RURAL ELECTRIFICATION & RENEWABLE ENERGY CORPORATION

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Nairobi, Kenya
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TEL NO.254-20-2710955/2713921

PROCUREMENT FOR DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 1No. 150kW SOLAR PV-DIESEL HYBRID PLANT IN DADAJABULA TRADING CENTRE WAJIR COUNTY

Invitation to Tender (ITT) No. 1000001239

INVITATION TO TENDER (ITT)

Procuring Entity: Rural Electrification and Renewable Energy Corporation

CONTRACT NAME AND DESCRIPTION: RFX No; 1000001239; Procurement For Design, Supply, Installation, Testing and Commissioning of 1no. 150kW Solar PV-Diesel Hybrid Plant in Dadajabula Trading Centre Wajir County

1. Rural Electrification & Renewable Energy Corporation invites sealed tenders for the construction of 1No. 150kW solar PV-Diesel hybrid plant in Dadajabula Trading Centre Wajir County within 40 weeks

2. Tendering will be conducted under open competitive method (National) using a standardized tender document. Tendering is open to all qualified and interested Tenderers.

3. Qualified and interested tenderers may obtain further information and inspect the Tender Documents during office hours **8.00am - 12.45pm** to 1**.45pm-4.00pm Monday to Friday** at *Rural Electrification and Renewable Energy Corporation* Offices situated in Kawi Complex, Block C, Ground floor.

4. A complete set of tender documents may be viewed and downloaded by interested tenderers free of charge electronically from the Website www.rerec.co.ke under tender documents or through the e-procurement portal using https://suppliers.rea.co.ke:44300/irj/portal and on the Public Procurement Information Portal https://tenders.go.ke

5. Tenderers who are not yet registered with REREC must register their companies in order to participate in the tender using link below that can be found from the website www.rerec.co.ke Procurement-Supplier registration:https://suppliers.rea.co.ke:44200/supportal(bD1lbiZjPTUwMCZkPW1pbg==)/bspwdapplication.do#VIEW_ANCHOR-ROS_TOP

6. Tenders shall be quoted in Kenya Shillings and shall include all taxes. Tenders shall remain valid for 147 days from the date of opening of tenders

7. There shall be a mandatory site visit on **6th January, 2025; Time: 9:00am – 4:00pm**

8. All Tenders must be accompanied by tender Security of **Kes; 2,317,489.66** in form of a bank guarantee or from Insurance Companies approved by PPRA. Original Bid security shall be delivered to the tender Box (Kawi Complex, Block C, Ground floor, Off Popo Road,) on or before **28th January, 2025 @ 10.00am.**

9. The Tenderer shall chronologically serialize all pages of the tender documents submitted

10. Completed tenders must be delivered to Rural Electrification and Renewable Energy Corporation electronically through https://suppliers.rea.co.ke:44300/irj/portal on or before **28th January, 2025 @ 10.00am.**

11. Only Electronic Tenders will be permitted

12. Tenders will be opened immediately after the deadline date and time specified above or any dead line date and times specified later. Tenders will be publicly opened in the presence of the tenderers' designated representatives who choose to attend at the address below.

13. Any addendum to this tender shall be uploaded to the Corporation's website www.rerec.co.ke under tender documents.

14. Late tenders will be rejected.

15. The addresses referred to above are:

Address for obtaining further information on tender documents

Original Bid security delivered to the tender Box (Kawi Complex, Block C, Ground floor, Off Popo Road,). Contact Manager, Supply chain management, telephone number: 0709193000 and e-mail address: tenders@rerec.co.ke

Address for Submission of Tenders:

Online Through https://suppliers.rea.co.ke:44300/irj/portal

Address for Opening of Tenders.

