



KENYA ELECTRICITY GENERATING COMPANY LIMITED

KGN-HYD-022-2017

**TENDER FOR DESIGN, SUPPLY, INSTALLATION, TESTING
AND COMMISSIONING OF A 500KVA EMERGENCY
DIESEL GENERATOR FOR KAMBURU HYDROPOWER
STATION-KENYA
(OPEN INTERNATIONAL)**

Kenya Electricity Generating Company Limited
Stima Plaza Phase III, Kolobot Road, Parklands
P.O. BOX 47936-00100
NAIROBI.
Website: www.kengen.co.ke

July 2017

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SECTION I: INVITATION FOR TENDERS (IFT)

The Company invites sealed tenders from eligible candidates for **Tender for Design, Supply, Installation, Testing and Commissioning of a 500KVA Emergency Diesel Generator for Kamburu Hydropower Station** whose specifications are detailed in the tender documents.

Interested eligible candidates may obtain further information from, and inspect the Tender Documents at the office of:

Supply Chain Director

Tel: **(254) (020) 3666000**

Email: tenders@kengen.co.ke

Cc: skimani@kengen.co.ke; jknjuguna@kengen.co.ke; badegu@kengen.co.ke; mmaluki@kengen.co.ke

A complete set of Tender Documents may be obtained by interested tenderers upon payment of a non-refundable fee of **KShs. 1,000.00 (One Thousand Kenyan Shillings)** and can also be viewed and downloaded from the Company's website <http://www.kengen.co.ke>. Tenderers who download the document are not required to pay any charges but are advised to immediately submit their details to the Supply Chain Director for records.

They are also advised to be keen on the information under the appendix to instructions to tenderers and the special conditions of the contract.

Tenders must be accompanied by a security of **KShs. 500,000.00 (Five hundred thousand Kenyan Shillings)** as specified in the tender documents, and must be submitted in a plain sealed envelope marked **Tender for Design, supply, installation, testing and commissioning of a 500KVA emergency Diesel Generator for Kamburu Hydropower Station** and delivered to:

**Company Secretary & Legal Affairs Director
Kenya Electricity Generating Company Limited
10th Floor, KenGen Pension Plaza II,
P O Box 47936 - 00100
NAIROBI, KENYA.**

Or be deposited in the tender box situated in the Supply Chain Office on the Ground Floor, Stima Plaza, on or before: **26th September 2017 at 10.00 a.m.**

There will be only one **MANDATORY** site visit **6th September 2017 at 10.00 a.m.** at **Kamburu Power station**

Tenders will be opened on **26th September 2017 at 10.30 a.m.** in the presence of the Bidders' representatives who choose to attend at Pension Plaza II, Tender Opening Room, Ground Floor. The company reserves the right to vary the quantities.

KenGen adheres to high standards of integrity in its business operations. Report any unethical behavior immediately to any of the provided anonymous hotline service.

Call Toll Free: 0800722626

Free-Fax: 00800 007788

Email: kengen@tip-offs.com

Website: www.tip-offs.com

SUPPLY CHAIN DIRECTOR

SECTION II: INTRODUCTION

A. INSTRUCTION TO TENDERERS

- 1 Scope of Tender**
- 1.1 The Procuring Entity indicated in the **Tender Data Sheet** (TDS) invites Tenders for the construction of works as specified in the **Tender Data Sheet**
- 1.2 The successful Tenderer will be expected to complete the works by the completion date he/she has indicated.
- 1.3 The objectives of the works are listed in the (**Technical Specifications**)
- 2 Eligible Tenderers**
- 2.1 A Tenderer may be a natural person, private or public company, government-owned institution, subject to sub-Clause 3.4 or any combination of them with a formal intent to enter into an agreement or under an existing agreement in the form of a joint venture, consortium, or association. In the case of a joint venture, consortium, or association, all parties shall be jointly and severally liable.
- 2.2 The Invitation for Tenders is open to all Contractors as defined in the Public Procurement and Disposal Act, 2005 and the Public Procurement and Disposal Regulations, 2006 except as provided hereinafter.
- 2.3 National Tenderers shall satisfy all relevant licensing and/or registration with the appropriate statutory bodies in Kenya, such as the Ministry of Public Works, National Construction Authority or the Energy Regulatory Commission.
- 2.4 A Tenderer shall not have a conflict of interest. All Tenderers found to have a conflict of interest shall be disqualified. A Tenderer may be considered to have a conflict of interest with one or more parties in this Tendering process, if they:
- a) Are associated or have been associated in the past directly or indirectly with employees or agents of the Procuring Entity or a member of a board or committee of the Procuring Entity;
 - b) Are associated or have been associated in the past, directly or indirectly with a firm or any of its affiliates which have been engaged by the Procuring Entity to provide consulting services for the preparation of the design, specifications and other documents to be used for the procurement of the works under this Invitation for Tenders;
 - c) Have controlling shareholders in common; or

- d) Receive or have received any direct or indirect subsidy from any of them; or
- e) Have the same legal representative for purposes of this Tender; or
- f) Have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Tender of another Tenderer, or influence the decisions of the Procuring Entity regarding this Tendering process; or
- g) Submit more than one Tender in this Tendering process. However, this does not limit the participation of subcontractors in more than one Tender, or as Tenderer and subcontractor simultaneously.

2.5 A Tenderer will be considered to have a conflict of interest if they participated as a consultant in the preparation of the design or technical specification of the project and related services that are the subject of the Tender.

2.6 Tenderers shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of Kenya in accordance with TDS and GCC

2.7 Government owned enterprises in Kenya may participate only if they are legally and financially autonomous, if they operate under commercial law, are registered by the relevant registration board or authorities and if they are not a dependent agency of the Government.

2.8 Tenderers shall provide such evidence of their continued eligibility satisfactory to the Procuring Entity, as the Procuring Entity shall reasonably request.

3 One Tender per Tenderer

3.1 A firm shall submit only one Tender, in the same Tendering process, either individually as a Tenderer or as a partner in a joint venture pursuant to ITT Clause 5.

3.2 No firm can be a subcontractor while submitting a Tender individually or as a partner of a joint venture in the same Tendering process.

3.3 A firm, if acting in the capacity of subcontractor in any Tender, may participate in more than one Tender but only in that capacity.

3.4 A Tenderer who submits or participates in more than one Tender (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the Tenders in which the Tenderer has participated to be disqualified.

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| 4 | Alternative Tenders by Tenderers | 4.1 | Tenderers shall submit offers that comply with the requirements of the Tendering documents, including the basic Tenderer’s technical design as indicated in the specifications and Drawings and Bill of Quantities. Alternatives will not be considered, unless specifically allowed for in the Tender Data Sheet . If so allowed, sub-Clause 4.2 and 4.3 shall govern. |
| | | 4.2 | When alternative times for completion are explicitly invited, a statement to that effect will be included in the Tender Data Sheet as will the method of evaluating different times for completion. |
| | | 4.3 | If so allowed in the Tender Data Sheet , Tenderers wishing to offer technical alternatives to the requirements of the Tendering documents must also submit a Tender that complies with the requirements of the Tendering documents, including the basic technical design as indicated in the specifications. In addition to submitting the basic Tender, the Tenderer shall provide all information necessary for a complete evaluation of the alternative by the Procuring Entity, including technical specifications, breakdown of prices, and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Tenderer conforming to the basic technical requirements shall be considered by the Procuring Entity. |
| 5 | Cost of Tendering | 5.1 | The Tenderer shall bear all costs associated with the preparation and submission of its Tender, and the Procuring Entity shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the Tendering process. |
| 6 | Site Visit and Pre – Tender Meeting | 6.1 | The Tenderer, at the Tenderer’s own responsibility and risk, is advised to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Tender and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Tenderer’s own expense. |
| | | 6.2 | The Procuring Entity may conduct a site visit and a pre-Tender meeting. The purpose of the pre-Tender meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage. |
| | | 6.3 | The Tenderer’s designated representative is invited to attend a site visit and pre-Tender meeting which, if convened, will take place at the venue and time stipulated |

in the **Tender Data Sheet**.

- 6.4 The Tenderer is requested as far as possible, to submit any questions in writing or by electronic means to reach the procuring Entity before the pre-Tender meeting. It may not be practicable at the meeting to answer all questions, but questions and responses will be transmitted in accordance with sub-Clause 6.5.
- 6.5 Minutes of the pre-Tender meeting, including the text of the questions raised and the responses given together with any responses prepared after the pre-Tender meeting will be transmitted within the time stated in the **Tender Data Sheet** to all purchasers of the Tendering documents. Any modification of the Tendering documents listed in sub-Clause 8.1 that may become necessary as a result of the pre-Tender meeting shall be made by the Procuring Entity exclusively through the issue of an Addendum pursuant to ITT sub Clause 10.2 and not through the minutes of the pre-Tender meeting.
- 6.6 Non-attendance during the site visit or pre-Tender meeting will not be a cause for disqualification of a Tenderer unless specified to the contrary in the **Tender Data Sheet**.

B. TENDERING DOCUMENTS

- 7 **Content of Tendering Documents** of 7.1 The works required, Tendering procedures, and contract terms are prescribed in the Tendering Documents. In addition to the Section I Invitation for Tenders, Tendering documents which should be read in conjunction with any addenda issued in accordance with ITT sub Clause 9.2 include:
- Section II Instructions to Tenderers
 - Section III Tender Data Sheet
 - Section IV General Conditions of Contract
 - Section V Contract Data Sheet
 - Section VI Specifications
 - Section VII Drawings
 - Section VIII Bill of Quantities
 - Section IX Forms of Tender
 - Form of Tender
 - Appendix to Tender
 - Confidential Business Questionnaire
 - Integrity Declaration
 - Letter of Acceptance
 - Form of Contract Agreement
 - Section X Forms of Security
 - Tender Security Form

- Performance Bank or Insurance Guarantee
 - Advance Payment Guarantee
- 7.2 The number of copies to be completed and returned with the Tender is specified in the **Tender Data Sheet**.
- 7.3 The Invitation for Tenders (Section I) issued by the Procuring Entity is not part of the Tendering Documents and is included for reference purposes only. In case of discrepancies between the Invitation for Tenders and the Tendering Documents listed in sub-Clause 7.1 above, the said Tendering Documents will take precedence.
- 7.4 The Procuring Entity is not responsible for the completeness of the Tendering Documents and their addenda, if they were not obtained directly from the authorized staff of the Procuring Entity.
- 7.5 The Tenderer is expected to examine all instructions, forms, terms and specifications in the Tendering documents. Failure to furnish all information required by the Tendering Documents or to submit a Tender substantially responsive to the Tendering documents in every respect will be at the Tenderer's risk and may result in the rejection of its Tender.
- 8 **Clarification of Tendering Documents**
- 8.1 A prospective Tenderer requiring any clarification of the Tendering documents may notify the Procuring Entity in writing, e-mail or facsimile at the Procuring Entity's address indicated in the **Tender Data Sheet**.
- 8.2 The Procuring Entity will within the period stated in the **Tender Data Sheet** respond in writing to any request for clarification provided that such request is received no later than the period indicated in the **Tender Data Sheet** prior to the deadline for the submission of Tenders prescribed in sub-Clause 21.1.
- 8.3 Copies of the procuring entity's response will be forwarded to all Purchasers of the Tendering documents, including a description of the inquiry, but without identifying its source.
- 8.4 Should the Procuring Entity deem it necessary to amend the Tendering documents as a result of a clarification, it shall do so following the procedure under ITT Clause 9.
- 9 **Amendments of the Tendering Documents**
- 9.1 Before the deadline for submission of Tenders, the Procuring Entity may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Tenderer, modify the Tendering documents by issuing addenda.
- 9.2 Any addendum issued shall be part of the Tender

documents pursuant to sub-Clause 7.1 and shall be communicated in writing, by e-mail or facsimile to all who have obtained the Tendering documents directly from the Procuring Entity.

9.3 In order to allow prospective Tenderers reasonable time in which to take an addendum into account in preparing their Tenders, the Procuring Entity at its discretion shall extend, as necessary, the deadline for submission of Tenders, in accordance with sub-Clause 21.2

C. PREPARATION OF TENDERS

- 10 **Language of Tender** 10.1 The Tender, and all correspondence and documents related to the Tender exchanged by the Tenderer and the Procuring Entity shall be written in the Tender language stipulated in the **Tender Data Sheet**. Supporting documents and printed literature furnished by the Tenderer may be in another language provided they are accompanied by an accurate translation of the relevant passages in the above stated language, in which case, for purposes of interpretation of the Tender, the translation shall prevail.
- 11 **Documents Constituting the Tender** 11.1 The Tender submitted by the Tenderer shall consist of the following components:
- a) The Form of Tender (in the format indicated in Section IX) completed in accordance with ITT Clause 14, 15 and 16;
 - b) Information requested by Instructions to Tenderers ITT sub-Clause 12.2; 12.3 and 12.4;
 - c) Tender Security or Tender Securing Declaration in accordance with Instructions to Tenderers ITT Clause 18;
 - d) Priced Bill of Quantities;
 - e) Qualification Information Form and Documents;
 - f) Alternative offers where invited in accordance with Instructions to Tenderers ITT Clause 4;
 - g) Written confirmation authorizing the signatory of the Tender to commit the Tenderer in accordance with Instructions to Tenderers ITT sub Clause 18.2; and
 - h) And any information or other materials required to be completed and submitted by Tenderers, as specified in the **Tender Data Sheet**.
- 12 **Documents Establishing** 12.1 Pursuant to ITT Clause 12, the Tenderer shall furnish, as part of its Tender, documents establishing the Tenderer's

Eligibility and Qualifications of the Tenderer

eligibility to Tender and its qualifications to perform the contract if its Tender is accepted.

- 12.2 In the event that pre-qualification of potential Tenderers has been undertaken, only Tenders from pre-qualified Tenderers will be considered for award of contract. These qualified Tenderers should submit their Tenders with any information updating the original pre-qualification applications or, alternatively, confirm in their Tenders that the originally submitted pre-qualification information remains essentially correct as of the date of Tender submission. The update or confirmation should be provided in Section IX.
- 12.3 If the Procuring Entity has not undertaken pre-qualification of potential Tenderers, to qualify for award of the contract, Tenderers shall meet the minimum qualifying criteria specified in the **Tender Data Sheet**:
- 12.4 Tenders submitted by a joint venture of two or more firms as partners shall comply with the following requirements, unless otherwise stated in the **Tender Data Sheet**:
- a) The Tender shall include all the information listed in the **Tender Data Sheet** pursuant to sub-Clause 12.3 above for each joint venture partner;
 - b) The Tender shall be signed so as to be legally binding on all partners;
 - c) One of the partners will be nominated as being in charge, and this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the partners;
 - d) The partner in charge shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of a joint venture and the entire execution of the Contract, including payment, shall be done exclusively with the partner in charge;
 - e) All partners of the joint venture shall be liable jointly and severally for the execution of the contract in accordance with the contract terms and a statement to this effect shall be included in the authorization mentioned under I above as well as in the Tender and in the Agreement (in case of a successful Tender); and
 - f) A copy of the joint venture agreement entered into by all partner shall be submitted with the Tender. Alternatively, a Letter of Intent to execute a joint

venture agreement in the event of a successful Tender shall be signed by all partners and submitted with the Tender, together with a copy of the proposed Agreement.

- g) The Tender Security and Tender Securing Declaration as stated in accordance with ITT Clause 18, and in case of a successful Tender, the Agreement, shall be signed so as to be legally binding on all partners.

- 13 Lots Package**
 - 13.1 When Tendering for more than one contract under the lots arrangements, the Tenderer must provide evidence that it meets or exceeds the sum of all the individual requirements for the lots being tendered in regard to:
 - a) Average annual turnover;
 - b) Particular experience including key production rates;
 - c) Financial means, e.t.c;
 - d) Personnel capabilities; and
 - e) Equipment capabilities.
 - 13.2 In case the Tenderer fail to fully meet any of these criteria, it may be qualified only for those lots for which the Tenderer meets the above requirement.
- 14 Form of Tender**
 - 14.1 The Tenderer shall fill the Form of Tender furnished in the Tendering Documents. The Form of Tender must be completed without any alterations to its format and no substitute shall be accepted.
- 15 Tender Prices**
 - 15.1 The Contract shall be for the whole Works, as described in sub-Clause 1.1, based on the priced Bill of Quantities submitted by the Tenderer.
 - 15.2 The Tenderer shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items for which no rate or price is entered by the Tenderer will not be paid for by the Procuring Entity when executed and shall be deemed covered by the other rates and prices in the Bill of quantities.
 - 15.3 All duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 15 days prior to the deadline for submission of Tenders, shall be included in the rates, prices and total Tender price submitted by the Tenderer.
 - 15.4 The rates and prices quoted by the Tenderer shall be subject to adjustment during the performance of the Contract if provided for in the **Tender Data Sheet** and the provisions of the Conditions of Contract. The

above correction.

- 18 **Tender Security and Tender Securing Declaration**
- 18.1 Pursuant to ITT Clause 11, where required in the **Tender Data Sheet**, the Tenderer shall furnish as part of its Tender, a Tender Security in original form and in the amount and currency specified in the **Tender Data Sheet**.
A Tender Securing Declaration as specified in the **Tender Data Sheet** in the format provided in section X shall be provided as a mandatory requirement.
- 18.2 The Tender Security or Tender Securing Declaration is required to protect the Procuring Entity against the risk of Tenderer's conduct which would warrant the security's forfeiture, pursuant to ITT sub-Clause 18.9.
- 18.3 The Tender Security shall be denominated in the currency of the Tender and shall be in one of the following forms:
- a) Cash;
 - b) A Bank Guarantee;
 - c) An Insurance Bond issued by an insurance firm approved by the PPOA located in Kenya;
 - d) An irrevocable letter of credit issued by a reputable bank.
- 18.4 The Tender Security shall be in accordance with the Form of the Tender Security included in Section X or another form approved by the Procuring Entity prior to the Tender submission.
- 18.5 The Tender Security shall be payable promptly upon written demand by the Procuring Entity in case any of the conditions listed in sub-Clause 18.8 are invoked.
- 18.6 Any Tender not accompanied by a Tender Security in accordance with sub-Clauses 18.1 or 18.3 shall be rejected by the Procuring Entity as non-responsive, pursuant to ITT Clause 27.
- 18.7 The Procuring Entity shall immediately release any Tender Security if:
- a) The procuring proceedings are terminated;
 - b) The Procuring Entity determines that none of the submitted Tenders is responsive;
 - c) A contract for the procurement is entered into.
- 18.8 The Tender Security shall be forfeited and the Tender Securing Declaration executed if the Tenderer:
- a) Withdraws its Tender after the deadline for

- submitting Tenders but before the expiry of the period during which Tenders must remain valid;
 - b) Rejects a correction of an arithmetic error pursuant to sub-Clause 28.2;
 - c) Refuse to enter into a written contract in accordance with ITT Clause 39;
 - d) Fails to furnish the Performance Security in accordance with ITT Clause 40.
- 18.9 The Tender Security and Tender Securing Declaration of a joint venture must be in the name of the joint venture submitting the Tender.
- 18.10 A Tenderer shall be suspended from being eligible for Tendering in any contract with the Procuring Entity for the period of time indicated in the Tender Securing Declaration:
- a) If the Tenderer withdraws its Tender, except as provided in ITT sub-Clauses 17.2 and 28.2; or
 - b) In the case of a successful Tenderer, if the Tenderer fails within the specified time limit to:
 - (i) Sign the contract; or
 - e) Furnish the required Performance Security.
- 19 **Tender Format and Signing of Tender**
- 19.1 The Tenderer shall prepare one original of the documents comprising the Tender as described in ITT Clause 11 of these Instructions to Tenderers, with the Form of Tender, and clearly marked “**ORIGINAL**”. In addition, the Tenderer shall submit copies of the Tender, in the number specified in the **Tender Data Sheet**, and clearly marked as “**COPIES**”. In the event of discrepancy between them, the original shall prevail.
- 19.2 The original and all copies of the Tenders shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Tenderer. This authorization shall consist of a written confirmation as specified in the **Tender Data Sheet** and shall be attached to the Tender. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Tender, except for un-amended printed literature, shall be initialled by the person or persons signing the Tender.
- 19.3 Any interlineations, erasures, or overwriting shall be valid only if they are initialled by the person or persons signing the Tender.
- 19.4 The Tenderer shall furnish information as described in the Form of Tender on commissions or gratuities, if any,

paid or to be paid to agents relating to this Tender and to contract execution if the Tenderer is awarded the contract

D. SUBMISSION OF TENDERS

- 20 **Sealing and Marking of Tenders**
- 20.1 The Tenderer shall seal the original and each copy of the Tender in separate envelopes, duly marking the envelopes as “**ORIGINAL**” and “**COPY**”. The envelopes shall then be sealed in an outer envelope securely sealed in such a manner that opening and resealing cannot be achieved undetected.
- 20.2 The inner and outer envelopes shall:
- a) Be addressed to the Procuring Entity at the address given in the **Tender Data Sheet**; and
 - b) Bear the Project name indicated in the **Tender Data Sheet**, the Invitation for Tenders (IFT) title and number indicated in the **Tender Data Sheet**, and a statement: “**DO NOT OPEN BEFORE,**” to be completed with the time and the date specified in the **Tender Data Sheet**, pursuant to ITT sub-Clause 21.1.
- 20.3 In addition to the identification required in sub-Clause 20.2, the inner envelopes shall also indicate the name and address of the Tenderer to enable the Tender be returned unopened in case it is declared late, pursuant to sub-Clause 21.1 and for matching purpose under ITT Clause 22
- 20.4 If the outer envelope is not sealed and marked as required by ITT sub clause 20.2, the Procuring Entity shall assume no responsibility for misplacement or premature opening of the Tender.
- 21 **Deadline for Submission of Tenders**
- 21.1 Tenders shall be received by the Procuring Entity at the address specified under ITT sub-Clause 20.2 no later than the date and time specified in the **Tender Data Sheet**.
- 21.2 The Procuring Entity may, in exceptional circumstances and at its discretion, extend the deadline for the submission of Tenders by amending the Tendering documents in accordance with ITT Clause 8, in which case all rights and obligations of the Procuring Entity and Tenderers previously subject to the deadline will thereafter be subject to the new deadline.
- 21.3 The extension of the deadline for submission of Tenders shall not be made later than the period specified in the **Tender Data Sheet** before the expiry of the original deadline.

