

PART 2

PG-02.1 (EC) PRICING ASSUMPTIONS – GCC 3rd Edition (2015)

Project title:	<i>Griekwastad, Prieska, Douglas and Hopetown Magistrate Courts: Installation of generators: Cluster 4</i>		
Tender / Quotation no:	KIM 13/2023	Reference no:	19/2/4/2/2/2342/16

C2.1 Pricing Assumptions

C2.1.1 GENERAL

The Bill of Quantities forms part of the Contract Documents and must be read and priced in conjunction with all the other documents comprising the Contract Documents, which include the Conditions of Tender, Conditions of Contract, the Specifications (including the Project Specification) and the Drawings.

C2.1.2 DESCRIPTION OF ITEMS IN THE SCHEDULE

The Bill of Quantities has been drawn up generally in accordance with Civil Engineering Quantities 1990 issued by the SA Institution of Civil Engineers.

The short descriptions of the items in the Bill of Quantities are for identification purposes only and the measurement and payment clause of the Standardized Specifications and the Particular Specifications, read together with the relevant clauses of the Project Specification and directives on the drawings, set out what ancillary or associated work and activities are included in the rates for the operations specified.

C2.1.3 QUANTITIES REFLECTED IN THE SCHEDULE

The quantities given in the Bill of Quantities are estimates only, and subject to remeasuring during the execution of the work. The Contractor shall obtain the Engineer's detailed instructions for all work before ordering any materials or executing work or making arrangements for it.

The Works as finally completed in accordance with the Contract shall be measured and paid for as specified in the Bill of Quantities and in accordance with the General and Special Conditions of Contract, the Specifications and Project Specifications and the Drawings. Unless otherwise stated, items are measured net in accordance with the Drawings, and no allowance has been made for waste.

The validity of the contract will in no way be affected by differences between the quantities in the Bill of Quantities and the quantities finally certified for payment.

C2.1.4 PROVISIONAL SUMS

Where Provisional sums or Prime Cost sums are provided for items in the Bill of Quantities, payment for the work done under such items will be made in accordance with Clause 45 of the General Conditions of Contract 2004. The Employer reserves the right, during the execution of the works, to adjust the stated amounts upwards or downwards according to the work actually done under the item, or the item may be omitted altogether, without affecting the validity of the Contract.

The Tenderer shall not under any circumstances whatsoever delete or amend any of the sums inserted in the "Amount" column of the Bill of Quantities and in the Summary of the Bill of Quantities unless ordered or authorized in writing by the Employer before closure of tenders. Unauthorized changes made by the Tenderer to provisional items in the Bill of Quantities, or to the provisional percentages and sums in the Summary of the Bill of Quantities will lead to the disqualification of the Tenderer.

C2.1.5 PRICING OF THE BILL OF QUANTITIES

The **bills of quantities / lump sum 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 Tender, Conditions of Contract, Specifications, Drawings and all other relevant documentation.

The prices and rates to be inserted by the Tenderer in the Bill of Quantities shall be the full inclusive prices to be paid by the Employer for the work described under the several items, and shall include full compensation for all cost and expenses that may be required in and for the completion and maintenance during the defects liability period of all the work described and as shown on the drawings as well as all overheads, profits, incidentals and the cost of all general risks, liabilities and obligations set forth or implied in the documents on which the Tender is based.

Each item shall be priced and extended to the "Total" column by the Tenderer, with the exception of the items for which only rates are required, or items which already have Prime Cost or Provisional Sums affixed thereto. If the Contractor omits to price any items in the Bill of Quantities, then these items will be considered to have a nil rate or price.

The Tenderer is required to check the Bills of Quantities and the numbers of the pages and should any be found to be missing or in duplicate, or should any of the typing be indistinct, or any doubt of obscurity arise as to the meaning of any description or particulars of any item, or if this Tender Enquiry contains any obvious errors, then the Tenderer must immediately inform the Principal Agent and have them rectified or explained in writing as the case may be. No liability whatsoever will be admitted by reason of the Contractor having failed to comply with the foregoing instruction.

No alterations, erasures, omissions or additions is to be made in the text and/or conditions of these Bills of Quantities. Should any such alterations, amendments, note/s or addition be made, the same will not be recognized, but reading of these Bills of Quantities as originally prepared by the Quantity Surveyor will be adhered to.

The contractor is cautioned that the use of any quantities appearing in these Bills of Quantities for the purpose of ordering material, it is done at own risk and no liability whatsoever will be admitted by the Employer or Quantity Surveyor for the correctness of such Quantities. Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.

The prices and rates to be inserted by the Tenderer in the Bills of Quantities shall be the full inclusive prices to be paid by the Employer for the work described. Such prices and rates shall cover all costs and expenses that may be required in and for the execution of the work described, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the documents on which the tender is based, as well as overhead charges and profit. Market related prices shall be inserted as these will be used as a basis for assessment of payment for additional work that may have to be carried out. The Employer reserves the right to balance the Bill rates where deemed necessary within the Tendered Amount.

A price or rate is to be entered against each item in the Bills of Quantities, whether the quantities are stated or not. An item against which no rate is/are entered, or if anything other than a rate or a nil rate (for example, a zero, a dash or the word "included" or abbreviations thereof) is entered against an item, it will also be regarded as a nil rate having been entered against that item, i.e. that there is no charge for that item. The Tenderer may be requested to clarify nil rates, or items regarded as having nil rates; and the Employer may also perform a risk analysis with regard to the reasonableness of such rates.

Should the full intent and meaning of any description not be clear, the bidder shall, before submission of his tender, call for a written directive from the principal agent, failing which it shall be assumed that the contractor has allowed in his pricing for materials and workmanship in terms of National Best Practice.

All items for which terminology such as "inclusive" or "not applicable" have been added by the Tenderer will be regarded as having a nil rate which shall be valid irrespective of any change in quantities during the execution of the Contract.

The Tenderer shall fill in rates for all items where the words "rate only" appear in the "Total" column. "Rate Only" items have been included where:

- (a) variations of specified components in the make-up of a pay item may be expected; and
- (b) no work under the item is foreseen at tender stage but the possibility that such work may be required is not excluded.

For 'Rate Only' items no quantities are given in the "Quantity" column but the quoted rate shall apply in the event of work under this item being required. The Tenderer shall however note that in terms of the Tender Data the Tenderer may be asked to reconsider any such rates which the Employer may regard as unbalanced.

Descriptions in the Bills of Quantities are abbreviated and comply generally with those in the "PW 371" and the principles contained in the latest version of the SANS 1200 in South Africa. It is the intention that the abbreviated descriptions be fully described when read with the applicable measuring system and the relevant preambles and/or specifications. However, should the full intent and meaning of any description not be clear, the bidder shall, before submission of his tender, call for a written directive from the principal agent, failing which it shall be assumed that the contractor has allowed in his pricing for materials and workmanship in terms of National Best Practice.

The price quoted against each item of this Bills of Quantities shall cover the full inclusive cost of the complete work to which it refers, as described in the Conditions of Contract and Specifications and as shown on the Drawings and shall allow for labour, material, transporting, loading, storage, supervision, commissioning, wastage, as well as the builders profit and attendance.

The Tenderer must ensure that he fully completes all columns of the Bill of Quantities including the Final Summary. The fully priced bill of quantities must be submitted with the tender or The Final Summary and the Section Summary pages MUST be returned with the tender document as indicated the PA-03 Notice and Invitation to Tender / PA-04 Notice and Invitation for quotation.

The tenderers are to ensure that they have read and understood the project specifications included in C3: Scope of Work. All the information provided in the Scope of Works form part of the work and must be included in the rates.

"The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and to have satisfied himself before submitting his tender (as far as is practicable) as to:

- (a) the form and nature of the Site and its surroundings, including subsurface conditions,
- (b) the hydrological and climatic conditions,
- (c) the extent and nature of work and materials necessary for the execution and completion of the Works,
- (d) the means of access to the Site and the accommodation he may require

and, in general, shall be deemed to have obtained all information (as far as is practicable) as to risks, contingencies and all other circumstances which may influence or affect his Tender"

C2.1.6 VALUE ADDED TAX

The **contract sum** must include for Value Added Tax (VAT). All rates, provisional sums, etc. in the **bills of quantities / lump sum document** shall be in Rands and cents and shall include all levies and taxes (other than VAT). VAT will be added in the summary of the Bill of Quantities. The rates must however be net (exclusive of VAT) with VAT calculated and added to the total value thereof in the Final Summary. All rates and amounts quoted in the Bill of Quantities

C2.1.7 CORRECTION OF ENTRIES

Incorrect entries shall not be erased or obliterated with correction fluid but must be crossed out neatly. The correct figures must be entered above or adjacent to the deleted entry, and the alteration must be initialled by the Tenderer.

C2.1.8 ARITHMETICAL ERRORS

Arithmetical errors found in the Bill of Quantities as a result of faulty multiplication of addition, will be corrected by the Engineer at the tender evaluation stage, as set out in the Tender Data.

C2.1.9 CONTRACT DOCUMENTS

The Tenderers are advised to examine the bills of quantities, drawings and specifications including all other contract documents and make themselves thoroughly acquainted with the nature and requirements of the work, as no claim for extra payment in this regard will be entertained. Should any parts of the drawings not be clearly intelligible to the Tender, he must, before submitting his tender, obtain clarification from the Principal Agent.

C2.1.10 UNITS OF MEASUREMENT

The units of measurement described in the Bill of Quantities are metric units for which the standard international abbreviations are used. Non-standard abbreviations which may appear in the Bill of Quantities are as follows:

No.	=	Number
%	=	Percent
Sum	=	Lump sum
PCsum	=	Prime cost sum
Prov sum	=	Provisional sum
m ³ .km	=	Cubic metre - kilometre
Km-pas	=	kilometre - pass
m ² .pass	=	square metre – pass

C2.1.11 TRADE NAMES

Tenderers attention is drawn to the fact that wherever trade names or references to any catalogue have been made in these Bills of Quantities, it is purely to establish a standard for the required material. If use is made of any other equally approved material in lieu of the prescribed trade name or catalogue, the necessary price adjustments will be made.

C2.1.12 CONTRACT DOCUMENTS

The Tenderers are advised to examine the bills of quantities, drawings and specifications including all other contract documents and make themselves thoroughly acquainted with the nature and requirements of the work, as no claim for extra payment in this regard will be entertained. Should any parts of the drawings not be clearly intelligible to the Tender, he must, before submitting his tender, obtain clarification from the Principal Agent.

C2.1.13 PAYMENTS

Interim valuations and payments will be prepared on a monthly basis, all in terms of the conditions of contract.

The contractor is to note that no payment will be made for materials stored off site and in the case of materials being stored on site, payment will only be made for such materials on condition that they have not been delivered to the site prematurely, a tax invoice and proof of payment (ownership) is submitted by the Contractor.

C2.1.14 ACCOMMODATION ON SITE

It is imperative to note that no living quarters for construction workers on site will not be permitted for the full duration of the contract unless otherwise stated in the contract data or permission be granted by the Employer.

C2.1.15 LOCAL MATERIAL UTILISATION REPORT (LOCAL CONTENT)

Submission of Local Material Utilisation Reports is *not applicable* to this project.

Bidders to note that materials procured for the works should be from South African manufactures and suppliers. Imported materials shall only be considered under exceptional circumstances, based on compelling technical justifications, and subject to the approval by the NDPWI.

The contractor shall be responsible for record keeping, documenting and submission of monthly local material utilization report with supporting documentation to the Employer's representative within 7 working days of the beginning of the successive month, indicating the percentage targets achieved in terms of DTI&C designated industry/sector/sub-sector schedule as per the PA36 and Annexures C attached to the tender document. The final percentage achievement to be reconciled upon completion of the project and form part of the final account. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16 CONTRACT PARTICIPATION GOALS

The contractor shall achieve in the performance of this contract the following Contract Participation Goals (CPGs) as indicated below:

Provision for pricing of compliance with the achieving the CPGs is made in the Contract Participation Goal Section of the Bills of Quantities and it is explicitly pointed out that all requirements in respect of the aforementioned are deemed to be priced thereunder and no additional claims in this regard shall be entertained

Monthly progressive reports to be submitted to the Employer's representative indicating the percentage targets achieved which must be reconciled upon completion of the project and to form part of the final account.

C2.1.16.1 MINIMUM TARGETED LOCAL BUILDING MATERIAL MANUFACTURERS CONTRACT PARTICIPATION GOAL

The Minimum Targeted Local Building Material Manufacturers CPG not applicable to this project.

Provision is made within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Local Building Material Manufacturers CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.7.1. Prescribed Profit and Attendance percentages have been stipulated, all inclusive of associated costs to the contractor for implementation and allowance for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.2 MINIMUM TARGETED LOCAL BUILDING MATERIAL SUPPLIERS CONTRACT PARTICIPATION GOAL

The Minimum Targeted Local Building Material Suppliers CPG is *not applicable* to this project.

Provision is made within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Local Building Material Suppliers CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.7.2. Prescribed Profit and Attendance percentages have been stipulated, all inclusive of associated costs to the contractor for implementation and allowance for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.3 MINIMUM TARGETED LOCAL LABOUR CONTRACT PARTICIPATION GOAL

The Minimum Targeted Local Labour Skills Development CPG is *not applicable* to this project.

Provision is made within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Local Labour CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.7.3. T Prescribed Profit and Attendance percentages have been stipulated, all inclusive of associated costs to the contractor for implementation and allowance for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.4 MINIMUM TARGETED ENTERPRISE DEVELOPMENT: CONTRACT PARTICIPATION GOALS (CPG)

The Minimum Targeted Enterprise Development Contract Participation Goal is *not applicable* to this project.

A provisional amount has been allowed for within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Enterprise Development CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.7.4. The provisional amount allowed is for the appointment of training coordinator, mentor, training service providers and training of the beneficiary enterprises. The provisional amount will be adjusted in accordance with the actual Contract Amount (Awarded tender amount excluding allowance, provisional amounts and VAT) of the awarded bid.

Prescribed Profit and Attendance percentages have been stipulated, all inclusive of associated costs to the contractor for implementation and allowance for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

The contractor shall complete a separate bill of quantities upon the award of the project and identification of the respective beneficiaries and the appointment of the training coordinator, mentor, training service providers of which the cost will be offset against the provisional amount allowed in the Bills of Quantities.

C2.1.16.5 MINIMUM TARGETED TARGETED CONTRACT SKILLS DEVELOPMENT GOALS (CSDG)

The Minimum Targeted Contract Skills Development CPG is *not applicable* to this project.

A provisional amount has been allowed for within the Contract Participation Goal section in the Bill of Quantities for the Minimum Targeted Skills Development CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.7.5. The provisional amount allowed is for:

- stipends payable to the beneficiaries
- appointment of training coordinator
- appointment of mentor (where applicable)
- appointment of training service providers
- other additional costs as per Table 3 of the Standard

The provisional amount will be adjusted in accordance with the actual Contract Amount (Awarded tender amount excluding allowance, provisional amounts and VAT) of the awarded bid.

Prescribed Profit and Attendance percentages have been stipulated, all inclusive of associated costs to the contractor for implementation and allowance for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

The contractor shall complete a separate bill of quantities upon the award of the project and identification of the respective beneficiaries. The CPG value to be achieved will be based on the actual contract amount which will be offset against the provisional amount allowed for within the Contract Participation Goal section in the Bill of Quantities.

Payment

The contractor shall upon the appointment of beneficiaries, provide a breakdown of all the associated costs. The contractor shall provide a payment schedule as to how the CPG costs will be claimed against for inclusion in the monthly payment certificates.

(a) Payment to the contractor to accommodate Part/Full Occupational qualification and Trade qualifications:

Should the contractor select Part/Full Occupational qualification and Trade qualifications learners, then the employer shall make provision for payment to the contractor as indicated in Table 3 of the Standard.

The contract skills participation goal, expressed in Rand, shall not be less than the contract amount multiplied by a percentage (%) factor given in Table 2 in the Standard for the applicable class of construction works. Should the contractor select Part/Full Occupational qualification and Trade qualifications learners, then the employer shall make provision for payment to the contractor as indicated in Table 3 of the Standard.

Table 1: Contracting skills development goals for different classes of engineering and construction works contracts

Source: cldb Standard for Developing Skills through Infrastructure Contracts as published in the Government Gazette Notice No 48491 Government Gazette, 23 April 2023 (Table 2, Page 7)

Class of construction works as identified in terms of Regulation 25 (3) of the Construction Industry Regulations 2004		Construction skills development goal (CSDG) (%)
Designation	Description	
CE	Civil Engineering	0.25
CE and GB	Civil engineering and General Building	0.375
EE	Electrical Engineering works (buildings)	0.25
EP	Electrical Engineering works (infrastructure)	0.25
GB	General Building	0.5
ME	Mechanical Engineering works	0.25
SB	Specialist	0.25

No provision for an additional payment item for the payment of the supervisor and/or mentors for the provision of training as provided for in the Contract Participation Goal section in the Bill of Quantities for the training of part/full time occupational learners and/or trade qualification learners. The associated cost is deemed to be included in general supervision on site.

