be made to the cold water main, the incoming service earth conductor, if any and the earth mat or other local electrode by means of 12mm x 1,60 mm solid copper strapping or 16 mm² stranded (not solid) bare copper wire or such conductor as the Department's representative may direct. Main earth copper strapping where installed below 3m from ground level, must be run in 20 mm diameter conduit securely fixed to the walls.

All other hot and cold water pipes shall be connected with 12mm x 0,8mm perforated for solid copper

strapping (not conductors) to the nearest switchboard. The strapping shall be fixed to the pipework with brass nuts and bolts and against walls with brass screws at 150-mm centres. In all cases where metal water pipes, down pipes, flues, etc., are positioned within 1,6m of switchboards an earth connection consisting of copper strapping shall be installed between the pipework and the board. In vertical building ducts accommodating both metal water pipes and electrical cables, all the pipes shall be earthed at each distribution board.

18.2 ROOFS, GUTTERS AND DOWN PIPES

Where service connections consist of overhead conductors, all metal parts of roofs, gutters and down pipes shall be earthed. One bare 10mm² copper conductor shall be installed over the full length of the ceiling void, fixed to the top purlin and connected to the main earth conductor and each switchboard. The roof and gutters shall be connected at 15m intervals to this conductor by means of 12mm X 0,8mm copper strapping (not conductors) and galvanised bolts and nuts. Self-tapping screws are not acceptable. Where service connections consist of underground supplies, the above requirements are not applicable.

18.3 SUB-DISTRIBUTION BOARDS

A separate earth connection shall be supplied between the earth busbar in each sub-distribution board and the earth busbar in the Main Switchboard. These connections shall consist of a bare or insulated stranded copper conductors installed along the same routes as the supply cables or in the same conduit as the supply conductors. Alternatively armoured cables with earth continuity conductors included in the armouring may be utilised where specified or approved.

18.4 SUB-CIRCUITS

The earth conductors of fall sub-circuits shall be connected to the earth busbar in the supply board in accordance with SANS 10142.

18.5 RING MAINS

Common earth conductors may be used where various circuits are installed in the same wire way in accordance with SANS 10142. In such instances the sizes of earth conductors shall be equivalent to that of the largest current carrying conductor installed in the wire way, alternatively the size of the conductor shall be as directed by the Engineer. Earth conductors for individual circuits branching from the ring main shall be connected to the common earth conductor with T-ferrules or soldered. The common earth shall not be broken.

18.6 NON-METALLIC CONDUIT

Where non-metallic conduit is specified or allowed, the installation shall comply with the Department's standard quality specification for "conduit and conduit accessories".

Standard copper earth conductors shall be installed in the conduits and fixed securely to all metal appliances and equipment, including metal switch boxes, socket-outlet boxes, draw-boxes, switchboards, luminaires, etc. The securing of earth conductors by means of self-threading screws will not be permitted.

18.7 FLEXIBLE CONDUIT

An earth conductor shall be installed in all non-metal flexible conduit. This earth conductor shall not be installed externally to the flexible conduit but within the conduit with the other conductors. The earth conductor shall be connected to the earth terminals at both ends of the circuit.

18.8 CONNECTION

Under no circumstances shall any connection points, bolts, screws, etc., used for earthing be utilised for any other purpose. It will be the responsibility of the Contractor to supply and fit earth terminals or clamps on equipment and materials that must be earthed where these are not provided.

Unless earth conductors are connected to proper terminals, the end shall be tinned and lugged.

19 MOUNTING AND POSITIONING OF LUMINAIRES

The Contractor is to note that in the case of board and acoustic tile ceilings, i.e. as opposed to concrete slabs, close co-operation with the building contractor is necessary to ensure that as far as possible the luminaires are symmetrically positioned with regard to the ceiling pattern.

The layout of the luminaires as indicated on the drawings must be adhered to as far as possible and must be confirmed with the Department's representative.

LED luminaires installed against concrete ceilings shall be screwed to the outlet boxes and in addition 2 x 6mm expansion or other approved type fixing bolts are to be provided. The bolts are to be $\frac{3}{4}$ of the length of the luminaires apart.

LED luminaires to be mounted on board ceilings shall be secured by means of two 40mm x No. 10 round head screws and washers. The luminaires shall also be bonded to the circuit conduit by means of locknuts and brass bushes. The fixing screws are to be placed $\frac{3}{4}$ of the length of the fitting apart.

Earth conductors must be drawn in with the circuit wiring and connected to the earthing terminal of all LED luminaires as well as other luminaires exposed to the weather in accordance with the "Wiring Code".

LED luminaires are to be screwed directly to outlet boxes in concrete slabs. Against board ceilings the luminaires shall be secured to the bracing or joists by means of two 40mm x No. 8 round head screws.

PART 2: INSTALLATION DETAILS

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PART 2: INSTALLATION DETAILS

1 CABLE SLEEVE PIPES

Where cables cross under roadways, other services and where cables enter buildings, the cables shall be installed in earthenware or high-density polyethylene pipes.

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.

2 NOTICES

The Contractor shall issue all notices and make the necessary arrangements with Supply Authorities, the Postmaster-General, and S.A. Transport Services, Provincial or National Road Authorities and other authorities as may be required with respect to the installation.

3 ELECTRICAL EQUIPMENT

All equipment and fittings supplied must be in accordance with the attached quality specification (Part 3 of this document), suitable for the relevant supply voltage, and frequency and must be approved by the Employers Electrical Engineer.

4 DRAWINGS

There are current no drawings for the project. All information required on the installation is detailed in the scope of works.

5 BALANCING OF LOAD

The Contractor is required to balance the load as equally as possible over the multiphase supply.

6 SERVICE CONDITIONS

All plant shall be designed for the climatic conditions appertaining to the service.

7 SWITCHES AND SOCKET OUTLETS

The installation of switches and socket outlets must conform to clause 13 of Part 1 of this specification.

8 LIGHT FITTINGS AND LAMPS

The installation and mounting of luminaires must conform to clause 19 of Part 1 of this specification.

All fittings to be supplied by the Contractor shall have the approval of the Employer.

The light fittings must be of the type specified in the Schedule of Light Fittings.

9 EARTHING AND BONDING

The Contractor will be responsible for all earthing and bonding of the building and installation. The earthing and bonding is to be carried out strictly as described in clause 18 of Part 1 of this specification and to the satisfaction of the Employer/s Electrical Engineer.

10 MAINTENANCE OF ELECTRICAL SUPPLY

All interruptions of the electrical supply that may be necessary for the execution of the work, will be subject to prior arrangement between the Contractor and the Client and the Employer's Electrical Engineer.

11 EXTENT OF WORK

The work covered by this contract comprises the complete electrical installation, in working order, as per this specification, including the supply and installation of all fittings and also the installation of such equipment supplied by the Employer.

12 SUPPLY AND CONNECTION

The supply will be 400 Volt $\pm 10\%$, 50 Hz at Tseki Magistrates Court.

The Contractor must arrange in good time with the local Municipality for them to be present during the relocation of the energy meter so as to inspect and approve of the relocation.

The Contractor will be responsible for the supply and installation of all cables necessary for the completion of the electrical installation, including connection of existing cables on site. The size and length of new cables is listed in the Schedule of Cables and measured in the Bills of Quantities.

Standby Plant

The 165kVA standby plant be supplied, installed and commissioned by others.

The Contractor will only be responsible for the supply and installation of the cable connections between the Main Distribution Board, Change- over Control Panel and generator.

13 CONDUIT AND WIRING

Conduit and conduit accessories shall be black enameled/galvanized screwed conduit or black enameled/galvanized plain end conduit in accordance with SANS 61386.

All conduits, regardless of the system employed, shall be installed strictly as described in the applicable paragraphs of clauses 4 to 8 of Part 1 of the specification. Wiring of the installation shall be carried out as directed in clause 9 part 1 of this specification.

Where plain end conduit is offered all switches and light fittings must be supplied with a permanent earth terminal for the connection of the earth wire.

Lugs held by switch fixing screws or self tapping screws will not be acceptable.

13.1 Telephone Installation

(NOT APPLICABLE)

13.2 Intercom Installation

(NOT APPLICABLE)

13.3 Power Trunking

The Contractor shall be responsible for the supply and installation of all power trunking complete with corner pieces, end pieces, junction pieces, supply conduits, cover plates and power outlets as specified and indicated on the drawings.

The power trunking must comply with SANS 61084. The Contractor must ensure that the power trunking is installed to satisfaction of the Employer's Electrical Engineer before commencing with the wiring of the power trunking.

14 POWER POINTS

Existing plug points in server room to be connected to DB UPS.

14.1 Water Heaters

(NOT APPLICABLE)

14.2 Extractor Fans (Bathrooms)

(NOT APPLICABLE)

14.3 Extractor Fans (Canopy)

(NOT APPLICABLE)

14.4 Air Conditioners

(NOT APPLICABLE)

14.4 Compressor (Comp)

(NOT APPLICABLE)

15 CABLES

The Contractor shall supply and completely install all distribution cables as indicated on the drawings, and listed in the Schedule of Cables.

The storage, transportation, handling and laying of the cables shall be according to first class practice, and the contractor shall have adequate and suitable equipment and labour to ensure that no damage is done to cables during such operations.

The cable-trenches shall be excavated to a depth of 1m deep below ground level and shall be 450mm wide for one to three cables, and the width shall be increased where more than three cables are laid together so that the cables may be placed at least two cable diameters apart throughout the run. The bottom of the trench shall be level and clean and the bottom and sites free from rocks or stones liable to cause damage to the cable.

The Contractor must take all necessary precautions to prevent the trenching work being in any way a hazard to the personnel and public and to safeguard all structures, roads, sewage works or other property on the site from any risk of subsidence and damage.

In the trenches the cables shall be laid on a 100mm thick bed of earth and be covered with a 100-mm layer of earth before the trench is filled in.

All joints in underground cables and terminations shall be made either by means of compound filled boxes according to the best established practice by competent cable jointers using first class materials or by means of approved epoxy-resin pressure type jointing kits. Epoxy-resin joints must be made entirely in accordance with the manufacturer's instructions and with materials stipulated in such instructions. Low tension PVCA cables are to be made off with sealing glands and materials designed for this purpose which must be of an approved make. Where cables are cut and not immediately made off, the ends are to be sealed without delay.

The laying of cables shall not be commenced until the trenches have been inspected and approved. The cable shall be removed from the drum in such a way that no twisting, tension or mechanical damage is caused and must be adequately supported at intervals during the whole operation. Particular care must be exercised where it is necessary to draw cables through pipes and ducts to avoid abrasion, elongation or distortion of any kind. The ends of such pipes and ducts shall be sealed to approval after drawing in of the cables.

Backfilling (after bedding) of the trenches is to be carried out with a proper grading of the material to ensure settling without voids, and the material is to be tamped down after the addition of every 150mm. The surface is to be made good as required.

On each completed section of the laid and jointed cable, the insulation resistance shall be tested to approval with an approved "Megger" type instrument of not less than 500 V for low tension cables.

Earth continuity conductors are to be run with all underground cables constituting part of a low tension distribution system. Such continuity conductors are to be stranded bare copper of a cross-sectional area equal to at least half that of one live conductor of the cable, but shall not be less than 4mm² or more than 70mm². A single earth wire may be used as earth continuity conductor for two or more cables run together, branch earth wires being brazed on where required.

15.1 LAYING, JOINTING AND MAKING OFF OF ELECTRICAL CABLES

[The requirements specified hereafter, are aimed essentially at high tension cable but are also valid for low tension cable, where applicable.]

1. The use of the term "Inspector", includes the engineer or inspector of the Department or an empowered person of the concerned supervising consulting engineer's firm.
2. No cable is to be laid before the cable trench is approved and the soil qualification of the excavation is agreed upon by the Contractor and inspector.
3. After the cable has been laid and before the cable trench is back-filled the inspector must ensure that the cable is properly bedded and that there is no undesirable material included in the bedding layer.
4. All cable jointing and the making off of the cables must only be carried out by qualified experienced cable jointers. Helpers of the jointers may not saw, strip, cut, solder, etc. The cable and other work undertaken by them must be carried out under the strict and constant supervision of the jointer.
5. Before the Contractor allows the jointer to commence with the jointing work or making off of the cable (making off is recognized as half a joint) he must take care and ensure:
 - 5.1 That he has adequate and suitable material available to complete the joint properly and efficiently. Special attention must be given to ensure the cable ferrules and cable lugs are of tinned copper and of sufficient size. The length of the jointing lugs must be at least six times the diameter of the conductor,
 - 5.2 That the joint pit is dry and that all loose stones and material are removed,
 - 5.3 That the walls and banks of the joint pit are reasonable firm and free from loose material which can fall into the pit,
 - 5.4 That the necessary coffer-dams or retaining walls are made to stop the flow of water into the joint pit,
 - 5.5 That the joint pit is provided with suitable groundsheets so that the jointing work is carried out in clean conditions,
 - 5.6 That the necessary tents or sails are installed over the joint pit to effectively avert unexpected rainfall and that sufficient light or lighting is provided,
 - 5.7 That the necessary means are available to efficiently seal the jointing or cable end when an unexpected storm or cloudburst occurs, regardless of how far the work has progressed,
 - 5.8 That the cables and other materials are dry, undamaged and in all respects are suitable for the joint work or making off,
 - 5.9 That the heating of cable oil, cable compound, plumbers metal and solder is arranged that they are at the correct temperature when required so that the cable is not unnecessarily exposed to the atmosphere and consequently the ingress of moisture (care must be taken of overheating)

Flow temperatures of cable oil and compound must be determined with suitable thermometers. Cable oil and compound must not be heated to exceed the temperatures given on the containers and precaution must be taken to ensure that the tin is not overheated in one position. The whole mass must be evenly and proportionally heated.

(Temperatures of solder and plumbers metal may be tested with brown paper (testing time: 3 seconds). The paper must colour slightly - not black or burnt).
6. Before the paper-insulated cables are joined, they must be tested for the presence of moisture by the cable jointers test. This consists of the insertion of a piece of unhandled insulated impregnated

paper tape in warm cable oil heated to a temperature of $130 \pm 5^{\circ}\text{C}$.

Froth on the surface of the oil is an indication that moisture is present in the impregnated insulation and the amount of the froth gives an indication of the moisture present.

7. If the cable contains moisture or is found to be otherwise unsuitable for jointing or making of the inspector is to be notified immediately and he will issue the necessary instruction to cope with the situation.
8. The joint or making off of paper insulated cables must not be commenced during rainy weather.
9. Once a joint is in progress the jointer must proceed with the joint until it is complete and before he leaves the site.
10. The jointer must ensure that the material and his tools are dry at all times, reasonably clean and absolutely free from soil.
11. Relating to the jointing of the cable the following requirements apply:
 - 11.1 All jointing must be carried out in accordance with recognized and tried techniques and comply strictly with the instructions given by the supplier of the jointing kit.
 - 11.2 The cables must be twisted by hand so that the cores can be joined according to the core numbers. If necessary the cable is to be exposed for a short distance to accomplish this. Under no circumstances may the cores in a joint be crossed so as to enable cores to be joined according to the core numbers. If it is not possible to twist the cables so that the preceding requirements can be met, then cores are to be joined in the normal way without any consideration of the core numbers.
 - 11.3 Normally the cables will have profile conductors. The conductors shall be pinched with gas pliers to form a circular section, bound with binding wire so that they do not spread, and then tinned before jointing.
 - 11.4 Jointing ferrules, the length of which are at least 6 times the diameter of the conductors, must be slid over the conductor ends to be joined and pinched tightly. Then they are soldered by means of the ladle process whilst being pinched further closed.

Use resin only as a flux. The slot opening in the ferrule must be completely filled, including all depressions.

Remove all superfluous metal with a cloth dipped in tallow. Work during the soldering process must be from top to bottom. Rub the ferrule smooth and clean with aluminium oxide tape after it has cooled down to ensure that there are not any sharp points or edges.

NB: The spaces between the conductor strands must be completely filled by soldering process and must be carried out quick enough to prevent the paper insulation from burning or drying out unnecessarily.

- 11.5 After the ferrules have been rubbed smooth and clean, they and the exposed cores must be treated with hot cable oil (110°C) to remove all dust and moisture. These parts are to be thoroughly basted with the oil.
- 11.6 The jointer must take care that his hands are dry and clean before the joint is insulated. Also the insulating tape which is to be used must first be immersed in warm cable oil (110°C) for a sufficient period to ensure that no moisture is present.
- 11.7 After the individual cores have been installed they must be well basted with hot cable oil and again after the applicable separator and/or belt insulation tape is applied before the lead joint sleeve is placed in position.

- 11.8 The lead joint sleeve must be thoroughly cleaned and prepared before it is placed on the cable and must be kept clean during the whole jointing process. Seal the filling apertures of the sleeve with tape until the sleeve is ready for compound filling.
- 11.9 The plumbing joints employed to solder the joint sleeve to the cable sheath, must be cooled off with tallow and the joint sleeve is to be filled with compound while it is still warm. Top up continuously until the joint is completely filled to compensate for the compound shrinkage.
- 11.10 The outer joint box must be clean and free from corrosion. After it has been placed in position it must be slightly heated before being filled with compound. Top up until completely full.
12. As far as cable end boxes are concerned the requirements as set out above are valid where applicable.

16. DISTRIBUTION BOARDS AND KIOSK

In addition to clause 14 and clause 15 of Part 1 of this specification the following shall also be applicable to switchboards required for this service.

The Contractor shall supply and install the distribution boards as indicated on the drawings and listed in the distribution Board Schedule. All distribution boards shall comply with the quality specification in Part 3 of this specification, and be approved by the Employer's Electrical Engineer.

The following types of distribution boards are required to be installed new:

BOARD	TYPE	PANEL	Location
DB UPS	Flush mounted	UPS	Server room

The following types of Kiosks are required to be installed new:

BOARD	TYPE	PANEL	Location
Kiosk MAIN	Floor standing	Normal + Emergency	Near existing main cable.

The existing distribution boards on the premises require servicing.

The following distribution boards require servicing.

BOARD	TYPE	PANEL	Location
DB Main	Floor standing	Emergency	Next to server room
DB A	Flush mounted	Emergency	Main entrance
DB server (Old)	Flush mounted	Emergency	Old server room
DB guard house	Flush mounted	Emergency	Guard house

The latest Departmental Quality Specification Section for Distribution Boards must be adhere to by Part 3 of the specification.

17. SUBSTATION

(NOT APPLICABLE)

18. SCHEDULE OF LIGHT FITTINGS

(NOT APPLICABLE)

18.1 STRAIGHT POLES SPECIFICATIONS

(NOT APPLICABLE)

19. SCHEDULE OF POWER POINTS

Existing plug points in server room to be connected to DB UPS.

20. SCHEDULE OF CABLES, CONDUIT AND WIRING

Supply, install and connect the following cable. Note: The existing cable from the pole top CB to DB Main must be cut and connected to the kiosk.

CABLE No	CABLE SPECIFICATION	BCEW SPEC.	FED FROM	FED TO	LENGTH	AMP C/B	VOLT DROP
1	185mm ² x 4-core PVC/SWA	95mm ²	Generator	Kiosk	65m	300 A 3P	2.23V
2	10mm ² x 2-core PVC	10mm ²	DB Main	DB UPS	10m	30 A 1P + N	0.98V

21. SCHEDULE OF DISTRIBUTION BOARDS AND KIOSK

The front panels of normal supply, standby power and no-break supply sections shall be painted in distinctive colours as follows:

Normal supply : Light Orange, colour B26 of SANS 1091.
Standby power : Signal Red, colour A11 of SANS 1091.
No-break supply: Dark Violet, colour F06 or Olive Green, Colour H05 of SANS 1091.

Indicated is the probable fault level rating (kA) of the busbars. Refer to the Summary of Switchgear and Circuits for the minimum fault level rating of specified equipment.

Distribution boards new:

BOARD	TYPE	PANEL	Location	KA RATING
DB UPS	Surface mount	UPS	Server room	5 KA

Kiosk new:

BOARD	TYPE	PANEL	Location	KA RATING
Kiosk Main	Floor standing	Normal	Near existing main cable.	25 KA

Distribution boards serviced:

BOARD	TYPE	PANEL	Location	KA RATING
DB Main	Floor standing	Emergency	Next to server room	15 KA
DB A	Flush mounted	Emergency	Main entrance	25 kA
DB server (Old)	Flush mounted	Emergency	Old server room	5 kA
DB guard house	Flush mounted	Emergency	Guard house	5 kA

22. SUMMARY OF SWITCHGEAR AND CIRCUITS

NOTE: ALL CIRCUIT BREAKERS MUST BE OF THE MAGNETIC HYDRAULIC TYPE AND NO THERMAL CIRCUIT BREAKERS WILL BE ALLOWED. ALL THE CIRCUIT BREAKERS MUST BE OF THE SAME TYPE OF RANGE. ALL CIRCUIT BREAKERS MUST BE MANUFACTURE AND ASSEMBLE AT SOUTH AFRICA, NO IMPORTS WILL BE ALLOWED.

22.1 Distribution Board DB Main

This is an existing distribution board. The distribution board requires servicing. The circuit breakers listed below are additional to the existing ones in the distribution board.

The indicated fault current rating (kA) is the **minimum** value that the switchgear must comply with for connecting to the busbars of the distribution board.

Emergency Power – 15kA

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
DB UPS	Fed to DB UPS	1 x 30Amp 1P + N 6kA

22.2 Distribution Board DB UPS

This is a new distribution board which requires the following listed equipment.

The indicated fault current rating (kA) is the **minimum** value that the switchgear must comply with for connecting to the busbars of the distribution board.

Emergency Power – 5kA

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
DB UPS	Main Switch	1 x 30Amp 1P + N 6kA
Plugs	Server sockets	4 x 20Amp 1P 6kA

22.3 Kiosk Main

This is a new kiosk which requires the following listed equipment.

The indicated fault current rating (kA) is the **minimum** value that the switchgear must comply with for connecting to the busbars of the distribution board.

Emergency Power – 5kA

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
Kiosk Main	Main Switch	2 x 300Amp 3P 25kA
	Energy meter	1 x Existing kwh meter

23. SCHEDULE OF LIGHTS, SOCKET OUTLETS AND SPECIAL POWER POINTS

(NOT APPLICABLE)

NOT INCLUDED IN THIS DOCUMENT

THIS ENTIRE SPECIFICATION AND BILLS OF QUANTITIES SHALL BE READ IN CONJUNCTION WITH THE ELECTRICAL GENERAL TECHNICAL SPECIFICATION AND QUALITY SPECIFICATION OF THE DEPARTMENT OF PUBLIC WORKS, WHICH IS AVAILABLE ON REQUEST.

= END OF SPECIFICATION =

PART 4: BILLS OF QUANTITIES

Bills of Quantities are included in part C2.2 of the tender document.

PART 5: ELECTRICAL WORK MATERIAL SCHEDULE

The Contractor shall complete the following schedules and submit with their tender.

The schedules will be scrutinised by the Electrical Engineer and should any material offered not comply with the requirements contained in the specification, the Contractor will be required to supply material in accordance with the contract at no additional cost.

NB: Only one manufacturer's name to be inserted for each item.

Item	Material	Make or trade name	Country of origin
1.	Circuit breakers 1P, 2P, 3P		
2.	Conduit		
3.	Cables		
4.	Distribution boards		
5.	Power skirting		
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PART 6: DRAWINGS

DRW NO	SHORT DESCRIPTION

There is currently no drawings available.

ADDITIONAL PARTICULARS OF ELECTRICAL CONTRACTOR

The electrical contractor to complete the info below and attach the certified documentation (ECB & ECA & DOL) to the electrical tender document.

TENDER NO: _____ REFERENCE: _____

SERVICE: _____

NAME OF THE ELECTRICAL CONTRACTOR THREE PHASE REGISTER: _____

ADDRESS _____

CONTACT NUMBER: _____

ELECTRICAL CONTRACTOR'S REGISTRATION NUMBER AT THE ELECTRICAL CONTRACTING BOARD OF SOUTH AFRICA.

ECB NUMBER: _____

ELECTRICAL CONTRACTOR'S REGISTRATION NUMBER AT THE ELECTRICAL CONTRACTORS ASSOCIATION OF SOUTH AFRICA

ECA NUMBER: _____

ELECTRICAL CONTRACTOR'S REGISTRATION NUMBER AT THE DEPARTMENT OF LABOUR:

DOL NUMBER _____

DATE

SIGNATURE OF TENDERER



public works
& infrastructure

Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OUTDOOR EMERGENCY GENERATOR SET INCLUDING ELECTRICAL INSTALLATION

SPECIFICATION FOR THE GENERATOR AND ELECTRICAL INSTALLATION AT TSEKI MAGISTRATES COURT

ELECTRICAL ENGINEER

Department of Public Works and Infrastructure
Contact: Moganum Govender
18 President Brand Street
Bloemfontein
9301

Tel. No. 051 408 7336

**SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OF 165kVA
OUTDOOR EMERGENCY GENERATOR SET INCLUDING ELECTRICAL
INSTALLATION**

SPECIFICATION

FOR THE GENERATOR AND

ELECTRICAL INSTALLATION

INDEX TO SPECIFICATION

THIS SPECIFICATION CONSISTS OF THE FOLLOWING DOCUMENTS:

PAGES:

(A)	SPECIFICATION FOR ELECTRICAL WORK (SECTION A)	3 - 8
(B)	SPECIFICATION FOR GENERATOR WORK (SECTION B)	9 - 34
(C)	DRAWING REGISTER	35

SECTION A

SPECIFICATION FOR ELECTRICAL WORK

1. **GENERAL INFORMATION**

The tenderer's attention is drawn to the fact that if the schedules of this specification are not completed his tender cannot be adjudicated and may be disqualified. This applies also to the Bill of Quantities where the unused items are not priced. Items used on the project must be priced and no cost plus items will not be accepted.

2. **DRAWINGS**

There are no drawings available. This specification generally show the character and extent of the generator installation work, and shall not be held as showing every minute detail of the work to be executed. The contractor will be required to submit shop drawings and plinth design drawings for approval.

3. **MAKING GOOD**

The successful tenderer will be responsible for making good in all trades of any damage to buildings or other services which he or his employees may have incurred during the construction of the works.

The Contractor will be responsible for keeping the site clean and tidy and shall remove from the site all rubble and letter resulting from the construction work.

4. **ELECTRICAL EQUIPMENT**

All fittings, material and equipment and component parts thereof are to be in accordance with the attached quality specification and must have the approval of the Department. In addition all equipment shall be designed, manufactured and tested in accordance with the relevant South African National Standards Specification or otherwise the relevant British Standard Specification.

All material and equipment must be suitable for the supply voltage namely 400/230 volt 3PH-4 wire and the necessary pre-cautions shall be taken against corrosion, i.e. exposed metal shall be anti-rust treated to approval and all metalwork to be galvanized or painted.

5. **WORK SEQUENCE AND MAINTENANCE OF ELECTRICAL SUPPLY**

The sequence in which the work must be carried out must be established in consultation with the Department's Representative. The tender is to note that allowance should be made to work after hours, weekends or public holidays in order to carry out the installation so as to not affect the operation of the court.

All interruptions of the electrical supply that may be necessary for the execution of the work will be subject to prior arrangements between the Contractor, the user Department, and the Department's Representative.

6. **SUPERVISION**

The work shall at all times, for the duration of the contract, be carried out under the supervision of a skilled and competent representative of the Contractor, who will be able and authorized to receive and carry out instruction on behalf of the Contractor. A sufficient number of workmen shall be employed at all times to ensure satisfactory progress of the work.

7. **CERTIFICATE OF COMPLIANCE**

A Certificate of Compliance in accordance with the latest issue of the S.A.N.S. 10142, Code of Practice for the Wiring of Premises, shall be completed by the Contractor on completion of the installation. Practical completion will only be taken after the Department has received the certificate and has been approved by the Engineer.

