cogta
Department:
Co-operative Governance and Traditional Affairs
PROVINCE OF KWAZULU-NATAL

TENDER INVITATION: ZNT1931/2018LG

COGTA – WADLEY HOUSE STANDBY GENERATOR INSTALLATION

THE MANUFACTURE, SUPPLY, DELIVERY, OFFLOADING, INSTALLATION, TESTING, COMMISSIONING AND HANDING-OVER OF STANDBY GENERATOR INSTALLATION AND ASSOCIATED ELECTRICAL WORKS AT WADLEY HOUSE IN PIETERMARITZBURG WITHIN MSUNDUZI MUNICIPALITY

TENDER VALIDITY : **120 DAYS**

TENDERER'S NAME : _____

MAILING ADDRESS : _____

_____

TELEPHONE NUMBER : _____

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm or person submitting a bid for the same materials, supplies or equipment and is in all respects fair and without collusion or fraud. I agree to abide by all conditions of this bid and certify that I am authorized to sign this bid.

_____
AUTHORISED SIGNATURE

_____
PRINT NAME

BID DOCUMENT FEE: R500.00

1. SUMMARY FOR TENDER OPENING PURPOSES

[To facilitate the reading out of tender parameters at the opening of tenders, the Tenderer shall complete this form and submit it with his/her tender. This form does not replace the Form of Offer, C1.1, which must be completed]

Name of tenderer submitting the tender: _____

Tender amount (as stated in the Form of Offer including VAT):

R_____

Time for Completion offered, (Contract Period in months):

_____

Tendered alternative contract period to that stated in the Contract Data Section inclusive of public holidays, builders brakes, etc.)

Details of contact person:

Name (Print): _____

Telephone No: _____

Fax No: _____

Cell Phone: _____

E-mail Address: _____

Is Form of Offer signed by Tenderer and Witnesses?_____(Yes/No)

SIGNATURE: _____
(person authorised to sign the tender)

Note: In the event of conflict between the data provided in this summary and that given in the Form of Offer, C1.1, the latter shall prevail.

PART T1: TENDERING PROCEDURES

T1.1 TENDER NOTICE AND INVITATION TO TENDER

RFB TITLE: COGTA – WADLEY HOUSE STANDBY GENERATOR INSTALLATION

THE MANUFACTURE, SUPPLY, DELIVERY, OFFLOADING, INSTALLATION, TESTING, COMMISSIONING AND HANDING-OVER OF STANDBY GENERATOR INSTALLATION AND ASSOCIATED ELECTRICAL WORKS AT WADLEY HOUSE IN PIETERMARITZBURG

Queries relating to the issue of these documents shall be addressed to the Employer's Representative(s):

Employers Representative/s to whom Procurement Enquires must be addressed	Name: Department of Co Operative Governance and Traditional Affiars Address: 330 Langalibalele Street, Natalia Building,13th Floor, Room 8 North Tower: Email address: Lindiwe.madlala@kzncogta.gov.za

The Province of KwaZulu-Natal Department of Co-operative Governance and Traditional Affairs invites bids for "The Manufacture, Supply, Delivery, Offloading, Installation, Testing, Commissioning and Handing-Over of Standby Generator Installation and Associated Electrical Works at Wadley House".

Requirements

1. Bidders must be registered on the Central Suppliers Database
2. The bid is only open to EMEs or QSEs with BBBEE level 1 certificate.
3. A tender that fails to meet any pre-qualifying criteria stipulated on 1 and 2 will be deemed non responsive.

Tender documents will be available as from 08 February **2019 till the 13 February 2019 – 08h00 till 15h00.** A non-refundable tender deposit of **R500** deposited at ABSA Bank.

A detailed **ZNT 1931/2018 LG** document is available for collection from the Department of Co-operative Governance and Traditional Affairs, Acquisition Ms Lindiwe Madlala on **033 395 2174** email address: lindiwe.madlala@kzncogta.gov.za

No documents will be distributed at the briefing session, therefore interested service providers must obtain a copy of the document before the briefing date.

Compulsory Briefing Session details:

Date : 14 February 2019

Venue : Wadley House, 115 Jabu Ndlovu Street, Pietermaritzburg, Province of KwaZulu Natal.

The site Co Ordinates are as follows: Latitude: 29°36'30.03"S, Longitude: 30°22'31.82"E

Time : 10:00 am

Late arrivals will not be allowed to participate in the meeting and their submission will be declared non-responsive.

The closing date for submission of bids is 11 March 2019 at **11h00** KZN Department of Co-operative Governance and Traditional Affairs, 330 LANGALIBALELE STREET, NATALIA BUILDING, 13TH FLOOR, LIFT AREA, NORTH TOWER

Technical Enquiries may be directed to Mr Jacques Bhengu on **031 2776600** and email:Jacques.Bhengu@smec.com

T1.2 TENDER DATA & EVALUATION CRITERIA

The conditions of tender are the Standard Conditions of Tender in terms of the CIDB Standard for Uniformity in Construction Procurement (May 2010) Board Notice 86 of 2010. (http://www.cidb.org.za/Documents/KC/cidb_Publications/Stand_Codes_Other/Stand_codes_gg33239_28May2010.pdf)

The Tender Data below provides clarity, amends or adds to the standard conditions of tender. Each item of the data given below is cross-referenced to the clause in the standard conditions of tender to which it mainly applies.

CLAUSE NUMBER	TENDER DATA & EVALUATION CRITERIA
	F.1.1 Actions
F.1.1	The Employer is the **Department of Co-operative Governance and Traditional Affairs**
	F.1.2 Tender Documents
F.1.2	The Tender Documents issued by the Employer comprise the documents as listed on the Content Page. In Addition, Tenderers are advised, in their own interest, to obtain their own copies of the following acts, regulations, standards and conditions of contract included, by reference, in this procurement document. 1. The CIDB Standard for Uniformity in Construction Procurement (May 2010 Edition) 2. JBCC Contract 3. Other documents as referenced in this document
	F.1.3 Communication and Employer's agent
F.1.3	See T1.1 Notice to Tenderers.
	F.1.4 Employer's Rights
F.1.4	The Employer reserves the right not to appoint the lowest submitted price. The Employer reserves the right to award parts of the tender to different Tenderers, to make no award at all and to withdraw or cancel the tender at its discretion
	F.2.1 Eligibility
F.2.1	The Employer will only contract with those Tenderers who satisfy the following criteria: 1. BBBEE Level 1 certificate EMEs or QSEs 2. The Tenderer or any of its directors/shareholders should not be listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector;

T1.2 TENDER DATA & EVALUATION CRITERIA (CONTINUED)

CLAUSE NUMBER	TENDER DATA & EVALUATION CRITERIA (CONTINUED)
	F.2.1 Eligibility (Continued)
F.2.1	3. The Tenderer has not: i) abused the Employer's Supply Chain Management System; or ii) failed to perform on any previous contract and has been given a written notice to this effect; 5. The Tenderer has completed and signed the Declaration of Interest and there are no conflicts of interest which may impact on the Tenderer's ability to perform the contract in the best interests of the Employer or potentially compromise the tender process. 6. The Tenderer has completed and signed the Declaration of Independent Tender Determination and has arrived at the accompanying tender independently from, and without consultation, communication, agreement or arrangement with any competitor. 7. Submission of the Certificate of Attendance at the Compulsory Briefing Session. 8. CIDB Certificate confirming Grading of **4EB and above** 9. Submit certificate confirming **Level 1 BBBEE** (certified or original) and submit an sworn-in statement / affidavit signed by a commissioner of oath confirming that the bidder is an EME or QSE 10. The Tenderer has fully complied with this request for BID and furnished all of the information and documents required listed in the tender returnable schedule. 11. The Tenderer has active and valid registration with the department of labour as an electrical contracting company. 12. The Tenderer has active and valid wireman's licensed personnel Master Installation Electrician (MIE) responsible for signing of electrical Certificate of Compliance (CoC).
	F.2.2 Acknowledge Addenda
F.2.2	Tenderers are to acknowledge receipt of any addenda in the method stated on the addenda.
	F.2.3 Clarification Meeting
F.2.3	There shall be a compulsory clarification meeting. The details for which are stated in the Tender Notice and Invitation to Tender. Tenderers must sign the attendance list in the name of the tendering entity and ensure that the form T2.6 is signed at the clarification meeting. No certificates of attendance will be signed after the tender briefing meeting.
	F.2.4 Alterations to Documents
F.2.4	Tenderers shall not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer.

T1.2 TENDER DATA & EVALUATION CRITERIA (CONTINUED)

CLAUSE NUMBER	TENDER DATA & EVALUATION CRITERIA (CONTINUED)
	F.2.5 Alternative Tender Offers
F.2.5	No alternative tender offers shall be considered.
	F.2.6 Submitting a Tender Offer
	COMMON LAW OR BY-LAW REQUIREMENTS No liability for not specifically mentioning any normal contractual, Common Law or by-law requirements will be accepted by the Employer. The Tenderer warrants that it has familiarized itself with all of the applicable law and will comply therewith for the purposes of the tender and any agreement which may result therefrom.
F.2.6.1	The Employer's details and address for delivery of tender offers are stated in T1.1 **Tender Notice and Invitation to Tender.**
F.2.6.2	A two-envelope system is **not** applicable
F.2.6.3	**Identification details** The identification details which must be stated in the tender offer outer package are: **TENDER NUMBER: Bid No. ZNT1931/2018LG** **THE MANUFACTURE, SUPPLY, DELIVERY, OFFLOADING, INSTALLATION, TESTING, COMMISSIONING AND HANDING-OVER OF STANDBY GENERATOR INSTALLATION AND ASSOCIATED ELECTRICAL WORKS AT WADLEY HOUSE IN PIETERMARITZBURG WITHIN MSUNDUZI MUNICIPALITY** **CLOSING DATE: 11 March 2019** **CLOSING TIME: 11:00** **TENDERER'S NAME:** **TENDERER'S ADDRESS:**
F2.6.4	Facsimile, Emailed or Postal Tenders will not be considered. The Employer will not be liable for any costs incurred in the preparation of the tender. When a Tenderer has been advised by telegram or letter of acceptance of his tender, the office of the SA Post Office Limited shall be regarded as the agent of the Tenderer and delivery of such notice of acceptance to the office of the SA Post Office Limited, shall be considered as delivery to the Tenderer. Where a tender has been informed per facsimile message of the acceptance of his tender, the acknowledgment of receipt transmitted by his facsimile machine shall be regarded as proof of delivery to the Tenderer.
	F.2.7 Closing Time
F.2.7	The closing time for submission of tender offers is as stated in **T1.1 Tender Notice and Invitation to Tender.**

T1.2 TENDER DATA & EVALUATION CRITERIA (CONTINUED)

CLAUSE NUMBER	TENDER DATA & EVALUATION CRITERIA (CONTINUED)
	F.2.8 Tender Offer Validity
F.2.8	The tender offer validity period is **120 days** from the closing date.
	F.2.9 Certificates
F.2.9	The Tenderer is required to submit with his tender: 1) Unique PIN from SARS/ Tax Compliance Certificate Certified Copies of the following (*no copies of certified copies*): 2) CIDB Grading Certificate 3) VAT Registration Certificate 4) Company Registration Certificate 5) B-BBEE Status Level 1 Certificate or sufficient evidence to confirm status as a qualifying EME or QSE 6) Proof of good standing in terms of the COID Act – T2.11 7) Registration Certificate for Unemployment Insurance Fund and current proof of compliance 8) Confirmation of Registration on National Treasury CENTRAL SUPPLIERS DATABASE
	F.3.1 Opening of Tender Submissions
F.3.1	Tenders shall be opened immediately after the closing time for tenders as stipulated in T1.1 Tender Notice and Invitation to Tender. The venue of the Tender opening shall be at the (TBC)
	F3.2 Test for Responsiveness
F.3.2	Submission all documents listed as compulsory in the Returnable Schedule, item T2.1
	F.3.3 Evaluation of Tender Offers
F.3.3.1 F.3.3.2 F.3.3.3	The Employer applies the two stage process of evaluating tenders, namely functionality then Price/BBBEE component, using the preferential procurement mechanism of the 80/20 rule. **FUNCTIONALITY** • All tenders duly lodged as specified in this document will be examined to determine compliance with tender requirements and conditions. Bids with deviations from the requirements/conditions, will be eliminated from further consideration. • Firstly, the assessment of functionality will be done in terms of the evaluation criteria and minimum threshold. A tender will be disqualified if it fails to meet the minimum threshold for functionality. • Thereafter, only the qualifying bids will be evaluated in terms of the 80/20 preference mechanism, where 90 points will be used for price and 10 points are allocable to Broad-Based Black Economic Empowerment, in line with the grading per the BBBEE Act in place at the time of the advertisement. **Elimination of Proposals on Grounds of Functionality** **Scoring Functionality threshold for this contract is 70%. Failure to meet this threshold will lead to disqualification of the Tenderer irrespective of the competitiveness of the fee proposal submitted for this bid.** The 80/20 system for preference point system is applicable to this bid:

T1.2 TENDER DATA & EVALUATION CRITERIA (CONTINUED)

CLAUSE NUMBER	TENDER DATA & EVALUATION CRITERIA (CONTINUED)
	F.3.4 Evaluation of Tender Offers (Continued)
F.3.4	**ADJUDICATION USING POINT SYSTEM** The Tenderer obtaining the higher number of total points will be awarded the contract. • 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. • Points scored must be rounded off to the nearest 2 decimals places. • 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 BBBEE. • However, the functionality is part of the evaluation process and in the event that two or more bids have scored equal points including preference points for B-BBEE, the successful bid must be the one scoring the highest score for functionality. • Should two or more bids be equal in all respects, the award shall be decided by the drawing of lots. **POINTS AWARDED FOR PRICE** THE PREFERENCE POINT 80/20 SYSTEM FORMULA A maximum of 80 points is allocated for price on the following basis: **80/20** $Ps = 80\left(1 - \frac{Pt - P\min}{P\min}\right)$ Where Ps = Points scored for comparative price of bid under consideration Pt = Comparative price of bid under consideration Pmin = Comparative price of lowest acceptable bid **POINTS AWARDED FOR BBBEE STATUS LEVEL OF CONTRIBUTION** • In terms with the Preferential Procurement Mechanism, preference points will be awarded to a Tenderer for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (80/20 system)
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-compliant contributor	0

T1.2 TENDER DATA & EVALUATION CRITERIA (CONTINUED)

<table>
<tr><th>CLAUSE NUMBER</th><th>TENDER DATA & EVALUATION CRITERIA (CONTINUED)</th></tr>
<tr><td></td><td>F.3.5 Evaluation of Tender Offers (Continued)</td></tr>
<tr><td>F.3.5</td><td>

Tenderers who qualify as EMEs in terms of the B-BBEE Act must submit a certificate issued by an Accounting Officer as contemplated in the CCA or a Verification Agency accredited by the South African National Accreditation System (SANAS) or a Registered Auditor. Registered auditors do not need to meet the prerequisite for IRBA's approval for the purpose of conducting verification and issuing EMEs with B-BBEE Status Level Certificates.
Tenderers other than EMEs must submit their original and valid B-BBEE status level verification certificate or a certified copy thereof, substantiating their B-BBEE rating issued by a Registered Auditor approved by IRBA or a Verification Agency accredited by SANAS.
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.
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.
A Tenderer will not be awarded points for B-BBEE status level if it is indicated in the bid documents that such a Tenderer intends sub-contracting more than 30% of the value of the contract to any other enterprise that does not qualify for at least the points that such a Tenderer qualifies for, unless the intended sub- contractor is an EME that has the capability and ability to execute the sub-contract.

</td></tr>
<tr><td></td><td>F.3.6 Evaluation of Tender Offers (Continued)</td></tr>
<tr><td>F.3.6</td><td>
The minimum number of evaluation points for quality is 70. Tender offers that fail to score the minimum number of points for quality will be rejected as non-responsive.

The evaluation criteria and maximum score in respect of each of the criteria are as follows:
<table>
<tr><th>Reference</th><th></th><th>Quality Criteria</th><th>Max. number of points</th></tr>
<tr><td>T2.16</td><td></td><td>Tenderers Financial Standing(Bank Rating)</td><td>10</td></tr>
<tr><td>T2.17</td><td></td><td>Tenderers Experience</td><td>30</td></tr>
<tr><td>T2.18</td><td></td><td>Organogram and Experience of Key Staff</td><td>20</td></tr>
<tr><td>T2.19</td><td></td><td>Method Statement / Approach / Methodology</td><td>30</td></tr>
<tr><td>T2.20</td><td></td><td>Preliminary Programme</td><td>10</td></tr>
<tr><td colspan="3">TOTAL</td><td>100</td></tr>
</table>
Tenderers who do not submit the above schedules and the associated documents will be scored as 'no response'
</td></tr>
</table>

T1.2 TENDER DATA & EVALUATION CRITERIA (CONTINUED)

CLAUSE NUMBER	TENDER DATA & EVALUATION CRITERIA (CONTINUED)
	F.3.7 Acceptance of Tender Offer
F.3.7	Tenders will only be accepted if: a) The Tenderer complies with eligibility criteria as stated in F.2.1
	F.3.8 Provide Copies of the Contracts
F.3.8	The number of paper copies of the signed contract to be provided by the Employer is **one**.

PART T2: RETURNABLE DOCUMENTS

T2.1 LIST OF ALL RETURNABLE & COMPULSORY DOCUMENTS

The Tenderer shall complete and submit the following returnable schedules and documents:

Returnable Schedules

Item	Description	Details	Compulsory (Yes / No) Non-Submission will render to Tenderer non-responsive	Compulsory (Yes / No) For Tender Evaluation Purposes	Tenderers Check	COGTA Check
Documents Required for Eligibility to proceed to next Phase of Evaluation						
T2.2	Declaration of Interest	Completion of attached forms	**Yes**			
T2.3	Local production &	Completion of attached forms	**Yes**			
T2.4	Declaration of Tenderer's Past Supply Chain Management	Completion of attached forms	**Yes**			
T2.5	Tax Clearance Certificate Requirements	Original Tax Compliant Certificate / PIN issued by the South Africa Revenue Service in respect of: Income Tax Skills Development Levy; Unemployment Insurance Fund; Value Added Tax and Pay as you earn	**Yes**			
T2.6	Certificate of Independent Bid Determination	Form duly completed and signed	**Yes**			
T2.7	Certificate of Attendance at Compulsory Clarification Meeting	Relevant annexure duly signed and dated by an authorised signatory	**Yes**			
T2.8	CIDB Grading	The Tenderer shall have a CIDB Grading of 4EB **or above** The Tenderer shall provide a certificate valid at the time of closing and at the time of award.	**Yes**			
T2.9	Certificate Confirming Registration on the Central Supplier Database	In terms of the National Treasury Supply Chain Management Policy Framework, all suppliers of goods and services to the Province of KwaZulu-Natal are required to register on the Central Suppliers Database	**Yes**			
Documents Relating to the Tendering Entity						
T2.10	Authority for Signatory	Form duly completed and signed	**Yes**			
T2.11	Mandatory Company	Certified Copies of CIPC Registration documents.	**Yes**			
T2.12	Vat Registration Certificate	Proof of registration for VAT with SARS	**Yes**			
T2.13	Letter of Good Standing in terms of COID Act*	Certified copy of a letter of Good Standing issued by the Department of Labour, in accordance with the Compensation for Occupational Injuries and Diseases Act (COIDA). –must be valid at the time of close of tender and a valid certificate must be produced at the time of award if the certificate expires between close of tender and award.	**Yes**			

T2.14	Company profile and capability statement	Company Profile indicating the companies' capabilities and management structure		**No, for information purposes only**		
T2.15	Shareholders / Member / Partner	Agreement and ID Document of all Member / Shareholder / other as applicable*	**Yes**			

T2.1 LIST OF ALL RETURNABLE & COMPULSORY DOCUMENTS (CONTINUED)

Item	Description	Details	Compulsory (Yes / No) Non-Submission will render to Tenderer non-responsive	Compulsory (Yes / No) For Tender Evaluation Purposes	Tenderers Check	COGTA Check
Documents Required for Evaluation of Functionality (Threshold 70 Points)						
T2.16	Tenderer's Registration (30 Points)	- Active and valid registration of Tenderer with the Department of Labour as an Electrical Contracting Company - Active and valid wireman's license of at least one (1) minimum Master Installation electrician (MIE) personnel responsible for signing of Electrical Certificate of Compliance (CoC)		**Yes**		
T2.17	Tenderer's Experience (30 Points)	- Previous experience with minimum five (5) successfully completed projects appointments and reference letters including contactable references on projects of similar nature ranging from installation of 300kVA indoor/outdoor type standby generator		**Yes**		
T2.18	Tenderers CIBD Grading (20 Points)	- Grade 4 EB (20 points) - Grade 3 EB (10 points) - Grade 2 EB (5 points) - Grade 1 EB (0 points)		**Yes**		
T2.19	Organogram and Experience of Key Personnel (10 Points)	- Organogram Specific for this Tender - Schedule of Key Personnel and years' experience Skills and Resources		**Yes**		
T2.20	Preliminary Programme (10 Points)	- Programme done using Gantt Chart - Detailed Activities and Dependencies - Activity Durations Cleary indicated including Critical Paths - Project Duration within the Stated Contract - (NB: Works to be completed, including testing, commissioning, snagging and handover, with 60 working days)		**Yes**		
Documents Required for Evaluation of BBBEE						
T2.21	Preference Points claim form	Tenderers other than EMEs must submit their original and valid Level 1 B-BBEE status level verification certificate or a certified copy thereof, substantiating their B-BBEE rating issued by a Registered Auditor approved by IRBA or a Verification Agency accredited by SANAS		**Yes**		
Documents Relating to the Tender Submission						
T2.22	Form of Offer and Acceptance	Completion and Signing of the Form of Offer and Acceptance.	**Yes**			
T2.23	Pricing Schedule	Completion of the Pricing Schedule and Summary Page.		**Yes**		
Documents Relating to the Tender Submission						
T2.24	Schedule of Proposed Sub-Contractors	Submission of a schedule of Sub-contractors intended to be used on the project		**Yes**		
T2.25	Record of Addenda to Tender Documents	Acknowledgement of receipt of addenda		**Yes, if applicable**		
T2.26	Declaration OF Correctness of Bid	Form duly completed and signed		**Yes**		

T2.2 DECLARATION OF INTEREST

1. Any legal person, including persons employed by the state[1], or persons having a kinship with persons employed by the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid (includes an advertised competitive bid, a limited bid, a proposal or written price quotation). In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons employed by the state, or to persons connected with or related to them, it is required that the bidder or his/her authorised representative declare his/her position in relation to the evaluating/adjudicating authority where-

   - the bidder is employed by the state; and/or

   - the legal person on whose behalf the bidding document is signed, has a relationship with persons/a person who are/is involved in the evaluation and or adjudication of the bid(s), or where it is known that such a relationship exists between the person or persons for or on whose behalf the declarant acts and persons who are involved with the evaluation and or adjudication of the bid.

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

2.1 Full Name of bidder or his or her representative: ……

2.2 Identity Number:……

2.3 Position occupied in the Company (director, trustee, shareholder[2], member): ……

2.4 Registration number of company, enterprise, close corporation, partnership agreement or trust: ……

2.5 Tax Reference Number: ……

2.6 VAT Registration Number:
……

2.6.1 The names of all directors / trustees / shareholders / members, their individual identity numbers, tax reference numbers and, if applicable, employee / PERSAL numbers must be indicated in paragraph 3 below.

[1]"State" means –
(a)any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No. 1 of 1999);
(b)any municipality or municipal entity;
(c)provincial legislature;
(d)national Assembly or the national Council of provinces; or
(e)Parliament.

[2]"Shareholder" means a person who owns shares in the company and is actively involved in the management of the enterprise or business and exercises control over the enterprise.

2.7 Are you or any person connected with the bidder presently employed by the state? **YES** ☐ **NO** ☐

2.7.1 If so, furnish the following particulars:

Name of person / director / trustee / shareholder/ member: ……
Name of state institution at which you or the person ……
connected to the bidder is employed : ……
Position occupied in the state institution: ……

Any other particulars: ……

T2.2 DECLARATION OF INTEREST

2.7.2 If you are presently employed by the state, did you obtain the appropriate authority to undertake remunerative work outside employment in the public sector? **YES** ☐ **NO** ☐

2.7.2.1 If yes, did you attach proof of such authority to the bid document? (Note: Failure to submit proof of such authority, where applicable, may result in the disqualification of the bid. **YES** ☐ **NO** ☐

2.7.2.2 If no, furnish reasons for non-submission of such proof:
……
……
……

2.8 Did you or your spouse, or any of the company's directors / trustees / shareholders / members or their spouses conduct business with the state in the previous twelve months? **YES** ☐ **NO** ☐

2.8.1 If so, furnish particulars:
……
……
……

2.9 Do you, or any person connected with the bidder, have any relationship (family, friend, other) with a person employed by the state and who may be involved with the evaluation and or adjudication of this bid? **YES** ☐ **NO** ☐

2.9.1 If so, furnish particulars.
……
……
……

2.10 Are you, or any person connected with the bidder, aware of any relationship (family, friend, other) between any other bidder and any person employed by the state who may be involved with the evaluation and or adjudication of this bid? **YES** ☐ **NO** ☐

2.10.1 If so, furnish particulars.
……
……
……

2.11 Do you or any of the directors / trustees / shareholders / members of the company have any interest in any other related companies whether or not they are bidding for this contract? **YES** ☐ **NO** ☐

2.11.1 If so, furnish particulars:
……
……
……

T2.2 DECLARATION OF INTEREST

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

Full Name	Identity Number	Personal Income Tax Reference Number	State Employee Number / Persal Number

4 DECLARATION

I, THE UNDERSIGNED (NAME)……

CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 2 and 3 ABOVE IS CORRECT.

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

…….. ……
Signature Date

…… ……
Position Name of bidder

T2.3 SBD 6.2

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 at no cost.

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:

Description of services, works or goods	Stipulated minimum threshold
Wire Products: All Mesh wire fencing /mesh reinforcing, Roof and Cladding: Roof sheeting, Apex, Barge and Fascia flashing Lightweight Steel Canopy Fasteners: Bolts, nuts, nails, rivets etc. Fabricated Structural Steel: Stainless steel side grab rail, Stainless steel rear grab rail , Metal grating removable cover and frame all steel products & components used for the Construction at Silutshana CSC	100%
Office Furniture	85%

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.

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
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:** _____

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.					Note: VAT to be excluded from all calculations
(C2)	Tender description:					
(C3)	Designated product(s)					
(C4)	Tender Authority:					
(C5)	Tendering Entity name:					
(C6)	Tender Exchange Rate:	Pula		EU		GBP
(C7)	Specified local content %					

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)

(C20) Total tender value	R 0	
(C21) Total Exempt imported content		R 0
(C22) Total Tender value net of exempt imported content		R 0
(C23) Total Imported content		R 0
(C24) Total local content		R 0
(C25) Average local content % of tender		

Signature of tenderer from Annex B

Date:

T2.4 DECLARATION OF TENDERER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES (TO BE COMPLETED BY TENDERER) (CONTINUED)

1. This Section must form part of all Tenders invited.
2. It serves as a declaration to be used by the Employer in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
3. The Tender of any Tenderer may be disregarded if that Tenderer, or any of its directors have:

   a. abused supply chain management system;
   b. committed fraud or any other improper conduct in relation to such system; or
   c. failed to perform on any previous contract.

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

Item	Question	Yes	No
4.1	Is the Tenderer or any of its directors listed on the National Treasury database as companies or persons prohibited from doing business with the public sector?	Yes ☐	No ☐
4.1.1	If so, furnish particulars		
4.2	Is the Tenderer or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)?	Yes	No
4.2.1	If so, furnish particulars		
4.3	Was the Tenderer or any of its directors convicted by a court of law (including a court outside of the Republic of South Africa) for fraud or corruption during the past five years?	Yes	No
4.3.1	If so, furnish particulars		
4.4	Was any contract between the Tenderer and any organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes	No
4.4.1	If so, furnish particulars		

T2.4 DECLARATION OF TENDERER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES (TO BE COMPLETED BY TENDERER) (CONTINUED)

CERTIFICATION

I, the undersigned

(full name) _____

Certify that the information furnished on this declaration form is true and correct. I accept that, in addition to cancellation of a contract, action may be taken against me should this declaration prove to be false.

_____.. _____

Signature **Date**

_____

Position

_____

Name of Tender

T2.5 TAX CLEARANCE CERTIFICATE

[Tax Compliance Certificate/Tax Pin obtained from SARS to be inserted here]

T2.6 CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

1. This section must form part of all tenders[1] invited.

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

3. Treasury Regulation 16A9 prescribes that accounting officers and accounting authorities must take all reasonable steps to prevent abuse of the supply chain management system and authorizes accounting officers and accounting authorities to:

   a. disregard the tender of any Tenderer if that Tenderer, or any of its directors have abused the institution's supply chain management system and or committed fraud or any other improper conduct in relation to such system.
   b. cancel a contract awarded to a Service Provider of goods and services if the Service Provider committed any corrupt or fraudulent act during the tendering process or the execution of that contract.

4. This Standard Bidding Document SBD serves as a certificate of declaration that would be used by institutions to ensure that, when tenders are considered, reasonable steps are taken to prevent any form of tender-rigging.

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

- **Includes price quotations, advertised competitive tenders, limited tenders and proposals.**

- **Tender rigging (or collusive tendering) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for Employers who wish to acquire goods and / or services through a tendering process. Tender rigging is, therefore, an agreement between competitors not to compete against each other?**

T2.6 CERTIFICATE OF INDEPENDENT TENDER DETERMINATION (CONTINUED)

I, the undersigned, in submitting the accompanying tender:

_____

(Tender Number and Description)

in response to the invitation for the tender made by:

_____

(Name of Institution)

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

I certify, on behalf of:_____ that:
(Name of Tenderer)

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying tender will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the Tenderer to sign this Certificate, and to submit the accompanying tender, on behalf of the Tenderer;
4. Each person whose signature appears on the accompanying tender has been authorized by the Tenderer to determine the terms of, and to sign the tender, on behalf of the Tenderer;
5. For the purposes of this Certificate and the accompanying tender, I understand that the word "competitor" shall include any individual or organization, other than the Tenderer, whether or not affiliated with the Tenderer, who:
   (a) has been requested to submit a tender in response to this tender invitation;
   (b) could potentially submit a tender in response to this tender invitation, based on their qualifications, abilities or experience; and
   (c) provides the same goods and services as the Tenderer and/or is in the same line of business as the Tenderer.
6. The Tenderer has arrived at the accompanying tender independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium[3] will not be construed as collusive tendering.

T2.6 CERTIFICATE OF INDEPENDENT TENDER DETERMINATION (CONTINUED)

7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
   (a) prices;
   (b) geographical area where product or service will be rendered (market allocation);
   (c) methods, factors or formulas used to calculate prices;
   (d) the intention or decision to submit or not to submit, a tender;
   (e) the submission of a tender which does not meet the specifications and conditions of the tender; or
   (f) tendering with the intention not to win the tender.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this tender invitation relates.
9. The terms of the accompanying tender have not been, and will not be, disclosed by the Tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening or of the awarding of the contract.
10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to tenders and contracts, tenders that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act 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.

- **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.**

_____. _____

Signature **Date**

_____. _____

Position **Name of Tenderer**

T2.7 CERTIFICATE OF ATTENDANCE AT COMPULSORY CLARIFICATION MEETING

This is to certify that the following person attended the compulsory briefing meeting held on:

OFFICIAL BRIEFING SESSION/SITE INSPECTION CERTIFICATE

Site/building/institution involved: **WADLEY HOUSE IS SITUATED IN 115 JABU NDLOVU STREET IN PIETERMARITZBURG WITHIN MSUNDUZI LOCAL MUNICIPALITY.**

THE SITE CO ORDINATES ARE AS FOLLOWS: LATITUDE: 29°36'30.03"S LONGITUDE: 30°22'31.82"E

Bid No: **ZNT 1931/2018LG**

Service: **THE MANUFACTURE, SUPPLY, DELIVERY, OFFLOADING, INSTALLATION, TESTING, COMMISSIONING AND HANDING-OVER OF STANDBY GENERATOR INSTALLATION AND ASSOCIATED ELECTRICAL WORKS AT WADLEY HOUSE IN PIETERMARITZBURG WITHIN MSUNDUZI MUNICIPALITY**

****

THIS IS TO CERTIFY THAT (NAME): .....

ON BEHALF OF: .....

ATTENDED THE BRIEFING SESSION ON: **14 FEBRUARY 2019 *at 10:00 am at* WADLEY HOUSE, 115 JABU NDLOVU STREET IN PIETERMARITZBURG IN THE PROVINCE OF KWAZULU NATAL.**

THE SITE CO ORDINATES ARE AS FOLLOWS: LATITUDE: 29°36'30.03"S LONGITUDE: 30°22'31.82"E

AND IS THEREFORE FAMILIAR WITH THE CIRCUMSTANCES AND THE SCOPE OF THE SERVICE TO BE RENDERED.

.....
SIGNATURE OF BIDDER OR AUTHORISED REPRESENTATIVE
(PRINT NAME)

DATE: .....

.....
SIGNATURE OF DEPARTMENTAL REPRESENTATIVE
(PRINT NAME)

.....
DEPARTMENTAL STAMP:
(COMPULSORY)

DATE: .....

T2.8 CIDB GRADING CERTIFICATE

[CIDB Grading certificate from the Construction Industry Development Board to be inserted here]

T2.9 REGISTRATION ON THE CENTRAL SUPPLIERS DATABASE

1. In terms of the National Treasury Supply Chain Management Policy Framework, all suppliers of goods and services to the Province of KwaZulu-Natal are required to register on the Central Suppliers Database.

2. If you wish to apply for registration, forms may be downloaded from the National Treasury website, https://secure.csd.gov.za/ (click on "Register")

3. If a business is registered on the Database and it is found subsequently that false or incorrect information has been supplied, then the Department may, without prejudice to any other legal rights or remedies it may have;

4.

   4.1 de-register the supplier from the Database,

   4.2 cancel a bid or a contract awarded to such supplier, and the supplier would become liable for any damages if a less favourable bid is accepted or less favourable arrangements are made.

5. The same principles as set out in paragraph 3 above are applicable should the supplier fail to request updating of its information on the Suppliers Database, relating to changed particulars or circumstances.

T2.10 AUTHORITY FOR SIGNATORY

Fill in the relevant portion applicable to the type of organization

A. COMPANIES

If a Bidder is a company, a certified copy of the resolution by the board of directors, personally signed by the chairperson of the board, authorizing the person who signs this bid to do so, as well as to sign any contract resulting from this bid and any other documents and correspondence in connection with this bid and/or contract on behalf of the company must be submitted with this bid, that is before the closing time and date of the bid

AUTHORITY BY BOARD OF DIRECTORS

By resolution passed by the Board of Directors on …..... 20....., Mr/Mrs ……whose signature appears below) has been duly authorized to sign all documents in connection with this bid on behalf of (Name of Company).....

IN HIS/HER CAPACITY AS: …….....

SIGNED ON BEHALF OF COMPANY: ……
(PRINT NAME)

SIGNATURE OF SIGNATORY: ..... **DATE:** .....

WITNESSES: 1 .....

2 .....

_____

B. SOLE PROPRIETOR (ONE - PERSON BUSINESS)

I, the undersigned..... hereby confirm that I am the sole

owner of the business trading as .....

SIGNATURE……

DATE……

C. PARTNERSHIP

The following particulars in respect of every partner must be furnished and signed by every partner:

Full name of partner	**Residential address**	**Signature**
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

We, the undersigned partners in the business trading as.....
hereby authorize ..... to sign this bid as well as any contract resulting from the bid and any other documents and correspondence in connection with this bid and /or contract on behalf of (company name) ……

.....	.....	.....
SIGNATURE	**SIGNATURE**	**SIGNATURE**
.....	.....	.....
DATE	**DATE**	**DATE**

_____

D. CLOSE CORPORATION

In the case of a close corporation submitting a bid, a certified copy of the Founding Statement of such corporation shall be included with the bid, together with the resolution by its members authorizing a member or other official of the corporation to sign the documents on their behalf.

By resolution of members at a meeting on ..... 20..... at……

..... Mr/Ms....., whose signature appears below, has been authorized to sign all documents in connection with this bid on behalf of (Name of Close Corporation)
…….....

SIGNED ON BEHALF OF CLOSE CORPORATION: ……
(PRINT NAME)

IN HIS/HER CAPACITY AS..... **DATE:** .....

SIGNATURE OF SIGNATORY: .....

WITNESSES: 1..... **WITENSS: 2**.....

E. CO-OPERATIVE

A certified copy of the Constitution of the co-operative must be included with the bid, together with the resolution by its members authoring a member or other official of the co-operative to sign the bid documents on their behalf.

By resolution of members at a meeting on ……. 20..... at …….....

Mr/Ms....., whose signature appears below, has been authorized to sign all documents in connection with this bid on behalf of (Name of cooperative)
……

SIGNED ON BEHALF OF CO-OPERATIVE:.....
(PRINT NAME)

IN HIS/HER CAPACITY AS: .....…**DATE:**.....……..

SIGNATURE OF AUTHORISED REPRESENTATIVE/SIGNATORY: .....

WITNESSES: 1 ..... **WITNESS:- 2** .....