The contractor shall complete a separate bill of quantities upon award, indicating the type and number of beneficiaries as well as the associated Notional Cost of Training to be provided, on which payment will be based.

(b) Payment to the contractor to accommodate Work Integrated Learners and Candidates for professional registration:

Should the contractor select Work Integrated Learners and/or Candidates for professional registration, then the employer shall make provision for payment to the contractor as indicated in Table 3 of the Standard.

Provisional amounts have been included in the Contract Participation Goal section in the Bill of Quantities for the training of Work Integrated Learners and Candidates for professional registration. The contractor shall price his Profit and Attendance (all inclusive of associated costs to the contractor for implementation and reporting), based on the provisional amount in the Contract Participation Goal section in the Bill of Quantities.

The contractor shall complete a separate bill of quantities upon award, indicating the type and number of beneficiaries as well as the associated Notional Cost of Training to be provided, on which payment will be based.

The CPG value to be achieved will be based on the contract amount as defined by the Standard, which will be offset against the provisional amount allowed for within the Contract Participation Goal section in the Bill of Quantities.

The contractor shall apportion the cost of accommodating work integrated learners (P1 and P2 learners) and candidates for professional registration by using Table 3 in the Standard and this cost will be used to determine the Rand value and will be used in determining the contract participation goal in the Bills of Quantities.

Table 3: The notional cost of providing training opportunities per quarter

Source: cldb Standard for Developing Skills through Infrastructure Contracts as published in the Government Gazette Notice No 48491 Government Gazette, 23 April 2023 (table 3, Page 9)

Type of Training Opportunity	Provision for stipends (Unemployed learners only)	Provisions for mentorship	Provisions for additional costs*	Total costs	
				Unemployed learners	Employed learners
Method 1					
Occupational qualification	R7 000	R0	R9 000	R16 000	R9 000
Method 2					
TVET College graduates	R14 000	R0	R9 000	R23 000	N/A
Apprenticeship	R14 000	R0	R12 000	R26 000	R12 000
Method 3					
P1 and P2 learners	R24 000	R20 000	R4 500	R48 500	N/A
Method 4					
Candidates with a 3 year diploma	R37 000	R20 000	R4 500	R61 500	R20 000
Candidates with 4 year qualification	R47 000	R20 000	R4 500	R71 500	R20 000

Note: The notional cost of providing training opportunities will increase by CPI on an annual basis based on April CPI. Should the rates increase after bid award or during construction the rates will be adjusted as a provisional item.

Example: Training Target Calculation for a R65,7m GB contract

Contract amount R65 700 000
Contract duration 12 Months
CSDG 0,50%
Minimum CSDG target $0,50\% \times R65\,700\,000 = R328\,500$ (Minimum requirement)

Skills Types	Number of learners	Notional Cost / Learner / Quarter	Notional cost/learner/year	Total Notional Cost over 12 months Contract
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Method 2: Workplace learning opportunities, with unemployed TVET graduates	1	R23 000	R92 000	R92 000
Method 3: Candidacy for an unemployed learner with a 3-year qualification	1	R61 500	R246 000	R246 000
Total	2			R338 000

C2.1.16.6 NATIONAL YOUTH SERVICE TRAINING AND DEVELOPMENT PROGRAMME

The National Youth Service Training and Development Programme is *not applicable* to this project.

The programme shall be implemented in terms of the Implementation of the National Youth Service Programme under the Expanded Public Works (EPWP) and shall be priced in the CPG section of the Bills of Quantities.

Provision has been made within the Contract Participation Goal section in the Bill of Quantities for the National Youth Service Training and Development Programme CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.7.6.

Prescribed Profit and Attendance percentages have been stipulated, all inclusive of associated costs to the contractor for implementation and allowance for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.1.16.7 LABOUR-INTENSIVE WORKS

Labour Intensive Works is *applicable* to this project.

Where labour intensive work is specified in the Bill of Qualities and indicated by "LI" the contractor must price for and include in rates. Contractors are expected to use their initiative to identify additional activities that can be done labour-intensively to comply with the set minimum labour intensity target. Provision has been made within the Contract Participation Goal section in the Bill of Quantities for the monthly reporting illustrating the value of the works executed under Labour Intensive Works CPG in the execution of this project as described in PG-01.1 (EC) SCOPE OF WORKS C3.7.7 and any other supplementary specifications.

Prescribed Profit and Attendance percentages have been stipulated, all inclusive of associated costs to the contractor for implementation and allowance for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

C2.2 Submission of Accrual Reports

The Contractor shall submit accrual reports to the client representative at the end of March and September each year for the duration of the Service Contract period from the date of appointment up to and including project closeout. This is to ensure that PMTE complies with the accounting framework GRAP, which requires that PMTE disclose all its accruals as at the end of each reporting date. Allowance must be made for submitting reports to the Employer's Representative on a monthly basis in terms of monthly and accumulative targets achieved with audited supporting documentation.

PG-03.1 (EC) SITE INFORMATION – GCC 3rd Edition (2015)

Project title:	<i>Griekwastad, Prieska, Douglas and Hopetown Magistrate Courts: Installation of generators: Cluster 4</i>			
Tender no:	<i>KIM 13/2023</i>	WCS no:	<i>056284</i>	Reference no: <i>19/2/4/2/2/2342/16</i>

C4 Site Information

The project is for the installation of generators. The site will be occupied during the course of construction period.



**public works
& infrastructure**

Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

NATIONAL DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE

ELECTRICAL ENGINEERING SERVICES

SPECIFICATION FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF AN OUTDOOR EMERGENCY GENERATOR SET

Date: May 2020

Engineering Services Chief Directorate
Electrical Engineering Directorate
Electrical Engineering Standards & Specifications Committee
256 Madiba Street
Pretoria
0001

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SECTION 1 – GENERAL

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1. SECTION 1 – GENERAL

1.1. Intent of Specification

The specification is intended to cover the complete installation and commissioning of the generator plant. The minimum equipment requirements are outlined, but do not cover all the details of design and construction. Such details are recognised as being the exclusive responsibility of the contractor.

For the purposes of this document the following applies:

- Generator Contractor shall be referred to as the Generator Contractor or simply Contractor;
- The masculine includes the feminine;
- The singular includes the plural.

1.2. Standards and Codes

All standards referenced shall be the latest editions.

SANS 10142-1	the wiring of premises: Low Voltage Installations
SANS 8528	Reciprocating internal combustion engine driven alternating current generating sets.
SANS 60034	Rotating electrical Machines
SANS IEC 60947	Low Voltage Switchgear
OHSACT	Occupational Health and Safety Act.
Department of Public Works Quality Specification Parts A, B and C.	
Local municipality by-laws for generator installations. (To be obtained from local municipality)	

1.3. Compliance with Regulations

The installation shall be erected and tested in accordance with the following Acts and regulations:

- a) The Occupational Health and Safety Act, 1993 (Act 85 of 1993) as amended,
- b) The Local Government Ordinance 1939 (Ordinance 17 of 1939) as amended and the municipal by-laws and any special requirements of the local supply authority,
- c) The Fire Brigade services Act 1987 (Act 99 of 1987) as amended,
- d) The National Building Regulations and Building Standards Act 1977 (Act 103 of 1977) as amended,
- e) The Electricity Act 1984 (Act 41 of 1984) as amended.
- f) The environmental Act and regulations

1.4. Scope of Work

Included in this Outdoor Generator Specification

Supply, delivery, installation and commissioning of the complete outdoor emergency generator inside an IP65 canopy/container set on a concrete plinth as specified in this document.

The successful tenderer shall supply, deliver and install a complete single enclosed diesel driven standby generator set in a position that will be determined on site. The machine shall be totally enclosed in a 3CR12 stainless steel housing powder coated or within 50km from the coast with grade 316 steel housing powder coated. The exhaust shall be manufactured from stainless steel.

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

1.5. Co-ordinating

The Contractor shall familiarise himself with the requirements of the other professional disciplines and shall examine the plans and specifications covering each of these sections.

The generator space, noise and vibration requirements shall be carefully checked with other professional disciplines to ensure that the equipment can be installed in the proper sequence in the space allotted.

1.6. Tests Certificates and Inspections

The following tests are to be carried out:

- a) At the supplier's premises, before the generating set will be delivered to site Representatives of the Department must be present during the test to satisfy themselves that the generating set complies with the specification and delivers the specified output. The test must be carried out in accordance with SANS 8528. The Representative/Agent must be timeously advised of the date for the test.
- b) After completion of the works and before practical completion is taken, a full test will be carried out on the installation for a period of sufficient duration to determine the satisfactory working thereof. During this period the installation will be inspected and the contractor shall make good, to the satisfaction of the Representative/Agent, any defects which may arise.
- c) The Contractor shall provide all instruments and equipment required for testing and any water, power and fuel required for the commissioning and testing of the installation at completion.
- d) Test reports of both tests as specified under (a) and (b) are to be submitted to the Representative/Agent.

The total costs for these test shall be included in the tendered amount.

In the event of the plant, equipment or installation not passing the test, the Representative/Agent shall be at liberty to deduct from the Contract amount all reasonable expenses incurred by the Employer and/or the Representative/Agent attending the test.

1.7. Operating and Maintenance Manuals

The Contractor shall be responsible for the compilation of a complete set of Operating and Maintenance manuals.

This shall be done in accordance with Section 4 – Operating and Maintenance manuals.

All information shall be recorded and reproduced in electronic format as well as supplying the Representative/Agent with three sets of hard copies.

Approval of the final Operating and Maintenance Manuals shall be a prerequisite for issuing of a Certificate of Practical Completion of the installation.

1.8. Guarantee

After works completion of the installation have been achieved, there will follow a 12-month free maintenance period.

During this period the generator contractor shall maintain the generator installation as per the requirements of the Occupational Health and Safety Act. This maintenance shall include systematic examinations, adjustments and lubrication of all generator equipment. Electrical and mechanical parts shall be repaired or replaced whenever it is required to maintain optimum performance without additional cost to the Department, unless the condition was caused by misuse or vandalism of the generator equipment or natural hazards/force majeure.

The work under this section shall be performed by competent, qualified accredited personnel under the supervision and in the direct employment of the Generator Contractor and shall not be transferred to any non-affiliated agent. Contract maintenance and repair work shall be done during normal working hours and shall further provide emergency call-back service twenty-four (24) hours a day, seven (7) days a week.

During the guarantee/maintenance period the Department will invite tenders for the comprehensive maintenance of the generator, which will commence after the final completion has taken place, i.e. after the twelfth month guarantee period is over and all defects are corrected.

1.9. Materials and Workmanship

- a) The work throughout shall be executed to the highest standards and to the entire satisfaction of the Representative/Agent who shall interpret the meaning of the Contract Document and shall have the authority to reject any work and materials, which, in his judgement, are not in full accordance therewith. All condemned material and workmanship shall be replaced or rectified as directed and approved by the Representative/Agent.
- b) All work shall be executed in a first-class manner by qualified accredited tradesman.
- c) The Contractor shall be fully responsible for his work and shall replace any of the work which may be damaged, lost or stolen. The Contractor shall protect the building and its contents against damage by him, his employees or sub-contractors and shall make good any damage thereto.
- d) The Contractor shall indemnify the Employer of all liability for damages arising from injuries or disabilities to persons or damage to property occasioned by any act or omission of the Contractor or any of his sub-contractors, including any and all expenses, legal or otherwise, which may be incurred by the Employer or Representative/Agent in the defence of any claim, action or suit.
- e) The Contractor shall warrant that the materials and workmanship shall be of the highest grade, that the equipment shall be installed in a practical and first-class manner in accordance with the best practices and ready and complete for full operation. It is specifically intended that all material or labour which is usually provided as part of such equipment as is called for and which is necessary for its proper completion and operation shall be provided without additional cost whether or not shown or described in the Contract Document.
- f) The Contractor shall thoroughly acquaint himself with the work involved and shall verify on site all measurements necessary for proper installation and commissioning work. The Contractor shall also be prepared to promptly furnish any information relating to his own work as may be necessary for the proper installation work and shall co-operate with and co-ordinate the work of others as may be applicable.
- g) The Contractor shall inspect and verify that the existing power feeder system is compatible with the equipment offered and any changes or upgrading of the electrical supply shall be brought to the attention of the Representative/Agent.
- h) Material and equipment damaged in transit shall be replaced with undamaged material without additional cost to the Department.
- i) All components and their respective adjustment, which do not form part of the equipment installation work, but influence the optimum and safe operation of the equipment shall be considered to form part of, and shall be included in the Contractor's scope of works.
- j) All control equipment and serviceable items shall be installed and positioned such that they will be accessible and maintainable.
- k) The Contractor shall make sure that all safety regulations and measures and environmental regulations are applied and enforced during the installation and guarantee period to ensure the safety of the public and the User Client.

1.10. Brochures

Detailed brochures of all equipment offered shall be presented together with the tender documents.

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2. SECTION 2 – EQUIPMENT REQUIREMENTS

2.1. Engine

2.1.1. General

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

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

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

2.1.2. Rating

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

2.1.3. De-Rating

The engine must be de-rated for the site conditions as set out in the Technical Specification, Section 3 of this document.

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

2.1.4. Starting and Stopping

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

Tenderers must state what arrangements are 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.

2.1.5. Starter Battery

The set must be supplied a fully charged lead-acid type or maintenance free type battery, complete with necessary electrolyte. The battery must have sufficient capacity to provide the starting torque stipulated by the engine manufacturer. The battery capacity shall not be less than 120 Ah and shall be capable of providing three consecutive start attempts from cold and thereafter a fourth attempt under manual control of not less than 20 seconds duration each. The battery must be of the heavy duty "low maintenance" type, housed in a suitable battery box.

2.1.6. Cooling

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

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

2.1.7. Lubrication

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

2.1.8. Fuel Pump

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

2.1.9. Fuel Tank

The fuel tank shall be an integral part of the base frame of the generator set. The tank shall have sufficient capacity for standby sets to run the engine on full load for a period of 24 hours.

The diesel fuel storage system / tank which will be provided with the standby generator installation must be fitted with a fuel filtration and water separation system (filter & separator) which is entirely separate from the fuel supply line and line filter to the engine. This filtration and water separation system must be dedicated to purifying the content of the storage system / tank by way of the cleaning processes which are applied while circulating the fuel through the filter & separator unit.

The filtration system must be able to handle diesel fuel of "high" and of "low" sulphur content for an indefinite period. The suction line of the system must be connected to the lowest part of the storage system / tank. The return line must be connected in the top section of the storage system / tank in such a position and in such a way that the flow of fuel within the storage system / tank between the fuel return point and the fuel suction point will induce scouring of the bottom of the system / tank to effectively capture sediment and water in the to be filtered fuel.

The filtration unit must filter the diesel fuel, removing suspended particles of effective diameters down to 5 micron. In addition, it must separate all water from the fuel and the fuel storage system and automatically dispose of / dump such water into an open, removable receptacle for disposal at the installation or in a suitable position outside the building. Separation of the fuel and water must be sufficiently effective that the discharged water will meet the standard required for it to be disposed of into a municipal drain and sewer system.

The filter and water separator unit must draw its power from the DC batteries used to power the relevant generator set. The circulating pump shall be provided with a controller programmed to switch the pump through not more than three complete on and off cycles of equal time (i.e. 50% on; 50% off) , per hour, with a deviation of not more than 10 % $\pm$. The pump must be capable of a duty cycle of not less than 60% running time. The flow rate through the circulating pump must be between 1 L/min and 1.25 L /min.

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

The filtration & separator system may be mounted against the wall of the plant room or on the inside of a container, which may house the installation as may be specified elsewhere in this document.

The tank shall be fitted with a suitable filter, a full height gauge glass, "low fuel level" alarm, giving an audible and visible signal on the switchboard as well as a low-low fuel level cut-out.

An electrically operated pump with sufficient length of oil resistant hose to reach 2m beyond the door of the canopy/container, shall be supplied, for each set for filling the fuel tank/s from 200 litre drums.

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

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

2.1.10. Governor

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

The permanent speed variation between no load and full load shall not exceed 4.5% of the nominal engine speed and the temporary speed variation shall not exceed 10%. External facilities must be provided on the engine, to adjust the nominal speed setting by $\pm 5\%$ at all loads between zero and rated load.

2.1.11. Flywheel

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

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

2.1.12. Exhaust Silencer

It is essential to keep the noise level as low as possible. An effective exhaust silencing system of the residential type must be provided and shall be capable of providing 20 to 30 decibels of suppression.

The exhaust system shall consist of 3CR12 steel for inland areas (greater than 50km from the coast) or Grade 304 stainless steel in coastal areas.

The exhaust pipe shall be installed in such a way that the expelled exhaust fumes will not cause discomfort to the public. The exhaust pipe must be flexibly connected to the engine to take up vibrations transmitted from the engine, which may cause breakage. The exhaust piping and silencer shall be lagged and then cladded in stainless steel sheet to reduce the heat and noise transmission in the generator enclosure and shall be protected against the ingress of driving rain at 45° to the horizontal. The exhaust pipe must extend 0,5m above the canopy.

2.1.13. Accessories

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

2.1.14. Exhaust emissions

The exhaust emissions shall comply with US Tier III/EU stage III standards.