8. **BALANCING OF LOAD**

The Electrical Contractor is required to balance the load as equally as possible over the multiphase system.

9. **SUPPLY AND CONNECTION**

The supply will be 400 Volt $\pm 10\%$, 50 Hz at Tseki Magistrates Court.

The site is fed from a pole top transformer which feeds a pole top circuit breaker which in turn feeds the main distribution board. The main distribution board consists of a 400A switch disconnector. The local authority energy meter is also located in the main distribution board.

The energy meter must be relocated to a new outdoor kiosk. The existing cable from the Pole top circuit breaker to the Main DB must be cut and cut ends must be terminated to the new kiosk. A new 185mm² cable will lead from the generator to the new Kiosk. The automatic changeover must be located in the kiosk.

The Contractor must arrange in good time with the local Municipality for them to be present during the relocation of the energy meter so as to inspect and approve of the relocation.

10. **EXTENT OF WORK**

To make provision for the installation of an outdoor IP65 silent canopy type 165 kVA generator, including plinth, cables, kiosk and all necessary equipment for the completion installation.

10.1 **LOCATION OF SITE**

The site is located in Tseki Magistrates Court, Phuthaditjhaba.

10.2 **SUMMARY OF WORK TO BE DONE**

10.2.1 **EMERGENCY GENERATOR PLANT**

The successful tenderer shall supply, deliver and install a completely single enclosed diesel driven standby generator set of 165kVA 400/230V 3 phase in a position that will be determined on site. The machine shall be totally enclosed in a 3CR12 stainless steel housing. The exhaust shall be manufactured from stainless steel.

The housing is to be provided on galvanized 3CR12 stainless steel skids so that the generator set can be transported to site and placed in position on a concrete plinth, casted by the successful tenderer. The skids must be of sufficient height to allow for the passage of storm water under the set.

The generating set shall be on standby and fully automatic, i.e. it shall start when the main supply fails, as further detailed in the general technical specification.

The generator is to provide emergency power to the whole building.

10.2.2 CONCRETE PLINTH

Concrete plinth to be provided for the 165kVA generator.

The plinth dimensions shall be 3500X2000X200mm. The bund wall shall rise 130mm above the plinth. The surface of the concrete plinth shall be 50mm higher than the existing ground level. Concrete pavers shall be placed 1 meter away from the generator side. Steel palisade fencing shall surround the generator.

A tap to be provided to drain all the water that accumulates inside the bund wall. Final position of the tap will be determined on site. It is the engineer's responsibility to ensure plinth design complies with generator dimensions and weights. The bund wall shall contain 110% of the fuel, oil and water capacity of the generator. The bund wall shall not constrain the canopy doors from opening completely.

The contractor is required to provide a drawing of the plinth for approval before constructing.

10.2.3 P.V.C.A. CABLES

The following cables shall be installed and commissioned by others.

Supply, install and connect the following cable.

CABLE No	CABLE SPECIFICATION	BCEW SPEC.	FED FROM	FED TO	LENGTH	AMP C/B	VOLT DROP
1	185mm ² x 4-core PVC/SWA	95mm ²	Generator	Kiosk	65m	300 A 3P	2.23V
3	10mm ² x 2-core PVC	10mm ²	DB Main	DB UPS	10m	30 A 1P + N	0.98V

10.2.4 DISTRIBUTION BOARDS

The front panels of normal supply, standby power and UPS supply sections shall be painted in distinctive colours as below. Painting and paint color to comply with Department of Public Works general specification for electrical installations.

Normal supply : Light Orange, colour B26 of SANS 1091.

Standby power : Signal Red, colour A11 of SANS 1091.

UPS supply : Dark Violet, colour F06 or Olive Green, Colour H05 of SANS 1091.

The following distribution boards need to be installed is listed below.

DB UPS:

BOARD	TYPE	PANEL	Location	KA RATING
DB UPS	Surface mount	UPS	Server room	6 KA

The following equipment needs to be installed for DB UPS is listed below. This includes all labelling, busbars, panel, and other material necessary for the complete installation of the equipment.

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
DB UPS	Main Switch	1 x 30Amp 1P +N 6kA
Plugs	Server sockets	4 x 20Amp 1P 6kA

The following distribution boards needs servicing to accept the generator:

DB Main:

The DB board is be serviced. The DB board front panel should be resprayed signal red. Engraved label indicating cable size and where DB board is fed from should be provided. Existing energy meter to be relocated.

BOARD	TYPE	PANEL	Location	KA RATING
DB Main	Floor standing	Emergency	Near server room	15 KA

The following equipment needs to be installed for DB main:

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
DB UPS	Fed to DB UPS	1 x 30Amp 1P + N 6kA

DB A:

The DB board is be serviced. The DB board front panel should be resprayed signal red.

BOARD	TYPE	PANEL	Location	KA RATING
DB A	Surface mount	Emergency	Near main entrance	25 KA

DB Server room (old):

The DB board is be serviced. The DB board front panel should be resprayed signal red.

BOARD	TYPE	PANEL	Location	KA RATING
DB server room (old)	Surface mount	Emergency	Old server room	5 KA

DB Guard house:

The DB board is be serviced. The DB board front panel should be resprayed signal red.

BOARD	TYPE	PANEL	Location	KA RATING
DB Guard House	Surface mount	Emergency	Guard House	5 KA

10.2.5 THE INSTALLATION OF A NEW FREE STANDING KIOSK

The contractor shall allow for the supply and installation of a new kiosk including equipment as indicated. The kiosk is to be made from 3CR12 and be weatherproof. All cables and equipment for the kiosk must be installed by the contractor. The kiosk shall be mounted on 300mm high concrete pedestal to avoid the ingress of water.

BOARD	TYPE	PANEL	Location	KA RATING
Kiosk Main	Floor standing	Normal + Emergency	To be located near existing main cable	25 KA

The following equipment needed to be installed for the kiosk is listed below. This includes all labelling, busbars, panel, and other material necessary for the complete installation of the equipment. NOTE: The automatic changeover must be supplied with all equipment necessary for the changeover of the 165kVA generator. The automatic changeover must be able to only accept the incoming and outgoing cables and be operational. Appropriate earthing must be provided for the kiosk by earth mat or by earth rods driven into the ground.

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
Kiosk Main	Main Switch	2 x 300Amp 3P 25kA
	Energy meter	1 x Existing kwh meter
	Automatic changeover	Automatic changeover switch, including contactors, CB's, wiring and all necessary equipment for the changeover of 165kVA generator

10.2.6 EARTH CONTINUITY TEST

The contractor shall allow for the supply and installation of a complete earthing system as indicated below.

The contractor shall install an earthing mat below the concrete plinth. The depth of the earth mat must be 200mm below ground level underneath the generator plinth. The earth mat must consist of 10mm diameter solid copper conductors. All joints and conductors to earth mat to be done with exo-thermic process ("CADWELD"). Connect the generator main earth bar/frame to the earth mat via 95mm² stranded copper earth cable. The combined earth resistance must be below 1 ohm. If this cannot be attained, then mix ground surrounding earth conductor with coal dust or other approved and compact. Additional earth rods can be added to achieve acceptable earth resistance. The cost of which shall be included in the price for the generator.

SECTION B
SPECIFICATION FOR GENERATOR WORK

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SPECIFICATION FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF DIESEL/ALTERNATOR GENERATING SETS

1. GENERAL

This section covers the Standard Specification for the supply, delivery and complete installation on site in full working order of diesel/alternator generating sets.

Full particulars, performance curves and illustrations of the equipment offered, must be submitted with the Tender. Tenderers may quote for their standard equipment, complying as closely as possible with this Specification, but any deviations from the specification must be fully detailed.

Supply, install, commission, test and maintain an emergency generating set at Tseki Magistrates Court.

Note: The tenderer to note that the position of the emergency set is provisional and the final position of the enclosure will be determined on site with the successful tenderer and the Department's Representative.

2. DELIVERY

The successful Tenderer shall inform the Regional Representative of the Department, when the set is ready for installation.

3. OUTPUT AND VOLTAGE

The set shall have a site output and voltage as specified.

4. CONSTRUCTION

The engine and alternator of the set shall be built together on a common frame with anti-vibration mountings and contained in a 3CR12 canopy as specified. A galvanized or 3CR 12 drip tray must be fitted under the engine. The tray must be large enough to catch a drip from any part of the engine.

The frame must be of the "DUPLEX" type.

5. OPERATION

The set is required to supply the essential loads in the case of a mains power failure.

The set shall be fully automatic i.e. it shall start when any one phase of the main supply fails or get switched and shall shut down when the normal supply is re-established. In addition it shall be possible to manually start and stop the set by means of pushbuttons on the switchboard.

The automatic control shall make provision for three consecutive starting attempts. Thereafter the set must be switched off, and the start failure relay on the switchboard must give a visible and audible indication of the fault.

To prevent the alternator being electrically connected to the mains supply when the mains supply is on and vice versa, a safe and foolproof system (mechanical or electrical interlocking)

of suitably interlocked contactors shall be supplied and fitted to the changeover switchboard.

Important Note

The Tenderer must submit, together with his offer, the design of the control system to comply with the requirements for automatic starting, stopping, interlocking and isolation as specified.

6. ENGINE

6.1 General

The engine must comply with the requirements laid down in SANS 8528 and must be of the atomized injection, compression ignition type, running at a speed not exceeding 1500 r.p.m. The engine must be amply rated for the required electrical output of the set, when running under the site conditions. The starting period for either manual or automatic switching-on until the taking over by the generating set, in one step, of a load equal to the specified site electrical output, shall not exceed 15 seconds. This must be guaranteed by the Tenderer.

Turbo-charged engines will only be accepted if the Tenderer submits a written guarantee that the engine can deliver full load within the specified starting period.

Curves furnished by the engine makers, showing the output of the engine offered against the speed, for both intermittent and continuous operation as well as fuel consumption curves when the engine is used for electric generation, must be submitted with the Tender.

6.2 Rating

The set shall be capable of delivering the specified output continuously under the site Conditions, without overheating. The engine shall be capable of delivering an output of 110% of the specified output for one hour in any period of 12 hours consecutive running in accordance with SANS 8528.

6.3 De-rating

The engine must be de-rated for the site conditions as set out in the Detail Specification, Section 5 of this document.

The de-rating of the engine for site conditions shall be strictly in accordance with SANS 8528 as amended to date. Any other methods of de-rating must have the approval of the Department and must be motivated in detail. Such de-rating must be guaranteed in writing and proved by the successful Tenderer at the site test.

6.4 Starting and Stopping

The engine shall be fitted with an electric starter motor and be easily started from cold, without the use of any special ignition devices under summer as well as winter conditions.

6.5 Starter Battery

The set must be supplied with a fully charged lead-acid type battery, complete with necessary electrolyte. The battery must have sufficient capacity to provide the starting torque stipulated by the engine makers. The battery capacity shall not be less than 120 Ah and shall be capable of providing three consecutive start attempts from cold and thereafter a fourth attempt under

manual control of not less than 20 seconds duration each. The battery must be of the heavy duty "low maintenance" type, housed in a suitable battery box.

6.6 Cooling

The engine may be either of the air or water cooled type. In the case of water-cooling, a built-on heavy duty, tropical type pressurized radiator must be fitted. Only stand-by sets that are water cooled shall have electric heaters.

For either method of cooling, protection must be provided against running at excessive temperatures. The operation of this protective device must give a visual and audible indication on the switchboard. Water-cooled engines shall in addition be fitted with a low water cut-out switch, installed in the radiator, to switch the set off in the event of a loss of coolant. The protection shall operate in the same way as the other cut-outs (eg. low oil pressure). All air ducts for the cooling of the engine are to be allowed for. The air shall be supplied from the cooling fan cowling/radiator face to air outlet louvers in the enclosure.

6.7 Lubrication

Lubrication of the main bearings and other important moving parts shall be by forced feed system. An automatic low oil pressure cut-out must be fitted, operating the stop solenoid on the engine and giving a visible and audible indication on the switchboard.

6.8 Fuel Pump

The fuel injection equipment must be suitable for operation with the commercial brands of diesel fuel normally available in South Africa.

6.9 Fuel Tank

The fuel tank below the engine under the generator for outdoor units and the tank shall have sufficient capacity to run the engine on full load for a period of **24** hours. If the generator is installed in a generator room the fuel tank may be a free standing type. The contractor shall allow for a full tank of diesel when handing over the plant to the Department.

The tank shall be fitted with a suitable filter and "low fuel level" alarm, giving an audible and visible signal on the switchboard as well as a low-low fuel level cut-out. A manual type fuel diesel pump with adequate length of hose is to be supplied for the filling of the fuel tank from the diesel drums or any other storage arrangements. In addition a water trap shall be provided in the fuel pipe run between the tank and the engine.

All generators with a capacity of 50 kVA and above must be supplied with an electrically operated pump with sufficient length of oil resistant hose to reach 2m beyond the door of the canopy or generator room shall be supplied for filling the fuel tank from 200 liter drums.

A filtration and water separation system for generators with a capacity of 50 kVA and above must be provided for the standby generator. This filtration and water separation system must be dedicated to purifying the content of the storage system / tank by way of the cleaning processes which are applied while circulating the fuel through the filter & separator unit.

The filtration system must be able to handle diesel fuel of "high" and of "low" sulphur content for an indefinite period. The suction line of the system must be connected to the lowest part of the storage system / tank. The return line must be connected in the top section of the storage

system / tank in such a position and in such a way that the flow of fuel within the storage system / tank between the fuel return point and the fuel suction point will induce scouring of the bottom of the system / tank to effectively capture sediment and water in the to be filtered fuel.

The filtration unit must filter the diesel fuel mechanically, removing suspended particles of effective diameters down to 5 micron. In addition, it must separate all water from the fuel and the fuel storage system and automatically dispose of / dump such water into an open, removable receptacle for disposal at the installation or in a suitable position outside the building/container.

Separation of the fuel and water must be sufficiently effective that the discharged water will meet the general effluent standard required for it to be disposed of into a municipal drain and sewer system.

The filter and water separator unit must be supplied from the DC batteries used to power the relevant generator set. The circulating pump shall be suitably sized to circulate the full contents of the fuel tank, once every seven (7) days. The pump shall be equipped with an override function on the control panel, to allow the circulating pump to be activated manually when the diesel tank is refilled.

The filter cartridge of the filter and water separator unit must be replaceable, and, in normal operational conditions, not require replacement within periods shorter than three months. The replacement units must be readily available.

The filtration & separator system may be mounted against the wall of the plant room or in the inside of the container, which may house the installation.

6.10 Fusible Fuel shut off link

The contractor shall allow for the supply and installation of a fuel shut off fusible link in the container. The fusible link shall shut off the fuel at a temperature of 130 degrees in an event of a fire in the self-contain enclosure. The fusible link shall be mounted above the engine and coupled to the shut off valve by means of a 2mm stainless steel cable. The cable shall be installed to the shut off valve without any possibility of kinking the cable which may cause malfunctioning of the protection device.

6.11 Governor

The speed of the engine shall be controlled by a governor in accordance with ECM of SANS 8528 if not otherwise specified in the Detailed Specification.

The permanent speed variation between no load and full load shall not exceed 4,5% of the nominal engine speed and the temporary speed variation shall not exceed 10%. External facilities must be provided on the engine, to adjust the nominal speed setting by $\pm 5\%$ at all loads between zero and rated load.

6.12 Flywheel

A suitable flywheel must be fitted, so that lights fed from the set will be free from any visible flicker.

The cyclic irregularity of the set must be within the limit laid down in SANS 8528.

6.13 Exhaust Silencer

It is essential to keep the noise level to 65dB at 5m from the unit. An effective stainless steel exhaust silencing system of the residential type must be provided and housed inside the containerized unit and shall be constructed of 304 stainless steel.

The exhaust system shall be installed in such a way that the expelled exhaust fumes will not cause discomfort to the public. The exhaust pipe must be flexibly connected to the engine to take up vibrations transmitted from the engine, which may cause breakage. The exhaust piping and silencer shall be lagged to reduce the heat and noise transmission in the generator enclosure.

Outside of the container, the exhaust to be protected to prevent the ingress of rain, installed at an angle of 45 degrees and extent 500mm above canopy.

6.14 Accessories

The engine must be supplied complete with all accessories, air and oil filters, 3 instruction manuals, spare parts lists, the first fill of all lubricating oils and diesel fuel etc.

7. ALTERNATOR

The alternator shall be of the self-excited brushless type, with enclosed ventilated drip-proof housing and must be capable of supplying the specified output continuously with a temperature rise not exceeding the limits laid down in SANS 60034-1 for rotor and stator windings.

The alternator shall be capable of delivering an output of 110% of the specified output, for one hour in any period of 12 hour in any period of 12 hours consecutive running.

Both windings must be fully impregnated for tropical climate and must have an oil resisting finishing varnish.

7.1 Regulation

The alternator must preferably be self-regulated without the utilisation of solid state elements. The inherent voltage regulation must not exceed plus or minus 5% of the nominal voltage specified, at all loads with the power factor between unity and 0,8 lagging and within the driving speed variations of 4,5% between no-load and full load.

7.2 Performance

The excitation system shall be designed to promote rapid voltage recovery following the sudden application of the full load. The voltage shall recover to within 5% of the steady state within 300 milli-seconds following the application of full load and the transient voltage dip shall not exceed 18%.

7.3 Coupling

The engine and alternator must be directly coupled by means of a high quality flexible coupling, ISO 9001:2000 approved and must be designed and manufactured to this quality system.

8. SWITCHBOARD

A switchboard must be supplied and installed to incorporate the equipment for the control and protection of the generating set and battery charging.

The switchboard must conform to the specification as set out in the following paragraphs.

8.1 Construction

The switchboard shall be enclosed in the steel enclosure.

All equipment, connections and terminals shall be easily accessible from the front and the front panels may be either hinged or removable with studs and chromium-plated cap nuts. Self-tapping screws shall not be used in the construction of the board.

All pushbuttons, pilot lights, control switches, instrument and control fuses, shall be mounted on hinged panels with the control wires in flexible looms.

The steelwork of the boards must be thoroughly de-rusted, primed with zinc chromate and finished with two coats of signal red quality enamel, or a baked powder epoxy coating. Suitably rated terminals must be provided for all main circuits and the control and protection circuits. Where cable lugs are used, these shall be crimped onto the cable strands. Screw terminals shall be of the type to prevent spreading of cable strands. All terminals shall be clearly marked.

For the control wiring, each wire shall be fitted with a cable or wire marker of approved type, and numbering of these markers must be shown on the wiring diagram on the switchboard. Control wiring shall be run in PVC trunking. The trunking shall be properly fixed to the switchboard steelwork. Adhesives shall not be acceptable for the fixing of trunking or looms.

The automatic control and protection equipment shall be mounted on a separate easily replaceable small panel with printed circuits. The equipment shall mainly be the "solid state" type. After mounting the equipment on the panel, the rear of this panel shall be sealed with epoxy-resin. However, other proven control systems may also be considered, but must be described in detail.

All equipment on the switchboard, such as contactors, isolators, busbars etc., shall have ample current carrying capacity to handle at least 110% of the alternator full load current.

8.2 Protection and Alarm Devices

All switchboards shall be equipped with protection and alarm devices as described below.

A circuit breaker and an adjustable current limiting protection relay must be installed, for protection of the alternator. The protection relay shall be of the type with inverse time characteristics. The relay shall cause the contactor to isolate the alternator and stop the engine.

Protection must be provided for overload, high engine temperature, low lubricating oil pressure, overspeed, start-failure, low water level.

Individual relays with reset pushes are required, to give a visible signal and stop the engine when any of the protective devices operate. In the case of manual operation of standby sets, it shall not be possible to restart the engine.

The indicators and re-set pushes must be marked in ENGLISH.

"OVERLOAD"
"TEMPERATURE HIGH"
"OIL PRESSURE LOW"
"OVERSPEED"
"START FAILURE"
"LOW WATER LEVEL"

In addition two relays with reset pushes must be fitted giving an audible and visible flashing signal, when:

- (a) The fuel level in the service tank is low. The reset push of this relay must be marked "FUEL LOW".

In addition, a low-low level sensor must be provided. At this level the engine must stop to prevent air entering the fuel system.

- (b) The battery charger failed. The reset push of this relay must be marked "CHARGER FAIL".

This is also applicable to the engine driven generator/alternator.

All relays must operate an alarm hooter. A pushbutton must be installed in the hooter circuit to stop the audible signal, but the fault indicating light on the control panel must remain lit until the fault has been rectified.

An on/off switch is not acceptable. After the hooter has been stopped, it must be re-set automatically, ready for a further alarm.

The hooter must be of the continuous duty and low consumption type. Both hooter and protection circuits must operate from the battery.

Potential free contacts from the alarm relay must be brought down to terminals for remote indication of alarm conditions.

A test pushbutton must be provided to test all indicator lamps.

8.3 Manual Starting

Each switchboard shall be equipped with two pushbuttons marked "START" and "STOP" for manual starting and stopping of the set.

8.4 Battery Charging Equipment

Each switchboard shall be equipped with battery charging equipment.

The charger shall operate automatically in accordance with the state of the battery and shall generally consist of an air-cooled transformer, a full wave solid state rectifier, and the necessary automatic control equipment of the constant voltage system.

The charger must be fed from the mains. An engine driven alternator must also be provided

for charging the battery while the set is operational. Failure of this alternator must also activate the battery charger failure circuit.

8.5 Switchboard Instruments

Each generating set shall have a switchboard equipped as follows:

- (a) One flush square dial voltmeter, reading the alternator voltage, scaled as follows:
 - (i) 0-300V for single phase generators
 - (ii) 0-500V for three phase generator. In this case a six position and off selector switch must be installed for reading all phase to phase and phase to neutral voltages.
- (b) A flush square dial combination maximum demand and instantaneous ampere meter for each phase, with re-settable pointer suitably scaled 20% higher than the alternator rating. A red arc stripe above the scale markings from 0-20A and a red radial line through the scale at full-load current shall be provided. This instrument shall be supplied complete with the necessary current transformer.
- (c) One flush square dial vibrating type frequency meter, indicating the alternator frequency.
- (d) A six digit running hour meter with digital counter, reading the number of hours the plant has been operating. The smallest figure on this meter must read 1-10th hour.
- (e) Fuses or m.c.b.'s for the potential circuits of the meters.
- (f) One flush square dial ampere meter suitably scaled for the battery charging current.
- (g) One flush square dial voltmeter with a spring-loaded pushbutton or switch for the battery voltage.

8.6 Markings

All labels, markings or instructions on the switchgear shall be in ENGLISH.

8.7 Earthing

An earth bar must be fitted in the switchboard, to which all non-current carrying metal parts shall be bonded. The neutral point of the alternator must be solidly connected to this bar by means of a removable link labeled "EARTH". Suitable terminals must be provided on the earth bar for connection of up to three earth conductors, which will be supplied and installed by others.

8.8 Operation Selector Switch

A four position selector switch must be provided on the switchboard marked "AUTO", "MANUAL", "TEST" and "OFF".

With the selector on "AUTO", the set shall automatically start and stop, according to the mains supply being available or not.

With the selector on "TEST", it shall only be possible to start and stop the set with the pushbuttons, but the running set shall not be switched the load.

With the selector on "MANUAL", the set must take the load when started with the pushbutton, but it must not be possible to switch the set on to the mains, or the mains onto the running set.

With the selector on "OFF", the set shall be completely disconnected from the automatic controls, for cleaning and maintenance of the engine.

8.9 Automatic Change-over System

A fully automatic change-over system must be provided to isolate the mains supply and connect the standby set to the outgoing feeder in case of a mains failure and reverse this procedure on return of the mains.

The contactors for this system must be electrically and mechanically interlocked. As the main Automatic mains fail panel will be located in the new kiosk, the generator will have its own change over panel which would monitor when there is a mains or failure, and start or stop the generator, but all load switching will be carried out in the AMF panel.

8.10 Bypass switch and Mains Isolator

The switchboard shall be equipped with an on-load isolator to isolate the mains and a manually operated on-load 4 pole 4 position by-pass switch, which shall switch the connected loads as follows: NORMAL: will allow for the normal connection i.e. connects the incoming mains to the automatic control gear or directly to the outgoing feeder. In the GEN BY-PASS position the switch will disconnect the automatic changeover control gear, and will connect the municipal mains directly to the essential supply busbar which will allow for the maintenance of either or both the generator and the automatic changeover equipment. MAINS BY-PASS switching position would allow the generator to be connected directly to the essential supply busbar. This is when there is a problem with the automatic changeover equipment and there is no municipal power available.

The final position is an OFF position which will remove all power downstream of this switch.

It is required that this by-pass switch and mains isolator be mounted away from the automatic control gear, in a separate compartment, either on the side or in the lower portion of the switchboard cubicle, and that the switches are operated from the front of the compartment. Contractor to note: The by-pass and mains isolator switch shall also break the main neutral.

8.11 Start Delay

Starting shall be automatic in event of a mains failure. A 0-15s adjustable, start delay timer shall be provided to prevent start-up on power dips or very short interruptions.

8.12 Stop delay

A stop delay with timer is required for the set, to keep the set on load for an adjustable period of one to sixty seconds after the return of the mains supply, before changing back to the supply. An additional timer shall keep the set running for a further adjustable cooling period of 5 to 10 minutes at no-load before stopping.

9. INSTALLATION

The tenderer will be responsible for tracing the main incoming cable. The contractor will then

cut into this cable and route it to the new kiosk. A new cable will then be routed from the generator to the new kiosk, including control cabling for the automatic changeover which will be located in the kiosk as well as all terminations. The kiosk to be C3R12 enclosure.

10. **WARNING NOTICES**

Notices, in ENGLISH, must be installed on the outside of the steel enclosures.

The notice shall be made of a non-corrodible and non-deteriorating material, preferable plastic, and must read as follows:

DANGER: This engine will start without notice. Turn selector switch on control board to "OFF" before working on the plant.

11. **DRAWINGS**

The successful Tenderer must, as soon as possible after receipt of the order, submit detailed drawings and wiring diagrams of the plant and the switchgear. One diagram shall be contained in a metal pouch on the side of the switchboard.

12. **INFORMATION REQUIRED FOR GENERATOR AND CANOPY**

Tenderers must furnish detailed descriptions and illustrations of the equipment offered and must complete the questionnaire following this specification. This includes drawings of the switchboard layouts and control diagrams.

Failure to submit any of the information asked for, may disqualify the tender.

13. **GUARANTEE**

The successful Tenderer will be required to guarantee the complete plant for a period of 12 months from the date it has been taken over by the Department in running order.

If during this period the plant is not in working order, or not working satisfactorily owing to the faulty material, design or workmanship, the Contractor will be notified and immediate steps shall be taken by him to rectify the defects and/or replace the affected parts on site, at his own expense.

14. **MAINTENANCE**

14.1 **Initial Maintenance**

The successful Tenderer will be required to maintain the plant in good running order for a period of twelve months after the plant has been taken over by the Department. The full cost of this maintenance must be included in the tender price, inclusive of overheads and travelling fees. The department shall not acknowledge any cost claims additional to this maintenance cost as tendered.

However, should the Contractor fail to hand over the plant in good working order on expiry of the specified twelve months, the Contractor will be responsible for further monthly maintenance until final delivery is taken.