_____

F. CONSORTIUM

If a bidder is a consortium, a certified copy of the resolution/agreement passed/reached signed by the duly authorized representatives of concerned enterprises, authorizing the representatives who sign this bid to do so, as well as to sign any contract resulting from this bid and any other documents and correspondence in connection with this bid and/or contract on behalf of the consortium must be submitted with this bid, before the closing time and date of the bid.

AUTHORITY TO SIGN 0N BEHALF OF THE CONSORTIUM

By resolution/agreement passed/reached by the consortium on ……..…… 20 ……

Mr/Mrs……..…(whose signature appear below) have been duly authorised to sign all documents in connection with this bid on behalf of:

(Name of Consortium)……..

SIGNED ON BEHALF OF CLOSE CORPORATION: ……
(PRINT NAME)

IN HIS/HER CAPACITY AS ..... **DATE**: .....

SIGNATURE OF SIGNATORY: .....

WITNESSES: 1 ..... **WITNESS: - 2** .....

G. JOINT VENTURE

If a bidder is a joint venture, a certified copy of the resolution/agreement passed/reached signed by the duly authorized representatives of the enterprises, authorizing the representatives who sign this bid to do so, as well as to sign any contract resulting from this bid and any other documents and correspondence in connection with this bid and/or contract on behalf of the joint venture must be submitted with this bid, before the closing time and date of the bid.

AUTHORITY TO SIGN ON BEHALF OF THE JOINT VENTURE

By resolution/agreement passed/reached by the joint venture partners on……20……

Mr/Mrs……,Mr/Mrs……

Mr/Mrs……and Mr/Mrs……
(whose signatures appear below) have been duly authorized to sign all documents in connection with this bid on behalf of:(Name of Joint Venture)……..

IN HIS/HER CAPACITY AS: ……..

SIGNED ON BEHALF OF (COMPANY NAME): ……..
(PRINT NAME)

SIGNATURE:…….... **DATE:** ……

IN HIS/HER CAPACITY AS:……

SIGNED ON BEHALF OF (COMPANY NAME): ……
(PRINT NAME)

SIGNATURE :…… **DATE**: ……

IN HIS/HER CAPACITY AS:……

SIGNED ON BEHALF OF (COMPANY NAME): ……..
(PRINT NAME)

SIGNATURE :…….. **DATE:** ……..

IN HIS/HER CAPACITY AS:……..

SIGNED ON BEHALF OF (COMPANY NAME): ……
(PRINT NAME)

SIGNATURE :…….. **DATE:** ……

IN HIS/HER CAPACITY AS:……

T2.11 MANDATORY COMPANY REGISTRATION CERTIFICATES

Important note to Tenderer: The relevant supporting documents to the organisation tendering i.e. Registration Certificates for Sole Proprietors, Companies, Close Corporations, Joint Ventures, Consortiums and Partnerships, all as referred to in the foregoing forms in T2.8, must be inserted here.

[Certified CIPC Registration documents to be inserted here]

T2.12 VAT REGISTRATION CERTIFICATE

[VAT Registration Certificate obtained from SARS to be inserted here]

T2.13 LETTER OF GOOD STANDING IN TERMS OF COID ACT. (COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT)

[Letters of good standing to be inserted here]

T2.14 COMPANY PROFILE AND CAPABILITY STATEMENT

Important note to Tenderer: The relevant supporting documents to the organisation tendering i.e. Registration Certificates for Companies, Close Corporations and Partnerships, or Agreements and Powers of Attorney for Joint Ventures and Consortiums, ID documents for Sole Proprietors, all as referred to in the foregoing forms and in T2.8, must be inserted here.

T2.15 SHAREHOLDER / MEMBER / PARTNER INFORMATION

[Agreement and ID Documents of all Member /Shareholder / other as applicable to be inserted here]

T2.16 TENDERER'S FINANCIAL STANDING *(10 points)*

A. BANK RATING

Tenderer shall provide information about its commercial position, which includes information necessary for the Employer to evaluate the Tenderer's financial standing.

To that end the Tenderer must provide with the tender a bank rating, certified by its banker, to the effect that it will be able to successfully complete the contract at the tendered amount within the specified time for completion.

Name of account holder: _____

Name of Bank: _____ Branch: _____

Account number: _____ Type of account: _____

Telephone number: _____ Facsimile number: _____

Name of contact person (*at bank:*

_____

Failure to provide the required bank details and certified bank rating with its tender, will lead to the conclusion that the Tenderer does not have the necessary financial resources at its disposal to complete the contract successfully within the specified time for completion.

The Employer undertakes to treat the information thus obtained as confidential, strictly for the use of evaluation of the tender submitted by the Tenderer.

NAME : _____
(Block Capitals)

SIGNATURE : _____ DATE: _____
(of person authorised to sign on behalf of the Tenderer)

T2.16 TENDERER'S FINANCIAL STANDING *(10 points)* (CONTINUED)

B. LETTERS OF CREDIT FROM KEY SUPPLIERS

The Tenderer shall supply **minimum of 3 and a maximum of 5 letters of credit** from key suppliers (Plant and Material) indicating the payment period and the status of the Tenderers account with the supplier **for the last 12 months**, for a **minimum value of R100 000-00.**

Schedule of Key Suppliers

NO.	NAME OF SUPPLIER	ITEM SUPPLIED	CREDIT REFERENCE INCLUDED (YES / NO)
1			
2			
3			
4			
5			

The evaluation criteria for the references from key suppliers are listed below:

REFERENCES EVALUATION CRITERIA	
5 REFERENCES	**5**
4 REFERENCES	**4**
3 REFERENCES	**3**

T2.16 TENDERER'S FINANCIAL STANDING *(10 points)* (CONTINUED)

C. Proof of Bridging Finance or Confirmation from the Tenderers Bank that the Tenderer has sufficient cash reserves to meet the requirements of the Contract.

Attached Proof of Bridging Finance or Letter of Reference (General Report) from the Tenderers Bank stating the bank rating code.

The bank rating evaluation criteria is listed hereunder:

BANK RATING EVALUATION CRITERIA	
RATING	**POINTS**
CODE C	**5**

T2.17 TENDERER'S EXPERIENCE SCHEDULE *(30 points)*

The experience of the tendering entity as opposed to the key staff members / experts, in projects of similar type and scale over the last five years, will be evaluated.

Contact details of clients of the relevant projects must also be provided.

It is compulsory that the tenderer completes the attached "Tenderers Experience Schedule- (T2.16 Page 43 & 44", failing which, zero points will be awarded.

General Experience is defined as having experience in multi-disciplinary building projects.

EMPLOYER, CONTACT PERSON AND TELEPHONE NUMBER	PROJECT TITLE	DETAILED DESCRIPTION AND DISCIPLINES INVOLVED	SCOPE OF THE APPOINTMENT (INCLUDING WORKS OUTSOURCED)	VALUE OF PROJECT	PROJECT DURATION	DATE UNDERTAKEN
	Schedule A: General Experience					
	Company Name:					

T2.17 TENDERER'S EXPERIENCE SCHEDULE *(30 points)* (CONTINUED)

ITEM REF.	CATEGORY	POINTS PER PROJECT	MAX POINTS (30)
A1	General Experience, reference letters and appointments: Projects greater than R3m	4	12
A2	General Experience, reference letters and appointments: Projects between R2m and R3m	3	9
A3	General Experience, reference letters and appointments: Projects between R1m and R2m	2	6
A4	General Experience, reference letters and appointments: Projects less than R1m	1	3

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

NAME : _____
(Block Capitals)

SIGNATURE : _____ DATE: _____
(of person authorised to sign on behalf of the Tenderer)

T2.17 TENDERER'S EXPERIENCE SCHEDULE *(30 points)* (CONTINUED)

Schedule A: General Experience

All respondents shall complete the following tables

ITEM	EMPLOYER, CONTACT PERSON AND TELEPHONE NUMBER	DESCRIPTION OF THE PROJECT	DETAILED DESCRIPTION AND DISCIPLINES INVOLVED	VALUE OF PROJECT	PROJECT DURATION	YEAR COMPLETED	PRINCIPAL AGENT, CONTACT PERSON AND TELEPHONE NUMBER
Eg	Ms A Some 031 xxx xxxx	Construction of Residences at Westville	Construction of 4-storey greenfield residential complex including site works, access, buildings and internal fit-out.	R5m	12 Months	2011	ABC Consulting, Ms A Some 031 xxx xxxx
A1 - Projects greater than R3m							
1							
2							
3							
A2 - Projects between R2m and R3m							
1							
2							
3							

T2.17 TENDERER'S EXPERIENCE SCHEDULE *(30 points)* (CONTINUED)

Schedule A: General

All respondents shall complete the following tables

ITEM	EMPLOYER, CONTACT PERSON AND TELEPHONE NUMBER	DESCRIPTION OF THE PROJECT	DETAILED DESCRIPTION AND DISCIPLINES INVOLVED	VALUE OF PROJECT	PROJECT DURATION	YEAR COMPLETED	PRINCIPAL AGENT, CONTACT PERSON AND TELEPHONE NUMBER
Eg	Ms A Some 031 xxx xxxx	Construction of Residences at Westville	Construction of 4-storey greenfield residential complex including site works, access, buildings and internal fit-out.	R5m	12 Months	2011	ABC Consulting, Ms A Some 031 xxx xxxx
A3 - Projects between R1m and R2m							
1							
2							
3							
A4 - Projects less than R1m							
1							
2							
3							

T2.18 ORGANOGRAM AND EXPERIENCE OF KEY PERSONNEL *(20 Points)*

The experience of assigned staff member/s in relation to the scope of work will be evaluated from the following points of view:

1) Submission of an Organogram indicating the following levels of resources as a minimum: Contracts Manager/ Site Agent, Master Installation Electrician, Foreman for the specific trades that make up the work (where applicable)

2) Years of Experience in the Position Indicated in the Organogram. Certified copy of relevant qualification is to be submitted.

3) The skills and experience of the assigned staff are of similar nature in the operational area which the staff has been resourced.

4) Failure to submit CV's or incomplete CV's of the personnel listed in the scoring below will be scored zero.

CVs of the construction team of **not more than 2 pages each** should be attached to this schedule: (define which CV's are required)

Each CV should be structured under the following headings:

PERSONAL PARTICULARS	NAME OF CURRENT EMPLOYER AND POSITION IN ENTERPRISE	YEARS OF EXPERIENCE IN THE CURRENT POSITION	SKILLS AND KNOWLEDGE OF THAT HAS A BEARING ON THE SCOPE OF WORK	EXPERIENCE HISTORY (DESCRIPTION AND VALUE OF THE PROJECTS)	REFERENCES

The scoring will be as follows:

ITEM	POSITION	CERTIFICATES		RELEVANT EXPERIENCE		MAX POINTS (20)
		TYPE	POINTS	YEARS	POINTS	
1	Contracts Manager / Site Agent	Relevant NQF 6 / or Equivalent	2	5 Years or more 2 – 5 Years	3 1	5
2	Master Installation Electrician	Relevant NQF 6 / or Equivalent	2	5 Years or more 2 – 5 Years	3 1	5
3	Full time Senior Foreman	Relevant NQF 6 / or Equivalent	2	5 Years or more 2 – 5 Years	3 1	5
4	Full time Health & Safety Representative	Relevant NQF 6 / or Equivalent	2	5 Years or more 2 – 5 Years	3 1	5

T2.18 ORGANOGRAM AND EXPERIENCE OF KEY PERSONNEL (CONTINUED) *(20 Points)*

Along with the Submission of the Organogram Specific to this Tender, Tenderers are required to submit the Key Personnel Schedule as indicated below.

KEY PERSONNEL	NAME	AGE	YEARS OF EXPERIENCE	PERIOD WITH COMPANY	HIGHEST VALUE CONTRACT HANDLED
Contracts Manager / Site Agent					
Master Installation Electrician					
Senior Foreman (1)					
Health and Safety Representative					

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

NAME : _____
(Block Capitals)

SIGNATURE : _____ DATE: _____
(of person authorised to sign on behalf of the Tenderer)
The Tenderer shall complete the following table to be submitted with the Tender

T2.19 METHOD STATEMENT / APPROACH / METHODOLOGY *(30 points)*

The Tenderer is **discouraged** from producing a generic method statement. The Method Statement must be concise and clearly demonstrate how this project will be implemented

The Method Statement shall clearly describe the sequencing of the construction activities.

The Tenderer is to describe in detail the responsibilities key personnel in relation to the construction activities. The Method Statement must also demonstrate what communication and documentation systems are put in place to ensure that the team will be operating at its optimum.

The Method Statement must clearly demonstrate how key components relating to time, risks and cost will be addressed and managed during all stages of the project life cycle.

The Method Statement shall also include the Tenderers quality control plan relevant to the activities described in the method statement.

METHOD STATEMENT	PROPOSAL IS SPECIFIC AND TAILORED TO SUIT TO OBJECTIVE	PROPOSAL ADEQUATELY DEAL WITH THE OBJECTIVES	PROPOSAL DOES NOT ADEQUATELY DEAL WITH THE OBJECTIVES AND OR TOO GENERIC	NO RESPONSE OR SUBMISSION	MAXIMUM POINTS (MAX SCORE 30)
The method statement demonstrates a clear technical methodology in terms of sequencing to meet the project deliverables.	6	4	2	0	6
The key components relating to time, risks and cost management have been clearly addressed.	6	4	2	0	6
Supervision and Quality Control Processes with regards to planning and control have been clearly addressed.	6	4	2	0	6
The Responsibilities of the Key Personnel has also been described.	6	4	2	0	6
Site Documentation, filing, archiving and communication systems are fully described.	6	4	2	0	6

T2.20 PRELIMINARY PROGRAMME *(10 Points)*

The Tenderer shall submit a detailed programme clearly decomposing the construction activities by indicating the hierarchy of activities.

The activities shall indicate the duration and the dependencies between the tasks.

PROGRAMME / IMPLEMENTATION	POINTS	MAXIMUM POINTS (10)
The tenderer has submitted irrelevant information to determine a score	0	0
The programme is not acceptable as it will not satisfy project objectives or requirements. The tenderer has misunderstood the scope of work and does not deal with the critical aspects of the project	2	2
The programme is generic, not practical and realistic, therefore is unlikely to satisfy project objectives or requirements. The tenderer has misunderstood certain aspects of the scope of the works and does not deal with the critical aspects of the project	4	4
The programme addresses certain specific project objectives. The programme does not adequately deal with the critical characteristics of the project	6	6
The programme addresses the specific project objectives and is sufficiently flexible to accommodate changes that may occur during execution	8	8
Besides meeting the "Good" rating, the important issues are approached in an innovative and efficient way, indicating that the tenderer has outstanding knowledge of state-of-the-art approaches	10	10

T2.21 PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2011, SUBSTANTIATED BY B-BBEE VERIFICATION CERTIFICATE

1. BID DECLARATION

Tenderers who claim points in respect of B-BBEE Status Level of Contribution must complete the following:

2. B-BBEE STATUS LEVEL OF CONTRIBUTION CLAIMED

B-BBEE Status Level of Contribution:_____(maximum of 10 or 20 points) must be in accordance with the table reflected in F3.11 and must be substantiated by means of a B-BBEE certificate issued by a Verification Agency accredited by SANAS or a Registered Auditor approved by IRBA or an Accounting Officer as contemplated in the CCA).

3. DECLARATION WITH REGARD TO COMPANY/FIRM

3.1 Name of company/firm _____

3.2 VAT registration number _____

3.3 Company registration number _____

3.4 TYPE OF COMPANY/ FIRM

☐ Partnership/Joint Venture / Consortium ☐ One person business/sole propriety

☐ Close corporation ☐ Company ☐ (Pty) Limited

[TICK APPLICABLE BOX]

3.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

_____

_____

_____

3.6 COMPANY CLASSIFICATION [TICK APPLICABLE BOX]

☐ Manufacturer ☐ Supplier ☐ Professional service provider

☐ Other service providers, e.g. transporter, etc. Please state below:

_____

3.7 Total number of years the company/firm has been in business?

_____

T2.21 PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2011, SUBSTANTIATED BY B-BBEE VERIFICATION CERTIFICATE (CONTINUED)

3. DECLARATION WITH REGARD TO COMPANY/FIRM (CONTINUED)

3.8 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, 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; and

(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 Tenderer 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 / tertiary institution for a period not exceeding 10 years, after the audi alteram partem (hear the other side) rule has been applied; and forward the matter for criminal prosecution

WITNESSES:

1._____ 2._____

SIGNATURE(S) OF TENDERER

_____

DATE: _____

T2.22 FORM OF OFFER AND ACCEPTANCE

[THE OFFER AND ACCEPTANCE FORM (PART C, C1.1 FORM OF OFFER AND ACCEPTANCE) MUST BE INSERTED HERE]

T2.23 PRICING SCHEDULE

[THE PRICING SCHEDULE (PART C, PART C2.2 BILLS OF QUANTITIES) MUST BE INSERTED HERE]

Note: Only locally produced or locally manufactured fabricated structural steel, fasteners and cable products materials will be considered with a minimum threshold of 100% for local production and content will be considered. Bidders who fail to reach the minimum threshold for local production and content will not be considered further for pricing scoring

Note: Only locally produced or locally manufactured distributions board materials will be considered with a minimum threshold of 85% for local production and content will be considered. Bidders who fail to reach the minimum threshold for local production and content will not be considered further for pricing scoring

The exchange rate to be used for the calculation of local production and content will be the exchange rate published by the South African Reserve Bank at 12:00 on the date of the invitation and only the South African Bureau of standards approved technical specifications SATS 1286:2011 will be used to calculate local content.

PROVIDE PROFESSIONAL SERVICES FOR THE INSTALLATION OF A BACKUP GENERATOR AT WADLEY HOUSE, 115 JABU NDLOVU STREET, PIETERMARITZBURG

ELECTRICAL TECHNICAL SPECIFICATION

November 2018

Rev 01

PREPARED BY:

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SMEC
Member of the Surbana Jurong Group

cogta
Department:
Cooperative Governance and Traditional Affairs
PROVINCE OF KWAZULU-NATAL

TITLE	:	**Provide Professional Services for the Installation of a Backup Generator at Wadley House, 115 Jabu Ndlovu Street, Pietermaritzburg**
Project Team	:	SMEC Consulting Engineers (Pty) Ltd
Client	:	Co-Operative Governance & Traditional Affairs
SMEC Project No	:	DM0163
Status of Report	:	Electrical Technical Specification
SMEC Report No	:	COGTA GENSET - ELECTRICAL SPECIFICATION - REV00
Key Words	:	Electrical / Standby Generator
Date of this Issue	:	21 November 2018

For SMEC Consulting Engineers (Pty) Ltd

Compiled by:	N Miningwa		21 – Nov - 2018
	Initials & Surname	Signature	Date
Reviewed by:	J Bhengu		21 – Nov - 2018
	Initials & Surname	Signature	Date
Approved by:	J Bhengu		21 – Nov - 2018
	Initials & Surname	Signature	Date

Approval by Client

Approved by:			
	Initials & Surname	Signature	Date

TABLE OF CONTENTS

DOCUMENTS FORMING PART OF THIS SPECIFICATION

Documents forming part of this installation specification:

SMEC DOC NO.	TITLE
DM0163	ELECTRICAL SPECIFICATION (THIS DOCUMENT)
DM0163	BILL OF QUANTITIES (THIS DOCUMENT)

DOCUMENTS FORMING PART OF THIS SPECIFICATION

Documents forming part of this installation specification and obtainable from Co-Operative Governance & Traditional Affairs and Department of Public Works:

COGTA / DPW DOC NO.	TITLE
	Electrical Installation Specifications

DRAWINGS FORMING PART OF THIS SPECIFICATION

Drawings forming part of this installation specification:

Project No.	Rev.	Description	COGTA No.
DM0163-0-EE-P-DRG-DET-0001-01	A	DB-Main/Gen Single Line Diagram	T.B.A.
DM0163-0-EE-P-DRG-DET-0002-01	A	Proposed Electrical Site Plan	T.B.A.
DM0163-0-EE-P-DRG-DET-0003-01	A	Typical Cable Trench Detail	T.B.A.
DM0163-0-EE-P-DRG-DET-0004-01	A	Typical Electrical Manhole Detail	T.B.A.

2. SCOPE OF WORK

This specification covers the manufacture, supply, delivery, offloading, installation, testing, commissioning and handing over of all the electrical works for Wadley House Standby Generator installation required in Wadley House, 115 Jabu Ndlovu Street in Pietermaritzburg in the Province of KwaZulu Natal.

Site co-ordinates 29°36'30.03"S, 30°22'31.82"E.

The attention of the Tenderer is drawn to the Bill of Quantities that forms an integral part of the specification and especially the following clauses:

Where the term “or other approved” is used in connection with proprietary materials or articles, it is to be understood that approval shall be at the sole discretion of the Engineer. Where brand or trade names are referred to in the Drawings and Bill of Quantities, these shall indicate the quality and type of material or fitting required and no substitution of materials so specified will be permitted, unless the authority of the Engineer has been obtained, in writing, before tenders close.

The drawings listed in the index form an integral part of this specification, but are issued for TENDER PURPOSES ONLY and are not intended to be used for construction without the prior written approval of the Client’s Representative.

The positioning of all equipment, light fittings, light switches, socket outlets etc. on the drawing, is schematic only and in some cases may not correspond to the actual layout of the buildings. The successful Tenderer shall be responsible for indicating the correct position of all electrical equipment on their working drawings to enable the Client’s Representative to produce “as built” drawings.

2.1 WORK INCLUDED

The successful Tenderer shall provide all labour, materials, equipment, tools and supervision to transport, assemble, erect, install, connect, test and place into service the complete electrical works. The works shall consist of, but are not limited to:

The supply and installation of a 300kVA standby generator unit including automatic changeover unit and associated accessories;

The installation of existing supply cables from the substation to the new main 400V switchboards in existing meter room complete with terminations and joints;

Supply and installation of distribution boards complete terminations and joints;

Supply and installation of earthing and lightning protection system for the new installation complete with earth conductors, rods and lightning arrestors;

Tenderers are to allow for ALL work and materials indicated and implied on the drawings, whether indicated in the specification or not, to deliver a complete and operational project;

2.2 SPECIAL CONDITIONS

All work shall be done by an electrical contractor registered with the Electrical Contracting Association of South Africa (ECA) and Department of Labour.

The electrical contractor shall provide certified copies as proof of accreditation and registration with the ECA and Department of Labour prior to commencement at the site hand-over meeting and prior to commencement of any work.

Lightning protection soil resistivity tests, risk assessment, detail designs and installation work shall be done by a certified person and who are able to provide proof of successfully completed projects with contact details and references.

Electronic systems, detail designs and installation work shall be done by a competent certified person and who are able to provide proof of successfully completed projects with contact details and references.

2.3 SITE ESTABLISHMENT

The successful Tenderer shall provide all the facilities required to enable him to undertake the Contract Works.

2.4 STANDARDS AND CODES OF PRACTICE

All installation work shall comply with the following Specifications, Legal Requirements and Codes of Practice:

LEGISLATION, STANDARDS AND CODES OF PRACTICE – ELECTRICAL RELATED	
NUMBER	**TITLE**
OHSA	Occupation Health & Safety Act (act 85 of 1993), with Regulations included
BS 1363-2	13 A plugs, socket-outlets, adaptors and connection units – Specification for 13 A switched and un-switched socket-outlets
ISO 9001 – 9004	Quality Management Systems
ISO 3046-1	Part 1: Standard reference conditions, declarations of power, fuel and lubricating oil consumptions, and test methods
ISO 3046-3	Part 3: Test measurements
ISO 3046-4	Part 4: Speed governing
ISO 3046-5	Part 5: Torsional vibrations
ISO 3046-6	Part 6: Over speed protection
ISO 3046-7	Part 7: Codes for engine power
NRS 048-4	Quality of supply
NRS 0424-1	Diesel alternator set Part1: Diesel alternator sets for fixed installations-Preferred requirements for application their organisations by the DC and standby equipment representative user group.
SANS 10086-1	The installation, inspection and maintenance of equipment used in explosives atmospheres Part 1: Installations including surface installations on mines.
SANS 204	Energy efficiency in buildings
SANS 10108	The classification of hazardous locations and the selection of apparatus for use in such locations.
SANS 1012	Electric light dimmers
SANS 10142-1	The wiring of premises. Part 1: Low-voltage installations
SANS 1019	Standard voltages, currents and insulation levels for electricity supply
SANS 10198-1-14	The selection, handling and installation of electric power cables of rating not exceeding 33 kV. Parts 1 to 13
SANS 10199	The design and installation of earth electrodes

SANS 1029	Miniature substations
SANS 10292 (SABS 0292)	Earthing of low-voltage (LV) distribution systems.
SANS 10313	The protection of structures against lightning
SANS 1063	Earth rods, couplers and connections
SANS 1065-1 & 2	Metal conduits and fittings (screwed-end
SANS 1085	Wall outlet boxes for the enclosure of electrical accessories
SANS 1195	Busbars.
SANS 10114-1	Interior lighting Part 1: Artificial lighting of interiors
SANS 10114-2	Interior lighting Part 2: Emergency lighting
SANS 1213	Mechanical cable glands
SANS 1239	Plugs, socket-outlets and couplers for industrial purposes
SANS 1339	Electric cables – Cross-linked polyethylene (XLPE) insulated cables for voltages 3,8/6,6 kV to 19/33 kV
SANS 1411-1	Materials of insulated electric cables and flexible cords – Part 1: Conductors
SANS 1418-1	Aerial bundled conductor systems – Part 1: Cores.
SANS 1433-1	Electrical terminals and connectors – Part 1: Terminal blocks having screw and screw less terminals.
SANS 1433-2	Electrical terminals and connectors – Part 2: Flat push-on connectors.
SANS 1473-1	Low-voltage switchgear and control gear assemblies – Part 1: Type-tested, partially type-tested and specially tested assemblies with a rated short-circuit withstand strength above 10 kea
SANS 1507-1 Parts 1-6	Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1 900/3 300 V)
SANS 156	Molded-case circuit-breakers
SANS 1574-3	Electric flexible cores, cords and cables with solid extruded dielectric insulation – Part 3: PVC-insulated cores and cables.
SANS 1574-5	Electric flexible cores, cords and cables with solid extruded dielectric insulation – Part 5: Rubber-insulated cores and cables.
SANS 1632-1	Batteries Part 1: General information-Definitions, abbreviations and symbols
SANS 164-0 parts 1 - 6	Plug and socket-outlet systems for household and similar purposes for use in South Africa
SANS 1665	Metal-clad switchgear for rated a.c. voltages above 1 kV and up to and including 36 kV – General requirements and methods of test
SANS 1765	Low-voltage switchgear and control gear assemblies (distribution boards) with a rated short-circuit withstand strength up to and including 10 kA
SANS 1777	Photoelectric control units for lighting (PECUs)
SANS 1799	Watt-hour meters – AC electronic meters for active energy
SANS 1874	Metal-enclosed ring main units for rated a.c. voltages above 1 kV and up to and including 24 kV.
SANS 1973-1	Part 1 Type tested Assemblies with Stated deviations and a rated short circuit withstand strength over 10kA
SANS 1973-3	Low-voltage switchgear and control gear ASSEMBLIES – Part 3: Safety of ASSEMBLIES with a rated prospective short-circuit current of up to and including 10 kA
SANS 1973-8	Low-voltage switchgear and control gear ASSEMBLIES – Part 8: Safety of minimally tested ASSEMBLIES (MTA) with a rated short-circuit current above 10 kA and a rated busbar current of up to and including 1 600 A a.c. and d.c
SANS 337	Stove couplers
SANS 529	Heat-resisting wiring cables
SANS 556-1	Low-voltage switchgear – Part 1: Circuit-breakers
SANS 60044-1 to 5	Instrument transformers – Part 1 to 5
SANS 60079 (all parts)	Electrical apparatus for explosive gas atmospheres

SANS 60137	Insulated bushings for alternating voltages above 1 000 V
SANS 60265-1	High-voltage switches – Part 1: Switches for rated voltages above 1 kV and less than 52 kV
SANS 60269-1	Low-voltage fuses
SANS 60282-1	High-voltage fuses – Part 1: Current-limiting fuses
SANS 60282-2	High-voltage fuses – Part 2: Expulsion fuses
SANS 60309-1	Plugs, socket-outlets and couplers for industrial purposes – Part 1: General requirements
SANS 60439-1 to 5	Low-voltage switchgear and control gear Assemblies Parts1 to 5
SANS 60502-4	Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1,2 kV) up to 30 kV (Um = 36 kV) – Part 4: Test requirements on accessories for cables with rated voltages from 6 kV (Um = 7,2 kV) up to 30 kV (Um = 36 kV).
SANS 60529	Degrees of protection provided by enclosures (IP Code).
SANS 60669-1	Switches for household and similar fixed electrical installations – Part 1: General requirements.
SANS 60669-2-1/	Switches for household and similar fixed electrical installations – Part 2-1: Particular requirements – Electronic switches.
SANS 60896-21	Stationary Lead Acid Batteries Part 21: Valve regulated types- Methods of Test
SANS 60896-22	Stationary Lead Acid Batteries Part 21: Valve regulated types-Requirements
SANS 60947-2	Low-voltage switchgear and control gear – Part 2: Circuit-breakers
SANS 60947-3	Low-voltage switchgear and control gear – Part 3: Switches, disconnectors, switch-disconnectors and fuse combination units.
SANS 60947-4-1	Low-voltage switchgear and control gear – Part 4-1: Contactors and motor-starters – Electromechanical contactors and motor-starters
SANS 60947-4-2	Low-voltage switchgear and control gear – Part 4-2: Contactors and motor-starters – AC semiconductor motor controllers and starters.
SANS 60947-4-3	Low-voltage switchgear and control gear – Part 4-3: Contactors and motor-starters – AC semiconductor controllers and contactors for non-motor loads
SANS 60947-5-5	Low-voltage switchgear and control gear – Part 5-5: Control circuit devices and switching elements Electrical emergency stop device with mechanical latching function
SANS 60947-6-1	Low-voltage switchgear and control gear – Part 6-1: Multiple function equipment –Transfer switching equipment.
SANS 61000-3-4	Electromagnetic compatibility - Limitation of emission of harmonic currents in low-voltage power supply systems for equipment with rated current greater than 16 A
SANS 61000-4-7	General guide on harmonics and inter-harmonics measurements and instrumentation, for power supply systems and equipment connected thereto
SANS 61008-1	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – Part 1: General rules.
SANS 61084-1	Cable trunking and ducting systems for electrical installations – Part 1: General requirements.
SANS 61238-1	Compression and mechanical connectors for power cables for rated voltages up to 30 kV (Um = 36 kV) – Part 1: Test methods and requirements
SANS 61312-3	Protection against lightning electromagnetic impulse – Part 3: Requirements of surge protective devices (SPDs).
SANS 61347-2-2	Lamp control gear – Part 2-2: Particular requirements for d.c. or a.c. supplied electronic step-down convertors for filament lamps
SANS 61386-1	Conduit systems for cable management – Part 1: General requirements.
SANS 61386-21	Conduit systems for cable management – Part 21: Particular requirements – Rigid conduit systems
SANS 61386-22	Conduit systems for cable management – Part 22: Particular requirements – Pliable conduit systems.
SANS 61386-23	Conduit systems for cable management – Part 23: Particular requirements – Flexible conduit systems
SANS 61558-1	Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests.
SANS 61641	Arc Testing

SANS 61643-1	Low-voltage surge protective devices – Part 1: Surge protective devices connected to low-voltage power distribution systems – Requirements and tests.
SANS 61643-12	Low-voltage surge protective devices – Part 12: Surge protective devices connected to low-voltage power distribution systems – Selection and application principles
SANS 62053-11	Electricity metering equipment (a.c.) – Particular requirements – Part 11: Electromechanical meters for active energy (classes 0,5, 1 and 2).
SANS 62053-21	Electricity metering equipment (a.c.) – Particular requirements – Part 21: Static meters for active energy (classes 1 and 2).
SANS 62271 All Parts	High-voltage switchgear and control gear
SANS 62305-1	Protection of structures against lightning Part 1: General principles
SANS 62305-1	Protection against lightning – Part 1: General principles.
SANS 62305-2	Protection against lightning – Part 2: Risk management.
SANS 62305-3	Protection against lightning – Part 3: Physical damage to structures and life hazard
SANS 62305-4	Protection against lightning – Part 4: Electrical and electronic systems within structures
SANS 767-1	Earth leakage protection units – Part 1: Fixed earth leakage protection circuit-breakers.
SANS 780	Distribution transformers
SANS 950	Un-plasticized polyvinyl chloride rigid conduit and fittings for use in electrical installations
SANS 60044-1	Instrument transformers Part 1: Current transformers
SANS 60044-2	Instrument transformers Part 2: Inductive voltage transformers
SANS 60265-1	High-voltage switches Part 1: Switches for rated voltages above 1 kV and less than 52 kV
SANS 62271-200	A.C. metal-enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV
SANS 60439-1	Low-voltage switchgear and control gear assemblies Part 1: Type tested and partially type-tested assemblies
SANS 60529	Degrees of protection provided by enclosures (IP code)
SANS 60947-1	Low-voltage switchgear and control gear Part 1: General rules
SANS 60947-2	Low-voltage switchgear and control gear Part 2: Circuit-breakers
SANS 60947-4	Low-voltage switchgear and control gear Part 4: Contactors and motor-starters
SANS 60947-5	Low-voltage switchgear and control gear Part 5: Control circuit devices and switching elements
SANS 60947-6	Low-voltage switchgear and control gear Part 6: Multiple function equipment
SANS 61439-1	LV Control-Gear and assemblies
SANS 60076 1-21	Power Transformers
SANS 10400	Code of Practice for the Application of the National Building Regulations (as amended)
	COGTA and KZN Public Works requirements
	Electricity Regulation Act, No 4 of 2006 (as amended)
	The National Building Regulations and Building Standards Act 1996 (Act 29 of 1996) (as amended)
	Local Municipal By-Laws and any special requirements of the local supply authority
	Energy Code of Conduct for all Government Buildings
	National and Local Authority Fire Regulations and SANS 10400-T: 2011 (Ed 3)
	ICASA Regulations
	Construction Regulations 2003
	The Local Government Act 1998 (Act 10 of 1998 (Gauteng), municipal by-laws and any special requirements of the local supply authority
	The Fire Brigade Services Act 2000 (Act 14 of 2000)
	The Post Office Act 1998 (Act 124 of 1998)
	The Electricity Act 1996 (Act 88 of 1996)

	The Regulations of the local Gas Board where applicable
	The National Water Act 1998 (Act no. 36 of 1998)
	The Water Services Act 1997 (Act no. 108 of 1997)
	The General Authorizations (Water act)
	The Environmental Conservation Act 1998 (Act no. 73 of 1989)
	The National Environmental Management Act 1998 (Act no. 107 of 1998)

2.5 CLIENT STANDARDS

In line with accepted practice, the Client has, from time to time, standardised on the supply of various items of equipment. The Tenderer shall undertake, and by the submission of his tender confirms that he has undertaken, to inform himself of the status of such standardisation requirements ruling at the time of tender, and any deviations from such standards shall be corrected by the successful Tenderer at his expense.

2.6 MAINTENANCE OF INSTALLATIONS

With effect from the date of the issue of the Completion (First Delivery Certificate) the successful Tenderer 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.

The maintenance period shall be 12 months.

If during the said period the installations are not in working order, due to the fault of the successful Tenderer, or if the installations develop defects, the successful Tenderer shall immediately upon being notified thereof take steps to remedy the defects and make any necessary adjustments.

Should such stoppages however become so frequent as to become troublesome, or should the installations otherwise prove unsatisfactory the successful Tenderer shall, if called upon by the Client, at his own expense, replace the affected part or the whole of the installations or such parts thereof as the Client may deem necessary with apparatus specified by the Client.

2.7 BALANCING OF LOAD

The successful Tenderer is required to balance the load as equally as possible over the multiphase supply where applicable.

3. DIESEL ALTERNATOR GENERATING SET

2.1 GENERAL

This specification covers the design, manufacture, assembly, delivery to site, off-loading, installation, testing, commissioning and handing over a new and in first class working order of a complete sound attenuated self-contained emergency diesel alternator generator set and all ancillary equipment necessary and to comply with the requirements of this specification.

The plant generally shall comprise a diesel engine coupled to an alternator mounted on a steel fabricated base frame that incorporates an integral fuel tank, starting batteries,

automatic charging unit, interconnecting cables, a control panel housing the generator M.C.C.B. with all necessary switchgear, change-over starting and interconnecting cables and on-load bypass switch.

Any deviation from this Standard Specification or additional information will be given in the Specific Specification. In case of contradiction between this Standard Specification and the Specific Specification, the Specific Specification shall apply.

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.

The questionnaire following this Specification must be completed by Tenderers in all respects.

The client reserves the right to accept any portion of any tender and does not bind itself to accept the lowest or any tender.

2.2 SITE CONDITIONS

The stand-by generator set herein specified is to be installed outdoors at the Wadley house Cogta Facilities in Pietermaritzburg in the province of KwaZulu Natal.

The following site conditions will be applicable and equipment shall be suitably rated to develop their assigned rating and duty at these conditions:

Description	Condition
Height above sea level	417m
Maximum ambient temperature	45ºC
Maximum ambient humidity at lowest temperature	98%

Tenderers are advised to acquaint themselves with the site conditions including access, as no claim on the grounds of lack of knowledge will be entertained.