2.2. Alternator

2.2.1. General

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

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

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

2.2.2. Regulation

The alternator must preferably be self-regulated without the utilisation of solid state elements. The inherent voltage regulation must not exceed plus or minus 5% of the nominal voltage specified, at all loads with the power factor between unity and 0,9 lagging and within the driving speed variations of 4,5% between no-load and full load.

2.2.3. Performance

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

2.2.4. Coupling

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

2.3. Switchboard

2.3.1. General

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

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

2.3.2. Construction

The switchboard shall be enclosed in the steel enclosure.

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

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

The steelwork of the boards must be thoroughly de-rusted, primed with zinc chromate and finished with two coats of signal red quality enamel, or a baked powder epoxy coating.

Suitably rated terminals must be provided for all main circuits and the control and protection circuits. Where cable lugs are used, these shall be crimped onto the cable strands. Screw terminals shall be of the type to prevent spreading of cable strands. All terminals shall be clearly marked.

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

The modular generator set controller and protection equipment shall be mounted on a separate easily replaceable panel.

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

Access to the cubicle will be such that all components can be conveniently reached for testing and maintenance purposes.

The necessary bushes and a screen over the terminals will be provided where the power feeds enter and leave the cubicle.

The cubicle will be so constructed that the ac and dc components are screened from one another.

2.3.3. Protection and Alarm Devices

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

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

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

Reset push buttons are required on the modular generator set controller and a visible signal are required and the engine must stop when any of the protective devices operate. In the case of manual operation of standby sets, it shall not be possible to restart the engine.

The indication on the modular generator set controller must be in ENGLISH.

"OVERLOAD"

"TEMPERATURE HIGH"

"OIL PRESSURE LOW"

"OVERSPEED"

"START FAILURE"

"LOW WATER LEVEL"

In addition an audible and visible flashing signal shall be provided, when:

- a) The fuel level in the service tank is low. The indication on the modular generator set controller shall be "FUEL LOW".
- b) The battery charger failed. The indication on the modular generator set controller shall be "CHARGER FAIL"

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

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

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

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

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

2.3.4. Modular Generator Set controller

The modular generator set controller shall be an electronic unit to match those of the other modular generator set controllers and of a high quality i.e. Levato, Deep Sea Electronics, Circom. It must be provided with IO and communication facilities.

The modular generator set controller will be supplied with all its functions and shall be mounted on a separate easily replaceable panel with plug in termination blocks for easy installation and replacement.

The modular generator set controller interface will be implemented with relays, contactors etc.

The modular generator set controller will have a mimic display of the alternator/mains/ change over contactors configuration with LED's showing the status of the mains, alternator and change over contactors.

Configuration software shall be supplied with the system. The software will be capable of the following:

- Fault management (event log)
- Configuration management (software upgrades and function changes)
- Account management (energy management)
- Performance management (generator set point changes)
- Security management (passwords)

The modular generator set controller will have a standard RS 232/485 or Ethernet interface suitable for TCP I/P transport medium. All communication including configuration management will be done through this port. Equipment connected at each end of the RS 232 or Ethernet cable shall be adequately protected against transient over-voltages, lightning effects (particularly if the set and remote alarms are in separate buildings), switching surges, power system surges or mains and alternator borne noise/interference.

The controller will incorporate the following functions:

- Mains sensing
- Alternator output-voltage sensing
- Alternator over- frequency sensing
- Control of processor unit (self-diagnostics)
- Alarm/ Status indications
- Control selector and operation
- Phase rotation monitor

A 4- position control selector on the controller will be provided to facilitate the following modes of operation:

- OFF: Diesel/ alternator generator set switched off
- MANUAL: Mains bypassed: Diesel/ alternator will not take load

- AUTO: Diesel /alternator takes load on mains failure
- TEST: Diesel /alternator takes load on mains failure
- A standby failure alarm (SF) will be given on the controller and to the output alarms when “Not in Auto” is selected.

The modular generator set controller must monitor the following

When the voltage of the incoming mains varies by more than a pre-program value (default $\pm 10\%$) from the normal voltage on any phase, the controller will signal that the incoming mains will be disconnected and the engine-starting sequence initiated.

When the frequency of the incoming mains varies by more than pre- program value (default $\pm 5\%$) from the normal frequency, the controller will signal that the incoming mains will be disconnected and the engine-starting sequence initiated.

Upon restoration of the incoming mains to the pre-program value (default $\pm 10\%$) of the normal voltage on all phases, the monitor will signal that the load will be disconnected from the alternator and reconnected to the incoming mains.

If the alternator has been disconnected from the load and the incoming mains within the voltage limits of $\pm 10\%$ on all phases, the controller will signal that the load will be reconnected to the incoming mains.

Should the incoming mains fail or not in the specified limits while the engine is running under control of the cooling-off timer, the control for the cooling –off timer in the controller will be cancelled and the load connected to the alternator.

When the output voltage of the alternator varies by more than the pre-program value (default value $\pm 10\%$) on ANY phase, the controller will signal that the load will be disconnected from the alternator and the engine stopped.

A software over and under-frequency monitor will be provided in the controller if the frequency exceeds or drop below pre-programmed values. It will meet the requirements of class G2 governing. The monitor will not be influenced by harmonics.

Note: Software monitors will include adjustable overshoot and undershoot timers to be fully compatible with Class G2 governing.

All timers will be implemented in software.

Incoming supply failure timer

It is essential that incoming supply failures, occurring at short intervals, do not cause a series of starts and stops.

A timer adjustable from 1 s to 10 s required

The timer default value will be generator set to 3 s

The signal generated by the mains voltage monitor will start the timer. If the duration of the signal is less than the generator setting on the timer, the signal is suppressed so that the switching and starting sequence is initiated. However, if the duration of the signal is more than the generator setting on the timer, the signal will be transmitted to initiate the switching and starting sequence.

Incoming supply restoration timer

It is essential that incoming supply failures, occurring at short intervals, do not cause a series of starts and stops.

A timer adjustable from 1 s to 10 s required.

The timer default value will be generator set to 3 s.

The signal generated by the mains voltage monitor will start the timer. If the duration of the signal is less than 150 sec, the signal is suppressed and the timer is regenerator set. However, if the duration of the signal is more than 150 sec, the signal will be transmitted to initiate the switching sequence.

Alternator supply/ incoming supply change-over timer

It is essential that the supply be disconnected from the load before the incoming supply is reconnected to the load. This will be software generator settable in the controller with a minimum of 5 seconds and maximum of 20 seconds.

On receipt of the switching signal, the alternator supply will be disconnected from the load and timer started. After 5 sec, the incoming supply will be reconnected to the load.

Engine cooling-off timer

After the load has been transferred to the incoming supply the engine will run without load for a period to cool off and then stop.

A timer, software adjustable in the controller from 5 to 10 min is required.

Repeat- start control

A repeat- start control is required in the controller software adjustable so that in the event of the engine failing to start on the first start attempt, the starter motor will be released and repeat the start attempt.

The repeat-start attempt will be repeated 3 times.

The duration of each start attempt will be 6 sec with a period of 15 sec between successive start attempts.

Should the engine fail to start after the third start attempt, the controller will transmit a signal for alarm purposes.

In addition to the requirement for the switchboard instruments listed elsewhere in this document metering will also form part of the modular generator set controller and must be accessible on the software.

The modular generator set controller shall display the following alarm/status indications:

- High engine temperature.
- Low Oil pressure
- High/low alternator output voltage
- Over and under speed (frequency)
- Low water level
- Emergency stop activated
- Mains fail
- Battery charger fail
- Dummy load in operation (When provided)
- Unit not in Auto
- Engine running
- Low fuel alarm
- Engine start failure

Conditions one to six above will stop the engine.

The Contractor shall provide a remote alarm mimic panel and the associated control wiring for the set. The panel shall be installed in the duty/security room at the entrance to the building approximately 70m from the generator set position.

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

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

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

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

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

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

A facility to originate a call to the control cellular and to transfer a fault message should a warning or shutdown fault occur. The alarm conditions above from the controller will be extended to four relays with a make and break contact and terminal strip to allow for remote monitoring of the following alarms:

- Mains fail
- Standby run
- Standby fail
- Low Fuel

A remote start facility must be supplied, software controllable in the controller.

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

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

2.3.5. Manual Starting

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

2.3.6. Battery Charging Equipment

Each switchboard shall be equipped with battery charging equipment.

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

The charger must be fed from the mains. An engine driven alternator must be provided for charging the battery while the set is operational. Failure of this alternator must also activate the battery charger failure circuit.

The starter battery voltage will be software monitored by the modular generator set controller. The voltage will be digitally displayed.

2.3.7. Switchboard Instruments

Each generating set shall have a switchboard equipped as follows:

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

2.3.8. Marking

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

2.3.9. 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 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.

2.3.10. Operation Selector Switch

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

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

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

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

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

2.3.11. Automatic Change-over System

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

The contactors for this system must be electrically and mechanically interlocked.

2.3.12. By-pass Switch and Main Isolator

The switchboard shall be equipped with an on-load isolator to isolate the mains and a manually operated on-load 4 pole 4 position by-pass switch, which shall switch the connected loads as follows:

NORMAL: will allow for the normal connection i.e. connects the incoming mains to the Automatic control gear or directly to the outgoing feeder.

In the **GEN BY-PASS** position the switch will disconnect the automatic changeover control gear, and will connect the municipal mains directly to the essential supply busbar which will allow for the maintenance of either or both the generator and the automatic changeover equipment.

MAINS BY-PASS switching position would allow the generator to be connected directly to the essential supply busbar. This is when there is a problem with the automatic changeover equipment and there is no municipal power available.

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

It is required that this by-pass switch and mains isolator be mounted away from the automatic control gear, in a separate compartment, either on the side or in the lower portion of the switchboard cubicle, and that the switches are operated from the front of the compartment.

Contractor to note: The by-pass and mains isolator switch shall also break the main neutral.

2.3.13. Start Delay

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

2.3.14. Stop Delay

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

2.4. Installation

Except for the supply of the incoming mains cable and outgoing feeder cables, the tenderer must include for the complete installation and wiring of the plant in running order, including the connection of the incoming cable and outgoing feeder cables.

The connecting of the cable and control cabling to the generator and the control terminals in the LV board remains the responsibility of the tenderer.

2.5. Warning Notices

Notices, in English, must be installed on the outside of the steel enclosure.

The successful tenderer must consult the Occupational Health and Safety Act 83 of 1993 and get approval of the wording from the Department's representative, prior to ordering the notices.

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

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

An engraved label shall be installed next to the fuel cap that indicates the following:

- Base Tank Capacity
- Bulk Tank Capacity (if provided)
- Full load litres per hour consumption

2.6. Construction

The engine and alternator of the set shall be built together on a common frame, which must be mounted on a skid base on anti-vibration mountings. The set must be placed inside an IP65 canopy/container. A drip tray must be fitted under the engine. The tray must be large enough to catch a drip from any part of the engine.

The frame must be of the 'DUPLEX' type.

2.7. Operation

The set is required to supply the lighting and power requirements in the case of a mains power failure.

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

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

To prevent the alternator being electrically connected to the mains supply when the mains supply is on and vice versa, a safe and fail proof system of suitably interlocked contactors shall be supplied and fitted to the changeover switchboard.

SECTION 3 – TECHNICAL SPECIFICATION
(TO BE COMPLETED BY CONSULTING ENGINEER)

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3. SECTION 3 – TECHNICAL SPECIFICATION

3.1. General

Supply, deliver, install, commission, test and maintain an emergency generating set at

This installation must comply fully with all the sections and drawings of this document. This technical specification is supplementary to the Equipment Requirements, Section 2, and must be read together where they are at variance the Technical Specification shall apply.

Supply, delivery, installation and commissioning of the complete outdoor emergency generator set inside an IP65 canopy/container on a concrete plinth as specified in this document and indicated on the drawings.

Concrete plinth to be provided as per drawing

The surface of the concrete plinth shall be 50mm higher than the existing ground level. The thickness and strength of the plinth shall be designed by the consulting engineer and are detailed on the drawings.

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

The contractor shall install an earthing system in the concrete plinth. The contractor shall install two (2) earth studs 1.8 meters long on opposite corners of the concrete plinth into the ground. The earth studs shall be connected by means of a 70mm² bare copper earth wire to the main earth bar in the control panel. The earth conductor shall be connected to the earth bar, canopy, base, skid and earth bar by means of suitably crimping lugs and brass bolts.

3.2. Site Information and Conditions

3.2.1. Location

The site is at Griekwastad, Prieska, Douglas and Hopetown

3.2.2. Site Conditions

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

- | | | |
|---|---|-------------|
| a) Height above sea level | : | Meter |
| b) Maximum ambient temperature | : | °C |
| c) Maximum ambient humidity at lowest temperature | : | % |

3.3. Output and Voltage

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

No load voltage	:	400/230 Volt
Rating	:	80 kVA
Power at 0.9 power factor	:	kW

Frequency	:	50Hz
Fault Level	:	5kA

The generating set is required to feed the following electrical load:

	Load KW	Power factor
Discharge lighting		
Fluorescent lighting		
Heaters & plugs		
Computers & radios		
Petrol Pump		

3.4. Switchboard/Control Panel Unit

All switch- and control gear shall be rated for a fault current level of 5kA.

The switchboard/control panel unit shall be enclosed in the IP65 canopy/container.

3.5. Cables

The contractor will be responsible for all electrical cable connections associated with the complete generating set installation.

The following cables will be supplied, installed and terminated at the Switchboard by others. Adequate provision shall be made for the termination of these cables at the Switchboard:

DB fed	PVC PVC SWA PVC Cable	 mm ²
--------	-----------------------	-----------------------

3.6. Engine

A sump drainpipe must be fitted with a shut-off valve placed in a convenient position outside the base frame to facilitate drainage.

Recommended oil types must be indicated on the engine, or base frames, by means of suitable labels.

All engine instruments shall have clear markings on the faceplates, indicating the normal operating zone(s), maximum and minimum allowable values/limits and danger zone(s).

The flywheel shall be covered by approved hoods.

3.7. Alternator

The Alternator shall be of the low harmonic type.

3.8. Load Acceptance

The generator set shall be capable of accepting 75% of the specified site electrical output 10 seconds after the starter motor is energised and the remaining 25%, 5 seconds thereafter, i.e. 100% load acceptance shall not exceed 15 seconds.

3.9. Enclosure

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

3.9.1 General

The enclosure, shall be completely vermin-proof, powder coated and shall be constructed of 3CR12 stainless steel or within 50km from the coast with grade 316 steel housing of a minimum thickness of ± 1.5 mm.

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

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

The door hinges and locking bars shall be of a heavy duty type and be manufactured of 3CR12 stainless steel or within 50km from the coast with grade 316 steel and shall be fitted with a grease nipple.

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

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

No flexible restraints will be accepted.

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

Unless specified the silencers shall be mounted within the enclosure.

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

Rubber seals on doors shall be equal to or similar to rubber pinch weld, wind lace.

9.2 Design

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

9.3 Roof

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

9.4 Lamp fitting

A lamp fitting and it's associated on/off door switch shall be provided inside the enclosure for illumination of the control panel. The power for the lamp shall be obtained from the starter battery.

9.5 Sound-proofing

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

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

9.6 Padlock and keys

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

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

3.10. Alarms

The successful tenderer must pay particular attention to the requirements of the alarms as described in the Equipment Requirements, Section 2.

One alarm hooter and red light shall be supplied and installed on the outside of the generator container in a position as indicated by the Department's Representative.

The hooter shall consist of an electronic unit similar and equal to a "Klaxon" - type SY2/725 hooter with a continuously rated output and 110 dB at a distance of 2 metres, and shall be IP55 weatherproof rated.

The warning light shall consist of a 40W flashing red light, which shall be mounted on a galvanised steel frame together with the hooter.

The hooter and light shall be switched on or off simultaneously after initiation or cancellation of an alarm condition. The supply and installation of the wiring between the control board and the alarm unit forms part of this contract.

The successful tenderer must ensure that the hooter control circuit resets automatically after cancellation due to a low fuel condition or battery charger failure, but the visible fault indication must remain, i.e. should the operator continue to run the set, the hooter must sound, should any other condition develop.

A remote alarm panel shall be supplied and installed by the contractor in the control room. This shall be of surface mounting, enamelled sheet metal (colour to approval), minimum depth construction, and shall incorporate a flashing red pilot alarm light, adjustable electronic sounder, and a silence push button. The silence button shall not switch off the pilot light - this shall only be switched off when the alarm is reset at the Generator Panel.

A 2,5mm² x 4-core PVC SWA PVC cable will be supplied, installed and terminated by others between the Generator Panel and the Charge Office. The Contractor shall connect this cable at both ends and shall supply and install all switch gear relays, etc. to ensure satisfactory operation of the Remote Alarm Panel.

3.11. Remote Control Generator Switch

A Remote Control Generator "ON/OFF/AUTO" switch will be supplied and installed by others in the control room, and a 2,5mm² x 4-core PVC SWA PVC cable will be supplied and installed by others between the control room and the Generator Panel.