Kawi Complex, Block C, Ground floor, **online opening system**

Name: **Dr. Rose N. Mkalama**

Designation: **Chief Executive Officer**

PART 1 - TENDERING PROCEDURES

SECTION I - INSTRUCTIONS TO TENDERERS

A General Provisions

1. Scope of Tender

The Procuring Entity as defined in the Appendix to Conditions of Contract invites tenders for Works Contract as described in the tender documents. The name, identification, and number of lots (contracts) of this Tender Document are **specified in the TDS.**

2. Fraud and Corruption

2.1 The Procuring Entity requires compliance with the provisions of the Public Procurement and Asset Disposal Act, 2015, Section 62 "Declaration not to engage in corruption". The tender submitted by a person shall include a declaration that the person shall not engage in any corrupt or fraudulent practice and a declaration that the person or his or her sub-contractors are not debarred from participating in public procurement proceedings.

2.2 The Procuring Entity requires compliance with the provisions of the Competition Act 2010, regarding collusive practices in contracting. Any tenderer found to have engaged in collusive conduct shall be disqualified and criminal and/or civil sanctions may be imposed. To this effect, Tenders shall be required to complete and sign the "Certificate of Independent Tender Determination" annexed to the Form of Tender.

2.3 Unfair Competitive Advantage- Fairness and transparency in the tender process require that the Firms or their Affiliates competing for a specific assignment do not derive a competitive advantage from having provided consulting services related to this tender. The Procuring Entity shall indicate in the **TDS** firms (if any) that provided consulting services for the contract being tendered for. The Procuring Entity shall check whether the owners or controllers of the Tenderer are same as those that provided consulting services. The Procuring Entity shall, upon request, make available to any tenderer information that would give such firm unfair competitive advantage over competing firms.

2.4 Tenderers shall permit and shall cause their agents (whether declared or not), subcontractors, sub-consultants, service providers, suppliers, and their personnel, to permit the Procuring Entity to inspect all accounts, records and other documents relating to any initial selection process, prequalification process, tender submission, proposal submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Procuring Entity.

3 Eligible Tenderers

3.1 A Tenderer may be a firm that is a private entity, a state-owned enterprise or institution subject to ITT3.7 or any combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter in to such an agreement supported by a letter of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the tendering process and, in the event the JV is awarded the Contract, during contract execution. The maximum number of JV members shall be specified in the **TDS**.

3.2 A Tenderer shall not have a conflict of interest. Any tenderer found to have a conflict of interest shall be disqualified. A tenderer may be considered to have a conflict of interest for the purpose of this tendering process, if the tenderer:

a. Directly or indirectly controls, is controlled by or is under common control with another tenderer; or

b. Receives or has received any direct or indirect subsidy from another tenderer; or

c. Has the same legal representative as another tenderer; or

d. Has a relationship with another tenderer, directly or through common third parties, that puts it in a position to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process; or

e. Any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the tender; or

f. Any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as Engineer for

the Contract implementation; or

h) Would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the contract specified in this Tender Document or

i) Has a close business or family relationship with a professional staff of the Procuring Entity who:

i) Are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract; or

ii) would be involved in the implementation or supervision of such Contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.

3.3 Public Officers of the Procuring Entity, their Spouses, Child, Parent, Brothers or Sister. Child, Parent, Brother or Sister of a Spouse, their business associates or agents and firms/organizations in which they have a substantial or controlling interest shall not be eligible to tender or be awarded a contract. Public Officers are also not allowed to participate in any procurement proceedings.

3.4 A tenderer shall not be involved in corrupt, coercive, obstructive, collusive or fraudulent practice. A tenderer that is proven to have been involved any of these practices shall be automatically disqualified and would not be awarded a contract.

3.5 A Tenderer (either individually or as a JV member) shall not participate in more than one Tender, except for permitted alternative tenders. This includes participation as a subcontractor in other Tenders. Such participation shall result in the disqualification of all Tenders in which the firm is involved. A firm that is not a tenderer or a JV member may participate as a subcontractor in more than one tender.

3.6 A Tenderer may have the nationality of any country, subject to the restrictions pursuant to ITT4.8. A Tenderer shall be deemed to have the nationality of a country if the Tenderer is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed subcontractors or sub-consultants for any part of the Contract including related Services.

3.7 A Tenderer that has been debarred by the PPRA from participating in public procurement shall be ineligible to be prequalified for a tender or be awarded a contract. The list of debarred firms and individuals is available from the website of PPRA www.ppra.go.ke.