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| 22 | Late Tenders | 22.1 | The Procuring Entity shall not consider for evaluation any Tender that arrives after the deadline for submission of Tenders, in accordance with ITT Clause 21. |
| | | 22.2 | Any Tender received by the Procuring Entity after the deadline for submission of Tenders shall be declared late, rejected and returned unopened to the Tenderer |
| 23 | Modification, Substitution and Withdrawal of Tenders | 23.1 | A Tenderer may modify or substitute or withdraw its Tender after it has been submitted, provided that written notice of the modification, including substitution or withdrawal of the Tender, is received by the Procuring Entity prior to the deadline prescribed for submission of Tenders prescribed under ITT sub-Clause 21.1. |
| | | 23.2 | The Tenderer’s modification or substitution or withdrawal notice shall be prepared, sealed, marked, and dispatched in accordance with the provisions of ITT Clauses 19 and 20 with the outer and inner envelopes additionally marked “ MODIFICATION ” or “ SUBSTITUTION ” or “ WITHDRAWAL ” as appropriate. The notice may also be sent by electronic mail and facsimile, but followed by a signed confirmation copy, postmarked not later than the deadline for submission of Tenders. |
| | | 23.3 | No Tender may be withdrawn, replaced or modified in the interval between the deadline for submission of Tenders and the expiration of the period of Tender validity specified by the Tenderer on the Tender Form. Withdrawal of a Tender during this interval shall result in the Tenderer’s forfeiture of its Tender Security or execution of Tender Securing Declaration, pursuant to the ITT sub-Clause 18.9. |
| | | 23.4 | Withdrawal of a Tender between the deadline for submission of Tenders and the expiration of the period of Tender validity specified in the Tender Data Sheet or as extended pursuant to sub-Clause 21.2 shall result in the forfeiture of the Tender Security and execution of Tender Securing Declaration pursuant to ITT sub-Clause 18.9. |
| | | 23.5 | Tenderers may only offer discounts to, or otherwise modify the prices of their Tenders by submitting Tender modifications in accordance with this Clause, or included in the original Tender submission. |

f) OPENING AND EVALUATION OF TENDERS

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| 24 | Opening of Tenders | 24.1 | The Procuring Entity will open all Tenders including modifications, substitution or withdraw notices made |
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- pursuant to ITT Clause 23, in public, in the presence of Tenderers or their representatives who choose to attend and other parties with legitimate interest and Tender proceedings, at the place on the date and at time specified in the **Tender Data Sheet**. The Tenderers' representatives who are present shall sign a register as proof of their attendance.
- 24.2 Envelopes marked "**WITHDRAWAL**" shall be opened and read out first. Tenders for which an acceptable notice of withdrawal has been submitted pursuant to ITT Clause 23 shall not be opened but returned to the Tenderer. If the withdrawal envelope does not contain a copy of the "Power of Attorney" confirming the signature as a person duly authorized to sign on behalf of the Tenderer, the corresponding Tender will be opened. Subsequently, all envelopes marked "**MODIFICATION**" shall be opened and the submissions therein read out in appropriate detail. Thereafter all envelopes marked or "**SUBSTITUTION**" opened and the submissions therein read out in appropriate detail.
- 24.3 All other envelopes shall be opened one at a time. The Tenderers' names, the Tender prices, the total amount of each Tender and of any alternative Tender (if alternatives have been requested or permitted), any discounts, the presence or absence of Tender security, and such other details as the appropriate tender opening committee may consider appropriate, will be announced by the Secretary of the Tender Opening Committee at the opening.
- 24.4 Tenders or modifications that are not opened and not read out at Tender opening shall not be considered further for evaluation, irrespective of the circumstances. In particular, any discount offered by a Tenderer which is not read out at Tender opening shall not be considered further.
- 24.5 Tenderers are advised to send in a representative with the knowledge of the content of the Tender who shall verify the information read out from the submitted documents. Failure to send a representative or to point out any un-read information by the sent Tenderer's representative shall indemnify the Procuring Entity against any claim or failure to read out the correct information contained in the Tenderer's Tender.
- 24.6 No Tender will be rejected at Tender opening except for late Tenders which will be returned unopened to the Tenderer, pursuant to ITT Clause 22.
- 24.7 The Secretary of the appropriate tender opening

committee shall prepare minutes of the Tender opening. The record of the Tender opening shall include, as a minimum: the name of the Tenderers and whether or not there is a withdrawal, substitution or modification, the Tender price per Lot if applicable, including any discounts and alternative offers and the presence or absence of a Tender Security or Tender Securing Declaration.

24.8 The Tenderers' representatives who are present shall be requested to sign the record. The omission of a Tenderer's signature on the record shall not invalidate the contents and affect the record.

24.9 A copy of the minutes of the Tender opening shall be furnished to individual Tenderers upon request.

25 Confidentiality

25.1 Information relating to the examination, clarification, evaluation, and comparison of Tenders and recommendations for the award of a Contract shall not be disclosed to Tenderers or any other persons not officially concerned with such process until the award to the successful Tenderer has been announced.

25.2 Any effort by a Tenderer to influence the Procuring Entity's processing of Tenders or award decisions may result in the rejection of his Tender.

25.3 Notwithstanding sub-Clause 25.2, from the time of Tender opening to the time of Contract award, if any Tenderer wishes to contact the Procuring Entity on any matter related to the Tendering process, it should do so in writing.

26 Clarification of Tenders

26.1 To assist in the examination, evaluation, comparison of Tenders and post-qualification of the Tenderer, the Procuring Entity may, at its discretion, ask a Tenderer for clarification of its Tender including breakdown of prices. Any clarification submitted by a Tenderer that is not in response to a request by the Procuring Entity shall not be considered.

26.2 The request for clarification and the response shall be in writing. No change in the prices or substance of the Tender shall be sought, offered, or permitted except to confirm the correction of arithmetic errors discovered by the Procuring Entity in the evaluation of Tenders in accordance with ITT Clause 27.

26.3 From the time of Tender opening to the time of Contract award if any Tenderer wishes to contact the Procuring Entity on any matter related to the Tender it should do so

in writing.

- 27 **Preliminary Examination of Tenders**
- 27.1 Prior to the detailed evaluation of Tenders, the Procuring Entity will determine whether:
- a) The Tender has been submitted in the required format;
 - b) Any Tender Security submitted is in the required form, amount and validity period;
 - c) The Tender has been signed by the person lawfully authorized to do so;
 - d) The required number of copies of the Tender have been submitted;
 - e) The Tender is valid for the period required;
 - f) All required documents and information have been submitted; and
 - g) Any required samples have been submitted.
- 27.2 The Procuring Entity will confirm that the documents and information specified under ITT Clause 11 and ITT Clause 12 have been provided in the Tender. If any of these documents or information is missing, or is not provided in accordance with the Instructions to Tenderers, **the Tender shall be rejected**. The evaluation shall be carried out in three phases comprising compliance to preliminary or general requirements, compliance to technical specifications and financial evaluation. Tenderers deemed to be non-compliant to preliminary or general requirements shall be disqualified henceforth and their bid not subjected to the second phase of evaluation of compliance to Technical Specifications. Similarly, tenderers whose bids shall be deemed to be non-compliant to Technical Specifications shall be disqualified at that stage and their bids not subjected to the final phase of financial evaluation. Bids established to be compliant to both Preliminary or General Requirements shall be subjected to financial evaluation and tender awarded to the lowest evaluated bidder. Apart from the requirements captured in Section 27.0, some of the Preliminary or General Requirements are captured in Sections IX (A-I) and Section X.
- 27.3 The Procuring Entity may waive any minor informality, nonconformity, or irregularity in a Tender which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Tenderer.
- 27.4 A substantially responsive Tender is one which conforms to all the terms, conditions, and specifications of the

Tendering documents, without material deviation or reservation. A material deviation or reservation is one that:

- a) Affects in any substantial way the scope, quality, or execution of the Works;
- b) Limits in any substantial way, inconsistent with the Tendering documents, the Procuring Entity's rights or the Tenderer's obligations under the Contract; or
- c) If rectified, would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders.

27.5 If a Tender is not substantially responsive, it will be rejected by the Procuring Entity, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

28 **Correction of Errors** of 28.1 Tenders determined to be substantially responsive will be checked by the Procuring Entity for any arithmetic errors. Errors will be corrected by the Procuring Entity as follows:

- a) If there is a discrepancy between unit prices and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the total price shall be corrected, unless in the opinion of the Procuring Entity there is an obvious misplacement of the decimal point in the unit price, in which the total price as quoted shall govern and the unit price shall be corrected;
- b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- c) Where there is a discrepancy between the amounts in figures and in words, the amount in words will govern.

28.2 The amount stated in the Tender will be adjusted by the Procuring Entity in accordance with the above procedure for the correction of errors and, with the concurrence of the Tenderer, shall be considered as binding upon the Tenderer. If the Tenderer does not accept the corrected amount, its Tender will then be rejected, and the Tender Security may be forfeited and the Tender Securing Declaration may be executed in accordance with sub-Clause 18.9.

29 **Conversion** to 29.1 To facilitate the evaluation and comparison, the

Single Currency

Procuring Entity will convert all Tender prices expressed in the amounts in various currencies in which the Tender prices are payable to Kenya Shillings at the selling exchange rate established for similar transactions by the Central Bank of Kenya ruling on the date specified in the **Tender Data Sheet**.

- 30 **Comparison of Tenders**
- 30.1 The Procuring Entity shall evaluate and compare only the Tenders determined to be substantially responsive in accordance with ITT Clause 27.
- 30.2 In evaluating the Tenders, the Procuring Entity will determine for each Tender the evaluated Tender price by adjusting the Tender price as follows:
- Making any correction for errors pursuant to ITT Clause 28;
- Excluding provisional sums and the provision, if any for contingencies in the Bill of Quantities, but including Day work , where priced competitively ; and
Making appropriate adjustments to reflect discounts or other price modifications offered in accordance with sub-Clause 23.5.
- 30.3 The Procuring Entity may waive any minor informality or non-conformity, which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative standing of any Tenderer. Variations, deviations, and alternative offers and other factors, which are in excess of the requirements of the Tendering documents or otherwise result in unsolicited benefits for the Procuring Entity will not be taken into account in Tender evaluation.
- 31 **National Preference**
- 31.1 In the evaluation of Tenders the Procuring Entity shall apply exclusive preference to citizens of Kenya where:
- a) The funding is 100% from the Government of Kenya or a Kenyan body;
- b) The amounts are below the prescribed threshold in **the Tender Data Sheet**
- 31.2 To qualify for the preference the candidate shall provide evidence of eligibility by:
- a) Proving Kenyan citizenship by production of a Kenyan Identity Card; or
- b) Providing proof of being a “citizen contractor” in

terms of section 3(1) of the Act, i.e. being a natural person or an incorporated company wholly owned and controlled by persons who are citizens of Kenya.

c) Foreign successful bidder must incorporate a mix of local expertise either through subcontracting, or technical expertise.

31.3 The Minister of Finance may prescribe additional preference and/or reservation schemes, for example for procurements above these thresholds. If such additional preference schemes apply, details will be given in the **Tender Data Sheet**.

32 **Determination of the Lowest Evaluated Tender** 32.1 The Tender with the lowest evaluated price from among those which are eligible, compliant and substantially responsive shall be the lowest evaluated Tender.

33 **Post-Qualification of Tenderer** 33.1 If specified in the **Tender Data Sheet**, post-qualification shall be undertaken.

33.2 The Procuring Entity will determine to its satisfaction whether the Tenderer that is selected as having submitted the lowest evaluated responsive Tender is qualified to perform the contract satisfactorily, in accordance with the criteria listed in sub-Clause 12.3.

33.3 The determination will take into account the Tenderer's financial, technical, and production capabilities. It will be based upon an examination of the documentary evidence of the Tenderer's qualifications submitted by the Tenderer, pursuant to sub-Clause 12.3, as well as such other information as the Procuring Entity deems necessary and appropriate. Factors not included in these Tendering documents shall not be used in the evaluation of the Tenderer's qualifications.

33.4 An affirmative determination will be a prerequisite for award of the contract to the Tenderer. A negative determination will result in rejection of the Tenderer's Tender, in which event the Procuring Entity will proceed to the next lowest evaluated Tender to make a similar determination of that Tenderer's capabilities to perform satisfactorily.

g) AWARD OF CONTRACT

34 **Criteria of Award** 34.1 Subject to ITT Clause 34 and 35, the Procuring Entity will award the Contract to the Tenderer whose Tender has been determined to be substantially responsive to the Tendering documents and who has offered the lowest Evaluated Tender Price, provided that such Tenderer has

been determined to be:

- a) Eligible in accordance with the provisions of ITT Clause 2;
- b) Is determined to be qualified to perform the Contract satisfactorily;
- c) Successful negotiations have been concluded.

34.2 If, pursuant to sub-Clause 13.1, this Contract is being awarded on a “lot and package” basis, the lowest evaluated Tender price will be determined when evaluating this Contract in conjunction with other Contracts to be awarded concurrently, taking into account any discounts offered by the Tenderer for award of more than one Contract.

35 Clarifications

35.1 Clarifications may be undertaken with the lowest evaluated Tenderer relating to the following areas:

- a) A minor alteration to the technical details of the statement of requirements;
- b) Reduction of quantities for budgetary reasons, where the reduction is in excess of any provided for in the Tendering documents;
- c) A minor amendment to the Contract Data Sheet;
- d) Finalizing payment arrangements;
- e) Mobilization arrangements;
- f) Agreeing final delivery or work schedule to accommodate any changes required by the Procuring Entity;
- g) The methodology or staffing; or
- h) Clarifying details that were not apparent or could not be finalized at the time of Tendering

35.2 Clarifications shall not change the substance of the tender.

36 Procuring Entity’s Right to Accept any Tender and to Reject any or all Tenders

36.1 Notwithstanding ITT Clause 34, the Procuring Entity reserves the right to accept or reject any Tender, and to cancel the Tendering process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer or Tenderers.

36.2 Notice of the rejection of all Tenders shall be given promptly within 14 days to all Contractors that have submitted Tenders.

36.3 The Procuring Entity shall upon request communicate to

any Tenderer the grounds for its rejection of its Tenders, but is not required to justify those grounds.

- 37 **Procuring Entity’s Right to Vary Quantities at the Time of Award** 37.1 The Procuring Entity reserves the right at the time of contract award to increase or decrease the quantity of goods or related services originally specified in these Tendering documents (schedule of requirements) provided this does not exceed by the percentage indicated in the **Tender Data Sheet**, without any change in unit price or other terms and conditions of the Tender and Tendering documents.
- 38 **Notification of Award** of 38.1 The Tenderer whose Tender has been accepted will be notified of the award by the Procuring Entity prior to expiration of the Tender validity period by e-mail or facsimile confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the “Letter of Acceptance”) will state the sum that the Procuring Entity will pay the Contractor in consideration of the provision and maintenance of the Work(s) as prescribed by the Contract (hereinafter and in the Contract called the “Contract Price”).
- 38.2 The notification of award will constitute the formation of the Contract, subject to the Tenderer furnishing the Performance Security in accordance with ITT Clause 39 and signing the Contract in accordance with sub-Clause 38.2
- 38.3 At the same time as the person submitting the successful Tender is notified, the Procuring Entity will notify each unsuccessful Tenderer, the name of the successful Tenderer and the Contract amount and will discharge the Tender Security and Tender Securing Declaration of the Tenderer pursuant to ITT sub Clause 18.7.
- 38.4 If, after notification of award, a Tenderer wishes to ascertain the grounds on which it’s Tender or application for pre-qualification was unsuccessful, it should address its request to the secretary of the Tender Committee that authorized the award of contract. The secretary of the Tender Committee shall, within fourteen days after a request, provide written reasons as to why the Tender, proposal or application to be pre-qualified was unsuccessful. However, failure to take this opportunity to clarify the grounds for rejection does not affect the Tenderer’s right to seek immediate review by the Public Procurement Administrative Review Board under Clause 45.

- 39 **Signing Contract** of 39.1 Promptly, and in no case later than 14 days, after notification, Procuring Entity shall send the successful Tenderer the Agreement and Contract Data Sheet, incorporating all agreements between the parties obtained as a result of Contract negotiations.
- 39.2 Within the period specified in the notification or Tender Data Sheet but not earlier than fourteen (14) days since notification of award of contract, the successful Tenderer shall sign and date the contract and return it to the Procuring Entity.
- 40 **Performance Security** 40.1 Within fifteen (15) days but after 7days after receipt of the Letter of Acceptance, the successful Tenderer shall deliver to the Procuring Entity a Performance Security in the amount and in the form stipulated in the **Tender Data Sheet** and the Contract Data Sheet, denominated in the type and proportions of currencies in the Letter of Acceptance and in accordance with the Conditions of Contract.
- 40.2 If the Performance Security is provided by the successful Tenderer in the form of a Bank Guarantee or Insurance Bond, it shall be issued either:
- a) At the Tenderer’s option, by a bank or insurance firm located in Kenya, or a foreign bank or insurance firm through a correspondent bank or insurance firm located in Kenya;
- b) With the consent of the Procuring entity, directly by a foreign bank acceptable to the Procuring entity.
- 40.3 Failure of the successful Tenderer to comply with the requirement of sub-Clause 40.1 shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender Security, in which event the Procuring Entity may make the award to the next lowest evaluated Tenderer or call for new Tenders.
- 41 **Advance Payment** 41.1 The Procuring Entity will provide an Advance Payment as stipulated in the Conditions of Contract, subject to a maximum amount, as stated in the **Tender Data Sheet**.
- 41.2 The Advance Payment request shall be accompanied by an Advance Payment Security (Guarantee) in the form provided in Section X. For the purpose of receiving the Advance Payment, the Tenderer shall make an estimate of, and include in its Tender, the expenses that will be incurred in order to commence work. These expenses

will relate to the purchase of equipment, machinery, materials, and on the engagement of labour during the first month beginning with the date of the Procuring Entity's "Notice to Commence" as specified in the Contract Data Sheet.

SECTION III: TENDER DATA SHEET (TDS)

Instructions to Tenderers Clause Reference

TDS Ref. No	ITT Clause No	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers
A. INTRODUCTION		
1	1.1	<p>The “Procuring Entity” also called Employer is:- KENYA ELECTRICITY GENERATING COMPANY LIMITED Stima Plaza Phase III, Kolobot Road, P.O. Box 47936 – 00100 NAIROBI, KENYA. Tel: +254 2 3666000 Email: tenders@kengen.co.ke; Cc: skimani@kengen.co.ke; jknjuguna@kengen.co.ke; badegu@kengen.co.ke; mmaluki@kengen.co.ke;</p>
	1.1	The Tender is; Tender for Design, supply, installation, testing and commissioning of a 500KVA emergency Diesel Generator for Kamburu Hydropower Station
	1.2	The duration of implementation from commencement date of the works to the date of issue of the Taking Over Certificate shall be (8) eight months, calendar working days, excluding Sundays and Public Holidays, calculated from receipt of the Engineer’s Order to Commence
	1.3	The main objective of the project is the Design, supply, installation, testing and commissioning of a 500KVA emergency Diesel Generator for Kamburu Hydropower Station
2	2.6	<p>Corruption and ethical standards</p> <p>The Government requires that Procuring Entities (including beneficiaries of Government funded projects) as well as Tenderers/Suppliers/Contractors under Government financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. It is the responsibility of the Procuring Entity to ensure that Tenderers, suppliers, and contractors and their subcontractors observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy:</p> <p>For the purpose of this provision, the following definitions are provided:</p> <p>(i). “Corruption” has the meaning assigned to it in the Anti-Corruption and Economic Crime Act 2003 and includes the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement or disposal process or in contract execution;</p> <p>(ii). “Fraudulent Practice” includes a misrepresentation of fact in order to influence a procurement or disposal process or the execution of a contract to</p>

TDS Ref. No	ITT Clause No	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers
		<p>the detriment of the Procuring Entity and includes collusive practices amongst Tenderers prior to or after Tender submission designed to establish Tender prices at artificial non-competitive levels and deprive the Procuring Entity of the benefits of free and open competition;</p> <p>(iii). “Collusive Practice” means an arrangement between two or more suppliers, contractors and subcontractors designed to achieve an improper purpose, including to influence improperly the actions of the Procuring Entity prior to or after Tender submission , designed to establish Tender prices at artificial non-competitive levels and to deprive the Procuring Entity of the benefit of free and open competition;</p> <p>(iv). “Coercive Practice” means impairing or harming, or threatening to impair or harm, directly or indirectly a supplier, contractor or subcontractor or the property of any of them to influence improperly the actions of a Procuring Entity;</p> <p>(v). “Obstructive Practice” means deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede an investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and /or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation.</p> <p>A Procuring Entity has the right to require that Tenderers, suppliers, and contractors and their subcontractors permit persons duly appointed by KACC/PPOA/KNAO to inspect their accounts and records and other documents relating to the Tender submission and contract performance; The Procuring Entity will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt, fraudulent practices or others stated under Clause 44.1.a in competing for the contract;</p> <p>In pursuit of the policy defined in sub-Clause 44.1,the Procuring Entity will cancel the portion of the funds allocated to a contract for goods, works, or services if it at any time determines that corrupt or fraudulent practices were engaged in by representatives of the Procuring Entity or Approving Authority or of a beneficiary of the funds during the procurement or the execution of that contract;</p> <p>In the event that the Procuring Entity or Approving Authority does not take timely and appropriate action satisfactory to the Government of Kenya to remedy the situation, then the Director-General may order an investigation of procurement proceedings for the purpose of determining whether there has been a breach of the Public Procurement and Disposal Act, 2005.</p>
3	4.1	Alternative offers are not allowed.
4	4.2	Alternative times for completion are not allowed.

TDS Ref. No	ITT Clause No	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers
5	6.3	<p>The Tenderer's designated representative is invited to a site visit which is MANDATORY and shall take place as follows;</p> <p>SITE VISIT</p> <p>Mandatory Site Visit as per IFT starting with bid pre-meeting at Kamburu at 10.00 am –</p> <p>Day: Wednesday Date: 6th September 2017 Time: 10.00 a.m.</p> <p>Assemble Point For Site Visit: Kamburu Power Station</p>
6	6.5	The clarifications of the site visit meeting will be made available within five (5) working days from the date of the site visit.
7	6.6	Non-attendance at the site visit will result in disqualification. Bidders are strongly advised to visit site and obtain for themselves information adequate for them to prepare a responsive bid.
B. TENDERING DOCUMENTS		
8	7.2	The number of copies to be completed and returned with the tender is Two (2) .
9	8.1	<p>CLARIFICATIONS</p> <p>Further information and/or clarification may also be obtained from the Employer's representative at the following address: -</p> <p>Supply Chain Director Kenya Electricity Generating Company Limited Ground Floor, Stima Plaza, Phase III; Kolobot Road, Parklands P O Box 47936 – 00100 NAIROBI, KENYA Email; tenders@kengen.co.ke; cc: jknjuguna@kengen.co.ke; skimani@kengen.co.ke; badegu@kengen.co.ke; mmaluki@kengen.co.ke;</p>
10	8.2	Bidders may seek any clarifications latest if a third of the period given to respond to the tender is remaining.
11	8.3	Potential bidders are advised to regularly check KenGen website for any uploaded information on this tender. Any issued Addenda/Clarification shall be uploaded by Procuring entity on the website.
C. PREPARATION OF TENDERS		
12	10.1	Language of Tender and all correspondence shall be <i>English</i> .
13	11.1	<p><i>List of documents required to be submitted with the tender:</i></p> <ol style="list-style-type: none"> a. <i>Tender security</i> b. <i>Manufacturers' Authorizations</i>

TDS Ref. No	ITT Clause No	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers
		<ul style="list-style-type: none"> c. <i>Technical Brochures</i> d. <i>Site Visit Certificate</i> e. <i>Any Addendums and Clarification</i> f. <i>Notarised Power of Attorney in the case of Joint Ventures</i> g. <i>Warranties</i>
14	12.4	<ul style="list-style-type: none"> a. All requirements of sub-clause 11.1 b. Copy of Joint Venture Agreement, or copy of Letter of Intent to execute a Joint Venture Agreement c. Tender must be signed to be legally binding on all partners
15	16.1	The currency in which the prices shall be quoted shall be: <i>Kenya Shillings</i> or in any freely convertible currencies. However, the maximum number of currencies shall be limited to two (2).
16	16.2	The authority for establishing the rates of exchange shall be Central Bank of Kenya. The applicable date for exchange rates for tendering and evaluation purposes is the exchange rate at the tender closing date.
17	17.1	The tender shall remain valid and open for acceptance for a period of one hundred and twenty (120) calendar days from the specified date of tender opening or from the extended date of tender opening (in accordance with clause 21) whichever is the later.
18	18.1	The Tenderer shall furnish as part of his tender, a Tender Security in the amount of: KShs. 500,000.00 (<i>Say Kenya Shilling Five Hundred thousand Only</i>) Valid for at least 30 days beyond tender validity. Foreign bidders who choose to use bank guarantee must do so through corresponding local bank. Tender securing declaration shall not be accepted in place of Tender Security
19	19.1	In addition to the original of the Tender, the Tenderer shall submit <i>two (2)</i> copies of the Tender.
20	19.2	Written confirmation of authorization shall be Power of Attorney
D. SUBMISSION OF TENDERS		
21	20	Tenders shall be addressed to : The Company Secretary & Legal Affairs Director Kenya Electricity Generating Company Limited 10th Floor, Pension Plaza Phase 1 Kolobot Road, Parklands P.O. Box 47936-00100 Nairobi, Kenya
22	20.2	The name and identification of the project is: Design, supply, installation, testing and commissioning of a 500KVA emergency Diesel Generator for Kamburu Hydropower Station The tender number is: KGN-HYD-022-2017 Date and Time for submission is: Day: Tuesday Date: 26th September 2017

TDS Ref. No	ITT Clause No	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers
		Time: 10.00 a.m.
23	21.1	The deadline for Tender submission is: Day: Tuesday Date: 26th September 2017 Time: 10.00 a.m.
24	21.3	The extension of the deadline for submission of Tenders shall be made not later than five (5) days before the expiry of the tender deadline.
25	23.4	The tender shall remain valid and open for acceptance for a period of one hundred and twenty (120) calendar days from the specified date of tender opening or from the extended date of tender opening (in accordance with clause 21 here above) whichever is the later.
E. OPENING AND EVALUATION OF TENDERS		
26	24.1	The Tender opening shall take place at: Company: Kenya Electricity Generating Company Limited Street address: Kolobot Road, off Limuru Road Building/Plot No: Pension Plaza Phase 2 Floor/Room No: Ground Floor City/Town: Nairobi Country: Kenya The amount read out on the Tender form shall be assumed to be inclusive of all offered discounts and all duties, fees and applicable taxes.
27	27.1	EVALUATION PRELIMINARY a) Certificate of Incorporation / Registration – attach copy b) Valid Tax Compliance Certificate – attach copy c) Audited Financial Statements / Accounts for the last two (2) years –attach copies. d) Manufacturer’s Authorization e) Duly signed and stamped/sealed Power of Attorney (in case of Joint Ventures) f) Tender Security of Kshs. 500,000 (Kenya Shillings Five Hundred Thousand Only) h) ERC registration certificates and NCA Class 6 and above Kenyan firms and equivalent Engineering/Construction statutory registration certificates from the national registration bodies in the bidders’ home country for international bidders i) Detailed technical description, drawings and brochures j) Mandatory Site visit -attach duly filled signed/stamped copy of attendance k) Technical schedules duly completed k) Price Schedules duly completed Only tenders who meet the preliminary requirements shall be subjected to technical evaluation

TDS Ref. No	ITT Clause No	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers		
		Method statement on how the Tenderer intends to execute the works. A tentative program shall be provided.		
		TECHNICAL		
		TECHNICAL EVALUATION	Clause	Requirements
			Qualification and experience of key personnel	Site <u>Project Manager</u> and alternate: qualifications as stated in Section B, Experience of the Firm, clause 24.1: Has managed installation of at least 8 Diesel Engines in similar applications in the last 10 years (attach CVs, references with up-to-date contact details and Completion Certificates from the Clients).
			Experience of the firm	EDG installation supervisor qualifications as stated in Section B, Experience of the Firm, clause 24.1: Has supervised installation of equipment of at least 5 diesel Generators in similar applications in the last 10 years (attach CVs, references with up-to-date contact details and Completion Certificates from the Clients)
			EDG Design and Commissioning Engineer qualifications_ Electrical /Mechanical and alternate: as stated in Section B, Experience of the Firm, clause 24.1: Has commissioned at least 8 diesel Generators in similar applications/Systems of similar rating in the last 10 years (attach CVs, references with up-to-date contact details and Completion Certificates from the Clients)	Experience of the firm as stated in Section B, Experience of the Firm, clause 24.2: Has undertaken supply, installation and commissioning of at least 10 diesel Generators in similar applications of the same or higher rating in the last 10 years (attach references with up-to-date contact details and Completion Certificates from the Clients).