The contractor shall connect this cable at both ends, and shall supply and install all switch gear, relays, etc. to ensure satisfactory operation of the remote control switch.

3.12. Fuel Drip Tray

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

3.13. Completion Time

The Generator Set is required to be commissioned in conjunction with the building contract.

3.14. Inform

The successful tenderer shall inform the Engineer when the set is ready for installation.

3.15. Fuel Supply 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 period of 24 hours. The base tank shall be an open channel self-bund walled type that shall be of sufficient capacity to contain a spillage equivalent to 110% in volume of the base tank. The containment tank shall be manufactured from black mild steel with a thickness of not less than 2mm.

A float level alarm connected to the generator controller shall be incorporated into the bund area located such that the alarm will be activated when 50% of the volume of the bund area has been reached in the event of any diesel fuel leakage.

SECTION 4 – SCHEDULES OF TECHNICAL INFORMATION
(TO BE FULLY COMPLETED BY TENDERER)

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4. SECTION 4 – SCHEDULES OF TECHNICAL INFORMATION

4.1. Engine

NO	ITEM	REMARKS
1.	Manufacturer's Name	
2.	Country of Origin	
3.	Manufacturer's model No. and year of manufacture	
4.	Continuous sea level rating after allowing for ancillary equipment : a) In b.h.p. b) In kW	
5.	Percentage de-rating for site conditions, in accordance with SANS 8528 a) For altitude b) For temperature c) For humidity d) Total de-rating	
6.	Net output on site in kW	
7.	Nominal speed in r.p.m.	
8.	Number of cylinders	
9.	Strokes per working cycle	
10.	Stroke in mm	
11.	Cylinder bore in mm	
12.	Swept volume in cm ³	
13.	Mean piston speed in m/min	
14.	Compression ratio	
15.	Cyclic irregularity	
16.	Fuel consumption of the complete generating set on site in l/h of alternator output at : a) Full load b) $\frac{3}{4}$ load c) $\frac{1}{2}$ load NOTE : A tolerance of 5% shall be allowed above the stated value of fuel consumption.	
17.	Make of fuel injection system.	
18.	Capacity of fuel tank in litres	
19.	Is gauge glass fitted to tank?	
20.	Is electric pump for filling the fuel tank included?	

NO	ITEM	REMARKS
21.	Method of starting	
22.	Voltage of starting system	
23.	Method of cooling	
24.	Type of radiator if water-cooled	
25.	Type of heater for warming cylinder heads	
26.	Capacity of heater in kW	
27.	Method of protection against high temperature	
28.	Method of protection against low oil pressure	
29.	Type of governor	
30.	Speed variation in % a. Temporary b. Permanent	
31.	Minimum time required for as assumption of full load in seconds	
32.	Recommended interval in running hours for : a. Lubricating oil change b. Oil filter element change c. Decarbonising	
33.	Type of base	
34.	Can plant be placed on solid concrete floor?	
35.	Are all accessories and ducts included?	
36.	Is engine naturally aspirated?	
37.	Are performance curves attached?	
38.	Diameter of exhaust pipe	
39.	Noise level in plant room in dBA	N/A
40.	Noise level at tail of exhaust pipe in dBA	
41.	BMEP (4 stroke) at continuous rating (kPa)	
42.	% Load acceptance to SANS 8528, with 10% transient speed drop	

4.2. Alternator

NO	ITEM	REMARKS
1.	Maker's name and model no.	
2.	Country of Origin and year of manufacture	
3.	Type of enclosure	
4.	Nominal speed in r.p.m.	
5.	Number of bearings	
6.	Terminal voltage	
7.	Sea level rating kVA at 0,9 power factor	
8.	De-rating for site conditions	
9.	Input required in kW	
10.	Method of excitation	
11.	Efficiency at 0,9 power factor and : a) Full load b) $\frac{3}{4}$ load c) $\frac{1}{2}$ load	
12.	Maximum permanent voltage variation in %	
13.	Transient voltage dip on full load	
14.	Voltage recovery on full load application in milli-seconds	
15.	Is alternator brushless?	
16.	Class of insulation of windings	
17.	Is alternator tropicalised?	
18.	Symmetrical short circuit current at terminals n Ampere	
19.	Type of Coupling	

4.3. Switchboard

NO	ITEM	REMARKS
1.	Maker's Name	
2.	Country of Origin	
3.	Is board floor mounted?	
4.	Finish of board	
5.	Make of volt, amp, and frequency meters	
6.	Dial size of meters in mm	
7.	Scale range of voltmeter	
8.	Scale range of ammeters	
9.	Ratio of current transformers	
10.	Make of hour meter	
11.	Range of cyclometer counter	
12.	Smallest unit shown on counter (Item 11)	
13.	Make of circuit breaker	
14.	Type of circuit breaker	
15.	Rating of circuit breaker in Amp and fault level in kA	
16.	Setting range of overload trips	
17.	Setting range of instantaneous trips	
18.	Make of change-over equipment	
19.	Make of voltage relay	
20.	Is control and protection equipment mounted on a small removable panel?	
21.	Type of control equipment	
22.	Make of mains isolator	
23.	Type of indicators for protective devices	
24.	Make of rectifier	
25.	Type of rectifier	
26.	Is battery charging	
27.	Are volt- and ammeters provided for charging circuit?	
28.	Is the alarm hooter of the continuous duty type?	
29.	Rating in Amps of : a. Change-over equipment b. Mains on load isolator c. By-pass switch d. Circuit breaker to outgoing feed	
30.	Is manufacture of switchboard/control panel to be sub-let?	

NO	ITEM	REMARKS
31.	If yes, state name and address of specialist manufacturer	

4.4. Battery

NO	ITEM	REMARKS
1.	Maker's Name	
2.	Country of Origin	
3.	Type of battery	
4.	Voltage of battery	
5.	Number of cells	
6.	Capacity in cold crank amp	

4.5. Dimensions

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

4.6. Deviation from the Specification as an Alternative (State Briefly)

NO	DESCRIPTION

4.7. Spare Parts and Maintenance Facilities

NO	ITEM	REMARKS
1	Approximate value of spares carried in stock for this particular diesel engine and alternator	
2	Where are these spares held in stock	
3	What facilities exist for the servicing of the equipment offered	
4	Where are these facilities available	

SECTION 5 – PRICE SCHEDULES

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5.2. Schedule31

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5. SECTION 5 – PRICE SCHEDULES

5.1. General

- 1) The conditions of contract and the application of the Contract Price Adjustment Provisions shall be as set out in Part A: Section 1: Preliminaries.
- 2) The descriptions in this Price Schedule shall be read in conjunction with the specification.
- 3) The unit rate for each item in the Price Schedules shall include for all materials, labour, profit, transport, etc., everything necessary for the execution and complete installation of the work in accordance with the description.
- 4) The Price Schedules shall not be used for ordering purposes. The Contractor shall check the lengths of cables and overhead conductors on site before ordering any of the cables. Any allowance for off-cuts shall be made in the unit rates.
- 5) The rates shall exclude Value Added Tax and the total carried over to the final summary in PART A.
- 6) All material covered by this Specification shall, wherever possible, be of South African manufacture.

5.2. Schedule for Griekwastad Magistrate Office Generator SABS approved

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
					R	c
1.1	Site Clearance Allow for site clearing, this includes bushes/shrubs and rubble to install the generator, foundation and fence.	m ²	1			
1.1	Supply, Deliver, install and commissioning of standby generator complete in canopy as specified for the following sizes: 80 kVA Diesel/Alternating Generator Enclosed (3Ph) (Including first fill of all lubrication, oils and diesel) Supply and Install	no	1			
1.2	Design supply and install the stainless steel exhaust silencer for the mentioned generator, including lagging:					

	Supply and Install	no	1			
1.3	Supply and install a concrete foundation supporting the generator and must meet flotation, alignment & vibrations. The foundation must be able to withstand the installation weight, concrete plinth/pad/base 3000mm x 2000mm x 400mm of 25MPA	MPa	1			
1.4.1	Supply and install a sub distribution board 3CR12 distribution kiosks. Fault level= 15kA	Item	1			
1.4.2	150A 3phase circuit breaker	no	1			
1.4.3	3 phase surge protection	no	1			
	<u>Cabling to SANS 1507</u>					
1.4.4	Supply and install a 50mm ² x 4 core PVC SWA cable.	no	100			
1.4.5	Excavation and filling in earth to a depth of 600mm, this include removal and disposal of rubble.	m	50			
1.5	<u>Fencing of generator</u>					
1.5.1	Supply and install an anti-climb fence with shark tooth spikes 3m high (powder coated panels with black coatings, wire diameter 3mm x 3mm). This should include all necessary fittings.	m	10			
1.5.2	Supply and install a small/pedestrian gate with shark tooth spikes to excess the generator area these include weld on gate hooks and a 38mm padlock.	no	1			

1.6	Supply and Install warning notices on the container as specified. Set of Warning Notices as per SANS and OHS specifications.	Item	1			
1.7	Supply and install 2 x 150W solar LED wall mounted.	no	2			
1.8	Compilation of Maintenance, operational and technical Manuals to the client satisfaction. This include training of staff on general operation.	item	1			
1.9	Test and Commission to deliver a fully operational generating set to the client and engineers satisfaction:					
1.9.1	At the suppliers premises, prior to delivery to site (FAT).	item	1			
1.9.2	On site after completion of the installation (SAT).	item	1			
1.9.3	Electrical Certificate of Compliance	no	1			
1.10	Maintenance of the generator and refilling (fully loaded) the tank every 6 months. Service of the plant as per the manufacturer's requirements.	item	2			
1.11	Supply and install padlocks for the required size the generator.	no	5			
1.12	<u>EPWP</u> Appoint local labour and pay the labour the rates as per ministerial determination					

	throughout the construction period	Sum	1			
	Supply EPWP branded PPE as a once off purchase.					
1.12.1	Supply of 2 overalls per person on site.	no	2			
1.12.2	Supply of 1 per of safety boots per person on site.	no	2			
1.12.3	Supply 2 orange Brimmed bush hat with reflective strip per person on site.	no	2			
1.13	Preliminaries					
1.13.1	Compliance with health and safety regulations as per Act 85 of 1993.	item	1			
1.13.2	Transportation of all materials to site.	item	1			
1.13.3	Profit and attendance	item	1			
Total Carried to Summary				R		

5.3. Summary of Schedules of Quantities

Schedule

Page No

Amount

R c

1.

Total Tender Price for the Supply and Installation of an Emergency Generator Set

R

**5.4. Schedule for Prieska Magistrate Office Generator
SABS approved**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
					R	c
1.1	Site Clearance Allow for site clearing, this includes bushes/shrubs and rubble to install the generator, foundation and fence.	m ²	1			
1.1	Supply, Deliver, install and commissioning of standby generator complete in canopy as specified for the following sizes: 80 kVA Diesel/Alternating Generator Enclosed (3Ph) (Including first fill of all lubrication, oils and diesel) Supply and Install	no	1			
1.2	Design supply and install the stainless steel exhaust silencer for the mentioned generator, including lagging: Supply and Install	no	1			
1.3	Supply and install a concrete foundation supporting the generator and must meet flotation, alignment & vibrations. The foundation must be able to withstand the installation weight, concrete plinth/pad/base 3000mm x 2000mm x 400mm of 25MPa	MPa	1			
1.4.1	Supply and install a sub distribution board 3CR12 distribution kiosks. Fault level= 15kA	Item	1			
1.4.2	150A 3phase circuit breaker	no	1			

1.4.3	3 phase surge protection	no	1			
	<u>Cabling to SANS 1507</u>					
1.4.4	Supply and install a 50mm ² x 4 core PVC SWA cable.	no	160			
1.4.5	Excavation and filling in earth to a depth of 600mm, this include removal and disposal of rubble.	m	50			
1.5	<u>Fencing of generator</u>					
1.5.1	Supply and install an anti-climb fence with shark tooth spikes 3m high (powder coated panels with black coatings, wire diameter 3mm x 3mm). This should include all necessary fittings.	m	10			
1.5.2	Supply and install a small/pedestrian gate with shark tooth spikes to excess the generator area these include weld on gate hooks and a 38mm padlock.	no	1			
1.6	Supply and Install warning notices on the container as specified. Set of Warning Notices as per SANS and OHS specifications.	Item	1			
1.7	Supply and install 2 x 150W solar LED wall mounted.	no	2			
1.8	Compilation of Maintenance, operational and technical Manuals to the client satisfaction. This include training of staff on general operation.	item	1			
1.9	Test and Commission to deliver a fully operational					

	generating set to the client and engineers satisfaction:					
1.9.1	At the suppliers premises, prior to delivery to site (FAT).	item	1			
1.9.2	On site after completion of the installation (SAT).	item	1			
1.9.3	Electrical Certificate of Compliance	no	1			
1.10	Maintenance of the generator and refilling (fully loaded) the tank every 6 months. Service of the plant as per the manufacturer's requirements.	item	2			
1.11	Supply and install padlocks for the required size the generator.	no	5			
1.12	<u>EPWP</u> Appoint local labour and pay the labour the rates as per ministerial determination throughout the construction period					
	Supply EPWP branded PPE as a once off purchase.	Sum	1			
1.12.1	Supply of 2 overalls per person on site.	no	2			
1.12.2	Supply of 1 per of safety boots per person on site.	no	2			
1.12.3	Supply 2 orange Brimmed bush hat with reflective strip per person on site.	no	2			
1.13	Preliminaries	item	1			
1.13.1	Compliance with health and safety regulations as per Act 85 of 1993.	item	1			
1.13.2	Transportation of all materials to site.	item	1			

1.13.3	Profit and attendance	item	1			
Total Carried to Summary					R	

5.5. Summary of Schedules of Quantities

Schedule

Page No

Amount

R c

1.

**Total Tender Price for the Supply and
Installation of an Emergency Generator Set**

R

**5.6. Schedule for Douglas Magistrate Office Generator
SABS approved**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
					R	c
1.1	Site Clearance Allow for site clearing, this includes bushes/shrubs and rubble to install the generator, foundation and fence.	m ²	1			
1.1	Supply, Deliver, install and commissioning of standby generator complete in canopy as specified for the following sizes: 80 kVA Diesel/Alternating Generator Enclosed (3Ph) (Including first fill of all lubrication, oils and diesel) Supply and Install	no	1			
1.2	Design supply and install the stainless steel exhaust silencer for the mentioned generator, including lagging: Supply and Install	no	1			
1.3	Supply and install a concrete foundation supporting the generator and must meet flotation, alignment & vibrations. The foundation must be able to withstand the installation weight, concrete plinth/pad/base 3000mm x 2000mm x 400mm of 25MPa	MPa	1			
1.4.1	Supply and install a sub distribution board 3CR12 distribution kiosks. Fault level= 15kA	Item	1			
1.4.2	150A 3phase circuit breaker	no	1			

1.4.3	3 phase surge protection	no	1			
	<u>Cabling to SANS 1507</u>					
1.4.4	Supply and install a 50mm ² x 4 core PVC SWA cable.	no	100			
1.4.5	Excavation and filling in earth to a depth of 600mm, this include removal and disposal of rubble.	m	50			
1.5	<u>Fencing of generator</u>					
1.5.1	Supply and install an anti-climb fence with shark tooth spikes 3m high (powder coated panels with black coatings, wire diameter 3mm x 3mm). This should include all necessary fittings.	m	10			
1.5.2	Supply and install a small/pedestrian gate with shark tooth spikes to excess the generator area these include weld on gate hooks and a 38mm padlock.	no	1			
1.6	Supply and Install warning notices on the container as specified. Set of Warning Notices as per SANS and OHS specifications.	Item	1			
1.7	Supply and install 2 x 150W solar LED wall mounted.	no	2			
1.8	Compilation of Maintenance, operational and technical Manuals to the client satisfaction. This include training of staff on general operation.	item	1			
1.9	Test and Commission to deliver a fully operational					

	generating set to the client and engineers satisfaction:					
1.9.1	At the suppliers premises, prior to delivery to site (FAT).	item	1			
1.9.2	On site after completion of the installation (SAT).	item	1			
1.9.3	Electrical Certificate of Compliance	no	1			
1.10	Maintenance of the generator and refilling (fully loaded) the tank every 6 months. Service of the plant as per the manufacturer's requirements.	item	2			
1.11	Supply and install padlocks for the required size the generator.	no	5			
1.12	<u>EPWP</u> Appoint local labour and pay the labour the rates as per ministerial determination throughout the construction period					
	Supply EPWP branded PPE as a once off purchase.	Sum	1			
1.12.1	Supply of 2 overalls per person on site.	no	2			
1.12.2	Supply of 1 per of safety boots per person on site.	no	2			
1.12.3	Supply 2 orange Brimmed bush hat with reflective strip per person on site.	no	2			
1.13	Preliminaries	item	1			
1.13.1	Compliance with health and safety regulations as per Act 85 of 1993.	item	1			

1.13.2	Transportation of all materials to site.	item	1			
1.13.3	Profit and attendance	item	1			
Total Carried to Summary				R		00

5.7. Summary of Schedules of Quantities

Schedule

Page No

Amount

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1.