3.8 Tenderers that are state-owned enterprises or institutions may be eligible to compete and be awarded a Contract (s) only if they are accredited by PPRA to be (i)a legal public entity of the state Government and/or public administration, (ii) financially autonomous and not receiving any significant subsidies or budget support from any public entity or Government, and (iii) operating under commercial law and vested with legal rights and liabilities similar to any commercial enterprise to enable it compete with firms in the private sector on an equal basis.

3.9 A Firms and individuals may be in eligible if their countries of origin (a) as a matter of law or official regulations, Kenya prohibits commercial relations with that country, or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, Kenya prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country. A tenderer shall provide such documentary evidence of eligibility satisfactory to the Procuring Entity, as the Procuring Entity shall reasonably request.

3.10 Foreign tenderers are required to source at least forty (40%) percent of their contract inputs (in supplies, subcontracts and labor) from national suppliers and contractors. To this end, a foreign tenderer shall provide in its tender documentary evidence that this requirement is met. Foreign tenderers not meeting this criterion will be automatically disqualified. Information required to enable the Procuring Entity determine if this condition is met shall be provided in "*SECTION III- EVALUATION AND QUALIFICATION CRITERIA, Item9".*

3.11 Pursuant to the eligibility requirements of ITT3.10, at tender is considered a foreign tenderer, if it is registered in Kenya, has less than 51 percent ownership by nationals of Kenya and if it does not subcontract foreign contractors more than 10 percent of the contract price, excluding provisional sums. JVs are considered as foreign tenderers if the individual member firms are registered in Kenya have less 51 percent ownership by nationals of Kenya. The JV shall not subcontract to foreign firms more than 10 percent of the contract price, excluding provisional sums.

3.12 The National Construction Authority Act of Kenya requires that all local and foreign contractors be registered with the National Construction Authority and be issued with a Registration Certificate before they can undertake any construction works in Kenya. Registration shall not be a condition for tender, but it shall be a condition of contract award and signature. A selected tenderer shall be given opportunity to register before such award and signature of contract. Application for registration with National Construction Authority may be accessed from the website www.nca.go.ke.

3.13 The Competition Act of Kenya requires that firms wishing to tender as Joint Venture under takings which may prevent, distort or lessen competition in provision of services are prohibited unless they are exempt in accordance with the provisions of Section 25 of the Competition Act, 2010. JVs will be required to seek for exemption from the Competition Authority. Exemption shall not be a condition for tender, but it shall be a condition of contract award and signature. AJV tenderer shall be given opportunity to seek such exemption as a condition of award and signature of contract. Application for exemption from the Competition Authority of Kenya may be accessed from the website www.cak.go.ke

4 Eligible Goods, Equipment, and Services

4.1 Goods, equipment and services to be supplied under the Contract may not have their origin in any country that is not eligible under ITT3.9. At the Procuring Entity's request, Tenderers may be required to provide evidence of the origin of Goods, equipment and services.

4.2 Any goods, works and production processes with characteristics that have been declared by the relevant national environmental protection agency or by other competent authority as harmful to human beings and to the environment shall not be eligible for procurement.

5 Tenderer's Responsibilities

5.1 The tenderer shall bear all costs associated with the preparation and submission of his/her tender, and the Procuring Entity will in no case be responsible or liable for those costs.

5.2 The tenderer, at the tenderer's own responsibility and risk, is encouraged to visit and examine the Site of the 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 beat the tenderer's own expense.

5.3 The Tenderer and any of its personnel or agents will be granted permission by the Procuring Entity to enter upon its premises and lands for the purpose of such visit. The Tenderer shall indemnify the Procuring Entity against all liability arising from death or personal injury, loss of or damage to property, and any other losses and expenses incurred as a result of the inspection.

5.4 The tenderer shall provide in the Form of Tender and Qualification Information, a preliminary description of the proposed work method and schedule, including charts, as necessary or required.

B. Contents of Tender Documents

6 Sections of Tender Document

6.1 The tender document consists of Parts 1, 2, and 3, which includes all the sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITT 10.