2.3 OUTPUT POWER RATING & VOLTAGE

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

Description	Specification
No load voltage – 3 phase, 4 wire system requirements	415/240V
Full load voltage – 3 phase, 4 wire system requirements	400/230V
Rating at 0.8 power factor	300kVA
From start-up - 60% of initial load within	15 sec
Balance of 40% of the load after a further	10 sec
Frequency	50 Hz
Noise level DBA at 1m	70 dba

2.4 CONSTRUCTION

The engine and alternator of the set shall be built together on a common hot dipped galvanised steel base frame with anti-vibration mountings between the engine/alternator

combination and base. The set must be able to be placed direct onto the plant room concrete floor.

The frame must be of the "DUPLEX" type.

The generator set shall be bolted to the base frame by means of stainless steel bolts, nuts and washers.

Provision shall be made in the design of the base for outgoing cables and the main earth connection to pass through and to be connected and disconnected whenever necessary.

2.5 OPERATION

The diesel generating set and its ancillary equipment shall normally operate as an automatic mains failure unit. It shall be capable of delivering its full rated output at any time and any ambient conditions likely to occur at the site. The set is required to supply the essential power requirements in the case of a mains supply failure and be rated for continuous service.

The generating set will not be required to be synchronized with the main supply.

The set shall be fully automatic i.e. it shall start when any one phase of the mains supply fails 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 fail proof system of suitably interlocked contactors shall be supplied and fitted to the change-over switchboard.

Important Notice: 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.

Essential power from the stand-by generating plant will be required for minimum 8 hours continuous running capacity including the day tank (1000 litres).

2.6 ENGINE

2.7 GENERAL

The engine must comply with the requirements laid down in BS 5514 and must be of the atomised injection, compression ignition type, running at a speed not exceeding 1500 r.p.m. at normal full load conditions. The engine must be rated for the required electrical output of the set, when running under any of the specified extreme site conditions.

The engine shall be of the multi cylinder, four stroke cycle, cold starting, direct fuel injection, compression ignition type, suitable for operation on commercial grade diesel fuel.

Any one of the following manufacturer's engines may be used: John Deere, Perkins, Deutz, Volvo, Mitsubishi, Caterpillar or similar approved and confirmed by the Engineer in writing prior to closing of the tender.

The starting period for either manual or automatic switching-on until the taking over by the generating set 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.

2.8 RATING

The rating of the diesel generating set shall be based on operation of the set when equipped with all necessary accessories such as radiator fan, air cleaners, lubricating oil pump, fuel transfer pump, fuel injection pump, water circulating pump, and battery charging alternator.

The set shall be capable of delivering the specified output continuously under the site conditions, without overheating. The engine shall be capable to deliver an output of 110% of the specified output for one hour in any period of 12 hours consecutive running in accordance with BS 5514.

In addition the engine shall be capable of delivering 110 % load for one hour, after the set has been running at full load for a period of six hours and shall, after the overload period of one hour be capable of maintaining the rated output continuously without any undue mechanical strain, overheating, incomplete fuel combustion or other adverse effects.

The engine shall have sufficient capacity to start up and shall within 15 seconds from mains failure, supply the full rated load at the specified voltages and frequency.

2.9 DERATING

The engine must be derated for the site conditions as set out in this document.

The derating of the engine for site conditions shall be strictly in accordance with BS 5514 of 1977 as amended to date. Any other methods of derating must have the approval of the Client and must be motivated in detail. Such derating must be guaranteed in writing and proved by the successful Tenderer at the site test.

2.10 STARTING AND STOPPING

The engine shall be fitted with a 12/24 volt starting system of sufficient capacity to crank the engine at a speed, which will allow starting of the engine. The engine shall easily start from cold condition without the use of any special ignition devices under summer as well as winter conditions.

The starting equipment shall include a D.C. starter motor engaging directly on the flywheel ring gear.

Tenderers must state what type of heating is provided to ensure easy starting in cold weather. Full details of this equipment must be submitted. In the case of water cooled engines, any electrical heaters shall be thermostatically controlled.

The electrical circuit for such heaters shall be taken from the control panel, and must be protected by a suitable circuit breaker.

2.11 STARTER BATTERY

The set must be supplied with a fully charged heavy duty type battery, charging alternator and maintenance free batteries.

The battery shall be one of the following reputable manufacturers: Willard; EXIDE; Delco/Deltec or similar approved by the Engineer prior to ordering.

The batteries shall be mounted in a lockable battery box being protected against the corrosive action of the battery electrolyte.

The battery must have sufficient capacity to provide the starting torque stipulated by the engine manufacturer. The battery capacity 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.

The batteries shall be connected to the engine with suitably rated P.V.C. insulated flexible leads.

The batteries shall have sufficient capacity to provide three automatic attempts to start immediately followed by three manual attempts without any appreciable drop in voltage. The automatic attempts to start shall each be of not less than 10 seconds duration with 10 second intervals between and the manual attempts shall be based on the same cranking period.

A device shall be provided to limit the cranking time of each automatic attempt to start, to the 10 seconds specified above and to provide three automatic attempts after which the automatic starting mechanism will cut out until manually reset and at the same time sound an audible alarm and illuminate the L.E.D. on the AMF 120 controller. The engine driven battery charging alternator shall have sufficient capacity to recharge the batteries back to normal starting requirements in not more than six hours.

A battery charging unit of the trickle charge type shall be provided to maintain the batteries at full capacity. The charging equipment shall be connected so that the battery is normally charged from the mains, but is also charged under mains failure conditions from the diesel generating plant and if required, via an inhibitor relay to prevent dual charging. The unit shall be complete with voltmeter, push button test, D.C. and A.C. protective gear. The charging unit shall be incorporated in the diesel generator control cabinet.

2.12 COOLING

The engine shall be of the water cooled type and the cooling system shall be of sufficient capacity to cool the engine when the set is delivering its full rated load in the ambient conditions specified.

The engine shall be equipped with a heavy duty tropical type pressurised radiator complete with engine driven fan and centrifugal water circulating pump and a thermostat to maintain the engine at the manufacture's recommended temperature level.

A thermostatically controlled immersion heater shall be provided and fitted in the engine cooling circuit to ensure easy starting of the engine at any ambient temperature. The heater shall be fitted that it can easily be withdrawn without having to drain the system. The heater shall be suitable for a 230 volt 50 Hz supply.

A low radiator level shutdown sensor switch shall be fitted in the radiator header tank. A separate temperature sensor must be fitted on the block for the normal high engine temperature shutdown and gauge for protection 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 be supplied complete with engine cooling system shall be supplied filled with pure glycol or anti-freeze liquid and 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 (e.g. low oil pressure).

A permanent notice is to be affixed adjacent to the header tank that only anti-freeze or clean water is to be used for filling or topping up purposes.

All air ducts for the cooling of the engine are to be allowed for.

2.13 RADIATOR EXTRACT DUCTING

A galvanized duct shall be provided and installed between the radiator face and outlet louver to positively duct the hot expelled air out of the plant room.

The air shall not re-circulate in the room and the air duct shall fully cover and enclose the space between the cooling fan cowling/ radiator face to the air outlet louvers in the wall.

2.14 AIR CLEANERS

The engine shall be provided with one or more dry type air cleaners which shall provide positive air filtration.

2.15 LUBRICATION

The engine shall be provided with a forced feed lubricating system with a gear type lubricated oil pump for supplying oil under pressure to the main bearings, crank pin bearings, pistons, piston pins, timing gears, camshaft bearings, valve rocker mechanism and all other moving parts.

Full flow replaceable element type oil filters, conveniently located for servicing, shall be provided. Filters shall be provided with a spring loaded by-pass valve to ensure circulation if the filters become clogged.

An automatic low oil pressure cut-out must be fitted, operating the stop solenoid on the engine and giving a visible and audible indication of the switchboard.

2.16 CYLINDER LINERS

The engine shall be provided with removable wet or dry type cylinder liners of close grained alloy iron.

2.17 FUEL AND FUEL PUMP

The engine and fuel injection equipment shall be capable of satisfactory performance on a commercial grade of distilled petroleum fuel oil such as Number 2 fuel oil, (commercial grade diesel fuel normally available in South Africa).

2.18 DAY FUEL TANK

The fuel tank shall be an integral part of the base frame of the generator set. The tank shall have sufficient capacity to run the engine on full load for a minimum period of 8 hours.

The tank shall be fitted with a suitable filter, gauge, removable inspection cover, drain, filler cap, low level and extra low shutdown alarm sensors. These shall supply an audible and visible signal on the control panel and building management system.

A water trap and fuel filter must be fitted in the fuel pipeline from the tank to the engine.

The tank shall have a removable cover suitable to facilitate the cleaning of the tank. The cover, with packing, shall be bolted in position with four bolts.

A drainage valve shall be fitted to the tank to drain sludge and water.

The tank shall be fitted with a mechanical contents indicator or meter calibrated 0% to 100%. A sight tube type will not be acceptable.

A visual level gauge, removable inspection cover, drain, Low Level and Extra Low-Level shutdown alarm sensors shall be provided which shall supply an audible and visible signal on the control panel. The tank shall be provided with a filler cap which is positioned to conveniently facilitate the filling of the tank from a 20-litre container.

The interconnection fuel piping between the engine and day tank shall consist of copper tubes and the connection to vibrating components shall be in flexible tubing with armoured covering.

The set shall be supplied with switches and sensors to start and stop the electric self-priming electric pump. The pump shall be complete with fuel piping and be connected to the bulk fuel tank.

In addition, the set shall be supplied with a hand operated “wing pump” and a suitable length of oil resistant hose. The hose shall be of the “push lock” type and shall be sufficient in length to extend to the door for filling from 200 litre drums.

2.19 BULK FUEL TANK (NOT REQUIRED IN THIS PROJECT)

The composite bulk fuel tank together with all interconnecting supply and return pipes, low level alarm, fuel level indicators, lockable shut off valves, breather and an automatic filling system shall be provided. This installation shall be carried out by a specialized petrochemical installation contractor in accordance with SABS 0131 Part 2/1979 and SABS 089 Part 3/1991. The bulk fuel tank shall be positioned adjacent to the generator room.

The automatic filling of the day tank, from the bulk tank, shall be controlled by level switches mounted in the day tank.

The bulk tank shall be encased in a bund walled area that is of sufficient size to contain any spillage equivalent in volume of the bulk storage tank.

The containment area shall be fitted with an outlet pipe located at floor level and a lockable valve located on the outside of the bund wall.

The complete system including bulk (if considered for additional hours) and day tank shall be sized to allow the set to run continuously for min 8 hours at full load on day fuel tank and additional hours on bulk fuel tank.

2.20 GOVERNOR

The speed of the engine shall be controlled by the latest electronic type controller, or by a Class A1 accuracy governor to maintain a speed for 50 Hz during any operational or site conditions.

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 ± 5% at all loads between zero and rated load.

2.21 EXHAUST SYSTEM & SILENCER

The engine shall be fitted with an efficient stainless steel exhaust system. Flexible bellows shall be fitted between the exhaust outlet and the silencer. The exhaust silencer shall be suitably lagged then clad in polished stainless-steel sheet.

The flexible piping must at no account be used to form a bend or compensate for misalignment. The silencer and discharge piping shall be suitably supported with stainless steel brackets, nuts, bolts and washers.

The silencer shall be located in the plant room and the discharge pipe run from the silencer out through the wall. The silencer shall be of the highly efficient type suitable for use in residential areas and shall be capable of providing 20 to 30 decibels of suppression.

The exhaust pipe shall be installed in such a way that the exhaust fumes will not cause discomfort to the public or adjacent activities.

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 into the plant room and shall be protected against the ingress of driving rain at 45° to the horizontal. The pipe must extend minimum of 0,5m above the room guttering.

Openings through the wall are to be neatly drilled and stainless steel flashing plates must be fitted on both sides.

2.22 FLYWHEEL

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

The flywheel shall be designed to limit the cyclic irregularities to within the limits laid down in BS 5514 as amended.

2.23 ENGINE INSTRUMENTS

The following instruments with suitable limit markings shall be provided on the generator panel:

- Water temperature gauge. The gauge shall be calibrated at the lower part of the temperature range, so that when the engine is inoperative, the temperature of the water is readable when heated by the immersion heater only. The temperature range shall extend beyond the operating range of the engine.
- Lubricating oil pressure gauge.
- Battery charging ammeter.

2.24 ACCESSORIES

The engine must be supplied complete with all accessories, air and oil filters, three (3) instruction manuals and a comprehensive spare part list.

- An easily removable drip tray must be fitted under the engine. The tray must be large enough to catch all dripping from any part of the engine.
- Alternator

2.25 CONSTRUCTION AND MANUFACTURE

The generator shall be a revolving field type, coupled directly to the engine flywheel through a flexible disc for positive alignment. The generator housing shall bolt directly to the engine flywheel housing and shall be equipped with a heavy-duty ball bearing support for the rotor. The motor shall be dynamically balanced up to 25 % over speed.

The generator shall be of heavy duty compact design. Insulation shall be Class H to BS 5514.

The generator field excitation shall be performed by a rotating exciter mounted on the generator motor shaft through a brushless rotating diode system. The voltage regulator shall be of the static-magnetic type with silicon diode control. It shall be mounted on the top or side of the generator and enclosed in a drip proof enclosure.

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 BS 5000 for rotor and stator windings.

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

The alternator manufacturer shall be Leroy Somer, Marelli Motori, Newage Stamford or similar approved and confirmed by the Engineer in writing prior to closing of the tender.

2.26 REGULATION

A built-in voltage adjusting rheostat shall provide 10 % voltage adjustment.

The alternator must be self-regulated in accordance with BS 4999 Part 4 of 1977 - Class VR 2.31.

The inherent voltage regulation must not exceed plus or minus 2,5% of the nominal voltage specified, at cold or hot conditions and all loads with a power factor between unity and 0,8 lagging and within the driving speed variation of 4,5% between no-load and full load.

The shape for the voltage and current wave shall be within the limits laid down by BS 5000.

Upon application of any load specified in transient, maximum voltage dip shall not exceed 20% of the nominal voltage when measured at the alternator terminals.

2.27 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 2.5% of the steady state within 300 milli-seconds following the application of full load and the transient voltage dip shall not exceed 18%.

Upon application of any load specified in transient, maximum voltage dip shall not exceed 20% of nominal voltage when measured at the alternator terminals.

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

2.28 WINDINGS

The alternator stator windings shall be star connected with the star point brought out and connected to the neutral terminal in the terminal box to provide a 400/230 volt supply under full load conditions.

2.29 TERMINAL BOX

The terminal box shall be fitted to suit the cable route and it shall be large enough to allow for glanding and connecting the cables specified.

2.30 RADIO AND T.V. INTERFERENCE

The alternator set shall be suppressed within the limits of B.S. 800 against radio and television interference against radio and television interference in accordance with South African statutory requirements.

2.31 COUPLINGS

The engine and alternator must be directly coupled by means of a high quality flexible coupling, equal and similar to the "HOLSET" type.

2.32 CHANGE-OVER SWITCHBOARD AND CONTROL PANEL

A. CONSTRUCTION

The panel shall be designed for the control of the diesel generating set with instrumentation and protective devices to meet both manual and automatic mode requirements.

The control panel shall have a robust construction, floor mounted / generator frame mounted, totally enclosed and dust proof.

The switchboard shall be of the free standing type / generator frame mounted, manufactured from 3CR12 steel, carried on a substantial framework construction with front entry through hinged doors.

Internal chassis plates, circuit breaker pans and gland plates shall be provided.

The gland plate shall be suitably braced to prevent distortion after the cables are secured thereto.

Suitably size holes shall be punched in the gland plates for the required number of cable terminations for both incoming and outgoing cables. Holes which are not used must be blanked off with blind grommets.

Cables shall be secured to the gland plate by means of SABS approved glands. Cable glands shall be Pratley, C.C.G. type or similar approved.

Special attention shall be given to vermin proofing and dust sealing.

All hinged doors shall have suitable bracing to ensure rigidity with heavy duty hinges and door handles.

Prior to painting, all steelwork must be thoroughly degreased and de-rusted and then primed with a zinc chromate primer. All internal steel chassis plates, gland plates and switchgear brackets shall be painted with two coats of white powder epoxy paint and all exterior steel surfaces finished with red powder epoxy paint.

The switchboard must be supplied and installed to incorporate the equipment necessary for the control and protection of the generating set, the automatic change-over, and the battery charging.

The control panel shall be flush fronted with all equipment to be mounted back on the front panel on suitable supports.

All equipment, connections and terminals shall be easily accessible. The front panels may be either hinged or be removable and fixed with studs and chromium-plated cap nuts.

Self-tapping screws shall not be used in the construction of the board.

Cabling, Bus-Bars, Wiring & Switchgear

The contractor shall install all interconnecting cables between the alternator and control panel.

All cabling, bus-bars and wiring shall be adequately rated and suitably supported.

Control wiring shall be neatly laced and numbered with durable plastic ferrules, for easy tracing.

Suitable terminals are to be provided for incoming and outgoing cables.

Circuit breakers shall be of moulded case construction.

All instrumentation shall be of 1,5 % accuracy and their performance shall comply with B.S. 89. The instruments shall be flush mounted and the dial dimensions shall be 96 mm x 96 mm.

Tenderers must give an assurance with their tender that replacements for the equipment, switchgear and instruments used in the construction of the panel are readily available from stock held in the Republic of South Africa.

All switch and control gear shall be rated for the highest of the system fault level specified or the generator fault level.

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

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 end shall be fitted with a wire marker of approved type and numbering of these markers must be shown on the wiring diagram of switchboards.

Control wiring shall be installed in PVC trunking as far as possible. The trunking shall be properly fixed to the switchboard steelwork. Adhesives shall not be acceptable for the fixing of trunking or wire looms to the steelwork.

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, bus bars, etc. shall have ample current carrying capacity to handle at least 110% of the full load alternator current.

B. SWITCHGEAR

One Triple Pole MCB rated to suit the generator offered and shall have both adjustable thermal and instantaneous overload elements.

C. ALTERNATORS OVER 150KVA

- One set of Four Pole automatic change-over isolators with motor operated mechanisms (Minimum rating of 630A) with appropriate auxiliary and control contacts complete with electrical and mechanical interlocking arrangements to the approval of the Client.
- One on-load hand operated by pass switch (Minimum rating of 630amps) of the isolator type with three operating positions labelled "NORMAL", "OFF" and "BYPASS" to enable the change-over equipment and control circuitry to be by-passed for maintenance purposes.
- The units are to be Stromberg type or similar approved.

D. ALTERNATORS UNDER 150KVA

- One set of Four Pole suitably rated contactors with electrical and mechanical interlocking arrangements with appropriate auxiliary and control contacts to the approval of the Client. The units are to be Stromberg type or similar approved.
- No by-pass switch is required.
- 3 x Open ring CT's suitably scaled.
- 110% full load rated Phase, Neutral and Earth bus-bars.

E. CONTROL, PROTECTION AND ALARM DEVICES

Only a solid state programmable system will be accepted.

Control systems may not consist of the electromagnetic relay type.

Only the AMF120 Mk4 or equivalent solid state programmable systems complying with the following will be accepted:

The solid state control systems shall be of South African Manufacture.

Be available “off the shelf”.

Has a proven local operating history of at least five years.

Imported or specially made solid state control systems or engine control and/or management systems will not be acceptable under any circumstances.

The control system shall consist of a single unit including all indicators/switches and allow for quick installation using locking connectors.

The solid state controller and associated systems wiring shall be in accordance with the manufacturer’s guidelines and shall be adequately protected against

transient over voltages arising from lightning effects, switching and power system surges and alternator borne noise or interference. Full details of the suppression system must be provided with the tender. Wiring to and from the solid state programmable controller shall be screened where necessary to prevent electrostatic and magnetic interference.

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 high engine temperature, low lubricating oil pressure, over speed, start-failure, low water level, low fuel 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 by pushing the reset.

Panel indicators and re-set pushes must be clearly marked or displayed.

The controller status including Warning and Shutdown/ Critical alarms shall be indicated by a combination of LEDs and messages on the LCD display.

The following indications and alarms shall be provided:

Item	Condition	LED	Display Message	Alarm	Cut-out	Reset
a	Overload		X	X	X	X
b	High Temperature		X	X	X	X
c	Oil Pressure Low		X	X	X	X
d	Over / Under Speed		X	X	X	
e	Heater Fault		X	X	X	
f	Fuel Low		X	X		X
g	No Fuel		X	X	X	
h	Water Level Low		X	X	X	
i	Emergency Stop	X	X	X	X	X
j	Start Failure		X	X		X
k	Mains & Alternator On	X				
l	Mains & Alternator Phase Rotation Fault		X	X	X	
m	Mains & Alternator Over Voltage		X	X	X	
n	Mains & Alternator Under Voltage		X	X	X	
o	Battery Voltage Low		X	X		X
p	Battery Charger Fault		X	X		X
q	Control System Fault		X	X		X
r	Auto	X				
s	Test	X				
t	Manual	X				
u	Manual Start	X				
v	Manual Stop	X				

Relays with reset pushes must be fitted giving an audible and visible signal when “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.

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

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

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

The siren 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 wired to terminals for remote indication of alarm conditions.

A Lamp test push button must be provided to test all indicator lamps.

An alarm mute push button must be provided on the front panel.

F. OPERATION SWITCHES

Four individual mode selector push button switches: “OFF, AUTO, MANUAL, TEST”

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

"TEST"- it shall only be possible to start and stop the set with the pushbuttons, full functional testing and the running set shall not be switched to the load without a mains failure.

"MANUAL" - the set must take the load when started with the manual pushbutton, but it must not be possible to switch the set on to the mains, or the mains onto the running set. In this mode the load will not be transferred in the event of a mains failure.

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

G. 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 obtain a hard copy on site.

The controller must have sufficient memory to log at least three months of typical generator set operation and include details to determine the time from mains failure to alternator on load.

H. USER PROGRAMMABLE

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

HIGH battery volts	
LOW battery volts	
HIGH Mains volts	
LOW Mains volts	
HIGH Alternator volts	
LOW Alternator volts	
OVER-SPEED	
UNDER-SPEED	
Crank Release RPM	
Start delay	
Run-up delay	
Mains return delay	
Cool down time	
Low Oil Pressure	(Normally open /closed)
Low Oil Pressure gauge	Warning level
High Temperature	(Normally open /closed)
High Temperature gauge	Warning level
Low Water	(Normally open /closed)
Low Fuel	(Normally open /closed)
No Fuel	(Normally open /closed)
Low Bulk Tank	(Normally open /closed)
Alternator CT Ratio	
Emergency Stop	(Normally open /closed)
Charging Alternator	(Normally open /closed)

I. PRINTER

The controller shall be able to connect to a printer used to obtain a hard copy of the log on site and this printer must be able to operate from internal rechargeable batteries or allow charging from a 12V DC supply in the event a mains supply is not available.

J. COMPUTER REMOTE STATUS

The controller shall be able to be fitted with an RS-485/ Modbus module to allow the controller to be connected to a BMS or SCADA system.

K. MANUAL STARTING

The switchboard shall be equipped with two separate push buttons marked "START" and "STOP" for manual starting and stopping of the set.

L. BATTERY CHARGING EQUIPMENT

The switchboard shall be equipped with a constant voltage battery charging unit.

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 to maintain a constant charge voltage.

The charger must be supplied 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.

M. SWITCHBOARD INSTRUMENTS

The switchboard shall be equipped as follows:

- One (1) flush square dial voltmeter, reading the alternator voltage, scaled 0-500V.
- One (1) six position and off selector switch for reading all phase to phase and phase to neutral voltages.

A flush square dial combination maximum demand and instantaneous ampere meter for each phase, with resettable pointer suitably scaled 20% higher than the alternator rating. A red arc stripe above the scale markings from 0-20 A 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.

One flush square dial vibrating type frequency meter, indicating the alternator frequency.

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.

Fuses for the potential circuits of the meter.

One (1) 22mmØ "Twist to release" type pushbutton marked "Emergency Stop" for the immediate stopping of the engine, by-passing all control circuits.

One (1) flush square dial ampere meter suitably scaled for the battery charging current.

- One (1) flush square dial voltmeter with a spring loaded pushbutton or switch for the battery voltage.
- Circuit breaker for electric fuel pump.

N. MARKINGS

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

O. 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 labelled "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.

P. AUTOMATIC CHANGE-OVER SWITCH

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

The contactor for this system must be interlocked in a safe and fail proof way to prevent the alternator being switched onto the mains or visa-versa.

Q. BYPASS SWITCH AND MAINS ISOLATOR

- The switchboard shall be equipped with an on-load isolator to isolate the mains and a manually operated, three (3) position on-load by-pass switches. The by-pass switch shall have an "OFF" position (centre) and shall either connect the incoming mains to the automatic control gear or directly to the outgoing feeder.
- In the "OFF" position the automatic control gear, including the main contactors, shall be isolated for maintenance purposes.
- It shall not be possible to start the engine except with the selector switch in the "TEST" position.
- It is required that this bypass switch and mains isolator be mounted away from the automatic control gear, in a separate compartment, either on the side or in the lower position of the switchboard cubicle, and that the switches are operated from the front of the compartment.

R. START DELAY

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

S. STOP DELAY

- A stop delay with timer is required for the set, to keep the set on load for an adjustable period of 1 to 10 minutes after the return of the mains supply, before changing back to that 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.

T. DUMMY LOAD

- Supply and install an automatic dummy load to ensure that the engine's load is never lower than 30% of the generators full load.

U. RESISTIVE ELEMENTS

- The resistive heating elements shall be installed in the warm air ducting between the engine's radiator and the outlet louvers. The elements shall be of the mineral isolated tubular type.
- The elements shall be connected in star with four conductors equal in a size.
- The elements and connectors shall be easy accessible to ensure easy replacement.

V. CONTROL

- The dummy load shall be switched from a three pole contactor of sufficient size. The contactors shall be installed in the control board.
- Supply and install an indicator lamp on the control board to indicate when the dummy load is connected to the set.
- The total load in kW of the generator set shall be monitored by a semi-conductor load monitor. The monitor shall be equipped with two adjustable control switching points. The switching points shall be set at 30% and 70% of the generator set's full load.
- An adjustable timer relay (0-200 sec) must start timing the moment the generator set starts.
- If the generator set's load is less than 30% after a pre-adjusted time, initially 60 seconds, the dummy load shall automatically be connected to the generator set. If the load rises above 70% the dummy load shall be disconnected. If the load falls below 30% the dummy load shall immediately be reconnected to the generator set.

W. DUMMY LOAD CONNECTION

- The supply to the dummy load shall be through a circuit breaker of sufficient capacity and marked "DUMMY LOAD". The circuit breaker shall be installed of the front panel of the control board.
- The connections between the control board and the elements must consist of a PVC/SDP/PVC copper cable of sufficient size.
- The connections between the elements and the connectors must consist of asbestos isolated copper conductors.

X. CABLE INSTALLATION

- The tenderer shall allow for the complete installation and wiring of the plant, including the connection of the incoming main and outgoing feeder cables for the generating set switchboard.
- All interconnection power cables must be provided and installed between the alternator and the change-over panel.
- All interconnection control cables must be provided and installed between the alternator, engine fuel tanks and the control panel.
- Power cables shall be PVC/SWA/ECC/PVC 4 core copper cables. The control circuits shall be multi-core PVC cables.
- The cable conductors shall be terminated with suitably rated pressure crimped cable lugs.

Y. EARTHING

- The neutral point of the generator shall be solidly connected to the earth bar on the alternator and the panel by means of an appropriate size of insulated earth conductor.
- All plant ancillary equipment and steel work in the plant room shall be suitably bonded with an appropriate size of bare copper and also be solidly connected to the earth bar.
- The earth bar shall be positioned in the cable trench to enable easy access for the main earth point to be connected.

Z. PHASE ROTATION

The Contractor shall ensure that the mains and generator phase rotations are identical.

2.33 PAINTING

The engine and generator shall be painted with best quality Grey Enamel paint.

2.34 WARNING NOTICES

Notices, in English must be installed in the plant room in terms of regulation 4 of the Electrical Machinery Regulations of the Machinery and Occupational Safety Act, No 6 of 1983.

The contents of these notices are summarised below:

- Unauthorised entry prohibited.
- Unauthorised handling of equipment prohibited.
- Procedure in case of electrical shock.
- Procedure in case of fire.
- The successful tenderer must consult the Act and get approval of the wording from the Client's representative, prior to ordering the notices.
- Lettering must be black on yellow background.
- Notice (a) must be installed outside, next to the entrance door. Notices (b) - (d) must be installed inside the plant room.
- In the plant room a clearly legible and indelible warning notice of 450 x 450mm must be mounted in a conspicuous position with white lettering on red background.
- “DANGER- THIS ENGINE WILL START WITHOUT NOTICE. TURN THE SELECTOR SWITCH "OFF" BEFORE WORKING ON THE PLANT.”

2.35 TESTS AT CONTRACTOR'S PREMISES

- An acceptance test shall be carried out at the Contractor's premises to establish that the diesel generating set and its ancillary equipment meets with the requirements of the specification.
- The Contractor shall give the consultant and representatives of the Client at least seven days’ notice prior to testing the plant.
- In the event of the plant failing the test and having to be re-tested, at some future date, all expenses (including travelling) incurred by the consultant and representatives of the Client in attending the second test will be to the Contractor's account.

The following tests are to be carried out:

- Simulate a mains failure to automatically start the plant from cold to test its ability to attain full rated speed and voltage and assume the full load in specified time of 10 seconds.
- Test-run the plant at full load for a period of one hour.
- Immediately after the above specified run, without stopping the plant, run in for a further one hour at 110% load.

- Test the plant with regards to voltage dip, voltage and frequency recovery, with sudden application of various loads.
- Test the plant for its ability to assume full rated load immediately on failure of normal supply.
- Test and demonstrate (by simulation only where actual conditions could damage the plant and its ancillary equipment) the correct functional and operation of the engine safety controls and alarms together with other alarms as specified.
- Any other tests the client or his representative may consider necessary to demonstrate that the diesel generator and its ancillary equipment as a whole is functioning correctly and in accordance with the specification.
- The Contractor shall provide all the necessary instruments and equipment, resistance for the load, labour and consumables required to carry out the tests. The test equipment shall be capable to produce the load specified above continuously without interruption. The test load shall be adjustable and balanced over three phases.
- The instrumentation shall be capable of recording and producing printed data pertaining to transient voltage dips, recovery time, applied load, etc, as specified. Complete test results of all tests shall be submitted to the engineer at the end of the tests. In addition, an original set with copies shall be compiled and bound with the As-Built documentation.

2.36 TESTS ON SITE

On completion of the installation of the plant, following tests are to be carried out:

- Simulate a mains failure to automatically start the plant from cold to test its ability to attain full rated speed and voltage and assume the full load in specified time of 10 seconds.
- Automatic starting and stopping with load change over. The load in this instance will be provided by the client.
- Test by simulation only of the operation of the engine protection and alarm devices.
- Any other tests which the consultant may require on site.

2.37 DRAWINGS FOR APPROVAL

The Contractor shall, within one month after being awarded the Contract, submit for approval the drawings in electronic format (pdf or dwg format) or 2 sets of drawings showing in detail particulars of the equipment to be supplied.

The following minimum details shall be submitted:

- General arrangement of all plant and equipment.
- Front layout of change-over and control panels.
- Schematic of the complete electrical systems, including starter motor, battery and automatic battery charger.
- Details of diesel alternator base indicating dimensions and weight.
- General arrangement, wiring diagrams and details of the control panel and automatic change-over equipment complete with cabling.
- Details of silencer/s, exhaust system including expansion pieces and brackets.
- Details of the fuel day-tank, pump and piping arrangement.

- Detail of radiator (where applicable), fan cooling arrangement and ventilation ducting.
- Dimensioned layout of all plant in the plant room.
- All drawings, circuit or schematic diagrams and documents prepared by or on behalf of the Contractor for submission shall be thoroughly checked, corrected where necessary and signed as accepted by the Contractor, prior to submission for approval.
- Approval of drawings and documentation will not release the Contractor from any of his responsibility and obligation for the proper operation of the installation or for full compliance with the specification, drawings, local authority and statutory requirements. Special care shall be taken to ensure that the equipment physically fit through access and be accommodated within the space and via the access provided.

2.38 WORKING INSTRUCTIONS

A complete diagram showing complete schematic diagram of the power and control circuitry of the plant together with detailed instructions, being plasticized shall be placed in a durable, non-deteriorating frame, neatly fixed to the wall of the plant room.

2.39 DRAWINGS AND MAINTENANCE MANUALS

- The Contractor shall supply three complete comprehensive sets of operating and maintenance manuals in hard copy and on CD complete with schematic control circuit diagrams for both engine and generator.
- The above manuals are to be handed to Engineer prior to commissioning of the installation.

2.40 SPARE PARTS AND INFORMATION REQUIRED

- Tenderers shall submit with their tender an assurance that the plant offered as a whole and spares parts for the plant are readily available within the Republic of South Africa and state all contact details where these spares are available.
- 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 layout and control diagrams.
- Failure to submit any of the information asked for, may, disqualify the tender.

2.41 GUARANTEE, REPAIRS AND MAINTENANCE

- 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 after first delivery of the plant.
- 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 the Contractor's expense and to the satisfaction of the client.
- The contractor shall bear all expense incidental thereto including making good of work by others, arising out of removal or reinstallation of equipment. All work arising from the implementation of the guarantee or maintenance of

equipment shall be carried out at times which will not result in any undue inconvenience to users of the equipment or occupants of premises.

- If any defects are not remedied within a reasonable time the client may proceed to do the work at the Contractor's risk and expense, but without prejudice to any other rights which the client may have against the Contractor.
- Should the standby plant defects be so frequent as to become objectionable or should the equipment otherwise prove unsatisfactory during the guarantee period of twelve months, the Contractor shall, if called upon by the client, at his own expense replace the whole or such parts thereof as the client may deem necessary with equipment to be specified by the client. Approval - tacit or otherwise - of the equipment installed shall be considered as provisional only and shall not invalidate the client's right as indicated above.
- The successful Tenderer will be required to do initial maintenance and maintain the plant in good running order for a period of twelve (12) months after the plant has been taken over by the Client. The full cost of this maintenance must be included in the tender price, inclusive overheads and travelling fees.
- Apart from the consumables as detailed below, the Client shall not acknowledge any cost claim 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.
- At six monthly intervals (2) during the guarantee period of twelve months the Contractor shall adjust and maintain the standby plant and its ancillary equipment in proper working order by a qualified member of his staff.

As a minimum requirement the Contractor shall:

- Report to the Officer-in-Charge, keeping the maintenance records, and enter into a log book the date of the visit, all the test carried out, and adjustments made, and any further details that may be required.
- Grease And Oil Moving Parts Where Necessary.
- Check The Air Filter, And When Necessary, Clean The Filter And Replace Oil Filter.
- Check and top-up if necessary, the fluid levels in the radiator, engine sump, fuel oil tank and batteries.
- Test run the standby plant and ancillary equipment for a period of 15 minutes.
- Wipe down the standby plant and its ancillary equipment and report on any evidence of any fluid leaks or other defects.
- After the plant has run on one oil change for the number of hours stipulated by the makers, 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.
- Under this heading only the cost of the actual oil used, shall be charged as an extra on the monthly account.
- Clean the lubricating oil filter and/or replace filter element at intervals recommended by the engine maker, the cost of a new filter element to be charged as an extra on the monthly account.
- Check and when necessary adjust the valve settings and the fuel injection equipment.

- Report to the Client and to the consultant on any parts that become unserviceable through fair wear and tear, or damaged by causes beyond the control of the Contractor.
- The Contractor, on receiving the report, shall immediately submit a detailed quotation for the repairs or replacement of such parts to the Client.
- Advise the Client when it has become necessary to decarbonise the engine and submit a quotation for this service.
- Top up the water of the radiator, if applicable.
- Clean the plant and its components when necessary.
- The cost of such inspections, maintenance, adjustments, repairs, etc., shall be included in the tender price, but the cost of renewing any part which may become worn through fair wear and tear, or damaged beyond the control of the Contractor (provided this is not due to unsuitable design) shall be excluded.

2.42 MAINTENANCE AGREEMENT

- After the lapse of this 12 month period, the Contractor may be required to enter into a maintenance agreement, as described under Clause 2.13.1 initially for one year with a possible yearly renewal.
- Acceptance of the tender shall not bind the Client to accept this maintenance service.
- Tenderers must state in the Price Schedule the charge per visit for carrying out the maintenance as detailed above.
- 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.
- Three (3) copies of a maintenance fault-localising and operating manual are to be handed over to the Client's representatives on site.

2.43 LATENT DEFECTS AND FAILURE TO COMPLY WITH SPECIFICATION

The client reserves the right to demand the replacement or making good by the Contractor at his own expense of any part of the Contract which is shown to have any latent defects or not to have complied with the Specification, notwithstanding that such work has been taken over or that the guarantee period has expired.

2.44 QUALIFICATION BY TENDERER

Should any specified materials or equipment in the Tenderers opinion be of inferior quality, or be unsuitably employed, rated or loaded, the Tenderer shall prior to the submission of his tender advise the consultant accordingly. His failure to do so shall mean that he guarantees the work including all materials or equipment as specified.

4. LOW VOLTAGE PVC INSULATED CABLES (600-1000V)

Low voltage power cables shall be two, three or four core stranded plain annealed copper conductor, PVC insulated, PVC bedded, galvanised steel wire armoured, PVC sheathed, PVC/PVC/SWA-ECC/PVC type cable 600/1000V to SANS 1574 as amended.