**Total Tender Price for the Supply and
Installation of an Emergency Generator Set**

R

**5.8. Schedule for Hopetown Magistrate Office Generator
SABS approved**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
					R	c
1.1	Site Clarence Allow for site clearing, this includes bushes/shrubs and rubble to install the generator, foundation and fence.	m ²	1			
1.1	Supply, Deliver, install and commissioning of standby generator complete in canopy as specified for the following sizes: 80 kVA Diesel/Alternating Generator Enclosed (3Ph) (Including first fill of all lubrication, oils and diesel) Supply and Install	no	1			
1.2	Design supply and install the stainless steel exhaust silencer for the mentioned generator, including lagging: Supply and Install	no	1			
1.3	Supply and install a concrete foundation supporting the generator and must meet flotation, alignment & vibrations. The foundation must be able to withstand the installation weight, concrete plinth/pad/base 3000mm x 2000mm x 400mm of 25MPA	MPa	1			
1.4.1	Supply and install a sub distribution board 3CR12 distribution kiosks. Fault level= 15kA	Item	1			
1.4.2	150A 3phase circuit breaker	no	1			

1.4.3	3 phase surge protection <u>Cabling to SANS 1507</u>	no	1			
1.4.4	Supply and install a 50mm ² x 4 core PVC SWA cable.	no	100			
1.4.5	Excavation and filling in earth to a depth of 600mm, this include removal and disposal of rubble.	m	50			
1.5	<u>Fencing of generator</u>					
1.5.1	Supply and install an anti-climb fence with shark tooth spikes 3m high (powder coated panels with black coatings, wire diameter 3mm x 3mm). This should include all necessary fittings.	m	10			
1.5.2	Supply and install a small/pedestrian gate with shark tooth spikes to excess the generator area these include weld on gate hooks and a 38mm padlock.	no	1			
1.6	Supply and Install warning notices on the container as specified. Set of Warning Notices as per SANS and OHS specifications.	Item	1			
1.7	Supply and install 2 x 150W solar LED wall mounted.	no	2			
1.8	Compilation of Maintenance, operational and technical Manuals to the client satisfaction. This include training of staff on general operation.	item	1			
1.9	Test and Commission to deliver a fully operational					

1.9.1	generating set to the client and engineers satisfaction: At the suppliers premises, prior to delivery to site (FAT).	item	1			
1.9.2	On site after completion of the installation (SAT).	item	1			
1.9.3	Electrical Certificate of Compliance	no	1			
1.10	Maintenance of the generator and refilling (fully loaded) the tank every 6 months. Service of the plant as per the manufacturer's requirements.	item	2			
1.11	Supply and install padlocks for the required size the generator.	no	5			
1.12	<u>EPWP</u> Appoint local labour and pay the labour the rates as per ministerial determination throughout the construction period					
	Supply EPWP branded PPE as a once off purchase.	Sum	1			
1.12.1	Supply of 2 overalls per person on site.	no	2			
1.12.2	Supply of 1 per of safety boots per person on site.	no	2			
1.12.3	Supply 2 orange Brimmed bush hat with reflective strip per person on site.	no	2			
1.13	Preliminaries	item	1			
1.13.1	Compliance with health and safety regulations as per Act 85 of 1993.	item	1			

1.13.2	Transportation of all materials to site.	item	1			
1.13.3	Profit and attendance	Item	1			
Total Carried to Summary				R		

5.9. Summary of Schedules of Quantities

Schedule	Page No	Amount	
		R	c
1.			
V			
Total Tender Price for the Supply and Installation of an Emergency Generator Set		R	

DPW-03 (EC): TENDER DATA

Project title:	<i>Griekwastad, Prieska, Douglas and Hopetown Magistrate Courts: Installation of generators: Cluster 4</i>
Reference no:	19/2/4/2/2/2342/16

Tender / Quotation no:	KIM 13/2023	Closing date:	13/10/2023
Closing time:	11H00	Validity period:	12 Weeks (84 Calendar days)

Clause number:	
	The conditions of tender are the Standard Conditions of Tender as contained in Annex C of the CIDB Standard for Uniformity in Construction Procurement as per Government Notice No. 423 published in Government Gazette No. 42622 of 8 August 2019 and as amended from time to time. (see www.cidb.org.za). The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender. Each item of data given below is cross-referenced to the clause marked "C" in the above mentioned Standard Conditions of Tender.
C.1.1	The employer is the Government of the Republic of South Africa in its Department of Public Works and Infrastructure.
C.1.2	For this contract the three volume approach is adopted. This procurement document has been formatted and compiled under the headings as contained in the CIDB's "Standard for Uniformity in Construction Procurement." The three volume procurement document issued by the employer comprises the following: Volume 1: Tendering procedures T1.1 - Notice and invitation to tender (PA-04 EC) T1.2 - Tender data (DPW-03 EC) Volume 2: Returnable documents T2.1 - List of returnable documents (PA-09 EC) C1.1 - Form of offer and acceptance (DPW-07 EC) C1.2 – Contract Data T2.2 - Returnable schedules Volume 3: Contract Part C1: Agreement and contract data C1.2 - Contract data (Part 1: Data provided by employer) (DPW-04 EC or DPW-05 EC) C1.3 - Form of guarantee (DPW-10.1 EC / DPW-10.3EC or DPW-10.2 EC/DPW-10.4 EC) Part C2: Pricing data C2.1 - Pricing Assumptions (PG-02.2 EC or PG-02.1EC) C2.2 - Bills of Quantities / Lump sum document (if not a returnable document) Part C3: Scope of work C3 - Scope of work (PG-01.2 EC or PG-01.1EC) Part C4: Site information C4 - Site information (PG-03.2 EC or PG03.1EC)

Tender no: KIM 13/2023

C.1.4	The Employer's agent is:	
	Name:	<i>Insert name of agent</i>
	Capacity:	<i>Select</i>
	Address:	<i>Insert address of agent</i>
	Tel:	<i>Insert tel of agent</i>
	Fax:	<i>Insert fax of agent</i>
	E-mail:	<i>Insert e-mail address of agent</i>

C.2.1 C.3.11	A. <u>ELIGIBILITY IN RESPECT OF CIDB REGISTRATION:</u>
	The following tenderers who are registered with the CIDB, or are *capable of being so registered prior to the evaluation of submissions, are eligible to have their tenders evaluated (* tenderers who are capable of being so registered, or who have applied for registration but have not yet received confirmation of such registration, must provide, <u>with this tender</u>, acceptable documentary proof thereof): a) contractors who have a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations, for a 3 EB or 3 EP** class of construction work; and b) contractors registered as potentially emerging enterprises with the CIDB who are registered in one contractor grading designation lower than that required in terms of a) above: select Joint ventures are eligible to submit tenders provided that: 1. every member of the joint venture is registered with the CIDB; 2. the lead partner has a contractor grading designation in the select tender value range select class of construction works or select tender value range select class of construction works** class of construction work; and 3. the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations for a select tender value range select class of construction works or select tender value range select class of construction works** class of construction work ** Delete "or select tender value range select class of construction works" where only one class of construction works is applicable A contract will be entered into with a tenderer who has in his employ management and supervisory staff satisfying the requirements of the scope of work for labour intensive competencies for supervisory and management staff: select

			- Permission to Occupy from local chief in case of rural areas (PTO) which is in the name of the bidder. Or - Lease Agreement which is in the name of the bidder.
3.	An EME or QSE which is at least 51% owned by black women (Mandatory)	4	SANAS Accredited BBBEE Certificate or Sworn Affidavit where applicable.
4.	An EME or QSE which is at least 51% owned by black people with disability (Mandatory)	2	- SANAS Accredited BBBEE Certificate or Sworn Affidavit where applicable. and - Medical Certificate indicating that the disability is permanent. Or - South African Social Security Agency (SASSA) Registration indicating that the disability is permanent. Or - National Council for Persons with Physical Disability in South Africa registration (NCPDPSA).
5.	An EME or QSE which is at least 51% owned by black youth (Mandatory)	2	ID Copy and SANAS Accredited BBBEE Certificate or Sworn Affidavit where applicable.



D2. For procurement transaction with rand value greater than R1 Million and up to R50 Million (Inclusive of all applicable taxes) the specific goals listed in table 1 below are applicable.

Table 2

Serial No	Specific Goals	Preference Points Allocated out of 20	Documentation to be submitted by bidders to validate their claim
1.	An EME or QSE or any entity which is at least 51% owned by black people (Mandatory)	10	SANAS Accredited BBBEE Certificate or Sworn Affidavit where applicable.
2.	Located in a specific Local Municipality or District Municipality or Metro or Province area for work to be done or services to be rendered in that area (Mandatory)	2	- Official Municipal Rates Statement which is in the name of the bidder Or - Any account or statement which is in the name of the bidder. Or

			- Permission to Occupy from local chief in case of rural areas (PTO) which is in the name of the bidder Or - Lease Agreement which is in the name of the bidder.	
3.	An EME or QSE or any entity which is at least 51% owned by black women (Mandatory)	4	SANAS Accredited BBBEE Certificate or Sworn Affidavit where applicable.	
4.	An EME or QSE or any entity which is at least 51% owned by black people with disability (Mandatory)	2	- SANAS Accredited BBBEE Certificate or Sworn Affidavit where applicable. and - Medical Certificate indicating that the disability is permanent. Or - South African Social Security Agency (SASSA) Registration indicating that the disability is permanent. Or National Council for Persons with Physical Disability in South Africa registration (NCPDPSA).	
5.	An EME or QSE or any entity which is at least 51% owned by black youth (Mandatory)	2	ID Copy and SANAS Accredited BBBEE Certificate or Sworn Affidavit where applicable.	



D3. For procurement transaction with rand value greater than R50 Million (Inclusive of all applicable taxes) the specific goals listed in table 2 below are applicable.

NB. The use of one of goal numbers' 4 or 5 is mandatory. The BSC must select either one of the two, but not both.

Table 3

Serial No	Specific Goals	Preference Points Allocated out of 10	Documentation to be submitted bidders to validate their claim
1.	An EME or QSE or any entity which is at least 51% owned by black people (Mandatory)	4	SANAS Accredited BBBEE Certificate or Sworn Affidavit where applicable.

	2.	Located in a specific Local Municipality or District Municipality or Metro or Province area for work to be done or services to be rendered in that area (Mandatory)	2	- Official Municipal Rates Statement which is in the name of the bidder. Or - Any account or statement which is in the name of the bidder. Or - Permission to Occupy from local chief in case of rural areas (PTO) which is in the name of the bidder. Or - Lease Agreement which is in the name of the bidder.	
	3.	An EME or QSE or any entity which is at least 51% owned by black women (mandatory)	2	SANAS Accredited BBBEE Certificate or Sworn Affidavit where applicable.	
	4. ☐	An EME or QSE or any entity which is at least 51% owned by black people with disability (Mandatory)	2	- SANAS Accredited BBBEE Certificate or Sworn Affidavit where applicable. and - Medical Certificate indicating that the disability is permanent. Or - South African Social Security Agency (SASSA) Registration indicating that the disability is permanent. Or National Council for Persons with Physical Disability in South Africa registration (NCPDPSA).	
	OR				
	5. ☐	An EME or QSE or any entity which is at least 51% owned by black youth (Mandatory)	2	ID Copy and SANAS Accredited BBBEE Certificate or Sworn Affidavit where applicable.	

Black people mean Africans, Coloureds and Indians, who - (a) are citizens of the Republic of South Africa by birth or descent; or (b) became citizens of the Republic of South Africa by naturalisation - (i) before 27 April 1994; or (ii) on or after 27 April 1994 and who would have been entitled to acquire citizenship by naturalisation prior to that date. (BROAD-BASED BLACK ECONOMIC EMPOWERMENT ACT No 25899, 2003 of 9 JANUARY 2004).

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E. ELIGIBILITY IN RESPECT OF RISK TO EMPLOYER:

Standard risk management assessment criteria in respect of tenders received for routine projects in the engineering and construction works environments:

Tender offers will be evaluated by an Evaluation Committee based on the technical and commercial risk criteria listed hereunder. Each criterion carries the same weight / importance and will be evaluated individually based on reports presented to the Bid Evaluation Committee by the Professional Team appointed on the project. A tender offer will be declared non-responsive and removed from any further evaluation if any one criterion is found to present an unacceptable risk to the Employer.

In order for the evaluation reports to be prepared by the Professional Team, the Tenderer is obliged to provide comprehensive information on form DPW-09 (EC). Failure to complete the said form will cause the tender to be declared non-responsive and removed from any further consideration. The Employer reserves the right to request additional information over and above that which is provided by the Tenderer on said form. The information must be provided by the Tenderer within the stipulated time as determined by the Bid Evaluation Committee, failing which the tender offer will *mutatis mutandis* be declared non-responsive.

E.1 Technical risks:

Criterion 1: Experience on comparable projects during the past 10 years.

The tendering Service Provider's experience on comparable projects during the past specify period 10 years. The number of current and previous comparable projects performed by the Tenderer as per the evaluation report prepared by the Consultant Team, based on its research and inspection of a representative sample of the Tenderer's current and previous work as reflected on form DPW-09 (EC), as well as, if necessary, of any additional work executed by the Tenderer, not reflected on form DPW-09 (EC). Failing to provide contactable references will result in the tender offer will be *mutatis mutandis* declared non-responsive.

Aspects to be regarded as "comparable" includes (but may be extended according to circumstances): size of projects (measured against monetary value or other project quantifying parameters), nature of projects (building, engineering, high/low rise, etc.), locality/area of execution (site-specific influences, knowledge of local conditions, etc.), complexity of project, projects for similar client department irrespective of end purpose of buildings/facilities created or in progress of being created and time scales of projects (normal, fast track, etc.) and stage of its/their development.

Criterion 2: Contractual commitment and quality of performance on comparable projects during the past 10 years.

Adherence to contractual commitments and quality of performance of comparable current and previous projects performed by the Tenderer on comparable projects during the past 10 years as per the evaluation report prepared by the Consultant Team, based on its research and inspection of a representative sample of the Tenderer's current and previous work as reflected on form DPW-09 (EC), as well as, if necessary, of any additional work executed by the Tenderer, not reflected on form DPW-09 (EC). Failing to provide contactable references will result in the tender offer be *mutatis mutandis* declared non-responsive.

Aspects to be considered include, but are not limited to the following:

1. The level of progress on current projects in relation to the project programme or, if such is not available/applicable, to the contractual construction period in general;
2. The degree to which previous projects have been completed within the contractual completion periods and/or extensions thereto, and the extend of penalties imposed;

Tender no: KIM 13/2023

	3. Project performance: time management & programming of works, timeous ordering of materials and appointment of subcontractors; 4. Financial management: payment to suppliers and cash flow problems; 5. Quality of workmanship: extent of reworks and timeous attention to remedial works; 6. Personnel resources: suitably qualified and experienced, turnover in site staff and labour force, specifically site manager and foreman; 7. Personnel management: extent of labour disputes and ability to resolving labour disputes amicably; 8. Sub-contractors: extent of turnover in subcontractors, general liaison and payment problems experienced; 9. Contract administration: contractual aspects such as complying to laws and regulations, insurances, security, submission of required documentation timeously, reaction to written contract instructions, appointments of subcontractors, etc. as can generally be expected in standard/normal conditions of contract. 10. Health & Safety: adherence to regulations and compliance, and number of transgressions & serious incidents. 11. Plant & equipment: sufficient resources on site and in time. 12. Delays: extent of causing delays, submission of claims timeously, and abuse of or exaggerated delay claims. 13. Final account: extent to which the contractor assisted in finalising the final account. Criterion 3: Suitably qualified and appropriately experienced human resources Allocation of suitably qualified and appropriately experienced human resources, both in respect of principals and/or other staff (contract manager, site agent, site foreman including other professional, technical and/or administrative) of the tendering Service Provider to the project, as proof that the tendering Service Provider will be able to react/respond appropriately to the Services required herein. The Company Organogram with CV's and certified ID's of all principals and employed workforce as well as proof of Professional Registration will be verified. Current and future workload of the tenderer in relation to capacity and capability will also be considered. The tenderer should demonstrate that he or she possesses the necessary professional and technical qualifications and -competence in relation to the scope of work and work to be undertaken. Criterion 4: Attendance of compulsory bid clarification meeting, if applicable If applicable, submission of confirmation of DPW-16.1 (PSB) attendance of compulsory bid clarification meeting or proof of attending the compulsory virtual meeting by a suitably qualified and experienced representative of the tenderer in terms of PA-04 (EC): Notice and Invitation to Tender. E.2 Commercial risks: The financial viability assessment evaluates the risk over the life of the construction period, as to whether the tenderer will be able to deliver the goods and services which are specified in the contract and / or be able to fulfil guarantees or warranties provided for in the contract in order to complete the project successfully for the amount tendered. Aspects to be considered include but are not limited to, the respective rates tendered, bank rating, financial capability and capacity whether the tenderer has or has access to sufficient financial resources to deliver the goods or services described in the tender documentation (including fulfilling any guarantees or warranty claims), whether the tenderer is not subject to any current or impending legal action (either formal proceedings or notification of legal action) which could impact on the financial standing of the tenderer or the delivery of the goods or services, financial report from auditors as proof of current liquidity, and company or any parent company or investor guarantee/s and financial statements.
C.2.7	For particulars regarding a pre-tender site inspection meeting, see Notice and Invitation to Tender T1.1