PART 1 Tendering Procedures

i) Section I- Instructions to Tenderers (ITT)

ii) Section II- Tender Data Sheet (TDS)

iii) Section III- Evaluation and Qualification Criteria

iv) Section IV-Tendering Forms

PART 2 Works Requirements

i) Section V- Specifications
ii) Section VI- Drawings

PART 3 Conditions of Contract and Contract Forms

i) Section VII- General Conditions of Contract (GCC)
ii) Section VII– Special Conditions of Contract (SC)
iii) Section IX- Contract Forms

6.2 The Invitation to Tender Document Notice issued by the Procuring Entity is not part of the Tender document.

6.3 Unless obtained directly from the Procuring Entity, the Procuring Entity is not responsible for the completeness of the Tender document, responses to requests for clarification, the minutes of the pre-Tender meeting (if any), or Addenda to the Tender document in accordance with ITT 10. In case of any contradiction, documents obtained directly from the Procuring Entity shall prevail.

6.4 The Tenderer is expected to examine all instructions, forms, terms, and specifications in the Tender Document and to furnish with its Tender all information and documentation as is required by the Tender document.

7 Site Visit

7.1 The Tenderer, at the Tenderer's own responsibility and risk, is encouraged to visit and examine the Site of the Required Services and its surroundings and obtain all information that may be necessary for preparing the Tender and entering into a contract for the Services. The costs of visiting the Site shall be at the Tenderer's own expense.

8 Pre-Tender Meeting and a pre-arranged pretender visit of the site of the works

8.1 The Procuring Entity shall specify in the **TDS** if a pre-tender conference will be held, when and where. The Procuring Entity shall also specify in the **TDS** if a pre-arranged pretender visit of the site of the works will be held and when. The Tenderer's designated representative is invited to attend a pre-arranged pretender visit of the site of the works. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

8.2 The Tenderer is requested to submit any questions in writing, to reach the Procuring Entity not later than the period specified in the **TDS** before the meeting.

8.3 Minutes of the pre-Tender meeting and the pre-arranged pretender visit of the site of the works, if applicable, including the text of the questions asked by Tenderers and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Tenderers who have acquired the Tender Documents in accordance with ITT6.3. Minutes shall not identify the source of the questions asked.

8.4 The Procuring Entity shall also promptly publish anonymized (*no names*) Minutes of the pre-Tender meeting and the pre-arranged pretender visit of the site of the works at the web page identified **in the TDS**. Any modification to the Tender Documents 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 ITT10 and not through the minutes of the pre-Tender meeting. Nonattendance at the pre-Tender meeting will not be a cause for disqualification of a Tenderer.

9 Clarification of Tender Documents

9.1 A Tenderer requiring any clarification of the Tender Document shall contact the Procuring Entity in writing at the Procuring Entity's address specified in the **TDS** or raise its enquiries during the pre-Tender meeting and the pre-arranged pretender visit of the site of the works if provided for in accordance with ITT8.4. The Procuring Entity will respond in writing to any request for clarification, provided that such request is received no later than the period specified in the **TDS** prior to the deadline for submission of tenders. The Procuring Entity shall forward copies of its response to all tenderers who have acquired the Tender Documents in accordance with ITT 6.3, including a description of the inquiry but without identifying its source. If so specified in the **TDS**, the Procuring Entity shall also promptly publish its response at the web page identified in the **TDS**. Should the clarification result in changes to the essential elements of the Tender Documents, the Procuring Entity shall amend the Tender Documents appropriately following the procedure under ITT 10.

10 Amendment of Tendering Document

10.1 At any time prior to the deadline for submission of Tenders, the Procuring Entity may amend the Tendering document by issuing addenda.

10.2 Any addendum issued shall be part of the tendering document and shall be communicated in writing to all who have obtained the tendering document from the Procuring Entity in accordance with ITT 6.3. The Procuring Entity shall also promptly publish the addendum on the Procuring Entity's webpage in accordance with ITT8.1.

10.3 To give prospective Tenderers reasonable time in which to take an addendum into account in preparing their Tenders, the Procuring Entity shall extend, as necessary, the deadline for submission of Tenders, in accordance with ITT 24.2 below 2.