TDS Ref. No	ITT Clause No	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers		
				<p>After-sale services and availability of spares for at least 20 years from time of commissioning: Details of after sales support including supply of spares for at least 5 diesel Generators in similar applications implemented (attach evidence – reference from clients)</p> <p>Tenderer MUST have a Quality Assurance System implemented according to the requirements: Attach evidence of the Certificate.</p>
			Litigation History	<p>Tenderers shall provide accurate information on any litigation or arbitration resulting from contracts completed or under execution by the tenderer.</p>
				<p>Tenderer shall not have a Non-performing contract within the last Five (5) years as per clause 25.3 of technical evaluation criteria.</p>
			Project preliminary designs	<p>Tenderer has submitted preliminary designs</p>
				<p>User-friendly and easily upgradable software.</p>
				<p>Tenderer has submitted manuals, brochures and layout drawings</p>

TDS Ref. No	ITT Clause No	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers		
			Implementation plan	Submitted a clear implementation plan
			Compliance to technical specifications	Duly filled Technical Schedule and Technical Data form
				Submitted all type test certificates
			Software and other necessary licenses	Delivery of all required software and licenses as per specifications and intellectual property/s related to all applications/programs designed specifically for the project.
			After Sales service	Provision of maintenance spares and services for a period of at least 15 years.
Table 1a: Evaluation criteria				
<p>FINANCIAL Price bill of quantities provided will be checked for arithmetical errors and financial records provided to ensure that the bidder is capable of executing the project.</p>				
			Clause	Requirements
		FINANCIAL EVALUATION	Audited Accounts:	Authentic and certified documents for the last 3 years.

TDS Ref. No	ITT Clause No	Amendments of, and Supplements to, Clauses in the Instruction to Tenderers	
			<p>Financial Position</p> <p>Tenderers shall demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit (specific to the works being tendered for), and other financial means, sufficient to meet the contracts cash flow</p>
Table 2b: Evaluation criteria			
<p>NOTE: Table 1a & 1b above show the evaluation criteria that shall be applied. Failure to provide the required proof shall lead to automatic disqualification of the bidder.</p>			
28	28.1	Errors will NOT be corrected by the Procuring Entity. The total price as quoted shall govern.	
29	28.2	The amount stated in the Tender will NOT be adjusted by the Procuring Entity.	
30	29.1	The Tenderer's prices shall be converted to Kenya shillings where applicable, at the mean exchange rate of the Central Bank of Kenya on the closing date of the tenders	
31	31.1	Shall NOT be applicable	
32	31.3	Shall NOT be applicable	
33	33	Post- qualification shall be undertaken	
F. AWARD OF CONTRACT			
	37.1	Percentage for quantities increase or decrease is 15%.	
	40.1	The Tenderer upon being issued with a Notification of Award, shall provide the Employer with a Performance Security of ten percent (10%) of the Contract. The security shall be issued by reputable bank acceptable to the Employer. Foreign bidders shall issue the Performance Security through a corresponding local bank.	
34	41.1	The Advance Payment – not applicable	
35	Add	<p>The Tenderer shall propose one Adjudicator from among the list of Members or Fellows of the Chartered Institute of Arbitrators (Kenya Branch) who shall be agreed upon by the Procuring Entity.</p> <p>The hourly fee for the Adjudicator shall be as determined by the Chartered Institute of Arbitrators (Kenya Branch). If the parties fail to agree upon the name of the Adjudicator, the appointment shall be made by the Chartered Institute of Arbitrators (Kenya Branch) at the request of either party.</p>	

SECTION IV: GENERAL CONDITIONS OF CONTRACT

1. Definitions

1.1 In this Contract, except where context otherwise requires, the following terms shall be interpreted as indicated;

“Bills of Quantities” means the priced and completed Bill of Quantities forming part of the tender [where applicable].

“Schedule of Rates” means the priced Schedule of Rates forming part of the tender [where applicable].

“The Completion Date” means the date of completion of the Works as certified by the Employer’s Representative.

“The Contract” means the agreement entered into by the Employer and the Contractor as recorded in the Agreement Form and signed by the parties.

“The Contractor” refers to the person or corporate body whose tender to carry out the Works has been accepted by the Employer.

“The Contractor’s Tender” is the completed tendering document submitted by the Contractor to the Employer.

“The Contract Price” is the price stated in the Notification of award.

“Days” are calendar days; “Months” are calendar months.

“A Defect” is any part of the Works not completed in accordance with the Contract.

“The Defects Liability Certificate” is the certificate issued by Employer’s Representative upon correction of defects by the Contractor.

“The Defects Liability Period” is the period named in the Appendix to Conditions of Contract and calculated from the Completion Date.

“Drawings” include calculations and other information provided or approved by the Employer’s Representative for the execution of the Contract.

“Employer” means Kenya Electricity Generating Company Limited and is the party who employs the Contractor to carry out the Works

“Equipment” is the Contractor’s machinery and vehicles brought temporarily to the Site for the execution of the Works.

“Site” means the place or places where the permanent Works are to be carried out including workshops where the same is being prepared.

“Materials” are all supplies, including consumables, used by the Contractor for incorporation in the Works.

“Employer’s Representative” is the person appointed by the Employer and notified to the Contractor for the purpose of supervision of the Works.

“Specification” means the Specification of the Works included in the Contract.

“Start Date” is the date when the Contractor shall commence execution of the Works.

“A Subcontractor” is a person or corporate body who has a Contract with the Contractor to carry out a part of the Work in the Contract, which includes Work on the Site.

“Temporary works” are works designed, constructed, installed, and removed by the Contractor which are needed for construction or installation of the Works.

“A Variation” is an instruction given by the Employer’s Representative which varies the Works.

“The Works” are what the Contract requires the Contractor to construct, install, and turnover to the Employer.

2. Contract Documents

2.1 The following documents shall constitute the Contract documents and shall be interpreted in the following order of priority;

- a. Contract Agreement,
- b. Notification of award
- c. Letter of Acceptance,
- d. Conditions of Contract
- e. Technical Specifications
- f. Drawings,
- g. Bills of Quantities or Schedule of Rates [whichever is applicable)
- h. Contractor’s Tender,
- i. Applicable Addenda and Clarifications

3. Employer’s Representative’s Decisions

3.1 Except where otherwise specifically stated, the Employer’s Representative will decide contractual matters between the Employer and the Contractor in the role representing the Employer.

4. Works, Language and Law of Contract

- 4.1 The Contractor shall construct and install the Works in accordance with the Contract documents. The Works may commence on the Start Date and shall be carried out in accordance with the Program submitted by the Contractor, as updated with the approval of the Employer's Representative, and complete them by the Intended Completion Date.
- 4.2 The ruling language of the Contract shall be English language and the law governing the Contract shall be the law of the Republic of Kenya.

5. Safety, Temporary works and Discoveries

- 5.1 The Contractor shall be responsible for design of temporary works and shall obtain approval of third parties to the design of the temporary works where required.
- 5.2 The Contractor shall be responsible for the safety of all activities on the Site.
- 5.3 Anything of historical or other interest or significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Employer's Representative of such discoveries and carry out the Employer's Representative's instructions for dealing with them.

6. Work Program and Sub-contracting

- 6.1 Within seven days after Site possession date, the Contractor shall submit to the Employer's Representative for approval a program showing the general methods, arrangements, order and timing for all the activities in the Works.
- 6.2 The Contractor may sub-contract the Works (but only to a maximum of 25 percent of the Contract Price) with the approval of the Employer's Representative. However, he shall not assign the Contract without the approval of the Employer in writing. Sub-contracting shall not alter the Contractor's obligations.

7. The site

- 7.1 The Employer shall give possession of all parts of the Site to the Contractor.
- 7.2 The Contractor shall allow the Employer's Representative and any other person authorised by the Employer's Representative, access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.

8 Instructions

- 8.1 The Contractor shall carry out all instructions of the Employer's Representative which are in accordance with the Contract.

9 **Extension of Completion Date**

9.1 The Employer's Representative shall extend the Completion Date if an occurrence arises which makes it impossible for completion to be achieved by the Intended Completion Date. The Employer's Representative shall decide whether and by how much to extend the Completion Date.

9.2 For the purposes of this clause, the following occurrences shall be valid for consideration;

Delay by:-

- (a) Force majeure, or
- (b) Reason of any exceptionally adverse weather conditions, or
- (c) reason of civil commotion, strike or lockout affecting any of the trades employed upon the Works or any of the trades engaged in the preparation, manufacture or transportation of any of the goods or materials required for the Works, or
- (d) Reason of the Employer's Representative's instructions issued under these Conditions, or
- (e) reason of the contractor not having received in due time necessary instructions, drawings, details or levels from the Employer's Representative for which he specifically applied in writing on a date which having regard to the date for Completion stated in the appendix to these Conditions or to any extension of time then fixed under this clause was neither unreasonably distant from nor unreasonably close to the date on which it was necessary for him to receive the same, or
- (f) delay on the part of artists, tradesmen or others engaged by the Employer in executing work not forming part of this Contract, or
- (g) Reason of delay by statutory or other services providers or similar bodies engaged directly by the Employer, or
- (h) reason of opening up for inspection of any Work covered up or of the testing or any of the Work, materials or goods in accordance with these conditions unless the inspection or test showed that the Work, materials or goods were not in accordance with this Contract, or
- (i) Reason of delay in appointing a replacement Employer's Representative, or
- (j) reason of delay caused by the late supply of goods or materials or in executing Work for which the Employer or his agents are contractually obliged to supply or to execute as the case may be, or

(k) Delay in receiving possession of or access to the Site.

10 **Management Meetings**

- 10.1 A Contract management meeting shall be held regularly and attended by the Employer's Representative and the Contractor. Its business shall be to review the plans for the remaining Work. The Employer's Representative shall record the business of management meetings and provide copies of the record to those attending the meeting and the Employer. The responsibility of the parties for actions to be taken shall be decided by the Employer's Representative either at the management meeting or after the management meeting and stated in writing to all who attend the meeting.
- 10.2 Communication between parties shall be effective only when in writing.

11 **Defects**

- 11.1 The Employer's Representative shall inspect the Contractor's work and notify the Contractor of any defects that are found. Such inspection shall not affect the Contractor's responsibilities. The Employer's Representative may instruct the Contractor to search for a defect and to uncover and test any Work that the Employer's Representative considers may have a defect. Should the defect be found, the cost of uncovering and making good shall be borne by the Contractor. However if there is no defect found, the cost of uncovering and making good shall be treated as a variation and added to the Contract Price.
- 11.2 The Employer's Representative shall give notice to the Contractor of any defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the Appendix to Conditions of Contract.
- 11.3 Every time notice of a defect is given, the Contractor shall correct the notified defect within the length of time specified by the Employer's Representative's notice. If the Contractor has not corrected a defect within the time specified in the Employer's Representative's notice, the Employer's Representative will assess the cost of having the defect corrected by other parties and such cost shall be treated as a variation and be deducted from the Contract Price.

12 **Bills of Quantities/Schedule of Rates**

- 12.1 The Bills of Quantities/Schedule of Rates shall contain items for the construction, installation, testing and commissioning of the Work to be done by the Contractor. The Contractor will be paid for the quantity of the Work done at the rates in the Bills of Quantities/Schedule of Rates for each item. Items against which no rate is entered by the Tenderer will not be paid for when executed and shall be deemed covered by the rates for other items in the Bills of Quantities/Schedule of Rates.

12.2 Where Bills of Quantities do not form part of the Contract, the Contract Price shall be a lump sum (which shall be deemed to have been based on the rates in the Schedule of Rates forming part of the tender) and shall be subject to re-measurement after each stage.

13 Variations

13.1 The Contractor shall provide the Employer's Representative with a quotation for carrying out the variations when requested to do so. The Employer's Representative shall assess the quotation and shall obtain the necessary authority from the Employer before the variation is ordered.

13.2 If the Work in the variation corresponds with an item description in the Bill of Quantities/Schedule of Rates, the rate in the Bill of Quantities/Schedule of Rates shall be used to calculate the value of the variation. If the nature of the Work in the variation does not correspond with items in the Bill of Quantities/Schedule of Rates, the quotation by the Contractor shall be in the form of new rates for the relevant items of Work.

13.3 If the Contractor's quotation is unreasonable, the Employer's Representative may order the variation and make a change to the Contract Price, which shall be based on the Employer's Representative's own forecast of the effects of the variation on the Contractor's costs.

14 Payment Certificates and Final Account

14.1 The Contractor shall be paid after each of the following stages of work listed here below (subject to re-measurement by the Employer's Representative of the work done in each stage before payment is made). In case of lump-sum Contracts, the valuation for each stage shall be based on the quantities so obtained in the re-measurement and the rates in the Schedule of Rates.

(i) Advance payment (percent of Contract Price, [after Contract execution] to be inserted by the Employer).

(ii) After defects liability period

14.2 Upon deciding that Works included in a particular stage are complete, the Contractor shall submit To the Employer's Representative his application for payment. The Employer's Representative shall check, adjust if necessary and certify the amount to be paid to the Contractor within 21 days of receipt of the Contractor's application .The Employer shall pay the Contractor the amounts so certified within 30 days of the date of issue of each Interim Certificate.

14.3 The Contractor shall supply the Employer's Representative with a detailed final account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Employer's Representative shall issue a Defect Liability Certificate and certify any final

payment that is due to the Contractor within 30 days of receiving the Contractor's account if it is correct and complete. If it is not, the Employer's Representative shall issue within 21 days a schedule that states the scope of the corrections or additions that are necessary. If the final account is still unsatisfactory after it has been resubmitted, the Employer's Representative shall decide on the amount payable to the Contractor and issue a Final Payment Certificate. The Employer shall pay the Contractor the amount so certified within 60 days of the issue of the Final Payment Certificate.

- 14.4 If the period laid down for payment to the Contractor upon each of the Employer's Representative's Certificate by the Employer has been exceeded, the Contractor shall be entitled to claim simple interest calculated pro-rata on the basis of the number of days delayed at the Central Bank of Kenya's average base lending rate prevailing on the first day the payment becomes overdue. The Contractor will be required to notify the Employer within 15 days of receipt of delayed payments of his intentions to claim interest.

15. Insurance

- 15.1 The Contractor shall be responsible for and shall take out appropriate cover against, among other risks, personal injury; loss of or damage to the Works, materials and plant; and loss of or damage to property.

16. Liquidated Damages

- 16.1 The Contractor shall pay liquidated damages to the Employer at the rate 0.001 per cent of the Contract price per day for each day that the actual Completion Date is later than the Intended Completion Date except in the case of any of the occurrences listed under clause 9.2. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities.

17. Completion and Taking Over

- 17.1 Upon deciding that the Work is complete the Contractor shall request the Employer's Representative to issue a Certificate of Completion of the Works, upon deciding that the Work is completed.

The Employer shall take over the Site and the Works within seven days of the Employer's Representative issuing a Certificate of Completion.

18. **Termination**

- 18.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract. These fundamental breaches of Contract shall include, but shall not be limited to, the following;
- (a) the Contractor stops Work for 30 days continuously without reasonable cause or authority from the Employer's Representative;
 - (b) the Contractor is declared bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
 - (c) a payment certified by the Employer's Representative is not paid by the Employer to the Contractor within 30 days after the expiry of the payment periods stated in sub clauses 14.2 and 14.3 hereinabove.
 - (c) the Employer's Representative gives notice that failure to correct a particular defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time.
- 18.2 If the Contract is terminated, the Contractor shall stop Work immediately, and leave the Site as soon as reasonably possible. The Employer's Representative shall immediately thereafter arrange for a meeting for the purpose of taking record of the Works executed and materials, goods, equipment and temporary buildings on Site.

19. **Payment upon Termination**

- 19.1 The Employer may employ and pay other persons to carry out and complete the Works and to rectify any defects and may enter upon the Works and use all materials on Site, plant, equipment and temporary works.
- 19.2 The Contractor shall, during the execution or after the completion of the Works under this clause, remove from the Site as and when required within such reasonable time as the Employer's Representative may in writing specify any temporary buildings, plant, machinery, appliances, goods or materials belonging to him, and in default thereof, the Employer may (without being responsible for any loss or damage) remove and sell any such property of the Contractor, holding the proceeds less all costs incurred to the credit of the Contractor.
- 19.3 Until after completion of the Works under this clause, the Employer shall not be bound by any other provision of this Contract to make any payment to the Contractor, but upon such completion as aforesaid and the verification within a reasonable time of the accounts therefore the Employer's Representative shall certify the amount of expenses properly incurred by the Employer and, if such amount added to the money paid to the Contractor before such determination exceeds the total amount which would have been payable on due completion in accordance with this Contract, the difference shall be a debt payable to the Employer by the Contractor; and if the said amount added

to the said money be less than the said total amount, the difference shall be a debt payable by the Employer to the Contractor.

19.4 In the event that an advance payment is granted, the following shall apply:-

- a) On signature of the Contract, the Contractor shall at his request, and without furnishing proof of expenditure, be entitled to an advance of 10% (ten percent) of the original amount of the Contract. The advance shall not be subject to retention money.
- b) No advance payment may be made before the Contractor has submitted proof of the establishment of deposit or a directly liable guarantee satisfactory to the Employer in the amount of the advance payment. The guarantee shall be in the same currency as the advance.
- c) Reimbursement of the lump sum advance shall be made by deductions from the Interim payments and where applicable from the balance owing to the Contractor. Reimbursement shall begin when the amount of the sums due under the Contract reaches 20% of the original amount of the Contract. It shall have been completed by the time 80% of this amount is reached.

The amount to be repaid by way of successive deductions shall be calculated by means of the formula:

The amount to be repaid by way of successive deductions shall be calculated by means of the formula:

$$R = \frac{A(x1 - x11)}{80 - 20}$$

Where:

R = the amount to be reimbursed

A = the amount of the advance which has been granted

X1 = the amount of proposed cumulative payments as a percentage of the original amount of the Contract. This figure will exceed 20% but not exceed 80%.

X11 = the amount of the previous cumulative payments as a percentage of the original amount of the Contract. This figure will be below 80% but not less than 20%.

- d) With each reimbursement the counterpart of the directly liable Guarantee may be reduced accordingly.

20. **Corrupt Gifts and Payments of Commission**

20.1 The Contractor shall not;

- (a) Offer or give or agree to give to any person in the service of the Employer any gifts or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of

this or any other contract with the Employer or for showing or forbearing to show favour or dis-favour to any person in relation to this or any other contract with the Employer.

- (b) Any breach of this Condition by the Contractor or by anyone employed by him or acting on his behalf (whether with or without the knowledge of the Contractor) shall be an offence under the Laws of Kenya.

21. Settlement of Disputes

- 21.1 Any dispute arising out of the Contract which cannot be amicably settled between the parties shall be referred by either party to the arbitration and final decision of a person to be agreed between the parties. Failing agreement to concur in the appointment of an Arbitrator, the Arbitrator shall be appointed by the chairman of the Chartered Institute of Arbitrators, Kenya branch, on the request of the applying party.

22 Taxes

- 22.1.1 "Taxes" means all present and future taxes, levies, duties, charges, assessments, deductions or withholdings whatsoever, including any interest thereon, and any penalties and fines with respect thereto, wherever imposed, levied, collected, or withheld pursuant to any regulation having the force of law and "Taxation" shall be construed accordingly.

22.1.2 Local Taxation

Nothing in the Contract shall relieve the Contractor and/or his Sub-Contractors from their responsibility to pay any taxes, statutory contributions and levies that may be levied on them in Kenya in respect of the Contract. The Contract Price shall include all applicable taxes and shall not be adjusted for any of these taxes.

- 22.1.3 The Contractor shall be deemed to be familiar with the tax laws in the Employer's Country and satisfied themselves with the requirements for all taxes, statutory contributions and duties to which they may be subjected during the term of the Contract.

- 22.1.4 In instances where discussions are held between the Employer and the Contractor regarding tax matters, this shall not be deemed to constitute competent advice and hence does not absolve the Contractor of their responsibility in relation to due diligence on the tax issue as per 3.21.2 above.

Tax Deduction

- 22.1.5 If the Employer is required to make a tax deduction by Law, then the deduction shall be made from payments due to the Contractor and paid directly to the Kenya Revenue Authority. The Employer shall upon remitting the tax to Kenya Revenue Authority furnish the Contractor with the relevant tax deduction certificates.

- 22.1.6 Where the Contractor is paid directly by the Financiers and the Employer is not able to deduct tax, then the Contractor will be required to pay the tax deduction to Kenya

Revenue Authority in the name of the Employer and furnish the Employer with an original receipt thereof as evidence of such payment. In absence of the said evidence, the Employer will not process any subsequent payments to the Contractor.

Tax Indemnity

- 22.1.7 The Contractor shall indemnify and hold the Employer harmless from and against any and all liabilities, which the Employer may incur for any reason of failure by the Contractor to comply with any tax laws arising from the execution of the Contract whether during the term of the Contract or after its expiry.
- 22.1.8 The Contractor warrants to pay the Employer (within fourteen (14) days of demand by the Employer), an amount equal to the loss, liability or cost which the Employer determines has been (directly or indirectly) suffered by the Employer for or on account of the Contractor's Tax liability arising from the Contract.
- 22.1.9 Where the amount in 3.21.8 above remains unpaid after the end of the fourteen (14) days moratorium, the Employer shall be entitled to compensation for financing charges.

SECTION V: SPECIAL CONDITIONS OF CONTRACT

The conditions of Contract – Special Conditions, shall be those forming Conditions of Contract for Construction, For Building and Engineering works Designed by the Employer, First Edition 1999, prepared by **Federation Internationale des Ingenieurs-Conseils (FIDIC)**.

Where in conflict, the provisions of these special conditions of contract shall prevail over those provided for in Part 1 – General Conditions of Contract

NOTE:

- i. The Contractor, through the Association of Consulting Engineers of Kenya (ACEK), shall be deemed to have procured a copy for his own use from: -

**FIDIC Secretariat
P.O. Box 86, 1000 Lausanne 12
Switzerland
Fax: 41 21 653 5432
Telephone: 41 21 653 5003**

- ii. These Conditions are subject to the variations set out in Part III hereof entitled "Conditions of Particular Application".
- iii. The Conditions of Particular Application take precedence over those of General and Special Conditions of Contract.