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C.2.12	If a tenderer wishes to submit an alternative tender offer, the only criteria permitted for such alternative tender offer is that it demonstrably satisfies the Employer's standards and requirements. A tenderer may submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted. Provided that the tenderer's main tender offer is according to specification and would under normal circumstances be recommended for acceptance, his alternative tender offer may also be considered for the purpose of the award of the contract. Calculations, drawings and all other pertinent technical information and characteristics as well as modified or proposed Pricing Data must be submitted with the alternative tender offer to enable the Employer to evaluate the efficacy of the alternative and its principal elements, to take a view on the degree to which the alternative complies with the Employer's standards and requirements and to evaluate the acceptability of the pricing proposals. Calculations must be set out in a clear and logical sequence and must clearly reflect all design assumptions. Pricing Data must reflect all assumptions in the development of the pricing proposal. Acceptance of an alternative tender offer will mean acceptance in principle of the offer. It will be an obligation of the contract for the tenderer, in the event that the alternative is accepted, to accept full responsibility and liability that the alternative offer complies in all respects with the Employer's standards and requirements. The modified Pricing Data must include an amount equal to 5% of the amount tendered for the alternative offer to cover the Employer's costs of confirming the acceptability of the detailed design before it is constructed. Alternative tender offer permitted: Yes ☐ No ☒
C.2.13.2	The list of Returnable Documents identifies which of the documents a tenderer must complete when submitting a tender offer. The tenderer must submit his tender offer by completing the Returnable Documents, signing the "Offer" section in the "Form of Offer and Acceptance" and delivering the Returnable Documents back to the Department.
C.2.13.5	The Employer's address for delivery of tender offers and identification details to be shown on each tender offer package are as per Notice and Invitation to Tender T1.1.
C.2.13.6 C.3.5	A two-envelope procedure will not be followed.
C.2.15	The closing time for submission of tender offers is as per Notice and Invitation to Tender T1.1.
C.2.16	The tender offer validity period is as per Notice and Invitation to Tender T1.1.
C2.16.3	Omit the wording of the last sentence for those projects which are subject to CPAP
C.2.18	The tenderer will be required to submit his fully priced Bills of Quantities / Lump Sum Document (complete document inclusive of all parts): ☒ Together with his tender; or ☐ The tenderer shall submit his fully priced and completed sectional summary- and final summary pages with the tender and thereafter submit the fully completed Bills of Quantities within fourteen (14) calendar days of the date requested to do so prior to the award of the contract.
C.2.19	Access shall be provided for inspections, tests and analysis as may be required by the Employer.
C.3.4.1 C.3.4.2	The location for opening of the tender offers, immediately after the closing time thereof shall be at: <i>Insert location</i>
C.3.8	The words "responsive tender" and "acceptable tender" shall be construed to have the same meaning.

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C.3.9.3	Omit the wording and replace with the following: "Notify the tenderer of all errors, omissions and/or rate imbalances that are identified in the tender offer and request the tenderer to, within a stipulated time, accept the total of prices as corrected in accordance with C.3.9.4."
C.3.9.4	Omit the wording of the first sentence and replace with the following: "In cases where tender offers contain errors, omissions and/or rate imbalances, these are to be corrected as follows:"
C.3.9.4	Add sub paragraph c) to C.3.9.4, as follows: "c) If the tenderer does not accept the corrected tender offer, or cannot reach consensus with the Employer on a corrected tender offer, the tender is to be classified as not acceptable/non responsive and removed from further contention."
C.3.11.1	The procedure for the evaluation of responsive tenders is Method 2: Financial Offer and Preference.
C.3.13	Add the following to sub paragraph a), as follows: The tenderer or any of its directors is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act, 2004 (Act No. 12 of 2004) as a person prohibited from doing business with the public sector;
C.3.17	Provide to the successful tenderer one copy of the signed contract document.



public works
& infrastructure

Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA



EXPANDED PUBLIC WORKS PROGRAMME
CONTRIBUTING TO A NATION AT WORK

EPWP IMPLEMENTATION FRAMEWORK ON NDPWI PROJECTS

Griekwastad, Prieska, Douglas and Hopetown Magistrate Courts: Installation of generators: Cluster 4

In order to make tender / contract documents fully EPWP compliant (labour-intensive construction projects) the following clauses and / or additions need to be included in the documentation:

1. Tender Document Cover

The following EPWP Logo to be included on the bottom of the front cover



EXPANDED PUBLIC WORKS PROGRAMME
CONTRIBUTING TO A NATION AT WORK

2. Tender Notice and Invitation to Tender

The following must be included in the notice and invitation to tender (for Contract Documentation for the Works):

"Only tenderers who employ staff which satisfy EPWP requirements are eligible to submit tenders."

3. Contract Data

The following must be included in the contract data in the contract with the Employer:

Linkage of payment for labour-intensive component of works to submission of project data

The Contractor's payment invoices shall be accompanied by labour information for the corresponding period in a format specified by the employer. If the contractor chooses to delay submitting payment invoices, labour returns shall still be submitted as per frequency and timeframe stipulated by the Employer. The contractor's invoices shall not be paid until all pending labour information has been submitted.

Applicable labour laws

The current Ministerial Determination (also downloadable at www.epwp.gov.za), Expanded Public Works Programmes, issued in terms of the Basic Conditions of Employment Act of 1997 by the Minister of Labour in Government Notice, shall apply to works described in the scope of work as being labour intensive and which are undertaken by unskilled or semi-skilled workers.

4. Bill of Quantities



- Due to the nature of the works involved, this type of project is feasible as a labour Intensive project i.e. the construction activities will require skilled/unskilled labour.
- Noted that only few items were identified to be implemented LI on the BOQ. The QS is kindly requested to identify more activities that will be done LI in the BOQ.
- Below are some of the potential focus areas where employment creation can be optimized. The following activities must be marked in the bill of quantities with the letter (LI);

LI Activities
All excavations works not exceeding 1.5 m
Masonry
Brickwork
Waterproofing (requires skilled labour and semi-skilled labour)
Cleaning of roof
Carpentry and joinery (requires skilled and semi-skilled labour)
Shelving
Installation of handle doors, door closers, nameplates, bathroom fittings
Signage,
Installation of pinning boards , writing boards
Plastering (Internal and External)
Tiling
Plumbing and Drainage & stormwater drainage
Paintwork
Installation of Fencing
Landscaping
Sewer connections
Water connections
Road signs
Paving to parking area
Fencing and installation of gate

6. Employment Targets

The contractor needs to provide a realistic estimate on the number of jobs that the project has the potential to create throughout the project duration as the project will be implemented using Labour Intensive Construction methods on elements where it is economical and feasible for this construction method.

Estimated no of jobs to be created:

NYS Beneficiaries = N/A

Local Labour = 2

7. Employment requirements



Tenderers are advised that this contract will be subject to the Expanded Public Works Program (EPWP) aimed at alleviating and reducing unemployment.

Tenderers must allow for any costs for the following employment requirements of the EPWP

60% women

55% youth aged between 18 and 35 years

2% people with disability

100% unskilled labour utilized must reside within the boundaries of the Municipality ward where this contract is executed, with preference to the local community closest or at the walking distance to the contract site. Wherever possible local skilled tradesmen are to be employed on this contract with the view to maximize utilization of local resources.

8. Employment of Community Liaison Officer (CLO)

- 8.1. The Contractor shall allow for and pay any and all costs necessary for the engagement of the services of a Community Liaison Officer (CLO) for the full duration of a project.
- 8.2. A CLO will be identified by the local structures (Project Steering Committee) of the ward areas and appointed following a fair and transparent interviewing process, to be conducted in the presence of local structures and the contractor representative, in order to assist the Contractor in the procurement of any local labour, etc. required for this project.
- 8.3. The Contractor is to liaise with the CLO and afford him any assistance needed in ensuring sound working relations with the local community.
- 8.4. Key Responsibilities of the CLO are envisaged to include and not necessary be limited to:
 - a) Assisting local leadership in conducting skills and resources audit which facilitates sourcing labour from within the ward or targeted areas for employment, as required by contractor,
 - b) Assisting in the procurement of materials from local resources, as required by the contractor,
 - c) Assisting the contractor by identifying areas of potential conflict and or threats to the project or to stakeholders in the project and recommend appropriate action to the contractor.
 - d) Assisting contractor and stakeholders in the project in the resolution of any conflict which may arise.
 - e) Establishing and ensuring that sufficient and open communication channels between the contractor and the work force are maintained.
 - f) Establish and ensuring that efficient and open communication channels between the contractor and the community are maintained



- g) Identifying and reporting to the Contractor regarding issues where communication between stakeholders is necessary, recommend courses of action and facilitate such communications
- h) Assisting the Contractor and the work force in the establishment of grievance procedures and necessary recommendation to the Contractor regarding the grievances and solution thereto.
- i) Attending to site meetings and project implementation meetings as required by the Contractor and prepare periodic reports as may be required by the Contractor from time to time.
- j) Attending to such other duties which are consistent with the functions of a CLO, as may be required by the Contractor from time to time.

9. EPWP Branding

9.1. Signboard

EPWP Programme at the project level shall always be promoted through the projects signage board that embrace EPWP logo at the bottom, correct measurement for this signage board will be provided by the project leader during the site handing over meeting.

The Contractor is responsible for ensuring that the project board remains neatly and safely erected for the full duration including the maintenance period, after which the project board and posts are to be dismantled and handed to the client in good order

9.2. Personal Protective Equipment (PPE)

All local labourers including contractor & sub-contractors' shall be provided with EPWP branded Personal Protective Equipment (PPE), as per the branding specifications.

Overalls to be orange in colour as per EPWP Corporate image and requirements (Annexure E). Branding to be done in full colour. Specification with the exception of Correctional Services contracts where the participants top and bottom would be green.

10. Reporting

The Contractor's payment invoice shall be accompanied by labour information for the corresponding period in an EPWP reporting format (Annexure B). The completed EPWP reporting template should be accompanied by the following supporting documents:

- Contract of employment (Individual and/or Entity) - once-off
- Certified South African ID copy (certification date not older than 3 months)-once-off
- Attendance register of participants- periodically
- Proof of payment of participants- periodically
- Schedule of payment for SMMEs- periodically (N/A)



The Consultant shall, before certifying a contractor's payment certificate, ensure that contractor has submitted labour information in a format and timeframe specified by the employer.

If the information submitted by the contractor is inadequate the consultant shall not submit the payment certificate to the employer for payment. If the contractor chooses to delay submitting payment invoices, labour information shall still be submitted as per frequency and timeframe stipulated by the Employer. The contractors invoice shall not be paid until all pending labour information has been submitted.

12.02 PROVISION OF EPWP PPE.



public works
& infrastructure

Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

OCCUPATIONAL HEALTH AND SAFETY SAFETY, HEALTH AND ENVIRONMENTAL SPECIFICATION

FOR

INSTALLATION OF GENERATORS

FOR

CLUSTER 4

MANAGED BY

**THE DEPARTMENT OF
PUBLIC WORKS AND INFRASTRUCTURE**

Project Manager: Lerato Sebopetja

OHS Manager: Wendy Mbolekwa

1. INTRODUCTION

This Health and Safety Specification has been prepared in terms of Client's responsibility[Construction Regulation 5(1)] to provide the principal Contractor and Contractors with a documented Specification of all Health and Safety requirements pertaining to the associated works on the proposed construction site/so as to ensure the health and Safety of all persons affected by the works. This health and Safety specification highlights, but in no way replaces legal requirements that the principal Contractor and Contractors are bound to comply with in terms of the Department of Public Works program.

- The client has made provisions in the tender for the Principal Contractor to price for the cost of health and safety measures before and during the construction process [Construction Regulation 5(1)(g)].The Principal Contractor in turn needs to make the same provision when Contractors(Sub-Contractors)tender or quote on work[7(c)(1).
- The principal Contractor and Contractors are required to prepare a Health and Safety plan based on the Client's health and Safety Specification, which shall be applicable from the date of commencement of and for the duration of work [Construction Regulation 7(1) (a)].This documented plan must be based on a Hazard Identification and Risk assessment (HIRA) which will serve to identify the hazards, and their associated risks, anticipated for the scope of works [Construction regulation 9].

Principal Contractor tendering must provide the client with an appropriate Preliminary Hand Safety Plan (including a Preliminary Hazard Identification and Risk Assessment) as in Construction Regulation 5(1).This plan must be submitted with the tender.

2. APPLICATION

The Health and Safety specification contains clauses that are applicable to occupational health and safety in construction and the document is intended to impose pro-active controls associated with the activities, plant 7 machinery and other aspects of the proposed construction work that impact on health and safety of persons, by means of a documented H&S Plan prepared by Principal Contractors.

Compliance to the requirements of the OHS act and relevant legislation is in addition to the requirements of the H&S Specification and forms parts of the Principal Contractor's responsibility. The Client and Client's agents will monitor the Principal Contractor to ensure that the Principal Contractor and Contractors comply with the requirement of OHS Act and will not prescribe to the Principal Contractor how such compliance is to be achieved.

3. PURPOSE

The purpose of the Health and Safety Specification is to provide the Principal Contractor and Contractor's tendering for the proposed construction work and /or appointed for the above mentioned construction work with the necessary detail of all health and safety requirements, and hazards pertaining to the associated scope or works, so as to enable the principal Contractor and Contractors to develop a Health and Safety Plan-to be implemented on site in order to ensure the health and safety of all persons while undertaking the said works.

4. REFERENCE DOCUMENTS AND HEALTH AND SAFETY STATUTORY REQUIREMENTS

The following Acts and Regulations are referred to in this document followed by their abbreviations in brackets. Note that this is not an exhaustive list and other documents may be referred to if necessary in order to compile **your Site Specific Health and Safety plan**:

4.1 Occupational Health and Safety Act,(Act No.85 of 1993)-[OHSA] and Regulations as follows:

- Construction Regulations[CR]
- General Administrative Regulations[GAR]
- General Safety Regulations[GSR]
- Environmental Regulations for Workplaces[ERW]
- General machinery Regulations [GMR]
- Hazardous Chemical Substances Regulations[HCSR]
- Electrical Installations Regulations[EIR]
- Electrical Machinery Regulations[EMR]
- Pressure Equipment Regulation [PER]

4.2 Compensation for occupational Injury and Diseases Act-[COIDA]

4.3 South African National Standards, SANS 10147:2014

4.4 Act, Regulations and site safety rules applicable to Department of Public works Construction Sites.

With regards to workplace health and safety, the following Acts, Regulations and safety rules shall apply to all Department of Public works Construction Site and must be fully complied with at all times by all contractors on site:

- Occupational Health and Safety Act(85 of 1993) and Regulations
- Compensation for Occupational Injuries and Diseases Act and Regulations
- This Health and Safety Specification
- Any other relevant statutory laws, including Municipal By-laws where applicable
- As well as any amendments that may arise from time to time;
- As well as any draft amendments to legislation-it is good practice to comply

4.5 Contractor's General Requirements for Health and Safety

4.5.1 The contractor shall be solely responsible for carrying out the work under the contract.

4.5.2 The contractor shall have the highest regards for health and safety of its employees, the Company and any persons at or in the vicinity of the site. This regard shall extend to include the works, temporary work materials, the property of third parties and any purpose relating to the contractor carrying out its obligations under the Contract.

4.5.3 The contractor shall initiate and maintain safety programmes to conform to all applicable safety and health laws or other requirements, including ground rules, and the project health and safety specification.

- 4.5.4 The contractor shall, at its own cost, erect and maintain safeguards for the protection of workers and public.
- 4.5.5 The contractor shall manage all reasonably foreseeable hazards created by performance of the work under the contract.
- 4.5.6 Provide all things and take all measures necessary for maintaining proper personal hygiene, ensuring safety of persons and property and protecting the environment at or near the site.
- 4.5.7 Avoid unnecessary interference with the passage of people and property at or near the site.
- 4.5.8 Prevent nuisance and excessive noises and unreasonable disturbances in performing the work under Contract.
- 4.5.9 Be responsible for the adequacy, stability and safety of all of its site operations, of all its methods of design, construction and work and be responsible for all of the work, irrespective of any acceptance, recommendation or consent by the Client, its Contractors, employees, agents and invitees, or any Government body.
- 4.5.10 The contractor shall comply, and shall be responsible for ensuring that all of its subcontractors comply, with the relevant statutory regulations for safety and the Client's requirements included in the contract.

4.6 Site Rules for Contractor

The site rule for contractors' document is the minimum standard with regard to specifications for construction work on this site. Contractors may have existing standards for each specific trade, but where conflict may arise between the contractor's and these Site rule for contractors, the more stringent shall apply.