C. Preparation of Tenders

11 Cost of Tendering

11.1 The Tenderer shall bear all costs associated with the preparation and submission of its Tender, and the Procuring Entity shall not be responsible or liable for those costs, regardless of the conduct or outcome of the tendering process.

12 Language of Tender

12.1 The Tender, as well as all correspondence and documents relating to the tender exchanged by the tenderer and the Procuring Entity, shall be written in the English Language. Supporting documents and printed literature that are part of the Tender may be in the same language.

13 Documents Comprising the Tender

13.1 The Tender shall comprise the following:

a) Form of Tender prepared in accordance with ITT 14;

b) Schedules of personnel, and work completed in accordance with ITT 14 and ITT 16;

c) Tender Security or Tender-Securing Declaration, in accordance with ITT 21.1;

d) Alternative Tender, if permissible, in accordance with ITT 15;

e) Authorization: written confirmation authorizing the signatory of the Tender to commit the Tenderer, in accordance with ITT 22.3;

f) Qualifications: documentary evidence in accordance with ITT 19 establishing the Tenderer's qualifications to perform the Contract if its Tender is accepted;

g) Conformity: a technical proposal in accordance with ITT 18;

h) Any other document required in the **TDS**.

In addition to the requirements under ITT 13.1, Tenders submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Tender shall be signed by all members and submitted with the Tender, together with a copy of the proposed Agreement. The Tenderer shall serialize pages of all tender documents submitted.

14 Form of Tender and Schedules

14.1 The Form of Tender and Schedules, shall be prepared using the relevant forms furnished in Section IV, Tendering Forms. The forms must be completed without any alterations to the text, and no substitutes shall be

Accepted except as provided under ITT 22.3. All blank spaces shall be filled in with the information requested. The Tenderer shall chronologically serialize all pages of the tender documents submitted.

14.2 The Tenderer shall furnish in the Form of Tender information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Tender.

15 Alternative Tenders

15.1 Unless otherwise specified in the **TDS**, alternative Tenders shall not be considered.

15.2 When alternative times for completion are explicitly invited, a statement to that effect **will be included in the TDS**, and the method of evaluating different alternative times for completion will be described in Section III, Evaluation and Qualification Criteria.

15.3 Except as provided under ITT 15.4 below, Tenderers wishing to offer technical alternatives to the requirements of the Tender Documents must first price the Procuring Entity's design as described in the Tender Documents and shall further provide all information necessary for a complete evaluation of the alternative by the Procuring Entity, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the Tenderer with the Winning Tender conforming to the basic technical requirements shall be considered by the Procuring Entity.

15.4 When specified in the **TDS**, Tenderers are permitted to submit alternative technical solutions for specified parts of the Works, and such parts **will be identified in the TDS**, as will the method for their evaluation and described in Section VII, Works' Requirements.

16 Tender Prices and Discounts

16.1 The prices and discounts (including any price reduction) quoted by the Tenderer in the Form of Tender shall conform to the requirements specified below.

16.2 The Tenderer shall price for all items of the Works, including design, management and quality control costs and shall be assumed to have included in the tender price all associated costs, including costs to meet Public Authorities' requirements.

16.3 The price to be quoted in the Form of Tender, in accordance with ITT 14.1, shall be the total price of the Tender, excluding any discounts offered.

16.4 The Tenderer shall quote any discounts and the methodology for their application in the Form of Tender, in accordance with ITT 14.1.

16.5 It will be specified in the **TDS** if the rates and prices quoted by the Tenderer are or are not subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, except in cases where the contract is subject to fluctuations and adjustments, not fixed price. In such a case, the Tenderer shall furnish the indices and weightings for the price adjustment formulae in the Schedule of Adjustment Data and the Procuring Entity may require the Tenderer to justify its proposed indices and weightings.

16.6 Where tenders are being invited for individual lots (contracts)or for any combination of lots (packages), tenderers wishing to offer discounts for the award of more than one Contract shall specify in their Tender the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITT 16.4, provided the Tenders for all lots (contracts) are opened at the same time.

16.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28days prior to the deadline for submission of Tenders, shall be included in the rates and prices and the total Tender Price submitted by the Tenderer.