All low voltage power cables shall be manufactured in strict accordance to SANS 1507 and shall bear the SABS mark on the outer sheath.

The insulation material shall comprise of PVC in accordance to SANS 1411: Part II as amended.

The bedding shall consist of a continuous impermeable of PVC extruded sheath to fit the core or cores closely and to fill the interstices between the cores of multi-core cables.

Where armouring is specified, the armouring shall consist of one layer of round galvanized steel wire in accordance with SANS 1411: Part IV. Aluminium strip or tape armouring is not acceptable.

Unless otherwise specified specifically, all multi-core cables shall include earth continuity conductor (ECC) in the armouring. Where required additional bare earth copper conductor shall be installed as specified.

All cable connections from 16mm² conductor sizes and larger shall be of the hexagonal crimp method using correct size and type of lugs, ferrule and matching crimp head dices. Smaller conductor sizes shall be done with indent crimp method with tools having the ratchet facility to ensure a full depth crimp.

All routine tests specified by SANS 1507 as amended shall be carried out on production runs of the cable. Two test certificates will be provided for each cable drum delivered to site.

Wooden cables drums shall be clearly marked on both sides in accordance with SANS 1507 as amended. Both ends of the cable on the wooden drum must be sealed to prevent penetration of moisture. Both ends of the cable shall furthermore be fixed to the flange of the drum to avoid loose coiling and mechanical damage. Cable drums shall be placed on firm, well-drained surfaces.

Cable ducting and trenches shall be in accordance with SANS 2001 PD3.

5. LOW VOLTAGE CABLE INSTALLATION

All low voltage cables shall be in accordance with the standard and detail specifications.

Cables shall be loaded, transported and off-loaded on wooden cable drums manufactured and supplied for the purpose by the cable manufacturer.

The transportation, loading, off-loading and installation of the cables shall be in strict accordance with the requirements of the cable manufacturer, this specification and relevant standards which shall be continuously supervised and controlled by a competent person who is well experienced in the handling and installation of cables.

Cables that are not terminated shall at all times be capped and sealed to protect the ends from the ingress of moisture and dirt.

Cables shall be installed in the routes specified. Cable lengths are nominal and shall not be used for ordering purposes. The Contractor shall be remunerated on actual lengths of cable installed. All wastage shall be for the account of the successful Tenderer.

All cables shall be rolled from the wooden cable drum such that the cable will not be subjected to twisting or tensions values exceeding the values specified by the manufacturer.

Cables laid in the same trench shall be laid parallel to each other and shall not cross over one another.

All cables shall be run in single un-spliced lengths and shall be drawn up and terminated in the distribution kiosk, distribution boards, plant or equipment as required. When complete, all cabling and wiring shall present a neat and tidy appearance.

No joints shall be allowed in cables unless specifically called for in the Bill of Quantities or unless the cable lengths exceed the maximum standard drum lengths supplied by the manufacturer or without the prior approval of the Engineer.

The minimum radius of bends in all cables shall be as per the manufacturer recommendation to ensure that the minimum bending radii of the cables are maintained at all times during and after installation. Failure to adhere to this requirement may result in the rejection of the particular cable.

Special care shall be taken during installation to avoid any damage to the sheaths of the cable. Rollers and pulling socks or other suitable means approved by the Engineer shall be used for installing the cables in trenches. The rollers shall be free of sharp edges and shall be spaced to prevent the cable from touching the ground during the pulling process. Corner rollers shall be used at each corner and where required bond pulling shall be used.

Where communication, instrument or signal type service cables run with power cables in the same trench, the minimum separation shall be 500mm. Where “signal” and power services cross, they shall be separated vertically by 500mm.

LV cables no less than 600mm below final ground level measured to the top of the cable.

The cables shall be laid in such a manner that the beginning of a drum shall be laid from the end of the previous drum to ensure that the lay of the cores remain the same. Low voltage cables shall overlap by at least 500mm.

All cables shall be fitted with the appropriate size lugs at the termination. Lugs and ferrules equal or greater the 16mm² shall be crimped with a hydraulic crimper only using a hexagon die.

All glands, lugs, fixers, nuts, bolts and other consumables are, where not specifically detailed in the Bill of Quantities, are to be included within the price for cable terminations.

Where cables cross under roadways, walkways, parking areas, paved areas and other services, and where cables enter buildings, the cables shall be installed in 110mm diameter Class 9 u-PVC pipes or as indicated on the drawings.

Every cable shall be marked on both ends by means of an approved type cable tag label on which the size of cable and its source or destination and cable number is punched. The label shall be installed around the outer PVC sheath immediately below the cable termination and gland.

6. CABLES IN TRENCHES

All cable trenches shall be routed as indicated on the drawings attached to this specification. Deviations shall only be permitted by prior consent of the Electrical Engineer or the issuing of revised drawings.

Trenches shall be straight and be cut as square as possible and the bottom made flat and free from stones or other hard projections. Where this is not possible, a 50mm layer of stone free sand shall be laid at the bottom of the trench to accommodate the cables. It must be presumed that, where trenching occurs within soft/hard rock, the trenching rate shall include for the stone free layer of soil. After installation, the cables shall be covered with a 100mm layer of fine, stone free soil prior to backfilling. The backfill shall be adequately compacted in layers of 250mm to the approval of the Electrical Engineer.

The minimum width of trenches shall be 300mm for one cable and 500mm for up to three unless otherwise specified.

Cables shall be laid at a minimum depth of 600mm (to top of cable) for cables rated 600/1000V, and 1 000mm (to top of cable) for cables rated greater than 1000V, below the adjoining final ground level, except where intersections take place with other services, adequate clearance between the services shall be allowed.

A cable marking tape shall be run 300mm above each cable. Where multiple services are installed within the same trench, two marker tapes shall be installed marking the width extremities of the trench. For cables rated greater than 1 000V, protective cable tiles shall be laid at 600mm above each main cable for the entire length of the cable trench.

The Tenderer shall excavate by hand due to limited access or the proximity of other services.

Special care shall be taken at intersections with other services. Any damage to other services shall be made good and paid for by the Contractor.

No excavated material shall be left closer than 300mm from the side of the excavation. The excavated material shall take up as small an area as possible with the safety of the workmen and Works taken into consideration.

The Tenderer shall maintain the excavation in a good condition, free of water, mud, loose ground, rocks, stones, gravel and other strange material until the cables are installed and the excavation is backfilled and completed.

The cable shall, after the completion of the trench, be laid with the minimum of delay so that the trench can be backfilled. Timeous arrangements shall be made that all cables be inspected by the Electrical Engineer prior to backfilling and closing trenches. The Tenderer shall be responsible for informing the Electrical Engineer timeously, and non-inspected closed trenches may be required to be opened up for test inspections or may be rejected.

All open cable trenches shall be effectively barricaded so as to prevent people from falling into the trenches. Cable trenches within demarcated and fenced construction areas shall be barricaded with danger tape and maintained to be clearly visible to all construction activities.

7. CABLES IN SLEEVES

Pulling socks or other suitable means approved by the Engineer shall be used for the installation of cables in sleeves. Care shall be taken to ensure that the maximum allowed mechanical forces on the cables are not exceeded and that the sheaths are not damaged during installation. Furthermore, the Contractor shall ensure that the cables are not kinked or excessively bent while maintaining the minimum bending radius as specified by the manufacturer.

The Contractor shall use necessary precautions to ensure that all cables are not damaged at the mouth of cable sleeves.

The Contractor shall inspect the sleeves before installation of the cables to ensure and confirm that there are no sharp edges present that could cause damage to the sheaths.

Cables found with scratch marks or other forms of damage will be rejected and shall be replaced at the Contractor's cost.

Should long runs of cables in sleeves be encountered, it may be required to grease the cable with petroleum jelly or other non-aggressive compound to facilitate the installation. This will however be discussed with the Engineer prior to installation.

8. CABLES ON CABLE RACKING

Cables to be installed on cable racking shall be secured to the cable racking at intervals not exceeding 1m.

Cables with diameters larger than 50mm and cables in trefoil arrangement shall be secured by means of stainless steel bandit straps (over a PVC strap for the protection of sheath). Smaller cables shall be secured by means of PVC cable ties.

All cables shall be individually strapped, except for cables installed in trefoil format.

9. CABLE NUMBERING AND CORE IDENTIFICATION

Each cable shall be numbered by means of an approved type cable tag attached to both ends below each termination and gland. Each tag shall indicate the designation connected at the other end, cable size, number of cores, length, earth wire size and be easily readable after installation.

10. DISTRIBUTION BOARDS

The successful Tenderer shall be responsible for the design and installation of the distribution boards so as to ensure that they fit comfortably in the positions specified on the drawings, are easily maintained and the doors of the distribution boards can be fully opened.

The layouts and construction of all distribution boards shall be to the approval of the Engineer prior to ordering and manufacturing.

The distribution boards shall be of the flush / floor standing / surface mounting type/s. The distribution board tray shall be constructed of 2mm minimum thickness hot dip galvanised steel or folded 3CR12 sheet metal. Pre-punched knockouts for conduit shall

be incorporated in the upper and lower sides of the distribution board tray prior to galvanising. The size of tray shall be determined by the number of circuits actually installed allowing for 30% additional circuit space and spare conduits installed from the distribution board to the ceiling void where the DB is built into a wall.

The architrave frame shall be constructed with square edges from minimum 2 mm thick 3CR12 steel and be powder coated. The architrave frame shall form a 25 mm border around the bonding tray and shall be fixed to the bonding tray in such a manner as to allow for adjustment for the inequalities in the wall finish. A minimum of 75 mm shall be allowed between the inside of the architrave frame and the equipment.

The distribution board cover shall be constructed of minimum 2mm thick folded 3CR12 steel and be powder coated. The distribution board cover shall have machine cut openings for the specified electrical equipment and as indicated on the single line diagrams. The distribution board cover shall furthermore be fitted with suitable handles to facilitate safe the removal of the cover.

Distribution boards shall be equipped with single/double hinged doors. The doors shall be constructed of 2 mm minimum thick 3CR12 steel and be powder coated. Where required, the doors shall be reinforced to ensure rigidity. The door shall be mounted flush in the architrave frame and will comply with the requirements detailed on the drawings.

The distribution boards shall be equipped with suitably sized tinned solid copper neutral and earth bars as required for earth leakage protected circuits and for the balancing of the circuits. Only one neutral conductor shall terminate in each clamp. 30% extra terminals shall be provided above those circuits actually installed.

Wiring shall be done by means of PVC insulated copper conductors with sizes to suit the relevant switchgear. The ends of the conductors shall be provided with suitably sized lugs, firmly crimped for connection to busbars.

The main/incoming isolator/circuit breaker shall be mounted at the left hand side of the distribution board. The isolators and circuit breakers shall comprise the list as shown on the single line diagram. Should the distribution board comprise of rows of equipment, then sufficient vertical space shall be allowed for between equipment for the bending and termination of conductors and cables. The earth leakage circuit breakers/isolators shall be 30mA sensitivity with a tolerance of +0 to -50%.

All metal doors shall be earthed bonded to the distribution board tray by means of an insulated copper strap, tooth washers, bolts and nuts.

Every circuit on each distribution board shall be clearly and legibly labelled. The legend shall be typed and circuit breaker numbering shall be of the engraved type.

All unequipped spaces in the distribution boards shall be fitted with dummy MCB's or approved cover plates.

uPVC sleeves installed shall cater for the cable size and the minimum bending radius on the sleeve with minimum 6 times the diameter of the sleeve.

Distribution boards shall be painted and labelled in accordance with the details as specified below:

	Normal Supply	Essential Supply	UPS Supply
Colour of Indoor Distribution Board	White or Beige	White or Beige but preferably Red	White or Beige but preferably Blue
Colour of Outdoor Distribution Board	Electric Orange colour B26 of SANS 10140 (Part II)	Electric Orange colour B26 of SANS 10140 (Part II)	Electric Orange colour B26 of SANS 10140 (Part II)
Colour of Face Plate	White or Beige (Indoor) Electric Orange (Outdoor)	Signal Red colour B26 of SANS 1091	Blue colour F06 of SANS 1091
Label Type	Black letters on White Ivorene label	White engraved letters on red Ivorene label	White engraved letters on blue Ivorene label
Label Fixing	Ivorene label to be glued with super glue or pop riveted to face plate or frame		
Distribution Board Label Details	Distribution Board name e.g. DB A	Distribution Board name e.g. DB AE	Distribution Board name e.g. DB AU
Face Plate Label Details	Distribution Board Name; Indication of Feeder source; Size of Feeder cable; Fault level; Rating of Distribution Board; Phase rotation		
Letter Font	Arial		
Letter Size	Distribution Board label 6mm Face Plate label 3mm		
Labelling of Cables	All incoming and outgoing cables must be labelled with Ivorene labels indicating the designation and size of the cable		

11. CONDUIT AND ACCESSORIES (PVC)

The conduit and wiring system shall include all conduit, draw boxes (where required), joints, elbows and other accessories required for the completion of the Contract Works. Consumables, including saddles, fixers, screws, conduit bushes, etc., are deemed to be included within the rates quoted. A minimum number of joints shall be permitted in any length of conduit run between draw boxes, switch socket outlets, luminaries, distribution boards, etc.

All the conduiting shall be done on the roof trusses (attached by means of saddles onto the bottom of the trusses) or on top of the ring beams or chased into walls or cast in concrete where applicable. The conduit work shall cater for face brick external wall finishes and plastered/face brick internal finishes to all buildings. No surface conduit shall be allowed and the successful Tenderer shall build conduits into the walls. Where services exit in face brick walls, the successful Tenderer is to ensure that the conduit box or switch box is symmetrical with the nearest brick course.

The successful Tenderer shall be responsible for the conduit routing. Draw-boxes are to be provided in accordance with the Wiring Code and wherever necessary to facilitate easy wiring.

The successful Tenderer shall have a representative in attendance at all times when the casting of concrete slabs takes place, to ensure that no movement or damage to conduit occurs.

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 SABS specifications and the conduit shall bear the mark of approval of the South African Bureau of Standards.

The bonding of PVC tubing to connectors, elbows or termination boxes shall be carried out using a good quality adhesive, rendering the pipe work completely watertight.

The loop in system shall be used throughout the installation. This means that all wiring shall be possible from below the ceiling and that no inspection or draw boxes shall be allowed in the ceiling space.

For light and socket outlet circuits, the conduit used shall have an external diameter of 20mm.

For telephone and LAN circuits, the conduit used shall have an external diameter of 25 or 32mm. In all other instances the sizes of conduit shall be in accordance with the Wiring Code for the specified number and size of conductors. For a single outlet point, a 25mm conduit must be installed and a 32mm to power skirting for every 5 or less outlet points.

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

Under no circumstances will conduit having a wall thickness of less than 1.6mm be allowed in screeding 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 Client's Representative, be completely removed and rectified, and any wiring already drawn into such damaged conduits must be completely renewed at the successful Tenderer's expense.

Flexible connections between conduit and appliance or other equipment shall be by means of flexible conduit.

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 Engineer to any claim submitted by the successful Tenderer that may result from a lack of knowledge in regard to the requirements of the supply authority.

The Contractor shall make himself familiar with the positions of all fittings, such as blackboards, pinning boards, cupboards, shelving, work-tops, etc, before commencing the conduit installation. The position of switches and socket outlets as indicated on the drawings are approximate only. The Contractor must verify that the final position of these will not be covered by the installation of the fittings referred to above, or come midway between the junction of any dadoes and upper wall finishes.

No extras will be entertained for moving switches or socket outlets as a result of the Contractor's failure to verify the final positions of the fittings or type of wall finish.

12. SURFACE MOUNTED CONDUIT

Wherever possible, the conduit installation is to be concealed in the building work, however, where unavoidable or otherwise specified, 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 couplings used where necessary.

Conduit will be secured on heavy duty approved spaced saddles rigidly secured to the mounting surface.

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 run along the wall plates and the beams.

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.

No extras will be entertained for moving switches or socket outlets as a result of the Contractor's failure to verify the final positions of the fittings or type of wall finish.

13. WIRING

In general, all wiring used in installations shall be of at least 600/1000V grade in accordance with SABS 1507 and PVC insulated, subject to volt drop calculation results.

Light, ceiling fan and extractor fan circuits shall be wired with 1.5mm² 7 strand copper conductor PVC insulated wire, subject to volt drop calculation results.

Switched socket outlets and power points shall be wired with 2.5mm² 7 strand copper conductor PVC insulated wire, subject to volt drop calculation results.

Geyser, air conditioner and heater circuits shall be wired with 4mm² 7 strand copper conductor PVC insulated wire, subject to volt drop calculation results.

Stove and oven cooker circuits shall be wired with 6mm² 7 strand copper conductor PVC insulated wire, subject to volt drop calculation results.

Wiring for circuits not specified shall be according to SANS 10142-1.

Associated with every circuit, a stranded copper earth conductor shall be run and connected to the terminal of the appliance or outlet and on the installed earth bar within the distribution board. Wire sizes shall be as follows:

6mm² conductor : 4mm² earth wire

4mm² conductor : 2.5mm² earth wire

2.5mm² conductor : 2.5mm² earth wire

1.5mm² conductor : 2.5mm² earth wire

Where circuits are run in metal conduit, bare earth conductor shall be used and PVC insulated earth conductor shall be used for circuits run in PVC conduit.

14. EQUIPMENT ISOLATORS

The colour coding of isolators located adjacent to items of fixed equipment as prescribed in SANS 10142-1 or elsewhere in this specification or drawings, shall be in accordance with the details as specified below:

	Normal Supply	Essential/Emergency Supply	UPS Supply
Colour of Cover Plate	White		
Colour of Isolator Toggle	White	Red	Blue
Label Type	Black letters on White Ivorene label or engraved directly on the cover plate with Black infill	Red letters on White Ivorene label or engraved directly on the cover plate with Red infill	Blue letters on White Ivorene label or engraved directly on the cover plate with Blue infill
Label Fixing	Ivorene label to be glued with super glue or pop riveted to cover plate		
Cover Plate Label Details	Distribution Board name and circuit number feeding the isolator e.g. DBA I1	Distribution Board name and circuit number feeding the isolator e.g. DBAE IE1	Distribution Board name and circuit number feeding the isolator e.g. DBA U/IU1-1
Letter Font	Arial		
Letter Size	3mm		

Where Blue isolator toggles are not obtainable and written approval was obtained from the Engineer, an isolator switch incorporating a Red or Blue neon or LED indicator may be used. Alternatively, a White isolator toggle may be used but the isolator toggle must be tagged with a non-removable Red or Blue sticker.

Unless otherwise specified in the Bill of Quantities or the drawings, the isolator outlets shall be similar in design and construction to the Clipsal Series 2000, Crabtree Diamond or other approved. The correct PVC cover plate shall be provided with the isolator outlet and included in the rate.

15. EARTHING AND LIGHTNING PROTECTION

General

All workmanship and materials used shall be of the highest standard and shall be carried out in accordance with the best modern practice, as determined by the Engineer.

The entire installation shall comply in every respect with the latest amended publication of the relevant specifications.

Definitions

Lightning Protection System

The whole system of conductors used to protect a structure from the effects of lightning.

Air Terminal

The part of a lightning protection system that is intended to intercept lightning discharges directly.

Down Conductor

A conductor that connects the air terminal (s) to the earth terminals (s).

Earth Terminal

The part of a lightning protection system that is intended to discharge lightning currents into the general mass of the earth.

Earthing Electrode

The part of an earth terminal which makes direct electrical contact with the earth.

Bond

A conductor that provides electrical connection between the lightning protection system and the metal work of the structure to be protected or between various parts of this metal work.

Joint

A mechanical junction between two conductors for purpose of providing electrical continuity between two parts of the lightning protection system.

Testing Joint

A joint in a down-conductor or in a bond connecting two sections of the lightning protection system so designed and situated as to enable measurements to be made of the resistance to earth or of electrical continuity of parts of the lighting protection system.

Detailed scope

The contractor shall have a specialist who will undertake the soil resistivity tests and submit a detail design based on soil resistivity results indicating the expected earth reading to the engineer for approval prior to commencement of the installation.

Each transformer shall have an earth mat that is connected to the earth point of the transformer.

The earth mat shall be provided by the successful Tenderer as close as possible to the distribution board. The earth electrode shall consist of 10mmØ solid copper conductor and treaded copper coated earth spikes bearing the SABS mark of approval. A minimum of 250µm copper coated mild steel threaded on both ends driven into the ground to a depth where the reading obtained on equipment as specified does not exceed 2Ω. The distribution board earth bar shall be connected to the earth by means of a bare stranded copper conductor of size equivalent to that of the main incoming cable.

Earth continuity between any point and an exterior earth connection shall be proven by a Meggar reading of zero, i.e. full continuity.

All light fittings, fixed appliances such as stoves, geysers, etc., switched socket outlets and steel or copper water pipes shall be suitably bonded to a good earth.

Should non-conductive water piping be used in buildings for hot or cold water, the geyser or heat pump earth must be bonded to the main earth in each distribution board and to the main water supply piping.

No exothermic weld connections are allowed.

The lightning protection system shall consist of an aluminium roof conductor system in the case of non-metallic roofs and metallic roofs with which do not conform with minimum SANS62305-3:2011 (as amended), linked via a series of aluminium down conductors to buried earth spikes and 10mmØ solid copper trench earths. In the case of metallic roofs, that conform with minimum SANS requirements, the roof shall be bonded to the buried earth spikes and trench earths by means of down conductors. The down conductors shall be spaced at a maximum of 20m apart around the entire building.

All conductors shall be in accordance with the requirements of BSS 1474 or American Standards Specification 6063. All aluminium conductors shall have a cross-section area of not less than 50mm^2 (domestic dwelling only) or 70mm^2 for all other applications. The dimensions of flat section conductors shall be a minimum of 20mm x 3mm. Where conductors are mounted in stand-off guides, the cross-sectional area of the conductor shall be not less than 70mm^2 to give adequate mechanical strength.

The conductor shall be mounted in aluminium alloy guides conforming to the material specification given above. The guides shall allow for free longitudinal movement of the conductor to cater for expansion and contraction of the system caused by temperature variation. The minimum thickness of any part of the guide shall not be less than 3mm. The guides shall be securely attached to the structure using two stainless steel screws and plugs; the use of plated screws is not permitted.

The conductor system shall be supported in guides so that an air gap exists at all times between the aluminium and the surface of the structure, the guides being seated upon plastic or other similar insulating material. Should conductors be installed directly upon the surface of concrete or cement plaster, an insulating strip is to be installed over their entire length to prevent contact between the two surfaces. Guides shall be installed to support the conductor at intervals not exceeding 1.2m horizontally or 1.5m vertically.

No part of an aluminium conductor system shall be allowed to come into direct contact with concrete or cement plaster as this may cause the aluminium to corrode.

Where conductors are installed horizontally without deviation from a straight line over long distances, expansion loops shall be provided at distances not exceeding 30m. These expansion loops shall have a cross-sectional area which is at least equal to that of the conductor.

Where external down-conductors are installed in areas which are readily accessible to the public, the lower ends of the conductors shall be enclosed in a semi-rigid insulating material. In the case of a circular section conductor this shall comprise a 2m length of 20mm diameter conduit. The conduit shall be securely attached to the wall by means of

galvanized heavy duty steel saddles fixed with stainless steel screws and plugs, spaced at intervals not exceeding 1m. The ends of the conduit shall not be sealed.

Standard Procedure to be followed by the Specialist Contractor

a. Conduct a risk assessment on various structures and equipment, as required by the SANS Code of Practice.

b. Conduct resistance test measurements at areas where existing earthing has been installed and measure earth termination points connected and disconnected.

c. Conduct soil resistivity surveys where new installations are intended by means of the Wenner and fall of potential method.

d. Analyse from the surveys whether the ground conditions are in any way corrosive as per the SANS Code of Practice.

e. Block plan/site plan drawing to be provided so that required earthing can be marked up to upgrade wherever necessary.

f. Once the survey has been conducted and drawings marked up, etc., to provide quotation to upgrade wherever necessary.

g. Supply and install materials to structures and equipment wherever upgrading or new system may be installed to SANS requirements.

h. Conduct final resistance test measurements in presence of authorized personnel and issue an Earthing & Lightning Protection Report and Certificate/s.

i. Provide detail design of the complete earthing system complete with SANS10313 Lightning Protection System Installation Safety Report for acceptance by the Engineer.

The acceptance letter will be submitted by the Engineer.

All test procedures and recommendations will fully comply with the SANS Code of Practice 10313: 2010 in conjunction with SANS 62305-1-2-3-4: 2011 and IEC 62305-1-2-3-4: 2010.

15.1 JOINTS ABOVE GROUND

Circular section aluminium conductors shall be jointed by aluminium ferrules or lugs which are securely crimped into place. Aluminium lugs shall be bolted together using 10mmØ aluminium bolts and washers. The material specification for these components shall conform to that laid down above. Alternatively, heavily tinned copper lugs and ferrules may be used. The lugs should be joined together by means of 10mmØ copper, brass or bronze bolts and washers. Care should be taken to inhibit corrosion where dissimilar metals are used by thoroughly cleaning the surfaces of the metal before assembly and subsequently sealing the joint with an inert tenacious compound or tape.

Flat section aluminium conductors shall be joined by double riveting, using aluminium rivets which comply with the material specification laid down above. Alternatively, 2 x 6mmØ stainless steel bolts, nuts and washers may be used. Fold over type bends will not be permitted.

Down-conductors are to be terminated approximately 200mm above finished ground level. Circular section aluminium is to be jointed to a 70mm^2 (50mm^2 in the case of domestic dwellings) stranded copper conductor by securely crimping in place two heavily tinned lugs and bolting these together using 10mm diameter copper, brass or bronze nuts, bolts and washers.

Under no circumstances shall aluminium conductors be buried in the ground.

15.2 JOINTS BELOW GROUND

A joint in the stranded copper conductor which forms part of the earthing system shall be made by using a crimped copper ferrule clamp (not lugs), two copper line taps of suitable dimensions. The copper earth conductor shall be joined to an earth rod by clamping, using a standard earth rod clamp or copper line tap. No exothermic weld connections are allowed.

Joints made between dissimilar metals (i.e. copper conductor to galvanized steel water main), shall be thoroughly cleaned before assembly. They shall be rendered watertight using waterproof adhesive tape or a suitable compound for a minimum distance of 200mm in all directions from the joint.

15.3 BONDS

Where it is necessary to bond the aluminium conductor to any other metallic surface, this shall be done by bolting or riveting. When attaching aluminium to a dissimilar metal the joints are to be thoroughly cleaned and sealed to prevent corrosion.

15.4 AIR TERMINALS FOR NON-METALLIC PITCHED ROOFS

Aluminium conductors are to be installed along all ridges of roofs and projections such as dormer windows, etc., terminating at the ends with conductors running downwards over the surface of the roof and the eaves. Non-metallic chimneys shall be protected by means of a finial of sufficient length to cover the chimney within a 45° angle struck downwards from its point. Alternatively it should have a conductor installed in the form of a closed loop upon the upper surface. The conductors are to follow the outer contour of the stack and shall be bonded at a convenient point to the nearest component of the air terminal system.

This bond may run in a horizontal or downward direction, but under no circumstances shall any part of it run above horizontal.

Conductors may be dead-ended (i.e. have one end free and unbonded), providing that the length of such a conductor does not exceed 10m and that the unbonded end is either at the same level or higher than the bonded end. This technique may be used where ridge conductors are installed over dormer windows, etc.

In all cases where metallic gutters have been installed along the eaves of a pitched roof, these shall be bonded to the air terminal system. Where metallic gutters do not exist, however, a conductor shall be installed over the surface of the roof at eaves level to which the remainder of the air terminal system is to be bonded, with the following exceptions:

- Where the maximum distance from the ground level to the eaves of the building is less than 4m and the pitch of the roof is more than 1 in 2 (27° from the horizontal).

- Where the maximum distances from ground level to the eaves is less than 7m and the pitch of the roof is more than 1 in 1.5 (34° from the horizontal).
- Where the distance from the ground level to the eaves is more than 7m and the pitch of the roof is more than 1 in 1 (i.e. the included angle at the apex of the roof is less than 90°).

Under these circumstances eaves conductors need not be installed.

Any non-metallic objects which protrude above the general roof lines, such as Cape-Dutch gable ends, shall be protected as described above with a suitable air terminal system. Any metallic objects which protrude above the general roof line, such as hot water expansion pipes shall be bonded as directly as possible to the nearest eaves conductor, gutter or other part of the lightning system.

These bonding conductors shall run in a horizontal or preferably a downward direction, from the vent pipe, etc., to the lightning protection system.

15.5 AIR TERMINALS FOR METALLIC PITCHED ROOFS

Buildings with roofs covered with electrically continuous metal sheets do not require separate air terminals but shall be earthed via down conductors generally as described in above. Any non-metallic objects projecting above the general roof line shall be separately protected as described above and bonded to the metal roof covering.

15.6 AIR TERMINALS FOR NON-METALLIC FLAT OR MONO-PITCHED ROOFS

For flat or mono pitched roofs of non-metallic construction the air terminal system shall consist of aluminium alloy conductors installed around the outer perimeter of each section of the roof structure. These conductors shall be installed on top of parapet walls if these exist. Lift motor rooms, tank rooms, penthouses, etc., which protrude above the general roof line shall have air terminal conductors installed around the outer perimeter of each roof slab or parapet wall. Any metallic objects which protrude above the roof line, such as expansion pipes, signs, flag poles, handrails, etc., shall be bonded directly to the nearest component of the lightning protection system.

It is not permissible for the ends of conductors to be bonded directly to the perimeter air terminal system if the latter is installed upon a parapet wall having a height exceeding 500mm above roof slab level. In these circumstances the conductors are to be bonded directly to the down conductors.

15.7 AIR TERMINALS FOR METALLIC FLAT OR MONO PITCHED ROOFS

Metallic flat or mono pitched roofs do not require separate air terminal conductors, providing that there is electrical continuity between the metallic roofing sheets. A metallic roof surrounded by a non-metallic parapet wall shall have conductors installed at the top of the parapet wall and these shall be bonded to the metallic roof at intervals not exceeding 20m. If the parapet wall is clad with metal over its upper surface, or a handrail is installed which affords good electrical continuity, separate air terminal conductors need not be installed. Under these circumstances the metal handrail or cladding shall be bonded to the metal roof covering at intervals not exceeding 20m.

All non-metallic covering such as slates, tiles, asbestos cement sheeting, etc., supported by a steel structure being electrically continuous throughout may be treated as being of a

complete metal construction. In these circumstances no separate air terminal system need be installed providing the steel roof structure is bonded to earth at intervals given above.

15.8 DOWN CONDUCTORS FOR NON-METALLIC STRUCTURES

Down conductors shall be installed at regular intervals around structures and run as directly as possible between the air terminal and earthing system. They shall, where practicable, be positioned at the external corners of the structure. The maximum separating distance between down conductors around the perimeter of the structure shall not exceed 30m. In the case of very tall buildings having a slender base (i.e. chimney stacks, water towers, etc.), a minimum of two down conductors shall be installed.

The lower ends of down conductors are to be terminated and bonded to the earthing system. Under no circumstances shall aluminium conductors be buried underground. Test joints shall be provided between the down conductors and earthing system. Down conductors shall run vertically between the air terminal and earthing systems. Where this is impracticable, their course may be deviated to run at any angle up to and including horizontal.

Where it is necessary to run conductors horizontally over the upper surface of a structural protrusion, such as an exposed concrete slab, the conductor may run down vertically over the edge of the slab and return to the main structure, so that the distance between the upper and lower conductors exceeds one third of the length of the horizontal run. Looped down conductors are not permitted. Down conductors shall not run over the underside of large overhangs which are less than 6m above ground level, or other areas where people are likely to be present during a thunderstorm.

External or internal metallic rainwater pipes may be used as down conductors providing these are of substantial section and are jointed by screwing one length into another or welding. Thin gauge galvanized steel pipes whose sections are held together by friction, rivets or screws shall not form part of a lightning protection system.

15.9 DOWN CONDUCTORS FOR REINFORCED CONCRETE FRAMED STRUCTURES

The steel reinforcement of this type of structure may be used in place of down conductors. Where the reinforcing system is used, the air terminal system shall be bonded to it at a maximum of 30m intervals using steel clamps. This bond may be achieved by clamping, with a steel clamp, a steel conductor to a selected reinforcing bar, the opposite end of this conductor shall terminate at a corrosion resistant metallic terminal such as Grade 316 stainless steel.

The reinforcing system of prefabricated concrete buildings shall not be used unless special provision is made for bonding the various prefabricated sections together.

The terminals should be mounted flush with the face of the concrete. An aluminium alloy bond shall then be taken from the air terminal system and be connected to the stainless steel terminal by means of a heavily tinned crimp lug for circular section aluminium, or a suitable bi-metallic joint in the case of flat section aluminium. A similar system shall be used to bond the reinforcing system at ground level to the earthing system at points directly below the air terminal bonds. Here copper conductors shall be used as the external bonding material.

Under no circumstances shall copper, or other non-ferrous material be allowed to come into contact with steel reinforcing bars, as this may cause severe corrosion and subsequent structural damage. The lightning protection system shall not be bonded to any part of the structure which is electrically isolated from the remainder of the building, i.e. cantilevered sections. In these circumstances, or where it is otherwise impracticable to use the reinforcing system, external down conductors shall be installed as above.

15.10 DOWN CONDUCTORS FOR STEEL FRAMED STRUCTURES

Where the framework of a building is constructed of structural steel columns, these may be used in place of down conductors providing the separating distance between them does not exceed 30m. The upper ends of the columns shall be bonded to the air terminal systems and the lower ends to the earthing system.

15.11 EARTHING BY MEANS OF VERTICALLY INSTALLED ROD TYPE ELECTRODES

Rod-type electrodes shall be driven into the ground at a position directly below each down connector. The maximum earthing resistance of each electrode or number of electrodes bonded to any one down conductor shall not exceed N x 30Ω, where N equals the total number of down conductors which are bonded to a common air terminal system, or 200Ω, whichever is the lower value.

The minimum horizontal separating distance between rod-type electrodes bonded together shall not be less than their installed depth. The upper ends of installed rod-type electrodes are to be terminated approximately 500mm below finished surface level. A 50mm^2 copper bonding conductor shall be installed to run between each earthing electrode system and the lower ends of the adjacent down conductors. A joint is to be made between each of these bonding conductors and the down conductors at a position approximately 200mm above finished ground level. These bonding conductors shall be installed in PVC conduit securely affixed to the wall. The length of this PVC conduit shall be approximately 600mm and shall be installed so that approximately 200mm protrudes above ground level, the remainder being buried into the soil.

15.12 EARTHING BY MEANS OF METALLIC WATER MAINS

Where two or three down conductors are installed the water mains may serve as an earth terminal for one of these. Where three of more down conductors are installed the water mains may serve as an earth terminal for two of these. Regardless of whether the water mains are used as an earth terminal or not, the incoming metal water pipe shall be bonded to the lightning protection earthing system underground.

15.13 EARTHING BY MEANS OF TRENCH TYPE ELECTRODES

Where the soil conditions prevent the satisfactory installation of rod-type electrodes, a trench earth system shall be installed. This method is to comprise a 70mm^2 stranded copper conductor installed horizontally into a trench at a depth of 500mm below finished ground level. The conductor is to follow the general outline of the structure to be protected and be installed 1m away from the outside walls. Where the building stands on rocky ground, the trench earth may be attached to the lower part of the wall in areas where rock protrudes through the soil. The conductor shall, however, be buried wherever possible as described above.

Each down conductor shall be bonded to the trench earth system as directly as possible by means of a copper conductor.

Trench earth systems shall have a maximum earth resistance of 30Ω. An isolated length of trench earth mat shall be bonded to the down conductor system in such a way as to reduce the length of dead-ends to the minimum.

Should trench earths be installed beneath pathways where people are likely to be present during a thunderstorm, a plastic, bitumastic or ceramic pipe shall be installed having a length similar to the width of the pathway and the trench earth conductor run inside it.

The maximum useful length of a dead-ended trench earth is 80m.

15.14 TESTS ON COMPLETION

The lighting protection of the installation shall comply with and shall be tested in accordance with SANS 10313. The installation shall be done by an approved and recognised specialist in the field of lightning protection and earthing.

The submitted price for the lightning protection system shall include all requirements for the detail design and entire installation, compliance with SANS 10313 and shall include all testing and the issue of safety and test certificates. Any additional cost required to enhance the earthing and lightning protection installation shall be paid direct from the project upon Clients approval or Clients representative.

16. TESTING AND INSPECTION

The successful Tenderer shall comply with the relevant requirements concerning registration of electricians, registration of the works, testing and inspection.

The successful Tenderer shall ensure that all equipment is installed and tested in full compliance with the requirements of the manufacturers of the equipment so as to ensure that the guarantees offered by the manufacturers are not compromised. The successful Tenderer shall familiarise himself in detail with the manufacturer's requirements prior to the installation of the equipment, and, where necessary, the installation work shall be carried out under the supervision of the manufacturer/supplier.

The successful Tenderer shall carry out continuity, earth leakage, earth loop impedance and insulation tests to ensure that the installation is functional and safe.