SECTION VI: TECHNICAL SPECIFICATIONS, SCHEDULE OF REQUIREMENTS

Notes

1. The goods to be supplied must be new and unused.
2. Delivery will be made to Kamburu Hydropower Station, Kenya, within 8 months from the date of award of contract.
3. Relevant descriptive literature of the Goods showing conformity to the technical specifications **must** be provided with the bid. **Irrelevant literature downloaded from the Internet shall not be accepted.**
4. These specifications describe the basic requirements for goods. Bidders are requested to submit with their offers the detailed specifications, drawings, catalogues, etc. for the products they intend to supply.
5. All the dimensions and capacities of the equipment to be supplied shall not be less than those required in these specifications. Deviations from the basic requirements, if any, shall be explained in detail in writing with the offer, with supporting data such as calculation sheets, etc. The procuring entity reserves the right to reject the products, if such deviations shall be found critical to the use and operation of the products.
6. The bidders are requested to present information along with their offers as follows: -
 - i) Shortest possible delivery period of each product.
 - ii) Information on proper representative and/or local workshop for back-up service/repair and maintenance/engine rebuild etc., including their **names and addresses.**
 - iii) Information and current price list of selected consumable spare parts likely to be used during the initial 2 years period of operation.
 - iv) Average fuel consumption rate on full load in litres per hour.

TECHNICAL SPECIFICATIONS

Abbreviations

1	ACB	Air Circuit Breaker
2	AGM	Absorbed Glass Matt
3	AVR	Automatic Voltage Regulator
4	BS	British Standard
5	CT	Current Transformer
6	DOL	Direct On-Line
7	ECM/ ECU	Electronic Control Monitor/ Unit
8	EDG/ DG	Emergency Diesel Generator
9	EN	European Committee for Standardization
10	HMI	Human Machine Interface
11	IEC	Electro-technical Commission
12	IED	Intelligent Electronic Device
13	IEEE	International Electrical & Electronic Engineers
14	LCD	Liquid Crystal Display
15	LED	Light Emitting Diode
16	MASB	Main Auxiliary Switchboard
17	MCCB	Moulded Case Circuit Breaker
18	O/U OR U/O	Over/ Under
19	OCP	over-crank protection
20	PLC	Programmable Logic Controller
21	RPM	Revolutions per Minute
22	RTD	Resistance Temperature Detectors
23	SCADA	Supervisory Control and Data Acquisition
24	STX	Station Transformer
25	TB	Terminal Block
26	TFT	thin-film-transistor
27	VGA	Video Graphics Array
28	XLPE	Cross-linked polyethylene

1. Introduction

This specification covers the minimum requirements for the design, engineering supply testing, installation, and commissioning of a new 500KVA; 415V; 0.8p.f; 50Hz, Emergency Diesel Generator (EDG) for Kamburu Hydropower Station.

2. Existing Systems

Kamburu Hydropower Station comprises three vertically mounted underground hydropower generators with ratings of 31.4MW each, giving a total installed capacity of 94.2MW. The plant was commissioned in 1974 and utilizes water from Masinga Dam on River Tana and River Thiba.

2.1 Main 415 Auxiliaries Switchboard

The 415Vac Mains Auxiliaries Switchboard (MASB) for Kamburu Power Station is housed in the main control building and supplies the power plant auxiliary equipment.

The 415 MASB has four feeders: station transformers (STX) 1 & 2, the 33kV Local Feeder (LF) and an Emergency Diesel Generator. The EDG is housed in a building separate from the main control building, referred to as the Diesel Generator Building or as in this document, the EDG House.

The 415Vac (MASB) consists of busbar A and busbar B. The busbar A can be supplied by the STX 2 and the EDG, while the busbar B can be supplied by STX 1 and the LF. Only one feeder supplies the busbar at any one time. The two busbars can be coupled by an Air Circuit Breaker that remains open in normal operating conditions. The coupler is closed only when all the feeders supplying a busbar are OFF. The configuration of the existing 415Vac MASB is as per drawing numbers A073/43 and KAM/E000208 (415Vac Unit Control Centre and Auxiliaries Switchboard).

The EDG powers critical auxiliary equipment in case of the loss of all the other feeders and is also required for Blackstart in case of a system blackout.

2.2 Fuelling System

The EDG is supplied by an outside 6820 litre fuel tank that is located next to the EDG house. The tank is complete with ON/OFF cork, combined filling and dip pipe with lockable cap, dipstick, duplex line filters and fuel contents gauge. The fuel filters are capable of being cleaned without dismantling or interruption of the fuel flow. Fuel is transferred from delivery road tankers to the storage tank at 450 litre/min by a 240AC electric motor driven fuel pump, complete with starter and pressure gauges.

3. Location and Environmental Conditions

3.1 Location

Kamburu Hydroelectric Power Station is one of the Power Stations operated by KenGen. It is located in Embu County, along the Embu-Kanyonyo road that joins the Thika-Garissa road, approximately 170 km from Nairobi and approximately 55 kilometres from Embu town.

3.2 Environmental conditions

The equipment shall withstand, without impairing the component function, the following ambient conditions:

1. Ambient air temperature
 - (a) Temperature range: +5°C to +50°C
 - (b) Indoor +40°C -1°C
 - (c) 24 hour average maximum +30°C -1°C
2. Humidity
 - (a) Relative humidity: 90 -100%
 - (b) Relative humidity: 85 % at 40°C
3. Altitude: Height above sea level 1000 m
4. EMC Class (IEC 61000) Industrial environments
5. Seismic coefficient 1.5
6. Rainfall conditions:
 - (a) Average 800-1700 mm/year
 - (b) Maximum 160mm in 24 hrs
7. Annual mean isokeraunic level: Max 180 thunderstorm days
8. Pollution (IEC 60815) Heavy: class II
9. The dew-point shall not be reached. If necessary, special measures shall be taken [cooling, fanning].

4. **Scope of Works**

The scope of work shall consist of the Design and Engineering; Manufacture, Factory Acceptance Testing; Transportation & Delivery of the 500KVA diesel generator set to site, i.e. Kamburu Power Station. It shall also include site works which shall comprise of the refurbishment of the existing EDG house and fuelling system, erection of the new equipment, testing and commissioning of the new and refurbished EDG system.

The bidder shall also provide test equipment for all the tests as well as onsite training for the client's staff. Likewise, the bidder shall provide technical documentation and warranty for the new EDG.

The scope of the works shall include but not be limited to the following activities; any other works required to ensure a well-functioning EDG system but not explicitly mentioned shall be the responsibility of the bidder:

1. Design, manufacture and engineering services of the new Emergency Diesel Generator systems. This shall include:
 - (a) Study of the existing EDG system and associated equipment at Kamburu Hydropower Station and interfacing to the existing power plant and control system.
 - (b) Design the new EDG system, including the alternator, diesel engine, the air intake and out-take systems, fuels oil system, engine starting system, governing system, the excitation system, battery and battery charging system, the anti-vibration system, etc.

- (c) Design of Complete EDG
 - i. Power panel complete with an MCCB and
 - ii. Local Control panel complete with HMI and other monitoring components for control and monitoring of the EDG, e.g. multimeter for voltage, current, power, energy, power factor monitoring. Panel illumination lamps, power sockets, pushbuttons, level, speed and temperature transducers, etc.
 - (d) Design of EDG protection system complete with protection numerical relay with all protection functions and adequate tripping and alarming settings. All the designs shall be sent to client for approval at each stage of design.
2. Factory acceptance testing of the EDG and fully assembled associated panels which shall be witnessed by two (2) client's engineers at manufacturer's factory. Factory Acceptance Test certificates shall form part of the final documentation.
 3. Supply of adequately rated cables and conductors, lugs, connectors, screws, nut bolts etc. required for retrofitting and other accessories which are necessary for satisfactory operation of complete EDG system though not individually or specifically mentioned herein.
 4. Supply of all piping and piping accessories required for connection of the inlet air, fuel, lube oil, exhaust and cooling systems.
 5. Disconnection and removal of existing EDG and associated equipment from the existing EDG House and transporting them to a designated location within the site. **Disconnection and removal of equipment shall only be done in the presence of the client's representatives.**
 6. All Civil and mechanical works required for correct mounting and installation of the new EDG and associated equipment in the EDG house.
 7. Installation of new panels with required mounting hardware, blanking plates, Glands, Earthing strip, relevant fabrication etc.
 8. Complete wiring/terminations, including wiring modifications, grounding etc. and also wiring modifications to include all logic as per existing EDG control and control system.
 9. Lube oil tank and associated system.
 10. Supply and installation of a Firefighting system for the DG and associated equipment.
 11. Anti-vibration pads of reputable make.
 12. Refurbishment of the existing EDG House and fuel storage tank and fuelling system. This shall include:
 - (a) Cleaning the fuel tank and piping off all sludge.
 - (b) Replacement of the fuel pump with a new one.
 - (c) Replacement of the fuel gauge with a new gauge.
 - (d) Supply of flameproof level switches for high as well as low level alarm and trip.
 - (e) Improving the fuelling system by fitting fuel cut-off fuse to close off fuel supply from the tank to the DG in case of fire.
 - (f) Painting of the EDG House and fuel tank, etc.
 13. Supply of first fill of lubricants, and consumables including fuel oil for commissioning up to the end of the defects reliability run.
 14. Supply of surface coating and final painting of complete system.
 15. Testing and commissioning of the modified and retrofitted new EDG system. These shall encompass all functions/logics in totality. The test equipment for the site acceptance tests

shall be provided by the bidder. Site Acceptance test certificates shall form part of the final documentation.

16. Replacement of any equipment or device e.g. Panel, Communication equipment, Software, relay, auxiliary relay etc. found defective during commissioning or defects liability period.
17. On job training and after commissioning training as detailed in Section E Clause 6.14 of specifications.
18. Provision of all final documentation as per Section E clause 6.15 and warranty for supplied EDG systems.
19. Supply and configuration of Software & Hardware for communication with EDG controls and other IED's.
20. Preparation of drawings and technical documentation as detailed section E clause 6.15, furnishing the client the above in softcopy as well as hardcopy (both A3 & A4 sizes for drawings).
21. Any other works and supply which could not be specified above but are necessary to complete the job shall be the responsibility of the bidder.

5. Codes and Standards

5.1 General

Ratings, characteristics, tests and test procedures, etc. for the electrical equipment encompassed by this Specification shall comply with the provisions and requirements of British Standards (BS) and standards of the International Electro-technical Commission (IEC) Or International Electrical & Electronic Engineers (IEEE) unless otherwise stated in Particular Technical Specifications.

Where the BS/IEC/IEEE standards do not fully cover all provisions and requirements for the design, construction, testing, etc. and for equipment and components that are not covered by IEC recommendations, The European Committee for Standardization (EN) standards or other recognised national/international standards LISTED BELOW shall be applied.

Other recognized national and international standards

- (a) American National Standards Institute -ANSI
- (b) International standardization organization - ISO
- (c) Japanese Industrial Standards – JIS
- (d) Japanese Electro-technical Commission – JEC
- (e) German DIN
- (f) American Society of Mechanical Engineers Relevant Test Codes and Appendices – ASME
- (g) American Society for Testing and Materials –ASTM
- (h) Kenya Energy Act and Rules

The latest revision or edition in effect at the time of Bid Invitation shall apply for all standards used or stated in this tender document. Where references are given to numbers in the old numbering scheme from IEC it shall be taken as to be the equivalent number in the new five-digit number scheme.

The Bidder shall specifically state the Precise Standard, complete with identification number, to which the various equipment and materials are manufactured. The Bid Documents do not contain a full list of standards to be used; they are only referred to where useful for clarification of the text.

Equipment meeting with any other standard, which ensures equal or better quality, may be accepted. Where the equipment conforms to any other standard, the salient points of difference between the standards adopted and the above standards shall be clearly brought out in the tender. A certified copy of such standard in English version shall be submitted along with the bid.

5.2 Applicable Standards

- (a) ISO 8528-1: Rotating electrical machines construction
- (b) IEC 60034-1, VDE 0530: rating & performance of rotating machines
- (c) ISO 8528-9: DG Vibration
- (d) ISO 8528-10 Noise levels
- (e) BS 5514: Diesel Engine
- (f) BS 2623: Alternators
- (g) NEMA MG1: Generator rating, construction, testing, and performance
- (h) IEC 60034-11, GB 755: Rotating electrical machines: built-in thermal protection, rules of protection
- (i) IEC 60529: Degree of protection provided by enclosure (IP CODE)
- (j) BS 5000: Rotating Electrical machines: dimensions & output
- (k) NEMA MGI -22, CSA22.2: Grounding & bonding equipment

6. **Technical Requirements**

6.0 General Requirements

The Emergency Diesel Generator and all associated systems shall be designed to ensure continuity of operation under all working conditions and to facilitate inspection, maintenance and repairs. All reasonable precautions shall be taken in the design of equipment to ensure safety of personnel concerned with the operation and maintenance of the equipment.

All components shall be adequately rated or sized for their most onerous duty and the specified ambient temperature. Due account shall be taken of any heat generated by the equipment therein and the components shall be appropriately selected, rated or de-rated as necessary to suit the most onerous operating temperature within the equipment. All equipment/components to be supplied must have spares available 20 years after installation.

6.1 Diesel Generator Specifications

6.1.1 *General:*

The Emergency Diesel Generator and all associated systems shall be designed to ensure continuity of operation under all working conditions and to facilitate inspection, maintenance and repairs. All reasonable precautions shall be taken in the design of equipment to ensure safety of personnel concerned with the operation and maintenance of the equipment.

All components shall be adequately rated or sized for their most onerous duty and the specified ambient temperature. Due account shall be taken of any heat generated by the equipment therein and the components shall be appropriately selected, rated or de-rated as necessary to suit the most onerous operating temperature within the equipment.

All equipment/components to be supplied must have spares available for the next 20 years after installation.

6.1.2 *Operational Requirements*

- (a) The Emergency Diesel Generator (EDG) shall be new rated at 500KVA, 415Vac, 4-wire, at 1500rpm speed. The diesel generator prime power shall be rated at site ambient temperature and environmental conditions, i.e. 400KW, at 0.8p.f lagging.
- (b) The EDG shall be capable of starting from cold condition.
- (c) The EDG shall be indoor type, designed for continuous operation. It shall be housed in the existing EDG building separate from the main control building.
- (d) The EDG shall be capable of satisfactorily providing an output 10% in excess of the rated output at the same speed for one hour in 12 hours continuous running without exceeding permissible temperature limits.
- (e) The DG shall be fitted with a Self-excited, self-regulated excitation system along with a fast response governor to ensure that the set comes to full speed & delivers rated output within 10 second after getting starting signal.
- (f) The design parameters of the generator and excitation system shall be such that the EDG is stable while running at any load between no-load and full load, sudden loss of load and also during starting of motors.
- (g) The governing system shall ensure minimum fluctuation during load changes. Inertia constant of the rotating system shall aid the governing system. Class A1 governing system preferably using wood ward PSG governor shall be offered.
- (h) Speed droop shall be continuously adjustable. Under transient operating condition, the time of return to within $\pm 3\%$ of steady state voltage when permitted step down load is suddenly applied shall be less than one second (assuming speed to be constant). Further the speed droop due to such loading shall be corrected to ensure 50Hz $\pm 1\%$ Hz within less than 3 seconds (momentary fluctuation in frequency shall be less than ± 1 Hz).
- (i) Motors re-acceleration schemes are not envisaged in case of Grid power failure & motors will be started again after starting of DG.
- (j) DG set shall meet the DOL starting requirement of induction motors.
- (k) The unit shall operate up to 120% of the rated speed over the entire range of output without undue vibrations and noise.

- (l) The EDG shall be capable of taking on min 50% load equivalent to its rated capacity in one step with no voltage dip and without affecting the frequency.

6.2 DG System Operation

The Diesel Generator shall be suitable for MANUAL START and AUTO START. In MANUAL START the Diesel Generator shall be started manually by an operator. In AUTO START the Diesel Generator shall start on receiving an impulse from under voltage relay.

6.2.0 *Starting time*

The total time from the receipt of starting impulse for diesel generator set till the diesel generator set reaches rated speed and rated voltage shall not be more than 10 seconds.

6.2.1 *Manual Mode*

- (a) This mode of operation shall be possible in both the REMOTE and LOCAL position of the REMOTE/LOCAL Selector switch located in Local Control panel.
- (b) In this mode of operation, it shall be possible for the operator to manually start the Emergency Diesel Generator from both:
 - (i) The Local Control Panel which shall be located in EDG Building and
 - (ii) The Common PLC Panel located Kamburu Control Room in the Main Control Building.
- (c) After carrying out all necessary checks, the operator shall give a closing command to the EDG Air circuit breaker (ACB) after the voltage builds up to rated voltage. It shall only be possible to close the EDG ACB after ensuring respective Transformer breakers and the Bus-coupler are in OFF position.

6.2.2 *Automatic Start (Automatic Main Failure scheme)*

- (a) Automatic mode of operation shall only be possible in REMOTE position of REMOTE/LOCAL Selector switch located in Local Control panel.
- (b) The diesel generator will normally be at rest and upon failure of normal supply, an impulse will be extended from an under voltage relay. Upon receipt of this impulse, the DG shall be started automatically and brought to rated speed and generator voltage brought to rated value.
- (c) All accessories required for starting and completion of various sequences of operation for the above purpose shall be provided.
- (d) In case the DG fails to start and run up on first attempt the engine cranking shall be repeated two more times. When engine does not respond to three impulses, it shall be locked out and an alarm issued. Contacts for repeat alarm shall be provided.
- (e) The bidder shall ensure that upon failure of supply, the EDG shall always be available within a maximum 10 seconds to take care of load. Suitable scheme to achieve this shall be developed by the bidder within the Main Control and protection Panel.
- (f) Immediately after the diesel generator reaches rated speed and rated voltage, a Voltage and Frequency monitoring relay located in Local Control panel shall give an impulse for closing the DG breaker.

6.2.3 Manual Test Mode

A facility for manually starting the diesel generator for routine testing shall be provided in the Local Control Panel. This shall be done by putting the LOCAL/REMOTE Selector switch in Local Position and by pressing the Push Button on the Local control panel. The scheme of operation shall be such that the closing impulse for Generator breaker shall not be issued.

6.3 Instrumentation & Control

6.3.1 Remote (SCADA) Control

- (a) It shall be possible to start, stop and monitor the DG remotely from the Kamburu Control room.
- (b) The following are the existing digital OP signals shall be provided for the existing PLC:

DG Digital Output Signals to PLC	
1	Diesel Generator Low Oil Pressure Alarm
2	Diesel Generator Overload Alarm
3	Diesel Generator High Engine Temp Alarm
4	Diesel Generator Low Oil Pressure Trip
5	Diesel Generator High Temp Shutdown
6	Diesel Generator Engine Fail To Start
7	Diesel Generator Overload Shutdown
8	Diesel Generator Over-current
9	Diesel Generator Standby Earth Fault
10	Diesel Gen. Stopped
11	Over-speed Trip

Table 3: DG Digital Output Signals to PLC

DG Analogue Output Signals to PLC	
1	Voltage (V)
2	Current (A)
3	Power(kW)
4	Energy (kWh)
5	Power factor (Cos ϕ)
6	Frequency (Hz)

Table 4: DG Analogue Output Signals to PLC

PLC Commands to EDG	
12	DG Remote Start Command
13	DG Remote Stop Command

Table 5: PLC Commands to EDG

6.3.2 Diesel Generator Fault conditions:

A minimum of the following conditions shall give an alarm and/ or initiate a trip of the generator at pre-set values:

Alarm Conditions

1. Lubricating oil low pressure alarm
2. Lubricating oil high temperature alarm
3. Fuel level warning (alarm) at 15%
4. Water high temperature alarm
5. Failure to start alarm
6. Battery voltage abnormal alarm

Trip Conditions

1. Lubricating oil low pressure trip
2. Lubricating oil high temperature trip
3. Generator under voltage trip
4. Generator over voltage trip
5. Fuel level low low (trip) shutdown at 5%
6. Engine over speed trip [if speed exceeds 20% of normal speed]
7. High stator temperature trip
8. Overload/ Over Current protection
9. Earth fault protection
10. Water high temperature trip
11. ECM Failure Trip

NOTE: The bidder is not limited to the above fault conditions.

6.4 Emergency Diesel Generator (DG) Protection Scheme

The contractor shall study the existing diesel generator system and associated equipment and formulate a comprehensive protection scheme. The scheme shall cover all existing protection functions and others deemed necessary.

The proposed generator protection schemes shall have (but not limited to) the following functions:-

- (a) Overcurrent protection
- (b) Earth fault protection
- (c) Reverse power
- (d) O/U frequency
- (e) U/O voltage

The protection relay outputs shall have tripping binary outputs to the existing EDG ACB. Dry contacts of the same shall be provided for annunciation at the common PLC.

Any operation of the protection scheme (Alarm and Trip) shall initiate a soft siren that shall be mounted on top of the diesel generator control panel.

Emergency Stop pushbutton and alarm reset buttons to be installed in the Local Control panel.

6.5 EDG Equipment & Accessories

6.5.1 *Engine*

- (a) The engine shall be turbocharged, multi cylinder 60°Vee diesel engine, equipped for cold starting and continuously rated for 400KW at an ambient temperature of 45°C.
- (b) The normal speed of the engine shall be 1500rpm and the direction of rotation clearly marked on the set.
- (c) One common base frame shall be provided for mounting the engine with flywheel and alternator, complete with foundation bolts, levelling screws, anti-vibration pads, etc.
- (d) The engine shall be constructed of cast iron with forced feed fuel injection and lubrication system.
- (e) The engine shall have a high compression ratio to ensure clean rapid starting in all conditions.
- (f) The suction and exhaust valves of the cylinder shall be well designed to offer minimum flow resistance for high air charging and scavenging efficiencies. The valve drives shall be force lubricated.
- (g) The piston shall be made of die cast aluminium and the head surface shall be force cooled with lubricant.
- (h) The connecting rod, crankshaft, crank shaft journal, cam shaft shall be induction hardened and all alignments shall improve efficiency.
- (i) The engine shall be flexibly coupled to the alternator and shall be provided with a coupling guard.
- (j) The governor shall regulate the speed to achieve stable performance. Control of the fuel injectors of the mechanically operated engine shall be via advanced electronic control, which shall be combined with carefully matched turbo-charging to give excellent fuel atomization to ensure low fuel consumption.
- (k) The engine shall have 120% over speed withstand capability, and an over speed trip facility shall be provided.
- (l) The engine shall offer high reliability; low fuel usage and low wear rates.

6.5.2 *Governing System*

- (a) The governor shall be an electronic governor capable of achieving steady state speed stability of ± 0.25 at any constant load.
- (b) It shall have a transient response of 15msec and shall be capable of both isochronous (zero percent) to four percent droop externally adjustable for remote speed control. The governor shall have following features:
- (c) The nominal speed shall be adjustable by $\pm 5\%$.
- (d) The rate of frequency variation shall not exceed 0.5 Hz. in every second.
- (e) An over speed trip mechanism shall be provided to shut-off fuel automatically in case the set reaches the over speed between 110% and 120% of rated speed.

6.5.3 *Flywheel:*

Flywheel shall be solid disc type with guard and shall be accurately balanced.

6.5.4 *Fuel system*

- (a) The EDG shall comprise of two fuel tanks: a day tank (inbuilt) connected to the existing external fuel tank that shall be refurbished during the installation works.
- (b) The day tank shall have sufficient capacity to keep the generator operational at full load for at least Six (6) hours. It shall be fitted with mechanical fuel level indicator to indicate low and high levels.
- (c) A self-adjusting direct injection type fuel pump and a manual fuel priming pump shall be provided for fuel supply.
- (d) The fuelling system shall be fitted with a fuel water separator/ fuel filter. This shall efficiently separate water and foreign matter from the liquid fuel to protect engine components from corrosion and contamination.
- (e) Pipe connection from fuel day tank to engine shall be such that the supply line directs fuel from the tank to the engine and the return line directs fuel from the engine to the tank. The fuel return lines shall enter the storage tank above the highest fuel level.
- (f) The day fuel tank shall be fitted with a ventilation pipe to prevent the build-up of pressure or vacuum during refilling and draining of the tank.
- (g) The tank shall be connected to an existing tank outside and adjacent to the EDG house. The connection of the existing tank to the DG inbuilt tank shall be via a fire safe fusible link valve. The fusible link shall be FM approved and ARRA compliant. The flow of the fuel into the inbuilt tank shall be via gravity.
- (h) Refuelling of the external tank shall be via a 240Vac motor driven pump. The contractor shall replace the existing pump with a new one of similar rating and specifications. The bidder shall refurbish the existing tank and piping as per Section E clause 6.14.4.