4.6.1 Rules of Conduct

Contractors and all employees under their control, including any visitors brought onto site must adhere to the following Rules of Conduct on Site:

- Partake of, possess or sell drugs or alcoholic beverages on site. Any employee or visitor whose actions and demeanour show symptoms of possible narcosis or drunkenness shall be removed from site.
- Indulge in practical jokes, horseplay, fighting or gambling.
- Make use of water from fire hydrants.
- Destroy or tamper with safety devices, symbolic signs or wilfully and unnecessarily discharge fire extinguisher.
- Bring onto site or have in your possession a firearm, lethal weapon, camera, or any other recording device, unless authorised to do so
- Assault, intimidate or abuse any other person
- Operate construction equipment (vehicle or plant) without the necessary training and authorisation.
- Display insubordination toward any supervisor, foreman or manager in respect to carrying out of properly issued instructions or orders for health and safety reasons.
- Negligently, carelessly or wilfully cause damage to property of others.
- Refuse to give evidence or deliberately make false statements during investigations.

- Enter into any areas where you have no business unless authorised to do so by the person in charge.
- Brig animals onto site.

Insubordination towards any foreman, supervisor or manager could lead to removal from site and or dismissal and or prosecution. Except insofar as the principles of common law, or conditions as determined by any relevant statutes are concerned, the decision of the Client or his agent shall be final and binding in respect of any disputes that may arise from the interpretation of these rules.

5 Definitions

The following definitions apply.

For the purpose of the General Health and Safety Specification, the abbreviations or definitions given hereunder shall apply:

“CR” refers to the Construction Regulations, 2014

“GHSS” refers to this document (the General Health and Safety Specification (including any project specific annexures that the engineers and designers could attach.

“OHSA” refers to the Occupational Health and Safety.

“S” refers to a section in Occupational Health and Safety Act of 1993.

“H&S” refers to Health and Safety.

“Client” Department of Public Works

Incident; means any unplanned event that causes, or has the potential to cause, an injury or illness and/or damage to equipment, buildings, plant or the natural environment. Incident range from near miss incidents to serious incidents and emergencies.

“Near Miss” means an incident which has the potential to cause an injury or illness or damage to company.

“Regulations” means, specifically, the Construction Regulations, 2003 as issued on 18 July 2003, under the Occupational Health and Safety Act of 1993, but not excluding the other applicable regulations existing under the Act.

“Site” means the lands and other places, made available by the Municipality or the Client for the purposes of the Contract, on under over in or through which the construction work is to be executed or carried out.

“Principal Contractor” and contractor shall be as defined in the Regulations.

Construction Work [CR1]:

Means any work in connection with-

- a) The erection, maintenance, alteration, renovation, repair, demolition or dismantling of or an addition to a building or any similar structure.
- b) The installation, erection, dismantling or maintenance of a fixed plant where such work includes the risk of a person falling.

- c) The construction, maintenance, demolition or dismantling of any bridge, dam canal, road, railway, runway, sewer or water reticulation system or any similar civil engineering structure; or
- d) The moving of earth, clearing of land or making of an excavation or work on any similar type of work.

Hazard, Identification, Risk assessment and risk control (HIRA)

Means a documented plan, which identifies hazards assesses the risk and detailing the control measures and safe working procedures, which are to be used to mitigate and control the occurrence of hazards and risks during construction or operation phases.

Site

Means the area in possession of the Contractor for the construction of the works. Where there is no demarcated boundary it will include all adjacent areas, which are reasonably required for the activities for the Contractor, and approved for such use by the client.

Hazards

Means a source of or exposure to danger (source which may cause injury or damage to persons, or property)

Risk

Means the probability or likelihood that a hazard can result in injury or damage.

Construction Supervisor [CR 8(1)]

Means a full time, competent employee appointed in writing by the Contractor to supervise construction work. The appointment, as required by OHSA, shall stipulate health and safety responsibilities, area of responsibility and the proposed duration of the project.

Hazardous Chemical Substance (HCS)

Means any toxic, harmful, corrosive, and irritant or asphyxiate substance, or mixture or substance for which an occupational exposure limit is prescribed, or an occupational exposure limit is not prescribed but which creates a hazard to health.

Construction Plant

Encompasses all type of plant including but not limiting to, cranes, piling frames, boring machines, excavators, dewatering equipment and road vehicles with or without lifting equipment

Contractor [CR 1]

Means an employer who performs construction work and includes principal contractors and sub-contractor.

Health & Safety Plan (HSP) [CR 1]

Means a documented plan, which addresses hazards identified and includes safe work procedures to mitigate, reduce or control the hazards identified

The plan shall be applied from the date of commencement of and for the duration of construction work [CR 5(1)]

Health and Safety File (HSF) [CR1]

The file holding all documentation and records on health and safety for the project, which shall be available at all times for evaluation, and copy of which will be forwarded to the client upon completion of the project.

Disabling Injury Frequency Rate (DIFR)

The number of disabling injuries multiplied by a constant (man hours relative to period worked divided by total man hours worked over a rolling period (usually 12 months, but can be less)).

Disabling Injury Severity Rate (DISR)

The number of days lost due to (DI's) multiplied by a constant (man hours relative to period worked) divided by total man hours worked over a rolling period (usually 12 months, but can be less).

Confined Space

An enclosed, restricted or limited space in which, because of its construction, location or contents, or any work carried on therein, a hazardous substance may accumulate or an oxygen deficient atmosphere may occur, and includes any chamber, tunnel, pipe, pit, sewer, container, valve, machinery or object in which a dangerous liquids or dangerous concentration of gas, vapour, dust or fumes may be present.

6. Responsibility of Contractors for Construction Work [CR 4, 7, 8]

6.1 Notification of Intention to Commence Construction Work [CR 4]

The principal contractor shall notify the Provincial Director of the Department of labour before any work commences, in accordance with the following requirements:

- The demolition of a structure exceeding a height of 3 meter; or
- The use of explosives to perform construction work; or
- The dismantling of fixed plant at height greater than 3 meters; or
- The work exceeds 30 days or will involve more than 300 person days of construction work; and
- Includes excavation work deeper than 1 meter; or
- Includes working at height greater than 3 meters above ground or landing.

The notification and submission to the local Department of labour must be done on a form similar to that shown in **Annexure A** of this document and a copy of the completed form kept in the HSF for inspection by inspector, the client or an employees

6.2 Principal Contractor's Responsibilities [CR 7]

6.2.1. Compile a HSP [CR 7]

6.2.2. Ensure co-operation between all contractors [CR 7(c), to comply with the Act]

6.2.3. Ensure compliance to the Act in terms of [CR 5(v)]

- a) Provide relevant sections of these specifications to contractors as required
- b) Appoint each contractor in (a) above in writing. Only contractors who have the necessary competencies and resources may be appointed [CR 7(c) (iii)]
- c) Ensure each contractor's HSP is implemented and maintained on site
- d) Stop any contractor from work which is not in accordance with HSP's or which pose a threat to health and safety of persons
- e) Sufficient information is provided to contractors where there are changes to design and construction
- f) Ensure every contractor is registered and in good standing with the Compensation Commissioner

- g) Ensure potential contractors have made provision for the cost of health and safety measures.
- 6.2.4** Negotiate and approve the HSP of each contractor [CR 7()]
- 6.2.5** All HSP's including the principal contractor's to be available on site [CR 7(b)]
- 6.2.6** All HSF's including the principal contractor's to be available on site [CR 7(d)]
- 6.2.7** A consolidated HSF to be handed over to the client on completion of construction including records of drawings, designs etc. [CR 7(e)]
- 6.2.8** HSF to include updated list of all contractors, the agreements and their type of work [CR 7(f)]

6.3 Contractor's Responsibilities [CR 7] (including sub-contractors)

- 6.3.1 Provide their HSP to the principal contractor[CR 7(2)]
- 6.3.2 Where a contractor appoints another contractor(sub-contractor) it is the responsibility of that contractor to apply 4.2 above as if he were the principal contractor [CR 7(3)]
- 6.3.3 No contractor to appoint another contractor(sub-contractor) unless the latter has the necessary competency and resources to perform the required work [CR 7(3)]
- 6.3.4 To provide any information which affects the health and safety of any persons at work to the principal contractor

6.4. Supervision of Construction Work [CR 8]

The appointments embodied in this regulation are as follows:

- 6.4.1 Construction supervisor [CR 8(1)]
- 6.4.2 Assistant Construction Supervisor [CR 8(2)]
- 6.4.3 Safety Officer [CR 8(5)] or Safety Representative OHS Act S17 (1)

The detailed requirements of these appointments can be found under the relevant regulation.

The contractor shall appoint a dedicated competent Safety Officer who will perform his duties at the work Site for the duration of the work under the Contract.

6.5. Legal Appointments

The principal contractor shall ensure copies of the appointment letters of all responsible persons appointed on site will be kept in the HSF. All legal appointments shall be conducted in accordance with the requirements set out in the OHSA and as per this specification. The tables below set out the appointment protocols for CR and OHSA.

NB: It should be noted that these represent complete lists and not all these appointments may be required.

6.5.1

The responsibilities of each appointment are detailed in the relevant form, which are signed by both the authorised person and the appointee and kept in the Health and Safety File. an example of an appointment form for a Construction Supervisor can be found under Annexure B.

7. Documentation and Procedures

All required HSE documentation for the construction work, shall be kept in the HSF, which shall be available on site. The Construction Supervisor shall be responsible for the file and the Project manager shall ensure that documentation is valid and up to date. The procedures to be used for the project are to be in accordance with contractor policy and as per the outcome of the HIRA exercise. It is required that the documentation is filled in an orderly fashion for easy access. The following sections are suggested:

- Policy permits etc.
- Health & safety plans, specifications
- Appointments
- Incidents management
- Inspection check lists
- Risk assessments
- Training
- Safe work Procedure
- Hazardous Chemical Substances

8. Application of COIDA and OHSA to Construction Work

8.1 Compensation of Occupational Injuries and Diseases Act, Act No.130 of 1993(COIDA)

Every contractor shall provide proof of registration and letter of good standing with the Compensation Commissioner.

8.2 Occupational Health and Safety Policy [OHSA 7]

Every contractor's OH&S Policy statement should be available for security and as evidence of their commitment to their employees' occupational health and safety

8.3 Health and Safety Training and Competency

Training of personnel is a necessity and a legal requirement when required. A record of all training shall be kept and provided on request.

8.3.1 Induction Training

The principal contractor shall be responsible for the induction of all personnel entering the site including visitors, inspectors etc. Contractors doing specific construction work shall be responsible for the induction of their employees with respect to that specific work. Records to be kept of all personnel that undergo induction training.

8.3.2 Awareness Training

In addition, the client would favour awareness training to be carried out such as weekly Toolbox Talks on relevant topics e.g. wearing PPE, manual lifting, safe use of portable electric tools etc.

8.3.3 Competency and CV's

Where applicable, valid copies of certificates of competency of appointed personnel to be provided and kept in the HSF. Other training requirements such as those identified through the HIRA process, to be completed and proof of that training also kept in the HSF. Where competency is achieved through experience, a brief CV will be required.

8.3.4 Specific OH&S Training

Valid certificates of training from registered service providers preferably accredited by the appropriate SETA are required for First Aiders, H&S Reps, Fire Marshals, Fire Equipment Inspector etc.

8.3.5 Medical Fitness

All work in elevated positions [tower crane operators (CR 20(g)), workers on elevated structures requiring fall protection (CR 8 (2b)), suspended platform workers (CR 15(12a)) and operators of construction vehicles and mobile plant (CR 21(d)) require certificates of physical and psychological fitness.

Valid certificates of training from registered service providers preferably accredited by the appropriate SETA are required for First aiders, H&S reps, Fire Marshals (CR 221 Fire Equipment Inspectors) etc.

8.4 Hazards and Potential Hazardous Situations [OHSA 13]

The principal contractor is responsible to ensure that all contractors and any visitors are warned of any hazardous or potentially hazardous situations, which may affect them on site and shall put any additional measures in place to assist in mitigating the risk of these hazards.

8.5 Health and Safety Reps [OHSA 17 and 18]

The principal contractor shall be responsible to ensure compliance to this section of the OHSA as required and to ensure similar compliance of all contractors. If a rep is not required, the appointed Safety officer will be responsible for these functions.

8.6 Health and safety Committee [OHSA 19 &20]

The principal contractor shall be responsible to ensure compliance to this section of the OHSA as required. If a committee is not convened, health and safety matters will need to be tabled and discussed at site meetings.

8.7 General Record Keeping

The principal contractor shall ensure that all Health and safety records, required by OHSA and Regulation are kept for reference purpose and auditing.

8.7.1 Inspections

The principal Contractor shall keep all records of inspections undertaken during the contract. An assessment will need to be made of what inspections are required and their frequency. The principal contractor is also responsible to ensure compliance to this requirement by all contractors

8.7.2 Audits [CR 5(o) and 5 (p)]

The client's agent shall carry out regular audits on the principal contractor at least once per month. Similarly, principal contractor shall be responsible for carrying out regular audits on their contractors at least once per month. The results shall be tabled for action and discussed at health and Safety Committee meetings or site meetings as appropriate.

8.8 Incident Management and Emergency Plans

The principal contractor shall create and Emergency Plan for the construction site. The plan shall be clearly laid out for all types of emergencies including responsibilities, evacuation routes, siren, emergency no's etc. The plan shall fully explain to all personnel during the induction training. All contractors will become completely familiar with the requirements of the plan and will participate in any evacuation drills that may take place.

8.8.1 First Aid [GSR 3]

The principal contractor shall be responsible to ensure compliance to this regulation as required. In particular, a first aid box with the minimum stock as specified in the regulation will be located at the site office and there will be signage to indicate the location of the box. Attention is drawn to GSR 3(4) for the requirement of trained first aiders. It is also suggested that a trained first aider be made responsible for the box in terms of the following:

- Security-the box should not be left open but it must be accessible in case of emergency(spare key availability)
- Injuries – a record of first aid box injuries treated and the stock issued.
- Stock- regular inspection to maintain stock levels and check expiry dates

In addition, the first aid requirement should be noted for high risk substances or hazardous chemical substances and if these are to be used, then it should be addressed in the HIRA and the need for eye wash facilities assessed.

NOTE: It is strongly recommended and good practice to comply with the Draft Health and Safety Regulation 7

8.8.2 Incidents and Injuries-Investigation and Reporting

The principal Contractor will ensure there is a management system to report and investigate all incidents. All incident including all near miss, first aid box treatment, and all other serious incidents involving any form of disabling injury or fatality are to be reported to the Client and the Clients H&S Agents telephonically immediately. This shall be confirmed in writing as soon as possible after the incident. Failure to comply with these provisions will be considered as serious offence. Recording and Investigation of Near Miss.

Incidents

The principal Contractor shall provide evidence by means of a procedure or chart that he is fully aware of the hierarchy of incidents that can occur e.g. unsafe situations, near miss first aid box injuries, medical cases, disabling injuries etc. He shall keep an incident register of all such incidents, investigate and apply corrective action where required. The client also reserves the right to request incident statistics from the principal contractor such as Di's DIFR and DISR and it is advised that these are maintained.

Injuries

First aid box injuries have been addressed under 8.7.1 above. More serious injuries requiring transport of the injured person to the nearest hospital or doctor or the calling of an ambulance and paramedic personnel will be the responsibility of the principal contractor's appointed personnel such as the Construction Supervisor, First Aider, and Safety Officer. It is advised that all required emergency numbers be on hand and prominently displayed as all contractors are registered an in

Good Standing with the Compensation Commissioner, it will be the responsibility of the contractor whose employee has been injured; too make the necessary report and claims to the Commissioner.

8.8.3 Accident and Incident Reporting and Investigation [OHSA 24, GAR 8, 9(1) & (2)]

Should an incident or accident investigation need to be conducted, a competent person shall be appointed to conduct the said investigation. The procedure to be followed will be in accordance with Annexure 1 of GAR 9-“Recording and Investigation of incidents”. Particular attention is also drawn to OHSA 24, reporting of certain incidents to an inspector of the department of labour. The principal contractor shall ensure that the investigations are kept for record purposes and he shall ensure that the outcome of the investigation is communicated to all affected parties as required i.e. the Client, Clients H& S Agent and contractors. The Client reserves the right to participate in all investigations into accidents or incidents and to conduct their own investigation if required.

8.9 Contractors and Suppliers

The client shall enter into an Agreement with Mandatory in terms of Section 37(2) of the OHS Act 85 of 1993, with all appointed principal contractors. Likewise all principal contractors shall enter in to a similar agreement with all contractors, sub-contracted to them for any period of the contract. Please note that if contractors hire any construction vehicle or mobile plant, the companies from which the equipment is hired must provide any maintenance and test certification as required. In addition, if operators are hired with the equipment, proof of competency and medical certification must be provided.

The principal Contractor shall ensure that all contractors are issued with this safety specification where *reasonable*. The principal contractor shall assist and ensure that contractors engaged comply with all of these requirements and adhere to the requirements set out OHSA .Contractors will be stopped from working in the event of unsafe conditions and activities being observed. All contractors shall be subject to the requirements specified in the HSP and will be issued with a copy of the plan. If the contractor is not able to comply with the requirements set out in the plan, he shall not be appointed as contractor.