A full functional test will be carried out on the installation for a period to determine the satisfactory working thereof after completion of the works and before first delivery is taken. During this period the installations will be inspected and the successful Tenderer shall make good, to the satisfaction of the Engineer, any defects that may arise.

The successful Tenderer 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.

The successful Tenderer shall on completion of the tests, submit, in terms of the OHS Act No.85 of 1993 (as amended), a completed and signed Certificate of Compliance for Electrical Installations to the Clients Representative.

On completion of the Contract Works, the successful Tenderer shall remove all dirt and debris arising from the Contract Works from site, paying particular attention to roof spaces.

Only Tenderers registered with the Electrical Contracting Board of South Africa in accordance with Regulation 5 of the Occupational Health and Safety Act will be accepted and permitted to do work under this Contract. The requirements of Regulation 5(2) will be strictly enforced, and are repeated for convenience purposes:

"5(2) The Electrical Contracting Board of South Africa shall, free of charge, register as an electrical contractor and enter into a register kept for that purpose the name of any person who applies therefore in terms of sub-regulation (1) and who

(a) has a fixed address and has a telephone listed in his name; and

(b) employs an accredited person on a full-time basis, or is himself an accredited person."

An "accredited person" is defined in the Regulations as "……a person registered in terms of Regulation (9) (of the Act) as an electrical tester for single phase, an installation electrician or a master installation electrician, as the case may be". If, for any reason whatsoever, the successful Tenderer fails to comply with these statutory requirements during the Contract period, after having been accepted initially to do work under this Contract, the services of the successful Tenderer will be terminated in accordance with Clause 56 of the Conditions of Contract.

17. DRAWINGS AND DOCUMENTATION

The successful Tenderer shall provide four sets of "as built" drawings and operational manuals for all equipment installed in terms of this specification, the drawings and Bill of Quantities. One set shall be provided to the Clients Representative and three to the Employer.

The maintenance and operational manuals must be complete with an index and be bound in a suitable hard cover binder such as Bantex A4 Ring Binders. The files must be provided with stiff dividers on which the relevant sections are indicated and are to be in printed or typed format. Drawings shall be housed in plastic pockets in the file, and only one (1) drawing per pocket will be allowed.

In addition all "as built" drawings must be stored on CD in .dwg format and must also be submitted with the manuals.

All schematic electrical "as built" drawings of distribution boards must be laminated and attached to the inside of the doors with double sided tape.

The main distribution board/electrical panel schematic diagram in the low voltage plant room or in other plant rooms as well as the schematic site reticulation layout, if applicable, must be suitably framed with Perspex and be mounted in the plant room in a position as indicated on site.

The maintenance and operational manuals must consist of the following sections where applicable to the project:

- Operations section, covering description of the system and functioning thereof, all starting up and stopping procedures, fault-finding procedures, pre-start checks and equipment running checks.

- Comprehensive data log sheets to be kept by the user of the system.

- General system description and general information schedules of plant and equipment, such as description of equipment, model number, capacity, electrical requirements of equipment, name and address of supplier, name of manufacturer.

- Design information: Design data sheet containing all design and selection parameters, calculations, selection curves, etc. Settings and values recorded during commissioning. Manufacturers' brochures, pamphlets, pump curves, etc.

- Maintenance data and schedules: The lapse of time between services and the description of service requirements for each part, piece of equipment or item installed under the Contract. This section must also include the detailed daily, weekly, monthly, three monthly, six monthly and yearly preventative maintenance instructions and checklists.

- Manufacturers' literature indication lubrication points, lubricants to be used and other data referred to above.

- Commissioning data of all equipment and systems with all set points listed in table format relating to the specific piece of equipment and/or system.

- All other data relating to other components forming part of the system/reticulation such as valves, diffusers, medical gas outlet points, etc.

- Critical spare parts list for all equipment.

- All test certificates (any certificates required in terms of the installations as pertaining to the project), compliance certificates, lightning protection certificates, certificates of construction of electrical panels.

- Schematic wiring diagrams and equipment ratings of all electrical panels and distribution boards.

- All "As-Built" drawings of mechanical and electrical installations pertaining to the project. "As-Built" drawings must be the true reflection of the installation as on site and must include the actual particulars of the equipment as installed on site and must be signed and dated by the responsible consultant and must be marked "AS BUILT".

- All "As-Built" drawings, including wiring diagrams, must be produced in Autocad format and be stored on CD as listed above.

ANNEXURES

18. DIESEL ALTERNATOR GENERATING SET (To be completed by tenderer)

18.1 DIESEL ENGINE TECHNICAL SCHEDULES

Items	Description	Unit	SCHEDULE A	SCHEDULE B
			Minimum Requirements	To Be Completed By *Contractor*
A	**DIESEL ENGINE:**			
1	Manufacturer		Stipulate	
2	Country of manufacture		Stipulate	
3	Model (or similar approved)		John Deere, Perkins, Deutz, Volvo, Mitsubishi, Caterpillar	
4	Type (two or four stroke)		4 stroke	
5	Continuous rated output at sea level	kVA	300	
6	Governed speed	rpm	1500	
7	Number of cylinders		Stipulate	
8	Diameter of cylinders	mm	Stipulate	
9	Stroke of piston	mm	Stipulate	
10	Piston speed	m/min	Stipulate	
11	Type of air cleaner		Stipulate	
12	Type of lubricating oil filter		Stipulate	
13	Make and type of injection system		Stipulate	
14	Type and number of fuel filters		Stipulate	
15	Manufacturer of turbo charger		Stipulate	
16	Type of turbo charger		Stipulate	
17	Lagging required over turbo charger?	Yes / No	Yes	
18	Manufacturer of governor		Stipulate	
19	Type of governor		Stipulate	
20	Max cyclic variations		Stipulate	
21	Speed variation for sudden release or application of load			
22	Temporary		Stipulate	
23	Permanent		Stipulate	
24	100% Rated full load may be applied seconds after initiation of starting sequence		Stipulate	
25	Fuel consumption of the complete generator set at site with a generator output of:		(Submit curves)	
26	- Full load	l/hr	Stipulate	
27	- ¾ load	l/hr	Stipulate	
28	- ½ load	l/hr	Stipulate	
29	Air quantity required for engine cooling	cu.m/min	Stipulate	
30	Cross sectional area of radiator air discharge outlet required		Stipulate	
31	Dimensions of engine:			

Items	Description	Unit	SCHEDULE A	SCHEDULE B
			Minimum Requirements	To Be Completed By *Contractor*
32	- Length	mm	Stipulate	
33	- Height	mm	Stipulate	
34	- Width	mm	Stipulate	
35	Mass of engine	kg	Stipulate	

18.2 ALTERNATOR TECHNICAL SCHEDULES

Items	Description	Unit	SCHEDULE A	SCHEDULE B
			Minimum Requirements	To Be Completed By *Contractor*
B	**ALTERNATOR:**			
1	Manufacturer		Stipulate	
2	Model (or similar approved)		Stromberg, Marelli, Mecc	
3	Country of origin		Stipulate	
4	Type of enclosure		Stipulate	
5	IP rating of enclosure		Stipulate	
6	Nominal speed at an output frequency of 50Hz	r/min	1500	
7	Output voltage within governed speed range at:			
8	No load	V	430	
9	50% load	V	Stipulate	
10	100% load	V	Stipulate	
11	110% load	V	Stipulate	
12	Method of voltage regulation		Stipulate	
13	Phases	ph	3ph	
14	Continuous rated output at sea level	kVA	300	
15	Power factor		0.8	
16	Output current at:			
17	- Full load	A	Stipulate	
18	- ¾ load	A	Stipulate	
19	- ½ load	A	Stipulate	
20	Percentage output loss due to site conditions	%	Stipulate	
21	Percentage efficiency at:			
22	- Full load	%	Stipulate	
23	- ¾ load	%	Stipulate	
24	- ½ load	%	Stipulate	
25	Transient voltage drop due to application of full load		Stipulate	
26	Time for voltage restoration after application of full load	min	Stipulate	
27	Reactance	kVAr	Stipulate	
28	Transient reactance	kVAr	Stipulate	
29	Are brushes used in exciter?	Yes / No	Stipulate	
30	Insulation class of stator windings		Stipulate	
31	Insulation class of rotor windings		Stipulate	
32	Mass of alternator	kg	Stipulate	

Items	Description	Unit	SCHEDULE A	SCHEDULE B
			Minimum Requirements	**To Be Completed By *Contractor***
33	Alternator short circuit current	kA	Stipulate	
34	Dimensions of alternator (L x W x H)	mm	Stipulate	
35	**EXHAUST PIPE:**			
26	Manufacturer		Stipulate	
27	Material type		Stainless steel	
28	Wall thickness	mm	Stipulate	
29	Diameter at end	mm	Stipulate	
30	Total exhaust pipe length	mm	Stipulate	
31	Does the diameter vary over the length?	Yes / No	Stipulate	
32	Exhaust outlet height above finished floor level	mm	Stipulate	
33	**DAY TANK:**			
34	Capacity	litre	1000	
35	Material		Stipulate	
26	Material thickness	mm	Stipulate	
27	Type of level indication		Stipulate	
28	Type of level sensors		Stipulate	
29	**STARTING BATTERIES:**			
30	Manufacturer		Stipulate	
31	Type of battery		Stipulate	
32	Capacity	A/hr	Stipulate	
33	Voltage	V	Stipulate	
34	Number of batteries	No	Stipulate	
35	**BATTERY CHARGER**:			
36	Manufacturer		Stipulate	
37	Time to recharge batteries	min	Stipulate	
38	Maximum charge current	Amp	Stipulate	
39	Charge voltage	V	Stipulate	
40	**CONTROL CUBICLE**:			
41	Manufacturer		Stipulate	
42	Type		Enclosed free-standing	
43	Dimensions of control cubicle:			
33	- Length	mm	Stipulate	
45	- Height	mm	Stipulate	
46	- Width	mm	Stipulate	
47	Type of control equipment		Stipulate	
48	Type, make and rating of by-pass switch		Stipulate	
49	Type, make and rating of change-over breaker / contractor		Stipulate	
50	Rupturing capacity at rated voltage main circuit	kA	Stipulate	
51	Method of tripping employed in main circuit breaker		Stipulate	
52	Range of load setting of main circuit breaker		Stipulate	
53	**VOLTMETER:**			
54	Make and type		Stipulate	

Items	Description	Unit	SCHEDULE A	SCHEDULE B
			Minimum Requirements	**To Be Completed By *Contractor***
55	Dial dimensions		Stipulate	
56	B.S.S. accuracy		Stipulate	
57	MAXIMUM DEMAND AMMETERS:			
58	Make and type		Stipulate	
59	Dial dimensions		Stipulate	
60	Time lag		Stipulate	
61	B.S.S. accuracy		Stipulate	
62	**FREQUENCY METER:**			
63	Make and type		Stipulate	
64	Dial dimensions		Stipulate	
65	B.S.S. accuracy		Stipulate	
66	**OVERALL PLANT:**			
67	Mass of plant	kg	Stipulate	
68	Overall dimensions of plant:			
69	- Length	mm	Stipulate	
70	- Height	mm	Stipulate	
71	- Width	mm	Stipulate	
72	Delivery period	Weeks	Stipulate	

19. FINANCIAL DETAILS (To be completed by tenderer)

19.1 TENDERERS FINANCIAL DETAILS

NAME OF BANK OR FINANCIAL INSTITUTION WHERE ACCOUNT IS KEPT: _____

_____

TOWN AND BRANCH: _____

ACCOUNT NO.: _____

NAME UNDER WHICH ACCOUNT IS OPERATED: _____

NOTE:
Tenders cannot be adjudicated without the above information and failure on the part of Electrical Contractors to declare this information, thus causing delays to the adjudication, may result in a tender being disqualified.

20. BILL OF QUANTITIES (To be completed by tenderer)

CONTRACT SUM INCLUSIONS

The contract sum includes all Contractor's design, administration, supervision, materials, plant, equipment, auxiliary costs, duties, taxes and profit. Similarly, the unit rates for extra work shall also include all the above costs. This includes, but is not limited to, any error or omission by Contractor in estimating the cost of Works; any additional compensation for overtime, even when such overtime is required to maintain or recover progress on instruction of the Engineer; and any premium or bonus paid to secure deliveries of construction tools, equipment and materials.

PRELIMINARY AND GENERAL

The Preliminary and General costs shall be fully inclusive of all fees, costs, charges, expenses and all other costs incurred to administer the Contract including costs for the administration of sub-contractors (if any) and these costs shall include, but not be limited to the following items:

- Supervisory and planning staff, satisfactory to the Engineer as to numbers, qualifications, experience and duration of assignment, as are required to ensure the efficient execution of the Contract in accordance with the agreed programme; and all salaries, burden, transfer costs, housing, travel and living expenses, personnel transport and all other allowances, costs and other charges incurred by or as a result of providing such supervisory personnel.

- Administration and clerical personnel as are required to ensure the efficient execution of the Contract; all necessary security services; warehouse staff for the safekeeping and administration of material intended for permanent incorporation in the Works; as well as all salaries, burden, transfer costs, housing, travel and living expenses, personnel transport and all other allowances, costs and other charges incurred by or as a result of providing such personnel.

- Buildings for the use of Contractor's construction, supervisory and administrative personnel and clerical staff; all mess rooms, washrooms, toilets, workshops, warehousing, stores, and like buildings required by the Contractor; all necessary office furniture and equipment; telephone systems as may be required for the proper administration of the Contract; including delivery, erection and subsequent dismantling and removal from site; and hard standing and open storage areas.

- The provision of, installation, maintenance and dismantling of all temporary facilities, which may be required for the efficient execution of the Contract, including materials, equipment and labour for electrical power supplies, water supply (including drinking water), air supplies, weather protection, foundations, sanitary facilities, sewage system, security fencing.

- Field general expenses such as office cleaning and running expenses, sanitary costs, telephone and fax costs, postal costs, stationery, office equipment hire, labour recruiting and advertising costs, expenses arising from visits to Site by Contractor's home office staff and all costs associated with their visits, staff welfare costs, entertainment expenses, personnel transport costs, permit and licence costs, and like costs.

- Insurance and legal fees including payments to statutory authorities or government bodies, local taxes whether public or private, and other similar disbursements or payments necessary for the execution of the Contract as well as all insurance fees in accordance with the Contract.

- All costs incurred in furnishing the Guarantees which are required by the Contract.

BILL OF QUANTITIES - GENERAL

An item against which no price is entered will be considered to be covered by the other prices or rates in the bill of quantities.

The General Conditions, the Particular Conditions, the Specification and the drawings are to be read in conjunction with the bill of quantities.

Rates are inclusive of waste. The Employer shall not be held liable for any costs incurred due to over or under ordering.

The prices and rates inserted in the bill of quantities are fully inclusive prices to the Employer for the work described under the several items. Such prices shall cover all costs and expenses that may be required in and for the construction of the work described and shall cover the cost of all general risks, liabilities and obligations set forth or implied in the Contract.

NB: Except for the Preliminary and General, the quantities in the bill of quantities are provisional estimates which will be re-measured on completion of the Works. The actual re-measured quantities will be applied to the unit rates to establish the Contract Price. The Preliminary and General time related prices will only be adjusted in accordance with agreed extensions of time.

The rates shall be fixed and not subject to escalation or foreign exchange variation.

Notwithstanding the fact that the lengths of cables and trenching as given in Bill of Quantities have been measured from scaled drawings, the Contractor shall check such lengths on site before ordering of such material, as he will not be paid for excess. Any allowances for off-cuts are made in the unit rates. The final measurements shall be based on the net route lengths of the cables and cable sleeves only.

Unless a separate rate for the supply and the installation of any item is specifically called for, the supply and installation costs of any item shall be fully included in the unit price.

The description of each item shall, unless otherwise stated herein, be held to include making, conveying and delivering, unloading, storing, unpacking, hoisting, setting, fitting and fixing in position, cutting and waste, patterns, models, brackets, mounting accessories and templates, plant, temporary works, return of packing, establishment charges, profit and all other obligations.

Where the Contractor takes delivery of, handles, stores, uses, applies and/or fixes any proprietary product, he shall do so in strict accordance with the manufacturer's instructions.

All fittings and accessories always include the connection thereto. All light fittings shall be complete with lamps and tubes, unless otherwise stated in the Bill of Quantities.

When using multicore cables, the rates include for all cable tails, and wastage and payment will only be made for the actual length measured from terminal to terminal.

Under no circumstances will any payment be made for wastage, or surplus cable left on drums, by the Contractor.

All measurements are nett, unless otherwise stated, and the rates include an allowance for wastage.

All provisional sums shall be expended as directed by the Engineer and any balance remaining shall be deducted from the amount of the Contract Sum.

All items described as "Provisional" shall be measured as executed and paid for according to prices in Bill of Quantities and any unexpected amounts shall be deducted from the amount of the contract sum. No work for which "Provisional" items are provided shall be commenced without written instruction from the Engineer.

The prices for articles described by trade names or catalogue references are based on the type and manufacture specified in these Bills.

Where articles other than of the manufacture specified are used, an adjustment of the prices will be made and Variation Orders issued to cover these adjustments. Substitution will be strictly subject to the Engineer's approval.

20.1 ELECTRICAL BILL OF QUANTITIES

Item	Description	Unit	Qty	Supply and Install Rate	Amount
1	***Section 1: P and G***				
1.1	Electrical Preliminary and General (all inclusive)	Sum	1		
1.2	The contractor shall allow for all items not specifically mentioned above in order to provide a complete working solution as per the specifications	Sum	1		
2	***Section 2: Earthing and bonding***				
2.1	70 mm² insulated stranded copper [down conductor] including all fixing accessories.	m	10		
2.2	70 mm² bare stranded copper [trench earth] including all fixing accessories	m	20		
2.3	Conduct soil resistivity surveys, tests, risk assessment, report and final construction drawings for Engineers approval prior to procurment or materials and execution of works	Sum	1		
2.4	Bonding joints, etc. complete for 70mm² conductor, including lugs, nuts, bolts and washers	Sum	1		
2.5	1.8m x 16mm diameter solid copper earth electrodes driven into the ground, complete with brass coupling between rods (Bearing SABS Mark)	No.	10		
2.6	16mm Diameter copper earth electrode clamp	No.	10		
2.7	25mm Diameter PVC conduit including bends, T-offs, saddles, joints, etc.	m	5		
2.8	Test and commission the complete installation including the handing in of the test results (COC) to the Engineer as detailed	Sum	1		
2.9	As Built Drawings	Sum	1		
2.10	Bond the water main to the adjacent down conductor. All water pipes, hand basins, sinks, baths, aluminium gutters, aluminium roof sheeting and rain water pipes shall be bonded.	Sum	1		
2.11	Standby Generator earth mat (1 ohm or less) + earth bar - all inclusive	Sum	1		
2.12	The contractor shall allow for all items not specifically mentioned above in order to provide a complete working solution as per the specifications	Sum	1		
3	***Section 3: Distribution Boards***				
	The supply of the distribution boards shall include all equipment, accessories, and internal wiring as specified on the single line diagram in accordance with the specification, handling, profit and delivery. The installation shall include the installation, connection, earthing, bonding and conduit terminations but excluding cable terminations				
3.1	Modify existing panel to suite proposed installation and relacate existing Elster Energy Meter in liaison with Municipality to the proposed new panel, all inclusive	Sum	1		
3.2	Trace circuits, test, make safe, disconnect and/or re-instate in existing electrical distribution boards, and dispose off site all redundant equipment	Sum	1		
3.3	DB-Main/Gen as detailed on single line drawing complete with busbars, switchgear, wiring, labelling, etc	Sum	1		
3.4	The contractor shall allow for all items not specifically mentioned above in order to provide a complete working solution as per the specifications	Sum	1		
4	***Section 4: Cables and Terminations***				
	Supply deliver to site and store 1000/600 volt Cu / PVC / SWA/PVC/ECC cables. Install, rack, strap and testing of cables as per specification including clamps, ties and cable numbering system. Rates to include for wastage. Contractor will only be reimbursed for installed cable measured on site between terminations. Cable bonding of all Earth Continuity Conductors from the incoming and outgoing cables will be properly crimped into cable lugs and bolted to their respective earth bars				
4.1	Contractor to test, make safe and relocate existing cables current departing from existing 500kVA Transformer to Existing DB-Main and relocate them to Proposed New DB-Main/Gen as per typical drawings	Sum	1		
4.2	120 mm² 4c 1000/600 volt Cu / PVC / SWA+ECC/PVC cable	m	600		
4.3	95mm² 1000/600 volt Cu / PVC earth cable + Terminations	m	200		
4.4	The contractor shall allow for all items not specifically mentioned above in order to provide a complete working solution as per the specifications	Sum	1		
5	***Section 5: Conduits, Sleeves, Trays, Trenching and Manholes***				
	Conduit placed in position for casting in concrete or screed, for building or chasing in concrete or brickwork, and surface mounting In ceiling voids including bending, short lengths, drawboxes, couplings, bends, tees, saddles and conduit glue. 1mm galvanised draw wire shall be installed in wireways for other services				
5.1	25 mm Diameter	m	10		
5.2	25 mm Diameter Bosal Conduit	m	10		
5.3	50mm Diameter u-PVC cable sleeve piping including short lengths, jointing and slow radius bends including danger tape (Communication)	m	20		
5.4	110mm Diameter u-PVC cable sleeve piping including short lengths, jointing and slow radius bends including danger tape (Electrical)	m	300		
5.5	Standard Electrical 800 x 800 x 900 Brick Built Manhole c/w 110ø uPVC sleeves and 6mmø Nylon Rope.	No.	2		
5.6	1000mm Wide Heavy Duty Cable Ladder inclusive of all mounting and supports accessories and T-Piece, Droppers, 90 degree bends, etc	m	20		
5.7	Trenching under Hardened and Tar Surfaces, backfill, danger tape and making good - all inclusive	m	20		
5.8	Coring through walls, slabs and etc and making good (i.e. patching, painting, etc) - Provide Structural Engineers approval prior to Commencement of Works	Sum	1		
5.9	The contractor shall allow for all items not specifically mentioned above in order to provide a complete working solution as per the specifications	Sum	1		
6	***Section 6: Diesel Generator Set***				
6.1	Supply, install, test and commission the Fully Enclosed Outdoor Type Diesel Generator set (of 300 KVA) including the cooling system, sound attenuation system (special care must be given to the attenuation as the set is in a office environment - <75dB(A) at one meter from the set), under unit base fuel tank for 16,67 hours (1000 litres) with full tank diesel fuel, fuel system, topped up fuel, tank, stainless steel exhaust system cladded with stainless steel, weather proof painted 3CR12 Canopy and radiator louver, battery and battery charger system and AMF control panel, including cabling & stainless steel cable supports from AMF panel to generator etc. Refer to the Generator Standard Specification.	No.	1		
6.2	Delivery to site and installation (Delivery address: Wadley House, 115 Jabu Ndlovu Street, Pietermaritzburg, Province of KwaZulu Natal)	No.	1		
6.3	Standby Generator Remote Panel installed in Supervisor/Managers office inclusive of all communication cabling, terminations, mounting accessories, display and/or condition and alarm indication unit to Engineers approval	Sum	1		
6.4	Fuel filtration system, Duvalco BFS series - 5 micron filter media, 302 stainless steel valves	Sum	1		
6.5	Reinforced Concrete Plinth and Bund Wall to Structural Engineers Detail (To suite Generator Weight including Full 1000L Fuel Tank)	Sum	1		
6.6	OHS Act signage, fire and resuscitation, 'engine may start automatically, isolate power before working on plant" notices and etc	Sum	1		
6.7	12 month maintenance including new fuel filters, after sales support and guarantee	Sum	1		
6.8	As built documentation, Operations and Maintenance Manuals, Training of employers staff - allow 2 days	Sum	1		
6.9	The contractor shall allow for all items not specifically mentioned above in order to provide a complete working solution as per the specifications	Sum	1		
7	***Section 7: Testing, Commissioning and Handover***				
7.1	Test and commission the complete installation + Compliance Certificates, test results and quality documentation.	Sum	1		
7.2	Provide attendance to Supply Authority Staff and other Contractors during Construction.	Sum	1		
7.3	Supply and installation of fire resistant sealer at all cable entry / exit ducts and between floor slabs. Type Pyrocote or equal and approved.	m²	2		
7.4	The contractor shall allow for all items not specifically mentioned above in order to provide a complete working solution as per the specifications	Sum	1		
8	***Section 8: Contingencies***				
8.1	Provisional Sum	Sum	1	R100 000,00	R100 000,00
	Total Carried Forward to Final Form of Offer (Excluding VAT)				

T2.24 SCHEDULE OF PROPOSED SUB-CONTRACTORS

Tenderers are requested to provide a schedule of proposed key sub-contractors intended to be used on the project.

The schedule should be structured under the following headings:

SUB-CONTRACTOR	TRADE	YEAR ESTABLISHED	CIDB GRADING	REFERENCES

T2.25 RECORD OF ADDENDA TO TENDER DOCUMENTS

I / We confirm that the following communications amending the Tender documents that I / we received from the Employer or its representative before the closing date for submission of Tenders have been taken into account in this Tender.

A signed copy of each addendum shall be inserted after this page.

ADDENDUM NO.	DATE	TITLE OR DETAILS

Signature
(of person authorized to sign on behalf of the Tenderer)

Date

T2.26 DECLARATION OF CORRECTNESS OF BID

I,_____(Full Name) the Authorised Signatory of

_____(Tenderer) hereby declare that the information furnished in

the tender is entirely true and correct; and the tender is submitted on condition that the

Tenderer; its facilities, etc., shall at any stage be subject to inspection.

SIGNATURE:_____ **DATE:** _____
(of person authorised to sign on behalf of the Tenderer)

PART C: THE CONTRACT

C1.1 FORM OF OFFER AND ACCEPTANCE

A. OFFER

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

BID NO. ZNT……: THE MANUFACTURE, SUPPLY, DELIVERY, OFFLOADING, INSTALLATION, TESTING, COMMISSIONING AND HANDING-OVER OF STANDBY GENERATOR INSTALLATION AND ASSOCIATED ELECTRICAL WORKS AT WADLEY HOUSE IN PIETERMARITZBURG

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 Service Provider 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 OFFERED TOTAL OF THE PRICES INCLUSIVE OF VAT IS:

(in words)_____

_____

_____

(in figures) R_____

The Tenderer confirms that he has read the Contract referred to in C1.2 Contract Data.

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.

Signature(s) _____

Name(s) _____

Capacity _____

For the Tenderer:
(Insert name and address of organization)

_____

_____

Name & Signature of Witness _____

Date _____

B: ACCEPTANCE

By signing this part of the 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:

C.1 Agreement, and Contract Data, (which include this Agreement)
C.2 Pricing Data, including the Bill of Quantities
C.3 Scope of Work
C.4 Site Information

And the schedules, forms, drawings and documents or parts thereof, which may be incorporated by reference into Parts 1 to 4 above.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto 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, which must be duly signed by the authorized representatives of both parties.

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 other 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 Service Provider) within five days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

Signature: *(of person authorized to sign the acceptance)*

_____

Name: *(of signatory in capitals)* _____

Capacity: *(of Signatory)* _____

Name of Employer: *(organization)* .....

Address: _____

_____

Telephone number: _____ **Fax number:** _____

AS WITNESS

Signature: _____ **Name:** *(in capitals)* _____

Date: _____

C1.1 FORM OF OFFER AND ACCEPTANCE (CONTINUED)

C: SCHEDULE OF DEVIATIONS

The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Tender Data and the Conditions of Tender.

A Tenderer's covering letter will not necessarily be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.

Any other matters arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract shall also be recorded here.

Any change or addition to the tender documents arising from the above agreements and recorded here shall also be incorporated into the final draft of the Contract.

1. **Subject: Subcontracting**

   Details: The Contractor shall not sub-contract more than 25% of the Contract Price to another enterprise that does not have equal or higher (better) B-BBEE status level, unless the intended sub-contractor is an EME that has the capability and ability to execute the sub-contract.

2. **Subject:** _____

   Details: _____

   _____

3. **Subject:** _____

   Details: _____

   _____

4. **Subject:** _____

   Details: _____

   _____

5. **Subject:** _____

   Details: _____

   _____

6. **Subject:** _____

   Details: _____

   _____

7. **Subject:** _____

   Details: _____

   _____

By the duly authorized representatives signing this Schedule of Deviations, 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 change to the terms of the offer agreed by the Tenderer and the Employer this process of offer and acceptance.

C: SCHEDULE OF DEVIATIONS

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.

FOR THE TENDERER:

Signature: _____

Name: _____

Capacity: _____

Tenderer: *(Name and address of organization)*

_____

Witness:

Signature: _____

Name: _____

Date: _____

FOR THE EMPLOYER

Signature: _____

Name: _____

Capacity: _____

Witness:

Signature: _____

Name: _____

Date: _____

C.1.2 CONTRACT DATA (INCLUDING SPECIAL CONDITIONS OF CONTRACT)

PART 1: C.1.2.1 GENERAL CONDITIONS OF CONTRACT

1. FORM OF CONTRACT

The "JBCC (JOINT BUILDING CONTRACTS COMMITTEE) SERIES 2000 PRINCIPAL BUILDING AGREEMENT – EDITION 5.0, CODE 2101 – JULY 2007," as amended in the SPECIAL CONDITIONS OF CONTRACT, shall be applicable to this contract.

2. PRELIMINARIES

The "ASAQS (ASSOCIATION OF SOUTH AFRICAN QUANTITY SURVEYORS) PRELIMINARIES, NOVEMBER 2007," as amended in the SPECIAL CONDITIONS OF CONTRACT, shall be applicable to this contract.

3. TRADE PREAMBLES

The "Model Preambles for Trades – 2008", as recommended by The Association of South African Quantity Surveyors shall apply to this contract and is obtainable from The Association of South African Quantity Surveyors or Building Industries Federation South Africa (BIFSA).

4. CONTRACT DATA IN RESPECT OF THE PRINCIPAL BUILDING AGREEMENT

The details of the Contract Data are stated in the CONTRACT DATA - EMPLOYER.

5. SCHEDULE OF VARIABLES IN RESPECT OF PRELIMINARIES

The details are stated in the SCHEDULE OF VARIABLES.

PART 2: C.1.2.2 SPECIAL CONDITIONS OF CONTRACT (CONTINUED)

1. GENERAL

These special Conditions of Contract generally contain clauses that are either deemed to be additions, elaborations or variations to the General Conditions of Contract. Accordingly, these Special Conditions of Contract must be read in conjunction with the General Conditions of Contract and it shall be deemed that the amended meanings and intentions of the clauses shall apply, if applicable. In addition, it shall be deemed that any reference to Contractor shall mean Principal Building Contractor, as defined in the JBCC Principal Building Agreement.

2. SCOPE OF THE CONTRACT

The scope of the contract for each Tender option/s, if applicable, is described in the Specifications, Drawings, Bills of Quantities, Contract Conditions and the Contract Variables, as applicable.

3. CONFIDENTIALITY OF CONTRACT DOCUMENTS

It shall be deemed that the details of the documents shall be treated as private and confidential and their general content shall not be disclosed or discussed with third parties without the prior approval of the Principal Agent in writing.

4. PROGRAMME

The Contractual Commencement and Completion dates and any other relevant dates for this contract is stated in CONTRACT VARIABLES: THE SCHEDULE.

Time, cost and quality are to be considered the essence of this Contract. Accordingly, it shall be deemed that the contract programme prepared and issued in *"Primavera", MS Project or similar approved programming software,* detailing each activity and duration is submitted by THE CONTRACTOR, IN ACCORDANCE WITH THE TENDER REQUIREMENTS PRIOR TO THE AWARD OF THE TENDER, and as amended in conjunction with the Principal Agent and/or other Agents, shall be the basis of monitoring progress on the project. The programme is to include construction activities, long lead procurement schedules, information required schedules, tenant information schedules and sub-contractor appointment schedules.

The Process to be adopted in finalizing the program shall be as follows:

- The Construction Project Manager and / or Principal Agent shall evaluate the programme to ensure the completeness of the work programmed, accuracy of the durations, relevance and completeness of the logic, dates on which information are requested, times allowed for long lead items and subcontractor appointment dates.

- Any shortcomings and/or further requirements shall be clearly indicated in a programme assessment report and issued to the contractor for correction and additions.

- The contractor shall affect amendments to the program based on above and the final contract programme shall be signed-off by the Project Team and shall be deemed to be the baseline / target contract programme. This programme, and the progress therein, (and relevant authorised revisions), will form the basis of adjudication of all clauses relating to time as specified in the contract document. The submission of the programme and the dates therein shall not excuse or relieve the principal contractor or its parties from completing the project within the timeframe specified in the contract documents.

4. PROGRAMME (CONTINUED)

- The contractor shall update the contract/project programme at any time when the works been developed do not, or may not correspond to that originally programmed, or as formally instructed by the Project Manager and /or Principal Agent. It shall be deemed that the principal contractor has, when updating or developing the programme, consulted with the relevant project team members as well as the relevant nominated and selected sub-contractors regarding procurement period, specifications and sequencing required.

The process to be adopted for **PROGRESS REVIEW** shall be as follows:

- The Project Manager and/or Principal Agent, and the Contractor shall conduct a progress review on a pre-determined weekly interval. The progress for each activity of the works shall be evaluated, agreed upon and recorded in a report.

- The progress review shall incorporate procurement of long lead items, information release, fit - out information and sub-contractor appointments.

- The following information shall be recorded for each activity:

    - Actual start dates of the planned activities (if started),
    - Actual finish dates of the planned activity (if completed),
    - Estimated remaining durations of the planned activities that are still in progress,
    - Suspend and resume dates if a planned activity is suspended, and
    - Log text of delays incurred to planned activities.

- The result after the progress update must be closely evaluated and the relevance and accuracy of the results must be checked.

NOTE:

- The Contractor is not permitted to make any changes to the Contract Programme without agreement by the Project Manager and/or Principal Agent.

- Extension of time claims due to inclement weather, late information, or any other reason shall far as practical, be evaluated the moment it is submitted and the effect on the contractual end date determined.

- A decision shall as far as practical be made immediately on the number of days to be granted to the contractor, if any.

- Claims that have no effect on the critical path shall be so recorded.

- A summary of the extension of time claims submitted, for both inclement weather and contractual claims must be included in the joint progress report.

5. DAMAGE TO THE WORK

Care shall be taken not to cause any damage to any part of the existing or new work or any adjoining property. The contractor will be held responsible for damage caused to the works by his negligence and shall be liable for all costs incurred in making good any such damage to the satisfaction of the Principal Agent.

6. COMMUNICATION, MEDIA RELEASES, ETC.

The contractor shall not in any way communicate with the press, or any representative of the written or electronic media, on a question affecting this contract unless prior approval in writing is received from the Employer and/or the Principal Agent.

All rights of publication of articles in the media, together with any advertising relating to, or in any way concerned with this project shall vest in the Employer.

The contractor shall not, without the written consent of the Principal Agent, cause any statement or advertisement to be printed, screened or aired by the media.

7. COPYRIGHT

No part of this document and any document forming part of the contract documents may be copied, photographed or repeated in any manner or by any process without the written consent of the **author**. Copyright is reserved on all designs, specifications, patents and patentable designs, systems and processes contained in documents pertaining to this contract. The person, firm, body, supplier, contractor, sub-contractor and any other contracting party is to be responsible jointly and severally, in their personal and corporate capacities for any contravention of this requirement.

8. ESCALATION

This contract shall either **be subjected or not subjected to any form of Contract Price Adjustment Formulae such as the Haylett Formulae or similar,** which shall be dependent on the tender offer accepted. In this regard, it is deemed that for the fixed price option, the contract amount includes for any potential increases (except any variation in the rate of value added tax) in the cost of labour, materials, transport, etc.

The option applicable to this contract is as indicated below:

Option 1 – Subject To Escalation Price Contract	**X**
Option 2 – Fixed Price Contract	**√**

KEY: √ - Tender Option Applicable
X - Not Required For This Tender

9. WORKMANSHIP AND QUALITY CONTROL

The onus to produce work that conforms in quality and accuracy of detail, to the requirements of the specifications, rests with the contractor, and the contractor shall, at his own expense, institute a quality control system and provide other technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the works at all times.

The cost of supervision and process control, including testing carried out by the contractor shall be deemed to be included in the amount quoted for the works.

The contractor's attention is drawn to the normal standards regarding the minimum frequency of testing required for materials. The contractor shall, at his own discretion increase this frequency where necessary to ensure adequate control.

9. WORKMANSHIP AND QUALITY CONTROL (CONTINUED)

On completion and submission of every part of the work to the **PRINCIPAL AGENT** for examination, the contractor shall furnish the **PRINCIPAL AGENT** with the results of the relevant tests, measurements and levels to indicate compliance with the specifications.

Notwithstanding the approval of these above-mentioned tests by the **PRINCIPAL AGENT**, the contractor shall remain solely responsible for the work as defined in this contract document, up to the end of the defects liability period.

10. REPORTING OF ACCIDENTS/INCIDENTS

In addition, to any statuary obligations the contractor shall, as soon as practicable, report to the Principal Agent every occurrence on the works or the site causing damage to the property or injury or death to any individuals.

If requested, the contractor shall submit a report in writing to the Principal Agent within 12 hours of such request, setting out the full details of the occurrence.

The Principal Agent shall have the right to make any enquiries either on the site or elsewhere as to the cause and results of any such occurrence and the contractor shall render all reasonable assistance and make available the necessary facilities, equipment, personnel, etc., for carrying out such enquiries.