Under the agreement the Contractor will undertake at intervals as per the manufactured recommendations for a visit to the plant by a qualified member of his staff, who shall:

- (a) *Report to the Officer-in-Charge, keeping the maintenance records, and enter into a log book the date of the visit, the tests carried out, the adjustments made, any further details that may be required.*
- (b) Grease and oil moving parts, where necessary.
- (c) Check the air filter and, when necessary, clean the filter and replace filter oil.
- (d) Check the lubricating oil and top-up when necessary
- (e) After the plant has run one oil change for the number of hours stipulated by the manufacturers, drain the sump and refill with fresh lubricating oil. The reading of the hour meter on the switchboard will be taken to establish the number of hours run by the plant.
- (f) Clean the lubricating oil filter and/or replace the filter element at intervals recommended by the engine manufacturer.
- (g) Check and when necessary adjust the valve settings and the fuel injection equipment.
- (h) Check the battery and top-up the electrolyte when necessary.
- (i) Test-run the plant for 0,5 hour and check the automatic starting with simulated faults on the mains, the proper working of all parts, including the electrical gear, the protective devices with fault indicators, the changeover equipment and the battery charger. Make the necessary adjustments.
- (l) Top up the water of the radiator, if applicable.
- (m) Clean the plant and it's components.

14.2 Maintenance Agreement

- (a) After the lapse of the abovementioned 12 month period, the Contractor may be required to enter into a maintenance agreement, as described under Clause 14.1, initially for one year with a possible yearly renewal.
- (b) Acceptance of the tender shall not bind the Department to accept this maintenance service.

14.3 Instruction of Operator

After completion of the installation and when the plant is in running order, the successful Tenderer will be required to instruct an attendant in the operation of the plant, until he is fully conversant with the equipment and the handling thereof. The officer will be identified by the Department's Regional Representative on site.

Three copies of a maintenance fault-localising and operating manual are to be handed over to the Department's representatives on site.

15. TESTS

The following tests are to be carried out:

(a) At the supplier's premises, before the generating set is to be delivered to site. Representatives of the Department must be present during the test to satisfy themselves that the generating set complies with the specification and delivers the specified output. The test must be carried out in accordance with SANS 8528. The department must be advised timeously of the date for the test.

(b) At the site after completion of the installation, all tests in (a) above shall again be carried out.

The dummy resistance for the load and all instruments which may be required for the tests have to be provided by the successful tenderer.

Test reports of both tests as specified under (a) and (b) are to be submitted to the Department.

16. **ENCLOSURE**

The standby set is a free standing unit and shall be mounted in an enclosure as detailed below:-

16.1 **General**

The enclosure, shall be completely vermin-proof, removable from the set and shall be constructed of 3CR12 stainless steel or equally approved of a minimum thickness of ± 1.5 mm.

The enclosure shall allow easy access to the engine, alternator, radiator filler cap and control cubicle for maintenance purposes.

The door shall be flush with the rest of the canopy and of the side opening type. A minimum of four doors are required i.e. two on either side.

The door hinges and locking bars shall be of a heavy duty type and be manufactured of an alloy or mild steel which is hot dip galvanized and shall be fitted with a grease nipple.

The doors and panels shall be suitably braced and stiffened to ensure rigidity and to prevent bending and warping.

Suitable door restraints shall be fitted to all the doors, enclosure including the control panel to prevent wind damage. The restraint shall consist of a steel rod in a steel groove or slide with a spring loaded catch, which is to be manually reset to close the door.

No flexible restraints will be accepted.

The diesel fuel level indicator and alternator rating plate shall be clearly visible with the doors open.

Unless specified the silencers shall be mounted within the enclosure.

Perforated sheeting shall be fitted over all the insulating material inside the canopy of all soundproof sets.

Rubber seals on doors shall be equal to or similar to rubber pinch weld, wind lace. (Max-nortons.).

16.2 Design

The enclosure shall be designed to be weather-proof and sound-proofing as specified. Rivets or self-tapping screws will under no circumstances be allowed for fixing the various sections of the enclosure. Only cadmium coated nuts and bolts are acceptable.

16.2 Roof

The roof of the enclosure shall be constructed for proper drainage of water as per the drawing.

16.4 Lamp fitting

A lamp fitting and its associated on/off door switch shall be provided inside the enclosure for illumination of the control panel.

The power for the lamp shall be obtained from the starter battery.

16.5 Sound-proofing

The sound-proofing on canopy engine sets shall be such that the maximum noise level generated by the set under any load condition shall not exceed 65 dB measured in any direction at a distance of 5m from the center of the set with the doors closed.

The supply and discharge air paths will require separate attenuators on soundproof sets.

16.6 Padlock and keys

The contractor shall supply padlocks and keys for all the doors of the enclosure. The padlock shall be off the "Viro A82 keyed alike with stainless steel shackles" type.

Suitable brass metal plates shall be installed behind each lock for the protection of the enclosure against scratching or damaging, where the locks are hanging.

17 PROGRAMMABLE CONTROLLER

- **Control Equipment Requirement**

The programmable controller shall be an electronic unit to match those of the other programmable controllers and of a high quality i.e Levato, Deep Sea Electronics, Circom.

- **Logging of Events**

All events relating to the status of the generator set shall be logged with date and time in a non-volatile memory (which can retain information for a period of 6 months in the absence of power to the controller) and the user shall be able to contain a hard copy on site.

Buffer erased on
Mains on load

97/04/17 at 07 H 44.34
97/04/17 at 07 H 44.29

Unit switched ON	97/04/17 at 06 H 30.55
Unit switched OFF	97/04/16 at 23 H 26.55
Low Fuel Level	
Alternator on load	97/04/16 at 21 H 44.53
Start attempts = 01	97/04/16 at 21 H 44.21
Mains phase 3 low	97/04/04 at 09 H 59.21
Mains on load	97/04/04 at 09 H 59.17
Unit Mode = Auto	97/04/04 at 09 H 50.00
Manual Stop	
Start attempts = 03	97/04/04 at 08 H 53.10
Manual Start	97/04/04 at 08 H 53.03
Unit Mode = Manual	
Alt phase 1 min = 221	
Alt phase 2 min = 224	
Alt phase 3 min = 222	
Alt phase 1 max = 236	
Alt phase 2 max = 237	
Alt phase 3 max = 238	97/03/27 at 10H 31.03
Alternator off	97/03/27 at 10 H 29.03
Mains on load	97/03/27 at 10 H 06.14
Alternator on load	
Start attempts = 02	

- **User Programmable**

The controller will be user programmable on site via a menu system with clear prompts for the required data and shall incorporate the following parameters:

Enter the user access code

#

System configuration for Unit no 1111

Current time is:

Is this a service

Change this unit ID code?

Low Battery crank level

Low Battery standby level

High Battery standby level

Mains Low Voltage sense level

Mains High Voltage sense level

Alt Low Voltage sense level

Alt High Voltage sense level

Engine Under speed RPM

Engine Over speed RPM

Speed Input

Number of Flywheel Teeth

Spare Sensor No 1

Spare Sensor No2

Start/Pre Heat Delay

Crank Time/Delay

97/08/14 at 10H 27.58

(0 = No 1 = Yes)

(0 = No 1 = Yes)

(02.0 – 50.0V)

(08.0 - 50.0V)

(08.0 - 50.0V)

(0001 – 4900 rpm)

(0001 – 4900 rpm)

(0 = RPM, 1= Alt)

(001 – 180)

(0 =NO, 1 = NC)

(0 =NO, 1 = NC)

(0.5 to 60 seconds)

(0.5 to 30 seconds)

(1 – 20)

Number of attempts to Start	(0.5 to 30 seconds)
Run up Delay	(0.5 to 60 seconds)
Load Transfer Delay	(0.5 to 30 minutes)
Mains Return Timer	(0.5 to 30 minutes)
Run on Timer	(0 =NO, 1 = NC)
High Engine Temp. Sensor	(0 =NO, 1 = NC)
Low Oil Pressure Sensor	(0 =NO, 1 = NC)
Heater Fault Sensor	(0 =NO, 1 = NC)
Low Fuel Sensor	(0 =NO, 1 = NC)
No Fuel Sensor	(0 =NO, 1 = NC)
Manual Start switch	(0 =NO, 1 = NC)
Manual Stop switch	(0 =NO, 1 = NC)
Emergency Stop switch	(0 =NO, 1 = NC)
Alternator Charge Sensor	(0 = Single, 1 = Three)
Phase Fault Check	(0 = No, 1 = Yes)
Set the Date and Time	(0 = No, 1 = Yes)
Change Unit Access Code	

NO for normally open and NC for normally closed contracts.

- **CONTROL SYSTEM DC SUPPLY VOLTAGE**

The control system must be able to operate with a minimum DC supply voltage of 4 volts (without making use of either an internal or an external auxiliary battery) to allow cranking and starting under conditions of low battery capacity. Control cables between the set and the control panel shall be fitted with sockets for ease of undoing in the event the set has to be removed.

- **RS 232 SERIAL PORT**

The control unit shall have an RS 232 serial port allowing various options to be added as listed below.

Equipment connected at each end of the RS 232 cable shall be adequately protected against transient over-voltages, lightning effects (particularly if the set and remote alarms are in separate buildings), switching surges, power system surges or mains and alternator borne noise/interference.

- **REMOTE ALARMS**

The Contractor shall provide a remote alarm mimic panel and the associated control wiring for the set. The panel shall be installed in the duty/security room at the entrance to the building approximately 150m from the generator set position. This is to be included in the generator pricing, including cabling and conduit necessary.

The mimic panels must fit into furniture and blend with the design. Before manufacture, the Contractor shall submit and obtain the approval, from the Engineer, for the mimic panel.

The remote alarm must have potential free relay contacts which shall indicate the following on each set:

1. Mains on/off
2. Alternator running
3. Common fault alarm
4. Buzzer which can only be reset at the generator panel
5. Fuel low

The cable between the remote alarms is to be a signal cable with a screen and this option must be able to operate from a 12 / 24 V dc supply so that it can be powered from the generator set batteries.

A facility to originate a fault message should a warning or shutdown fault occur.

This option must be capable of operating at a maximum distance of 150 m from the set.

• **COMPUTER MODEM REMOTE CONTROL**

The facility shall be provided a remote control system which can be interrogated and controlled from a remote computer using a modem connected to a Telkom telephone line or cell phone modem. This modem shall be a Wavecom "fast track" modem.

Real time status of the control system including any fault conditions, mains voltages on all phases, battery voltage and if the set is running alternator voltages on all phases and set RPM/frequency.

A facility to download the event log.

A facility to allow the mode of the control system to be changed to any of the four modes to allow the set to be run from a remote location.

A facility to originate a call to the control cellular and to transfer a fault message should a warning or shutdown fault occur.

18. **SITE CONDITIONS**

The site conditions are as follows:-

- | | | | |
|-----|---------------------------------------|---|--------------------------------|
| (a) | Altitude above sea level | : | To be determined by contractor |
| (b) | Maximum temperature | : | 45°C |
| (c) | Relative humidity at this temperature | : | To be determined by contractor |

19. **OUTPUT AND VOLTAGE**

After the de-rating factors for the engine and generator due to site conditions have been taken into account, the set must have a site output and voltage as follows:-

- | | | | |
|-----|------------------|---|-------------------|
| (a) | Voltage | : | 400/230V/ 3 phase |
| (b) | Rating (standby) | : | 165 kVA |
| (c) | Power factor | : | 0.9 |
| (d) | Frequency | : | 50Hz |

The generating set shall be capable of accepting 70% of the specified site electrical output within 10 seconds after the starter motor is energized and the remaining 30%, 5 seconds thereafter, i.e. 100% load acceptance shall not exceed 15 seconds.

20. **THE ALARM DEVICE**

The audible alarm and red light shall be of the weatherproof type and shall be installed on the exterior of the enclosure.

21. **FUEL DRIP TRAY**

A galvanized or 3CR12 drip tray approximately 100mm deep shall be mounted below the fuel tank and must be large enough to collect any fuel that drips from the tank accessories. The drip tray shall be manufactured from mild steel. The thickness of the drip tray sheet steel shall not be less than 2mm.

22.1 **SPECIFIED GENERATOR SET**

22.1.1 **Engine**

- Compact and extremely smooth running
- Low emission levels
- Quiet running – low noise levels
- Fast and easy all weather starting
- Convenient “one side” maintenance for easy economical servicing
- Direct injection system

22.1.2 **Alternator**

- Brushless
- Self exciting
- Automatic voltage regulation
- High motor starting capacity
- Excellent wave form for sensitive loads
- Full load recovery in less than 0.3 seconds

22.1.3 **Units**

- Compact sturdy skid base
- Large fuel tank integrated into base for 24 hour operation at full load
- Circuit breaker protected alternator
- Compact for easy transport
- Custom designed panel
- Twelve month warranty on complete unit

22.3 GENERATOR SET OFFERED

SCHEDULE OF INFORMATION

(To be completed by Tenderer)

A. ENGINE

NO.	ITEM	REMARKS
1.	Manufacturer's Name	
2.	Country of Origin	
3.	Manufacturer's model number and year of manufacture	
4.	Continuous sea level rating after allowing for ancillary equipment:	
5.	Percentage derating for site conditions, in accordance with SANS 8528 a) For altitude b) For temperature c) For humidity d) Total derating	
6.	Nett output on site in kW	
7.	Nominal speed in r.p.m.	
8.	Number of cylinders	
9.	Stroke per working cycle	
10.	Stroke in mm	
11.	Cylinder bore in mm	
12.	Swept volume in cm ³	
13.	Mean piston speed in m/min	
14.	Compression ratio	
15.	Cyclic irregularity	

16.	Fuel consumption of the complete generating set on site in l/h of alternator output at: a) Full load b) 3/4 load c) 1/2 load <u>NOTE:</u> A tolerance of 5% shall be allowed above the stated value of fuel consumption	
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NO.	ITEM	REMARKS
17.	Make of fuel injection system	
18.	Capacity of fuel tank in liters	
19.	Is gauge glass fitted to tank?	
20.	Is electric pump for filling the fuel tank included?	
21.	Method of starting	
22.	Voltage of starting system	
23.	Method of cooling	
24.	Type of radiator if water-cooled	
25.	Type of heater for warming cylinder heads	
26.	Capacity of heater in kW	
27.	Method of protection against high temperature	
28.	Method of protection against low oil pressure	
29.	Type of governor	
30.	Speed variation in % a) Temporary b) Permanent	
31.	Minimum time required for assumption of full load in seconds	

32.	Recommended interval in running hours for: a) Lubricating oil change b) Oil filter element change c) Decarbonising	
33.	Type of base	
34.	Can plant be placed on solid concrete floor?	
35.	Are all accessories and ducts included?	
36.	Is engine naturally aspirated?	
37.	Are performance curves attached?	

NO.	ITEM	REMARKS
38.	Diameter of exhaust pipe	
39.	Noise level 5m from unit in dB	
40.	Noise level at tail of exhaust pipe in dB	
41.	BMEP (4stroke) at continuous rating (kPA)	
42.	% Load acceptance to SANS 8528, with 10% transient speed droop	

B: ALTERNATOR

NO.	ITEM	REMARKS
1.	Maker's Name and model no.	
2.	Country of Origin and year of manufacture	
3.	Type of enclosure	
4.	Nominal speed in r.p.m.	
5.	Number of bearings	
6.	Terminal voltage	
7.	Sea level rating kVA at 0,8 power factor	

8.	Derating for site conditions	
9.	Input required in kW	
10.	Method of excitation	
11.	Efficiency at 0,8 power factor and: a) Full load b) 3/4 load c) 1/2 load	
12.	Maximum permanent voltage variation in %	
13.	Transient voltage dip on full load	
14.	Voltage recovery on full load application in milli-seconds	
15.	Is alternator brushless?	
16.	Class of insulation of windings	
17.	Is alternator tropicalized?	
18.	Symmetrical short circuit current at terminals in Ampere	
19.	Type of Coupling	

C. SWITCHBOARD

NO.	ITEM	REMARKS
1.	Maker's Name	
2.	Country of Origin	
3.	Is board floor mounted?	
4.	Finish of board	
5.	Make of volt, amp., and frequency meters	
6.	Dial size of meters in mm	
7.	Scale range of voltmeter	
8.	Scale range of ammeters	
9.	Ratio of current transformers	

10.	Make of hour meter	
11.	Range of cyclometer counter	
12.	Smallest unit shown on counter (Item 11)	
13.	Make of circuit breaker	
14.	Type of circuit breaker	
15.	Rating of circuit breaker in Amp and fault level in kA	
16.	Setting range of overload trips	
17.	Setting range of instantaneous trips	
18.	Make of change-over equipment	
19.	Make of voltage relay	
20.	Is control and protection equipment mounted on a small removable panel?	
21.	Type of control equipment	
22.	Make of mains isolator	
23.	Type of indicators for protective devices	
24.	Make of rectifier	
25.	Type of rectifier	
26.	Is battery charging automatic?	

NO.	ITEM	REMARKS
27.	Are volt and ammeters provided for charging circuit?	
28.	Is the alarm hooter of the continuous duty type?	
29.	Rating in Amps of: a) Change-over equipment b) Mains on load isolator c) By-pass switch d) Circuit breaker to outgoing fee	

D. BATTERY

NO.	ITEM	REMARKS

1.	Maker's Name	
2.	Country of Origin	
3.	Type of battery	
4.	Voltage of battery	
5.	Number of cells	
6.	Capacity in cold crank amp.	
7.	Battery Charging Unit. Voltage and Amp rating	

E. DIMENSIONS

NO.	ITEM	REMARKS
1.	Overall dimensions of set in mm	
2.	Overall mass	
3.	Is plant room adequate for the installation of the set, switch board and fuel tank.	

F. DEVIATION FROM THE SPECIFICATION (State briefly)

NO.	DESCRIPTION

G. GUARANTEE

NO.	ITEM	REMARKS
1.	Guarantee period in months	
2.	State conditions of guarantee	

H. SPARE PARTS AND MAINTENANCE FACILITIES

NO.	ITEM	REMARKS
1.	Approximate value of spares carried in stock for this particular diesel engine and alternator	
2.	Where are these spares held in	

	stock	
3.	What facilities exist for the servicing of the equipment offered	
4.	Where are these facilities available	

I. SWITCHBOARD

NO.	ITEM	REMARKS
1.	Is manufacture of switchboard/control panel to be sub-let?	
2.	If yes, state name and address of specialist manufacturer	

SECTION C

DRAWING REGISTER

**SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING EMERGENCY GENERATOR
SET INCLUDING ELECTRICAL INSTALLATION**

DRAWINGS

DESCRIPTION

SKETCH No

There is no drawings available for this project



**REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF PUBLIC WORKS**

ELECTRICAL INSTALLATION SUPPLEMENTARY SPECIFICATION

FOR

TSESENG MAGISTRATES COURT: INSTALLATION OF GENERATOR

CONSISTING OF: ELECTRICAL WORK

PG

1: Electrical Installation

1 to 29

See separate documents for:

Generator Specifications

ELECTRICAL ENGINEER

DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE

Contact: Moganum Govender

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PART B: ELECTRICAL WORK**NOTICE TO TENDERERS**

1. The tenderer for the principal contract shall submit additional information regarding the installer of the Electrical Installation and also complete the additional particulars of the electrical installer at the end of this document.
2. The tenderer shall also complete the material schedule at the end of this document when submitting his/her tender.

SPECIFICATION FOR ELECTRICAL WORK

PART 1 - GENERAL

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PART 1 - GENERAL

1 TESTS

After completion of the works and before practical completion is achieved, a full test will be carried out on the installation for a period of sufficient duration to determine the satisfactory working thereof. During this period the installations will be inspected and the Contractor shall make good, to the satisfaction of the Principle Agent/Electrical Engineer or the employer, any defects which may arise.

The Contractor shall provide all instruments and equipment required for testing and any water, power and fuel required for the commissioning and testing of the installations at completion.

2 MAINTENANCE OF INSTALLATIONS

With effect from the date of the Practical completion Certificate the Contractor shall at his own expense undertake the regular servicing of the installation during the maintenance period and shall make all adjustments necessary for the correct operation thereof.

If during the said period the installations is not in working order for any reason for which the Contractor is responsible, or if the installations develops defects, he shall immediately upon being notified thereof take steps to remedy the defects and make any necessary adjustments.

Should such stoppages however be so frequent as to become troublesome, or should the installations otherwise prove unsatisfactory during the said period the Contractor shall, if called upon by the Principle Agent/Electrical Engineer or the Employer, at his own expense replace the whole of the installations or such parts thereof as the Principal Agent/Electrical Engineer or the Employer may deem necessary with apparatus specified by the Principal Agent/Electrical Engineer or the Employer.

3 REGULATIONS

The installation shall be erected and tested in accordance with the Acts and Regulations as indicated in the scope of works

4 NOTICES AND FEES

The Contractor shall give all notices required by and pay all necessary fees, including any inspection fees, which may be due to the local Supply Authority.

On production of the official account, only the net amount of the fee charged by the Supply Authority for connection of the installation to the supply mains, will be refunded to the Contractor by the Employer.

5 SCHEDULE OF FITTINGS

In all instances where schedule of light, socket outlet and power points are attached to or included on the drawings, these schedules are to be regarded as forming part of the specification.

6 QUALITY OF MATERIALS

Only materials of first class quality shall be used and all materials shall be subject to the approval of the Employer. Departmental specifications for various materials to be used on this Contract are attached to and form part of this specification.

Wherever applicable the material is to comply with the relevant South African Bureau of Standards, specifications, or to IEC Specifications, where no SANS Specifications exist.

Materials wherever possible, must be of South African manufacture.

7 CONDUIT AND ACCESSORIES

The type of conduit and accessories required for the service, i.e. whether the conduit and accessories shall be of the screwed type, plain-end type or of the non-metallic type and whether metallic conduit shall be black enamelled or galvanised, is specified in Part 2 of this specification.

Unless other methods of installation are specified for certain circuits, the installation shall be in conduit throughout. No open wiring in roof spaces or elsewhere will be permitted.

The conduit and conduit accessories shall comply fully with the applicable SANS specifications as set out below and the conduit shall bear the mark of approval of the South African Bureau of Standards.

- a) Screwed metallic conduit and accessories: SANS 61386-1 and 21.
- b) Plain-end metallic conduit and accessories: SANS 61386-1 and 21.
- c) Non-metallic conduit and accessories: SANS 61386-1 and 21.

All conduit fittings except couplings, shall be of the inspection type. Where cast metal conduit accessories are used, these shall be of malleable iron. Zinc base fittings will not be allowed.

Bushes used for metallic conduit shall be brass and shall be provided in addition to locknuts at all points where the conduit terminates at switchboards, switch-boxes, draw-boxes, etc.

Draw-boxes are to be provided in accordance with the "Wiring Code" and wherever necessary to facilitate easy wiring.

For light and socket outlet circuits, the conduit used shall have an external diameter of 20mm. In all other instances the sizes of conduit shall be in accordance with the "Wiring Code" for the specified number and size of conductors, unless otherwise directed in part 2 of this specification or indicated on the drawings.

Only one manufactured type of conduit and conduit accessories will be permitted throughout the installation.

Running joints in screwed conduit are to be avoided as far as possible and all conduit systems shall be set or bent to the required angles. The use of normal bends must be kept to a minimum with exception of larger diameter conduits where the use of such bends is essential.

All metallic conduit shall be manufactured of mild steel with a minimum thickness of 1,2mm for plain-end conduit and 1,6mm in respect of screwed conduit.

Under no circumstances will conduit having a wall thickness of less than 1,6mm be allowed in screed laid on top of concrete slabs.

Bending and setting of conduit must be done with special bending apparatus manufactured for the purpose and which are obtainable from the manufacturers of the conduit systems. Damage to conduit resulting from the use of incorrect bending apparatus or methods applied must on indication by the Department's inspectorate staff, be completely removed and rectified and any wiring already drawn into such damaged conduits must be completely renewed at the Contractor's expense.

Conduit and conduit accessories used for flame-proof or explosion proof installations and for the suspension of luminaires as well as all load bearing conduit shall in all instances be of the metallic screwed type.

All conduit and accessories used in areas within 50 km of the coast shall be galvanised to SANS 32 and SANS 121.

Tenderers must ensure that general approval of the proposed conduit system to be used is obtained from the local electricity supply authority prior to the submission of their tender. Under no circumstances will consideration be given by the Department to any claim submitted by the Contractor, which may result from a lack of knowledge in regard to the supply authority's requirements.

8

CONDUIT IN ROOF SPACES

Conduit in roof spaces shall be installed parallel or at right angles to the roof members and shall be secured at intervals not exceeding 1,5m by means of saddles screwed to the roof timbers.

Nail or crampets will not be allowed.

Where non-metallic conduit has been specified for a particular service, the conduit shall be supported and fixed with saddles with a maximum spacing of 450 mm. The Contractor shall supply and install all additional supporting timbers in the roof space as required.

Under flat roofs, in false ceilings or where there is less than 0,9m of clearance, or should the ceilings be insulated with glass wool or other insulating material, the conduit shall be installed in such a manner as to allow for all wiring to be executed from below the ceilings.

Conduit runs from distribution boards shall, where possible terminate in fabricated sheet steel draw-boxes installed directly above or in close proximity to the boards.

9 SURFACE MOUNTED CONDUIT

Wherever possible, the conduit installation is to be concealed in the building work; however, where unavoidable or otherwise specified under Part 2 of the specification, conduit installed on the surface must be plumbed or levelled and only straight lengths shall be used.

The use of inspection bends is to be avoided and instead the conduit shall be set uniformly and inspection coupling used where necessary.

No threads will be permitted to show when the conduit installation is complete, except where running couplings have been employed.

Running couplings are only to be used where unavoidable, and shall be fitted with a sliced couplings as a lock nut.

Conduit is to be run on approved spaced saddles rigidly secured to the walls.

Alternatively, fittings, tees, boxes, couplings etc., are to be cut into the surface to allow the conduit to fit flush against the surface. Conduit is to be bedded into any wall irregularities to avoid gaps between the surface and the conduit.

Crossing of conduits is to be avoided, however, should it be necessary purpose-made metal boxes are to be provided at the junction. The finish of the boxes and positioning shall be in keeping with the general layout.

Where several conduits are installed side by side, they shall be evenly spaced and grouped under one purpose-made saddle.

Distribution boards, draw-boxes, industrial switches and socket outlets etc., shall be neatly recessed into the surface to avoid double sets.

In situations where there are no ceilings the conduits are to be run along the wall plates and the beams.

Painting of surface conduit shall match the colour of the adjacent wall finishes.

Only approved plugging materials such as aluminium inserts, fibre plugs, plastic plugs, etc., and round-head screws shall be used for fixing saddles, switches, socket outlets, etc., to walls, wood plugs and the plugging in joints in brick walls are not acceptable.

10 CONDUIT IN CONCRETE SLABS

In order not to delay building operations the Contractor must ensure that all conduits and other electrical equipment which are to be cast in the concrete columns and slabs are installed in good time.

The Contractor shall have a representative in attendance at all times when the casting of concrete takes place.

Draw-boxes, expansion joint boxes and round conduit boxes are to be provided where necessary. Sharp bends of any nature will not be allowed in concrete slabs.

Draw and/or inspection boxes shall be grouped under one common cover plate, and must preferable be installed in passages or male toilets.

All boxes, etc., are to be securely fixed to the shuttering to prevent displacement when concrete is cast. The conduit shall be supported and secured at regular intervals and installed as close as possible to the neutral axis of concrete slabs and/or beams.

Before any concrete slabs are cast, all conduit droppers to switchboards shall be neatly spaced and rigidly fixed.

11 FLEXIBLE CONNECTIONS FOR CONNECTING UP OF STOVES, MACHINES, ETC.

Flexible tubing connections shall be of galvanised steel construction, and in damp situations of the plastic

sheathed galvanised steel type. Other types may only be used subject to the prior approval of the Department's site electrical representative.

Connectors for coupling onto the flexible tubing shall be of the gland or screw-in types, manufactured of either brass or cadmium or zinc plated mild steel, and the connectors after having been fixed onto the tubing, shall be durable and mechanically sound.

Aluminium and zinc alloy connectors will not be acceptable.

12 WIRING:

Except where otherwise specified in Part 2 of this specification, wiring shall be carried out in conduit throughout. Only one circuit per conduit will be permitted.