8.10 Personal Protective equipment, Intoxication, Signage and Access Control [GSR 2]

8.10.1 Personal Protective Equipment (PPE)[GSR 2]

The principal contractor shall through the Risk Assessment process identify the specific PPE needs per activity. Contractors, as employers, will be responsible for the issue of the required PPE. Should PPE be lost or stolen, then the employee will be issued with new PPE. Should PPE be worn out or damaged, the user shall return the worn or damaged PPE and will be issued with a replacement. Training in the use of this shall be provided. Visitors shall be informed of PPE requirements prior to their visit so that they may enter the site.

8.10.2 Intoxication [GSR 2A]

The principal contractor shall be responsible to ensure that no persons may enter or remain at the construction site if under or apparently under the influence of intoxicating liquor or drugs.

8.10.3 Display of signs [GSR 2B]

The principal contractor should make use of signage to assist in enforcing compliance to any requirement specified in this document or as required by law. Standard symbolic signs are acceptable for conveying these requirements where applicable.

8.10.4 Access control [GSR 2C]

The principal contractor shall be responsible to ensure control of access to all persons entering the construction site. The reason for this is as follows;

- The principal contractor is the employer on the site and all intents and purposes is responsible for section 8 of OHSA of employees and contractors and section 9 for any other person on site such as visitors and inspectors
- All persons entering the site must undergo induction training to inform them of the hazards present on site. This includes contractors, visitors, inspectors etc.
- The construction supervisor will be aware of who is on site and their function
- The construction supervisor will be able to control tasks that may impact on other work being carried out on the site by a permit to work system.
- The number of people and their purpose on the site must be known in case of emergency and evacuation
- Security reasons

8.11 Ladders [GSR 13A]

The following requirements shall be complied with regarding Ladders and Ladder Works:

- A competent person shall be identified and appointed as ladder inspector
- Where aluminium ladders cannot be used, then wooden ladders shall be straight grained, unpainted to allow for proper inspection of the grain for cracking
- Ladders shall be secured at the top and choked at the base to prevent slipping.
- Where choking of the base is not possible, then the user shall ensure that the ladder is held in position by another employee when ascending the ladder.
- Ladders shall be inspected a minimum once per month by the person appointed as the ladder inspector.
- Proper storage shall be provided for all ladders when not in use.

8.12 Pressure Equipment Regulations, 2009(Gas Bottles) [PER 2009]

If gas bottle sets (Oxy-Acetylene for heating, cutting, welding) are used, these regulations, as required, shall be adhered to. Regular inspection of the sets shall be carried out. In particular;

- Only trained personnel shall operate such equipment.
- The construction Supervisor shall ensure operation of the equipment is in accordance with the HIRA requirements and Safe working Procedure (SWP) and /or method statement.
- All users shall undergo regular awareness training (toolbox) to ensure compliance.
- The Construction supervisor shall ensure the required PPE is used.

8.13 Portable Electric Tools [EMR 9]

This regulation shall be complied with as a minimum requirement. Regular inspections of all Portable Electric Tools such as drill, angle grinder's etc. shall be carried out. In particular:

- Only trained personnel shall operate such equipment.

- The Construction Supervisor shall ensure operation of the equipment is in accordance with the HIRA requirements and Safe working Procedure (SWP).
- All users shall undergo regular awareness training (toolbox talks) to ensure compliance.
- The Construction Supervisor shall ensure the required PPE is used.

8.14 Permit to work [including hot work]

The principal contractor shall be responsible to ensure that:

- All work being carried out on site has been approved through the necessary project control system.
- Permit require from third parties such as vetting for security clearance
- A permit system is operational so that work consisting of many tasks related to the construction on site, can be carried out without endangering the health and safety of personnel on site, neighbours and the public surrounding the site and or causing damage to property.
- In particular, attention is drawn to GSR 9, which details the requirements for welding, flame cutting, soldering and similar operations.

8.15 Environmental Rules

The contractor shall give effect to maintain all safeguards and standards and take such measures as may be necessary for the protection of the environment.

8.15.1 Clearing

The contractor shall comply with the following conditions and requirements for clearing:

- Follow the Occupational health and Safety Act, the Environmental Regulations for workplaces and Project EMP.
- Areas to be cleared will have boundaries clearly marked by tape, pegs or other means and will conform to limits on design drawings.
- No clearing is to occur without a written permit from the Engineer.
- Clearing will not commence until drainage control works are in place.
- Cleared vegetation should be windrowed along the contour to assist with erosion control.
- Any area which is not to be disturbed under requirements of the Cultural Heritage management Plan will be clearly identified.
- Vegetation clearance will be restricted to that necessary for the works.
- The Engineer is to be notified immediately if contaminated soil is discovered.
- Traffic shall be confined to maintained tracks and roads.
- Particular care shall be taken to minimise disturbance to the bed and banks of watercourses.

8.15.2 Noise and Vibration

The contractor shall ensure that each of its mobile and fixed plant and that of its subcontractor' are fitted with appropriate noise suppression equipment to ensure that noise levels from such plant are contained within the relevant limits prescribed by relevant industrial safety and environmental legislation, regulations and site standards. If there is a noise problem with electrical power generating equipment, compressors, or other facilities under the control of the contractor, additional noise suppression shall be erected by the Contractor at the Contractor's cost around the offending unit(s). Any deviation from the above listed practices is to be rectified at the Contractor's cost.

8.15.3 Transport, Storage and Handling of Hazardous Substances and Dangerous Goods

The contractor shall comply with the following conditions and requirements for storing and handling hazardous and dangerous goods:

- Comply with HCS Regulations 14. The storage and handling of flammable and combustible liquids.
- Provide a list of hazardous substances and corresponding MSDS prior to bringing substances on Site.
- Substances register to be held at each storage facility.
- Corrosive materials to be stored and handled in accordance with HCS Regulation 14.
- Fuels, oils and substances in containers of 200 litres or more shall be stored in a bunded area with capacity of at least 110% of largest container/tank.
- Fuel, oils and substances in less than 200 litre drums shall be stored as above or in a fenced and roofed compound.
- All fuels, oils and substances must be clearly labelled.
- Transfer of bulk fuel and handling of hazardous substances shall be conducted only by appropriately trained personnel
- Spill clean-up kits including absorbent materials shall be kept at each storage facility.

8.15.4 Erosion and Oil Traps

The Contractor shall comply with the following conditions and requirement for erosion, sedimentation, silt and oil traps:

- Land disturbance will be restricted to that necessary for the works.
- Topsoil will be salvaged for use in rehabilitation
- Storm water from upstream catchments will be diverted away from construction areas.
- Drains will be protected to prevent scouring if necessary.
- Sediment traps, silts fences or hay bales will be installed to control sediment where necessary and where directed by Engineer.
- Sediment traps will be cleaned periodically.

8.15.5 Dust Prevention

The contractor shall comply with the following conditions and requirements for air quality and dust:

- Dust generated by construction activities will be suppressed by water spraying, to levels that are safe for Site personnel.
- Speed limits on unsealed roads will be limited to a maximum speed consistent with the minimisation of dust generation.
- Earthworks Supervisors must pay particular attention to the management of topsoil stripping such that dust does not become a safety hazard or severe nuisance.
- All dust complaints will be investigated promptly and appropriate action initiated to reduce nuisance.

8.15.6 Waste Management

- The contractor shall provide suitable rubbish receptacles at the Site and shall ensure that all litter is collected in them and properly disposed of off Site in accordance with the requirements of the relevant statutory requirements
- The contractor shall ensure proper collection and off-site disposal of all industrial wastes in accordance with relevant statutory requirements.

- The contractor shall apply the principles of Waste Minimisation by reducing the amount of waste generated on Site by their operations and activities as much as possible. The contractor shall provide for cycling of glass, metals, plastics and papers.

8.15.7 Weed management

The contractor shall comply with the following conditions and requirements for weed management:

- Contractors shall ensure that all machinery, equipment and vehicles are washed down at a wash facility before the Site and again when leaving the site.
- Plants and soil shall not be removed from Site without authorisation.
- Soil or other material shall not be brought onto Site if it has originated from an area known to contain environmental weeds or declared weeds under the Rural land Protection act 1995.
- Areas disturbed or rehabilitated as part of a Contract will be inspected upon completion of the works. The Contractor shall eradicate any declared weeds found.
- Seeds used in rehabilitation shall be free of declared weeds
- Control measures (including use of herbicides) must be consistent with manufacture's recommendations, safe practice and recommendations in the Department of natural Resources Pest Fact series.
- Include information on the importance of weed control inductions.

Any deviation from the above listed practices is to be rectified at Contractor's cost

8.15.8 Found Object

All fossils, coins, articles, minerals of commercial value and objects of antiquity and structures and other remains and things of archaeological interest discovered at the Project site shall be deemed to be the absolute property of the Company. The Contractor shall take reasonable precautions to prevent the Contractor's employees, subcontractors and the employees of subcontractors and any other persons from removing and damaging any such article and thing and shall immediately upon discovery thereof acquaint the Engineer of such discovery and carry out, at the expense of the company and at the engineer's direction, the protection and or disposal of same,.

8.16 Monitoring, Audit and Review

- The Client's Agent/DPW Safety Manager shall have the right to conduct audits/inspections of the Contractor's operations, equipment and procedures at any time, and the Contractor shall fully co-operate with the client's agent during such audits/inspections.
- The client's agent rights under this clause shall not relieve the contractor of its obligations to conduct audits and reviews of its own safety and health performance.
- Where such Client's Agent/DPW Safety Manager audits reveal deficiency in the Contractor's procedure equipment, training, drills, etc. the contractor shall rectify such deficiencies as soon as practicable, and provide to the Client's agent a status report on all outstanding corrective actions. Where such deficiencies include an unsafe practice or breach of the Statutory or the Contract's requirements, the Client's Agents/DPW Safety Manager may in accordance with the general Conditions of Contract suspend the work associated with the unsafe practice or breach until the deficiency is rectified.

8.17 Penalties and Fines

Any contractor employees who is found not adhering to the ESH specification, Site Ground Rules, ESH Plan or any other statutory requirement, or who is observed committing unsafe acts or contributing to unsafe conditions will be issued with a Non-Conformance Report and the relevant Contract will be issued a fine according to the scale of fines nominated below.

Contractor employees will also be reprimanded as per the relevant company HR procedures:

- First transgression constitutes a **verbal warning**.
- Second transgression constitutes a **written warning**.
- Third transgression constitutes a **full disciplinary hearing** according to the company's HR procedures
- Any life-threatening unsafe act or unsafe condition must be treated as a Gross Neglect of Company Environmental, safety and Health Rules and Procedures and Disciplinary hearing shall be conducted to determine the root cause of the incident and the appropriate action which must be taken to prevent the similar unsafe situation from occurring in the future.

Copies of Non-Conformance Reports (NCR) and disciplinary hearings must be kept on record on the OHS File.

8.17.1 Offences and Penalties

All offences and penalties will be dealt according to CR (33)

9 Applications of the Construction Regulations [CR]

[Please note; this is the complete list. Item 9.1 is compulsory and the rest are applicable if relevant to the work being carried out]

9.1 Hazard Identification, Risk assessment and Risk Control (HIRA) [CR 9]

The contractor shall prior to the commencement of any construction work perform a HIRA exercise which will form part of the HSP and file for the project. A copy of HIRA shall be made available for viewing to the client's OHS agent and shall be kept in the Health and Safety File.

NB: The contractor shall ensure that the outcome of all HIRA exercises will be conveyed to all relevant employees with respect to the hazards and the related control measures before any work commences.

Below is the list of activities, which may be considered for HIRA if the activity is to be carried out on site. The list is not exhaustive but gives examples of activities for a construction site:

- Site security and access.
- Traffic management-restrictions etc.
- Activities that affect adjacent sites.
- Lifting operations such as offloading and moving equipment.
- Lifting equipment such as offloading and moving equipment
- Stacking, storage of equipment and materials, and good housekeeping.
- Use of hand tools
- Use of portable electric equipment(power tools)
- Use and storage of flammable and hazardous chemicals such as paint, adhesives, solvents, thinners, cement etc.

- Scaffolding.
- Painting.
- Welding.
- Electric installations.
- Mechanical installation.
- Waste management including removal of hazardous waste.
- Environmental restraints such as boundary noise and dust.
- Temporary site accommodation.
- General hazards to site personnel such as cleaning noise and dust.

The control of several of these risks may be specified in the OHSA or the CR but this does not mean that the HIRA exercise does not have to be carried out.

9.6 Construction vehicle and mobile plant [CR 23]

It will be the responsibility of each contractor on site to ensure compliance of their construction vehicles and mobile plant to these regulations.

This includes vehicles to be used for transporting personnel to and from site, which will be subject to relevant requirements such as licensing and roadworthiness checks. In addition the following will apply:

- Safe transport for personnel working on the project to and from the workplace, which shall include proper seating, side restraints and cover.
- Road safety principles shall be adhered to on and off site.

If a mobile crane or other mobile plant is hired, only approved hire companies shall be contracted to provide such equipment. The Construction Supervisor shall ensure compliance of the provider to these regulations. In particular attention is drawn to the competence and fitness of the operator [section 1(d)] and the inspection of the equipment [section 1(j)].

9.7 Electrical Works [CR 24], including [EIR] and [EMR]

The requirement of these regulations shall be met as required by the appointed electrical contractor. Competent person will be appointed for inspection and control of all temporary electrical installations as per CR 24(d) and (e) respectively.

The person /Contractor who does electrical installation work as an electrical contractor shall be registered as an electrical contractor in terms of electrical Installations Regulations.

9.8 Use and storage of flammable liquids [CR 25], and hazardous chemical substances [HCSR]

All the requirements of CR 16 shall be met.

In terms of HCSR, contractors shall ensure that all hazardous chemicals brought to site have Material Safety Data Sheet (MSDS) and the users are made aware of the important sections of the MSDS such as:

- Hazards
- First aid measures
- Fire fighting measures
- Accidental release measure

- Handling storage
- Exposure control especially PPE
- Disposal

First aider shall be made aware of the MSDS and how to treat HCS incidents appropriately. Copies of MSDS's will be available on site and in the HSF.

9.9 Housekeeping [CR 27] including [ERW (6)]

All contractors shall ensure that housekeeping standards as per these regulations shall be maintained at all times.

9.10 Stacking and Storage of Materials [CR 28] including [GSR (8)]

All contractors shall ensure that materials are only stored in defined and allocated storage areas and that materials being stored are stacked in accordance with sound stacking principle as per these regulations.

9.11 Fire precautions [CR 29]

All contractors on site will comply fully with the requirements of this regulation. In particular, the principal contractor will be responsible for the evacuation plan (section (l) the details of which will be imparted to contractors, visitors etc. through the site induction.

9.12 Construction employee welfare facilities [CR 30]

The principal contractor shall be responsible for implementing this regulation and shall ensure that adequate facilities are provided for the personnel on site in terms of the following:

- Change room facilities
- Adequate toilets
- Hand wash facilities
- Drinkable water

No food preparation shall be conducted on site. Eating and drinking will only be permitted in the designated eating areas, which must be provided with adequate seating. Waste bins shall be strategically placed and cleared regularly.

10. Site Specific and Design Risks

[Please note; this is not a complete or exhaustive list. The principal contractor is expected to assess all risks to which his employees may be exposed during the construction process, as well as the hazards identified and listed below].

10.1 Hazard Identification and Risk Assessment Methodology

Once on site, every contractor shall perform task risk assessment, using the baseline risk assessment as a guide.

The Risk assessment should be reviewed once on site and thereafter after any incident, change in design or every one-year period, whichever occurs first. Additional hazards highlighted or change in the risk factor should have a separate risk assessment carried out and filed.

The risk assessment is based on the combination of the CONSEQUENCE and PROBABILITY associated with each hazards.

10.1.1 Definitions

Term	Meaning
HAZARDS	Anything that can cause harm
RISK	The chance, great or small, that someone will be harmed by hazard
CONSEQUENCE	The possible outcome of an incident/ accident, e.g. broken leg, explosion.
PROBABILITY	The possibility of the accident/incident occurring

10.1.2 Risk Assessment

The following evaluation must be used to determine risk:

Probability X Consequence= RISK

Risk Matrix

Calculating the risk

1. Take the consequences rating(1-5) and select the correct column
2. Take the likelihood rating(A-E) and select the correct row
3. Select the risk rating where the two ratings cross on the matrix below.

VH=Very, High=High, M= Medium, L=Low

		CONSEQUENCES				
Likelihood	1	1	2	3	4	5
	A	M	H	H	VH	VH
	B	M	M	H	H	VH
	C	L	M	H	H	VH
	D	L	L	M	M	H
	E	L	L	M	M	M

10.2 Site Specific risks

The following site-specific risks have been identified for this project. These must be catered for in the contractor's health and safety plan (that which is applicable to their scope of work), and included in the site-specific risk assessment.

10.2.1 Traffic-restrictions, existing system, site traffic

Traffic accommodation must be arranged with the principal agent.

10.2.2 Site security and access-this is controlled by principal contractor.

10.3 Design risks

The following design risks have been identified by the designer for this project. These must be catered for in the contractor's health and safety plan (that which is applicable to their scope of work), and included in the site-specific risk assessment.

10.3.1 Electrical

10.3.2 Mechanical.

10.3.3 Civil Work

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