11. CO-OPERATION OF CONTRACTOR FOR COST CONTROL

It is deemed that the contractor accepts the obligation of assisting the Professional Consultants in implementing proper cost control in ensuring that the final building cost does not exceed the budget.

The cost control procedures are detailed on the Declaration for Cost Control and forms part of the Contract.

12. APPLICATION FOR PAYMENT

The Contractor shall submit the following information on a monthly basis to the Principal Agent and Quantity Surveyor in order to assist with the processing of the payment certificate and the preparation of the empowerment report:

- A detailed breakdown of the work done. (The work breakdown must be referenced strictly in accordance with the Tender Document or the detailed Priced Bills of Quantities, as applicable.)

- A detailed breakdown of all variation order costs claimed (With specific reference to work done by the Principal Building Contractor) in the certificate concerned, together with copies of the relevant contract instructions.

- A detailed breakdown of the work done by each sub-contractor. (The work breakdown must be referenced strictly in accordance with the Tender Document or the detailed Priced Bills of Quantities, as applicable.)

- A detailed breakdown of all variation order costs claimed in the certificate concerned for sub-contract work, together with copies of the relevant contract instructions.

12. APPLICATION FOR PAYMENT (CONTINUED)

- A written declaration authenticated by the Contracts Manager confirming, that the payment claims for work done by sub-contractors has been audited and amended by the Contractor's Quantity Surveyor, prior to it being forwarded to the Principal Agent and Quantity Surveyor for evaluation.

- If applicable, a combined empowerment report which shall include reports on contractor and sub-contractor compliance, in accordance with the format required by the empowerment manager. In this regard, the combined, contractor and sub-contractor empowerment report must contain an affidavit certifying that all information contained the report as being true and correct and must be authenticated by the contractor and a commissioner of oaths. The combined reports must also state that the contractor has checked and verified that all information submitted by sub-contractors is true and correct.

- Tax invoice: the contractor shall attach a tax invoice as prescribed in the Value Added Tax Legislation to each payment certificate when presenting the certificate to the employer for payment. Such tax invoices shall correctly reflect the prescribed information and the amounts shall match precisely the amounts included in the payment certificate. Should the contractor fail to comply with these requirements, the date of presentation of the certificate shall be deemed to be delayed at the contractor's default until such time as the requirements are met.

Should anyone or any combination of the above requirements not be complied with, the Principal Agent reserves the right to exclude any amounts that may have been due for certification from the Payment Certificate concerned and/or delay the issue of payment certificates and/or, revise the contractual payment date, as applicable, until such time compliance is achieved.

13. IDENTIFICATION OF PERSONNEL

All personnel that are utilized on the project by the contractor and its sub-contractors, are at all times whilst on site, be clothed with clothing that clearly identifies each staff member together with an identification document which includes, but not limited to the following:

- A photograph of the personnel concerned;
- The identification numbers of the personnel concerned; and,
- The name of company concerned

In addition, to that stated above, the contractor shall adhere to the premises security rules and regulations.

No personnel will be permitted to work on the project until this condition is adhered to.

14. INTERVENTION AT MANUFACTURE AND/OR SUPPLIER AND/OR SUB-CONTRACT LEVEL

The employer and its agents reserve the right to discuss and liaise on any issue pertaining to this contract with the contractor's service providers i.e. Manufacturers and/or suppliers and/or sub-contractors concerned (Nominated and Selected and Domestic). This right shall not create privacy of the contract between the employer and/or its agents and the said manufacturer and/or supplier and/or sub-contractors, (Nominated and Selected and Domestic).

15. CESSION OF MATERIALS SUPPLIED TO THE SITE

It shall be deemed that the contractor and its service providers on delivery of each batch of materials to site, has ceded the said materials to the employer.

16. ALTERATIONS IN THE QUANTITY AND VALUE OF WORK

The employer and/or its Agents shall be permitted to either increase or decrease the quantity and value of work contracted for. In this regard, the contractor including its service providers shall not be entitled to claim for any additional expense incurred, or for any change in the rates for work done and/or any materials and services supplied. It shall be deemed that all costs associated with this item is included in the Contract Sum.

17. CHANGES IN THE SCOPE OF WORK

The contractor acknowledges that whilst drawings have been prepared for this project, the scope of work and value of the contract may be substantially altered and that no claims for loss and expense shall be due by the employer for implementing any changes that may become necessary. It shall be deemed that the contract amount includes for all costs that may arise due to compliance with this clause.

18. MARKET RELATED WAGE RATES

The wage rates payable for labour in any category is deemed to be not less than the lessee of:

- Statutory wage rates in any labour category in the project locality; and
- The SAFCEC recommended minimum rates applicable at any time during the duration of the contract.

The Contractor shall demonstrate compliance with this requirement on a monthly basis.

19. TREASURES, RELICS, ETC.

Any relics, treasure, articles of value or of potential historical or archaeological interest found on the site must be brought to the attention of the **PRINCIPAL AGENT**. All work at the specific area of the discovery shall stop for a reasonable time period until such time that the **PRINCIPAL AGENT** instructs the contractor to continue with the work.

Any relics, treasure, articles of value or of potential historical or archaeological interest found on the site shall remain the property of the Employer and shall be handed over to the **PRINCIPAL AGENT** who shall be the sole arbitrator of what is an article of value.

20. PRICED BILLS OF QUANTITIES

The Contractor shall submit the Priced Bills of Quantities at the date of the tender closing.

21. LUMP SUM PRICE BREAKDOWN

Where items in the Tender document are measured as lump sums, the contractor's detailed Priced Bills of Quantities for each lump sum item, submitted **WITHIN TEN (10) DAYS OF NOTICE OF AWARD OF CONTRACT**, and prepared in accordance with the latest edition of the standard system of Measuring Building Work including any subsequent amendments thereto), shall form part of the contract and shall be used for the purposes of preparing valuation certificates, determining the value of variation orders, preparation of final account, etc.

22. PRICES AND NET MEASUREMENTS

Prices throughout these bills of quantities shall be deemed to include for all obligations arising out of the contract and unless otherwise specified, be held to include for making, conveying and delivering, unloading, storing, unpacking, hoisting, setting, fitting and fixing in position, cutting and waste, patterns, models and templates, plant, temporary works and return of packings.

22. PRICES AND NET MEASUREMENTS (CONTINUED)

Prices for all items contained in these bills of quantities and any additional authorised variations, shall be deemed to exclude all amounts due in terms of the Value Added Taxation Legislation. A provision for the addition of VAT shall be made on the summary page of the contract document and final statement of accounts, as applicable.

23. AMENDMENTS TO SCOPE OF WORK PRIOR TO TENDER AWARD

The Contractor is advised that certain portions of the scope of work may be adjusted/omitted subject to the Client's approval of the adjustments/omissions and can only be affected prior to the issuance of the Letter of Intent to Award. Any cost associated with the imminent scope change must be included in the overall price, as claims for additional costs/loss and expense will not be entertained.

24. SPECIFIC VARIATIONS AND/OR AMENDMENTS AND/OR ADDITIONS TO THE JBCC SERIES 2000 PRINCIPAL BUILDING AGREEMENT EDITION 5.0 CODE 2101 JULY 2007

24.1 DESIGN RESPONSIBILITY

Clause 4.0 refers:

Where the contract work includes a design element, the contractor will be required to complete a 'form of indemnity for design work'.

24.2 EMPLOYER'S AGENT

Clause 5.0 refers:

Notwithstanding that certain agents may not be directly appointed by the employer, such agents shall still be deemed as employer's agents.

24.3 COMPLIANCE WITH CONSTRUCTION REGULATIONS

New sub-clause 7.2 is to be added:

Without limiting the generality of the provisions of clause 7.0 of the **agreement**, the **contractor's** attention is drawn to the provisions of the Construction Regulations, 2003 issued in terms of the Occupational Health and Safety Act, 1993 in which it is specifically stated that the **employer** shall prepare a documented health and safety specification for the works and that the **employer** shall ensure that the **contractor** has made provision for the cost of health and safety measures during the execution of the works. In this regard, in the event that an occupational health and safety specification is not included as part of the contract documents, it shall be deemed that the **contractor** shall comply with the specification requirements as set out in the Occupational Health & Safety Manual For Construction as prepared by BIFSA and that all cost related to compliance with such specifications is included in the contract amount of the project.

24.4 EFFECTING INSURANCES

New sub-clause 12.7 is to be added:

It shall be deemed as acceptance by the Contractor that it (the contractor) is satisfied with the scope of the insurances effected by the Employer, and is supplemented by additional insurances considered necessary by itself (the contractor). In addition, the Contractor shall be responsible for excess amounts payable. Any clarification of the scope of cover provided by the policies arranged by the Employer should be obtained from the Employer's insurance brokers.

24.5 CONTRACT INSTRUCTIONS

New sub-clause 17.6 is to be added:

Should special circumstances warrant that the employer is required to take special measures to assist in the operations of the employer's business, during the construction phase, the employer shall have the right to instruct the principal agent to take special measures to accommodate these special circumstances. In such instance, the principal agent shall advise the contractor of these special measures at the time of issuing contract instructions to do work in this regard. Should the contractor fail to execute the contract instruction/s with due skill and diligence within (five) 5 days of having been issued with such instruction/s, the employer may employ others to give effect to such contract instruction/s all in accordance with clause 17.4.

24.6 SETTING OUT OF THE WORKS

New sub-clause 18.5 is to be added:

The contractor shall notify the principal agent if any encroachments of adjoining foundations, buildings, structures, pavements, boundaries, etc. Exist in order that the necessary arrangements may be made for the rectification of any such encroachments.

24.7 TEMPORARY WORKS AND PLANT

Sub-clause 19.2 refers – the following is deemed to be added after the words "notice boards"

Site notice boards, sub-contract notice boards, etc., as per the Standards Institute of Architects (1 No. each).

New sub-clause 19.4 is to be added:

It shall be deemed that all cost associated with the provision of, including erection, dismantling, etc., of special scaffolding required for the proper execution of the work is included in the contract amount. It shall also be deemed that all cost associated with the provision of, including erection and dismantling, etc. Of all scaffolding and hoisting equipment, machinery, etc. For Nominated, Selected and Domestic sub-contract work, required for the execution of the works, is included as part of the contract amount.

New sub-clause 19.5 is to be added:

The contractor shall erect, maintain and remove at completion hoarding with gantries, fans, safety screens, barriers, access gates, covered gangways and the like as necessary for the enclosure of the works and elements thereof all for the protection of the public and others or to meet the specific hoarding requirements of the employer as detailed on the architects drawing, and office accommodation for meetings held on site which shall be kept clean and fit or use at all times

New sub-clause 24.1.4 is to be added:

The contractor is expected to bring his work to a level of sectional or Practical Completion without extensive snagging lists being prepared by the Principal Agent, Architect, Engineer or any other authorised employer's agent. In this regard the Principal Agent, Architect, Engineer and any other authorised employer's agent will require sample panels to be erected in order to establish the required standards and performance parameters against which the works quality will be measured.

The contractor is expected to snag and rectify his own work until it is ready for Practical / Sectional Completion Inspection.

24.8 PRACTICAL COMPLETION

In the event that such inspection does not result in the work being accepted as Practically / Sectionally complete then the costs of such inspection and subsequent inspections shall be for the account of the contractor, , at a rate of Ten Thousand Rand (R10 000.00) per man hour or part thereof, calculated by multiplying the total of the number of employer's agents and employer's staff present at each abortive practical completion inspection meeting, i.e. Where practical

Completion is not achieved, by the time taken for such an inspection until practical completion is achieved. In this regard, the employer reserves the right to recover such costs in addition to any other remedies it may have in accordance with Clause 33.

24.9 WORKS COMPLETION

Sub-clause 25.1 refers – the following is deemed to be added after the words "works completion":

In this regard, the contractor shall within five (5) calendar days of receipt of the works completion list, issue a program indicating the dates for completion for all items listed in the works completion list. Should the contractor fail to issue a program, it shall be deemed that all items included in the works completion list shall be completed within twenty (20) calendar days after the due date for submission of the program.

Sub-clause 25.2 refers:

Add the following words after the word "completed":

"Within the agreed works completion list program referred to in the amended sub-clause 25.1."

Sub-clause 25.2.2 refers: add the following words after the last sentence:

Should the contractor be required to repeat the procedure in terms of 25.2, the employer reserves the right to deduct penalties equivalent to the amount of Ten Thousand Rand (R10 000.00) per man hour or part thereof, calculated by multiplying the total of the number of employer's agents and employer's staff present at each abortive works completion inspection meeting, i.e. Where works completion is not achieved in terms of 25.2, by the time taken for such an inspection. In this regard, such penalties shall be recovered in accordance with Clause 33.

24.10 FINAL COMPLETION

New sub-clause 26.3.3 is to be added:

In the event that the certificate of Final Completion is not issued due to the contractor's work not being sufficiently complete then the costs of such inspection and subsequent inspections shall be for the account of the contractor, at a rate of Ten Thousand Rand (R10 000.00) per man hour or part thereof, calculated by multiplying the total of the number of employer's agents and employer's staff present at each abortive final completion inspection meeting, i.e. Where final completion is not achieved in terms of 26.2, by the time taken for such an inspection until final completion is achieved. In this regard, the employer reserves the right to recover such costs in accordance with Clause 33.

24.11 REVISION OF DATE FOR PRACTICAL COMPLETION

Sub-clause 29.1.1 refers:

It shall be deemed that the contract programme includes an allowance of fifteen (15) working days for inclement and exceptionally inclement weather and an extension of time shall only be considered for inclement and exceptionally inclement weather beyond the fifteen (15) working day period. In this regard, the Employer reserves the right to recover such costs in accordance with Clause 33.

Sub-clause 29.1.2 refers:

Should any materials or items specified prove to be either unavailable, in poor supply or likely to cause delay to the contract Works, then this fact should be brought to the attention of the Principal Agent in sufficient time for suitable alternatives to be considered. Any claims for delays resulting from the contractor not conforming to the terms of this clause shall not be entertained nor allowed.

New sub-clause 29.1.7 is to be added:

Failure to give possession of the site to the contractor on the date stated on the schedule.

Sub-clause 29.2.1 refers:

This sub-clause is omitted.

New sub-clause 29.9 is to be added:

Notwithstanding, sub-clause(s) 29.1 to 29.8 a revision to the practical completion date will only be considered for work on the critical path of the contractual programme or the revised contractual programme, as applicable.

Any revised Programme, in order to be considered as a contractual programme, must be approved by the principal agent in writing, prior to it becoming effective.

New sub-clause 29.10 is to be added:

The removal and replacement of materials and/or workmanship which do not conform to specification or drawing shall not constitute grounds for the extension of the construction period nor for the adjustment of the contract value.

24.11 INTERIM PAYMENT

Sub-clause 31.1 refers:

Replace the word "shall" in the first line thereof with the word "may".

Sub-clause 31.6 refers:

The Contractor will be required to provide the Principal Agent with the necessary forms for cession of ownership for unfixed material.

Notwithstanding this or any other clause, materials and goods stored off-site shall not be included in any amount authorised for payment, unless otherwise agreed in writing.

24.11 INTERIM PAYMENT (CONTINUED)

Sub-clause 31.9 refers:

Replace the words "seven (7) calendar days" with "thirty (30) calendar days".

Sub-clause 31.13.2 refers:

This sub-clause shall be deemed to be deleted.

Sub-clause 31.13.3 refers:

This sub-clause shall be deemed to be deleted.

New sub-clause 31.17 is to be added:

Materials and goods stored off site shall not be included in the amount authorised for payment.

24.12 ADJUSTMENT TO THE CONTRACT VALUE

Sub-clause 32.2 refers:

Instructions given by the Principal Agent and / or any other authorised employer's agent in relation to the contract works, shall, irrespective of the format or wording of such instructions, not indicate that the work involved represents an extra or variation and shall not be deemed to be acceptance of any prices or quotations contained in any correspondence.

It is recorded that only the Quantity Surveyor is empowered, to rule whether any instructions issued constitutes an extra or not and, to resolve cost aspects of any matter pertaining to this contract.

25. SPECIFIC VARIATIONS AND/OR AMENDMENTS AND/OR ADDITIONS TO THE ASAQS PRELIMINARIES NOVEMBER 2007

25.1 TEMPORARY WORKS AND PLANT.

It shall be deemed that all cost associated with the provision of, including erection, dismantling, etc., of special scaffolding required for the proper execution of the work is included in the contract amount. It shall also be deemed that all cost associated with the provision of, including erection and dismantling, etc. of all scaffolding and hoisting equipment, machinery, etc. for Nominated, Selected and Domestic sub-contract work, required for the execution of the works, is included as part of the contract amount.

26. SPECIFIC PRELIMINARIES

26.1 PROPRIETARY BRANDED PRODUCTS

All materials, fittings, finishes, etc. Specified hereinafter under a trade name, catalogue number or reference, must be exactly as described. The Principal Agent's approval in writing must be obtained for the use of any alternative to the specification before the submission of Tenders otherwise the specified materials, fittings, finishings, etc. will be as assumed to have been allowed for in the tender.

The contractor shall take delivery of, handle, store, use, apply and/or fix all proprietary branded products in strict accordance with the manufacturers' instructions after consultation with the manufacturer's authorised representative.

26.2 MODE OF PROCEDURE

The Contractor shall provide, at the first site meeting, a computer generated critical path programme for each section of the project. The programme shall be prepared in sufficient detail to enable the principal agent to assess the weekly progress of the works. The programme must clearly indicate the lead times for procurement and off-site manufacture where appropriate and key dates for information required and for the appointment of nominated and/or selected and/or domestic and/or direct sub-contractors. The programme and level of detail shall be to the entire satisfaction of the principal agent.

No change is to be made to the programme without the approval of the Principal Agent, who shall be entitled to instruct the contractor to update and modify the programme in accordance with site circumstances, if applicable.

The programme is to be subject to the approval of the Principal Agent but such approval shall in no way relieve the contractor of his sole responsibility for the proper programming and seeing to the progress of the works and the timeous completion thereof.

The programme is to be prominently displayed in the site office and copies of the programme and its supporting documentation together with all amended programmes shall be handed to the Principal Agent.

The Contractor will be required to maintain, in addition to the main programme referred to above, a comprehensive fortnightly bar-chart programme expanded to reflect anticipated daily activities for the ensuing fourteen (14) days.

26.3 LABOUR RECORD

At the end of each week the Contractor shall provide the Principal Agent with a written record, in schedule form, reflecting the number and description of tradesmen and labourers employed by him and all subcontractors on the works each day.

26.4 WARRANTIES

The Contractor undertakes to perform the work in accordance with the terms and the conditions of the contract, in a workmanlike manner, which shall include but not be limited to, complying with the manufacturers/suppliers' specifications, if applicable, in respect of goods, methods, or materials used in the performance of the work.

The Contractor further warrants that they shall use only new merchantable materials, fit for their intended purpose, as well as supervision, labour and equipment which are fit for the purpose for which they are intended.

26.5 EXISTING SERVICES

The Contractor shall consult the Principal Agent before disconnecting any services. The Contractor shall take special care not to damage any existing services that could have been foreseen or what have been shown to him by the Principal Agent or Employer's representative. Damage to these services shall be for the contractor's account.

26.6 PLANT RECORD

At the end of each week the Contractor shall provide the 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.

26.7 MANUFACTURER'S RECOMMENDATIONS

All commodities are to be handled, stored, used, applied and/or fixed in strict accordance with the manufacturer's instructions and recommendations and after consultation with the manufacturer's authorised representative. Should these instructions and/or recommendations conflict with other specified requirements the Principal Agent must be notified timeously.

26.8 COMMODITIES TO BE NEW

All commodities, goods, articles or materials throughout the building are to be new except where re-use of existing is specified and are to be handled, stored, used, and/or fixed with care to ensure that they are in perfect condition when incorporated in the works and thereafter properly protected so as to ensure that they are likewise in perfect condition when handed over at completion of the works.

26.9 STANDARD OF WORKMANSHIP AND MATERIALS

In the absence of detailed specifications for any item or items, National Building Regulations, the latest applicable South African Bureau of Standard (SABS) specifications, or where such does not exist, then the latest applicable British Standard Specification (BS) shall apply.

26.10 OCCUPATIONAL HEALTH AND SAFETY ACT

The Contractor shall comply with the requirements as stated in the Occupational Health and Safety Manual for construction as prepared by BIFSA or the Occupational Health and Safety Specification, if included as part of the contract documents and for the duration of this contract be deemed to be the mandatory of the employer for the purposes of the Occupational Health and Safety Act No. 85 of 1993, and shall prior to taking occupation of the site, satisfy the employer by means of written representations confirming compliance with the relevant requirements of the said act.

Acceptance by the employer of the contractor's written representations in terms of the above shall constitute an agreement in writing to the arrangements and procedures between the parties to ensure compliance by the contractor, with the provisions of the act referred to herein, for the purpose of section 37(2) of the said act.

The employer shall at all times have the right to summarily suspend the performance of the contractor hereunder pending compliance by the contractor with any requirement, regulation and/or direction referred to.

The employer shall be entitled to set-off against any amount owed to the employer by the contractor hereunder any loss or damage suffered by it (the employer) as a result of suspension of the contractor's performance in the circumstances envisaged above.

For the sake of clarity, it shall be deemed that the BIFSA documentation shall only apply in instances where no other Occupational Health and Safety Specification is included as part of the contract documents.

26.10 GUARANTEES AND MAINTENANCE INSTRUCTIONS AND/OR MANUALS

The Contractor shall obtain and hand over to the Principal Agent on practical completion, all relevant guarantees, any operating and maintenance instruction manuals, data or instructions required by the Principal Agent or provided by manufacturer's or suppliers.

The Contractor shall ensure that all warranties and guarantees are received and fully ceded to the Employer on final completion.

26.11 PUBLICATIONS AND ADVERTISING

The Contractor shall not publish or cause to be published, any papers, articles or information relating to this contract nor display or permit to be displayed any advertisements on the site or elsewhere, in connection with this contract, without the prior permission, in writing, of the Principal Agent. The Contractor shall be responsible for the observance of this clause by his employees and sub-contractors.

26.12 REPORTING OF ACCIDENTS

In addition to any statutory obligations, the contractor shall, as soon as practicable, report to the principal agent every occurrence on the works or the site causing damage to the property or injury or death to any individuals. If required by the Principal Agent, the Contractor shall submit a report in writing to the Principal Agent within forty eight (48) hours of such incident setting out full details of the occurrence.

The Principal Agent shall have the right to make any enquiries either on the site or elsewhere as to the cause and results of any such occurrence and the Contractor shall make available to the Principal Agent the necessary facilities for carrying out such enquiries.

26.13 CONFIDENTIALITY

The Parties agree to consider information obtained from each other during the course of this Agreement as confidential information, and shall maintain such information as confidential indefinitely after the expiry or termination of this Agreement.

26.14 AS BUILT DRAWINGS

The Contractor shall accurately record the details of the electrical, mechanical, security, fire installation, water reticulation details, contractor breaks, etc., on drawings and issue same to the Principal Agent and the relevant agent for record purposes.

26.15 FALSE DECLARATION

All information provided by the contractor is accepted in good faith as being true and accurate. Any false declaration or intentional omission of relevant facts shall be reported to the employer, which on receipt of such report may elect to exercise its (the employer's) rights in terms of common law and/or the contract, as applicable.

26.16 REGULATIONS

The work shall be carried out in accordance with the requirements of local Authority Regulations that may be applicable.

The contractor shall if necessary, give notice and pay all fees, costs and rates as may be required by the Local Authority.

26.17 CONTRACTOR'S YARD, LATRINES, TELEPHONES, ETC.

The Contractor shall liaise with the Principal Agent with regard to storage space for plant, equipment, etc.

The Contractor is responsible for security of his equipment and materials used during the contract.

26.17 CONTRACTOR'S YARD, LATRINES, TELEPHONES, ETC. (CONTINUED)

No alcohol or drugs will be allowed on site neither will any person be admitted to the site if the Principal Agent has any reason to believe that such person is under influence of alcohol or drugs.

The Contractor is to provide temporary sheds, latrines and telephones, etc. for the duration of the project. These facilities must be available for use to the professional team and all Contractors involved on the project.

26.18 DUST AND NOISE POLLUTION

The Contractor shall take all reasonable measures to minimise any dust and nuisance and inconvenience as a result of the execution of the works. The Contractor shall use suitable and effective silencing devices for pneumatic tools and other plant that would otherwise cause a noise level exceeding the level laid down by the Local Authority.

26.19 NOTICES, SIGNS AND ADVERTISEMENTS

The Employer reserves the right to erect notices, signs and advertisements on the site or in the vicinity of the site. The Contractor is not entitled, without written approval by the Principal Agent, to display any signboard of his own. He must however allow for the standard signboard, if required by the employer.

26.20 CESSIONS

Neither of the Parties may cede, delegate, assign nor make over any of its rights and/or obligations in terms of this Agreement to any other third party without the prior written consent of the other Party.

26.21 ACCESS FOR PERSONNEL

No unauthorised persons are allowed on site unless authorised by the Principal Agent in writing. No persons are allowed access to any portion of the existing buildings, if applicable, other than the agreed entrance and exit routes, unless authorised by the Principal Agent in writing.

26.22 SAFETY HELMETS

The Contractor shall provide and keep on site an adequate supply of clean safety helmets for the use of all professional personnel and all authorised visitors.

26.23 SPECIAL TASKS

The Employer shall have the right to employ other Contractors to execute any special tasks whether contained in this contract or not, concurrently with the works being executed under this Contract.

The Contractor shall not be entitled to any profit and/or builder's discount on the value of any work executed by other contractors but shall nevertheless allow these other contractors and the Employer's employees to have access to the works, allocate reasonable space for the storage of their materials, tools and equipment.

Without in any way detracting from the generality of or limiting the above, the Contractor is advised that the special tasks will be carried out by the Employer and other contractors and the value of such work shall not be included in this contract.

26.24 OVERTIME

The Contractor is to note that all rates are inclusive of overtime work allowance and no additional costs for overtime work will be entertained.

26.25 INTERPRETATION OF THE DRAWINGS, SPECIFICATIONS AND BILLS OF QUANTITIES.

The Contractor shall be held solely responsible for and shall, at his own expense, rectify any errors arising out of the incorrect interpretation of the Drawings, Specifications, Bills of Quantities or Instructions.

Should any part of the Drawings, Specifications or Bills of Quantities not be clearly intelligible to the Contractor, or the material or articles to be used in the execution of the works be considered insufficiently described or the manner in which the work is to be carried out not clear, the Contractor must obtain from the Principal Agent the necessary information to clarify such Drawings, Specifications, Bills of Quantities or Instructions, which request shall be in writing.

All drawings, whatever their origin, are to be issued to the site or to any other person or persons only through the principal agent's office and shall bear the principal agent's office stamp and signature and an up to date register of all drawings issued to the contractor shall be kept on the works. Any other drawings used on the site will be used at the contractor's risk and should any work be incorrect due to the use of unauthorized drawings the cost of rectifying such work shall be for the contractor's account.

All drawings used on the works shall be properly mounted on suitable sheet material or otherwise protected and kept in good condition. Any drawings becoming bleached or otherwise obscured so that they cannot be properly read shall be returned to the Principal Agent for replacement, as any errors due to misreading of damaged or obscured drawings shall be made good by the Contractor at his own expense.

26.25 WORKING DAYS AND HOURS

The Tenderer is advised that the definition of "Working Days" has been amended to include Saturday and Sunday as normal working days. Further, the working hours shall mean 24 / 7 (twenty four hours a day for seven days a week for the complete duration of the contract). The Tenderer is to allow for all costs associated with this clause and is to allow for same in his Construction Programme.

26.26 JOBBING AND SITE RECORDS

Each trade shall perform all necessary jobbing and attendance and shall make good after all other trades.

Site records

The contractor shall keep a record in triplicate on site, the following:

- A daily record of work done.
- A daily record of all visits to site by any of the Employer's Agents.
- A daily record of all contract instructions issued by the Principal Agent and/or any other Agent.

Copies of these records are to be forwarded to the Principal Agent on a weekly basis.

26.27 SUPERVISION BY EMPLOYER'S AGENTS

Supervision by the Principal Agent and other Agents is intended as a means of checking the interpretation of work done and providing clarification and further information where required during the progress of the work. Supervision shall not in any way relieve the Contractor of his responsibility for ensuring that the work is carried out satisfactorily in all aspects, in good time and in accordance with the contract.

Although the Principal Agent and other Agents will make spot checks from time to time on dimensions and levels as the work proceeds, checking of the setting out, dimensions, levels and positioning of all items is the contractor's responsibility and should any errors occur during the course of or be found after completion of the works, the cost for remedying same will be for the Contractor's account.

26.28 PARTNERING

The Employer, its agents and the Contractor shall act as stated in the contract and in the spirit of mutual trust and co-operation. In this regard, it is a specific requirement that all the contractor's personnel provide reasonable assistance that may be required by the employer and/or its agents in order for them to assist in bringing the works to completion with due skill, diligence, regularity and expedition. In turn, the employer and its agents shall also provide assistance to the contractor to execute the works with due skill, diligence, regularity and expedition.

26.29 COPIES OF REVISED DRAWINGS ISSUED AS CONTRACT INSTRUCTIONS

The Contractor acknowledges that only one copy of any revised drawings shall be issued as contract instructions. In this regard, it shall be the contractor's responsibility for producing any additional copies that may be required for either internal use or for issue to any sub-contractor/s. It shall be deemed that the contractor has allowed for all costs necessary to ensure compliance with this clause in the contract amount

26.30 CONTRACTOR TO DELAY ACTIVITIES AT THE REQUEST OF THE PRINCIPAL AGENT

The Contractor may be called upon from time to time to cease certain building activities as required by the Employer. In this regard, the contractor shall cease such activities for the period as agreed with the Principal Agent. In this regard, the Contractor shall provide all reasonable assistance necessary to ensure compliance with this clause as well as to minimize the impact of such a request.

26.31 PROVISIONAL SUMS AND BUDGETARY ALLOWANCES

These amounts have been included in the contract sum where the work has not been defined at the date of tender. It is intended that once the scope is defined, tenders will be invited in terms of the process outlined below with a view to these works being awarded as nominated / selected subcontract works.

- The specialist consultant responsible for the specific work package will prepare documentation which is to include drawings, specification and schedule of quantities that define the scope of the works all in accordance with the principal building agreement.
- The Quantity Surveyor will prepare the necessary tender document.
- The Principal Agent will arrange for inviting prospective Tenderers to collect documents subject to the payment of a non-refundable document fee, if applicable.
- The Quantity Surveyor will arrange to issue the tender documents from their offices and take receipt of the amounts paid.

26.32 PROVISIONAL SUMS AND BUDGETARY ALLOWANCES (CONTINUED)

- The tenders for the works will be submitted to the Quantity Surveyor's office in terms of the tender closing times stipulated, unless otherwise agreed in writing.

- The Quantity Surveyor will prepare an initial financial evaluation report of the tenders and circulate to the Principal Building Contractor, the Principal Agent, the Empowerment Consultant, if applicable, and the relevant technical consultants for information and to enable them to prepare any necessary additional reports, all of which are to be submitted to the Principal Agent.

- The Principal Agent will prepare a draft report, discuss with the principal Building Contractor to get their approval and finally circulate the draft to the other consultants for final comment. Thereafter the Tender Report with recommendations will be finalised by the Principal Agent, circulate to the Employer for approval. On approval, the recommendation together with any instructions of award will be issued to the Principal Contractor who will be responsible for appointing the relevant party as a sub-contractor.

26.33 SITE ACCESS FOR AND MANAGEMENT OF DIRECT CONTRACTS

The Contractor shall allow direct contractors appointed by the Employer to access the site to execute work which does not form part of the Principal Building Agreement, concurrently with that of its (the principal building contractor), work. In this regard, the Contractor shall provide any necessary assistance (e.g. ensuring placement of material orders, monitoring the manufacturing process, monitoring of raw materials availability, programming of works, etc.), to the Principal Agent in respect of management of any direct contracts. In this regard, is shall be deemed that all allowances have been made in the contract amount to ensure compliance with this clause.

26.34 AVAILABILITY OF MANAGEMENT PERSONNEL

It shall be deemed that the Contractor has allowed in the contract amount for the Contracts Manager, Project Planner, Senior Quantity Surveyor and a responsible representative for the management of direct contracts, throughout the direction of the contract. Such persons are to be available to attend meetings to resolve any contractual and other related issues within 4 (four) hours on receipt of notice, either written or verbal, from the Principal Agent.

26.35 COMMISSIONING

The Contractor is referred to the special attendance items in the schedule of variables.

26.36 ENVIRONMENTAL QUALITY

The Contractor shall at all times during the construction period ensure that the construction site complies with the statutory obligations in terms of fire, ventilation (smoke, exhaust fumes, etc.), air quality, temperature, water quality, sanitation, hygiene, etc., as well as any requirements set out in an environmental management plan, if available.

26.37 ORDERING OF MATERIALS

Should the Contractor utilize the Bills of Quantities for ordering materials, it shall be entirely at its (the contractor's) own risk.

The Contractor shall take all reasonable steps to ensure that the specified materials and components required for the works are available for construction in accordance with the applicable construction programme.

26.37 ORDERING OF MATERIALS

Should any of the materials and components be available or likely to be unavailable when required, the Contractor shall without delay notify the Principal Agent, in writing, who shall decide on the procedure to be followed.

26.38 ENCROACHMENTS

After the site boundaries or beacons have been pointed out to the Contractor, if (the contractor) is to notify the Principal Agent if any encroachments of adjoining foundations, buildings, structures, pavements, etc., exist, so that the necessary arrangements can be made for the rectification of any such encroachment.

During the course of the building operations, the Contractor will be held entirely responsible for any encroachment onto any adjoining properties or servitude's and the cost of any remedial measures as required by the Principal Agent shall be borne by the Contractor unless the principal agent shall decide otherwise.

26.39 DOCUMENTS

Should any part of a drawing not be clearly intelligible to the Contractor or the manner in which the work is to be carried out not be clear, the Contractor shall request the Principal Agent to clarify his requirements, which request and reply shall be in writing, failing which the Contractor will be held responsible for any incorrect interpretation and shall, at his own expense, rectify any errors.

26.40 CONTRACT INSTRUCTIONS

Contract instructions issued on site are to be recorded in the site instruction book which is to be maintained on site by the contractor.

26.41 DOMESTIC SUB-CONTRACTORS

The Contractor shall not be permitted to substitute any domestic sub-contractor proposed at the time of contract award without written permission form the Principal Agent during the contract execution stage. Such permission shall not be unreasonably withheld, provided that the Contractor provides a detailed motivation for the substitution and the principal agent is allowed to verify the motivation with the sub-contractor concerned. Further, the Contractor shall appoint all domestic sub-contractors in terms of clause 23.1 of the Principal Building Agreement. Such appointments shall have similar terms and conditions and identical targets as the Principal Building Agreement.

26.42 INSPECTION OF EXISTING WORKS

It shall be deemed that the Contractor prior to contract commencement has inspected the existing works done to others and has satisfied itself (the contractor) that there are no latent detects and accordingly acknowledges that any defects not pointed out to the Principal Agent at site handover, shall fall under the responsibility of the Contractor to remedy and that the cost for such remedial work is deemed to be included in the contract amount.

26.43 DISPOSAL OF WASTE MATERIAL, ETC.

The Contractor shall provide appropriate equipment (such as chutes, if required), etc., for the rapid removal of waste material, etc., at points as agreed with the Principal Agent in writing. In addition, the Contractor is to provide for adequate waste skips for the disposal of such material to be located in positions as advised by the Principal Agent in writing.

26.43 DISPOSAL OF WASTE MATERIAL, ETC.

The Contractor shall ensue that there is a maximum of a twenty four (24) hour turn-around time for the removal of all full waste skips from site. The Contractor further acknowledges that the Employer reserves the right to appoint others to remove waste material and waste skips from site, should the Contractor fail to meet the twenty four (24) hour turn-around time and that such costs shall be deducted from amounts due to the Contractor.

26.44 DAMAGE TO EXISTING INSTALLATIONS

The Contractor shall be responsible for replacing and/or repairing any existing work damaged by itself and its sub-contractors whilst executing the Contractor at its own cost.

26.45 ACCESS FOR MOVEMENT OF MATERIAL TO THE SITE AND WORK ACCESS

The Contractor acknowledges that it shall only be permitted to move materials and access the works areas at locations/ positions agreed with and documented by the Principal Agent.

It will be deemed that the Contractor has allowed for vertical and horizontal movement, double handling, working under restrictive conditions as may be required for the building works. No claims for extras in this regard will be entertained at any later date.

26.46 LOCAL LABOUR

It is deemed that the Contractor shall as far as possible maximise the use of labour from the area in which the project is located.

26.47 BLACK ECONOMIC EMPOWERMENT

The Contractor shall comply with the Employers Black Economic Empowerment Policies.

26.48 SAMPLES

All material samples and colour samples must be submitted to the Principal Agent for selections and approval of the colour, shape and finish including mechanical, electrical and plumbing equipment that will be visible. The samples shall be provided in a4 size unless otherwise agreed. General samples shall be provided for Principal Agent/Employer to choose from each type of finish.

The Principal Agent/Employer may reject all or part of the submitted samples and request for additional selections if the first submission are not acceptable.

All samples must be kept in a sample room to be provided by the Contractor for reference.