No wiring shall be drawn into conduit until the conduit installation has been completed and all conduit ends provided with bushes. All conduits to be clear of moisture and debris before wiring is commenced.

Unless otherwise specified in Part 2 of this specification or indicated on the service drawings, the wiring of the installation shall be carried out in accordance with the "Wiring Code". Further to the requirements concerning the installation of earth conductors to certain light points as set out in the "Wiring Code", it is a specific requirement of this document that where plain-end metallic conduit or non-metallic conduit has been used, earth conductors must be provided and drawn into the conduit with the main conductors to all points, including all luminaires and switches throughout the installation.

Wiring for lighting circuits is to be carried out with 2,5mm² conductors and a 2.5mm²-earth conductor. For socket outlet circuits the wiring shall comprise 4mm² conductors and a 2,5mm²-earth conductor. In certain instances, as will be directed in Part 2 of this specification, the sizes of the aforementioned conductors may be increased for specified circuits. Sizes of conductors to be drawn into conduit in all other instances, such as feeders to distribution boards, power points etc., shall be as specified elsewhere in this specification or indicated on the drawings. Sizes of conductors not specified must be determined in accordance with the "Wiring Code".

The loop-in system shall be followed throughout, and no joints of any description will be permitted.

The wiring shall be done in PVC insulated 600/1000 V grade cable to SANS 1507.

Where cable ends connect onto switches, luminaires etc., the end strands must be neatly and tightly twisted together and firmly secured. Cutting away of wire strands of any cable will not be allowed.

13 SWITCHES AND SOCKET OUTLETS

All switches and switch-socket outlet combination units shall conform to the Department Quality Specifications, which form part of this specification.

No other than 16 A 3 pin sockets are to be used, unless other special purpose types are distinctly specified or shown on the drawings.

All light switches shall be installed at 1,4m above finished floor level and all socket outlets as directed in the Schedule of Fittings which forms part of this specification or alternatively the height of socket outlets may be indicated on the drawings.

14 SWITCHGEAR

Switchgear, which includes circuit breakers, iron-clad switches, interlocked switch-socket outlet units, contactors, time switches, etc., is to be in accordance with the Departmental Quality Specifications which form part of this specification and shall be equal and similar in quality to such brands as may be specified.

For uniform appearance of switchboards, only one approved make of each of the different classes of switchgear mentioned in the Quality Specifications shall be used throughout the installations.

15 SWITCHBOARDS

All boards shall be in accordance with the types as specified, be constructed according to the detail or type drawings and must be approved by the Employer before installation.

In all instances where provision is to be made on boards for the supply authority's main switch and/or metering equipment the contractor must ensure that all requirements of the authorities concerned in this respect are met.

Any construction or standard type aboard proposed, as an alternative to that specified must have the prior approval of the Employer.

All busbars, wiring, terminals, etc., are to be adequately insulated and all wiring is to enter the switchgear from the back of the board. The switchgear shall be mounted within the boards to give a flush front panel. Cable and boxes and other ancillary equipment must be provided where required.

Clearly engraved labels are to be mounted on or below every switch. The working of the labels in English, is to be according to the lay-out drawings or as directed by the Electrical Engineer and must be confirmed on site. Flush mounted boards to be installed with the top of the board 2,0m above the finished floor level.

16 WORKMANSHIP AND STAFF

Except in the case of electrical installations supplied by a single-phase electricity supply at the point of supply, an accredited person shall exercise general control over all electrical installation work being carried out.

The workmanship shall be of the highest grade and to the satisfaction of the Employer.

All inferior work shall, on indication by the Employer's inspecting officers, immediately be removed and rectified by and at the expense of the Contractor.

17 VERIFICATION AND CERTIFICATION OF ELECTRICAL INSTALLATION (CERTIFICATE OF COMPLIANCE AND TEST REPORT

On completion of the service, a certificate of compliance must be issued to the Principal Agent/Electrical Engineer or Employer in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) in the format as set out in SANS 10142-1 & 2.

18 EARTHING OF INSTALLATION

18.1 MAIN EARTHING

The type of main earthing must be as required by the supply authority if other than the Employer, and in any event as directed by the Principal Agent/Electrical Engineer, who may require additional earthing to meet test standards.

Where required an earth mat shall be provided, the minimum size, unless otherwise specified, being 1,0m x 1,0m and consisting of 4mm diameter hard-drawn bare copper wires at 250mm centres, brazed at all intersections.

Alternatively or additionally earth rods or trench earths may be required as specified or directed by the Electrical Engineer.

Installations shall be effectively earthed in accordance with the "Wiring Code" and to the requirements of the supply authority. All earth conductors shall be stranded copper with or without green PVC installation.

Connection from the main earth bar on the main board must be made to the cold water main, the incoming service earth conductor, if any and the earth mat or other local electrode by means of 12mm x 1,60 mm solid copper strapping or 16 mm² stranded (not solid) bare copper wire or such conductor as the Department's representative may direct. Main earth copper strapping where installed below 3m from ground level, must be run in 20 mm diameter conduit securely fixed to the walls.

All other hot and cold water pipes shall be connected with 12mm x 0,8mm perforated for solid copper

strapping (not conductors) to the nearest switchboard. The strapping shall be fixed to the pipework with brass nuts and bolts and against walls with brass screws at 150-mm centres. In all cases where metal water pipes, down pipes, flues, etc., are positioned within 1,6m of switchboards an earth connection consisting of copper strapping shall be installed between the pipework and the board. In vertical building ducts accommodating both metal water pipes and electrical cables, all the pipes shall be earthed at each distribution board.

18.2 ROOFS, GUTTERS AND DOWN PIPES

Where service connections consist of overhead conductors, all metal parts of roofs, gutters and down pipes shall be earthed. One bare 10mm² copper conductor shall be installed over the full length of the ceiling void, fixed to the top purlin and connected to the main earth conductor and each switchboard. The roof and gutters shall be connected at 15m intervals to this conductor by means of 12mm X 0,8mm copper strapping (not conductors) and galvanised bolts and nuts. Self-tapping screws are not acceptable. Where service connections consist of underground supplies, the above requirements are not applicable.

18.3 SUB-DISTRIBUTION BOARDS

A separate earth connection shall be supplied between the earth busbar in each sub-distribution board and the earth busbar in the Main Switchboard. These connections shall consist of a bare or insulated stranded copper conductors installed along the same routes as the supply cables or in the same conduit as the supply conductors. Alternatively armoured cables with earth continuity conductors included in the armouring may be utilised where specified or approved.

18.4 SUB-CIRCUITS

The earth conductors of fall sub-circuits shall be connected to the earth busbar in the supply board in accordance with SANS 10142.

18.5 RING MAINS

Common earth conductors may be used where various circuits are installed in the same wire way in accordance with SANS 10142. In such instances the sizes of earth conductors shall be equivalent to that of the largest current carrying conductor installed in the wire way, alternatively the size of the conductor shall be as directed by the Engineer. Earth conductors for individual circuits branching from the ring main shall be connected to the common earth conductor with T-ferrules or soldered. The common earth shall not be broken.

18.6 NON-METALLIC CONDUIT

Where non-metallic conduit is specified or allowed, the installation shall comply with the Department's standard quality specification for "conduit and conduit accessories".

Standard copper earth conductors shall be installed in the conduits and fixed securely to all metal appliances and equipment, including metal switch boxes, socket-outlet boxes, draw-boxes, switchboards, luminaires, etc. The securing of earth conductors by means of self-threading screws will not be permitted.

18.7 FLEXIBLE CONDUIT

An earth conductor shall be installed in all non-metal flexible conduit. This earth conductor shall not be installed externally to the flexible conduit but within the conduit with the other conductors. The earth conductor shall be connected to the earth terminals at both ends of the circuit.

18.8 CONNECTION

Under no circumstances shall any connection points, bolts, screws, etc., used for earthing be utilised for any other purpose. It will be the responsibility of the Contractor to supply and fit earth terminals or clamps on equipment and materials that must be earthed where these are not provided.

Unless earth conductors are connected to proper terminals, the end shall be tinned and lugged.

19 MOUNTING AND POSITIONING OF LUMINAIRES

The Contractor is to note that in the case of board and acoustic tile ceilings, i.e. as opposed to concrete slabs, close co-operation with the building contractor is necessary to ensure that as far as possible the luminaires are symmetrically positioned with regard to the ceiling pattern.

The layout of the luminaires as indicated on the drawings must be adhered to as far as possible and must be confirmed with the Department's representative.

LED luminaires installed against concrete ceilings shall be screwed to the outlet boxes and in addition 2 x 6mm expansion or other approved type fixing bolts are to be provided. The bolts are to be $\frac{3}{4}$ of the length of the luminaires apart.

LED luminaires to be mounted on board ceilings shall be secured by means of two 40mm x No. 10 round head screws and washers. The luminaires shall also be bonded to the circuit conduit by means of locknuts and brass bushes. The fixing screws are to be placed $\frac{3}{4}$ of the length of the fitting apart.

Earth conductors must be drawn in with the circuit wiring and connected to the earthing terminal of all LED luminaires as well as other luminaires exposed to the weather in accordance with the "Wiring Code".

LED luminaires are to be screwed directly to outlet boxes in concrete slabs. Against board ceilings the luminaires shall be secured to the bracing or joists by means of two 40mm x No. 8 round head screws.

PART 2: INSTALLATION DETAILS

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PART 2: INSTALLATION DETAILS

1 CABLE SLEEVE PIPES

Where cables cross under roadways, other services and where cables enter buildings, the cables shall be installed in earthenware or high-density polyethylene pipes.

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.

2 NOTICES

The Contractor shall issue all notices and make the necessary arrangements with Supply Authorities, the Postmaster-General, and S.A. Transport Services, Provincial or National Road Authorities and other authorities as may be required with respect to the installation.

3 ELECTRICAL EQUIPMENT

All equipment and fittings supplied must be in accordance with the attached quality specification (Part 3 of this document), suitable for the relevant supply voltage, and frequency and must be approved by the Employers Electrical Engineer.

4 DRAWINGS

There are current no drawings for the project. All information required on the installation is detailed in the scope of works.

5 BALANCING OF LOAD

The Contractor is required to balance the load as equally as possible over the multiphase supply.

6 SERVICE CONDITIONS

All plant shall be designed for the climatic conditions appertaining to the service.

7 SWITCHES AND SOCKET OUTLETS

The installation of switches and socket outlets must conform to clause 13 of Part 1 of this specification.

8 LIGHT FITTINGS AND LAMPS

The installation and mounting of luminaires must conform to clause 19 of Part 1 of this specification.

All fittings to be supplied by the Contractor shall have the approval of the Employer.

The light fittings must be of the type specified in the Schedule of Light Fittings.

9 EARTHING AND BONDING

The Contractor will be responsible for all earthing and bonding of the building and installation. The earthing and bonding is to be carried out strictly as described in clause 18 of Part 1 of this specification and to the satisfaction of the Employer/s Electrical Engineer.

10 MAINTENANCE OF ELECTRICAL SUPPLY

All interruptions of the electrical supply that may be necessary for the execution of the work, will be subject to prior arrangement between the Contractor and the Client and the Employer's Electrical Engineer.

11 EXTENT OF WORK

The work covered by this contract comprises the complete electrical installation, in working order, as per this specification, including the supply and installation of all fittings and also the installation of such equipment supplied by the Employer.

12 SUPPLY AND CONNECTION

The supply will be 400 Volt $\pm 10\%$, 50 Hz at Tseseng Magistrates Court.

The Contractor must arrange in good time with the local Municipality for the relocation of the low-tension meter point.

Standby Plant

The 80kVA silent and weatherproof standby plant to be supplied, installed and commissioned by others.

The Contractor will only be responsible for the supply and installation of the cable connections between the Main Distribution Board and the Charge- over Control Panel.

The supply cables are listed in the Schedule of Cables and measured in the Bills of Quantities.

13 CONDUIT AND WIRING

Conduit and conduit accessories shall be black enameled/galvanized screwed conduit or black enameled/galvanized plain end conduit in accordance with SANS 61386.

All conduits, regardless of the system employed, shall be installed strictly as described in the applicable paragraphs of clauses 4 to 8 of Part 1 of the specification. Wiring of the installation shall be carried out as directed in clause 9 part 1 of this specification.

Where plain end conduit is offered all switches and light fittings must be supplied with a permanent earth terminal for the connection of the earth wire.

Lugs held by switch fixing screws or self tapping screws will not be acceptable.

13.1 Telephone Installation

(NOT APPLICABLE)

13.2 Intercom Installation

(NOT APPLICABLE)

13.3 Power Trunking

The Contractor shall be responsible for the supply and installation of all power trunking complete with corner pieces, end pieces, junction pieces, supply conduits, cover plates and power outlets as specified and indicated on the drawings.

The power trunking must comply with SANS 61084. The Contractor must ensure that the power trunking is installed to satisfaction of the Employer's Electrical Engineer before commencing with the wiring of the power trunking.

14 POWER POINTS

Allow for the installation of power points and equipment as listed in the bill of quantities.

14.1 Water Heaters

(NOT APPLICABLE)

14.2 Extractor Fans (Bathrooms)

(NOT APPLICABLE)

14.3 Extractor Fans (Canopy)

(NOT APPLICABLE)

14.4 Air Conditioners

(NOT APPLICABLE)

14.4 Compressor (Comp)

(NOT APPLICABLE)

15 CABLES

The Contractor shall supply and completely install all distribution cables as indicated on the drawings, and listed in the Schedule of Cables.

The storage, transportation, handling and laying of the cables shall be according to first class practice, and the contractor shall have adequate and suitable equipment and labour to ensure that no damage is done to cables during such operations.

The cable-trenches shall be excavated to a depth of 1m deep below ground level and shall be 450mm wide for one to three cables, and the width shall be increased where more than three cables are laid together so that the cables may be placed at least two cable diameters apart throughout the run. The bottom of the trench shall be level and clean and the bottom and sides free from rocks or stones liable to cause damage to the cable.

The Contractor must take all necessary precautions to prevent the trenching work being in any way a hazard to the personnel and public and to safeguard all structures, roads, sewage works or other property on the site from any risk of subsidence and damage.

In the trenches the cables shall be laid on a 100mm thick bed of earth and be covered with a 100-mm layer of earth before the trench is filled in.

All joints in underground cables and terminations shall be made either by means of compound filled boxes according to the best established practice by competent cable jointers using first class materials or by means of approved epoxy-resin pressure type jointing kits. Epoxy-resin joints must be made entirely in accordance with the manufacturer's instructions and with materials stipulated in such instructions. Low tension PVCA cables are to be made off with sealing glands and materials designed for this purpose which must be of an approved make. Where cables are cut and not immediately made off, the ends are to be sealed without delay.

The laying of cables shall not be commenced until the trenches have been inspected and approved. The cable shall be removed from the drum in such a way that no twisting, tension or mechanical damage is caused and must be adequately supported at intervals during the whole operation. Particular care must be exercised where it is necessary to draw cables through pipes and ducts to avoid abrasion, elongation or distortion of any kind. The ends of such pipes and ducts shall be sealed to approval after drawing in of the cables.

Backfilling (after bedding) of the trenches is to be carried out with a proper grading of the material to ensure settling without voids, and the material is to be tamped down after the addition of every 150mm. The surface is to be made good as required.

On each completed section of the laid and jointed cable, the insulation resistance shall be tested to approval with an approved "Megger" type instrument of not less than 500 V for low tension cables.

Earth continuity conductors are to be run with all underground cables constituting part of a low tension distribution system. Such continuity conductors are to be stranded bare copper of a cross-sectional area equal to at least half that of one live conductor of the cable, but shall not be less than 4mm² or more than 70mm². A single earth wire may be used as earth continuity conductor for two or more cables run together, branch earth wires being brazed on where required.

15.1 LAYING, JOINTING AND MAKING OFF OF ELECTRICAL CABLES

[The requirements specified hereafter, are aimed essentially at high tension cable but are also valid

for low tension cable, where applicable.]

1. The use of the term "Inspector", includes the engineer or inspector of the Department or an empowered person of the concerned supervising consulting engineer's firm.
2. No cable is to be laid before the cable trench is approved and the soil qualification of the excavation is agreed upon by the Contractor and inspector.
3. After the cable has been laid and before the cable trench is back-filled the inspector must ensure that the cable is properly bedded and that there is no undesirable material included in the bedding layer.
4. All cable jointing and the making off of the cables must only be carried out by qualified experienced cable jointers. Helpers of the jointers may not saw, strip, cut, solder, etc. The cable and other work undertaken by them must be carried out under the strict and constant supervision of the jointer.
5. Before the Contractor allows the jointer to commence with the jointing work or making off of the cable (making off is recognized as half a joint) he must take care and ensure:
 - 5.1 That he has adequate and suitable material available to complete the joint properly and efficiently. Special attention must be given to ensure the cable ferrules and cable lugs are of tinned copper and of sufficient size. The length of the jointing lugs must be at least six times the diameter of the conductor,
 - 5.2 That the joint pit is dry and that all loose stones and material are removed,
 - 5.3 That the walls and banks of the joint pit are reasonable firm and free from loose material which can fall into the pit,
 - 5.4 That the necessary coffer-dams or retaining walls are made to stop the flow of water into the joint pit,
 - 5.5 That the joint pit is provided with suitable groundsheets so that the jointing work is carried out in clean conditions,
 - 5.6 That the necessary tents or sails are installed over the joint pit to effectively avert unexpected rainfall and that sufficient light or lighting is provided,
 - 5.7 That the necessary means are available to efficiently seal the jointing or cable end when an unexpected storm or cloudburst occurs, regardless of how far the work has progressed,
 - 5.8 That the cables and other materials are dry, undamaged and in all respects are suitable for the joint work or making off,
 - 5.9 That the heating of cable oil, cable compound, plumbers metal and solder is arranged that they are at the correct temperature when required so that the cable is not unnecessarily exposed to the atmosphere and consequently the ingress of moisture (care must be taken of overheating)

Flow temperatures of cable oil and compound must be determined with suitable thermometers. Cable oil and compound must not be heated to exceed the temperatures given on the containers and precaution must be taken to ensure that the tin is not overheated in one position. The whole mass must be evenly and proportionally heated.

(Temperatures of solder and plumbers metal may be tested with brown paper (testing time: 3 seconds). The paper must colour slightly - not black or burnt).

6. Before the paper-insulated cables are joined, they must be tested for the presence of moisture by the cable jointers test. This consists of the insertion of a piece of unhandled insulated impregnated paper tape in warm cable oil heated to a temperature of $130 \pm 5^{\circ}\text{C}$.

Froth on the surface of the oil is an indication that moisture is present in the impregnated insulation

and the amount of the froth gives an indication of the moisture present.

7. If the cable contains moisture or is found to be otherwise unsuitable for jointing or making of the inspector is to be notified immediately and he will issue the necessary instruction to cope with the situation.
8. The joint or making off of paper insulated cables must not be commenced during rainy weather.
9. Once a joint is in progress the jointer must proceed with the joint until it is complete and before he leaves the site.
10. The jointer must ensure that the material and his tools are dry at all times, reasonably clean and absolutely free from soil.
11. Relating to the jointing of the cable the following requirements apply:
 - 11.1 All jointing must be carried out in accordance with recognized and tried techniques and comply strictly with the instructions given by the supplier of the jointing kit.
 - 11.2 The cables must be twisted by hand so that the cores can be joined according to the core numbers. If necessary the cable is to be exposed for a short distance to accomplish this. Under no circumstances may the cores in a joint be crossed so as to enable cores to be joined according to the core numbers. If it is not possible to twist the cables so that the preceding requirements can be met, then cores are to be joined in the normal way without any consideration of the core numbers.
 - 11.3 Normally the cables will have profile conductors. The conductors shall be pinched with gas pliers to form a circular section, bound with binding wire so that they do not spread, and then tinned before jointing.
 - 11.4 Jointing ferrules, the length of which are at least 6 times the diameter of the conductors, must be slid over the conductor ends to be joined and pinched tightly. Then they are soldered by means of the ladle process whilst being pinched further closed.

Use resin only as a flux. The slot opening in the ferrule must be completely filled, including all depressions.

Remove all superfluous metal with a cloth dipped in tallow. Work during the soldering process must be from top to bottom. Rub the ferrule smooth and clean with aluminium oxide tape after it has cooled down to ensure that there are not any sharp points or edges.
 - NB:** The spaces between the conductor strands must be completely filled by soldering process and must be carried out quick enough to prevent the paper insulation from burning or drying out unnecessarily.
 - 11.5 After the ferrules have been rubbed smooth and clean, they and the exposed cores must be treated with hot cable oil (110°C) to remove all dust and moisture. These parts are to be thoroughly basted with the oil.
 - 11.6 The jointer must take care that his hands are dry and clean before the joint is insulated. Also the insulating tape which is to be used must first be immersed in warm cable oil (110°C) for a sufficient period to ensure that no moisture is present.
 - 11.7 After the individual cores have been installed they must be well basted with hot cable oil and again after the applicable separator and/or belt insulation tape is applied before the lead joint sleeve is placed in position.
 - 11.8 The lead joint sleeve must be thoroughly cleaned and prepared before it is placed on the cable and must be kept clean during the whole jointing process. Seal the filling apertures of the sleeve with tape until the sleeve is ready for compound filling.

- 11.9 The plumbing joints employed to solder the joint sleeve to the cable sheath, must be cooled off with tallow and the joint sleeve is to be filled with compound while it is still warm. Top up continuously until the joint is completely filled to compensate for the compound shrinkage.
- 11.10 The outer joint box must be clean and free from corrosion. After it has been placed in position it must be slightly heated before being filled with compound. Top up until completely full.
12. As far as cable end boxes are concerned the requirements as set out above are valid where applicable.

16. DISTRIBUTION BOARDS AND KIOSK

In addition to clause 14 and clause 15 of Part 1 of this specification the following shall also be applicable to switchboards required for this service.

The Contractor shall supply and install the distribution boards as indicated on the drawings and listed in the distribution Board Schedule. All distribution boards shall comply with the quality specification in Part 3 of this specification, and be approved by the Employer's Electrical Engineer.

The following types of distribution boards are required to be installed new:

BOARD	TYPE	PANEL	Location
DB UPS	Surface mounted	UPS	Server room
DB Outhouse	Surface mounted	Emergency	Outhouse
Pole mount DB	Surface mounted	Normal	Existing electrical pole

The following types of Kiosks are required to be installed new:

BOARD	TYPE	PANEL	Location
Kiosk MAIN	Floor standing	Normal and Emergency	To be located next to existing main cable

The existing distribution boards on the premises require servicing, balancing of phases, installation of front plates, labels, earthing, and installation of new circuit breakers and busbars as indicated in the drawings and bill of quantities.

The following Kiosks require servicing.

BOARD	TYPE	PANEL	Location
DK outdoor lights	Floor standing	Emergency	Next to garage

The following distribution boards require servicing.

BOARD	TYPE	PANEL	Location
DB Main	Flush mounted	Emergency	Corridor
DB Air-con	Surface mounted	Emergency	Next to DB Main
DB server	Surface mounted	Emergency	Server room
DB guard house	Flush mounted	Emergency	Guard house

The latest Departmental Quality Specification Section for Distribution Boards must be adhere to by Part 3 of the specification.

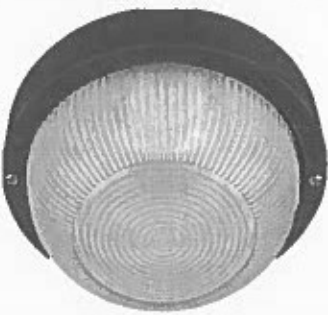
17. SUBSTATION

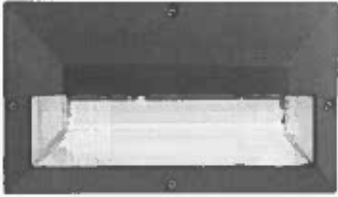
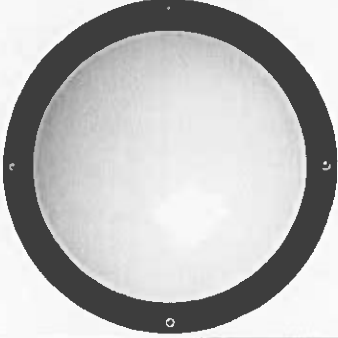
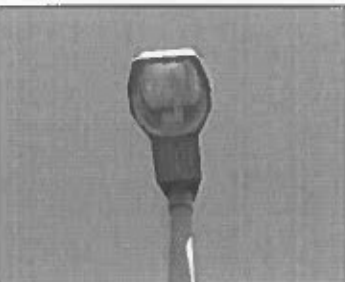
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18. SCHEDULE OF LIGHT FITTINGS

The Departmental Quality Specification for the relevant luminaires must be included in Part 3 of the specification.

The light fittings and accessories are to be according to the quality specifications in Part 3 and shall be approved by the Employer.

TYPES	DESCRIPTION	PICTURE	Quantity
Type A	NEW 1200MM FLUORESCENT LIGHT FITTING WITH 2x36W BULBS INCLUDED.		10
Type B	12W LED ROUND WALL/CEILING LIGHT WITH BLACK BASE. COLOUR TEMP 4000K		10

Type C	THE RECTANGULAR LUMINAIRE BASE AND TRIM RING IS MANUFACTURED OF A HIGH-PRESSURE DIE-CAST MARINE GRADE ALUMINIUM. COLOUR BLACK. THE DIMENSIONS SHALL BE 341MM * 195MM * 105MM. THE BASE AND TRIM ARE FINISHED WITH EPOXY POWDER COATING. THE DIFFUSER SHALL BE AN OPAL NON-DISCOLOURING HIGH IMPACT ACRYLIC INJECTION MOLDED DIFFUSER. IP 65. MAINS CONNECTION: 220...240V. PF 0.95, 50HZ, RATED INPUT POWER: 9W, 1370 LUMEN, CRI >80, 4000K, 60000HR LIFETIME, LUMINAIRE SHALL BEAR THE SANS 60598-2-1 SAFETY MARK.		3
Type D	Type D - The luminaire base and trim ring is manufactured of a high-pressure die-cast marine grade aluminium. The base and trim are finished with epoxy powder coating. Opal non-discolouring high impact acrylic injection molded diffuser. Vandal resistance. IP 65. It shall be designed to operate LEDs of (9W).		6
Type E	Type E - 25W Square industrial bulkhead, die cast aluminium body and diffuser frame finished in a thermos setting epoxy powder. The diffuser to be clear polycarbonate, colour temperature of 4000K.		7
Type F	Type F - 2X26W bottom pole mounted light fitting. To match existing. IP 65. Colour temperature 4000k. 230 V +/- 10%. Including all control gear and mounting accessories needed to mount on existing pole.		13

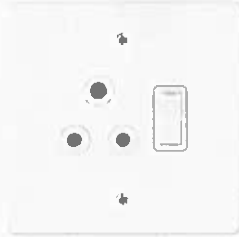
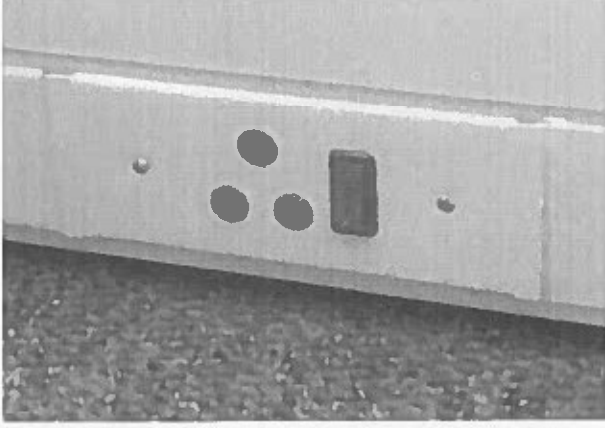
18.1 STRAIGHT POLES SPECIFICATIONS

(NOT APPLICABLE)

19. SCHEDULE OF POWER POINTS

Socket outlets to be installed shall be 16A switched socket outlets with the following colour coding.