17 Currencies of Tender and Payment

17.1 The currency (ies) of the Tender and the currency (I e s) of payments shall be the same**.**

17.2 Tenderers shall quote entirely in Kenya Shillings.

17.2.1 A Tenderer expecting to incur expenditures in other currencies for inputs to the Works supplied from outside Kenya (referred to as "the foreign currency requirements") shall indicate so in the Financial Proposal the percentage (s)of the Tender Price (excluding Provisional Sums), needed by the Tenderer for the payment of such foreign currency requirements, limited to no more than two foreign currencies.

17.2.2 The rates of exchange to be used by the Tenderer in arriving at the local currency equivalent and the percentage (s) mentioned in (a) above shall be specified by the Tenderer in the **TDS**, and shall apply for all payments under the Contract so that no exchange risk will be borne by the successful Tenderer.

17.3 Tenderers may be required by the Procuring Entity to justify, to the Procuring Entity's satisfaction, their local and foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Adjustment Data in the Appendix to Tender are reasonable, in which case a detailed breakdown of the foreign currency requirements shall be provided by Tenderers.

18 Documents Comprising the Technical Proposal

18.1 The Tenderer shall furnish a technical proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, Tender Forms, insufficient detail to demonstrate the adequacy of the Tenderer's proposal to meet the work's requirements and the completion time.

19 Documents Establishing the Eligibility and Qualifications of the Tenderer

19.1 Tenderers shall complete the Form of Tender, included in Section IV, Tender Forms, to establish Tenderer's eligibility in accordance with ITT 4.

19.2 In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract the Tenderer shall provide the information requested in the corresponding information sheets included in Section IV, Tender Forms.

19.3 If a margin of preference applies as specified in accordance with ITT 36.1, national tenderers, individually or in joint ventures, applying for eligibility for national preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITT 36.1.

19.4 Tenderers shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity, a particular contractor or group of contractors qualifies for a margin of preference. Further the information will enable the Procuring Entity identify any actual or potential conflict of interest in relation to the procurement and/or contract management processes, or a possibility of collusion between tenderers, and there by help to prevent any corrupt influence in relation to the procurement process or contract management.

19.5 The purpose of the information described **in ITT 19.2** above overrides any claims to confidentiality which a tenderer may have. There can be no circumstances in which it would be justified for a tenderer to keep information relating to its ownership and control confidential where it is tendering to undertake public sector work and receive public sector funds. Thus, confidentiality will not be accepted by the Procuring Entity as a justification for a Tenderer's failure to disclose, or failure to provide required information on its ownership and control.

19.6 The Tenderer shall provide further documentary proof, information or authorizations that the Procuring Entity may request in relation to ownership and control which information on any changes to the information which was provided by the tenderer under ITT19.5. The obligations to require this information shall continue for the duration of the procurement process and contract performance and after completion of the contract, if any change to the information previously provided may reveal a conflict of interest in relation to the award or management of the contract.

19.7 All information provided by the tenderer pursuant to these requirements must be complete, current and accurate as at the date of provision to the Procuring Entity. In submitting the information required pursuant to these requirements, the Tenderer shall warrant that the information submitted is complete, current and accurate as at the date of submission to the Procuring Entity.

19.8 If a tenderer fails to submit the information required by these requirements, its tenderer will be rejected. Similarly, if the Procuring Entity is unable, after taking reasonable steps, to verify to a reasonable degree the information submitted by a tenderer pursuant to these requirements, then the tender will be rejected.

19.9 If information submitted by a tenderer pursuant to these requirements, or obtained by the Procuring Entity (whether through its own enquiries, through notification by the public or otherwise), shows any conflict of interest which could materially and improperly benefit the tenderer in relation to the procurement or contract management process, then:

i) If the procurement process is still ongoing, the tenderer will be disqualified from the procurement process,

ii) If the contract has been awarded to that tenderer, the contract award will be set aside,

iii) The tenderer will be referred to the relevant law enforcement authorities for investigation of whether the tenderer or any other persons have committed any criminal offence.