26.49 SAMPLES BOARD

The Contractor shall provide a board(s) of approved samples and make available one set at the site (sample room) and one for the Employer.

26.50 MOCK - UP

The Contractor shall provide a mock – up of all finished surfaces prior to commencement of the relevant work. The Contractor shall only be permitted to commence with the relevant scope of work, on approval of the mock – up by the Principal Agent or its designated representative.

26.51 SCHEDULE OF DIRECT CONTRACTS

The Contractor is advised that the Employer shall let direct contracts for work that is not part of this contract and the Contractor to provide all access, attendance and co-operation.

26.52 PROVISION OF HOISTING FACILITIES, DUST BARRIERS, ETC.

It shall be deemed that the contract price is inclusive of the following:

- Hard wearing and strengthen dust barriers to be in uniform colour and specification.
- If applicable the provision of all hoarding which must be constructed of new shutter-boards (painted black in colour) of equal lengths and heights.
- The provision rubble chutes and waste skips.

26.53 ACCESS PERMITS, UNIFORMS, PPE, ETC

It shall be deemed that the Contractor has included in the contract amount for the provision of access permits for staff and vehicles, uniforms, PPE, identification cards for all personnel accessing the area of the works.

PART 3: C.1.2.3 PRINCIPAL CONTRACT DATA - EMPLOYER

The Clause References and Principal Contract Data provided in the table below must be read in conjunction with the Standard JBCC Principal Contract Data Form for Information provided by the Employer. The Contractor is referred to the JBCC Principal Building Agreement Contract Data EC.

CLAUSE REFERENCE	PRINCIPAL CONTRACT DATA
1.1	Employer: Department of Co-operative Governance and Traditional Affairs Contact: Theo Niekerk Address: 330 Langalibalele Street, Natalia Building, 13th Floor, Room 8 North Tower Telephone Number: 033 395 2463 Fax Number: n/a
1.2	Consultant: SMEC Consulting Engineers Contact: Mr. Jacques Bhengu Address: 2 The Crescent, Westway Office Park, Westville, Durban, South Africa, 3629 Telephone Number: 031 277 6600 Fax Number: n/a
1.9	Yes – SMEC is acting as Principal Agent
2.1	Republic of South Africa
2.2	The Works comprises of THE MANUFACTURE, SUPPLY, DELIVERY, OFFLOADING, INSTALLATION, TESTING, COMMISSIONING AND HANDING-OVER OF STANDBY GENERATOR INSTALLATION AND ASSOCIATED ELECTRICAL WORKS AT WADLEY HOUSE IN PIETERMARITZBURG as detailed in the bills of quantities and specifications.
2.3	The site is situated at the Msunduzi Local Municipality GPS Co-ordinates - **Latitude: 29°36'30.03"S, Longitude: 30°22'31.82"E**
2.4	TBC
2.5	Two (2 No.) working day
2.6	No
2.7	No
2.8	Yes – The Wadley House will not be in use during construction.
2.9	No
2.10	Yes – The Wadley House will not be in use during construction.
2.11	Yes
2.11.1	Option A
2.11.2	Option A
2.11.3	Option A
2.11.4	Option A
2.12	N/A

PART 3: C.1.2.3 PRINCIPAL CONTRACT DATA – EMPLOYER (CONTINUED)

The Clause References and Principal Contract Data provided in the table below must be read in conjunction with the Standard JBCC Principal Contract Data Form for Information provided by the Employer. The Contractor is referred to the JBCC Principal Building Agreement Contract Data EC.

CLAUSE REFERENCE	PRINCIPAL CONTRACT DATA
3.1	By Contractor - For the project value and payable by the Contractor
3.2	N/A
3.3	By Contractor - For the sum of amount of R1Million with a deductible of an amount to be selected and payable by the Contractor
3.4	N/A
3.5	N/A
4.1	3 Calendar months after Site Handover. Penalty of R 1 500.00 per Calendar Day
4.2	N/A
5.1	3 Copies
5.2	No
5.3	Yes, If applicable
5.4	Yes - Refer to Special Conditions of Contract
5.5	N/A- Priced Bills of Quantities to be submitted at Tender Closing
5.6	No
5.7	Refer to Special Conditions of Contract
5.8	20th of each month. COGTA to effect payment within 30 days on receipt of invoice.
6.0	Refer to Special Conditions of Contract

PART 4: C.1.2.4 SCHEDULE OF VARIABLES

The Clause References and Schedule of Variables provided in the table below must be read in conjunction with the "ASAQS Preliminaries" November 2007

CLAUSE REFERENCE	SCHEDULE OF VARIABLES
10.1	Yes
10.2	No drawings will be provided
10.3	The Contractor is to verify all dimensions on site and report any discrepancies
10.4	The Contractor is to inspect and document all defects in a form of a report prior to commencing of the works
10.5	The Contractor is to inspect all adjoining structures and document all defects in a form of a report prior to commencing of the works
10.6	Option A
10.7	Option A
10.8	Telephone - Yes
	Facsimile – Yes
	E-mail - Yes
10.9	Option A
10.10	The Contractor is to protect the works undertaken by others from damage during the execution of the contract. The cost of rectification as a result of any damages, should they occur, shall be for the contractor's account.
10.11	Yes The Contractor to provide all hoarding to the area of the works, in accordance with the Principal Agent's instructions, drawings provided, whichever is applicable
10.12	N/A
10.13	As defined in the Safety, Health and Environmental Specification

PART C2.1: PRICING INSTRUCTIONS

Where any item is not relevant to this specific contract, such item is marked N/A signifying "not applicable")

The adjustment of the preliminaries each item priced is to be allocated to one or more of the three categories by insertion of "F", "V", "T" as the case may be against the price in the "rate" column immediately preceding the "amount" column, where "F" denotes a fixed amount (amount not varied), "V" denotes an amount variable in proportion to value and "T" denotes an amount variable in proportion to time.

1 MASSES AND MEASURING UNITS

"These shall be in accordance with the Measuring Units and National Measuring Standards Act No. 76 of 1973 and amendments thereto.

The pages of each of these documents are numbered consecutively and before the Bidder submits his bid he should check the number of pages, and if any are found missing or duplicated, or the figures or writing indistinct, or the documents contain any obvious error, he should apply to the Head: Public Works AT ONCE and have same rectified as no liability whatsoever will be admitted by the Administration in respect of errors in Tender due to the foregoing."

2 TIMELY ORDERING OF MATERIALS

The Contractor is warned to place all orders for materials or special articles as early as possible, as he will be held solely responsible for any delay in the delivery of such goods. Nevertheless this tender is conditional upon no liability being attached to the Contractor if delivery of materials is rendered impossible by reason of any act of the Government.

PART C2.1: PRICING INSTRUCTIONS (CONTINUED)

3 ELECTRICAL LIGHTING, POWER AND WATER REQUIREMENTS

The Contractor shall provide any artificial lighting which may be necessary or required for the proper execution of the works, and provide electric power and water required by all Sub-Contractors, Nominated Sub-Contractors and Sub-Contractors appointed directly by the Employer.

The Contractor shall give all notices and pay all fees in connection with temporary electrical and water connections and shall connect temporary Electrical and Water meters for and pay for all current and water consumed.

Bidders are advised that the permanent light fittings and water points of any kind installed in the Works are not to be used to provide temporary lighting and supplement water requirements for construction purposes.

4 IMPORT PERMITS, DUTIES AND SURCHARGES.

All bids, by means of which imported products are being called for, must use the rate of exchange 14 days prior to the closing date indicated in the bid documents. If this day falls on a weekend or public holiday, the next working day must be used.

Furthermore, Bidders must submit documentary proof (in the form of a certified copy) from their bank or legally recognised financial institution, clearly indicating what the rate of exchange was 14 days prior to the closing date, as mentioned above.

Together with this, the Bidder must confirm that the tender price relating to an imported product, was based on the rate of exchange 14 days prior to the closing date as mentioned above.

5 STANDARD SYSTEM OF MEASUREMENT WHERE BILLS OF QUANTITIES FORM PART OF THE BID DOCUMENTS

The work executed under this Contract has been measured in accordance with the sixth (6th) edition of the "Standard System of Measuring Building Work", including all amendments unless descriptions of items indicate a deviation and it shall be understood that the system of measurement which is herein adopted is the only system of measurement which will be recognised in connection with this contract.

Any contradictions to this system of measurement contained in the "Standard Preambles to all Trades" shall be disregarded (unless same have been accommodated in the system of measurement) but applicable rates shall be included for all requirements stated and not measured separately in compliance with this system.

6 PRICING OF ROCK EXCAVATIONS

It is a condition of this bid that should the bidder elect to price the Rock Excavation included in this bid, the rates must be market related and should be identically priced for the same classification of excavations and not vary for similar billed items in the different sections.

PART C2.1: PRICING INSTRUCTIONS (CONTINUED)

7 BILLS OF QUANTITIES/LUMP SUM DOCUMENT

The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract documents, the Standard Conditions of Bid, Conditions of Contract, Standard Preambles to all Trades, Specifications, Drawings and all other relevant documentation.

8 VALUE ADDED TAX

The bid price must include for Value Added Tax (VAT). All rates, provisional sums, etc. in the Bills of Quantities must however be net (exclusive of VAT) with VAT calculated and added to the Total Value thereof in the Final Summary.

9 FIXED PRICE CONTRACT

Bidders are to take note that the contract price adjustments are not applicable to this contract. Bidders should therefore make provision in the Contract Sum, schedule of rates, etc. for possible price increases during the contract period, as no claims in this regard shall be entertained.

PART C3: SCOPE OF WORK

C3.1 DESCRIPTION OF THE WORKS

Refer to attached specification which includes a Bill of Quantities

C3.2 STANDARD SPECIFICATIONS

The Contractor is referred to the latest edition of:

1. SANS10142 – 1:
2. Applicable SANS 2001 Standards for Construction Works.
3. Standard and Model Preambles to All Trades.
4. Supplementary Preambles to the Bills of Quantities including electrical installation specifications.
5. Standard System of Measuring Building Work (Sixth Edition).
6. Occupational Health and Safety Specifications.
7. General Conditions of Contract included in the tender document.
8. The JBCC (Joint Building Contracts Committee), Series 2000 Principal Building Agreement – Edition 5.0, Code 2101 – July 2007 as amended in the Special Conditions of Contract.
9. The ASAQS (Association of South African Quantity Surveyors) Preliminaries: November 2007 as amended in the Special Conditions of Contract.

C3.3 PROJECT SPECIFICATIONS

Refer to attached project specifications and the Bills of Quantities and the relevant construction drawings must be read in conjunction with the standard specifications.

PART C4: SITE INFORMATION

C4.1 SITE INFORMATION

Wadley House is situated in 115 Jabu Ndlovu Street in Pietermaritzburg within Msunduzi Local Municipality.

The site Co Ordinates are as follows:

Latitude: 29°36'30.03"S
Longitude: 30°22'31.82"E

ANNEXURE A

OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

OCCUPATIONAL HEALTH AND SAFETY
SPECIFICATION INDEX
FPM 10/2016- WADLEY HOUSE STANDBY GENERATOR INSTALLATION

Schedules

PREAMBLE: HEALTH AND SAFETY SPECIFICATION

General Statement

It is a requirement of this contract that the Contractor shall provide a safe and healthy working environment and to direct all his activities in such a manner that his employees and any other persons, who may be directly affected by his activities, are not exposed to hazards to their health and safety. To this end the Contractors shall assume full responsibility to conform to all the provisions of the Occupational Health and Safety (O H S) Act (Act 85 and Amendment Act 181) of 1993, and the Construction Regulations 2014 issued on 1 August 2 01 4 by the Department of Labour. The Contractor is to complete Form O H S 1 in "Schedule D " and O H S 2 in "Schedule E".

For the purpose of this contract the Contractor is required to confirm his status as mandatory to the Employer (Client) and employer in his own right for the execution of the contract.

Health and Safety Specifications and Plans to be submitted at Tender Stage

(a) Employers Health and Safety Specification

The Employers Health and Safety Specification will be included in the tender documents as part of the Project Specifications.

(b) Tenderers Health a nd Safety Plan

The Tenderer shall submit with his tender sufficient proof that he has a Health and Safety Plan, which shall include necessary MSDSs for the scope of works, in place. The Contractor will, however, have to submit his Health and Safety Plan specific to this project with his tender for evaluation during the tender period.

In term s of the O H S Act the tender will be disqualified if the tenderer has no Health and Safety Plan.

The Contractor's Health and Safety Plan will be subject to approval by the Employer, or amendment if necessary, before commencement of construction work. The Contractor will not be allowed to commence work, or his work will be suspended if he had already commenced work, before he has obtained the Employer's written approval of his Health and Safety Plan.

The Contractor shall not be entitled to claim for extension of time or standing time and the related costs for any delays due to delayed commencement or suspension of the work arising from the lack of approval of or non-compliance with the Health and Safety Plan.

OCCUPATIONAL HEALTH AND SAFETY ACT 1993 : HEALTH AND SAFETY SPECIFICATION

A .1 SCOPE

This specification covers the health and safety requirements to be fulfilled by the Contractor to ensure a continued safe and healthy environment for all workers, employees and subcontractors under his control, and for all other persons entering the site of works.

This specification shall be read with the Occupational Health and Safety Act (Act N o. 85 and amendment Act N o. 181) 1993, and the corresponding Construction Regulations 2014, and all other safety codes and specifications referred to in the said Construction Regulations.

In term s of the O H S Act Agreement in Annexure E: Form O H S 2: O H S - Statement by Contractor, the status of the Contractor as mandatory to the Employer (Client) is that of an employer in his own right, responsible to com ply with all provisions of OHS Act 1993 and the Construction Regulations 2014.

This Health and Safety Specification and the Contractor's own Safety Plan as well as the Construction Regulations 2014, shall be displayed on site and made available for inspection by all workers, employees, inspectors and any other persons entering the site ofworks.

A.2 DEFINITIONS

For the purpose of this contract the following shall apply:

(a) "Employer" where used in the contract documents and in this specification, means the Employer as defined in the Contract Data and it shall have the exact same meaning as "Client" as defined in the Construction Regulations 2014. "Employer" and "Client" is therefore interchangeable and shall be read in the context of the relevant document.

(b) "Contractor", wherever used in the contract documents and in this specification, shall have the same meaning as "Contractor" as defined in the Contract Data.

In this specification the term s "Principal Contractor" and "Contractor" are replaced with "Contractor" and "Subcontractor" respectively.

For the purpose of this contract the "C on tractor" will, in term s of O H S Act 1993, be the mandatory of the Employer, without derogating from his status as an employer in his own right.

(c) "Engineer" where used in this specification, means the Engineer as defined in the. General Conditions of Contract In term s of the Construction Regulations the Engineer may act as agent on behalf of the Employer (the client as defined in the construction regulations).

(d) "Act" The Occupational Health and Safety Act 1993 (Act 85 of 1993)

(e) "Competent Person is any person having the knowledge, training, and experience specific to the work or task being performed.

(f) "Hazard" a source of exposure to danger.

(g) "Hazard Identification" the identification and documenting of existing or expected hazards to the health and safety of persons which are normally associated with the type of construction work being executed or to be executed.

(h) "Healthy" free from illness or injury attributable to occupational causes.

(i) "Excavation Work" means the making of any man-made cavity, trench, pit or depression formed by cutting, digging or scooping.

(j) "Fall Protection Plan" means a documented plan, which includes and provides for-

(a) All risks relating to working from a fall risk position, considering the nature of work undertaken;

(b) The procedures and methods to be applied in order to eliminate the risk of falling and;

(c) A rescue plan and procedures.

(k) "Health and Safety File" means a file or other record containing the information in writing required by these Regulations.

(l) "Health and Safety Plan" means a site activity or project specific documented plan in accordance with the client's health and safety specification.

(m) "Health and Safety Specification" means a site, activity or project document prepared by the Client pertaining to all health and safety requirements related to construction work.

(n) "Principal Contractor" means an employer appointed by the client to perform construction work.

(o) "Major Incident" and occurrence of catastrophic proportions, resulting from the use of plant or machinery, or from activities at a workplace.

(p) "Risk" the probability that injury or damage will occur.

(q) "Scaffold" any temporary elevated platform and supporting structure used for providing access and supporting workmen or materials or both.

(r) "Workplace" any premise or place where a person preforms work in the course of his/her employment.

(s) "Ergonomics" the application of scientific information concerning humans to the design of objects, systems and the environment for human use in order to optimize human well-being and overall system performance.

(t) "Incident" an event or occurrence occurring at work or arising out of or in connection with the activities of persons at work, or in connection with the use of plant or machinery, or in consequence of which

(a) any person dies, becomes unconscious, suffers the loss of a limb or part of a limb or is otherwise injured or becomes ill to such a degree that he is likely either to die or to suffer a permanent physical defect or likely to be unable for a period of at least 14 days either to work or to continue with the activity for which he was employed or is usually employed.

(b) A major incident occurred; or

(c) The health or safety of any person was endangered and where:

1. A dangerous substance was spilled
2. The uncontrolled release of any substance under pressure took place
3. Machinery or any part thereof fractured or failed resulting in flying falling or uncontrolled moving objects or machinery ran out of control.

(u) "Structure" any building, steel or reinforced concrete structure (not being a building), railway line or siding, bridge, waterworks, reservoir, pipe, or pipeline, cable, sewer, sewage works, fixed vessels, road, drainage works, earthworks, dam, wall, mast, tower, tower crane, batching plants, pylon, surface and underground tanks, earth retaining structure or any structure designed to preserve or alter any natural feature and any other similar structure;

(a) Any formwork, false work, scaffold, or other structure designed or used to provide support or means of access during construction work; or

(b) Any fixed plant in respect of work which includes the installation, commissioning decommissioning, or dismantling and where any such work involves a risk of a person falling two meters or more.

(v) "Building" includes any structure attached to the soil, any building or such structure or part thereof which is in the process of being erected or any prefabricated building or structure not attached to the soil.

(w) "Machinery" means any article or combination of articles assembled, arranged or connected and which is used or intended to be used for converting any form of energy to performing work, or which is used or intended to be used, whether incidental thereto or not, for developing, receiving, storing, confining, transforming, transmitting, transferring or controlling any form of energy.

(x) "HCS or Hazardous Chemical Substance" means any toxic, harmful, corrosive, irritant or asphyxiant substance, or a mixture of such substances for which:

(a) an occupational exposure limit is prescribed; or

(b) an occupational exposure limit is not prescribed ;but which creates a hazard to health.

(y) "Electrical Installation" means any machinery , in or on any premises, used for the transmission of electricity from a point of control to a point of consumption anywhere on the premises, including any article forming part of such an electrical installation irrespective of whether or not it is part of the electrical circuit, but excluding-

(a) any machinery of the supplier related to the supply of electricity on the premises;

(b) any machinery which transmits electrical energy in communication, control circuits, television or radio circuits;

(c) an electrical installation on a vehicle, vessel, train or aircraft; and

(d) control circuits of 50v or less between different parts of machinery or system components, forming a unit, that are separately installed and derived from an independent source or an isolating transformer;

Electrical Installations Regulations, 1988 promulgated by Government Notice No. R1593 of 12 August 1988.

(z) "demolition work" means a method to dismantle, wreck, break, pull down or knock down of a structure or part thereof by way of manual labour, machinery, or the use of explosives;

A.3 PROJECT DESCRIPTION

The work to be carried out under this contract is described in the tender document.

A.4 TENDERS

The Contractor shall make available the following during the tender evaluation:

(a) A documented Health and Safety Plan as stipulated in Regulation 5(1)(m) of the Construction Regulations. The Safety Plan must be based on the Construction Regulations 2014, this Health and Safety Specification, and will be subject to approval by the Employer;

(b) A declaration to the effect that he has the competence and necessary resources to carry out the work safely in compliance with the Construction Regulations 2014; Complete Form O H S 2 in Schedule "E"

Failure to submit the foregoing with his tender or during tender evaluation will lead to the conclusion that the Contractor is not able to carry out the work under the contract safely in accordance with the Construction Regulations and will result in his tender being disqualified.

(c) MSDSs for all necessary HCS are required to be ready and in the possession of the contractor.

A.5 NOTIFICATION OF COMMENCEMENT OF CONSTRUCTION WORK

After award of the contract, but before commencement of construction work, the Contractor shall, in term s of Regulation 3, notify the Provincial Director of the Department of Labour in writing if the following work is involved:

(a) The demolition of structures and dismantling of fixed plant of height of 3,0 m or more;

(b) The use of explosives;

(c) Construction work that will exceed 30 days or 300 person-days;

(d) Excavation work deeper than 1,0 m ; or

(e) Working at a height greater than 3,0 m above ground or landings.

The notification must be done in the form of the pro forma included in Schedule A of this OHS Specification.

A copy of the notification form m ust be kept on site, available for inspection by inspectors, Employer, Engineer, employees and persons on site.

A.6 GUIDELINES FOR THE DEVELOPMENT OF A HEALTH AND SAFETY PLAN

A.6.1 Project Background

In terms of the Construction Regulations [Regulation 4 (1) (a)] of the Occupational Health and Safety Act, N o. 8 5 of 2014, the Client is required to compile an Occupational Health and Safety

specification for each of its projects and the Contractor, appointed by the Client in terms of Regulation 4 (1) (c), is required to prepare an Occupational Health and Safety Plan. This plan has to be prepared in terms of Regulation 5 (1) as well as the Clients Occupational Health & Safety Specification. In terms of Regulation 4 (2), the Client and the Contractor are required to agree on the Occupational Health and Safety Plan before any work may commence.

A.6.2 Framework for an Occupational and Safety Plan

A.6.2.1 Introduction

The Contractor shall demonstrate to the Client that he has a suitable and sufficiently documented Occupational Health and Safety Plan as well as the necessary competencies, experience and resources to perform the construction work safely. The Contractor could be required to submit the following documentation for perusal and verification by the Client:

- Management Structure
- Quality Plan
- Human Resources Plan
- Registered Workplace Skills Plan
- "Letter of good standing" from the Compensation Commissioner or licensed compensation insurer.
- Proof of induction and other training of employees
- Example copy of minutes of previous Occupational Health and Safety Committee meetings and copies of Incident Investigation Reports

A.6.2.2 Contents of an Occupational Health and Safety Plan

The Occupational Health and Safety Plan shall include the following:-

A.6.2.2.1 Occupational Health and Safety Management Programme

- Management of Occupational Health and Safety risks
- Occupational Health and Safety structures and appointments
- Programme of Occupational and Safety inspections
- Occupational Health and Safety Representatives
- Occupational Health and Safety Committee

A.6.2.2.2 Communication and Management of the Work

- Management structure and responsibilities
- Occupational Health and Safety objectives for the project and arrangements formmonitoring and review of Occupational Health and Safety performance
- Arrangements for Regular liaison between parties on site
- Consultation with the workforce
- The exchange of design information between the Client, Engineer, supervisors and subcontractors on site
- Handling design changes during the project
- Selection and control of subcontractors

- T he exchange of Occupational Health and Safety information between all subcontractors
- Security
- Site induction and onsite training
- Facilities and first-aid
- T he reporting and investigation of accidents and incidents
- T he production and approval of risk assessments and method statements
- Site Occupational Health and Safety rules
- Fire and emergency procedures
- Reporting to the Client i.e. results of Occupational Health and Safety inspections, incident and incident investigations and committee meetings
- Reporting of incidents to the Department of Labour and Compensation insurer where appropriate.

A.6.2.2.3 Arrangements for Controlling Significant Site Risks

The following are some examples requiring arrangements for controlling the most significant site risks:-

Safety risks

- Services, including temporary electrical installations
- Preventing employees from falling into excavations, from trucks etc.
- Work with, on or near fragile materials
- Control of lifting operations
- The maintenance of plant and equipment
- Poor ground conditions
- Traffic routes and segregation of vehicles and pedestrians
- Storage of hazardous materials
- Dealing with existing unstable structures/land
- Accommodating adjacent land use
- Other significant safety risks as and when identified

Health risks

- Storage and use of hazardous chemical substances
- Dealing with contaminated land or material
- Manual handling
- Reducing noise and vibration
- Provision of adequate lighting
- Ventilation considerations
- Extreme heat and cold temperature considerations
- Dealing with HIV/Aids and other illnesses
- Provision of and maintaining ablution and eating facilities
- Other significant health risks as and when identified

A.7 HEALTH AND SAFETY FILE

The Contractor shall in term s of Construction Regulations 5(7) maintain a Health and Safety File on site at all times. The Health and Safety File is a file or other perm anent record containing information on aspects of the construction project - which will be necessary to ensure the health and safety of any person who may be affected by the construction work. The Contractor shall appoint a suitably qualified person to prepare the Health and Safety File and to keep it up to date for the duration of the contract. The Health and Safety file shall include the following information:-

- Notification of Construction Work (Construction Regulation 3.) (Schedule A)
- Copy of O H&S Act (updated) (General Administrative Regulation 4.)
- Proof of Registration and good standing with a COID Insurer construction regulations 5(j)
- Copy of health and safety plan Construction Regulation 7 (2) a
- H &S Programme agreed with Client including the underpinning Risk Assessment and Method Statements (Construction regulation 5 (1))
- A list of Contractors (Subcontractors) including copies of the agreements between the parties and the type of work being done by each Contractor (Construction Regulation 9(6)
- Appointment / Designation forms required by the ACT and Regulations.

Registers as follows:

Accident / Incident Register (Annexure 1 of the General Administrative Regulations)

- O H&S Representatives Inspection Register
- Excavations Inspection
- Lifting Equipment
- Demolition Inspections
- Designers inspection of Structures Record
- Arc & Gas Welding & Flam e Cutting Equipment Inspections
- Construction Vehicles & Mobile Plant Inspections
- Electrical Installation and Machinery Inspections
- Fire Equipment Inspection & Maintenance
- First Aid
- Hazardous Chemical Substances
- Lifting Tackle and Equipment Inspections
- Inspection of Cranes
- Inspection of Ladders
- Machinery Inspections
- D rivers/Operators of Mobile Plant/Construction Vehicles Daily Inspections
- Accommodation of traffic daily inspection book

Schedule B is a list of the records to be kept on s i t e .

The Health & Safety File shall be handed over to the Client on completion of the contract. It must contain all the documentation handed to Contractor by any sub-contractors together with a record of all drawings, designs, materials used and other similar information concerning the completed project.

A.8 RISK ASESSMENT

Before commencement of any construction work during the construction period, the Contractor shall have a risk assessment performed and recorded in writing by a competent person. (Refer Regulation 9 of the Construction Regulations 2014).

Risk is a measure of the likelihood that the harm from a particular hazard will be realized, taking into account the possible severity of the harm. H arm to people includes death, injury (perm anent or temporary), physical or mental health or any combination thereof. Risk management in health and safety includes the identification of hazards, assessing risk s, taking action to eliminate or reduce the risk, monitoring the effectiveness and performing regular review s o f the entire process. The Contractor shall com pile method statements to address or handle the following:

- Hazards particulars to contract
- Identify what could go wrong and how
- Identify the likelihood of this happening
- Identify the persons at risk
- Identify the extent of possible harm
- Measures to eliminate or reduce each risk
- A monitoring plan
- A review plan

Contractors must ensure that all subcontractors conduct risk assessments for their scope of work as well.

The risk assessment shall identify and evaluate the risk s and hazards that may be expected during the execution of the work under the contract, and it shall include a documented plan of safe work procedures to mitigate, reduce or control the risks and hazards identified.

The risk assessment shall be available on site for inspection by inspectors, Employer, Engineers, subcontractors, employees, trade unions and health and safety committee members, and must be monitored and reviewed periodically by the Contractor.

A.9 APPOINTMENT OF EMPLOYEES AND SUBCONTRACTORS

A .9.1 Health a nd Safety Plan

The Contractor shall appoint his employees and any subcontractors to be employed on the contract, in writing, and he shall provide them with a c op y o f his documented Health and Safety Plan, or relevant sections thereof. The Client shall ensure that all subcontractors and employees are committed to the implementation of his Safety Plan.

A.9.2 Health and Safety Induction Training

The Contractor shall ensure that all employees under his control, including subcontractors and their employees, undergo a health and safety induction training course by a competent person before commencement of construction work. No visitor or other person shall be allowed or permitted to enter the site of the work s unless such person has undergone health and safety training pertaining to hazards prevalent on site.

The Contractor shall ensure that every employee or visitor on site shall at all times be in possession of proof of the health and safety induction training issued by a competent person prior to commencement of construction work.

A.9.3 OH&S Training Requirements

(As required by the Construction Regulations and as indicated by the O H&S Specification and the Risk Assessment/s):

- General Induction (Section 8 of the OH & S Act)
- Site / Job Specific Induction (also visitors) (Section 8 & 9 of the Act)
- Site/Project Manager
- Construction Supervisor
- O H&S Representatives (Section 18 (3) of the Act)
- T raining of the Appointees
- Operation of Cranes (Driven Machinery Regulation 18 (11))
- Operators and Drivers of Construction Vehicles & Mobile Plant (Construction Regulation 23)
- Basic Fire Prevention & Protection (Environmental Regulations 9 and Construction regulation 29)
- Basic First Aid (General Safety Regulations Annexure Regulation 3)
- Storekeeping Methods & Safe Stacking (Construction Regulation 28)
- Emergency, Security and Fire Coordinator

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A.10 APPOINTMENT OF SAFETY PERSONNEL

A.10.1 Construction Supervisor

The Contractor shall appoint a full-time Construction Supervisor with the duty of supervising the performance of the construction work.

He may also have to appoint one or more competent employees to assist the construction supervisor where justified by the scope and complexity of the works.

A .10.2 Construction Safety Officer

Subject to the decision by the Inspector of the Department of Labour and taking into consideration the size of the project and the hazards or dangers that can be expected, the Contractor shall appoint in writing a full time or part time Construction Safety Officer. The Safety Officer shall have the necessary competence and resources to perform his duties diligently.

Provision will be made in the Bill of quantities to cover the cost of a dedicated construction safety officer appointed after award of the contract if so ordered by the Engineer.

A .10.3 Health a nd Safety Representatives

In term s of Sections 17 and 18 of the Act 85 (O H SA 1993) the Contractor shall appoint a health and safety representative whenever he has more than 20 employees in his employ on the work s. The health and safety representative must be selected from employees who are employed in a full-time capacity at a specific work place.

The number of health and safety representatives for a work place shall be at least one for every 50 employees.

The function of the health and safety representative(s) will be to review the effectiveness of health and safety measures, to identify potential hazards and major incidents, to examine causes of incidents (in collaboration with his employer, the Contractor), to investigate com plaints by employees relating to health and safety at work , to make representations to the employer (Contractor) or inspector on general matters affecting the health and safety of employees, to inspect the work place, plant, machinery etc. on a regular basis, to participate in consultations with inspectors and to attend meetings of the health and committee.

A .10.4 Health and Safety Committee

In term s of Sections 17 and 18 of the Act (O HSA 1993) the Contractor (as employee), shall establish on e or more health and safety committee(s). W here there are two or more health and safety representatives at a work place, the persons selected by the Contractor to serve on the committee shall be designated in writing.

The function of the health and safety committee shall be to hold meetings at regular intervals, but at least once every three months, to review the health and safety measures on the contract, to discuss incidents related to health and safety with the Contractor and the inspector, and to make recommendations regarding health and safety to the Contractor and to keep record of meetings, recommendations and reports made by the committee.

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A.10.5 Competent Persons

In accordance with the Construction Regulations the Contractor shall appoint, in writing, competent persons responsible for supervising construction work for the following work situations that may be expected on the site of the works.

(a) Risk assessment (Regulation 9);

(b) Fall protection (Regulation 10);

(c) Structures (Regulation 11);

(d) Form work and support work (Regulation 12);

(e) Excavation work (Regulation 13);

(f) Demolition work (Regulation 14);

(g) Tunneling (Regulation 15);

(h) Scaffolding work (Regulation 16);

(I) Suspended platform operations (Regulation 17);

(j) Cranes (Regulation 22);

(k) Construction vehicle and mobile plant (Regulation 23);

(l) Electrical installation and machinery on construction site (Regulation 24);

(m) Use and temporary storage of flam m able liquids on construction site (Regulation 25);

(n) Water Environments (Regulation 26);

(o) Housekeeping on construction sites (Regulation 27)

(p) Stacking and storage on construction sites (Regulation 28);

(q) Fire precautions on construction sites (Regulation 29); and

(r) Construction welfare facilities (Regulation 30).

A competent person may be appointed for more than one part of the construction work with the understanding that the person must be suitably qualified and able to supervise at the same time the construction work on all the work situations for which he has been appointed.

The appointment of competent persons to supervise parts of the construction work does not relieve the Contractor from any of his responsibilities to com ply with all requirements of the Construction Regulations.

A.11 CONTRACTOR'S RESPONSIBILITIES

Before commencement of work under the contract, the Contractor shall enter into an agreement with the Employer (Client) to confirm his status as mandatory (employer) for the contract under consideration.

The Contractor's duties and responsibilities are clearly set out in the Construction Regulations 2014, and are not repeated in detail but some important aspects are highlighted hereafter, without relieving the Contractor of any of his duties and responsibilities in term s of the Construction Regulations.

In addition, the Contractor shall also com ply with the requirements of the Compensation of Occupational Injuries and Diseases Act 130 of 1993 (C O ID A) and to this effect shall submit a letter of good standing with the compensation Insurer to the Client before work on site commences.

(a) Contractors Position in Relation to the Employer (Client) (Regulation 5)

In accordance with Section 5 of the Regulations, the Contractor shall liaise closely with the Employer or the Engineer on behalf of the Employer, to ensure that all requirements of the Act and the Regulations are met and complied with.

(b) The Contractor and Subcontractor (Regulation 7)

The Contractor is in term s of the definition in Regulation 2(b) the equivalent of Contractor as defined in the Construction Regulations, and he shall com ply with all the provisions of Regulation 7.

Any subcontractors employed by the Contractor shall be appointed in writing, setting out the term s of the appointment in respect of health and safety. An independent subcontractor shall, however, provide and demonstrate to the Contractor a suitable, acceptable and sufficiently documented health and safety plan before commencement of the subcontract. In the absence of such a health and safety plan the subcontractor shall undertake in writing that he will comply with the Con tractor's safety plan, the health and safety specifications of the Employer and the Construction Regulations 2014.

(c) Supervision of Construction Work (Regulation 8)

T h e Contractor shall appoint the safety and other personnel and employees as required in term s of Regulation 8. Appointment of those personnel and employees does not relieve the Contractor from any of the obligations under Regulation 7.

(d) Risk Assessment (Regulation 9)

The Contractor shall have the risk assessment performed before commencement of the work, and it must be available on site for inspection at all times. The Contractor shall consult with the health and safety committee or health and safety representative(s) etc. on a regular basis to ensure that all employees, including subcontractors under his control, are informed and trained by a competent person regarding health hazards and related work procedures.
No subcontractor, employee or visitor shall be allowed to enter the site of works without prior health and safety induction training.

(e) Fall Protection (Regulation 10)

Fall protection, if applicable to this contract shall com ply in all respects with Regulation 10 of the Construction Regulations.

(f) S tructures (Regulation 11)

The Contractor will be liable for all claim s arising from the collapse or failure of structures if he failed to comply with all the specifications, project specifications and drawings related to the structures, unless it can be proved that such collapse or failure can be attributed to faulty design or in sufficient design standards on which the specification and the drawings are based.

In addition, the Con tractor shall com ply with all aspects of Construction Regulation 11 of the Construction Regulations. A contractor must ensure that –

1 (a) all reasonably practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work.

(b) no structure or part of a structure is loaded in a manner which would render it unsafe; an

d (c) all drawings pertaining to the relevant structure to be kept on site and are available on request to an inspector, other contractors, the clients agent or employees.

(g) Form work an d Support Work (Regulation 12)

The Contractor will be responsible for the adequate design of all form work and support structures by a competent person.

All drawings pertaining to form work shall be kept on site and all equipment and materials used in for work shall be c are fully examined and checked for suitability by a competent person. A design certificate of the form work and support structures shall be submitted by a professional Engineer.

The provisions of Regulation 12 of the Construction Regulations shall be followed in every detail.

(h) Excavation Work (Regulation 13)

It is essential that the Contractor shall follow the instructions and precautions in the Standard Specifications and Project Specifications as well as the provisions of the Construction Regulations to the letter as unsafe excavations can be a major hazard on any construction site. The Contractor shall therefore ensure that all excavation work is in term s of the Standard Specifications and Project Specifications and the Construction Regulations, carried out under the supervision of a competent person, that inspections are carried out by a Professional Engineer or Technologist, and that all work is done in such a manner that no hazards are created by unsafe excavations and working conditions.

Supervision by a competent person will not relieve the Contractor from any of his duties and responsibilities under Regulation 13 of the Construction Regulations.

(i) Demolition work (Regulation 14)

(1)A contractor must appoint a competent person in writing to supervise and control all demolition work on site.

(2) A contractor must ensure that before any demolition work is carried out, and in order to ascertain the method of demolition to be used, a detailed structural engineering survey of the structure to be demolished is carried out by a competent person and that a method statement on the procedure to be followed in demolishing the structure is developed by that person.

(3) During a demolition, the competent person contemplated in sub regulation (1) must check the structural integrity of the structure at intervals determined in the method statement contemplated in sub regulation (2), in order to avoid any premature collapses.