6.5.5 *Cooling & Exhaust System*

1) Cooling System

- (a) Engine shall be Radiator cooled type. The jacket cooling water shall be circulated by engine driven pump.
- (b) The cooling water system shall comprise of but not limited to the following:
 - (i) a heat exchanger,
 - (ii) make up tank with filling vent,
 - (iii) Drain connection,
 - (iv) isolating valve,
 - (v) gauge glass and low level alarm device,
 - (vi) pumps,
 - (vii) Flow indicator, etc.
- (c) Make up cooling water temperature shall be 35 °C.
- (d) All accessories required in the internal cooling water circuit like pipes, valves, flanges, supports, etc. shall be provided by bidder.

2) Exhaust System

- (a) The exhaust system shall consist of an exhaust gas driven turbocharger, exhaust gas silencer, necessary piping, adaptors, etc.
- (b) The exhaust piping shall be insulated using environmentally acceptable roping.
- (c) The silencer shall be flange coupled and shall have a damping level of at least 35dB (A)
- (d) The silencer shall be mountable in either vertical or horizontal position to exhaust the fumes outside environment.
- (e) The exhaust shall be made of steel 37-2 material and capable of operating with temperatures of up to 600°C.

6.5.6 Engine Starting System

- (a) Starting of diesel engine shall be through electrical starting system.
- (b) The Electrical Starting System shall comprise of starter motor, batteries and battery charger and all the necessary instruments and accessories.
- (c) Air Intake, Air intake filter and silencer shall be provided by the contractor.

1) Battery & Battery Charger

A Battery & Battery charger system with the following specification shall be provided for the EDG start up system.

(a) Batteries

- (i) Batteries shall be of 24V lead acid battery of Absorbed Glass Matt (AGM) Construction.
- (ii) The battery bank shall be of adequate ampere hour capacity for the EDG (at 10 hours discharge rate for supplying control power to control panel and starting power to engine starting motor).
- (iii) This shall come complete with connecting leads first charging and routine check, teak wood stand, floor insulators, cell supporting insulators, etc.
- (iv) It shall be possible to start the engine three times in immediate succession without appreciable drop in DC Voltage. The battery shall have a sufficient capacity to start the engine more than four (4) consecutive times.

(b) Battery Charger:

- (i) Battery charger unit shall be complete with unit transformer / rectifier with surge protection, DC ammeter, Voltmeter, Charge rate selector etc.
- (ii) The charger shall have two charging levels (floating & rapid charge).
- (iii) The charger shall be specially designed to operate with batteries in floating mode. It shall provide high performance and high quality level of regulation, reliability and also have short-circuit protection.
- (iv) The charger shall be adaptable to battery type and operating conditions.
- (v) The charger shall have a minimum of the following alarms connected to the local control panel for annunciation: input power supply failure, output voltage failure & charger failure.

(vi) DC voltmeters, centre zero ammeters, protective fuses shall be provided. Charger shall give constant DC output voltage irrespective of incoming voltage variation specified.

(c) Starter motor:

- (i) The starter motor shall be a 24Vdc starter of high performance and durability.
- (ii) It shall have over-crank protection (OCP) to protect the motor in adverse starting conditions such as low battery capacity, high starting circuit resistance or operator misuse.
- (iii) It shall have a positive-engagement shift mechanism to ensure pinion-to-ring gear engagement prior to cranking to minimise milled ring gears and pinions.
- (iv) The starter shall be splash-proof and environmentally protected from contaminants.

(d) Combustion Air intake system

- (i) Bidder shall offer an arrangement so that clean and cool charge air is available near the turbochargers. The following auxiliaries which are required for the air intake system shall be included:
 - Air intake silencer,
 - filters,
 - Dry type air cleaners and
 - fans
- (ii) The air filter shall be dry type replaceable element air cleaner with restriction indicator.
- (iii) An efficient air intake silencer shall be provided for reducing intake noise to acceptable levels.

6.5.7 Lubrication System

- (a) This shall be a Force Feed Lubrication System achieved by means of engine driven oil pump, replaceable, suitable type full flow oil filter.
- (b) An automatic lube oil temperature control shall be included for lubrication of engine.
- (c) An oil service tank shall be provided.
- (d) A Hand pump shall be included for maintenance purposes.
- (e) The lube oils used will generally comply with the additive class HD Supplement 1, Classification API and Viscosity Class SAE 20 / 40.
- (f) The Lubricating System shall be equipped with one gear pump driven by crankshaft delivering lube oil from service tank via relief valves, oil cooler and through system of coarse and fine filters to the engine. Filters shall be replaceable while engine is in operation.
- (g) Bidder shall supply all necessary auxiliary equipment for the satisfactory operation of the lubrication system.

6.5.7 Engine Control Module

- (a) The ECM shall be robust, manufactured by engine manufacturer.
- (b) It shall be of Protection class IP66k
- (c) It shall be supplied complete with PC link software, allowing configuration of ECM functions.

Engine Set Specifications Summary

Engine Set Specifications:	
Engine Rating	400kW
Air intake system	Turbocharged, after-cooled
Speed	1500rpm
Cylinder Arrangement	6, 60°VEE
Combustion System	Direct Injection
Air inlet	Mounted Air filter
Time required from cold start	10Sec
Interval between starting impulse	10sec
Number of starting impulses	3
Type of Governor	EFC (Electronic Fuel Control, A1
Guaranteed limits of governing	As per Class A1 BS 5514
Method of Aspiration	Turbo charged After cooled
Method of Cooling of Engine	Radiator cooled Engine
Method of cooling of Lubricating Oil	Water Cooled
Air Filter Cum Silencer	Dry type with replaceable paper element
Diesel Storage Capacity	At least 6hours operation
Cycles	4Stroke
Method of starting	24VDC
Compression Ratio	16:1
Rated speed	1,500rpm
Rotation	Anti-clockwise, viewed on flywheel
Cooling system	Water cooled, designed for ambient temperature of up to 50°C
Governing type	Electronic
Governing class	ISO 8528 G2
Starting	Key Start/ Auto-start
Protection for environment:	Filters on air inlet and air outlet (IP27)
Frequency Regulation, Steady State:	±0.25
Sudden Frequency Warp [100% Sudden Reduce]	≤+1%
Sudden Frequency Warp [Sudden Increase]:	≤-1%
Frequency Recovery Time [100% Sudden Reduce]	≤5s
Frequency Recovery Time [Sudden Increase]:	≤5s
Noise Level:	<80dB.

Table 6: Engine Set Specifications Summary

6.6 Alternator

- (a) The alternator shall be industrial type, designed for 500kVA, 415/240Vac, 50Hz, etc. provided with insulation Class of 'H' as stipulated by IEC 60085, with temperature rise limited to class 'F' and Degree of protection of enclosure shall be no less than IP 23.
- (b) The complete generator shall be provided with the universal tropicalisation suitable for operation in humid and dry tropical climate.
- (c) The alternator shall be of drip proof construction and shall be self- ventilated. The temperature rise shall be within the prescribed limits of class F insulation, when feeding a 10% overload for one hour during every 12 hour run of full rated load with the cooling air at ambient temp.
- (d) The alternator shall be mounted on common base frame together with the engine. No external supply shall be required during starting & running of generator.
- (e) The alternator shall be capable of carrying an unbalanced load of 25% without injurious heating of any part, provided rated current is not exceeded. The voltage unbalance consequent to 25% unbalanced load between phases shall not exceed $\pm 2\%$ of average terminal voltage, provided the power factor in any phase does not fall below 0.8.
- (f) The alternator shall have brushless self-exciter mounted on the same shaft with adjustable compounding to provide a flat or rising characteristic with load. The Alternator shall be externally regulated type with a voltage variation of $\pm 5\%$ of the rated voltage with $\pm 3\%$ frequency variation.
- (g) The alternator shall withstand a short circuit at its terminal for three seconds with excitation adjusted to develop rated voltage at no load without any damage. The sub transient fault current shall not exceed 15 times the full load current.
- (h) 240V Single phase space heater shall be provided in the lower part of the station frame. The arrangement shall be made such that space heater shall be cut out automatically, when the alternator starts running. During long periods of standstill, the windings shall be maintained in dry condition by thermostatically controlled tubular low-temperature heaters of sufficient rating. The heaters shall be fitted in the stator casing and wired out to a terminal box on the bed plate, which in turn shall be connected to the 240 volt single –phase supply.
- (i) Generator Winding RTD's shall be provided: 2Nos. per phase and 2Nos. Bearing RTD's. A Temperature Scanner for these RTD's shall be provided in Local control Panel. Contact of Temperature Scanner will be used for tripping the Diesel Generator Breaker. These RTD'S shall be suitable for early warning (alarms) and tripping stages.
- (j) The alternator shall be equipped with greased-for-life bearings.
- (k) Radio Interferences shall be maintained within the limits defined by applicable standards.
- (l) The alternator shall withstand short circuit current equivalent to its sub transient reactance for 3sec.
- (m) The stator winding shall be able to withstand overloads of up to 1.5times rating for short duration such as for 30secs, and also withstand the stresses caused by the maximum asymmetrical short circuit current.

6.6.1 *Excitation & Voltage Regulator system*

The exciter shall have rotating silicon rectifiers, auxiliary exciter of permanent magnet type, damper cage, static voltage regulator and compounding equipment. The voltage regulator shall be capable of maintaining its setting for long periods without adjustment. Means shall be provided for a limited degree of manual adjustment of the output voltage setting.

The exciter shall come complete with motorised pot-meter, a power factor control circuit, and a provision for remote control of voltage (raise/lower) in case of synchronising and required DC metering (field current & field voltage monitoring)

1) Excitation:

- (a) The excitation unit shall have necessary protection for field discharge and an easy arrangement to re magnetize in case of loss of residual magnetism.
- (b) The Excitation System shall be designed to maintain a short circuit current equivalent to the generator's sub transient reactance.
- (c) The excitation system shall withstand the 10% overloads for 1 hour in 12 hour intervals.
- (d) The excitation system shall withstand over speed of 120%.

2) Voltage Regulation:

- (a) A solid state type AVR (Automatic Voltage Regulator) shall be perform $\pm 0.5\%$ regulation (steady state). The response of regulator shall be such that the generator voltage is recovered to set value on application or rejection of rated load at rated Power Factor within a period of 0.5sec.
- (b) The field winding shall be fully insulated from the core. The field system shall have low inductance to allow good voltage regulation.
- (c) Voltage regulation should be maintained within $\pm 2.5\%$ from no-load to full load including cold to hot variation and any power factor from 0.8 to unity.
- (d) Further adjusting the set voltage up to $\pm 5\%$ of rated voltage shall be possible by a potentiometer that shall be provided for this purpose.

Alternator Specifications	
Number of Phases	3
Connecting type	3 phase 4 wire connections
Power Factor [Cos phi]	0.8
Speed:	1500 rpm
Voltage between Phases :	415/240V
Exciter type:	Brushless, Self-exciting
Regulation:	3 phase sensing
Insulation class :	H
Temperature rise:	F
Voltage Regulation Steady State:	$\leq \pm 1\%$
Alternator capacity:	500kVA.
Alternator Efficiency:	$\geq 90.3\%$
Air Cooling Flow:	0.514 m ³ /s
Duty :	Continuous
Winding protection	Space heaters
Voltage Regulation	$\pm 2.5\%$
Voltage Regulation Steady State	$\pm 0.5\%$
Sudden Voltage Warp [100% Sudden Reduce]:	$\leq +25\%$
Sudden Voltage Warp [Sudden Increase]:	$\leq -25\%$
Voltage Stable Time [100% Sudden Reduce]:	$\leq 0.5s$
Voltage Stable Time [Sudden Increase]:	$\leq 0.5s$

Table 7: Alternator Specifications Summary

6.6.2 Alternator Terminal Box:

- (a) All the six terminals of the generator shall be brought out; three on one side and three on the other side. Terminal box on one side shall be used for power connection, the other side similar terminal box serving as the neutral terminal box shall be provided for forming neutral. The neutral shall be solidly earthed.
- (b) Current transformers shall be accommodated in neutral side terminal box of the Diesel generator to provide protection to the generator. The number and type of CT's to be accommodated in neutral terminal box shall be decided by bidder. The neutral terminal box shall be spacious enough to accommodate CT's. In case an additional extension box is required, the same shall also be provided.
- (c) Terminal Box shall be well sized and easily accessible, suitably situated on the generator side. Bidder shall provide suitable clamping arrangement for connecting power cables to the terminals. The terminals shall be suitably enclosed to prevent short circuits by rodents etc. Degree of protection for the terminal boxes shall be IP55.

6.7 Anti-Vibration Mountings

- (a) Anti-vibration mountings shall be provided between the frame and the EDG
- (b) The anti-vibration mountings shall provide isolations of at least 85% with equipment of normal speeds of 1500rpm.
- (c) The anti-vibration mountings shall be corrosion and oil resistant, durable.
- (d) The mountings shall have an integral failsafe design with resilient stop; it shall withstand shock loads of up to 2g without plastic deformation.

6.8 Engine – Alternator Coupling:

- (a) The Engine and the Alternator shall be coupled with a fully flexible power coupling with suitable coupling guard.
- (b) The Coupling shall withstand wide temperature range and should ensure constant alignment.

6.9 Earthing (Grounding)

- (a) There shall be exposed and accessible Earthing bars in all panels connected to the existing station Earthing/grounding system. Cables shall be earthed and shielded in accordance with earthing philosophy worked by contractor. All connections between equipment and the Earthing network shall be exposed (not embedded) and easily accessible for checking of the transition points.
- (b) Contractor shall take the necessary measures and furnish the required material for the safe Earthing of:
 - All steel structures, metal parts and overhead ground wires.
 - All metal parts, even if these do not constitute a conducting part of an electric system of the plants, such as machinery, operating desks, piping, sewers, rails, metal tanks, lighting, fixtures, cable racks, etc.
 - All operational electric systems such as power and instrument transformers, etc.

6.10 Power & Control Panels

6.10.1 *Power Panel*

- (a) This shall be mounted conveniently to house the EDG alternator's winding output terminals.
- (b) The panel shall be of protection class IP 3x
- (c) A Panel mounted emergency STOP pushbutton shall be provided for tripping the engine manually
- (d) The panel shall house:
 - (i) The circuit breaker (MCCB/ ACB) of correct rating: 800A
 - (ii) Power cable terminations: cables from EDG & cables from Main 415 Switchboard.
 - (iii) Current Transformers
- (e) The Moulded Case Circuit Breaker (MCCB) shall be fixed type breaker. It shall be equipped with under voltage release, safety shutter and shunt trip.
- (f) Minimum MCCB requirements are tabulated below in Table 6.

Description	Rating
Rated current (A) @50°C	800
Rated insulation voltage U_i (V)	800
Rated operational voltage U_e (V) AC (50Hz)	440
Number of poles	4
Rated ultimate breaking capacity I_{cu} (kA rms)	200

Table 8: MCCB Minimum Specifications

6.10.2 Local Control Panel

- (a) The DG Local Control panel shall be mounted in DG house and shall be of free standing type.
- (b) The panel shall meet the specifications outlined below in section 6.10.3
- (c) It shall be possible to start and stop the unit manually from this panel and monitor DG parameters (temperatures, pressures, levels, speed), status and alarms.
- (d) The control panel shall house the following components:
 1. A Programmable Logic Controller,
 2. Engine Control & Monitoring Panel
 3. A touch-screen panel (HMI)
 4. Protection relay – numerical type
 5. LOCAL/REMOTE control selector switch
 6. ON/OFF key operated selector switch - for isolations
 7. DG START/STOP PB (with integrated LED)
 8. Emergency stop pushbutton
 9. An Automatic Voltage Control Unit
 10. Indicator LED lamps for the supplies: diesel engine, mains and standby.
 11. Electrical overload device
 12. Temperature Scanner
 13. Battery charger, Battery charger ammeter and switch
 14. Auxiliary relays for control
 15. Auxiliary/ instrument supply MCBs and fuses
 16. Breaker LED Status Indication Lamps (ON,OFF, Trip)
 17. Terminal blocks for Digital and analogue signals
 18. Siren – audible alarm
 19. Indication Instruments
 - (a) A multifunction meter with display capable of displaying: Line and phase voltages and currents, Power (kW, kVA, kVar) and energy generated (KWH), Power factor, frequency, hour meter, etc.
 - (b) Running Hour meter
 - (c) Dial type thermometers for water & lube oil with alarm and trip contacts.
 - (d) Pressure Gauge with alarm & trip contacts.
 - (e) RPM indicator, Tachometer, and Tacho-generator
 - (f) Transducers: temperature, pressure, fuel level.

(e) The HMI Touch-screen Display

- (i) This shall be for display and control of the diesel generator.
- (ii) It shall be flash-mounted in the front side of local control panel.
- (iii) The HMI display shall be of minimum LCD screen size no less than 5.7", colour TFT and VGA resolution with a white LED background.
- (iv) The HMI panel shall have the following communication protocols: Ethernet RJ45, S-Bus RS232/485, and USB client.
- (v) It shall be possible to monitor the status of the DG: alarms, event logs, measurements, etc. on different dedicated screens on the HMI.
- (vi) It shall be possible to monitor the following parameters (but not limited to these) on the HMI:
 - 1. Voltage (V)
 - 2. Current (A)
 - 3. Power (kW)
 - 4. Energy (kWh)
 - 5. Power factor (Cos ϕ)
 - 6. Speed (% and RPM)
 - 7. Service hour
 - 8. Oil temperature ($^{\circ}$ C)
 - 9. Oil pressure (Bar)
 - 10. Water temperature ($^{\circ}$ C)
 - 11. Battery voltage (V)

6.10.3 *Panel Construction and Installation*

- (a) Panels shall be of robust construction, formed of a steel frame and covered with smooth steel plate. The steel plate shall be folded sheet steel of not less than 2.5mm thick and properly stiffened to prevent distortion.
- (b) Panels shall normally be covered at their rear with hinged doors. The frames of the boards and panels shall be designed to permit firm anchoring on the floor. The frames shall permit easy erection.
- (c) Panels for power circuits shall be in accordance IEC 6034 (minimum partly type tested apparatus (PTTA)). All enclosures shall be ventilated so that the temperature inside the enclosure do not rise more than 50 above ambient even with heaters connected.
- (d) The panel shall be provided with 240V, 50Hz. 15 A, 3 pin British type universal socket with switch. The socket with switch shall be mounted inside the panel at convenient location.
- (e) All major or important compartments containing electrical equipment shall be provided internal LED Lamp lighting fixture rated for 240V AC supply, controlled by panel door switch and fuse. The number of such lighting fixtures shall be 1 no. per panel compartment.
- (f) Unless otherwise specified or agreed upon, all instruments, apparatus and devices on the panel fronts shall be provided for flush mounting.
- (g) Panels with flush mounted devices shall be provided with transparent cover. The cover shall be a hinged to allow resetting and adjustment.

- (h) All terminals and all equipment shall be accessible without dismantling other components. Equipment shall not be mounted in swing-out doors. However, proper swing out frames may be used provided they can be opened will full load without twisting or distorting the panel. Windows shall be provided in front of rack mounted equipment.
- (i) All panels, boards and cabinets doors shall be provided with handles and key operated locks. All doors and removable covers shall have gaskets all round with neoprene gaskets, ventilating louvers with screen and filters.
- (j) The new panels shall be constructed to fit in the existing space where the current panels, boards & cabinets are located with cable entry from bottom.
- (k) They shall have easy access to the wiring inside through the rear side of the panel.
- (l) The panels shall be factory wired with the reception terminal blocks for connection to the instrumentation transformers, circuit breakers tripping coils, alarm circuits and plant equipment.
- (m) The panels shall be mounted on approved form of anti-vibration mounting.
- (n) Relays, electronic cards and devices shall be identified with labels permanently attached to the device. All relays shall be firmly supported on their bases to avoid mal-operation due to vibrations when the unit is running.
- (o) The bottom of the panels shall be sealed by means of removable gasketed steel plates. Gland plates for the bottom entry shall be at least 100mm above the floor.
- (p) A base plate for each panel shall be provided not exceeding 10cm in height.
- (q) All panels shall incorporate a common internal copper Earthing bar onto which all panel earth connections shall be made. Suitable stud or holes with the right screws shall be provided for connection to the main earth.
- (r) Appropriate eye bolts shall be provided to facilitate for easy lifting of the panels.
- (s) Panels and switchboards shall be labelled on the front and back at the top.
- (t) Marshalling cabinets, panels or boxes containing terminal blocks only shall be at least 600mm wide with a hinged door/s.

6.10.4 Wiring within Panels

- (a) All wiring shall be stranded flexible copper conductor with steel armoured and PVC insulated cable, suitable for operation at voltages below 1000 V and in compliance with the provisions of the applicable IEC Recommendations. Conductors shall not be smaller than 2.5 mm² for current & voltage transformer circuits and 1.5mm² for all other control circuits. The selection of conductor sizes for current transformer circuits shall be supported by calculations.
- (b) Wire runs shall be neatly arranged in trunks and properly clamped Wiring shall be securely supported, neatly installed by lacing and tying, readily accessible and connected to equipment terminals and terminal blocks. Flame retardant, plastic wiring channels/troughs with strap on plastic covers shall be used for this purpose. Sufficient space in channel for modification of wiring shall be kept. For wiring within boards the "bunch" pattern shall be adopted. Ample space shall be provided for running of cable within the enclosures.
- (c) The screens or screened pairs of multicore cables shall be earthed in accordance with a coherent Earthing philosophy to be worked out by the bidder and approved by the Project Engineer. The screen and earth wires shall be terminated in terminals

- dedicated for this use. All free conductors in connecting cables shall be terminated in terminals that shall be temporarily connected to earth and special marked.
- (d) Multi-stranded conductor ends shall be fitted with a suitable crimped thimble (bootlace ferrule type). The thimble shall be of correct type and length according to the core size and crimping tools shall be specially adapted to the thimble and cross section used. Each wire shall be separately terminated unless otherwise approved.
 - (e) All connections shall be made at numbered terminal blocks; joints, splicing or paralleling of wires will not be accepted.
 - (f) Accidental short circuiting of certain wires is likely to result in malfunction of equipment, such as closing or tripping of a breaker or positive and negative wires, these wires shall not be terminated on adjacent terminal blocks.
 - (g) It shall be possible to work on small wiring for maintenance or test purposes without making a switchboard/panel dead.
 - (h) Wire termination shall be made with solder less crimping type of tinned copper lugs which firmly grip the conductor. Insulation sleeves shall be provided at all the wire terminations.
 - (i) Engraved core identification plastic ferrules, factory marked to correspond with panel wiring diagram shall be fitted at both ends of each conductor. Ferrules shall fit tightly on the wire and shall not fall off when the wire is disconnected from terminal blocks. These markers (ferrule) shall be of an approved type attached to the conductor insulation.
 - (j) The wire numbers shown in the wiring diagram shall be in accordance with BS152/BS156.
 - (k) The ferrules shall be factory numbered, indelibly marked by engraving with black letter on a white background PVC castings. All wires directly connected to trip circuit breaker or devices shall be distinguished by white letter on a red background PVC castings
 - (l) The method of ferruling shall be subject to approval by the Employer; It is however preferred that the Wire marker (ferrule) correspond to both origin device/terminal block terminal Number and destination device/terminal block terminal Number or correspond to position in the drawing. If single numeric digit ferrule is to be used Number 6 and 9 shall not be used.
 - (m) The unused space on the front or rear of the panels shall be kept clear of wiring to facilitate addition of devices without rewiring associated portion of the panels.
 - (n) The contractor shall be responsible for the completeness and correctness of the internal wiring and for the proper functioning of the connected equipment.