Socket outlets shall be wall mounted and power skirting mounted as indicated on the drawings.

TYPE	DESCRIPTION	COVER COLOUR	PICTURE
1A	4X4 1XSANS 164-1 POWER SOCKET. 230V 16A	WHITE	
1B	4X4 SANS 164-1 AND 164-2 POWER SOCKET. 230V 16A	WHITE	
1C	4X4 2XSANS 164-1 POWER SOCKET. 230V 16A	WHITE	
1D	1XSANS 164-2 POWER SKIRTING SOCKET. 230V 16A	GREY, TO MATCH EXISTING	

20. SCHEDULE OF CABLES, CONDUIT AND WIRING

Supply, install and connect the following cable.

CABLE No	CABLE SPECIFICATION	BCEW SPEC.	FED FROM	FED TO	LENGTH	AMP C/B	VOLT DROP
1	50mm ² x 4-core PVC/SWA	16mm ²	Generator	Kiosk	35m	150 A 3P	1.89V
2	6mm ² x 2-core + Earth		Kiosk	DB Outhouse	10m	40 A 2P	1.46V

CABLE No	CABLE SPECIFICATION	BCEW SPEC.	FED FROM	FED TO	LENGTH	AMP C/B	VOLT DROP
3	6mm ² x 2-core + Earth		DB Server	DB UPS	0.3m	30 A 2P	0.06V

21. SCHEDULE OF DISTRIBUTION BOARDS AND KIOSK

The front panels of normal supply, standby power and no-break supply sections shall be painted in distinctive colours as follows:

Normal supply : Light Orange, colour B26 of SANS 1091.
Standby power : Signal Red, colour A11 of SANS 1091.
No-break supply: Dark Violet, colour F06 or Olive Green, Colour H05 of SANS 1091.

Indicated is the probable fault level rating (kA) of the busbars. Refer to the Summary of Switchgear and Circuits for the minimum fault level rating of specified equipment.

Distribution boards new:

BOARD	TYPE	PANEL	Location	KA RATING
DB UPS	Surface mount	UPS	Server room	6 KA
DB Outhouse	Surface mount	Emergency	Outhouse	6 KA
Pole mount DB	Surface mount	Normal	Existing electrical pole	25kA

Kiosk new:

BOARD	TYPE	PANEL	Location	KA RATING
Kiosk Main	Floor standing	Normal + Emergency	To be determined on site	15 KA

Distribution boards serviced:

BOARD	TYPE	PANEL	Location	KA RATING
DB Main	Flush mounted	Emergency	Corridor	15 KA
DB Air-con	Surface mounted	Emergency	Next to DB Main	6 kA
DB server	Surface mounted	Emergency	Server room	6 kA
DB guard house	Flush mounted	Emergency	Guard house	6 kA

Kiosk serviced:

BOARD	TYPE	PANEL	Location	KA RATING
DK outdoor lights	Floor standing	Emergency	Next to garage	6 KA

22. SUMMARY OF SWITCHGEAR AND CIRCUITS

NOTE: ALL CIRCUIT BREAKERS MUST BE OF THE MAGNETIC HYDRAULIC TYPE AND NO THERMAL CIRCUIT BREAKERS WILL BE ALLOWED. ALL THE CIRCUIT BREAKERS MUST BE OF THE SAME TYPE OF RANGE. ALL CIRCUIT BREAKERS MUST BE MANUFACTURE AND ASSEMBLE AT SOUTH AFRICA, NO IMPORTS WILL BE ALLOWED.

22.1 Distribution Board DB Main

This is an existing distribution board. The distribution board requires servicing. Repainting of front panel shall take place and testing of existing circuits. All existing breakers to be replaced. Contractor to identify circuits and label accordingly.

The indicated fault current rating (kA) is the **minimum** value that the switchgear must comply with for connecting to the busbars of the distribution board.

Emergency Power – 15kA

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
DB Main	Main Switch	1 x 150Amp 3P 15kA
Local breaker	Local breaker	1 x 63Amp 3P 6kA
Earth Leakage	Earth Leakage	1 x 63Amp 3P+N 6kA E/L
Earth Leakage	Earth Leakage	6 x 63Amp 1P+N 6kA E/L
Local breaker	Local breaker	6 x 63Amp 1P 6kA
Local breaker	Local breaker	2 x 40Amp 1P 6kA
Local breaker	Local breaker	1 x 30Amp 1P+N 6kA
Local breaker	Local breaker	1 x 30Amp 1P 6kA
Local breaker	Local breaker	1 x 25Amp 1P+N 6kA
Plugs	Plugs	12 x 20Amp 1P 6kA
Lights	Lights	15 x 10Amp 1P 6kA
Switch disconnect	Switch disconnect	1 x 63Amp 3P 6kA
Surge arrestor	Surge arrestor	Type 2 40kA 3P+N

22.2 Distribution Board DB Air- conditioning

This is an existing distribution board. The distribution board requires servicing. Only repainting of front panel shall take place and testing of existing circuits. Contractor to identify circuits and label accordingly.

22.3 Distribution Board DB Server

This is an existing distribution board. The distribution board requires servicing. Only repainting of front panel shall take place and testing of existing circuits. Contractor to identify circuits and label accordingly.

22.4 Distribution Board DB Guard house

This is an existing distribution board. The distribution board requires servicing. Repainting of front panel shall take place and testing of existing circuits. All existing breakers to be replaced. Contractor to identify circuits and label accordingly.

The indicated fault current rating (kA) is the **minimum** value that the switchgear must comply with for connecting to the busbars of the distribution board.

Emergency Power – 6kA

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
DB Guard House	Main Switch	1 x 40Amp 1P+N 6kA
Earth Leakage	Earth Leakage	1 x 63Amp 1P+N 6kA E/L
Plugs	Plugs	2 x 20Amp 1P 6kA
Lights	Lights	2 x 10Amp 1P 6kA
Surge arrestor	Surge arrestor	Type 2 40kA 1P+N

22.5 Distribution Board DB UPS

This is a new distribution board, Contractor to identify circuits and label accordingly. All sockets that leads to server cabinet must be supplied from the DB UPS.

The indicated fault current rating (kA) is the **minimum** value that the switchgear must comply with for connecting to the busbars of the distribution board.

Emergency Power – 6kA

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
DB UPS	Main Switch	1 x 30Amp 1P+N 6kA
Plugs	Plugs	2 x 20Amp 1P 6kA
Surge arrestor	Surge arrestor	Type 2 40kA 1P+N

22.6 Distribution Board DB Outhouse

This is a new distribution board, Contractor to identify circuits and label accordingly.

The indicated fault current rating (kA) is the **minimum** value that the switchgear must comply with for connecting to the busbars of the distribution board.

Emergency Power – 6kA

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
DB Outhouse	Main Switch	1 x 40Amp 1P+N 6kA
Earth Leakage	Earth Leakage	1 x 63Amp 1P+N 6kA E/L
Plugs	Plugs	2 x 20Amp 1P 6kA
Lights	Lights	2 x 10Amp 1P 6kA
Surge arrestor	Surge arrestor	Type 2 40kA 1P+N

22.3 Kiosk Main

This is a new kiosk which requires the following listed equipment.

The indicated fault current rating (kA) is the **minimum** value that the switchgear must comply with for connecting to the busbars of the distribution board.

Normal Power – 15kA

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
Kiosk Main	Main Switch	1 x 200Amp 3P 25kA
	Energy meter	1 x Existing kwh meter

Emergency Power – 15kA

CIRCUIT NUMBER	DESCRIPTION	EQUIPMENT
	Automatic transfer switch	ATS including CB's, contactors, etc
Guard house	Feed to Guard House	1 x 40Amp 1P+N 15kA
Main Building	Feed to Main Building	1 x 150Amp 3P 15kA

22.4 Pole mounted DB

The DB is to house the existing municipal breaker.

23. SCHEDULE OF LIGHTS, SOCKET OUTLETS AND SPECIAL POWER POINTS

23.1 DB Outhouse

Power Outlets

CIRCUIT NO	TYPE OF SOCKET OUTLET	QTY	LOAD EACH (W)	LOAD TOTAL (W)	MOUNTING
P1	1C	1	1000	1000	350mm Wall Mounted
	1B	1	500	500	350mm Wall Mounted

Lights

CIRCUIT NO	TYPE OF LIGHT FITTING	QTY	LOAD EACH (W)	LOAD TOTAL (W)	MOUNTING
L1	TYPE A	1	72	72	Ceiling mounted
	TYPE B	1	12	12	Ceiling mounted
	TYPE E	2	25	50	Wall mounted

Isolator

CIRCUIT NO	TYPE OF ISOLATOR	QTY	LOAD EACH (W)	LOAD TOTAL (W)	MOUNTING
AC1	Weather proof	1	1200	1200	Wall mounted

NOT INCLUDED IN THIS DOCUMENT

THIS ENTIRE SPECIFICATION AND BILLS OF QUANTITIES SHALL BE READ IN CONJUNCTION WITH THE ELECTRICAL GENERAL TECHNICAL SPECIFICATION AND QUALITY SPECIFICATION OF THE DEPARTMENT OF PUBLIC WORKS, WHICH IS AVAILABLE ON REQUEST.

= END OF SPECIFICATION =

PART 4: BILLS OF QUANTITIES

Bills of Quantities are included in part C2.2 of the tender document.

PART 5: ELECTRICAL WORK MATERIAL SCHEDULE

The Contractor shall complete the following schedules and submit with their tender.

The schedules will be scrutinised by the Electrical Engineer and should any material offered not comply with the requirements contained in the specification, the Contractor will be required to supply material in accordance with the contract at no additional cost.

NB: Only one manufacturer's name to be inserted for each item.

Item	Material	Make or trade name	Country of origin
1.	Circuit breakers 1P, 2P, 3P		
2.	Conduit		
3.	Conduit boxes		
4.	Light switches		
5.	Sockets		
	Lights		
6.	Type A		
7.	Type B		
8.	Type C		
9.	Type D		
10.	Type E		
11.	Type F		
12.	Low voltage cables		
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PART 6: DRAWINGS

DRW NO	SHORT DESCRIPTION

There is currently no drawings available.

ADDITIONAL PARTICULARS OF ELECTRICAL CONTRACTOR

The electrical contractor to complete the info below and attach the certified documentation (ECB & ECA & DOL) to the electrical tender document.

TENDER NO: _____ REFERENCE: _____

SERVICE: _____

NAME OF THE ELECTRICAL CONTRACTOR THREE PHASE REGISTER: _____

ADDRESS _____

CONTACT NUMBER: _____

ELECTRICAL CONTRACTOR'S REGISTRATION NUMBER AT THE ELECTRICAL CONTRACTING BOARD OF SOUTH AFRICA.

ECB NUMBER: _____

ELECTRICAL CONTRACTOR'S REGISTRATION NUMBER AT THE ELECTRICAL CONTRACTORS ASSOCIATION OF SOUTH AFRICA

ECA NUMBER: _____

ELECTRICAL CONTRACTOR'S REGISTRATION NUMBER AT THE DEPARTMENT OF LABOUR:

DOL NUMBER _____

DATE

SIGNATURE OF TENDERER



public works
& infrastructure

Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OUTDOOR EMERGENCY GENERATOR SET INCLUDING ELECTRICAL INSTALLATION

SPECIFICATION FOR THE GENERATOR AND ELECTRICAL INSTALLATION AT TSESENG MAGISTRATES COURT

ELECTRICAL ENGINEER

Department of Public Works and Infrastructure
Contact: Moganum Govender
18 President Brand Street
Bloemfontein
9301

Tel. No. 051 408 7336

**SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OF 80kVA
OUTDOOR EMERGENCY GENERATOR SET INCLUDING ELECTRICAL
INSTALLATION**

SPECIFICATION

FOR THE GENERATOR AND

ELECTRICAL INSTALLATION

INDEX TO SPECIFICATION

THIS SPECIFICATION CONSISTS OF THE FOLLOWING DOCUMENTS:

	<u>PAGES:</u>
(A) SPECIFICATION FOR ELECTRICAL WORK (SECTION A)	3 - 8
(B) SPECIFICATION FOR GENERATOR WORK (SECTION B)	9 - 34
(C) DRAWING REGISTER	35

SECTION A

SPECIFICATION FOR ELECTRICAL WORK

1. **GENERAL INFORMATION**

The tenderer's attention is drawn to the fact that if the schedules of this specification are not completed his tender cannot be adjudicated and may be disqualified. This applies also to the Bill of Quantities where the unused items are not priced. Items used on the project must be priced and no cost plus items will not be accepted.

2. **DRAWINGS**

There are no drawings available. This specification generally show the character and extent of the generator installation work, and shall not be held as showing every minute detail of the work to be executed. The contractor will be required to submit shop drawings and plinth design drawings for approval.

3. **MAKING GOOD**

The successful tenderer will be responsible for making good in all trades of any damage to buildings or other services which he or his employees may have incurred during the construction of the works.

The Contractor will be responsible for keeping the site clean and tidy and shall remove from the site all rubble and letter resulting from the construction work.

4. **ELECTRICAL EQUIPMENT**

All fittings, material and equipment and component parts thereof are to be in accordance with the attached quality specification and must have the approval of the Department. In addition all equipment shall be designed, manufactured and tested in accordance with the relevant South African National Standards Specification or otherwise the relevant British Standard Specification.

All material and equipment must be suitable for the supply voltage namely 400/230 volt $\pm 10\%$ 3PH-4 wire and the necessary pre-cautions shall be taken against corrosion, i.e. exposed metal shall be anti-rust treated to approval and all metalwork to be galvanized or painted.

5. **WORK SEQUENCE AND MAINTENANCE OF ELECTRICAL SUPPLY**

The sequence in which the work must be carried out must be established in consultation with the Department's Representative.

All interruptions of the electrical supply that may be necessary for the execution of the work will be subject to prior arrangements between the Contractor, the user Department, and the Department's Representative.

6. **SUPERVISION**

The work shall at all times, for the duration of the contract, be carried out under the supervision of a skilled and competent representative of the Contractor, who will be able and authorized to receive and carry out instruction on behalf of the Contractor. A sufficient number of workmen shall be employed at all times to ensure satisfactory progress of the work.

7. **CERTIFICATE OF COMPLIANCE**

A Certificate of Compliance in accordance with the latest issue of the S.A.N.S. 10142, Code of Practice for the Wiring of Premises, shall be completed by the Contractor on completion of the installation. Practical completion will only be taken after the Department has received the certificate.

8. **BALANCING OF LOAD**

The Electrical Contractor is required to balance the load as equally as possible over the multiphase system.

9. **SUPPLY AND CONNECTION**

The supply will be 400 Volt $\pm 10\%$, 50 Hz at Tseseng Magistrates Court.

The site is fed from a pole top transformer which feeds a 200A 25KA pole top circuit breaker which in turn feeds the main distribution board. The main distribution board consists of a 150A 15KA circuit breaker. The local authority energy meter is also located in the main distribution board.

The existing energy meter must be relocated to a new outdoor kiosk near the pole top circuit breaker. A new 50mm² cable will lead from the generator to the automatic changeover, which will be located in the outdoor kiosk. All load switching must be carried out in the outdoor kiosk. The existing cable will then lead from the kiosk to the Main DB.

The Contractor must arrange in good time with the local Municipality for them to be present during the relocation of the energy meter so as to inspect and approve of the relocation.

10. **EXTENT OF WORK**

To make provision for the installation of a silent outdoor IP65 canopy type 80 kVA generator.

10.1 **LOCATION OF SITE**

The site is located in Tseseng Magistrates Court, Phuthaditjhaba.

10.2 **SUMMARY OF WORK TO BE DONE**

10.2.1 **EMERGENCY GENERATOR PLANT**

The successful tenderer shall supply, deliver and install a completely single enclosed diesel driven standby generator set of 80kVA 400/230V 3 phase in a position that will be determined on site. The machine shall be totally enclosed in a 3CR12 stainless steel housing. The exhaust shall be manufactured from stainless steel.

The housing is to be provided on galvanized 3CR12 stainless steel skids so that the generator set can be transported to site and placed in position on a concrete plinth, casted by the successful tenderer. The skids must be of sufficient height to allow for the passage of storm water under the set.

The generating set shall be on standby and fully automatic, i.e. it shall start when the main supply fails, as further detailed in the general technical specification. The automatic mains failure panel shall be installed in the 3CR12 housing.

The generator is to provide emergency power to the whole building.

10.2.2 CONCRETE PLINTH

Concrete plinth to be provided for the 80kVA generator and fuel tank.

The plinth dimensions shall be 3500X2000X200mm. The bund wall shall rise 130mm above the plinth. The surface of the concrete plinth shall be 50mm higher than the existing ground level. Concrete pavers shall be placed 1 meter away from the generator side.

A tap to be provided to drain all the water that accumulates inside the bund wall. Final position of the tap will be determined on site. It is the engineer's responsibility to ensure plinth design complies with generator dimensions and weights. The bund wall shall contain 110% of the fuel, oil and water capacity of the generator. The bund wall shall not constrain the canopy doors from opening completely. The plinth cost to be included in the generator price as well. Design drawings must be provided by the contractor and approved by the engineer before construction.

10.2.3 P.V.C.A. CABLES

The contractor shall allow for the supply, installation and connection of the cables as per "Bill of Quantities" and as hereafter specified.

Supply, install and connect the following cable.

CABLE No	CABLE SPECIFICATION	BCEW SPEC.	FED FROM	FED TO	LENGTH	AMP C/B	VOLT DROP
1	50mm ² x 4-core PVC/SWA	16mm ²	Generator	Kiosk	35m	150 A 3P	1.89V
2	6mm ² x 2-core + Earth		Kiosk	DB Outhouse	10m	40 A 2P	1.46V
3	6mm ² x 2-core + Earth		DB Server	DB UPS	0.3m	30 A 2P	0.06V

10.2.4 DISTRIBUTION BOARDS

The front panels of normal supply, standby power and no-break supply sections shall be painted in distinctive colours as follows:

Normal supply : Light Orange, colour B26 of SANS 1091.
Standby power : Signal Red, colour A11 of SANS 1091.
No-break supply : Dark Violet, colour F06 or Olive Green,
Colour H05 of SANS 1091.

Distribution boards new:

<u>BOARD</u>	<u>TYPE</u>	<u>PANEL</u>	<u>Location</u>	<u>KA RATIN G</u>
DB UPS	<u>Surface mount</u>	UPS	<u>Server room</u>	<u>6 KA</u>
DB Outhouse	<u>Surface mount</u>	Emergency	<u>Outhouse</u>	<u>6 KA</u>
Pole mounted DB	<u>Surface mount</u>	Normal	<u>Near existing main cable</u>	<u>15kA</u>

Distribution boards serviced:

<u>BOARD</u>	<u>TYPE</u>	<u>PANEL</u>	<u>Location</u>	<u>KA RATIN G</u>
DB Main	<u>Flush mounted</u>	Emergency	<u>Corridor</u>	<u>10 KA</u>
DB Air-con	<u>Surface mounted</u>	Emergency	<u>Next to DB Main</u>	<u>6 kA</u>
DB server	<u>Surface mounted</u>	Emergency	<u>Server room</u>	<u>6 kA</u>
DB guard house	<u>Flush mounted</u>	Emergency	<u>Guard house</u>	<u>6 kA</u>

10.2.5 THE INSTALLATION OF A NEW FREE STANDING KIOSK

The contractor shall allow for the supply and installation of a new kiosk including equipment as indicated. All cables and equipment for the kiosk must be installed by the contractor. The kiosk shall be mounted on 300mm high concrete pedestal to avoid the ingress of water.

Kiosk new:

<u>BOARD</u>	<u>TYPE</u>	<u>PANEL</u>	<u>Location</u>	<u>KA RATIN G</u>
Kiosk Main	Floor standing	Normal + Emergency	To be determined on site	15 KA

Kiosk serviced:

<u>BOARD</u>	<u>TYPE</u>	<u>PANEL</u>	<u>Location</u>	<u>KA RATIN G</u>
DK outdoor lights	Floor standing	Emergency	<u>Next to garage</u>	<u>6 KA</u>

10.2.6 EARTH CONTINUITY TEST

The contractor shall allow for the supply and installation of a complete earthing system as indicated below.

The contractor shall install an earthing mat below the concrete plinth. The depth of the earth mat must be 200mm below ground level underneath the generator plinth. The earth mat must consist of 10mm diameter solid copper conductors. All joints and conductors to earth mat to be done with exo-thermic process ("CADWELD"). Connect the generator main earth bar/frame to the earth mat via 70mm² stranded copper earth cable. The combined earth resistance must be below 1 ohm. If this cannot be attained, then mix ground surrounding earth conductor with coal dust or other approved and compact. Additional earth rods can be added to achieve acceptable earth resistance. The cost of which shall be included in the price for the generator.

SECTION B
SPECIFICATION FOR GENERATOR WORK

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SPECIFICATION FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF DIESEL/ALTERNATOR GENERATING SETS

1. GENERAL

This section covers the Standard Specification for the supply, delivery and complete installation on site in full working order of diesel/alternator generating sets.

Full particulars, performance curves and illustrations of the equipment offered, must be submitted with the Tender. Tenderers may quote for their standard equipment, complying as closely as possible with this Specification, but any deviations from the specification must be fully detailed.

Supply, install, commission, test and maintain an emergency generating set at Tseseng Magistrates Court.

Note: The tenderer to note that the position of the emergency set is provisional and the final position of the enclosure will be determined on site with the successful tenderer and the Department's Representative.

2. DELIVERY

The successful Tenderer shall inform the Regional Representative of the Department, when the set is ready for installation.

3. OUTPUT AND VOLTAGE

The set shall have a site output and voltage as specified.

4. CONSTRUCTION

The engine and alternator of the set shall be built together on a common frame with anti-vibration mountings and contained in a 3CR12 canopy as specified. A galvanized or 3CR 12 drip tray must be fitted under the engine. The tray must be large enough to catch a drip from any part of the engine.

The frame must be of the "DUPLEX" type.

5. OPERATION

The set is required to supply the essential loads in the case of a mains power failure.

The set shall be fully automatic i.e. it shall start when any one phase of the main supply fails or get switched and shall shut down when the normal supply is re-established. In addition it shall be possible to manually start and stop the set by means of pushbuttons on the switchboard.

The automatic control shall make provision for three consecutive starting attempts. Thereafter the set must be switched off, and the start failure relay on the switchboard must give a visible and audible indication of the fault.

To prevent the alternator being electrically connected to the mains supply when the mains supply is on and vice versa, a safe and foolproof system (mechanical or electrical interlocking)

of suitably interlocked contactors shall be supplied and fitted to the changeover switchboard.

Important Note

The Tenderer must submit, together with his offer, the design of the control system to comply with the requirements for automatic starting, stopping, interlocking and isolation as specified.

6. **ENGINE**

6.1 **General**

The engine must comply with the requirements laid down in SANS 8528 and must be of the atomized injection, compression ignition type, running at a speed not exceeding 1500 r.p.m. The engine must be amply rated for the required electrical output of the set, when running under the site conditions. The starting period for either manual or automatic switching-on until the taking over by the generating set, in one step, of a load equal to the specified site electrical output, shall not exceed 15 seconds. This must be guaranteed by the Tenderer.

Turbo-charged engines will only be accepted if the Tenderer submits a written guarantee that the engine can deliver full load within the specified starting period.

Curves furnished by the engine makers, showing the output of the engine offered against the speed, for both intermittent and continuous operation as well as fuel consumption curves when the engine is used for electric generation, must be submitted with the Tender.

6.2 **Rating**

The set shall be capable of delivering the specified output continuously under the site Conditions, without overheating. The engine shall be capable of delivering an output of 110% of the specified output for one hour in any period of 12 hours consecutive running in accordance with SANS 8528.

6.3 **De-rating**

The engine must be de-rated for the site conditions as set out in the Detail Specification, Section 5 of this document.

The de-rating of the engine for site conditions shall be strictly in accordance with SANS 8528 as amended to date. Any other methods of de-rating must have the approval of the Department and must be motivated in detail. Such de-rating must be guaranteed in writing and proved by the successful Tenderer at the site test.

6.4 **Starting and Stopping**

The engine shall be fitted with an electric starter motor and be easily started from cold, without the use of any special ignition devices under summer as well as winter conditions.

6.5 **Starter Battery**

The set must be supplied with a fully charged lead-acid type battery, complete with necessary electrolyte. The battery must have sufficient capacity to provide the starting torque stipulated by the engine makers. The battery capacity shall not be less than 120 Ah and shall be capable of providing three consecutive start attempts from cold and thereafter a fourth attempt under

manual control of not less than 20 seconds duration each. The battery must be of the heavy duty "low maintenance" type, housed in a suitable battery box.

6.6 Cooling

The engine may be either of the air or water cooled type. In the case of water-cooling, a built-on heavy duty, tropical type pressurized radiator must be fitted. Only stand-by sets that are water cooled shall have electric heaters.

For either method of cooling, protection must be provided against running at excessive temperatures. The operation of this protective device must give a visual and audible indication on the switchboard. Water-cooled engines shall in addition be fitted with a low water cut-out switch, installed in the radiator, to switch the set off in the event of a loss of coolant. The protection shall operate in the same way as the other cut-outs (eg. low oil pressure). All air ducts for the cooling of the engine are to be allowed for. The air shall be supplied from the cooling fan cowling/radiator face to air outlet louvers in the enclosure.

6.7 Lubrication

Lubrication of the main bearings and other important moving parts shall be by forced feed system. An automatic low oil pressure cut-out must be fitted, operating the stop solenoid on the engine and giving a visible and audible indication on the switchboard.

6.8 Fuel Pump

The fuel injection equipment must be suitable for operation with the commercial brands of diesel fuel normally available in South Africa.

6.9 Fuel Tank

The fuel tank below the engine under the generator for outdoor units and the tank shall have sufficient capacity to run the engine on full load for a period of **24** hours. If the generator is installed in a generator room the fuel tank may be a free standing type. The contractor shall allow for a full tank of diesel when handing over the plant to the Department.

The tank shall be fitted with a suitable filter and "low fuel level" alarm, giving an audible and visible signal on the switchboard as well as a low-low fuel level cut-out. A manual type fuel diesel pump with adequate length of hose is to be supplied for the filling of the fuel tank from the diesel drums or any other storage arrangements. In addition a water trap shall be provided in the fuel pipe run between the tank and the engine.

All generators with a capacity of 50 kVA and above must be supplied with an electrically operated pump with sufficient length of oil resistant hose to reach 2m beyond the door of the canopy or generator room shall be supplied for filling the fuel tank from 200 liter drums.

A filtration and water separation system for generators with a capacity of 50 kVA and above must be provided for the standby generator. This filtration and water separation system must be dedicated to purifying the content of the storage system / tank by way of the cleaning processes which are applied while circulating the fuel through the filter & separator unit.

The filtration system must be able to handle diesel fuel of "high" and of "low" sulphur content for an indefinite period. The suction line of the system must be connected to the lowest part of the storage system / tank. The return line must be connected in the top section of the storage

system / tank in such a position and in such a way that the flow of fuel within the storage system / tank between the fuel return point and the fuel suction point will induce scouring of the bottom of the system / tank to effectively capture sediment and water in the to be filtered fuel.

The filtration unit must filter the diesel fuel mechanically, removing suspended particles of effective diameters down to 5 micron. In addition, it must separate all water from the fuel and the fuel storage system and automatically dispose of / dump such water into an open, removable receptacle for disposal at the installation or in a suitable position outside the building/container.

Separation of the fuel and water must be sufficiently effective that the discharged water will meet the general effluent standard required for it to be disposed of into a municipal drain and sewer system.

The filter and water separator unit must be supplied from the DC batteries used to power the relevant generator set. The circulating pump shall be suitably sized to circulate the full contents of the fuel tank, once every seven (7) days. The pump shall be equipped with an override function on the control panel, to allow the circulating pump to be activated manually when the diesel tank is refilled.