(4) A contractor who performs demolition work must-

(a) with regard to a structure being demolished, take steps to ensure that-

(i) no floor, roof or other part of the structure is overloaded with debris or material in a manner which would render it unsafe;

(ii) all reasonably practicable precautions are taken to avoid the danger of the structure collapsing when any part of the framing of a framed or partly framed building is removed, or when reinforced concrete is cut; and

(iii) precautions are taken in the form of adequate shoring or other means that may be necessary to prevent the accidental collapse of any part of the structure or adjoining structure;

(b) ensure that no person works under overhanging material or a structure which has not been adequately supported, shored or braced;

(c) ensure that any support, shoring or bracing contemplated in paragraph (b), is designed and constructed so that it is strong enough to support the overhanging material;

(d) where the stability of an adjoining building, structure or road is likely to be affected by demolition work on a structure, take steps to ensure the stability of such structure or road and the safety of persons;

(e) ascertain as far as is reasonably practicable the location and nature of electricity, water, gas or other similar services which may in any way be affected by the work to be performed, and must before the commencement of demolition work that may affect any such service, take the steps that are necessary to render circumstances safe for all persons involved;

(f) cause every stairwell used and every floor where work is being performed in a building being demolished, to be adequately illuminated by either natural or artificial means;

(g) cause convenient and safe means of access to be provided to every part of the demolition site in which persons are required to work; and

(h) erect a catch platform or net above an entrance or passageway or above a place where persons work or pass under, or fence off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe where there is a danger or possibility of persons being struck by falling objects.

(5) A contractor must ensure that no material is dropped to any point, which falls outside the exterior walls of the structure, unless the area is effectively protected.

(6) No person may dispose of waste and debris from a high place by a chute unless the c hute-

(a) is adequately constructed and rigidly fastened;

(b) if inclined at an angle of more than 45 degrees to the horizontal, is enclosed on its four sides;

(c) if of the open type, is inclined at an angle of less than 45 degrees to the horizontal;

(d) where necessary, is fitted with a gate at the bottom end to control the flow of material; and

(e) discharges into a container or an enclosed area surrounded by barriers.

(7) A contractor must ensure that every chute used to dispose of rubble is designed in such a manner that rubble does not free-fall and that the chute is strong enough to withstand the force of the debris travelling along the chute.

(8) A contractor must ensure that no equipment is used on floors or working surfaces, unless such floors or surfaces are of sufficient strength to support the imposed loads.

(9) Where a risk assessment indicates the presence of asbestos, a contractor must ensure that all asbestos related work is conducted in accordance with the Asbestos Regulations, 2001, promulgated by Government Notice No. R. 155 of 10 February 2002.

(10) Where a risk assessment indicates the presence of lead, a contractor must ensure that all lead related work is conducted in accordance with the Lead Regulations, 2001, promulgated by Government Notice No. R.236 of 28 February 2002.

(11) Where the demolition work involves the use of explosives, a method statement must be developed in accordance with the applicable explosives legislation, by an appointed person who is competent in the use of explosives for demolition work and all persons involved in the demolition works must adhere to demolition procedures issued by the appointed person.

(12) A contractor must ensure that all waste and debris are as soon as reasonably practicable removed and disposed of from the site in accordance with the applicable legislation.

(j) Tunneling (Regulation 15)

The Contractor shall com ply with Regulation 13 wherever tunneling of any kind is involved.

(k) Scaffolding (Regulation 16)

The Contractor shall ensure that all the provisions of Regulation 16 of the Construction Regulations are com plied with. [Note: Reference in the Regulations to "Section 44 of the Act" should read "Section 43 of the Act"]

(l) Cranes (Regulation 22)

Wherever the use of tower cranes becomes necessary, the provisions of Regulation 20 shall be com plied with.

(m) Construction Vehicles and Mobile Plant (Regulation 23)

The Contractor shall ensure that all construction vehicles and plant are in good working condition and safe for use, and that they are used in accordance with their design and intended use. The vehicles and plant shall only be operated by workers or operators who have received appropriate training, all in accordance with all the requirements of Regulation 23 as a minimum.

All vehicles and plant must be inspected on a daily basis, prior to use, by a competent person and the findings must be recorded in a register to be kept on site. Construction Regulation 23 1

(a) A contractor must ensure construction vehicles and mobile plant are of an acceptable design and construction.
(b) Are maintained in good working order
(c) Are used in accordance with their design and the intention for which they were designed, having due regard to safety and health.
(d) Are operated by a person who has had appropriate training, is certified competent and in possession of proof of competence and is authorized in having to operate those construction vehicles and mobile plant. Also by a person who has a medical certificate of fitness to operate the construction vehicle and/or mobile plant and issued by an occupational health practitioner in the form of Annexure 3.
(e) Have suitable and safe means of access and egress.
(f) Are properly organized and controlled in any work situation by providing adequate signaling or other control arrangement to guard against the dangers relating to the movement of vehicles and plant, in order to ensure their continued safe operating.
(g) Are prevented from falling into excavations, water or any other area lower than the working surface by installing adequate edge protection, which may include guardrails and crash barriers.
(h) Are fitted with structures designed to protect the operator from falling material or being crushed should the vehicle or plant overturn.
(i) Are equipped with an acoustic warning device which can be activated by the operator.
(j) Are equipped with an acoustic automatic reverse ring alarm; and
(k) Are inspected by the authorized operator or driver on a daily basis using a relevant checklist prior to use and that the findings of such inspection are recorded in a register kept in the construction vehicle or mobile plant. Construction Regulation 2 states

(a) A contractor must ensure that no person rides or is required or permitted to ride on a construction vehicle or mobile plant otherwise than in a safe place provided there on for that purpose;
(b) every contractor site is organized in such a way that, as far as reasonably practicable, pedestrians and vehicles can move safely and without risk to health;
(c) the traffic routes are suitable for the persons, construction vehicles or mobile plants using them, are sufficient in number, in suitable positions and of sufficient size;
(d) every traffic route is, where necessary, indicated by suitable signs;
(e) all construction vehicles and mobile plant left unattended at night, adjacent to a public road in normal use or adjacent to construction areas where works in progress, have appropriate lights or reflectors, in order to identify the location of the vehicles or plant; (f) all construction vehicles or mobile plant when not in use, have brackets, controls in neutral position, motors stopped, wheels chocked, brakes set and ignition secured. (g) whenever visibility conditions warrant additional lighting, all mobile plant are equipped with at least two headlights and two taillights when in operation;
(h) tools, material and equipment are secured and separately by means of a physical barrier in order to prevent movement when transported in the same compartment with employees.
(i) vehicles used to transport employees have seats firmly secured and adequate for the number of employees to be carried; and
(j) all construction vehicles or mobile plant travelling, working or operating on public roads comply with the requirement of the National Road Traffic Act, 1996.

(n) Use of Temporary Storage of Flammable Liquids on Construction Sites (Regulation 25)

The Contractor shall com ply with the provisions of the General Safety Regulations (Government Notice R 1031 of 30 M ay 1986) and all the provisions of Regulation 23 of the Construction Regulations to ensure a safe and hazard-free environment to all workers and other persons on site.

(o) Water Environments (Regulation 26)

Where construction work is done over or in close proximity to water; the provisions of Regulation 24 shall apply.

(p) Housekeeping on Construction Sites (Regulation 27)

Housekeeping on all construction sites shall be in accordance with the provisions of the environmental Regulations for work places (Government Notice R2281 of 16 October1987) and all the provisions of Regulation 27 of the Construction Regulations.

(q) Stacking and Storage on Construction Sites (Regulation 26)

The provisions for the stacking of articles contained in the General Safety Regulations (Government Notice R1031 of 30 May 1986) as well as all the provisions of Regulation 26 of the Construction Regulations shall apply.

(r) Fire Precautions on Construction Sites (Regulation 28)

The provisions of the Environmental Regulations for workplaces. In addition the necessary precautions shall be taken to prevent the incidence of fires, to provide adequate and sufficient fire protection equipment, sirens, escape routes etc. all in accordance with Regulation 28 of the Construction Regulations.

(s) Construction Welfare Facilities (Regulation 28)

The Contractor shall comply with the construction site provisions as in the Regulation 28 of the Construction Regulations.

(t) Non-compliance with the Construction Regulations 2014

The foregoing is a summary of parts of the Construction Regulations applicable to all construction projects. The Contractor, as employer for the execution of the contract, shall ensure that all provisions of the Construction Regulations applicable to the contract under consideration are complied with to the letter. Should the Contractor fail to comply with the provisions of the Regulations 3 to 30 as listed in Regulation 30, he will be guilty of an offence and will be liable, upon conviction, to the fines or imprisonment as set out in Regulation 33.

The Contractor is advised in his own interest to make a careful study of the Act and the Construction Regulations as ignorance of the Act and the Regulations will not be accepted in any proceedings related to non-conformance to the Act and the Regulations.

(u) Emergency Procedures

The contractor shall submit for acceptance to the employers Health and Safety Agent an emergency procedure which include but not limited to fire, spills, accidents to employees and exposure to hazardous substances which:

Identify the key personnel who are to be notified of any emergency.

Set out details including contact particulars of available emergency services and The

actions and steps which are to be taken during anemergency.

The contractor shall within 24 hours of an emergency taking place notify the employers Health and Safety Agent in writing of the emergency and briefly outline what happened and how it was dealt with.

(v) Personal Protective Equipment and Clothing

The contractor shall ensure that

(a) All workers are issued with the necessary PPE

(b) all workers are identifiable at all times by having the company for which they workfor printed on their overalls and there are clear procedures in place for the replacement of lost, stolen, worn or damaged PPE or clothing.

(w) First Aid, Emergency Equipment and Procedures

1) The contractor shall where more than five employees are employed at a workplace, provide a first aid box or boxes at or near the workplace which shall be available and accessible for the treatment of injured persons at that workplace. Such first aid boxes shall contain suitable first aid equipment.

2) The contractor shall ensure that where there are more than ten employees employed on the site that for every group of up to fifty employees at that workplace, at least one person is readily available during working hours, who is competent and in possession of a valid first aid certificate.

(x) Facilities for workers

1) The contractor shall provide and keep clean and fit for use at or within reasonable access of the site:

a) At least one shower facility for every 15 workers

b) At least one sanitary facility for every 30workers

c)changing facilities for each sex

d) Sheltered eating areas

2) A contractor shall provide reasonable and suitable living accommodation for the workers at construction sites which are remote from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available.

(y) Electrical Installation (Construction Regulations 24)

A contractor must, in addition to compliance with the Electrical Installation Regulations, 2009, and the Electrical Machinery Regulations, 1988, promulgated by Government Notice no. 1593 of 12 August 1988 ensure that-

a) before construction commences and during the progress thereof, adequate steps are taken to ascertain the presence of and guard against danger to workers from any electrical cables or apparatus which is under, over or on the site;

b) all parts of electrical installations and machinery are of adequate strength to withstand the working conditions on construction sites;

c) the control of all temporary electrical installations on the construction site is designated to a

competent person who has been appointed in writing for that purpose;

d) all temporary electrical installations used by the contractor are inspected at least once a week by a competent person and the inspection findings are recorded in a register kept on the construction site; and

e) all electrical machinery is inspected by the authorized operator or user on a daily basis using relevant checklist prior to use and the findings of inspection are recorded in a register kept on the construction site.

(z) Environmental Impact The NEMA ACT, National Environmental Waste Act No.59 of 2008

Is to reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management systems/ measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

It is the right of the State, therefore every contractor responsible for implementing this ACT and must put in place uniform measures that seek to reduce the amount of waste that is generated and, where waste is generated, to ensure that waste is re-used, recycled and recovered in an environmentally sound manner before being safely treated and disposed of.

A.12 PROJECT / SITE SPECIFIC REQUIREMENTS

Project Specification which lists specific activities and considerations that have been identified for the project and the construction site and for which Risk Assessments, Safe Working Procedures (SW P), management and control measures and Method Statements (where necessary have to be developed by the Principal Contractor.

A.13 ARRANGEMENTS FOR MONITORING AND REVIEW

The Client will conduct a Monthly Audit to audit compliance with Construction Regulation 7 (1) (d) to ensure that the Contractor has implemented and is maintaining the agreed and approved O H &S Plan. Schedule C will be used as a form at when conducting the audit. The Client reserves the right to conduct other ad hoc audits and inspections as deemed necessary.

A representative of the Contractor shall accompany the Client on all audits and inspections and m ay conduct his own audit/inspection at the same time. Each party will, however, take responsibility for the results of his own audit/inspection results.

A.14 MEASUREMENT AND PAYMENT

Payment for the Contractor's obligations in respect of the Occupational Health and Safety Act and Construction Regulations shall be made through three payment item s described below. The three payment item s together shall include full compensation for all personnel (including a dedicated full time Construction Safety Officer), costs and incidentals in respect of compliance with and enforcement of the Health and Safety specifications, which shall include for the compilation, presentation, implementation and maintenance of the site Health and Safety Plan as contemplated in Regulation 5 of the Construction Regulations.

In tendering rates for the three items the Contractor shall ensure that the sum of the amounts for the three item s shall not be less than one percent (1%) of the Tender Amount.

Item 1.A.1

Contractor's initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations (Sum)

The full amount will be paid in one installment only once:-

(a) The Contractor has notified the Provincial Director of the Department of Labour in writing of the project.
(b) The Contractor has made the required initial Appointments of Employees and Sub-Contractors.
(c) The Client has approved the Contractor's Health and Safety Plan.
(d) The Contractor has set up his Health and Safety File.

Item 1.A .2
Contractors' time related obligations in respect ofthe Occupational Health and SafetyAct and Construction Regulations (Sum)

Payment shall be effected as follow s only after payment for Item 1.A .1 has been made. Payment of incremental amounts (calculated by dividing the sum by the contract duration in months as stated in the Appendix to the Form of T ender) will be authorized in each of the subsequent progress certificates for the authorized duration of the contract. The tendered sum shall not be exceeded without prior approval from the Engineer.

Item 1.A .3
Submission of the Health and Safety File (Sum)

This amount will be paid only once the Contractor has met all his obligations in respect of the Occupational Health and Safety Act and the Construction Regulations and has submitted his Health and Safety File complete as envisaged on this specification to the Client's satisfaction.

SCHEDULE A

NOTIFICATION OF CONSTRUCTION WORK

Regulation 4 of the Construction Regulations, 2014

1.(a) Name and postal address of Principal Contractor:

.....

.....

1.(b) Name and telephone number of Principal Contractor's contact person:

.....

2. Principal Contractors compensation registration number:

.....

3.(a) Name and postal address of Client:

.....

.....

.....

3.(b) Name and telephone number of Clients contact person or agent:

.....

4.(a) Name and postal address of designer(s) for the project:

.....

.....

.....

4.(b) Name and telephone number of designer's contact person:

.....

.....

.....

5. Name and telephone number of principal Contractors construction supervisor on site appointed in terms of regulations 8(1)

.....

.....

6. Name/s of principal Contractors sub-ordinate supervisors on site appointed in terms of regulation 8(2):

.....

.....

7. Exact physical address of the construction site or site office:

.....

.....

8. Nature of the construction work:

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9. Expected commencement date:

.....

10. Expected completion date:

.....

11. Estimated maximum number of persons on the construction site:

.....

12. Planned number of Contractors on the construction site accountable to principal Contractor:

.....

13. Name(s) of Contractor already chosen:

.....

.....

.....

.....

....

Principal Contractor Date

....

Client Date

- THIS DOCUMENT IS TO BE FOR W AR DED TO TH E OFFICE OF THE DEPARTMENT OFLABOUR PRIOR TO COMMENCEMENT OF WORK ON SITE
- ALL PRINCIPAL CONTRACTORS THAT QUALIFY TO NOTIFY MUST DO SO EVEN IF ANOTHER PRINCIPAL C O N TR AC T O R ON TH E SAME SITE H AD DONE SO PRIOR TO THE COMMENCEMENT OF W ORK.

SCHEDULE B

RECORDS TO BE KEPT ON SITE

ITEM	Clause Reference	RECORD TO BE KEPT	RESPONSIBLE PERSON
1	4(1)	Notification to Provincial Director – Schedule A Available on site	Principal Contractor
2	5(1)m	Copy of Principal Contractor's Health & Safety Plan Available on request	Client (Consultant
3	7(1)b	Copy of Principal Contractor's Health & Safety Plan As well as each Contractor's Health & Safety Plan Available on request	Principal Contractor
4	7(1)b	Health & Safety File opened and kept on site (including all documentation required i.t.o. OHSA & Regulations Available on request	Contractor
5	7(1)	Consolidated Health & Safety File handed to Client on completion of Construction work. To include all documentation required i.t.o. OHSA & Regulations and records of all drawings, designs, materials used and similar information on the structure.	Principal Contractor
6	7(1)	Comprehensive and Updated List of all Contractors on site, the agreements between the parties and the work being done Included in Health & Safety file and available on request	Principal Contractor
7	7(1)	Keep record on the Health & safety File of the input by Construction Safety Officer [CR 6 (6)] at design stage or on the Health & Safety Plan	Contractor
8	9(1)	Risk Assessment Available on site for inspection	Contractor
9	7(7)	Proof of Health & Safety Induction Training	Every Employee on site
10	10(3)	Construction Supervisor has latest updated version of Fall Protection Plan	Contractor
11	9(1)	Inform Contractor in writing of dangers and hazards relating to construction work	Designer of Structure
12	11(1)(c)	All drawings pertaining to the design of structure On site available for inspection	Contractor
13	11(2)(b)	Record of inspection of the structure [First 2 years – once every 6 months, thereafter yearly]	Owner of Structure
14	11(2)(c)	Maintenance records – safety of structure Available on request	Owner of Structure
15	12(3)(c)	Drawings pertaining to the design of formwork/support work structure Kept on site, available on request	Contractor
16	13(h)(1)	Record of excavation inspection On site available on request	Contractor
17	17(2)(c)iv	Suspended Platform inspection and performance test records Kept on site available on request	Contractor
18	23(1)(k)	Findings of daily inspections(prior to use) of construction vehicles and mobile plant	Contractor
19	24(e)	Record of temporary electrical installation inspections and electrical machinery in a register and kept on site	Contractor
20	HCSR 9A 1	Records of MSDS for all, as reasonably practicable, hazardous chemical substances free of charge in the form of Annexure 8	Contractor
21			
22			
23			

SCHEDULE C

OCCUPATIONAL HEALTH AND SAFETY: AUDIT SYSTEM

Section/ Regulation	Subject	Requirements	1.1.1.2 Yes/No
Construction. Regulation 4	Notice of carrying out Construction work	Department of Labour notified Copy of Notice available on Site	
General Admin. Regulation 4	Copy of OH&S Act (Act 85 of 1993)	Updated copy of Act & Regulations on site Readily available for perusal by employees	
COID Act Section 80	Registration with Compensation Insurer	Written proof of registration / Letter of good standing available on Site	
Construction. Regulation 7	OH&S Specification & Plan	H&S Specification received from Client OH&S plan developed Updated regularly	
Construction. Regulation 9	Hazard Identification & Risk Assessment	Hazard Identification carried out/Recorded Risk Assessment and Plan drawn up/Updated Risk Assessment Plan available on Site Employees/Subcontractors informed/trained	
CR 8(1)	Assigned duties (Managers)	Responsibility of complying with the OH&S Act assigned to other person/s by CEO.	
Construction. Regulation 8(7)	Designation of Person Responsible on Site	Competent person appointed in writing as Construction Supervisor	
Construction. Regulation 8(8)	Designation of Subordinate Person	Competent person appointed in writing as Sub-ordinate Construction Supervisor	
Section 17 & 18 of OHS Act 85 of 1993	Designation of Occupational Health & Safety Representatives	More than 20 employees - one OH&S Representative, one additional OH&S Rep. for each 50 employees or part thereof. Designation in writing, period and area of responsibility specified. Meaningful OH&S Rep. reports. Reports actioned by Management.	
Section 19 & 20 of OHS Act 85 of 1993	Occupational Health & Safety Committee/s	OH&S Committee/s established. Members appointed in writing. Meetings held monthly. Minutes kept. Actioned by Management.	
Section 37 of OHS Act 85 of 1993	Agreement with Mandatories (Subcontractors)	Written agreement with Subcontractors. List of Subcontractors displayed. Proof of Registration with Compensation Insurer/Letter of Good Standing Construction Work Supervisor designated Written arrangements concerning OH&S Reps & OH&S Committee Written arrangements regarding First Aid	
Construction. Regulation 10	Fall Prevention & Protection	Competent person appointed to draw up and supervise the Fall Protection Plan Proof of appointees competence available on Site Risk Assessment carried out for work at heights Fall Protection Plan drawn up/updated Available on Site	
Construction. Regulation 10(5)	Roofwork	Competent person appointed to plan & supervise Roofwork. Proof of appointees competence available on Site Risk Assessment carried out Roofwork Plan drawn up/updated Roofwork inspect before each shift. Inspection register kept Employees medically examined for physical & psychological fitness. Written proof available	

Section/ Regulation	Subject	Requirements	1.1.1.2 Yes/No
Construction. Regulation 11	Structures	Information re. the structure being erected received from the Designer including: - geo-science technical report where relevant - the design loading of the structure - the methods & sequence of construction - anticipated dangers / hazards / special Measures to construct safely Risk Assessment carried out Method statement drawn up All above available on Site Structures inspected before each shift. Inspections register kept	
Construction. Regulation 12	Formwork & Support work	Competent person appointed in writing to supervise erection, maintenance, use and dismantling of Support & Formwork Design drawings available on site Risk Assessment carried out Support & Formwork inspected: - before use/inspection - before pouring of concrete - weekly whilst in place - before stripping/dismantling. Inspection register kept	
Construction. Regulation 16	Scaffolding	Competent persons appointed in writing to: - erect scaffolding (Scaffold Erector/s) - act as Scaffold Team Leaders - inspect Scaffolding weekly and after inclement weather (Scaffold Inspector/s) Written Proof of Competence of above appointees available on Site Copy of SABS 085 available on Site Risk Assessment carried out Inspected weekly/after bad weather. Inspection register/s kept	
Construction. Regulation 16	Suspended Scaffolding	Competent persons appointed in writing to: - erect Susp.scaffolding (Scaffold Erector/s) - act as Susp.Scaffold Team Leaders - inspect Susp.Scaffolding weekly and after inclement weather (Scaffold Inspector/s) Risk Assessment conducted Certificate of Authorization issued by a registered professional Engineer available on Site/copy forwarded to the Department of Labour The following inspections of the whole installation carried out by a competent person - after erection and before use - daily prior to use. Inspection register kept The following tests to be conducted by a competent person: - load test of whole installation and working parts every 12 months - hoisting ropes/hooks/load attaching devices quarterly. Tests log book kept Employees working on Susp.Scaffold medically examined for physical & psychological fitness. Written proof available	

Section/ Regulation	Subject	Requirements	1.1.1.2 Yes/No
Construction. Regulation 13	Excavations	Competent person/s appointed in writing to supervise and inspect excavation work Written Proof of Competence of above appointee/s available on Site Risk Assessment carried out Inspected: - before every shift - after any blasting - after an unexpected fall of ground - after any substantial damage to the shoring - after rain. Inspections register kept Method statement developed where explosives will be/ are used	
Construction. Regulation 14	Demolition Work	Competent person/s appointed in writing to supervise and control Demolition work Written Proof of Competence of above appointee/s available on Site Risk Assessment carried out Engineering survey and Method Statement available on Site Inspections to prevent premature collapse carried out by competent person before each shift. Inspection register kept	
Construction. Regulation 19	Materials Hoist	Competent person appointed in writing to inspect the Material Hoist Written Proof of Competence of above appointee available on Site. Materials Hoist to be inspected weekly by a competent person. Inspections register kept.	
Construction Regulations 15	Tunneling	Risk assessment carried out Comply with Mine Health and Safety Act 29 of 1996	

Section/ Regulation	Subject	Requirements	1.1.1.2 Yes/No
Construction. Regulation 22/ Driven Machinery Regulations 18 & 19	Cranes & Lifting Machines Equipment	Competent person appointed in writing to inspect Cranes, Lifting Machines & Equipment Written Proof of Competence of above appointee available on Site. Cranes & Lifting tackle identified/numbered Register kept for Lifting Tackle Log Book kept for each individual Crane Inspection: - All cranes - daily by operator - Tower Crane/s - after erection/monthly - Other cranes - annually by comp. person - Lifting tackle (slings/ropes/chain slings etc.) - 3 monthly Risk Assessment carried out	
Electrical Machinery Regulations 9 & 10/Electrical Installation Regulations	Inspection & Maintenance of Electrical Installation & Equipment (including portable electrical tools)	Competent person appointed in writing to inspect/test the installation and equipment. Written Proof of Competence of above appointee available on Site. Inspections: - Electrical Installation & equipment inspected after installation, after alterations and quarterly. Inspection Registers kept Portable electric tools and -lights and extension leads identified/numbered. Monthly visual inspection by User/Issuer/ Storeman. Register kept.	
Construction. Regulation 26	Water Environments	Competent person appointed in writing to supervise diving operations and ensure maintenance, statutory inspection and testing by an Approved Inspection Authority of equipment used Written Proof of Competence of above appointee available on Site Proof of registration of all divers present on site available Risk Assessment carried out Diving Manual produced. Available on Site Record of Voice Communications kept Diving Operations record kept Each Diver keeps a personal logbook. Entries countersigned by the Diving Supervisor Decompression tables available on Site Records of any Decompression illness kept Certificate of Manufacture of any Compression Chamber or Diving Bell in use available on Site	
General Safety Regulation 8(1)(a)	Designation of Stacking & Storage Supervisor.	Competent Person/s with specific knowledge and experience designated to supervise all Stacking & Storage Written Proof of Competence of above appointee available on Site	
Construction. Regulation 29/ Environmental Regulation 9	Designation of a Person to Co-ordinate Emergency Planning And Fire Protection	Person/s with specific knowledge and experience designated to co-ordinate emergency contingency planning and execution and fire prevention measures Emergency Evacuation Plan developed: - Drilled/Practiced - Plan & Records of Drills/Practices available on Site Fire Risk Assessment carried out All Fire Extinguishing Equipment identified and on Register. Inspected weekly. Inspection Register kept Serviced annually	

Section/ Regulation	Subject	Requirements	1.1.1.2 Yes/No
General Safety Regulation 3	First Aid	Every workplace provided with sufficient number of First Aid boxes. (Required where 5 persons or more are employed) First Aid freely available Equipment as per the list in the OH&S Act. One qualified First Aider appointed for every 50 employees. (Required where more than 10 persons are employed) List of First Aiders and Certificates Name of person/s in charge of First Aid box/es displayed. Location of F/Aid box/es clearly indicated. Signs instructing employees to report all Injuries/illness including first aid injuries	
General Safety Regulation 2	Personal Safety Equipment (PSE)	PSE Risk Assessment carried out Items of PSE prescribed/use enforced Records of Issue kept Undertaking by Employee to use/wear PSE	
General Safety Regulation 9	*Inspection & Use of Welding/Flame Cutting Equipment	Competent Person/s with specific knowledge and experience designated to Inspect Electric Arc, Gas Welding and Flame Cutting Equipment Written Proof of Competence of above appointee available on Site Equipment identified/numbered and entered into a register Equipment inspected monthly. Inspection Register Kept	
Hazardous Chemical Substances (HCS)	*Control of Storage & Usage of HCS	Competent Person/s with specific knowledge and experience designated to Control the Storage & Usage of HCS Written Proof of Competence of above appointee available on Site Risk Assessment carried out Register of HCS kept/used on Site	
Vessels under Pressure Regulations	Vessels under Pressure (VUP)	Competent Person/s with specific knowledge and experience designated to supervise the use, storage, maintenance, statutory inspections & testing of VUP's Written Proof of Competence of above appointee available on Site Risk Assessment carried out Certificates of Manufacture available on Site Register of VUP's on Site Inspections & Testing by Approved Inspection Authority (AIA): - after installation/re-erection or repairs - every 36 months. - Register/Log kept of inspections, tests. Modifications & repair	
Construction. Regulation 23	Construction Vehicles & Earth Moving Equipment	Operators/Drivers appointed to: - Carry out a daily inspection prior to use - Drive the vehicle/plant that he/she is competent to operate/drive Written Proof of Competence of above appointee available on Site Record of Daily inspections kept	
General Safety Regulation 13A	Inspection of Ladders	Competent person appointed in writing to inspect Ladders Ladders inspected at arrival on site and monthly thereafter. Inspections register kept	
General Safety Regulation 13B	Ramps	Competent person appointed in writing to Supervise the erection & inspection of Ramps. Inspection register kept	

SCHEDULE D: FORM OHS 1

OCCUPATIONAL HEALTH AND SAFETY: CHECK LIST

1. HEALTH AND SAFETY POLICY

(a) Can a copy of current health and safety policy including Procedures for risk assessment be supplied. Yes No

(b) Please give full reasons, on a separate sheet, if the health and safety policy cannot be provided

2. HEALTH AND SAFETY ADVICE

Do you :-

(a) Employ a full time health and safety advisor? Yes No

(b) Use the services of a health and safety consultant? Yes No

(c) Have access to the services of a health and safety group? Yes No

3. ACCIDENT AND INCIDENT STATISTICS

(a) Have any dangerous occurrences been reported within the last three years? Yes No

If Yes, please give brief details:-

.....

.....

(b) Has any employee or persons under your control been fatally injured at work within the last three years? Yes No

If Yes, please give brief details :-

.....

.....

Name of Firm (Block Capitals) : .....

Tenderer Name (Block Capitals) : .....

Signature : ..... Date : .....

SCHEDULE E: FORM OHS 2

OCCUPATIONAL HEALTH AND SAFETY STATEMENT BY CONTRACTOR

I, ... duly authorised to represent

..... (Company

name) in my capacity as .....

(Designation) hereby confirm that I accept full and exclusive responsibility for compliance by myself and all persons who perform work for me with the provisions of the Occupational and Safety Act, No. 85 of 1993 (as am ended) and all regulations promulgated from time to time, whilst performing work on :

Contract No. : .....

Contract Title : .....

: .....

I confirm that all employees who perform work on the site shall be properly trained to do this in a manner which is safe and without risk to health and safety to themselves and others in the vicinity and undertake to have our activities adequately supervised in the interest of health and safety.

Name of Firm : ..... (Block Capitals)

Tenderer Name : .....
(Block Capitals)

Signature : .....

Date : .....

COGTA: WADLEY HOUSE STANDBY GENERATOR INSTALLATION

THE MANUFACTURE, SUPPLY, DELIVERY, OFFLOADING, INSTALLATION, TESTING, COMMISSIONING AND HANDING-OVER OF STANDBY GENERATOR INSTALLATION AND ASSOCIATED ELECTRICAL WORKS AT WADLEY HOUSE IN PIETERMARITZBURG WITHIN MSUNDUZI MUNICIPALITY

SAFETY, HEALTH AND ENVIRONMENTAL RISK MANAGEMENT

BASELINE RISK ASSESSMENT

Brief description of Process / Task / Item..... All Possible Hazards / Risks

ID#	Type of Hazard	Hazard Quantification	Risk Identification	Existing Controls	Risk Rating						
					Prob	Severity			Freq	Total	Category
						Injury	Loss	Cost			
1.	HIV / AIIDS	Killer disease	Death	Protection issue	10	10	10	6	10	46	A - Very High
			Sick	Hygiene							
				Awareness training							
2.	Noise	85dBA	NIHL	PPE	7	8	1	5	5	26	C – Medium Risk
			Discomfort	Noise inhibitors							
			Stress	Training							
				Enforcing							
3.	Hydrocarbons	TWA-OEL-RL	Any disease or pathological	PPE	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Various[a]	Manifestations	Permits							
		Table 3 of HCSR		Training							
		Leukaemia		enforcing							
4.	Working at heights		Falls, injuries	Training, PPE (harness usage)	2	1	1	2	2	8	E – Very Low Risk
		>2 meters									

Brief description of Process / Task / Item..... All Possible Hazards / Risks

ID#	Type of Hazard	Hazard Quantification	Risk Identification	Existing Controls	Risk Rating						
					Prob	Severity			Freq	Total	Category
						Injury	Loss	Cost			
5.	Falling objects		Injuries to others	Training, Barricade under area	4	4	2	3	2	15	D – Very Low Risk
			Equipment / Tools damage	Lanyards to tools and equipment							
		>2 meters									
6.	Handling hazardous chemical substances	Various as per HCSR	Over exposure	PPE, training, MSDS availability and adherence	4	3	2	5	2	16	D – Very Low Risk
		HCSR 9A	Health risk	Correct storage and handling							
			Fire	Correct waste disposal							
			Pollution								
7.	Electrical power tools		Electrical shock	Control, checks, registers, issue	7	8	1	5	4	25	C – Medium Risk
			Injuries	Training							
			Bad workmanship	Audits							
			Low productivity								
8.	Use of Hand tools		Injuries, damage	PPE, checks, control, training	9	3	1	5	10	28	C – Medium Risk
			Reynard phenomenon	Enforce use of PPE							
			Any disease								

Brief description of Process / Task / Item…… All Possible Hazards / Risks

ID#	Type of Hazard	Hazard Quantification	Risk Identification	Existing Controls	Risk Rating						
					Prob	Severity			Freq	Total	Category
						Injury	Loss	Cost			
9.	Lifting equipment and gear		Injuries, damage, production Loss	Legal testing and checks, register	5	10	5	9	5	34	B – High Risk
				Control by identification							
				Replace defective equipment							
10.	Gas welding / Cutting		Occupational asthma	PPE, training	3	8	9	6	3	29	C – Medium Risk
			Fire, explosion	Permits							
				Storage standards							
11.	Electrical welding and / or Electrical Installation	Construction Regulations 24	Occupational asthma	PPE, training	7	9	10	6	5	37	B – High Risk
			Fire, electrical shocks	Permits							
			Sparks	Certificate of Compliance							
			Flashes, non-iodizing radiation	Competency Certs							
12.	Work on ladders and / or scaffolding	Over laden flooring boards	Falls, injuries	Checks, identification of hazards, defects, register	4	4	2	3	2	15	D – Low Risk
		Waste not removed continuously	Damage	No unauthorised modification to scaffolding							
		Openings in floor boards	Time delays	Tag scaffolds safe for use / not safe for use							
			Unstable construction								

Brief description of Process / Task / Item..... All Possible Hazards / Risks

ID#	Type of Hazard	Hazard Quantification	Risk Identification	Existing Controls	Risk Rating						
					Prob	Severity			Freq	Total	Category
						Injury	Loss	Cost			
13.	Working in enclosed areas / confined spaces / excavations	As per OHS Act	Asphyxiation, death	Permits to work, PPE	5	4	4	3	3	19	D – Low Risk
			Injuries	OHS Act requirements							
			Side collapse	Training							
14.	Fire		Damage, time loss	Permits, storage control	2	2	3	3	2	12	D – Low Risk
			Costs	Good housekeeping							
			Injuries	Training							
				No fires allowed							
15.	Environmental pollution	NEMA ACT 59	Air, ground and water pollution	Site and company legal requirements	7	2	5	6	10	30	C – Medium Risk
			Workplace pollution	Audits							
				Good housekeeping at al times at work areas and laydown areas							
16.	Handling / use of gas cylinders		Explosion, fire, damage, injury	Training, safe storage, correct handling	3	8	9	6	3	29	C – Medium Risk
				Correct use of tools							
				PPE							
				Site safety requirements							

Brief description of Process / Task / Item..... All Possible Hazards / Risks

ID#	Type of Hazard	Hazard Quantification	Risk Identification	Existing Controls	Risk Rating						
					Prob	Severity			Freq	Total	Category
						Injury	Loss	Cost			
17.	Compressed air		Injuries	Training	7	2	1	2	5	17	D – Low Risk
			Damage	PPE							
				Enforcing							
				Control							
18.	Electrical extension cords		Electrical shock, injuries	Identification, control, checks	7	10	5	5	5	32	B – High Risk
			Time loss	Training							
			Equipment damage	Correct usage							
			Trips and falls	enforcing							
19.	Lifting operations		Falling loads	Controlling, training, competent users / operators	7	10	5	5	6	33	B – High Risk
			Injuries	Method statements / rigging and lifting studies							
			Damage	For all loads >20 tons and all tandem lifts							
				Method statement for loads >10 tons							
20.	Injuries		Lost time	Training, first aiders at hand	8	10	10	10	10	48	A – Very High Risk
			Costs	Investigations for indicators							
			Loss of skilled labour	Indicator trends							

SAFETY, HEALTH AND ENVIRONMENTAL RISK MANAGEMENT
BASELINE RISK ASSESSMENT

Brief description of Process / Task / Item…… All Possible Hazards / Risks

ID#	Type of Hazard	Hazard Quantification	Risk Identification	Existing Controls	Risk Rating						
					Prob	Severity			Freq	Total	Category
						Injury	Loss	Cost			
21.	Manual Handling		Injuries	PPE, First Aiders on hand, good ergonomics practised.	7	2	5	6	10	30	C – Medium Risk
			Damage								
22.	Housekeeping		Slips, trips, falls	Enforcing, Control	5	5	5	5	5	25	D – Low Risk
			Incorrect disposal	Labelled Dirt bins at hand, Correct storage principals and procedures							
			Costs								
23.	Transportation Operations/ Construction vehicles	Construction Regulation 23	Air, Noise pollution	Daily checklists, competent drivers documentation, Good stacking and loading practices adhered to, Signage, Communication.	7	7	4	5	5	29	C – Medium Risk
			Damage	Good design and working order							
			Injuries/Incidents								