6.10.5 Terminal blocks

- (a) All wiring shall terminate at terminal blocks, the terminal blocks shall be of the moulded type not less than IP20 and provided with barriers to separate power from control cables. It shall be possible to replace a single terminal block without dismantling a whole column. They shall be clearly marked, the designations being those entered in the respective wiring diagrams. ALL terminal blocks shall be capable of receiving 2.5mm² conductors.
- (b) Terminal blocks for auxiliary power supply AC/DC, CT, CVT and VT secondary leads in addition to features above shall:
 - (i) Be 1100 V grade, at least 45 amps rated, one piece moulded, complete with insulated barriers, stud type, melamine housing brass terminals, washers, brass nuts and brass lock nuts and identification strips;
 - (ii) be provided with test links and isolating facilities; be separated and specially marked for each function;
 - (iii) be equipped with a sliding splice for separation and “banana” sockets on both sides for testing;
 - (iv) be so arranged that they fall into closed position when loose;
 - (v) Have CT terminal arranged in a manner to allow connection of additional circuit in series;
 - (vi) be covered with easily removable Protective transparent plastic covers and;
 - (vii) be suitable for connecting conductors of minimum cross sectional area of 4mm²
- (c) Knife disconnect terminal blocks shall be used for circuits other than VT, CT & auxiliary supply described above. These terminal blocks shall have two slots on both sides of the knife disconnect or for inserting shorting plugs and test plugs. Two Female “banana” test plugs shall be provided for each test block. Terminal blocks for control wiring shall be rated not less than 600V AC.
- (d) Only one conductor shall be connected to each side of a terminal block and the branch-offs shall be made by interconnecting the necessary number of neighbouring blocks by means of copper strips.
- (e) Terminal blocks using screws acting directly on the wire (conductor) as well as spring type terminal blocks are NOT acceptable. To avoid squeezing of the wire the screw pressure shall be applied by a pressure plate having smooth edges. ‘OBA’ terminal blocks are not acceptable. Only terminal blocks that are operated using screw drivers are acceptable.
- (f) Terminal blocks for different voltages SHALL NOT be mixed between one another. All conductors in a multi-core cable shall be terminated on the same terminal block if they are of the same voltage. The blocks shall be grouped for each voltage and they shall be clearly marked for easy identification of the system voltage. Terminations on T.B. shall be grouped function wise on one region of T.B. (may not be full T.B)
- (g) There shall be at least 20 % spare terminal blocks on each block.
- (h) All spare contacts/terminals of the panel mounted equipment and spare cores/conductors of cables terminated in a panel shall be wired up to terminal blocks with ferrule numbers starting with U.
- (i) Moulding materials making up the terminal blocks shall be self-extinguishing or resistant to flame propagation, substantially non hygroscopic and shall not carbonized

when tested for tracking. The insulation between any terminal and frame work between adjacent terminals shall with stand test of 2kV RMS for one minute. The moulding shall be mechanically robust to withstand handling while making terminations.

- (j) Terminal blocks shall be located at least 300mm from the bottom of the panel and shall be easily accessible. All terminal blocks shall be vertically oriented in a panel; horizontally aligned terminal blocks shall NOT be accepted. Marshalling Panels containing terminal blocks only shall be at least 600mm wide.
- (k) Each Individual Terminal Block shall be marked with a distinctive Number, which shall be the same Number used in the drawings, for identification purposes. The TB number shall be engraved in black numbers in white background.
- (l) Each set of terminal Block shall be identified by a label to distinguish it from another set of terminal block with similar Numbers for the individual terminal blocks. The labels used will match those used in the drawings.

6.10.6 Phase arrangement

- (a) The standard phase arrangement when facing the front of the panel shall be L1-L2-L3-N, and L-N from the left to right, from top to bottom, and front to back for A.C three-phase and single-phase circuits.
- (b) For DC circuit it shall be N-P from left to right, P-N from top to bottom and front to back. All relays, instruments, other devices, buses and equipment involving three-phase circuit shall be arranged and connected in accordance with the standard phase arrangement wherever possible.

6.11 Interfacing to Existing Systems

6.11.1 Interfacing to Plant Control System

- (a) Kamburu power station has a PLC for control of the common auxiliaries' systems referred to as the Common PLC herein denoted to as CPLC. The CPLC is connected to a SCADA server for remote operations and monitoring.
- (b) All existing and new signals shall be hardwired to the PLC. Potential free contacts shall be made available and wired to the external interface terminal block for connection to the existing 415V Main Auxiliary Switchboard and CPLC panel for signals. These potential free contacts shall be made be used for the existing signals listed in Table 1, 2 & 3 in clause 6.3 above and for new additional signals. Interfacing to the SCADA shall be done in conjunction with the client's engineers.
- (c) The EDG controls and protection systems shall be interfaced to plant control system by hardwiring as per particular specifications.
- (d) The Contractor shall give his intended signal list which the client shall examine and review. The signal list shall be agreed upon at the design stage. The Final list shall include all signals necessary for plant monitoring and fault analysis and shall consist of events, alarms, trips, commands and analogue values.
- (e) All tripping outputs will be hard wired. Hardwiring will take precedence and all important signals including those not explicitly mentioned in the particular specifications but required for optimal operation and monitoring shall be provided.

6.12 Power & Control Cables

General

- (a) Cables shall be wound on strong drums arranged to take a round spindle of a section adequate to support the loaded cable drum during installation and handling.
- (b) The drums shall be lagged with closely fitting battens that shall be securely fixed to prevent damage to the cable. Wooden drums shall be constructed of seasoned timber to prevent shrinkage of drums during shipment and subsequent storage at site. Each drum shall be clearly marked including indication of direction of rolling.
- (c) The ends of the cables shall be suitably sealed to prevent ingress of moisture. The end of the cable left projecting from the drum shall be securely protected against damage by mishandling during transport and storage.

6.12.1 Power Cable

- (a) The bidder shall supply the new EDG complete with a multicore cable with copper conductor, XLPE Insulated, Armoured and PVC Sheathed. The power cable shall be of adequate rating capable of withstanding 120% of rated current and conform to IEC 60502.
- (b) The cable shall be a four (4) core cable with copper conductor.
- (c) The conductor shall be plain circular, compacted stranded copper of the highest quality to conform to IEC 60228 standard.
- (d) The cable XLPE insulation shall be rated at 90°C.
- (e) The cable sheath shall be made of PVC type ST2 that conforms to IEC60502 standard.
- (f) The four core insulated conductors shall be laid d up together and filled with non-hygroscopic material compatible with the insulation and covered with a layer of PVC bedding.
- (g) The armour shall be made of galvanised steel wire applied over the PVC bedding.
- (h) The cable shall have high partial discharge withstand and overload current withstand capability as well as high moisture resistance.
- (i) The power cables provided shall run from the DG room through an underground cable duct to the 415Vac Main Auxiliary Switchboard covering a distance of approx.160m.

6.12.2 Control cables

- (a) It shall be the duty of the contractor to make a detailed study of the systems to be interfaced so as to size the cables properly in order to fit available cable trays and pathways and at the same time fulfil all required functions.
- (b) It shall be the responsibility of the contractor to remove the existing cables and transport them to a designated storage area within the site. The cables shall be removed in the presence of the client's representative.
- (c) The cables linking the new Local Control panel to other equipment and existing systems shall be new correctly rated armoured cables.

- (d) All cables shall have 1100V grade single core multi strand flexible copper conductor wires with HRPVC insulation and shall be flame retardant, vermin and rodent proof.
- (e) All conductors shall be stranded copper. The conductor shall be clean, uniform in size, shape and quality, smooth and free from scale, splits, sharp edges and other harmful defects. The conductor shall be in accordance with IEC 60228. The conductor shall be filled with swelling powder to stop axial ingress of moisture.
- (f) The maximum continuous current carrying capacity and maximum permissible continuous conductor temperature, and the factors for determining such rating and temperature shall be based on recommendations found in IEC 60287, subsequent amendments and all conditions prevailing on the Site.
- (g) All conductors cross section must be checked against maximum load current, allowable burden on measuring transformers, short circuit values, voltage drop, protection requirements and selectivity. Conductors however shall have minimum cross sections as follows:
 - (i) Measuring cables from VT & CT output - 2.5 mm²
 - (ii) Control and other measuring cables - 1.5 mm²
 - (iii) Power cables according 120 % max load current
 - (iv) Analogue signal cable-shielded twisted pairs-1.0mm²
 - (v) Networking cables- shielded twisted pairs -CAT6
- (h) Colour coded wires shall be as per IEC 60445 and IEC 60227-1(brown, Black, Grey, Blue) shall be used for CT, VT and CVT secondary connections.
 - (i) The standard phase colours for AC supply conductors including CT & VT output are: Brown for L1 phase, Black for L2 phase, Grey for L3 phase, Blue for neutral and Green with yellow stripe for Earth/ground wires.
 - (j) For auxiliary DC Supply, Red for Positive and black for Negative. Conductors for instrumentation and control signals shall be numbered clearly along the whole cable length for easy identification.

6.13 Inspection and Testing

The Diesel Generator, components and assemblies of the control and power Panels shall be tested in accordance with the relevant IEC Standards to verify compliance with the requirements of the Standards and Specification.

6.13.1 *Type Test*

- (a) The EDG offered shall be fully type tested as per the relevant standards. Type Test certificate not older than 5 years shall be supplied along with offer by the bidder.
- (b) Type tests for the DG from a third party reputable testing laboratory or certified by the National Standards and Testing Authority (NSTA) or a laboratory accredited to the NSTA shall be submitted with the tender for evaluation purposes.
- (c) The employer reserves the right to demand repetition of some or all the type test in the presence of the client's representative. If so required they shall be included in the factory acceptance tests. Bidder should make provisions for that.

6.13.2 Factory Routine Tests

- (a) The client shall witness the factory tests.
- (b) Routine tests as per BS 5514, ISO 3046 II & III, IEC 34-1 shall be carried out on bare engine and alternator in presence of Third Party Inspection Agency (TPIA).
- (c) The DG, control and power panels shall have functional tests carried out at the factory before dispatch to prove that all components operate together as a system and that all operations and device responses are satisfactory. It shall be the responsibility of the contractor to provide test boxes and other test equipment for sufficiently comprehensive tests.
- (d) All cubicles shall be subject to inspection during manufacture and on completion to verify compliance with all the requirements of the Specification, including surface finish and insulation resistance.
- (e) Tests shall include but not limited to:
 - 1. Visual Checks: General Check of the control panel in respect of dimension, finishing, construction, wiring & ferules verification lay out equipment on the panel, make and rating of instrument etc.
 - 2. Industrial frequency dielectric test
 - 3. Insulation Resistance as per relevant IEC standards
 - 4. Dielectric strength as per relevant IEC standards
 - 5. No load test
 - 6. Efficiency calculation
 - 7. Operational tests: Operation tests on all equipment to prove correctness of wiring of various circuits including indications, alarms, operation of DG and annunciation etc.
 - 8. Setting range and Functional tests

6.13.3 Site Tests

- (a) The Contractor's test schedules shall include comprehensive check lists for testing of the EDG.
- (b) The preliminary tests shall include the following:-
 - 1. Insulation resistance measurements at the specified voltages appropriate to the circuits and equipment.
 - 2. Auxiliary supply checks
 - 3. Instrument tests
 - 4. Dummy load test
 - 5. Earthing protection test
 - 6. Battery charger output test
 - 7. Step load acceptance test
 - 8. Noise level measurement
 - 9. Signal Test: Proof of correct connection and continuity of wiring for all control, protection, auxiliary and alarm equipment in accordance with the overall diagrams as provided by the Contractor.
 - 10. Functional tests to prove that all controls and protection functions operate together as a system and that all tripping signals and device responses are satisfactory and reach the desired equipment including operation of

relevant CB's. It shall be the responsibility of the Contractor to provide test programme and test equipment for sufficiently comprehensive tests.

11. Tests of all indications, displayed quantities and analogue outputs to show such items are accurate.
- (c) The Tests on Completion shall include the following:
1. Demonstration that the DG functions well, alarms/trips and indications operate correctly.
 2. Demonstration that all protection trips to the control system and Shutdown controls operate correctly when the DG is running.
- (d) The Contractor shall submit for approval a Commissioning Programme at least one week before installation. The Commissioning Programme shall include, as a minimum, the following:-
1. List of the site test for all DG systems and associated power equipment
 2. Procedures and methods for each commissioning test including those to be performed on-load.
 3. Testing equipment and instruments necessary for performing of each test
 4. Format of site test reports for each test.

6.14 Site Works: Installation, Testing & Commissioning

The scope work under this section includes site work of installation & commissioning of engine, generator assembly, electrical panels, battery station, associated cabling, earthing, piping, fuel pumps, refurbishment of the fuel tank and accessories, refurbishment of the EDG house, safety appliances (like rubber mats, carbon extinguishers etc.). All necessary erection materials such as cable racks, trays, angles, chemicals etc. required for the correct operation of the DG Set are included in the scope of work.

6.14.1 *Health, Environment and Safety*

- (a) The Contractor shall follow all Kenyan rules and regulations related to workers' safety and health as well as regarding protection of the environment.
- (b) The Contractor shall be responsible for equipping all his workers and his/her subcontractors with necessary safety equipment such as helmets, eye protection glasses, safety shoes and safety belts and enforcing the use of such. Nobody will be allowed to work in the client site without proper personal protective equipment.
- (c) No toxic material (such as Halon, PCB, and Asbestos, etc.) shall be utilised neither during construction nor under operation and maintenance.
- (d) The Contractor shall at all times during the course of work prevent accumulation of debris caused by the work. He shall also remove all debris and temporary structures when finishing the work.
- (e) The Contractor shall carry out all erection, testing at site and commissioning of the new equipment detailed in the Specifications. The Contractor shall perform all electrical, mechanical, civil works and furnish materials that might be necessary during the installation and mounting of the new EDG equipment.
- (f) All work, methods of work and workmanship, whether fully specified herein or not, shall be of the highest order in all respects; the generally accepted requirements and

commonly recognised good practice for first class work of the nature are to be adhered to.

- (g) The Contractor will make all materials, tools and equipment necessary for installation, testing and commissioning of the works available. The Client will be responsible for clearing and bonding [with Kenya Customs Department] of the installation and commissioning tools & equipment on receipt of Airway bill or Bill of Landing, list of tools & equipment with serial numbers, PFI [proforma invoice clearly marked 'Value for 'Customs Purposes Only' and must show the price of each tool & equipment and extension thereof]. The Contractor shall meet the cost of shipment in his country while the Client will meet the cost of return shipment in Kenya.
- (h) Contractor shall manage the works in person. He/she is expected to be available throughout the project execution or to be represented by an equally qualified person. Works will proceed when the stated person is present on site.
- (i) The Contractor shall provide all staff, such as engineers, supervisory staff, skilled and unskilled labour necessary to carry out and complete the Contract Works on schedule as specified. Information regarding site staff shall be provided to the project manager
- (j) Client will provide staff who will be attached to the contractor throughout the project; the number and scope of client staff shall be discussed with contractor prior project take off to allow the contractor to plan. Client's personnel shall be involved in every aspect of the project.
- (k) Work shall only be carried out in the time of day approved by the project engineer. No work shall be carried out in absence of client personnel
- (l) Removal of old equipment, panels and cables shall be carried out under supervision of the client. No equipment shall be removed without the presence of the client's representative. All existing equipment shall be the property of the client.
- (m) It shall be the responsibility of the contractor to transport the old equipment to a designated storage area within the site.
- (n) The contractor shall indicate the period required at site to install and commission the equipment.
- (o) The contractor shall carry out interface to the existing system under supervision of the Client engineers. Client engineers shall carry out software development (programming/configuration) of existing SCADA system to accommodate new signals and features of the new EDG. Contractor shall provide full support to client engineers in respect to configuration and programming of all IED'S supplied under the contract.
- (p) The winning bidder shall avail experienced commissioning engineers for testing at site. Functional tests shall be inherent in all test procedures. The Contractor shall record the test results in an approved form in such a manner that the test reports can be used as the basis for future maintenance tests. Test methods, test equipment and test equipment calibration details shall be noted on the test sheets.
- (q) Commissioning shall be carried out by the Contractor in the presence of the Employer's engineers. The Contractor shall prior to commissioning draw up a detailed commissioning schedule for approval showing the sequence to follow step by step in all connections. Client will then include tests related to the modified

existing control system as part of commissioning schedule and forward to contractor to create a final schedule to be approved by the client. Switching of energized components will be performed by the Employer.

- (r) Client commissioning engineer at site shall keep a copy of complete record of the test results. One copy of corrected drawings shall be kept at site after commissioning
- (s) A complete final test report in four (4) sets shall be handed over to the Project Manager not later than one month after the Plant being commissioned.
- (t) At the completion of the Contract, the Employer reserves the right, at his discretion, to take over tools, special tools, test equipment (not included in the bid document) and other construction equipment used by the Contractor in connection with the Contract, at depreciated prices to be mutually agreed upon at that time.

6.14.2 Equipment Pre Installation Work

- (a) Removal of packing material and clearance, removal of blocking devices provided for safe shipment.
- (b) Physical inspection, preparation of defect lists.
- (c) Assembly of shipping sections.
- (d) Civil work involved in grouting the equipment base frames, concrete chipping, grouting for wall, roof, floor supports wherever required for piping, cabling etc.
- (e) Tack welding of equipment, panels etc., to floor inserts wherever provided and providing floor inserts wherever required for erection work.
- (f) Applying touch paints for finish painted equipment's and finish painting of site fabricated steel work after pre-treatment like de-rusting, degreasing, primer coating etc.
- (g) All pre-wired panels shall be checked for correctness as per final approved wiring diagrams.
- (h) Trouble free mechanical operation and site testing of relays, contactors, timers, breakers and free rotation of all drive motors be checked.
- (i) Tightness of all bolts joints in busbars, motors, generator, engine etc., shall be checked.
- (j) Insulation resistance of all electrical equipment's shall be measured and improved by cleaning and drying.
- (k) Duplicate earthing shall be provided for all electrical equipment's, cable glands, tanks, and vessels etc.
- (l) Generator neutral shall be directly connected to pipe / plate electrode using insulated cable.
- (m) Earth ring inside DG Set shall be formed and connected to plant earth grid at minimum two points for DG Set to be provided by the contractor.

6.14.3 *Equipment Erection Work*

- (a) The EDG set consisting of diesel engine and AC generator shall be mounted on common base frame erected on civil foundation with correct orientation details.
- (b) Engine control panel, battery station, charger units shall be erected within the EDG House. Supplier shall furnish detailed layout drawing for the EDG room.
- (c) All the piping to the engine shall be done strictly as per manufacturer's drawings. Wherever piping involves joining by welding, the same shall be as per relevant statutory regulations (compressed air lines etc.). Unions / couplings of pipelines shall be done as per manufacturer's instruction /drawings, wherever welding is not preferred or permitted. All piping shall be checked for leak proof by conducting tests as per instruction manuals of manufacturer.
- (d) Coupling of the engine and alternator shall be done after checking and correcting alignment of shaft axes within permitted tolerances. Shaft levels shall be checked and adjusted to be within permitted tolerances.
- (e) DG set auxiliaries like lube oil prime pump, fuel oil pump, shall be run and checked using normal supply. Similarly batteries shall be charged through charger installed, using station supply. First filling of lubrication oil, grease, fuel oil (into tank) etc. shall be done by the contractor as per manufacturer's instructions.
- (f) All DG set instruments shall be tested / calibrated and set at values recommended by the manufacturer, Inscriptions on windows shall be checked. Overload relay for alternator protection shall be tested and set at values recommended.
- (g) Installation of safety appliances like rubber mat, carbon dioxide fire extinguishers, etc., shall be done.

6.14.4 *Refurbishment of existing fuel system*

- (a) This shall involve draining of the 6820 litre storage tank to get rid of degraded fuel and the water vapour that may have accumulated and condensed in the fuel tank along with any sediment that may be present. The tank shall be inspected for Bacterial growth and leakages.
- (b) The storage tank shall then be cleaned using appropriate detergent to get rid of all dirt and sediment.
- (c) The bidder shall supply of flameproof level switches for high as well as low level alarm and trip.
- (d) Fuel is transferred from delivery road tankers to the storage tank at 450 litre/min by a 240VAC electric motor driven fuel pump. During the works the bidder shall replace the electric motor driven refuelling pump, complete with starter and pressure gauges.
- (e) The bidder shall replace the existing duplex line filters with new ones.
- (f) The position of the day tank shall ensure maximum return fuel head to the fuel storage tank. Return fuel head shall be calculated from the top of the base frame.
- (g) The arrangement of the fuel pipe shall ensure that the fuel is not affected by the generator set exhaust heat.
- (h) The piping design shall ensure no fuel leakage of fuel and air in the fuel inlet and fuel return pipe.
- (i) Painting of the EDG House and fuel tank, etc.

6.14.5 Cable Laying and Routing

- (a) All the auxiliary power cables between equipment supplied by bidder and control cables to start and shut-off solenoids, temperature switches; level switches etc., shall be separately installed and terminated with ferrule numbers as per manufacturer's wiring diagrams.
- (b) Wherever control cables have to run near engine casing thermal insulations shall be used to prevent damage due to excess temperature. Flexible conduits shall be used to protect control cabling near the engine.
- (c) All the power and control cables shall be laid separately and in cable trenches / cable channels between generator and 415 Main Switchboard in the control building as per approved drawing. Vacant spaces in used and unused conduits should be plugged using M-seal monoplast filling compound. All cables shall be neatly dressed and clamped in fabricated cable trays.
- (d) The final routing of power and control cables in indoor and outdoor installations shall be determined by the project engineer, and the principles shown in the layouts on the drawings. All cable routing must adapt to obstacles as tubes and ventilation channels. All penetrations of fire zone separations shall have the same fire classification as the separation itself.
- (e) The cables shall be marked with item designation (Cable markers) in both ends as well as by entrances in enclosures.
- (f) Cables shall be neatly arranged, well supported and labelled at the gladding or termination point. The cable marking shall be fire proof.
- (g) No joints shall be allowed.
- (h) Cables shall be laid on corrosion resistant (aluminium or hot dipped galvanised) cable trays and racks and by raising cables fixed to cable ladders. The trays shall be dimensioned and fixed so that it allows one man to climb on it in addition to the cable load. Each tray shall have at least 15% spare capacity. The distance between each tray shall at least be 300 mm. For exposed outdoor installations cables shall be laid in covered cable trenches, plastic or steel ducts, depending on the available space.
- (i) Branch offs to individual equipment shall be fixed and supported all the way to the connection box. Cables and cable supports shall be properly fixed and secured against movement under short-circuit and strain caused by erection work. Particular attention shall be given to termination in confined areas where personnel may climb under erection and maintenance. Flexible tubes of "spiral type" shall not be used whereas tubes of "plica" type can.
- (j) Low power cables, i.e. cables for control, metering, etc. shall not be run in close parallel to high power cables or earth wires, but shall be run at the greatest possible separating distance. The minimum distances are:
 - 1. High and medium voltage versus control and measuring cables 800 mm
 - 2. Low voltage power cables versus control and measuring cables 400 mm
- (k) Necessary EMC consideration shall be taken in accordance with EMC standards.
- (l) Additionally, cables for extra low power, i.e. mA and mV circuits and cables connected to low power solid state electronic circuits, shall be laid in separate sheet steel trays with covers.

- (m) Single-phase power cables shall be run in trefoil configuration, single-phase DC power cables shall be run in parallel. Special care shall be taken so that closed magnetic circuits do not form around single phase cables.
- (n) Cables shall be laid in full runs and not spliced unless approved by Project Engineer. Termination of multi-stranded conductor ends shall be with a suitable crimped thimble as specified above. All other cable lugs or similar shall be of crimped type adapted to the cable type and cross-section used. The tools used should be special approved for the lugs and cable type used.
- (o) All cables shall be well marked with heat and oil resistant markers
- (p) The cable bidder's instructions regarding handling and bending radius shall be followed.

6.14.6 Labelling

- (a) All Panels and all front mounted equipment as well as equipment mounted inside the panels shall be provided with individual labels with equipment designation engraved for identification. The labels or escutcheon plates shall be mounted directly above the respective equipment with English description and also where appropriate the IEC Number.
- (b) The Device Name/Number shall correspond to the Name/Number used in the drawings. All panel devices shall also be provided tag numbers corresponding to the ones shown in the panel internal wiring drawing to facilitate each tracing of wiring. These labels shall be mounted directly by the side of the respective equipment and shall not be hidden by the equipment wiring.
- (c) Labels shall be made of Aluminium anodized plate P.V. Castings. The entries on the plates shall be indelibly marked by engraving with black letter on a white background. The plates shall be made of weatherproof and corrosion-proof materials and shall not be deformed under the service conditions at the site.
- (d) All surplus material should be disposed in an environmental satisfying way. Particular attention shall be given to safe disposal of environmentally hazardous substances. Workable equipment shall be handed over to the Employer.