The filter cartridge of the filter and water separator unit must be replaceable, and, in normal operational conditions, not require replacement within periods shorter than three months. The replacement units must be readily available.

The filtration & separator system may be mounted against the wall of the plant room or in the inside of the container, which may house the installation.

6.10 Fusible Fuel shut off link

The contractor shall allow for the supply and installation of a fuel shut off fusible link in the container. The fusible link shall shut off the fuel at a temperature of 130 degrees in an event of a fire in the self-contain enclosure. The fusible link shall be mounted above the engine and coupled to the shut off valve by means of a 2mm stainless steel cable. The cable shall be installed to the shut off valve without any possibility of kinking the cable which may cause malfunctioning of the protection device.

6.11 Governor

The speed of the engine shall be controlled by a governor in accordance with ECM of SANS 8528 if not otherwise specified in the Detailed Specification.

The permanent speed variation between no load and full load shall not exceed 4,5% of the nominal engine speed and the temporary speed variation shall not exceed 10%. External facilities must be provided on the engine, to adjust the nominal speed setting by $\pm 5\%$ at all loads between zero and rated load.

6.12 Flywheel

A suitable flywheel must be fitted, so that lights fed from the set will be free from any visible flicker.

The cyclic irregularity of the set must be within the limit laid down in SANS 8528.

6.13 Exhaust Silencer

It is essential to keep the noise level to 65dB at 5m from the unit. An effective stainless steel exhaust silencing system of the residential type must be provided and housed inside the containerized unit and shall be constructed of 304 stainless steel.

The exhaust system shall be installed in such a way that the expelled exhaust fumes will not cause discomfort to the public. The exhaust pipe must be flexibly connected to the engine to take up vibrations transmitted from the engine, which may cause breakage. The exhaust piping and silencer shall be lagged to reduce the heat and noise transmission in the generator enclosure.

Outside of the container, the exhaust to be protected to prevent the ingress of rain, installed at an angle of 45 degrees and extent 500mm above canopy.

6.14 Accessories

The engine must be supplied complete with all accessories, air and oil filters, 3 instruction manuals, spare parts lists, the first fill of all lubricating oils and diesel fuel etc.

7. ALTERNATOR

The alternator shall be of the self-excited brushless type, with enclosed ventilated drip-proof housing and must be capable of supplying the specified output continuously with a temperature rise not exceeding the limits laid down in SANS 60034-1 for rotor and stator windings.

The alternator shall be capable of delivering an output of 110% of the specified output, for one hour in any period of 12 hour in any period of 12 hours consecutive running.

Both windings must be fully impregnated for tropical climate and must have an oil resisting finishing varnish.

7.1 Regulation

The alternator must preferably be self-regulated without the utilisation of solid state elements. The inherent voltage regulation must not exceed plus or minus 5% of the nominal voltage specified, at all loads with the power factor between unity and 0,8 lagging and within the driving speed variations of 4,5% between no-load and full load.

7.2 Performance

The excitation system shall be designed to promote rapid voltage recovery following the sudden application of the full load. The voltage shall recover to within 5% of the steady state within 300 milli-seconds following the application of full load and the transient voltage dip shall not exceed 18%.

7.3 Coupling

The engine and alternator must be directly coupled by means of a high quality flexible coupling, ISO 9001:2000 approved and must be designed and manufactured to this quality system.

8. SWITCHBOARD

A switchboard must be supplied and installed to incorporate the equipment for the control

and protection of the generating set and battery charging.

The switchboard must conform to the specification as set out in the following paragraphs.

8.1 Construction

The switchboard shall be enclosed in the steel enclosure.

All equipment, connections and terminals shall be easily accessible from the front and the front panels may be either hinged or removable with studs and chromium-plated cap nuts. Self-tapping screws shall not be used in the construction of the board.

All pushbuttons, pilot lights, control switches, instrument and control fuses, shall be mounted on hinged panels with the control wires in flexible looms.

The steelwork of the boards must be thoroughly de-rusted, primed with zinc chromate and finished with two coats of signal red quality enamel, or a baked powder epoxy coating. Suitably rated terminals must be provided for all main circuits and the control and protection circuits. Where cable lugs are used, these shall be crimped onto the cable strands. Screw terminals shall be of the type to prevent spreading of cable strands. All terminals shall be clearly marked.

For the control wiring, each wire shall be fitted with a cable or wire marker of approved type, and numbering of these markers must be shown on the wiring diagram on the switchboard. Control wiring shall be run in PVC trunking. The trunking shall be properly fixed to the switchboard steelwork. Adhesives shall not be acceptable for the fixing of trunking or looms.

The automatic control and protection equipment shall be mounted on a separate easily replaceable small panel with printed circuits. The equipment shall mainly be the "solid state" type. After mounting the equipment on the panel, the rear of this panel shall be sealed with epoxy-resin. However, other proven control systems may also be considered, but must be described in detail.

All equipment on the switchboard, such as contactors, isolators, busbars etc., shall have ample current carrying capacity to handle at least 110% of the alternator full load current.

8.2 Protection and Alarm Devices

All switchboards shall be equipped with protection and alarm devices as described below.

A circuit breaker and an adjustable current limiting protection relay must be installed, for protection of the alternator. The protection relay shall be of the type with inverse time characteristics. The relay shall cause the contactor to isolate the alternator and stop the engine.

Protection must be provided for overload, high engine temperature, low lubricating oil pressure, overspeed, start-failure, low water level.

Individual relays with reset pushes are required, to give a visible signal and stop the engine when any of the protective devices operate. In the case of manual operation of standby sets, it shall not be possible to restart the engine.

The indicators and re-set pushes must be marked in ENGLISH.

"OVERLOAD"
"TEMPERATURE HIGH"
"OIL PRESSURE LOW"
"OVERSPEED"
"START FAILURE"
"LOW WATER LEVEL"

In addition two relays with reset pushes must be fitted giving an audible and visible flashing signal, when:

- (a) The fuel level in the service tank is low. The reset push of this relay must be marked "FUEL LOW".

In addition, a low-low level sensor must be provided. At this level the engine must stop to prevent air entering the fuel system.

- (b) The battery charger failed. The reset push of this relay must be marked "CHARGER FAIL".

This is also applicable to the engine driven generator/alternator.

All relays must operate an alarm hooter. A pushbutton must be installed in the hooter circuit to stop the audible signal, but the fault indicating light on the control panel must remain lit until the fault has been rectified.

An on/off switch is not acceptable. After the hooter has been stopped, it must be re-set automatically, ready for a further alarm.

The hooter must be of the continuous duty and low consumption type. Both hooter and protection circuits must operate from the battery.

Potential free contacts from the alarm relay must be brought down to terminals for remote indication of alarm conditions.

A test pushbutton must be provided to test all indicator lamps.

8.3 Manual Starting

Each switchboard shall be equipped with two pushbuttons marked "START" and "STOP" for manual starting and stopping of the set.

8.4 Battery Charging Equipment

Each switchboard shall be equipped with battery charging equipment.

The charger shall operate automatically in accordance with the state of the battery and shall generally consist of an air-cooled transformer, a full wave solid state rectifier, and the necessary automatic control equipment of the constant voltage system.

The charger must be fed from the mains. An engine driven alternator must also be provided for charging the battery while the set is operational. Failure of this alternator must also activate the battery charger failure circuit.

8.5 Switchboard Instruments

Each generating set shall have a switchboard equipped as follows:

- (a) One flush square dial voltmeter, reading the alternator voltage, scaled as follows:
 - (i) 0-300V for single phase generators
 - (ii) 0-500V for three phase generator. In this case a six position and off selector switch must be installed for reading all phase to phase and phase to neutral voltages.
- (b) A flush square dial combination maximum demand and instantaneous ampere meter for each phase, with re-settable pointer suitably scaled 20% higher than the alternator rating. A red arc stripe above the scale markings from 0-20A and a red radial line through the scale at full-load current shall be provided. This instrument shall be supplied complete with the necessary current transformer.
- (c) One flush square dial vibrating type frequency meter, indicating the alternator frequency.
- (d) A six digit running hour meter with digital counter, reading the number of hours the plant has been operating. The smallest figure on this meter must read 1-10th hour.
- (e) Fuses or m.c.b.'s for the potential circuits of the meters.
- (f) One flush square dial ampere meter suitably scaled for the battery charging current.
- (g) One flush square dial voltmeter with a spring-loaded pushbutton or switch for the battery voltage.

8.6 Markings

All labels, markings or instructions on the switchgear shall be in ENGLISH.

8.7 Earthing

An earth bar must be fitted in the switchboard, to which all non-current carrying metal parts shall be bonded. The neutral point of the alternator must be solidly connected to this bar by means of a removable link labeled "EARTH". Suitable terminals must be provided on the earth bar for connection of up to three earth conductors, which will be supplied and installed by others.

8.8 Operation Selector Switch

A four position selector switch must be provided on the switchboard marked "AUTO", "MANUAL", "TEST" and "OFF".

With the selector on "AUTO", the set shall automatically start and stop, according to the mains supply being available or not.

With the selector on "TEST", it shall only be possible to start and stop the set with the pushbuttons, but the running set shall not switched the load.

With the selector on "MANUAL", the set must take the load when started with the pushbutton, but it must not be possible to switch the set on to the mains, or the mains onto the running

set.

With the selector on "OFF", the set shall be completely disconnected from the automatic controls, for cleaning and maintenance of the engine.

8.9 Automatic Change-over System

A fully automatic change-over system must be provided to isolate the mains supply and connect the standby set to the outgoing feeder in case of a mains failure and reverse this procedure on return of the mains.

The contactors for this system must be electrically and mechanically interlocked. As the main Automatic mains fail panel will be located in the new kiosk, the generator will have its own change over panel which would monitor when there is a mains or failure, and start or stop the generator, but all load switching will be carried out in the AMF panel.

8.10 Bypass switch and Mains Isolator

The switchboard shall be equipped with an on-load isolator to isolate the mains and a manually operated on-load 4 pole 4 position by-pass switch, which shall switch the connected loads as follows: NORMAL: will allow for the normal connection i.e. connects the incoming mains to the automatic control gear or directly to the outgoing feeder. In the GEN BY-PASS position the switch will disconnect the automatic changeover control gear, and will connect the municipal mains directly the essential supply busbar which will allow for the maintenance of either or both the generator and the automatic changeover equipment. MAINS BY-PASS switching position would allow the generator to be connected directly to the essential supply busbar. This is when there is a problem with the automatic changeover equipment and there is no municipal power available.

The final position is an OFF position which will remove all power downstream of this switch.

It is required that this by-pass switch and mains isolator be mounted away from the automatic control gear, in a separate compartment, either on the side or in the lower portion of the switchboard cubicle, and that the switches are operated from the front of the compartment. Contractor to note: The by-pass and mains isolator switch shall also break the main neutral.

8.11 Start Delay

Starting shall be automatic in event of a mains failure. A 0-15s adjustable, start delay timer shall be provided to prevent start-up on power dips or very short interruptions.

8.12 Stop delay

A stop delay with timer is required for the set, to keep the set on load for an adjustable period of one to sixty seconds after the return of the mains supply, before changing back to the supply. An additional timer shall keep the set running for a further adjustable cooling period of 5 to 10 minutes at no-load before stopping.

9. INSTALLATION

The contractor to install the generator in the position chosen on site. The contractor will then install the generator cable from the generator to the new Main kiosk which will contain the municipal meter and the automatic changeover. All control cabling and conduit from generator to automatic changeover shall be installed by the contractor and included in cost

of generator. The distance between the generator and kiosk shall not be more than 50m.

10. **WARNING NOTICES**

Notices, in ENGLISH, must be installed on the outside of the steel enclosures.

The notice shall be made of a non-corrodible and non-deteriorating material, preferable plastic, and must read as follows:

DANGER: This engine will start without notice. Turn selector switch on control board to "OFF" before working on the plant.

11. **DRAWINGS**

The successful Tenderer must, as soon as possible after receipt of the order, submit detailed drawings and wiring diagrams of the plant and the switchgear. One diagram shall be contained in a metal pouch on the side of the switchboard.

12. **INFORMATION REQUIRED FOR GENERATOR AND CANOPY**

Tenderers must furnish detailed descriptions and illustrations of the equipment offered and must complete the questionnaire following this specification. This includes drawings of the switchboard layouts and control diagrams.

Failure to submit any of the information asked for, may disqualify the tender.

13. **GUARANTEE**

The successful Tenderer will be required to guarantee the complete plant for a period of 12 months from the date it has been taken over by the Department in running order.

If during this period the plant is not in working order, or not working satisfactorily owing to the faulty material, design or workmanship, the Contractor will be notified and immediate steps shall be taken by him to rectify the defects and/or replace the affected parts on site, at his own expense.

14. **MAINTENANCE**

14.1 **Initial Maintenance**

The successful Tenderer will be required to maintain the plant in good running order for a period of twelve months after the plant has been taken over by the Department. The full cost of this maintenance must be included in the tender price, inclusive of overheads and travelling fees. The department shall not acknowledge any cost claims additional to this maintenance cost as tendered.

However, should the Contractor fail to hand over the plant in good working order on expiry of the specified twelve months, the Contractor will be responsible for further monthly maintenance until final delivery is taken.

Under the agreement the Contractor will undertake at intervals as per the manufactured recommendations for a visit to the plant by a qualified member of his staff, who shall:

(a) Report to the Officer-in-Charge, keeping the maintenance records, and enter into a log

book the date of the visit, the tests carried out, the adjustments made, any further details that may be required.

- (b) Grease and oil moving parts, where necessary.
- (c) Check the air filter and, when necessary, clean the filter and replace filter oil.
- (d) Check the lubricating oil and top-up when necessary
- (e) After the plant has run one oil change for the number of hours stipulated by the manufacturers, drain the sump and refill with fresh lubricating oil. The reading of the hour meter on the switchboard will be taken to establish the number of hours run by the plant.
- (f) Clean the lubricating oil filter and/or replace the filter element at intervals recommended by the engine manufacturer.
- (g) Check and when necessary adjust the valve settings and the fuel injection equipment.
- (h) Check the battery and top-up the electrolyte when necessary.
- (i) Test-run the plant for 0,5 hour and check the automatic starting with simulated faults on the mains, the proper working of all parts, including the electrical gear, the protective devices with fault indicators, the changeover equipment and the battery charger. Make the necessary adjustments.
- (l) Top up the water of the radiator, if applicable.
- (m) Clean the plant and it's components.

14.2 Maintenance Agreement

- (a) After the lapse of the abovementioned 12 month period, the Contractor may be required to enter into a maintenance agreement, as described under Clause 14.1, initially for one year with a possible yearly renewal.
- (b) Acceptance of the tender shall not bind the Department to accept this maintenance service.

14.3 Instruction of Operator

After completion of the installation and when the plant is in running order, the successful Tenderer will be required to instruct an attendant in the operation of the plant, until he is fully conversant with the equipment and the handling thereof. The officer will be identified by the Department's Regional Representative on site.

Three copies of a maintenance fault-localising and operating manual are to be handed over to the Department's representatives on site.

15. **TESTS**

The following tests are to be carried out:

- (a) At the supplier's premises, before the generating set is to be delivered to site.

Representatives of the Department must be present during the test to satisfy themselves that the generating set complies with the specification and delivers the specified output. The test must be carried out in accordance with SANS 8528. The department must be advised timeously of the date for the test.

- (b) At the site after completion of the installation, all tests in (a) above shall again be carried out.

The dummy resistance for the load and all instruments which may be required for the tests have to be provided by the successful tenderer.

Test reports of both tests as specified under (a) and (b) are to be submitted to the Department.

16. **ENCLOSURE**

The standby set is a free standing unit and shall be mounted in an enclosure as detailed below:-

16.1 **General**

The enclosure, shall be completely vermin-proof, removable from the set and shall be constructed of 3CR12 stainless steel or equally approved of a minimum thickness of ± 1.5 mm.

The enclosure shall allow easy access to the engine, alternator, radiator filler cap and control cubicle for maintenance purposes.

The door shall be flush with the rest of the canopy and of the side opening type. A minimum of four doors are required i.e. two on either side.

The door hinges and locking bars shall be of a heavy duty type and be manufactured of an alloy or mild steel which is hot dip galvanized and shall be fitted with a grease nipple.

The doors and panels shall be suitably braced and stiffened to ensure rigidity and to prevent bending and warping.

Suitable door restraints shall be fitted to all the doors, enclosure including the control panel to prevent wind damage. The restraint shall consist of a steel rod in a steel groove or slide with a spring loaded catch, which is to be manually reset to close the door.

No flexible restraints will be accepted.

The diesel fuel level indicator and alternator rating plate shall be clearly visible with the doors open.

Unless specified the silencers shall be mounted within the enclosure.

Perforated sheeting shall be fitted over all the insulating material inside the canopy of all soundproof sets.

Rubber seals on doors shall be equal to or similar to rubber pinch weld, wind lace. (Max-nortons.).

16.2 Design

The enclosure shall be designed to be weather-proof and sound-proofing as specified. Rivets or self-tapping screws will under no circumstances be allowed for fixing the various sections of the enclosure. Only cadmium coated nuts and bolts are acceptable.

16.2 Roof

The roof of the enclosure shall be constructed for proper drainage of water as per the drawing.

16.4 Lamp fitting

A lamp fitting and its associated on/off door switch shall be provided inside the enclosure for illumination of the control panel.

The power for the lamp shall be obtained from the starter battery.

16.5 Sound-proofing

The sound-proofing on canopy engine sets shall be such that the maximum noise level generated by the set under any load condition shall not exceed 65 dB measured in any direction at a distance of 5m from the center of the set with the doors closed.

The supply and discharge air paths will require separate attenuators on soundproof sets.

16.6 Padlock and keys

The contractor shall supply padlocks and keys for all the doors of the enclosure. The padlock shall be off the "Viro A82 keyed alike with stainless steel shackles" type.

Suitable brass metal plates shall be installed behind each lock for the protection of the enclosure against scratching or damaging, where the locks are hanging.

17 PROGRAMMABLE CONTROLLER

• **Control Equipment Requirement**

The programmable controller shall be an electronic unit to match those of the other programmable controllers and of a high quality i.e Levato, Deep Sea Electronics, Circom.

• **Logging of Events**

All events relating to the status of the generator set shall be logged with date and time in a non-volatile memory (which can retain information for a period of 6 months in the absence of power to the controller) and the user shall be able to contain a hard copy on site.

Buffer erased on
Mains on load
Unit switched ON
Unit switched OFF

97/04/17 at 07 H 44.34
97/04/17 at 07 H 44.29
97/04/17 at 06 H 30.55
97/04/16 at 23 H 26.55

Low Fuel Level	
Alternator on load	97/04/16 at 21 H 44.53
Start attempts = 01	97/04/16 at 21 H 44.21
Mains phase 3 low	97/04/04 at 09 H 59.21
Mains on load	97/04/04 at 09 H 59.17
Unit Mode = Auto	97/04/04 at 09 H 50.00
Manual Stop	
Start attempts = 03	97/04/04 at 08 H 53.10
Manual Start	97/04/04 at 08 H 53.03
Unit Mode = Manual	
Alt phase 1 min = 221	
Alt phase 2 min = 224	
Alt phase 3 min = 222	
Alt phase 1 max = 236	
Alt phase 2 max = 237	
Alt phase 3 max = 238	97/03/27 at 10H 31.03
Alternator off	97/03/27 at 10 H 29.03
Mains on load	97/03/27 at 10 H 06.14
Alternator on load	
Start attempts = 02	

• User Programmable

The controller will be user programmable on site via a menu system with clear prompts for the required data and shall incorporate the following parameters:

Enter the user access code
#

System configuration for Unit no 1111	97/08/14 at 10H 27.58
Current time is:	(0 = No 1 = Yes)
Is this a service	(0 = No 1 = Yes)
Change this unit ID code?	(02.0 – 50.0V)
Low Battery crank level	(08.0 - 50.0V)
Low Battery standby level	(08.0 - 50.0V)
High Battery standby level	
Mains Low Voltage sense level	
Mains High Voltage sense level	
Alt Low Voltage sense level	
Alt High Voltage sense level	(0001 – 4900 rpm)
Engine Under speed RPM	(0001 – 4900 rpm)
Engine Over speed RPM	(0 = RPM, 1 = Alt)
Speed Input	(001 – 180)
Number of Flywheel Teeth	(0 =NO, 1 = NC)
Spare Sensor No 1	(0 =NO, 1 = NC)
Spare Sensor No2	(0.5 to 60 seconds)
Start/Pre Heat Delay	(0.5 to 30 seconds)
	(1 – 20)
Crank Time/Delay	
Number of attempts to Start	(0.5 to 30 seconds)
Run up Delay	(0.5 to 60 seconds)

Load Transfer Delay	(0.5 to 30 minutes)
Mains Return Timer	(0.5 to 30 minutes)
Run on Timer	(0 =NO, 1 = NC)
High Engine Temp. Sensor	(0 =NO, 1 = NC)
Low Oil Pressure Sensor	(0 =NO, 1 = NC)
Heater Fault Sensor	(0 =NO, 1 = NC)
Low Fuel Sensor	(0 =NO, 1 = NC)
No Fuel Sensor	(0 =NO, 1 = NC)
Manual Start switch	(0 =NO, 1 = NC)
Manual Stop switch	(0 =NO, 1 = NC)
Emergency Stop switch	(0 =NO, 1 = NC)
Alternator Charge Sensor	(0 = Single, 1 = Three)
Phase Fault Check	(0 = No, 1 = Yes)
Set the Date and Time	(0 = No, 1 = Yes)
Change Unit Access Code	

NO for normally open and NC for normally closed contracts.

- **CONTROL SYSTEM DC SUPPLY VOLTAGE**

The control system must be able to operate with a minimum DC supply voltage of 4 volts (without making use of either an internal or an external auxiliary battery) to allow cranking and starting under conditions of low battery capacity. Control cables between the set and the control panel shall be fitted with sockets for ease of undoing in the event the set has to be removed.

- **RS 232 SERIAL PORT**

The control unit shall have an RS 232 serial port allowing various options to be added as listed below.

Equipment connected at each end of the RS 232 cable shall be adequately protected against transient over-voltages, lightning effects (particularly if the set and remote alarms are in separate buildings), switching surges, power system surges or mains and alternator borne noise/interference.

- **REMOTE ALARMS**

The Contractor shall provide a remote alarm mimic panel and the associated control wiring for the set. The panel shall be installed in the duty/security room at the entrance to the building approximately 50m from the generator set position. This must also be included in the cost of the generator.

The mimic panels must fit into furniture and blend with the design. Before manufacture, the Contractor shall submit and obtain the approval, from the Engineer, for the mimic panel.

The remote alarm must have potential free relay contacts which shall indicate the following on each set:

1. Mains on/off
2. Alternator running

3. Common fault alarm
4. Buzzer which can only be reset at the generator panel
5. Fuel low

The cable between the remote alarms is to be a signal cable with a screen and this option must be able to operate from a 12 / 24 V dc supply so that it can be powered from the generator set batteries.

A facility to originate a fault message should a warning or shutdown fault occur.

This option must be capable of operating at a maximum distance of 50 m from the set.

• **COMPUTER MODEM REMOTE CONTROL**

The facility shall be provided a remote control system which can be interrogated and controlled from a remote computer using a modem connected to a Telkom telephone line or cell phone modem. This modem shall be a Wavecom "fast track" modem.

Real time status of the control system including any fault conditions, mains voltages on all phases, battery voltage and if the set is running alternator voltages on all phases and set RPM/frequency.

A facility to download the event log.

A facility to allow the mode of the control system to be changed to any of the four modes to allow the set to be run from a remote location.

A facility to originate a call to the control cellular and to transfer a fault message should a warning or shutdown fault occur.

18. **SITE CONDITIONS**

The site conditions are as follows:-

- | | | | |
|-----|---------------------------------------|---|--------------------------------|
| (a) | Altitude above sea level | : | To be determined by contractor |
| (b) | Maximum temperature | : | 45°C |
| (c) | Relative humidity at this temperature | : | To be determined by contractor |

19. **OUTPUT AND VOLTAGE**

After the de-rating factors for the engine and generator due to site conditions have been taken into account, the set must have a site output and voltage as follows:-

- | | | | |
|-----|------------------|---|-------------------|
| (a) | Voltage | : | 400/230V/ 3 phase |
| (b) | Rating (standby) | : | 80 kVA |
| (c) | Power factor | : | 0.9 |
| (d) | Frequency | : | 50Hz |

The generating set shall be capable of accepting 70% of the specified site electrical output within 10 seconds after the starter motor is energized and the remaining 30%, 5 seconds thereafter, i.e. 100% load acceptance shall not exceed 15 seconds.

20. **THE ALARM DEVICE**

The audible alarm and red light shall be of the weatherproof type and shall be installed on the exterior of the enclosure.

21. **FUEL DRIP TRAY**

A galvanized or 3CR12 drip tray approximately 100mm deep shall be mounted below the fuel tank and must be large enough to collect any fuel that drips from the tank accessories. The drip tray shall be manufactured from mild steel. The thickness of the drip tray sheet steel shall not be less than 2mm.

22.1 **SPECIFIED GENERATOR SET**

22.1.1 Engine

- Compact and extremely smooth running
- Low emission levels
- Quiet running – low noise levels
- Fast and easy all weather starting
- Convenient “one side” maintenance for easy economical servicing
- Direct injection system

22.1.2 Alternator

- Brushless
- Self exciting
- Automatic voltage regulation
- High motor starting capacity
- Excellent wave form for sensitive loads
- Full load recovery in less than 0.3 seconds

22.1.3 Units

- Compact sturdy skid base
- Large fuel tank integrated into base
- Circuit breaker protected alternator
- Compact for easy transport
- Custom designed panel
- Twelve month warranty on complete unit

22.3 GENERATOR SET OFFERED

SCHEDULE OF INFORMATION

(To be completed by Tenderer)

A. ENGINE

NO.	ITEM	REMARKS
1.	Manufacturer's Name	
2.	Country of Origin	
3.	Manufacturer's model number and year of manufacture	
4.	Continuous sea level rating after allowing for ancillary equipment:	
5.	Percentage derating for site conditions, in accordance with SANS 8528 a) For altitude b) For temperature c) For humidity d) Total derating	
6.	Nett output on site in kW	
7.	Nominal speed in r.p.m.	
8.	Number of cylinders	
9.	Stroke per working cycle	
10.	Stroke in mm	
11.	Cylinder bore in mm	
12.	Swept volume in cm ³	
13.	Mean piston speed in m/min	
14.	Compression ratio	
15.	Cyclic irregularity	

16.	Fuel consumption of the complete generating set on site in l/h of alternator output at: a) Full load b) 3/4 load c) 1/2 load <u>NOTE:</u> A tolerance of 5% shall be allowed above the stated value of fuel consumption	
-----	---	--

NO.	ITEM	REMARKS
17.	Make of fuel injection system	
18.	Capacity of fuel tank in liters	
19.	Is gauge glass fitted to tank?	
20.	Is electric pump for filling the fuel tank included?	
21.	Method of starting	
22.	Voltage of starting system	
23.	Method of cooling	
24.	Type of radiator if water-cooled	
25.	Type of heater for warming cylinder heads	
26.	Capacity of heater in kW	
27.	Method of protection against high temperature	
28.	Method of protection against low oil pressure	
29.	Type of governor	
30.	Speed variation in % a) Temporary b) Permanent	
31.	Minimum time required for assumption of full load in seconds	

32.	Recommended interval in running hours for: a) Lubricating oil change b) Oil filter element change c) Decarbonising	
33.	Type of base	
34.	Can plant be placed on solid concrete floor?	
35.	Are all accessories and ducts included?	
36.	Is engine naturally aspirated?	
37.	Are performance curves attached?	