6.14.7 Auxiliary Supply

- (a) Contractor shall reconnect the existing AC / DC supply for Switches, Panel illumination, space heater etc. and supplies for control and protections to the new panels.
- (b) Fresh connections shall be made from the power distribution boards; it shall be the responsibility of the contractor to supply cables and associated switchgear e.g. circuit breakers where necessary.
- (c) Devices and equipment shall be suitable or adopted for 24V (+/-10%) DC, 110V (+/-10%) DC supply and 240V/415V (+/-10%) AC supply which is existing at the station

6.14.8 Commissioning

1) Instruction/Training on Site for Maintenance and Test Procedures

- (a) The bidder shall provide qualified personnel for installation and carryout site testing and commissioning of all equipment supplied under this contract and shall give 'on the job' instruction /training to the client engineers.
- (b) The contractor shall furnish all equipment that is necessary for test and maintenance of the supplied equipment. These shall include but not limited to: - torque meters, programming tools (Lap top with installed software and accessories) and any other test equipment that may be necessary for maintenance and integrity checks of the supplied equipment. At the discretion of the client, these equipment shall become the possession of the client.
- (c) Maintenance and test procedures and techniques on the Equipment using specialised tools and test equipment provided by contractor.
- (d) Operational techniques relative to the Equipment both for local and remote operation as appropriate.
- (e) Step by step procedure in pre-commissioning and commissioning of the Equipment into operation.
- (f) The contractor shall document detailed maintenance procedures and checklists for EDG equipment and hand over to the client for use during plant maintenance.

2) Commissioning works

When installation is complete and the EDG is ready for starting, the following tests shall be carried out in addition to all test prescribed by the manufacturer:

1. Starting of engine manual mode / simulated DG Control condition.
2. Shut-off of the engine-manual mode/ auto mode simulated faults of the alternator and engine.
3. Over speed test.
4. Interlock between DG breaker and grid supply.
5. Governor speed control electrical /mechanical.
6. Minimum time in seconds required by the set to deliver power at desired voltage and frequency starting from standstill condition
7. Matching the DG phase sequence with grid supply phase sequence.
8. Checking annunciator windows for all the faults simulated during testing.
9. Continuous full load test as specified, by starting all the motor loads direct on line sequentially.
10. Paralleling with Grid (Wherever applicable).
11. Tabulation of all results in the mutually agreed format.

6.14.9 After-Commissioning Training

- (a) The contractor is expected to conduct three (3) day detailed training on the systems supplied to client operations and maintenance personnel.
- (b) The training shall cover both theory and practical aspects of the systems.
- (c) The content of the training shall include general theory on diesel engines, alternators, monitoring and control systems, specific theory related to particular equipment supplied and practical lessons on operating and maintaining equipment supplied.
- (d) The training shall encompass:
 - 1. General theory of diesel engines
 - 2. Governing systems
 - 3. Fundamentals of alternators
 - 4. Exciter and voltage regulation system provided
 - 5. Practical step by step commissioning and routine Maintenance of the systems
 - 6. Troubleshooting
 - 7. Use of commissioning, troubleshooting and control software supplied
- (e) Number of days for fruitful training detailed above shall be indicated in the bid. The detailed content of the training will be proposed by the contractor and forwarded to the client for approval and revision prior to commencement of the works.
- (f) Training will be conducted in client's facilities and on site using installed equipment. During this period Contractor will also carry out corrections on identified defects.
- (g) Defects correction will be carried out 3 or more days after final commissioning to enable identification of defects and equipment performance observation by client and contractor
- (h) Training shall commence the day after commissioning. Contractor shall use his commissioning engineers or other experienced personnel who are fluent and have excellent understanding of English language.
- (i) Contractor shall supply training aids including a detailed training guide or document well prepared in advance. Contractor is expected to be well prepared for the training with necessary presentations specific for the training.
- (j) Contractor will present to the client project engineer training aids, presentations and documents to be used for training two weeks prior to the training to ensure it contains all necessary/ required content by the client. Contractor is expected to include all materials necessary for the understanding, operation and maintenance of supplied systems
- (k) Client will provide projectors and other necessary training facilities
- (l) Theory training will be conducted for a group of up to twenty client personnel or any other number communicated to the contractor two weeks prior to the training. Practical training will be done in small groups to be agreed upon with the client and will be held in the power plant using installed equipment. Theory training shall include demonstrations using the spares to be supplied.
- (m) Costs of this training shall be included in the tender price
- (n) During the training period spare equipment supplied will be configured and tested prior to acceptance by the client.

6.15 Drawings and Documentation

Technical documentation shall be provided in **English** and shall consist of but not limited to:

1. Introduction/overview of project components,
2. Overall operating philosophy,
3. Operating conditions,
4. Detailed description of the equipment,
5. Emergency procedures,
6. Description of equipment arrangement,
7. Design calculations,
8. Maintenance and test instructions/procedures,
9. Installation instructions,
10. Operation instructions,
11. Schematic & Wiring drawings, cable schedules, terminal diagrams, device lists,
12. And mechanical & structural assembly drawings.
13. Logic diagrams, PLC applications, software manuals, detailed instructions for programming settings and configuration for all IEDs supplied,
14. Manufacturer data sheets & catalogues,

6.15.1 *Drawings and Schematics*

The function of each drawing shall be clearly indicated. Related drawings shall be arranged sequentially, and have the same drawing numbers but different sheet numbers.

The drawings shall include the following;

1. Functional Drawings in two sets on A4 size sheets
2. Terminal blocks wiring schedule, terminal block diagrams and cable schedules in A4 size sheet.
3. Panel device layout drawing shall show exploded view of the rear and front panel indicating the disposition of various equipment inside the control panel as well as power panel and instruments panel in two sets on A4 size sheets.
4. Blowout of the diesel generator
5. Dimensioned drawings of the control panel indicating front, sides and rear views with the layout of instruments, control switches, indication LEDs push buttons, relays and other equipment etc. clearly marked in two sets on A4 size sheets
6. General layout drawings for the panel's location in two sets on A4 size sheets
7. Parts list in A4 size sheet
8. Logic diagrams of all IED's provided in two sets on A4 size sheets
9. Drawing showing the legend of various references/codes adopted for equipment, relays and all other accessories used in the panels in A4 size
10. Drawing for name plates/identification labels engraving details in A4 size
11. Any other drawings considered necessary.

6.15.2 *Operating and Maintenance Instructions*

- (a) The Contractor shall supply detailed instruction manuals concerning the correct manner of assembling/Installing/Erection, configuring, setting, Testing and Commissioning, operating and maintaining the equipment and devices constituting the supplied EDG.
- (b) The basic maintenance schedule along with the troubleshooting, diagnostic chart shall be submitted.
- (c) The EDG shall be supplied with manuals detailing all technical and operating instructions.
- (d) All the internal drawings indicating the logics and block diagram details explaining principle of operation should be given at the time of supply.
- (e) Detailed testing procedure shall be supplied for the EDG control panel. The procedures shall be clear and detailed for all the functions. Checklists to be followed during testing shall be included
- (f) The maintenance details of each component shall also be described, including the frequency of inspections, testing, replacement etc.
- (g) The Manufacturer shall, in preparing the instruction manuals, take into account the lack of experience and familiarity of the Operators with this type of equipment.
- (h) ALL factory routine tests, all Site routine tests, commissioning tests and all type test reports shall be provided as part of technical documentation. The test report shall include the procedures followed and results obtained.
- (i) Diesel Generator Lifespan: The bidder shall mention following:-
 - 1. Hardware/Firmware change notification process. Upgrades to be provided free of cost within the warranty period, if needed.
 - 2. Lifespan of the DG and standard components and tools

6.15.3 *Final Documentation*

After all items of the work have been manufactured, erected and commissioned; complete sets of prints and softcopies of the technical documentation for all new systems and interfaced plant systems shall be furnished as indicated below.

- 1. Four Complete sets of bound prints for **ALL** documentation and **ALL** as built drawings and logic diagrams in **A4**
- 2. Four Complete sets of bound prints for all as built schematic drawings in **A4**
- 3. Four Complete sets of bound prints for all as built structural and mechanical drawings in **A3** and **A2/A1**.
- 4. All existing clients' drawings affected by the new system reviewed and updated by the contractor in two sets one A3 another **A4** size sheets
- 5. Soft copies of **ALL** Logic diagrams in original software format with the software and licence or in AutoCAD format.

6.16 Diesel Generator Tools and Spare Parts

6.16.1 *Maintenance Equipment & Tools*

- (a) All maintenance and test equipment required shall be included in the price schedule and will be handed over to the client in good order on completion of commissioning tests. This shall include but not limited to:-
 - 1. Test equipment used for commissioning of the new EDG
 - 2. All software used (engine control and monitoring, HMI software and programs etc.)
 - 3. All necessary software licenses
 - 4. Hardware connections necessary to connect the programming laptop to the programmable devices supplied.
- (b) One Portable computer (laptop) for the EDG control module and any Intelligent Electronic Device provided in the new EDG system.
- (c) The Contractor shall supply in lockable boxes, for the Employer's use, any special tools that may be required for assembly, dismantling adjustments and maintenance of the equipment. The tools shall be unused and in new condition at the time of handover. Suitable special spanners shall be provided for bolts and nuts, which are not properly accessible by means of an ordinary spanner.

6.16.2 *Spare Parts*

- (a) The bidder shall furnish in his offer, spares listed below and other recommended spares that may be required for trouble free operation for a period of 15 years with unit rates. The employer reserves the right of selection of items and quantities of these spares to be ordered.
- (b) This section shall contain the following:-
- (c) Spare Parts List including quantities and manufacturer's Part Numbers. Spare parts number shall be cross referenced with drawings in the instruction manual. These items shall be considered optional & KenGen may at the time of award consider purchasing all or any item within the spares list.
- (d) Recommended List of spares:

The following spare parts shall be included in the bid offer:-

- 1. Strategic spares for the Engine:
 - (i) One set of injection nozzles
 - (ii) One complete injection unit
 - (iii) One cylinder
 - (iv) Two complete pistons with rings
 - (v) Two rocker arms
 - (vi) Two sets of oil filters
 - (vii) Two sets of air filters
 - (viii) One set of belts
 - (ix) One set of seals and gaskets

2. Strategic spares for Generator
 - (i) One set of diodes
 - (ii) One voltage regulator

3. For control panel:
 - (i) Two power supplies of each type
 - (ii) Two control/auxiliary relays of each type
 - (iii) Two MCBs of each type.
 - (iv) One Switch of each type (push-button, selector switch, , key-switch)
 - (v) One indication instruments of each type.

(e) Strategic Tools:

- (i) One set of Allen keys and any other keys for special screws used on the engine and generator
- (ii) One set of socket spanners appropriate for bolts and nut sizes used on the engine and alternator
- (iii) One set of tools for injector adjustment
- (iv) A torque meter
- (v) Portable Computer

Specifications of the Portable Computer:

- (a) The portable computer supplied, shall be a laptop.
- (b) The laptop that shall be supplied for test and maintenance of the EDG control equipment shall be used for commissioning.
- (c) All portable computer equipment shall be delivered with all software and licences necessary to achieve the specified functionality as well as the software necessary for programming, testing, service and maintenance through the lifetime of the equipment.
- (d) Minimum specifications for the laptop shall be as in Table 8, below:

Item	Description
Processor	Intel® Core™ i7 (2.50GHz or above, with at least 2 hyper-threaded cores)
Cache	At least 3 MB L3 cache
RAM	At least 4 GB 1600 MHz DDR3 SDRAM
Operating Systems:	Preinstalled Genuine Windows 10 ultimate 64 bit plus
Applications	fully activated complete 64bit Microsoft office 2013 suite with license and key & Activated Kaspersky internet security anti-virus with license
Optical Drive:	DVD+/-RW Super Multi DL
Hard Disk	At least 500GB 7200 rpm SATA II
Display	Diagonal LED-backlit 15" colour LCD
Camera and Microphone	720p HD Webcam
Communication	Integrated Intel Gigabit Network Connection
Integrated Wireless	Broadcom 802.11a/b/g/n
Integrated Security	Security Lock Slot plus steel cable (5.5mm thick) with a combination lock
Interfaces	2 USB 3.0, 1 USB 2.0, 1 HDMI Display Port, 1 stereo microphone in 1 stereo headphone/line-out, 1 1394a, 1 AC power, 1 RJ-45 1 docking connector, 1 secondary battery connector, 1 Esata/USB 2.0 Combo, 1 VGA port
Pointing Devices	Touchpad with on/off button, two-way scroll, gestures, two pick buttons
Keyboard	Full-size, spill resistant keyboard with drains
Mouse	optical wireless mouse
Warranty	1 Year Warranty
Battery	6-cell (55 WHr) Li-Ion
Power Supply	240V AC, 50Hz, British plugs
Carrying Case	Genuine Leather Carrying Case

Table 9: Specifications of the Portable Computer

TECHNICAL SCHEDULE

Bidders shall complete the technical schedules in their entirety at the time of tendering. The schedules are extracted from the main specifications. Refer to the main specification and annexes for details.

Note 1

The bidder is expected to indicate, as the case may apply,

- Equipment rating, features, standards used, etc.
- Whether the offer complies with the specified clause of the tender document (Compliant or Not Compliant)

Note 2

The contractor shall provide layout drawings, detailed drawings, brochures, datasheets as reference documents that shall clearly show the equipment offered, associated features indicated in the technical schedule.

Item Description	Bidder's Guaranteed offer	Reference in bid offer (indicate page)
Bidder to provide a detailed description of the offer clearly showing how the works shall be undertaken.		
Scope		
1. Duration required for Engineering of EDG		
2. Engineering services: List activities		
3. Duration required for design of EDG equipment		
4. Duration required for assembly, integration, and manufacture		
5. Attendance of Client staff at Factory Tests: Give details FAT activities.		
6. Refurbishment, Installation and Commissioning Services: List activities		
7. Provide project Work Program		
8. Instruction/Training on Site for maintenance and test procedures.		
9. After commissioning training: Provide list of Training topics to be covered by the site training		
10. No. of days necessary for fruitful training detailed in the specifications		
11. Provide list of Technical documents & drawings to be provided in the project		
12. List of Spares and consumables to be provided		

	during the Warranty Period		
13.	Warranty period (years)		
	Diesel engine		
14.	Provide a description of the engine and its features		
15.	Provide a list of all major Engine components and their datasheets:		
(a)	Governing system		
(b)	Fuelling system		
(c)	Lubrication system		
(d)	Cooling & exhaust system		
(e)	Engine instrumentation		
(f)	Engine Control Unit/ Monitor (ECU/ECM)		
(g)	Engine starting system: batteries, charger, starter, air intake		
(h)			
16.	Provide a list of all engine protection features: alarm and trip conditions and settings		
	Alternator		
17.	Provide a description of the alternator and salient features		
18.	Provide a description of the excitation system		
19.	Provide a list of all major components and auxiliaries and their manuals and brochures		
20.	Provide manuals and brochures of all major components and auxiliaries		
21.	Excitation & voltage regulation system		
22.	Alternator terminal boxes		
23.	Provide the alternator protection features: list of Trips and alarm conditions and settings,		
24.	Describe operating philosophy of the EDG		

SECTION VII: GUARANTEED TECHNICAL SPECIFICATIONS

	Description	Unit	To be filled by Bidder
A.	ALTERNATOR		
1.	a) Make		
	b) Type		
	c) Duty:		
	d) IP class		
2.	a) Manufacturer's Make and Frame Size		
	b) Standard		
3.	a) Rated KVA (Standby/Prime)	KVA	
	b) % Average power output for 24 hours of operation available to user	%	
4.	Power Factor		
5.	a) Rated Voltage (L-L/L-N)	V	
	b) Number of Phases		
6.	Frequency	Hz., %±	
7.	Number of Poles		
8.	a) Class of Insulation		
	b) Temperature rise Class		
	c) Impregnation for tropical service		
	% Overload for 1 hr. at Site Condition		
9.	a) 50% Overload capacity	in Sec.	
	b) Allowable % unbalanced load on generator	in Sec.	
10.	Percentage Efficiency at P.F. - 0.8		
	a) - Full Load		
	b) - $\frac{3}{4}$ Load		
	c) - $\frac{1}{2}$ Load		
	d) - $\frac{1}{4}$ Load		
11.	Type of Excitation		
12.	Regulation		
13.	a) Voltage Regulation from No-Load to Full Load at any point with 4% speed regulation of the engine		
	b) Recovery Time and Voltage in response to 100% step load		
	c) % Voltage Adjustment on AVR		
14.	Percentage Reactance of Alternator		
	a) Sub Transient Reactance- x_d''	%	
	b) Transient Reactance - x_d'	%	
	c) Reactance – x_d	%	
15.	a) Type of Bearings		
	b) Method of Lubrication		
16.	Winding protection		

	Description	Unit	To be filled by Bidder
17.	a) No. of Winding RTDs		
	b) Per phase		
	c) Bearing RTDs		
18.	Air cooling flow		
B.	ENGINE		
1.	Manufacturer		
2.	Engine Model		
3.	Nominal Output Engine (Standby/Prime)	KW @45°C	
4.	Output of the Engine equipped with Auxiliary Drives required to be fed from DG Set	KW	
5.	% Average power output for 24 hours of operation available to user	%	
6.	Maximum Overload		
7.	% Overload for 1 hour at Site Conditions	%	
8.	Nominal Speed	rpm	
9.	Bore Diameter.	mm	
10.	Length of Strokes	mm	
11.	Cylinder Arrangements		
12.	Number of Cylinders		
13.	Total Swept Volume	Litre	
14.	Compression Ratio		
15.	Guaranteed fuel consumption at Full load	Litre/hr	
	at 25% load		
	at 50% load		
	at 75% load		
	at 100% load		
	at 110% load		
16.	Lubrication Oil Consumption		
17.	Time required for starting from cold condition		
18.	Anti-Vibration mounting		
	a) Manufacturer		
	b) Type		
19.	Engine Control unit (ECU)		
	a) Manufacturer		
	b) model		
	c) Protection class IP66k		
20.	Heat Balance of DG Set		
	- Engine O/P		
	- Exhaust Gases(Heat rejection)		
	- Cooling (Heat rejection to coolant)		
	- Radiations		
	-Total Heat Input		

	Description	Unit	To be filled by Bidder
21.	Machine Efficiency(Mechanical)		
22.	Thermal Efficiency		
23.	GD ² of Engine		
24.	Maintenance Schedule of Engine (First maintenance required after commissioning)		
25.	Sound level of Engine at distance of 1 M		
26.	Exhaust Gas Flow		
27.	Temperature of Exhaust Gas		
28.	Type of Turbocharger		
29.	Fuel Oil System		
	- Fuel Day Tank size & capacity		
	- Specification of Fuel recommendation		
30.	Refueling pump		
	a) rating		
	b) Supply Voltage		
31.	Anti-vibration mounting		
32.	a) Manufacturer		
33.	b) type		
34.	c) rating (shock loads)	g	
35.	d) isolation levels at rates speed and over-speed	%	
36.	Fusible link		
	a) Make		
	b) Operating temperature range		
37.	Governing System		
	a) Make		
	b) Type of Governor (enclose detailed catalogue)		
	c) Standard to which it conforms		
	d) Response time of Governor		
	e) Governing class		
C.	Accessories		
1.	Panels		
	a) Local Control Panel		
	i) Dimensions: (L x W x H)	mm	
	ii) IP Protection		
	iii) No. of doors and on which side of the panel.		
	iv) Size of base plate		
	v) Type of door handles and locks		
	vi) Paint thickness		
	HMI		
	i) Manufacturer		
	ii) Make/ type		
	iii) Screen size		

	Description	Unit	To be filled by Bidder
	iv)communication port		
	PLC/ Controller		
	i) Manufacturer		
	ii) Microprocessor make		
	iii)communication port		
	Push button and indication lamps		
	(i) Make & type (list)		
	(ii) Manufacturer for each type		
	(iii) Rating		
	(iv) Make & type for emergency push buttons		
	(v) Technical data sheet &/catalogue furnished		
	a) Siren		
	i) Make		
	ii) Manufacturer		
	iii) Type designation		
	iv) Rating		
	v) Operating principal		
	b) Power Panel	mm	
	i) Dimensions: (L x W x H)		
	ii) IP Protection		
	iii) No. of doors and on which side of the panel.		
	iv) Size of base plate		
	v) Type of door handles and locks		
	vi) Paint thickness		
	MCCB (with Under voltage release, safety shutter & Shunt trip)		
	i) Manufacturer		
	ii) Make/ type		
	iii) Current rating		
2.	Starting System (DC)		
	Battery Charger		
	a) Manufacturer		
	b) Type		
	c) Voltage Input		
	d) Voltage output		
	Batteries		
	a) Manufacturer		
	b) Battery type		
	c) Voltage Rating		
	Starter motor		
	a) Manufacturer		
	b) Make/ type		

	Description	Unit	To be filled by Bidder
	c) Rating		
	c) supply voltage		
3.	Power Cable		
	a) Manufacturer		
	b) Type		
	c) Rating		
	d) size		
	e) Insulation		
4.	Portable computers/laptop		
	i) manufacturer		
	ii) Brand name/model		
	iii) No of Processor & cache and speed		
	iv) RAM capacity		
	v) CPU capacity and speed		
	vi) Display size, resolution, colour depth etc.		
	v) Operating system		
	vii) list activated Pre-loaded application software		
	viii) size, type and speed of HDD		
	ix) Type of Optical drive		
	x) No and type of USB ports		
	xi) list Interface ports		
	xii) battery capacity		
	xiii) warranty duration		
	xiv) type of carrying case		
	xv) Technical data sheet &/catalogue furnished		
5.	Flywheel and flywheel housing		
6.	Coupling type		
7.	Corrosion resistor make		
8.	CIVIL REQUIREMENTS		
	a) Weight of Engine with accessories		
	b) Centre of Gravity of Engine		
	a) Weight of Generator		
	b) Total weight of DG set		

SECTION VIII: PRICES SCHEDULE

BILL OF QUANTITIES – PRICE SCHEDULES

Item No.	Description	Quantity	
	PART I : GENERAL TECHNICAL REQUIREMENTS		
1.	Engineering services	-	
2.	Factory Acceptance Tests	-	
3.	Site: Installation and refurbishment works	-	
4.	Testing and commissioning services	-	
5.	Site training	-	
6.	Commissioning and test equipment (To be handed over to the client)	-	
	PART II: EQUIPMENT TO BE SUPPLIED		
1.	Diesel Generator Set	SET	
2.	Pipes and piping accessories		
3.	Power cable	Metres	
4.	Interface/signal Cables (itemise cables)		
5.	Local Control Panel (Factory Assembled& wired)		
6.	Power Panel (Factory Assembled& wired)		
7.	Spare Parts (itemise)		
8.	Maintenance Equipment [Itemize the equipment]		
9.	As Built Drawings, Operation and Instruction manuals		
	Total Cost		
	Discount (%) if any		
	Other Charges (if any)		
	Country of Origin		
	Currency of Tender		
	Delivery Period		
	Manufacturer		
	Tenderer's Name		
	Tenderer's Signature		
	Date		

Signed & Stamp: _____

Date: _____

Duration of site Work: _____

ELIGIBILITY & QUALIFICATION DATA

Tender Questionnaire

Please fill in block letters.

1. Full names of Tenderer
.....
2. Full address of Tenderer to which tender correspondence is to be sent (unless an agent has been appointed below)
.....
3. Telephone number (s) of Tenderer
.....
4. E-mail and Fax address of Tenderer
.....
5. Name of Tenderer's representative to be contacted on matters of the tender during the tender period
.....
6. Details of Tenderer's nominated agent (if any) to receive tender notices. This is essential if the Tenderer does not have his registered address in Kenya (name, address, telephone, e-mail)
.....
.....

Signature of Tenderer

Make copy and deliver to: _____ (Name of Employer)

CONFIDENTIAL BUSINESS QUESTIONNAIRE

You are requested to give the particulars indicated in Part 1 and either Part 2 (a), 2 (b) or 2(c) and 2(d) whichever applies to your type of business.

You are advised that it is a serious offence to give false information on this Form.

Part 1 – General

Business Name: _____

Location of business premises; Country/Town: _____

Plot No: _____ Street/Road: _____

Postal Address: _____ Tel No: _____

Nature of Business: _____

Current Trade Licence No: _____ Expiring date: _____

Maximum value of business which you can handle at any time:

KShs.: _____

Name of your bankers: _____

Location and Branch: _____

Part 2 (a) – Sole Proprietor

Your name in full: _____ Age: _____

Nationality: _____ Country of Origin: _____

Citizenship details: _____

Part 2 (b) – Partnership

Give details of partners as follows:

	Name in Full	Nationality	Citizenship Details	Shares
1	_____	_____	_____	_____
2	_____	_____	_____	_____
3	_____	_____	_____	_____

Part 2(c) – Registered Company:

Private or public: _____

State the nominal and issued capital of the company-

Nominal KShs.: _____

Issued KShs.: _____

Give details of all directors as follows:

	Name in full.	Nationality	Citizenship Details *	Shares.
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____

Part 2(d) – Interest in the Firm:

Is there any person/persons in _____
(Name of Employer) who has interest in this firm? Yes/No _____ (Delete as necessary)

I certify that the above information is correct.