NO.	ITEM	REMARKS
38.	Diameter of exhaust pipe	
39.	Noise level 5m from unit in dB	
40.	Noise level at tail of exhaust pipe in dB	
41.	BMEP (4stroke) at continuous rating (kPA)	
42.	% Load acceptance to SANS 8528, with 10% transient speed droop	

B: ALTERNATOR

NO.	ITEM	REMARKS
1.	Maker's Name and model no.	
2.	Country of Origin and year of manufacture	
3.	Type of enclosure	
4.	Nominal speed in r.p.m.	
5.	Number of bearings	
6.	Terminal voltage	
7.	Sea level rating kVA at 0,8 power factor	

8.	Derating for site conditions	
9.	Input required in kW	
10.	Method of excitation	
11.	Efficiency at 0,8 power factor and: a) Full load b) 3/4 load c) 1/2 load	
12.	Maximum permanent voltage variation in %	
13.	Transient voltage dip on full load	
14.	Voltage recovery on full load application in milli-seconds	
15.	Is alternator brushless?	
16.	Class of insulation of windings	
17.	Is alternator tropicalized?	
18.	Symmetrical short circuit current at terminals in Ampere	
19.	Type of Coupling	

C. SWITCHBOARD

NO.	ITEM	REMARKS
1.	Maker's Name	
2.	Country of Origin	
3.	Is board floor mounted?	
4.	Finish of board	
5.	Make of volt, amp., and frequency meters	
6.	Dial size of meters in mm	
7.	Scale range of voltmeter	
8.	Scale range of ammeters	
9.	Ratio of current transformers	

10.	Make of hour meter	
11.	Range of cyclometer counter	
12.	Smallest unit shown on counter (Item 11)	
13.	Make of circuit breaker	
14.	Type of circuit breaker	
15.	Rating of circuit breaker in Amp and fault level in kA	
16.	Setting range of overload trips	
17.	Setting range of instantaneous trips	
18.	Make of change-over equipment	
19.	Make of voltage relay	
20.	Is control and protection equipment mounted on a small removable panel?	
21.	Type of control equipment	
22.	Make of mains isolator	
23.	Type of indicators for protective devices	
24.	Make of rectifier	
25.	Type of rectifier	
26.	Is battery charging automatic?	

NO.	ITEM	REMARKS
27.	Are volt and ammeters provided for charging circuit?	
28.	Is the alarm hooter of the continuous duty type?	
29.	Rating in Amps of: a) Change-over equipment b) Mains on load isolator c) By-pass switch d) Circuit breaker to outgoing feed	

D. BATTERY

NO.	ITEM	REMARKS

1.	Maker's Name	
2.	Country of Origin	
3.	Type of battery	
4.	Voltage of battery	
5.	Number of cells	
6.	Capacity in cold crank amp.	
7.	Battery Charging Unit. Voltage and Amp rating	

E. DIMENSIONS

NO.	ITEM	REMARKS
1.	Overall dimensions of set in mm	
2.	Overall mass	
3.	Is plant room adequate for the installation of the set, switch board and fuel tank.	

F. DEVIATION FROM THE SPECIFICATION (State briefly)

NO.	DESCRIPTION

G. GUARANTEE

NO.	ITEM	REMARKS
1.	Guarantee period in months	
2.	State conditions of guarantee	

H. SPARE PARTS AND MAINTENANCE FACILITIES

NO.	ITEM	REMARKS
1.	Approximate value of spares carried in stock for this particular diesel engine and alternator	
2.	Where are these spares held in	

	stock	
3.	What facilities exist for the servicing of the equipment offered	
4.	Where are these facilities available	

I. SWITCHBOARD

NO.	ITEM	REMARKS
1.	Is manufacture of switchboard/control panel to be sub-let?	
2.	If yes, state name and address of specialist manufacturer	

SECTION C

DRAWING REGISTER

**SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING EMERGENCY GENERATOR
SET INCLUDING ELECTRICAL INSTALLATION**

DRAWINGS

DESCRIPTION

SKETCH No

There is no drawings available for this project

T2.2 Returnable Documents required for tender evaluation purposes



PA-11: BIDDER'S DISCLOSURE

1. PURPOSE OF THE FORM

Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the bidder to make this declaration in respect of the details required hereunder.

Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.

2. Bidder's declaration

- 2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest (1) in the enterprise, employed by the state?

YES / NO

- 2.1.1 If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below.

Full Name	Identity Number	Name of State institution

(1) the power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.



- 2.2 Do you, or any person connected with the bidder, have a relationship with any person who is employed by the procuring institution?

YES / NO

- 2.2.1 If so, furnish particulars:

.....
.....

- 2.3 Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract?

YES / NO

- 2.3.1 If so, furnish particulars:

.....
.....

3 DECLARATION

I, the undersigned, (name).....
in submitting the accompanying bid, do hereby make the following statements that I certify to be true and complete in every respect:

- 3.1 I have read and I understand the contents of this disclosure;
- 3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;
- 3.3 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 consortium² will not be construed as collusive bidding.
- 3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.
- 3.5 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.
- 3.6 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.

² 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.



- 3.7 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.

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 1, 2 and 3 ABOVE IS CORRECT.

I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 6 OF PFMA SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND COMBATING ABUSE IN THE SUPPLY CHAIN MANAGEMENT SYSTEM SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....
Signature

.....
Date

.....
Position

.....
Name of bidder

This form has been aligned with SBD4

PA-15.1: RESOLUTION OF BOARD OF DIRECTORS

RESOLUTION of a meeting of the Board of *Directors / Members / Partners of:

(Legally correct full name and registration number, if applicable, of the Enterprise)

Held at _____ (place)

on _____ (date)

RESOLVED that:

- The Enterprise submits a Bid / Tender to the Department of Public Works in respect of the following project:

(Project description as per Bid / Tender Document)

Bid / Tender Number: _____ (Bid / Tender Number as per Bid / Tender Document)

- *Mr/Mrs/Ms: _____

in *his/her Capacity as: _____ (Position in the Enterprise)

and who will sign as follows: _____

be, and is hereby, authorised to sign the Bid / Tender, and any and all other documents and/or correspondence in connection with and relating to the Bid / Tender, as well as to sign any Contract, and any and all documentation, resulting from the award of the Bid / Tender to the Enterprise mentioned above.

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

PA-15.1: Resolution of Board of Directors

17			
18			
19			
20			

The bidding enterprise hereby absolves the Department of Public Works from any liability whatsoever that may arise as a result of this document being signed.

Note:

1. * Delete which is not applicable.
2. **NB:** This resolution must, where possible, be signed by all the Directors / Members / Partners of the Bidding Enterprise.
3. In the event that paragraph 2 cannot be complied with, the resolution must be signed by Directors / Members / Partners holding a majority of the shares / ownership of the Bidding Enterprise (attach proof of shareholding / ownership hereto).
4. Directors / Members / Partners of the Bidding Enterprise may alternatively appoint a person to sign this document on behalf of the Bidding Enterprise, which person must be so authorized by way of a duly completed power of attorney, signed by the Directors / Members / Partners holding a majority of the shares / ownership of the Bidding Enterprise (proof of shareholding / ownership and power of attorney are to be attached hereto).
5. Should the number of Directors / Members / Partners exceed the space available above, additional names and signatures must be supplied on a separate page.

ENTERPRISE STAMP

PA-15.2: Resolution of Board of Directors to enter into Consortia or Joint Ventures

Postal Address: _____

 _____ (code)

Telephone number: _____

Fax number: _____

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

The bidding enterprise hereby absolves the Department of Public Works from any liability whatsoever that may arise as a result of this document being signed

Note:

- * Delete which is not applicable.
- NB:** This resolution must, where possible, be signed by all the Directors / Members / Partners of the Bidding Enterprise.
- In the event that paragraph 2 cannot be complied with, the resolution must be signed by Directors / Members / Partners holding a majority of the shares / ownership of the Bidding Enterprise (attach proof of shareholding / ownership hereto).
- Directors / Members / Partners of the Bidding Enterprise may alternatively appoint a person to sign this document on behalf of the Bidding Enterprise, which person must be so authorized by way of a duly completed power of attorney, signed by the Directors / Members / Partners holding a majority of the shares / ownership of the Bidding Enterprise (proof of shareholding / ownership and power of attorney are to be attached hereto).
- Should the number of Directors / Members / Partners exceed the space available above, additional names and signatures must be supplied on a separate page.

ENTERPRISE STAMP

PA-15.3: SPECIAL RESOLUTION OF CONSORTIA OR JOINT VENTURES

RESOLUTION of a meeting of the duly authorised representatives of the following legal entities who have entered into a consortium/joint venture to jointly bid for the project mentioned below: *(legally correct full names and registration numbers, if applicable, of the Enterprises forming a Consortium/Joint Venture)*

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

Held at _____ (place)

on _____ (date)

RESOLVED that:

RESOLVED that:

- A. The above-mentioned Enterprises submit a Bid in Consortium/Joint Venture to the Department of Public Works in respect of the following project:

(Project description as per Bid /Tender Document)

Bid / Tender Number: _____ *(Bid / Tender Number as per Bid /Tender Document)*

PA-15.3: Special Resolution of Consortia or Joint Ventures

B. *Mr/Mrs/Ms: _____

in *his/her Capacity as: _____ (Position in the Enterprise)

and who will sign as follows: _____

be, and is hereby, authorised to sign the Bid, and any and all other documents and/or correspondence in connection with and relating to the Bid, as well as to sign any Contract, and any and all documentation, resulting from the award of the Bid to the Enterprises in Consortium/Joint Venture mentioned above.

C. The Enterprises constituting the Consortium/Joint Venture, notwithstanding its composition, shall conduct all business under the name and style of:

D. The Enterprises to the Consortium/Joint Venture accept joint and several liability for the due fulfilment of the obligations of the Consortium/Joint Venture deriving from, and in any way connected with, the Contract entered into with the Department in respect of the project described under item A above.

E. Any of the Enterprises to the Consortium/Joint Venture intending to terminate the consortium/joint venture agreement, for whatever reason, shall give the Department 30 days written notice of such intention. Notwithstanding such decision to terminate, the Enterprises shall remain jointly and severally liable to the Department for the due fulfilment of the obligations of the Consortium/Joint Venture as mentioned under item D above.

F. No Enterprise to the Consortium/Joint Venture shall, without the prior written consent of the other Enterprises to the Consortium/Joint Venture and of the Department, cede any of its rights or assign any of its obligations under the consortium/joint venture agreement in relation to the Contract with the Department referred to herein.

G. The Enterprises choose as the *domicilium citandi et executandi* of the Consortium/Joint Venture for all purposes arising from the consortium/joint venture agreement and the Contract with the Department in respect of the project under item A above:

Physical address: _____

_____ (Postal code)

Postal Address: _____

_____ (Postal code)

Telephone number: _____

Fax number: _____

PA-15.3: Special Resolution of Consortia or Joint Ventures

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

The bidding enterprise hereby absolves the Department of Public Works & Infrastructure from any liability whatsoever that may arise as a result of this document being signed.

Note:

1. * Delete which is not applicable.
2. **NB:** This resolution must be signed by all the Duly Authorised Representatives of the Legal Entities to the consortium/joint venture submitting this tender, as named in item 2 of Resolution PA-15.2.
3. Should the number of the Duly Authorised Representatives of the Legal Entities joining forces in this tender exceed the space available above, additional names, capacity and signatures must be supplied on a separate page.
4. Resolution PA-15.2, duly completed and signed, from the separate Enterprises who participate in this consortium/joint venture, must be attached to this Special Resolution (PA-15.3).

PA16: PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2017

This preference form must form part of all bids invited. It contains general information and serves as a claim form for preference points for Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution

NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017 AND THE AMENDED B-BBEE CODES.

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. The value of this bid is estimated to **Not Exceed** R50 000 000 (all applicable taxes included) and therefore the... **80/20**.....system shall be applicable.

1.3. Preference points for this bid shall be awarded for:

- (a) Price; and
- (b) B-BBEE Status Level of Contribution.

1.3.1 The maximum points for this bid are allocated as follows:

	POINTS
1.3.1.1 PRICE	80
1.3.1.2 B-BBEE STATUS LEVEL OF CONTRIBUTION	20
Total points for Price and B-BBEE must not exceed	100

1.4. 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 an Accounting Officer as contemplated in the Close Corporation Act (CCA) together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

1.5. An Exempted Micro Enterprise (EME) is only required to obtain a sworn affidavit or a certificate issued by Companies and intellectual property Commission (CIPC) confirming their annual turnover of R10 Million or less and level of black ownership to claim points.

1.6. Qualifying Small Enterprise (QSE) is only required to obtain a sworn affidavit or a certificate issued by Companies and intellectual property Commission (CIPC) confirming their annual turnover of R10 Million or less and level of black ownership to claim points.

- 1.7 The purchaser reserves the right to require of a 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 purchaser.
- 1.8 CERTIFICATES ISSUED BY IRBA AND ACCOUNTING OFFICER HAVE BEEN DISCONTINUED; HOWEVER VALID CERTIFICATES ALREADY ISSUED BEFORE 01 JANUARY 2017 MAY BE USED UNTIL THEY PHASE OUT COMPLETELY BY DECEMBER 2017

2. DEFINITIONS

- (a) **"all applicable taxes"** includes value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies;
- (b) **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;
- (c) **"B-BBEE status level of contributor"** means the B-BBEE status received by a measured entity based on its overall performance using the relevant scorecard contained in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;
- (d) **"bid"** means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of services, works or goods, through price quotations, advertised competitive bidding processes or proposals;
- (e) **"Broad-Based Black Economic Empowerment Act"** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (f) **"comparative price"** means the price after the factors of a non-firm price and all unconditional discounts that can be utilized have been taken into consideration;
- (g) **"consortium or joint venture"** 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;
- (h) **"contract"** means the agreement that results from the acceptance of a bid by an organ of state;
- (i) **"EME"** means an Exempted Micro Enterprise as defines by Codes of Good Practice under section 9 (1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (j) **"Firm price"** means the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax, which, in terms of the law or regulation, is binding on the contractor and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract;
- (k) **"functionality"** means the measurement according to predetermined norms, as set out in the bid documents, of a service or commodity that is designed to be practical and useful, working or operating, taking into account, among other factors, the quality, reliability, viability and durability of a service and the technical capacity and ability of a bidder;
- (l) **"non-firm prices"** means all prices other than "firm" prices;
- (m) **"person"** includes a juristic person;
- (n) **"QSE"** means a Qualifying Small Enterprise as defines by Codes of Good Practice under

section 9 (1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);

- (o) **“rand value”** means the total estimated value of a contract in South African currency, calculated at the time of bid invitations, and includes all applicable taxes and excise duties;
- (p) **“sub-contract”** means the primary contractor’s assigning, leasing, making out work to, or employing, another person to support such primary contractor in the execution of part of a project in terms of the contract;
- (q) **“total revenue”** bears the same meaning assigned to this expression in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act and promulgated in the *Government Gazette* on 9 February 2007;
- (r) **“trust”** means the arrangement through which the property of one person is made over or bequeathed to a trustee to administer such property for the benefit of another person; and
- (s) **“trustee”** means any person, including the founder of a trust, to whom property is bequeathed in order for such property to be administered for the benefit of another person.

3. ADJUDICATION USING A POINT SYSTEM

- 3.1 The bidder obtaining the highest number of total points will be awarded the contract.
- 3.2 Preference points shall be calculated after prices have been brought to a comparative basis taking into account all factors of non-firm prices and all unconditional discounts;.
- 3.3 Points scored must be rounded off to the nearest 2 decimal places.
- 3.4 In the event that two or more bids have scored equal total points, the successful bid must be the one scoring the highest number of preference points for B-BBEE.
- 3.5 However, when functionality is part of the evaluation process and two or more bids have scored equal points including equal preference points for B-BBEE, the successful bid must be the one scoring the highest score for functionality.
- 3.6 Should two or more bids be equal in all respects, the award shall be decided by the drawing of lots.

4. POINTS AWARDED FOR PRICE

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

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

80/20 or 90/10

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

Where

P_s = Points scored for comparative price of bid under consideration

P_t = Comparative price of bid under consideration

Any reference to words “Bid” or Bidder” herein and/or in any other documentation shall be construed to have the same meaning as the words “Tender” or “Tenderer”.

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P_{min} = Comparative price of lowest acceptable bid

5. Points awarded for B-BBEE Status Level of Contribution

- 5.1 In terms of Regulation 6(2) and /or 7(2), of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (90/10 system)	Number of points (80/20 system)
1	10	20
2	9	18
3	6	14
4	5	12
5	4	8
6	3	6
7	2	4
8	1	2
Non-compliant contributor	0	0

- 5.2 A trust, consortium or joint venture, will qualify for points for their B-BBEE status level as a legal entity, provided that the entity submits their B-BBEE status level certificate.
- 5.3 A trust, consortium or joint venture will qualify for points for their B-BBEE status level as an unincorporated entity, provided that the entity submits their consolidated B-BBEE scorecard as if they were a group structure and that such a consolidated B-BBEE scorecard is prepared for every separate bid.
- 5.4 Tertiary institutions and public entities will be required to submit their B-BBEE status level certificates in terms of the specialized scorecard contained in the B-BBEE Codes of Good Practice.
- 5.5 A person awarded a contract may not sub-contract more than 25% of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level than the person concerned, unless the contract is sub-contracted to an EME that has the capability and ability to execute the sub-contract.

6. BID DECLARATION

- 6.1 Bidders who claim points in respect of B-BBEE Status Level of Contribution must complete the following:

7. B-BBEE STATUS LEVEL OF CONTRIBUTION CLAIMED IN TERMS OF PARAGRAPHS 1.3.1.2 AND 5.1

7.1 B-BBEE Status Level of Contribution: =(maximum of 10 or 20 points)

(Points claimed in respect of paragraph 7.1 must be in accordance with the table reflected in paragraph 5.1 and must be substantiated by means of a B-BBEE certificate issued by a Verification Agency accredited by SANAS or Sworn Affidavit for EME's and QSE's.

8 SUB-CONTRACTING (relates to 5.5)

8.1 Will any portion of the contract be sub-contracted? YES / NO (delete which is not applicable)

8.1.1 If yes, indicate:

- (i) what percentage of the contract will be subcontracted?%
- (ii) the name of the sub-contractor?
- (iii) the B-BBEE status level of the sub-contractor?
- (iv) whether the sub-contractor is an EME/ a QSE YES / NO (delete which is not applicable)

Designated Group: An EME or QSE which is at least 51% owned by:	EME √	QSE √
Black people		
Black people who are youth		
Black people who are women		
Black people with disabilities		
Black people living in rural or underdeveloped areas or townships		
Cooperative owned by black people		
Black people who are military veterans		
OR		
Any EME		
Any QSE		

9 DECLARATION WITH REGARD TO COMPANY/FIRM

9.1 Name of company/firm

9.2 VAT registration number

9.3 Company registration number

9.4 TYPE OF COMPANY/ FIRM

- Partnership/Joint Venture / Consortium
- One person business/sole propriety
- Close corporation
- Company
- (Pty) Limited

[TICK APPLICABLE BOX]

9.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

.....

.....

.....

9.6 COMPANY CLASSIFICATION

Manufacturer

Supplier

Professional service provider

Other service providers, e.g. transporter, etc.

[TICK APPLICABLE BOX]

9.7 Total number of years the company/firm has been in business?

9.8 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBE status level of contribution indicated in paragraph 7 of the foregoing certificate/ Sworn Affidavit, qualifies the company/ firm for the preference(s) shown and I / we 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 paragraph 7, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;
- (iv) If the B-BBEE status level of contribution has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –
 - (a) Disqualify the person from the bidding 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) restrict the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, 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

WITNESSES:

1.

2.

.....

SIGNATURE(S) OF BIDDER(S)

DATE:..... ADDRESS:.....

.....

DPW-09 (EC): PARTICULARS OF TENDERER'S PROJECTS

Project title:	<i>Tseki and Tseseng Magistrate's Offices: Installation of back-up generators</i>			
Tender / quotation no:	BL22/007	Closing date:	20 September 2022	
Advertising date:	26 August 2022	Validity period:	84 days	

1. PARTICULARS OF THE TENDERER'S CURRENT AND PREVIOUS COMMITMENTS

1.1. Current projects

Projects currently engaged in	Name of Employer or Representative of Employer	Contact tel. no.	Contract sum	Contractual commencement date	Contractual completion date	Current percentage progress
1						
2						
3						
4						
5						
6						
7						
8						

Tender no: **BL22/007**

1.2. Completed projects

Projects completed in the previous 5 (five) years	Name of Employer or Representative of Employer	Contact tel. no.	Contract sum	Contractual commencement date	Contractual completion date	Date of Certificate of Practical Completion
1						
2						
3						
4						
5						
6						
7						
8						
9						

Name of Tenderer	Signature
	Date



Guidance Document for the Calculation of Local Content

1. DEFINITIONS

Unless explicitly provided in this guideline, the definitions given in SATS 1286:2011 apply.

2. GENERAL

2.1. Introduction

This guideline provides tenderers with a detailed description of how to calculate local content of products (goods, services and works) by components/material/services and enables them to keep an updated record for verification requirements as per the SATS 1286:2011 Annexure A and B.

The guideline consists of two parts, namely:

- a written guideline; and
- three declarations that must be completed:
 - Declaration C: "Local Content Declaration – Summary Schedule" (see Annexure C);
 - Declaration D: "Imported Content Declaration – Supporting Schedule to Annex C" (see Annexure D); and
 - Declaration E: "Local Content Declaration – Supporting Schedule to Annex C" (see Annexure E).

The guidelines and declarations should be used by tenderers when preparing a tender. A tenderer must complete Declarations D and E, and consolidate the information on Declaration C.

Annexure C must be submitted with the tender by the closing date and time as determined by the Tender Authority. The Tender Authority reserves the right to request that Declarations D and E also be submitted.

If the tender is successful, the tenderer must continuously update Declarations C, D and E with actual values for the duration of the contract.

NOTE:

Annexure A is a note to the purchaser in SATS 1286:2011; and
Annexure B is the Local Content Declaration IN SATS 1286:2011.

2.2. What is local content?

According to SATS 1286:2011, the local content of a product is the tender price less the value of imported content, expressed as a percentage. It is, therefore, necessary to first compute the imported value of a product to determine the local content of a product.

2.3. Categories: Imported and Local Content

The tenderer must differentiate between imported content and local content.

Imported content of a product by components/material/services is separated into two categories, namely:

- products imported directly by the tenderer; and
- products imported by a third party and supplied to the tenderer.

2.3.1. Imported Content

Identify the imported content, if any, by value for products by component/material/services. In the case of components/materials/services sourced from a South African manufacturer, agent, supplier or subcontractor (i.e. third party), obtain that information and Declaration D from the third party.

Calculate the imported content of components/materials/services to be used in the manufacture of the total quantity of the products for which the tender is to be submitted.

As stated in clause 3.2.4 of SATS 1286:2011: "If information on the origin of components, parts or materials is not available, it will be deemed to be imported content."

2.3.1.1. Imported directly by the tenderer:

When the tenderer import products directly, the onus is on the tenderer to provide evidence of any components/materials/services that were procured from a non-domestic source. The evidence should be verifiable and pertain to the tender as a whole. Typical evidence will include commercial invoices, bills of entry, etc.

When the tenderer procures imported services such as project management, design, testing, marketing, etc and makes royalty and lease payments, such payments relating to the tender must be included when calculating imported content.

2.3.1.2. Imported by a third party and supplied to the tenderer:

When the tenderer supplies components/material/services that are imported by any third party (for example, a domestic manufacturer, agent, supplier or subcontractor in the supply chain), the onus is on the tenderer to obtain verifiable evidence from the third party.

The tenderer must obtain Declaration D from all third parties for the related tender. The third party must be requested by the tenderer to continuously update Declaration D. Typical evidence of imported content will include commercial invoices, bills of entry etc.

When a third party procures imported services such as project management, design, testing, marketing etc. and makes royalty and lease payments, such payments relating to the tender must be included when calculating imported content.

2.3.1.3. Exempt Imported Content:

Exemptions, if any, are granted by the Department of Trade and Industry (**the dti**). Evidence of the exemptions must be provided and included in Annexure D.

2.3.2. **Local Content**

Identify and calculate the local content, by value for products by components/materials/services to be used in the manufacture of the total quantity of the products.

3. ANNEXURE C

3.1. Guidelines for completing Annexure C: Local Content Declaration – Summary Schedule

Note: The paragraph numbers correspond to the numbers in Annexure C.

C1. Tender Number

Supply the tender number that is specified on the specific tender documentation.

C2. Tender description

Supply the tender description that is specified on the specific tender documentation.

C3. Designated products

Supply the details of the products that are designated in terms of this tender (i.e. buses).

C4. Tender Authority

Supply the name of the tender authority.

C5. Tendering Entity name

Provide the tendering entity name (for example, Unibody Bus Builders (Pty) Ltd).

C6. Tender Exchange Rate

Provide the exchange rate used for this tender, as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

C7. Specified local content %

Provide the specified minimum local content requirement for the tender (i.e. 80%), as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MDB) 6.2.

C8. Tender item number

Provide the tender item number(s) of the products that have a local content requirement as per the tender specification.

C9. List of items

Provide a list of the item(s) corresponding with the tender item number.
This may be a short description or a brand name.

Calculation of local content

C10. Tender price

Provide the unit tender price of each item excluding VAT.

C11. Exempted imported content

Provide the ZAR value of the exempted imported content for each item, if applicable. These value(s) must correspond with the value(s) of column D16 on Annexure D.

C12. Tender value net of exempted imported content

Provide the net tender value of the item, if applicable, by deducting the exempted imported content (C11) from the tender price (C10).

C13. Imported value

Provide the ZAR value of the items' imported content.

C14. Local value

Provide the local value of the item by deducting the Imported value (C13) from the net tender value (C12).

C15. Local content percentage (per item)

Provide the local content percentage of the item(s) by dividing the local value (C14) by the net tender value (C12) as per the local content formula in SATS 1286.

Tender Summary

C16. Tender quantity

Provide the tender quantity for each item number as per the tender specification.

C17. Total tender value

Provide the total tender value by multiplying the tender quantity (C16) by the tender price (C10).

C18. Total exempted imported content

Provide the total exempted imported content by multiplying the tender quantity (C16) by the exempted imported content (C11). These values must correspond with the values of column D18 on Annexure D.

C19. Total imported content

Provide the total imported content of each item by multiplying the tender quantity (C16) by the imported value (C13).

C20. Total tender value

Total tender value is the sum of the values in column C17.

C21. Total exempted imported content

Total exempted imported content is the sum of the values in column C18. This value must correspond with the value of D19 on Annexure D.

C22. Total tender value net of exempted imported content

The total tender value net of exempt imported content is the total tender value (C20) less the total exempted imported content (C21).

C23. Total imported content

Total imported content is the sum of the values in column C19. This value must correspond with the value of D53 on Annexure D.

C24. Total local content

Total local content is the total tender value net of exempted imported content (C22) less the total imported content (C23). This value must correspond with the value of E13 on Annexure E.

C25. Average local content percentage of tender

The average local content percentage of tender is calculated by dividing total local content (C24) by the total tender value net of exempted imported content (C22).

4. ANNEXURE D

4.1. Guidelines for completing Annexure D: "Imported Content Declaration – Supporting Schedule to Annexure C"

Note: The paragraph numbers correspond to the numbers in Annexure D.

D1. Tender number

Supply the tender number that is specified on the specific tender documentation.

D2. Tender description

Supply the tender description that is specified on the specific tender documentation.

D3. Designated products

Supply the details of the products that are designated in terms of this tender (i.e. buses).

D4. Tender authority

Supply the name of the tender authority.

D5. Tendering entity name

Provide the tendering entity name (i.e. Unibody Bus Builders (Pty) Ltd).