(Title)

(Signature)

(Date)

* Attach proof of citizenship

STANDARD FORMS

The following schedules form the Contract Schedules and must be completed in their entirety by the Tenderer at the time of tendering. The technical details requested in this document shall also be submitted with the tender.

The Performance Security and Bank Guarantee for Advance Payment forms are samples and shall be only completed by the Approved Tenderer.

The Tenderer shall enter in the spaces on the tender form and bill of Quantity, price schedules the appropriate unit of currency to which he has tendered.

B1. FORM OF DISPUTE ADJUDICATION AGREEMENT

[for each member of a three-person DAB]

Name and details of Contract
Name and address of Employer
Name and address of Contractor
Name and address of Member

Whereas the Employer and the Contractor have entered into the Contract and desire jointly to appoint the Member to act as one of the three persons who are jointly called the "DAB" [*and desire the Member to act as chairman of the DAB*] to adjudicate a dispute which has arisen in relation to *

The Employer, Contractor and Member jointly agree as follows:

1. The conditions of this Dispute Adjudication Agreement comprise the "General Conditions of Dispute Adjudication Agreement", which is appended to the General Conditions of Contract. In these provisions, which include amendments and additions to the General Conditions of Dispute Adjudication Agreement, words and expressions shall have the same meanings as are assigned to them in the General Conditions of Dispute Adjudication Agreement.
2. [Details of amendments to the General Conditions of Dispute Adjudication Agreement, if any.]
3. In accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement, the Member shall be paid a daily fee of _____ per day.
4. In consideration of these fees and other payments to be made by the Employer and the Contractor in accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement, the Member undertakes to serve, as described in this Dispute Adjudication Agreement, as one of the three persons who are jointly to act as the DAB.
5. The Employer and the Contractor jointly and severally undertake to pay the Member, in consideration of the carrying out of these services, in accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement.

SIGNED by:

For and on behalf of the Employer in the presence of

Witness:
Name:
Address:
Date:

SIGNED by:
For and on behalf of the Contractor in the presence of

Witness:
Name:
Address:
Date:

SIGNED by:
The Member in the presence of

Witness:
Name:
Address:
Date:

B.2 FORM OF TENDER

Design, supply, installation, testing and commissioning of a 500KVA emergency Diesel Generator for Kamburu Hydropower Station

To: The Company Secretary, Legal Affairs Director
The Kenya Electricity Generating Company Limited
P.O. Box 47936-00100
Nairobi, Kenya

We have examined the Conditions of Contract, Employer's Requirements, Schedules, Technical Specifications, Tender Drawings, the attached Addenda Nos _____ for the above-named Tender. We have examined, understood and checked these documents and have ascertained that they contain no errors or other defects. We accordingly offer to design, execute and complete the Works and remedy any defects therein, in conformity with this Tender which includes all these documents and the enclosed Proposal, for the lump sum of (*in currencies of payment*)

inclusive of taxes.

We agree to abide by this Tender until _____ and it shall remain binding upon us and may be accepted at any time before that date.

If this offer is accepted, we will provide the specified Performance Security, commence the Works as soon as is reasonably practicable after the Commencement Date, and complete the Works in accordance with the above-named documents within the Time for Completion. We guarantee that the Works will then conform with the Schedule of Guarantees.

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

We understand that you are not bound to accept the lowest or any tender you may receive.

Signature _____ in the capacity of _____

duly authorised to sign tenders for and on behalf of _____
(Physical Address)

Phone Number(s)

(Email Address)

Date: _____

Note: In accordance with Clause 82 of the Public Procurement and Asset Disposal Act 2015
“The tender sum as submitted and read out during the tender opening shall be absolute and final and shall not be the subject of correction, adjustment or amendment in any way by any person or entity”.

B.4 KEY PERSONNEL CAPABILITIES

Name of Tenderer_____

For specific positions essential to Contract implementation, applicants should provide the names of candidates qualified to meet the specified requirements stated for each position set out in Instructions to Tenderers Sub-Clause 13.3 part 2.

The data on their experience should be supplied in separate sheets using one Form (B5) for each candidate.

1.	Title of position: Project Manager
	Name of candidate:
	Name of alternate:
2.	Title of position: Installation Supervisor for Electrical Equipment
	Name of candidate:
	Name of alternate:
3.	Title of position: Installation Supervisor for Mechanical Equipment
	Name of candidate:
	Name of alternate:
4.	Title of position: Commissioning Engineer
	Name of candidate:
	Name of alternate:

This information is declared to be correct by (Tenderer’s authorised representative)

Name..... Signature.....

Position in the Firm..... Date.....

B.5 CVS OF KEY PERSONNEL

Name of Tenderer:		
Position in the Company :		
Candidate information	1. Name of candidate	2. Date of birth
	3. Professional Qualifications	
Present employment	4. Name of Employer	
	5. Address of Employer	
	6. Telephone	Contact (Manager/Personnel Officer)
	Fax	E-mail
	Job title of candidate	Years with present employer

Summarise professional experience over the last 10 years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the Project.

From	To	Company/Project/Position/ Management Experience	Relevant	Technical	and

This information is declared to be correct by (Tenderer's authorised representative)

Name..... Signature.....

Position in the Firm..... Date.....

B.6 PROGRAMME OF WORKS

Name of Applicant or Partner of a Joint Venture

Based on the specified completion periods given under Sub-Clause 1.2 of the Instructions To Tenderers, the Tenderer shall provide a proposed programme of Works in a bar chart form showing the sequence of work and time duration for each activity.

The proposed programme shall include activities such as design, schedule for the drawing submittal, ordering and procurement of materials, manufacturing, fabrication, shop assembly and testing, transportation, erection, site testing and commissioning of the Plant to be supplied under the Contract.

We offer to complete all the works as required under tender within _____calendar days as per the attached schedule.

This information is declared to be correct by (Tenderer’s authorised representative)

Name..... Signature.....

Position in the Firm..... Date.....

B.8 DEVIATIONS FROM SPECIFICATIONS

Name of Applicant or Partner of a Joint Venture

Any deviations from the Conditions of Contract or the Technical Specifications shall be clearly indicated in the table below and reasons given.

Clause or Section No.	Deviation	Reason for Deviation
	1. Commercial / Contractual Deviations	
	2. Technical Deviations	

This information is declared to be correct by (Tenderer’s authorised representative)

Name..... Signature.....

Position in the Firm..... Date.....

B.9 DRAWINGS AND DOCUMENTATION TO BE SUBMITTED WITH TENDER

Name of Applicant or Partner of a Joint Venture

Pursuant to Clause 5 of Instructions to Tenderers (ITT), the Tenderer is required to submit drawings, brochures, technical data, type test certificates, etc. for the plant and equipment to be incorporated in the Works, sufficient to demonstrate compliance with the technical specifications. The Tenderer is required to list under each item in the table below, those documents being submitted with the tender. The reference number of the document shall be included so that the document can easily be identified.

Section	Description	Document Type	Document Reference
1.			
2.			
3.			
4.			
5.			

This information is declared to be correct by (Tenderer’s authorised representative)

Name..... Signature.....

Position in the Firm..... Date.....

B.10 PROPOSED WORK PLAN & METHODOLOGY

The Tenderer shall submit a write up on the proposed work plan and methodology for performing the works covering design, supply, installation commissioning and training (on site)

B.11 PROPOSED WORK PLAN

B.12 TURN-OVER

Name of Applicant or Partner of a Joint Venture

The Tenderer is requested to complete the information in this form for all individual firms, all partners of a joint venture and for the turbine and generator suppliers. The information supplied should be the annual turnover of the Tenderer (or each member of a joint venture), in terms of the amounts billed to clients for each year for work in progress or completed, **converted to KShs.** at the rate of exchange at the end of the period reported. The annual turnover for each entity should not be less than the turnovers specified in Sub-Clause 13.3 part 3 of Instructions To Tenderers (Tender Data Sheet).

Use a separated sheet for each partner of a joint venture and each supplier.

Annual Turnover Data		
Year	Turnover	Euro or equivalent
1.		
2.		
3.		
4.		
5.		

This information is declared to be correct by (Tenderer’s authorised representative)

Name..... Signature.....

Position in the Firm..... Date.....

B.13 PARTICULAR EXPERIENCE RECORD OF THE TENDERER

Name of Applicant or partner of a joint venture

The Tenderer or partner of a joint venture is required to list below the names of at least three (3) Contracts meeting the requirements of Sub-Clause 13.3 part 1 of Instructions to Tenderers (Tender Data Sheet). The detail of each of the listed contracts is to be summarised on Form (B15).

Names of Contracts meeting the specified requirements	Capacity (MVA)	Contract Amount (KShs equivalent)	Form B15 Completed (Yes/No)
1.			
2.			
3.			

This information is declared to be correct by (Tenderer’s authorised representative)

Name..... Signature.....

Position in the Firm..... Date.....

B.14 DETAILS OF CONTRACTS OF A SIMILAR NATURE AND COMPLEXITY

Name of Applicant or Partner of a Joint Venture

Use a separate sheet for each Contract.

1.	Number of Contract
	Name of Contract
	Country
2.	Name of employer
3.	Employer's address
4.	Nature of works and special features relevant to the Contract for which the Tenderer wishes to bid
5.	Contract role (check one) <input type="checkbox"/> Sole Contractor <input type="checkbox"/> Subcontractor <input type="checkbox"/> Partner in a joint venture
6.	Portion of the total Contract (in specified currencies at completion, or at date of award for current contracts) undertaken by the Tenderer.
7.	Equivalent value of item 6 in EUR
8.	Date of award
9.	Date of completion
10	Contract duration (years and months) _____ years _____ months
11.	Specified requirements ¹
12.	Details of Works meeting qualification criteria
13.	Client Certificate confirming two years satisfactory operation attached? (Yes/No).
14.	Contact details of a senior person in the client's organisation, whom can be contacted to verify details of the Client certificate

¹Insert any specific criteria required for the execution of the Contract. This information is declared to be correct by (Tenderer's authorised representative)

Name..... Signature.....

Position in the Firm..... Date.....

B.15 FINANCIAL INFORMATION

Name of Tenderer or Partner of a Joint Venture

Pursuant to Sub- Clause 13.3 part 4 of Instructions to Tenderers, the Tenderer, including each of the partners of a joint venture, and the main suppliers should provide the financial information requested below demonstrating the current soundness of their financial positions and long term profitability as well as evidence of financial resources to meet the Contract cash flow. A separate sheet should be used for each partner of a joint venture as well as for the principal suppliers.

- 1. Financial reports for the last three years, balance sheets, profit and loss statements, auditors’ reports etc. List them below and attach copies.

.....
.....

- 2. Evidence of access to lines of credit and availability of other financial resources sufficient to meet the Contract cash flow over one year, net of the Tenderer’s or supplier’s commitments for other contracts. The cash flow should at least meet the requirements of “Instructions to Tenderers” Clause 2.6. List the documents submitted as evidence and attach copies.

.....
.....

- 3. Name, address, telephone, e-mail, fax numbers of the Tenderer’s Bankers who may provide reference if contacted by the Employer.

.....
.....

This information is declared to be correct by (Tenderer’s authorised representative)

Name..... Signature.....

Position in the Firm..... Date.....

B.17 INTEGRITY DECLARATION

UNDERTAKING BY TENDERER ON ANTI – BRIBERY POLICY / CODE OF CONDUCT AND COMPLIANCE PROGRAMME

1. Each Tenderer must submit a statement, as part of the Tender documents, in either of the two given formats which must be signed personally by the Chief Executive Officer or other appropriate senior corporate officer of the Tendering company and, where relevant, of its subsidiary in the Kenya. If a Tender is submitted by a subsidiary, a statement to this effect will also be required of the parent company, signed by its Chief Executive Officer or other appropriate senior corporate officer.
2. Tenderers will also be required to submit similar No-bribery commitments from their subcontractors and consortium partners; the Tenderer may cover the subcontractors and consortium partners in its own statement, provided the Tenderer assumes full responsibility.
3.
 - a) Payment to agents and other third parties shall be limited to appropriate compensation for legitimate services.
 - b) Each Tenderer will make full disclosure in the Tender documentation of the beneficiaries and amounts of all payments made, or intended to be made, to agents or other third parties (including political parties or electoral candidates) relating to the Tender and, if successful, the implementation of the contract.
 - c) The successful Tenderer will also make full disclosure [quarterly or semi- annually] of all payments to agents and other third parties during the execution of the contract.
 - d) Within six months of the completion of the performance of the contract, the successful Tenderer will formally certify that no bribes or other illicit commissions have been paid. The final accounting shall include brief details of the goods and services provided that they are sufficient to establish the legitimacy of the payments made.
 - e) Statements required according to subparagraphs (b) and (d) of this paragraph will have to be certified by the company's Chief Executive Officer, or other appropriate senior corporate officer.
4. Tenders which do not conform to these requirements shall not be considered.
5. If the successful Tenderer fails to comply with its No-bribery commitment, significant sanctions will apply. The sanctions may include all or any of the following:
 - a) Cancellation of the contract;

- b) Liability for damages to the public authority and/or the unsuccessful competitors in the Tendering possibly in the form of a lump sum representing a pre-set percentage of the contract value (liquidated).
- 6. Tenderers shall make available, as part of their Tender, copies of their anti-Bribery Policy/Code of Conduct, if any, and of their-general or project - specific - Compliance Program.
- 7. The Government of Kenya has made special arrangements for adequate oversight of the procurement process and the execution of the contract, and has invited civil society and other competent Government Departments to participate in the oversight. Those charged with the oversight responsibility will have full access to all documentation submitted by Tenderers for this contract, and to which in turn all Tenderers and other parties involved or affected by the project shall have full access (provided, however, that no proprietary information concerning a Tenderer may be disclosed to another Tenderer or to the public).

ANTI-CORRUPTION DECLARATION PLEDGE

I/We/Messrs.....

of Street, Building, P O Box.....

Contact/Phone/E mail.....

declare that Public Procurement is based on a free and fair competitive Tendering process which should not be open to abuse.

I/We

declare that I/We will not offer or facilitate, directly or indirectly, any inducement or reward to any public officer, their relations or business associates, in connection with

Tender/Tender No

for or in the subsequent performance of the contract if I/We am/are successful.

Authorized Signature.....

Name and Title of Signatory.....

B.18 FORM OF CONTRACT AGREEMENT

This Agreement made theday of 20
Between **Kenya Electricity Generating Company Limited** of [or whose registered office is situated at] **Stima Plaza Phase III, Kolobot Road, Parklands, P.O. Box 47936-00100, NAIROBI, KENYA** (hereinafter called “the Employer”) of the one part, and of [*or whose registered office is situated at*].....(hereinafter called “the Contractor”) of the other part.

WHEREAS the Employer is desirous that the Contractor executes (hereinafter called “the Works”) located atand the Employer has accepted the Tender submitted by the Contractor for the execution and completion of such Works and the remedying of any defects therein, for the Contract Price of[*Amount in figures*], [*Amount in words*].

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and shall be read and construed as part of this Agreement i.e.
 - a) The Letter of Acceptance dated
 - b) The Letter of Tender dated
 - c) The Addenda Nos.
 - d) The Conditions of Contract
 - e) The Employer’s Requirements
 - f) The Completed Technical Schedules
 - g) The Completed Guarantee Schedules
 - h) The Priced Schedule of Prices.
 - i) The Technical Specifications
 - j) The Contractor’s Tender.
3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to design, execute and complete the Works and remedy any defects therein, in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

The common Seal of

Was hereunto affixed in the presence of
Signed Sealed, and Delivered by the said
Binding Signature of Employer
Binding Signature of Contractor

In the presence of

i). Name
Address
Signature

ii). Name
Address
Signature

B.19 SCHEDULES OF GUARANTEES

Name of Applicant or Partner of a Joint Venture

The Tenderer shall record below the guarantees for the major components as stipulated in the Technical Specifications.

The major equipment requiring the guarantee are as listed in the Technical Specifications.

This information is declared to be correct by (Tenderer’s authorised representative)

Authorized Signature.....

Name and Title of Signatory.....

B.20 TENDER SECURITY (BANK GUARANTEE) [UNCONDITIONAL]

(On Letterhead of Bank/Insurance Company)

*[If required, the **Bank /Tenderer** shall fill in this Guarantee form in accordance with the instructions indicated in brackets.]*

[Insert bank's name, and address of issuing branch or office]

Beneficiary: *[insert name and address of Procuring Entity]*

Date: *[insert date]*

TENDER GUARANTEE No.: *[insert number]*

We have been informed that *[insert name of the Tenderer; if a joint venture, list complete legal names of partners]* (hereinafter called "the Tenderer") has submitted to you its Tender dated *[insert date]* (hereinafter called "the Tender") for the execution of *[insert name of Contract]* under Invitation for Tenders No. *[insert IFT number]* ("the IFT").

Furthermore, we understand that, according to your conditions, Tenders must be supported by a Tender Guarantee.

At the request of the Tenderer, we *[insert name of bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[insert amount in figures expressed in the currency of the Purchaser's Country or the equivalent amount in an international freely convertible currency] [insert amount in words]* upon receipt by us of your first demand in writing accompanied by a written statement stating that the Tenderer is in breach of its obligation(s) under the Tender conditions, because the Tenderer;

- a) Has withdrawn its Tender during the period of Tender validity specified by the Tenderer in the Form of Tender; or
- b) Does not accept the correction of errors in accordance with the Instructions to Tenderers (hereinafter "the ITT") of the IFT; or
- c) Having been notified of the acceptance of its Tender by the Procuring Entity during the period of Tender validity;
 - i. Fails or refuses to execute the Contract Form, if required, or
 - ii. Fails or refuses to furnish the Performance Security, in accordance with the ITT.

This Guarantee shall expire;

- a) If the Tenderer is the successful Tenderer, upon our receipt of copies of the Contract signed by the Tenderer and of the Performance Security issued to you by the Tenderer; or
- b) If the Tenderer is not the successful Tenderer, upon the earlier of;
 - i. Our receipt of a copy of your notification to the Tenderer that the Tenderer was unsuccessful, or
 - ii. Thirty days after the expiration of the Tender validity.

Consequently, any demand for payment under this Guarantee must be received by us at the office on or before that date.

[signature(s) of authorized representative(s)]

B.21 PERFORMANCE BANK OR INSURANCE GUARANTEE [UNCONDITIONAL]

(On Letterhead of Bank)

[The **Bank or Insurance Company/successful Tenderer** providing the Guarantee shall fill in this form in accordance with the instructions indicated in brackets, if the Procuring Entity requires this type of security.]

[insert bank's or insurance company's name, and address of issuing branch or office]

Beneficiary: *[insert name and address of Procuring Entity]*

Date: *[insert date]*

PERFORMANCE GUARANTEE No.: *[insert Performance Guarantee number]*

We have been informed that *[insert name of Contractor]* (hereinafter called "the Contractor") has entered into Contract No. *[insert reference number of the Contract]* dated with you, for the execution of *[insert name of Contract and brief description of Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a Performance Guarantee is required.

At the request of the Contractor, we *[insert name of Bank or Insurance Company]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[insert amount in figures] ([insert amount in words])*, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change, addition or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any change, addition, or modification.

This guarantee shall expire not later than thirty days from the date of issuance of the Taking-Over Certificate.

[signature(s) of an authorized representative(s) of the Bank or Insurance Company]

B.22 ADVANCE PAYMENT GUARANTEE (if Applicable)

[Bank's Name and Address of Issuing Branch or Office]

Beneficiary: _____ *[Name and Address of Procuring Entity]*

Date: _____

ADVANCE PAYMENT GUARANTEE No.: _____

We have been informed that *[name of Contractor]* (hereinafter called "the Contractor") has entered into Contract No. *[reference number of the contract]* dated _____ with you, for the execution of *[insert name of Contract and brief description of Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum *[amount in figures]* () *[amount in words]* is to be made against an advance payment guarantee.

At the request of the Contractor, we *[name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[amount in figures]* () *[amount in words]* upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the Contract documents which may be made between _____ *[name of Procuring Entity]* and the Contractor, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

No drawing may be made by you under this guarantee until we have received notice in writing from you that an advance payment of the amount listed above has been paid to the Contractor pursuant to the Contract.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that eighty (80) percent of the Contract Price has been certified for payment, or on the ___ day of _____, 2___, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

Yours truly,

Signature and seal: _____

Name of Bank : _____

Address: _____

Date: _____



B.23 SITE VISIT CERTIFICATE

This is to certify that **(IN BLOCK LETTERS)**

Name:.....

Cell Phone No:.....

Email:.....

.....

Being the authorized representative of **(IN BLOCK LETTERS)**

[*Firm/Company*].....

Official Tel No.....

Official Email:.....

Participated in the organized inspection visit of the site of the works for:

Design, supply, installation, testing and commissioning of a 500KVA emergency Diesel Generator for Kamburu Hydropower Station

Held on..... Day of..... 20.....

OFFICIAL USE:-

Signed.....
(KenGen's Representative)

.....
(Name of KenGen's Representative)

.....
(Designation)

NOTE:

1. This form is to be completed at the time of the organized site visit.
2. Bidder to bring along with him duly filled site visit certificate during the site visit.

B.24 MANUFACTURER’S AUTHORIZATION FORM

To: **KENYA ELECTRICITY GENERATING COMPANY LIMITED**

WHEREAS: _____
[Name of the Manufacturer]

Who are established and reputable manufacturers of:

having factories at:

Do hereby authorize: _____
[Name and address of Agent]

to submit a tender, and subsequently negotiate and sign the Contract with you against **TENDER FOR Design, supply, installation, testing and commissioning of a 500KVA emergency Diesel Generator for Kamburu Hydropower Station**

for the above Goods manufactured by us.

We hereby extend our full guarantee and warranty as per the General Conditions of Contract for the Goods offered for supply by the above firm against this Invitation for Tenders.

B.25 APPENDIX TO CONDITIONS OF CONTRACT

THE EMPLOYER IS

Name: _KENYA ELECTRICITY GENERATING COMPANY (KENGEN)_

Address: _P.O BOX 47936, 00100 NAIROBI_

Name of Authorised Representative: _JOHN NJUGUNA_

Telephone: _____

Facsimile: _____

The Project Manager is

Name: _JOHN NJUGUNA_

Address: _ P.O BOX 47936, 00100 NAIROBI_

Telephone: _0711036000_

Facsimile: _____

The name (and identification number) of the Contract is _____

The Works consist of The design, supply, installation, testing and commissioning of a 500KVA emergency diesel generator for Kamburu Hydropower Station-Kenya

The Start Date shall be _____

The Intended Completion Date for the whole of the Works shall be _____
_____40weeks from _____ signing of contract _____

The following documents also form part of the Contract:

1. TENDER DOCUMENT

2. SIGNED CONTRACT

The Contractor shall submit a revised program for the Works within _14_ days of delivery of the Letter of Acceptance.

The Site Possession Date shall be _____

The Site is located at _KAMBURU POWER STATION_ and is defined in drawings nos. _to be availed during the site visit_

The Defects Liability period is _180_ days from commissioning.

Other Contractors, utilities etc., to be engaged by the Employer on the Site

Include those for the execution of;

1. none
2. _____
3. _____
4. _____

The minimum insurance covers shall be;

1. The minimum cover for insurance of the Works and of Plant and Materials in respect of the Contractor's faulty design is _Ksh.20million_

2. The minimum cover for loss or damage to Equipment is _____

3. The minimum for insurance of other property is _____

4. The minimum cover for personal injury or death insurance

For the Contractor's employees is _____

And for other people is _____

The following events shall also be Compensation Events:

1. _____
2. _____
3. _____
4. _____

The period between Program updates is 14 days.

The amount to be withheld for late submission of an updated Program is 1%

The proportion of payments retained is 10% percent.

The Price Adjustment Clause shall not (shall/shall not) apply

The liquidated damages for the whole of the Works is Kshs. 500,000 (per day)

The Performance Security shall be for the following minimum amounts equivalent as a percentage of the Contract Price----- percent (%)

The Completion Period for the Works is 40 [Weeks]

The rate of exchange for calculation of foreign currency payments is

_____.

The schedule of basic rates used in pricing by the Contractor is as attached [Contractor to attach].

Advance Payment shall not shall/ shall not be granted.