D6. Tender exchange rate

Provide the exchange rate used for this tender, as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

Table A. Exempted Imported Content

D7. Tender item number

Provide the tender item number(s) of the product(s) that have imported content.

D8. Description of imported content

Provide a list of the exempted imported product(s), if any, as specified in the tender.

D9. Local supplier

Provide the name of the local supplier(s) supplying the imported product(s).

D10. Overseas supplier

Provide the name(s) of the overseas supplier(s) supplying the exempted imported product(s).

D11. Imported value as per commercial invoice

Provide the foreign currency value of the exempted imported product(s) disclosed in the commercial invoice accepted by the South African Revenue Service (SARS).

D12. Tender exchange rate

Provide the exchange rate used for this tender as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

D13. Local value of imports

Convert the value of the exempted imported content as per commercial invoice (D11) into the ZAR value by using the tender exchange rate (D12) disclosed in the tender documentation.

D14. Freight costs to port of entry

Provide the freight costs to the South African Port of the exempted imported item.

D15. All locally incurred landing costs and duties

Provide all landing costs including customs and excise duty for the exempted imported product(s) as stipulated in the SATS 1286:2011.

D16. Total landed costs excl VAT

Provide the total landed costs (excluding VAT) for each item imported by adding the corresponding item values in columns D13, D14 and D15. These values must be transferred to column C11 on Annexure C.

D17. Tender quantity

Provide the tender quantity of the exempted imported products as per the tender specification.

D18. Exempted imported value

Provide the imported value for each of the exempted imported product(s) by multiplying the total landed cost (excl. VAT) (D16) by the

tender quantity (D17). The values in column D18 must correspond with the values of column C18 of Annexure C.

D19. Total exempted imported value

The total exempted imported value is the sum of the values in column D18. This total must correspond with the value of C21 on Annexure C.

Table B. Imported Directly By Tenderer

D20. Tender item numbers

Provide the tender item number(s) of the product(s) that have imported content.

D21. Description of imported content:

Provide a list of the product(s) imported directly by tender as specified in the tender documentation.

D22. Unit of measure

Provide the unit of measure for the product(s) imported directly by the tenderer.

D23. Overseas supplier

Provide the name(s) of the overseas supplier(s) supplying the imported product(s).

D24. Imported value as per commercial Invoice

Provide the foreign currency value of the product(s) imported directly by tenderer disclosed in the commercial invoice accepted by the South African Revenue Service (SARS).

D25. Tender rate of exchange

Provide the exchange rate used for this tender as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

D26. Local value of imports

Convert the value of the product(s) imported directly by the tenderer as per commercial invoice (D24) into the ZAR value by using the tender exchange rate (D25) disclosed in the tender documentation.

D27. Freight costs to port of entry

Provide the freight costs to the South African Port of the product(s) imported directly by the tenderer.

D28. All locally incurred landing costs and duties

Provide all landing costs including customs and excise duty for the product(s) imported directly by the tenderer as stipulated in the SATS 1286:2011.

D29. Total landed costs excl VAT

Provide the total landed costs (excluding VAT) for each item imported directly by the tenderer by adding the corresponding item values in columns D26, D27 and D28.

D30. Tender quantity

Provide the tender quantity of the product(s) imported directly by the tenderer as per the tender specification.

D31. Total imported value

Provide the total imported value for each of the product(s) imported directly by the tenderer by multiplying the total landed cost (excl. VAT) (D29) by the tender quantity (D30).

D32. Total imported value by tenderer

The total value of imports by the tenderer is the sum of the values in column D31.

Table C. Imported by Third Party and Supplied to the Tenderer

D33. Description of imported content

Provide a list of the product(s) imported by the third party and supplied to the tenderer as specified in the tender documentation.

D34. Unit of measure

Provide the unit of measure for the product(s) imported by the third party and supplied to tenderer as disclosed in the commercial invoice.

D35. Local supplier

Provide the name of the local supplier(s) supplying the imported product(s).

D36. Overseas supplier

Provide the name(s) of the overseas supplier(s) supplying the imported products.

D37. Imported value as per commercial invoice

Provide the foreign currency value of the product(s) imported by the third party and supplied to the tenderer disclosed in the commercial invoice accepted by SARS.

D38. Tender rate of exchange

Provide the exchange rate used for this tender as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

D39. Local value of imports

Convert the value of the product(s) imported by the third party as per commercial invoice (D37) into the ZAR value by using the tender exchange rate (D38) disclosed in the tender documentation.

D40. Freight costs to port of entry

Provide the freight costs to the South African Port of the product(s) imported by third party and supplied to the tenderer.

D41. All locally incurred landing costs and duties

Provide all landing costs including customs and excise duty for the product(s) imported by third party and supplied to the tenderer as stipulated in the SATS 1286:2011.

D42. Total landed costs excluding VAT

Provide the total landed costs (excluding VAT) for each product imported by third party and supplied to the tenderer by adding the corresponding item values in columns D39, D40 and D41.

D43. Quantity imported

Provide the quantity of each product(s) imported by third party and supplied to the tenderer for the tender.

D44. Total imported value

Provide the total imported value of the product(s) imported by third party and supplied to the tenderer by multiplying the total landed cost (D42) by the quantity imported (D43).

D45. Total imported value by third party

The total imported value from the third party is the sum of the values in column D44.

Table D. Other Foreign Currency Payments

D46. Type of payment

Provide the type of foreign currency payment. (i.e. royalty payment for use of patent, annual licence fee, etc).

D47. Local supplier making the payment

Provide the name of the local supplier making the payment.

D48. Overseas beneficiary

Provide the name of the overseas beneficiary.

D49. Foreign currency value paid

Provide the value of the listed payment(s) in their foreign currency.

D50. Tender rate of exchange

Provide the exchange rate used for this tender as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

D51. Local value of payments

Provide the local value of each payment by multiplying the foreign currency value paid (D49) by the tender rate of exchange (D50).

D52. Total of foreign currency payments declared by tenderer and/or third party

The total of foreign currency payments declared by tenderer and/or a third party is the sum of the values in column D51.

D53. Total of imported content and foreign currency payment

The total imported content and foreign currency payment is the sum of the values in column D32, D45 and D52. This value must correspond with the value of C23 on Annexure C.

5. ANNEXURE E

5.1. Guidelines to completing Annexure E: “Local Content Declaration-Supporting Schedule to Annexure C”

The paragraph numbers correspond to the numbers in Annexure E

E1. Tender number

Supply the tender number that is specified on the specific tender documentation.

E2. Tender description

Supply the tender description that is specified on the specific tender documentation.

E3. Designated products

Supply the details of the products that are designated in terms of this tender (for example, buses/canned vegetables).

E4. Tender authority

Supply the name of the tender authority.

E5. Tendering entity name

Provide the tendering entity name (for example, Unibody Bus Builders (Pty) Ltd) Ltd).

Local Goods, Services and Works

E6. Description of items purchased

Provide a description of the items purchased locally in the space provided.

E7. Local supplier

Provide the name of the local supplier that corresponds to the item listed in column E6.

E8. Value

Provide the total value of the item purchased in column E6.

E9. Total local products (Goods, Services and Works)

Total local products (goods, services and works) is the sum of the values in E8.

E10. Manpower costs:

Provide the total of all the labour costs accruing only to the tenderer (i.e. not the suppliers to tenderer).

E11. Factory overheads:

Provide the total of all the factory overheads including rental, depreciation and amortisation for local and imported capital goods, utility costs and consumables. (Consumables are goods used by individuals and businesses that must be replaced regularly because they wear out or are used up. Consumables can also be defined as the components of an end product that are used up or permanently altered in the process of manufacturing, such as basic chemicals.)

E12. Administration overheads and mark-up:

Provide the total of all the administration overheads, including marketing, insurance, financing, interest and mark-up costs.

E13. Total local content:

The total local content is the sum of the values of E9, E10, E11 and E12. This total must correspond with C24 of Annexure C.

PA-36: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

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

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017, the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

1. General Conditions

- 1.1. Preferential Procurement Regulations, 2017 (Regulation 8) make provision for the promotion of local production and content.
- 1.2. Regulation 8.(2) prescribes that in the case of designated sectors, organs of state must advertise such tenders with the specific bidding condition that only locally produced or manufactured goods, with a stipulated minimum threshold for local production and content will be considered.
- 1.3. Where necessary, for tenders referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE.
- 1.4. A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.
- 1.5. The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

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

Where

x is the imported content in Rand

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

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by South African Reserve Bank (SARB) on the date of advertisement of the bid as indicated in paragraph 3.1 below.

The SABS approved technical specification number SATS 1286:2011 is accessible on [http://www.thedti.gov.za/industrial development/ip.jsp](http://www.thedti.gov.za/industrial%20development/ip.jsp) at no cost.



PA36: Declaration Certificate for Local Production and Content for Designated Sectors.

(This form has been aligned with NT - SBD 6.2)

1.6. A bid may be disqualified if this Declaration Certificate and the Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation;

2. The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:

<u>Description of services, works or goods</u>	<u>Stipulated minimum threshold</u>
HDPE PIPES	100%
STEEL PRODUCTS	100%
LOW VOLTAGE ELECTRICAL CABLES	90%
VALVE PRODUCTS	70%
CEMENT (Complete attached local production and content declaration)	100%

3. Does any portion of the goods or services offered have any imported content?

(Tick applicable box)

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

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

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

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

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	
Yen	
Other	

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

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



PA36: Declaration Certificate for Local Production and Content for Designated Sectors.

(This form has been aligned with NT - SBD 6.2)

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

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

IN RESPECT OF BID NO.

ISSUED BY: (Procurement Authority / Name of Institution):

.....
NB

- 1 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.
- 2 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

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

- (a) The facts contained herein are within my own personal knowledge.
- (b) I have satisfied myself that:
 - (i) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011; and
- (c) The local content percentage (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 3.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C:

Bid price, excluding VAT (y)

R



PA36: Declaration Certificate for Local Production and Content for Designated Sectors.

(This form has been aligned with NT - SBD 6.2)

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

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above.

The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 3.1 above and the information contained in Declaration D and E.

- (d) I accept that the Procurement Authority / Institution has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
- (e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Institution imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

SIGNATURE: _____

WITNESS No. 1 _____

DATE: _____

WITNESS No. 2 _____

DATE: _____

This total must correspond with
Annex C - C 23

1. Annex E

Local Content Declaration - Supporting Schedule to Annex C

(E1)	Tender No.	BL22/007
(E2)	Tender description:	Tseki and Tseseng Magistrates Offices: Installation of back-up generator
(E3)	Designated products:	Steel products
(E4)	Tender Authority:	DPWI
(E5)	Tendering Entity name:	

Note: VAT to be excluded from all calculations

Local Products (Goods, Services and Works)	Description of items purchased	Local suppliers	Value
	(E6)	(E7)	(E8)
(E9) Total local products (Goods, Services and Works)			R

(E10) **Manpower costs** (Tenderer's manpower cost) R

(E11) **Factory overheads** (Rental, depreciation & amortisation, utility costs, consumables etc.) R

(E12) **Administration overheads and mark-up** (Marketing, insurance, financing, interest etc.) R

(E13) Total local content R

This total must correspond with Annex C - C24

Signature of tenderer from Annex B

Date: _____

2. Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	BL22/007			
(C2)	Tender description:	Tseki and Tseseng Magistrates Offices: Installation of back-up generator			
(C3)	Designated product(s)	Low voltage electrical cables			
(C4)	Tender Authority:	DPWI			
(C5)	Tendering Entity name:				
(C6)	Tender Exchange Rate:	Pula	EU	GBP	
(C7)	Specified local content %	90%			

Note: VAT to be excluded from all calculations

		Calculation of local content					Tender summary				
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Section 2, Bill 1, item 1, pg 20	185mm2 4 core cable PVC/SWA							80 m			
Section 2, Bill 1, item 2, pg 20	150mm2 4 core cable PVC/SWA							5 m			
Section 2, Bill 1, item 3, pg 20	10mm2 2 core cable + Earth							15 m			
Section 2, Bill 1, item 4, pg 20	95mm2 bare copper earth wire							80 m			
Section 2, Bill 1, item 5, pg 21	10mm2 bare copper earth wire							15 m			
Section 2, Bill 2, item 56, pg 26	2.5mm2 7 core pvc cable							80 m			
Section 2, Bill 2, item 57, pg 26	4mm2 4 core pvc cable							80 m			
Section 2, Bill 3, item 62, pg 27	2.5mm2 7 core pvc cable							60 m			
Section 2, Bill 4, item 90, pg 31	2.5mm² pvc insulated							10 m			
Section 2, Bill 4, item 91, pg 31	4mm² pvc insulated							50 m			
Section 2, Bill 4, item 92, pg 31	6mm² pvc insulated							1 m			

2. Annex D

Imported Content Declaration - Supporting Schedule to Annex C

(D1) Tender No. BL22/007

(D2) Tender description: Tseki and Tseseng Magistrates
Offices: Installation of back-up generator

(D3) Designated Products: Low voltage electrical cables

(D4) Tender Authority: DPWI

(D5) Tendering Entity name:

(D6) Tender Exchange Rate: Pula

Note: VAT to be excluded from all calculations

EU

GBP

A. Exempted imported content

Calculation of imported content										Summary	
Tender Item no's	Description of imported content	Local supplier	Overseas Supplier	Foreign currency value as per Commercial Invoice	Tender Exchange Rate	Local value of Imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Tender Qty	Exempted imported value
(D7)	(D8)	(D9)	(D10)	(D11)	(D12)	(D13)	(D14)	(D15)	(D16)	(D17)	(D18)

(D19) Total exempt imported value R

This total must correspond with Annex C - C 21

B. Imported directly by the Tenderer

Calculation of imported content										Summary	
Tender Item no's	Description of imported content	Unit of measure	Overseas Supplier	Foreign currency value as per Commercial Invoice	Tender Rate of Exchange	Local value of Imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Tender Qty	Total imported value
(D20)	(D21)	(D22)	(D23)	(D24)	(D25)	(D26)	(D27)	(D28)	(D29)	(D30)	(D31)

(D32) Total imported value by tenderer R

C. Imported by a 3rd party and supplied to the Tenderer

Calculation of imported content										Summary	
Description of imported content	Unit of measure	Local supplier	Overseas Supplier	Foreign currency value as per Commercial Invoice	Tender Rate of Exchange	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Quantity imported	Total imported value
(D33)	(D34)	(D35)	(D36)	(D37)	(D38)	(D39)	(D40)	(D41)	(D42)	(D43)	(D44)

(D52) Total of foreign currency payments declared by tenderer and/or 3rd party

(D53) Total of imported content & foreign currency payments - (D32), (D45) & (D52) above R

This total must correspond with Annex C - C 23

Signature of tenderer from Annex B

Date:

2. Annex E

Local Content Declaration - Supporting Schedule to Annex C

(E1)	Tender No.	BL22/007
(E2)	Tender description:	Tseki and Tseseng Magistrates Offices: Installation of back-up generator
(E3)	Designated products:	Low voltage electrical cables
(E4)	Tender Authority:	DPWI
(E5)	Tendering Entity name:	

Note: VAT to be excluded from all calculations

Local Products (Goods, Services and Works)	Description of items purchased	Local suppliers	Value
	(E6)	(E7)	(E8)
(E9) Total local products (Goods, Services and Works)			R

(E10) **Manpower costs** (Tenderer's manpower cost) R

(E11) **Factory overheads** (Rental, depreciation & amortisation, utility costs, consumables etc.) R

(E12) **Administration overheads and mark-up** (Marketing, insurance, financing, interest etc.) R

(E13) **Total local content** R

This total must correspond with Annex C - C24

Signature of tenderer from Annex B

Date: _____

Local Content Declaration - Summary Schedule

Tender No.	BL22/007
------------	----------

Tender description:

Designated product(s)	HDPE pipes

Tender Authority: DPWI

Tendering Entity name:

Tender Exchange Rate:	Pula	EU
-----------------------	------	----

Specified local content %	100%
---------------------------	------

GBP

GBP

Note: VAT to be excluded from all calculations

Signature of tenderer from Annex B		(C20) Total tender value R	
		(C21) Total Exempt imported content R	
		(C22) Total Tender value net of exempt imported content R	
		(C23) Total Imported content R	
		(C24) Total local content R	
		(C25) Average local content % of tender	
Date:			

Date:

3. Annex D

Imported Content Declaration - Supporting Schedule to Annex C

(D1)	Tender No.	BL22/007		Note: VAT to be excluded from all calculations
(D2)	Tender description:	Tseki and Tseseng Magistrates Offices: Installation of back-up generator		
(D3)	Designated Products:	HDPE pipes		
(D4)	Tender Authority:	DPWI		
(D5)	Tendering Entity name:			
(D6)	Tender Exchange Rate:	Pula	EU	

A. Exempted imported content

[illegible]

(D19) Total exempt imported value	R
-----------------------------------	---

This total must correspond with
Annex C - C 21

B. Imported directly by the Tenderer

[illegible]

(D32) Total imported value by tenderer	R
--	---

C. Imported by a 3rd party and supplied to the Tenderer

[illegible]

(D45) Total imported value by 3rd party	R
---	---

D. Other foreign currency payments

D. Other foreign currency payments			Calculation of foreign currency payments		Summary of payments
Type of payment	Local supplier making the payment	Overseas beneficiary	Foreign currency value paid	Tender Rate of Exchange	Local value of payments
(D46)	(D47)	(D48)	(D49)	(D50)	(D51)

(D52) Total of foreign currency payments declared by tenderer and/or 3rd party

(D53) Total of imported content & foreign currency payments - (D32), (D45) & (D52) above R

This total must correspond with
Annex C - C23

Signature of tenderer from Annex 8

Date:

3. Annex E

Local Content Declaration - Supporting Schedule to Annex C

(E1)	Tender No.	BL22/007
(E2)	Tender description:	Tseki and Tseseng Magistrates Offices: Installation of back-up generator
(E3)	Designated products:	HDPE pipes
(E4)	Tender Authority:	DPWI
(E5)	Tendering Entity name:	

Note: VAT to be excluded from all calculations

Local Products (Goods, Services and Works)	Description of items purchased	Local suppliers	Value
	(E6)	(E7)	(E8)
	(E9) Total local products (Goods, Services and Works)		R

(E10) **Manpower costs** (Tenderer's manpower cost) R

(E11) **Factory overheads** (Rental, depreciation & amortisation, utility costs, consumables etc.) R

(E12) **Administration overheads and mark-up** (Marketing, insurance, financing, interest etc.) R

(E13) **Total local content** R

This total must correspond with Annex C - C24

Signature of tenderer from Annex B

Date: _____

Local Content Declaration - Summary Schedule

Note: VAT to be excluded from all calculations

GB

[illegible][illegible]

Signature of tenderer from Annex 8

Date: _____

4. Annex D

Imported Content Declaration - Supporting Schedule to Annex C

(D1) Tender No. BL22/007

(D2) Tender description: Tseki and Tseseng Magistrates
Offices: Installation of back-up
generator

(D3) Designated Products: Valve products

(D4) Tender Authority: DPWI

(D5) Tendering Entity name:

(D6) Tender Exchange Rate: Pula

Note: VAT to be excluded from
all calculations

EU

GBP

A. Exempted imported content

Calculation of imported content										Summary	
Tender item no's	Description of imported content	Local supplier	Overseas Supplier	Foreign currency value as per Commercial Invoice	Tender Exchange Rate	Local value of Imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Tender Qty	Exempted Imported value
(D7)	(D8)	(D9)	(D10)	(D11)	(D12)	(D13)	(D14)	(D15)	(D16)	(D17)	(D18)

(D19) Total exempt imported value R

This total must correspond with
Annex C - C 21

B. Imported directly by the Tenderer

Calculation of imported content										Summary	
Tender item no's	Description of imported content	Unit of measure	Overseas Supplier	Foreign currency value as per Commercial Invoice	Tender Rate of Exchange	Local value of Imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Tender Qty	Total imported value
(D20)	(D21)	(D22)	(D23)	(D24)	(D25)	(D26)	(D27)	(D28)	(D29)	(D30)	(D31)

(D32) Total imported value by tenderer R

C. Imported by a 3rd party and supplied to the Tenderer

Calculation of imported content										Summary	
Description of imported content	Unit of measure	Local supplier	Overseas Supplier	Foreign currency value as per Commercial Invoice	Tender Rate of Exchange	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Quantity imported	Total imported value
(D33)	(D34)	(D35)	(D36)	(D37)	(D38)	(D39)	(D40)	(D41)	(D42)	(D43)	(D44)

(D45) Total imported value by 3rd party R

D. Other foreign currency payments

Calculation of foreign currency payments					Summary of payments	
Type of payment	Local supplier making the payment	Overseas beneficiary	Foreign currency value paid	Tender Rate of Exchange	Local value of payments	
(D46)	(D47)	(D48)	(D49)	(D50)	(D51)	

(D52) Total of foreign currency payments declared by tenderer and/or 3rd party

(D53) Total of imported content & foreign currency payments - (D32), (D45) & (D52) above R

Signature of tenderer from Annex B

Date

This total must correspond with
Annex C - C 23

4. Annex E

Local Content Declaration - Supporting Schedule to Annex C

(E1)	Tender No.	BL22/007
(E2)	Tender description:	Tseki and Tseseng Magistrates Offices: Installation of back-up generator
(E3)	Designated products:	Valve products
(E4)	Tender Authority:	DPWI
(E5)	Tendering Entity name:	

Note: VAT to be excluded from all calculations

Local Products (Goods, Services and Works)	Description of items purchased	Local suppliers	Value
	(E6)	(E7)	(E8)
(E9) Total local products (Goods, Services and Works)			R

(E10) Manpower costs (Tenderer's manpower cost) R

(E11) Factory overheads (Rental, depreciation & amortisation, utility costs, consumables etc.) R

(E12) Administration overheads and mark-up (Marketing, insurance, financing, interest etc.) R

(E13) Total local content R

This total must correspond with Annex C - C24

Signature of tenderer from Annex B

Date: _____



DECLARATION – CEMENT

I, _____ as Director of

Company name _____

Hereby Undertake To Comply To:

1. 100% LOCAL PRODUCED AND CONTENT CEMENT:

1.1 Comply to utilise only 100% local produced and content cement on site.

Signed by _____ : _____
Director of the Company

Date: _____

T2.2 Returnable Documents that will be incorporated into the contract

PA- 40: DECLARATION OF DESIGNATED GROUPS FOR PREFERENTIAL PROCUREMENT

Tender no: BL22/007

Name of Tenderer

☐ EME¹ ☐ QSE² ☐ Non EME/QSE (tick applicable box)

1. LIST ALL PROPRIETORS, MEMBERS OR SHAREHOLDERS BY NAME, IDENTITY NUMBER, CITIZENSHIP AND DESIGNATED GROUPS.

Name and Surname #	Identity/ Passport number and Citizenship##	Percentage owned	Black	Indicate if youth	Indicate if woman	Indicate if person with disability	Indicate if living in Rural (R) / Under Developed Area (UD) / Township (T) / Urban (U).	Indicate if military veteran
1.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No
2.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No
3.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No
4.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No
5.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No
6.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No
7.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No
8.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No
9.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No
10.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No
11.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No
12.		%	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ R ☐ UD ☐ T ☐ U	☐ Yes ☐ No

Where Owners are themselves a Company, Close Corporation, Partnership etc, identify the ownership of the Holding Company, together with Registration number
State date of South African citizenship obtained (not applicable to persons born in South Africa)

¹ EME: Exempted Micro Enterprise

² QSE: Qualifying Small Business Enterprise

PA- 40: DECLARATION OF DESIGNATED GROUPS FOR PREFERENTIAL PROCUREMENT

Tender no: BL22/007

2. DECLARATION:

The undersigned, who warrants that he/she is duly authorized to do so on behalf of the Tenderer, hereby confirms that:

- 1 The information and particulars contained in this Affidavit are true and correct in all respects;
- 2 The Broad-based Black Economic Empowerment Act, 2003 (Act 53 of 2003), Preferential Procurement Policy Framework Act, 2000 (Act 5 of 2000), the Preferential Procurement Regulations, 2017, National Small Business Act 102 of 1996 as amended and all documents pertaining to this Tender were studied and understood and that the above form was completed according to the definitions and information contained in said documents;
- 3 The Tenderer understands that any intentional misrepresentation or fraudulent information provided herein shall disqualify the Tenderer's offer herein, as well as any other tender offer(s) of the Tenderer simultaneously being evaluated, or will entitle the Employer to cancel any Contract resulting from the Tenderer's offer herein;
- 4 The Tenderer accepts that the Employer may exercise any other remedy it may have in law and in the Contract, including a claim for damages for having to accept a less favourable tender as a result of any such disqualification due to misrepresentation or fraudulent information provided herein;
- 5 Any further documentary proof required by the Employer regarding the information provided herein, will be submitted to the Employer within the time period as may be set by the latter;

Signed by the Tenderer

Name of representative	Signature	Date

DPW-21 (EC): RECORD OF ADDENDA TO TENDER DOCUMENTS

Project title:	<i>Tseki and Tseseng Magistrate's Offices: Installation of back-up generators</i>		
Tender no:	<i>BL22/007</i>	Reference no:	

1. I / We confirm that the following communications received from the Department of Public Works and Infrastructure before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer: *(Attach additional pages if more space is required)*

	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		

Name of Tenderer	Signature	Date

2. I / We confirm that no communications were received from the Department of Public Works and Infrastructure before the submission of this tender offer, amending the tender documents.

Name of Tenderer	Signature	Date

DPW-15 (EC): SCHEDULE OF PROPOSED SUBCONTRACTORS

Project title:	<i>Tseki and Tseseng Magistrate's Offices: Installation of back-up generators</i>		
Tender no:	<i>BL22/007</i>	Reference no:	

We notify you that it is our intention to employ the following Subcontractors for work in this contract.

We confirm that all subcontractors who are contracted to construct a house are registered as home builders with the National Home Builders Registration Council.

	Name and address of proposed Subcontractor	Nature and extent of work	Previous experience with Subcontractor
1			
2			
3			
4			
5			

Name of representative	Signature	Capacity	Date

Name of organisation:	
------------------------------	--

DPW-22 (EC): PARTICULARS OF ELECTRICAL CONTRACTOR

Project title:	<i>Tseki and Tseseng Magistrate's Offices: Installation of back-up generators</i>		
Tender no:	BL22/007	Reference no:	

Name of Electrical Contractor:	
Address:	
Electrical Contractor registration number at the Department of Labour	

Name of Tenderer	Signature	Date

DPW-23 (EC): SCHEDULE FOR IMPORTED MATERIALS AND EQUIPMENT

Project title:	<i>Tseki and Tseseng Magistrate's Offices: Installation of back-up generators</i>		
Tender no:	<i>BL22/007</i>	Reference no:	

This schedule should be completed by the tenderer. *(Attach additional pages if more space is required)*

Item	Material / Equipment	Rand (R) (Excluding VAT)
1.		R
2.		R
3.		R
4.		R
5.		R
6.		R

The Contractor shall list imported items, materials and/or equipment which shall be excluded from the Contract Price Adjustment Provisions (if applicable) and shall be adjusted in terms of currency fluctuations only. Copies of the supplier's quotations for the items, materials or equipment (provided that such costs shall not be higher than the relevant contract rate as listed above) should be lodged with the Principal Agent / Engineer of the Department of Public Works and Infrastructure within 60 (sixty) days from the date of acceptance of the tender. No adjustment of the local VAT amount, nor the contractor's profit, discount, mark-up, handling costs, etc. shall be allowed.

These net amounts will be adjusted as follows:

FORMULA:

The net amount to be added to or deducted from the contract sum:

$$A = V \left(\frac{Z}{Y} - 1 \right)$$

A = the amount (R) of adjustment

V = the net amount (supplier's quotation) (R) of the imported item

Y = exchange rate at the closing date of tender submission

Z = exchange rate on the date of payment.

Name of Tenderer	Signature	Date