19.10 If a tenderer submits information pursuant to these requirements that is in complete, inaccurate or out-of-date, or attempts to obstruct the verification process, then the consequences ITT19.9 will ensue unless the tenderer can show to the reasonable satisfaction of the Procuring Entity that any such act was not material, or was due to genuine error which was not attributable to the intentional act, negligence or recklessness of the tenderer.

20 Period of Validity of Tenders

20.1 Tenders shall remain valid for the Tender Validity period specified **in the TDS**. The Tender Validity period starts from the date fixed for the Tender submission deadline (as prescribed by the Procuring Entity in accordance with ITT 24.1). A tender valid for a shorter period shall be rejected by the Procuring Entity as non-responsive.

20.2 In exceptional circumstances, prior to the expiration of the Tender validity period, the Procuring Entity may request Tenderers to extend the period of validity of their Tenders. The request and the responses shall be made in writing. If a Tender Security is requested in accordance with ITT 21, it shall also be extended for thirty (30) days beyond the deadline of the extended validity period. A Tenderer may refuse the request without forfeiting its Tender security. A tenderer granting the request shall not be required or permitted to modify its Tender, except as provided in ITT 26.3.

21 Tender Security

21.1 The Tenderer shall furnish as part of its Tender, either a Tender-Securing Declaration or a Tender Security as specified in the **TDS**, in original form and, in the case of a Tender Security, in the amount and currency **specified in the TDS**. A Tender-Securing Declaration shall use the form included in Section IV, Tender Forms.

21.2 If a Tender Security is specified pursuant to ITT 21.1, the Tender Security shall be a demand guarantee in any of the following forms at the Tenderer's option:

i) cash;

ii) A bank guarantee;

iii) A guarantee by an insurance company registered and licensed by the Insurance Regulatory Authority listed by the Authority; or

iv) A guarantee issued by a financial institution approved and licensed by the Central Bank of Kenya, and from a reputable source, and an eligible country.

21.3 If an unconditional bank guarantee is issued by a bank located outside Kenya, the issuing bank shall have a correspondent bank located in Kenya to make it enforceable. The Tender Security shall be valid for thirty (30) days beyond the original validity period of the Tender, or beyond any period of extension if requested under ITT 24.2.

21.4 If a Tender Security or Tender-Securing Declaration is specified pursuant to ITT 21.1, any Tender not accompanied by a substantially responsive Tender Security or Tender-Securing Declaration shall be rejected by the Procuring Entity as non-responsive.

21.5 The Tender Security shall be returned/release as promptly as possible

a. The procurement proceedings are terminated;
b. The procuring entity determines that none of the submitted tenders is responsive;
c. A bidder declines to extend the tender validity.
d. Once the successful Tenderer has signed the Contract and furnished the required Performance Security.

21.6 The Tender Security may be forfeited or the Tender-Securing Declaration executed:

a) If a Tenderer withdraws its Tender during the period of Tender validity specified by the Tenderer on the Form of Tender; or

b) If the successful Tenderer fails to:

i) Sign the Contract in accordance with ITT 50; or

ii) Furnish a performance security in accordance with ITT 51.

21.7 Where the Tender-Securing Declaration is executed the Procuring Entity will recommend to the PPRA that PPRA debars the Tenderer from participating in public procurement as provided in the law.

21.8 The Tender Security or the Tender-Securing Declaration of a JV shall be in the name of the JV that submits the Tender. If the JV has not been legally constituted into a legally enforceable JV at the time of tendering, the Tender Security or the Tender-Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITT 4.1 and ITT 13.2.

21.9 A tenderer shall not issue a tender security to guarantee itself.

22 Format and Signing of Tender

22.1 The Tenderer shall prepare one original of the documents comprising the Tender as described in ITT 13and clearly mark it "ORIGINAL." Alternative Tenders, if permitted in accordance with ITT 15, shall be clearly marked "ALTERNATIVE." In addition, the Tenderer shall submit copies of the Tender, in the number **specified in the TDS** and clearly mark them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.

22.2 Tenderers shall mark as "CONFIDENTIAL" all information in their Tenders which is confidential to their business. This may include proprietary information, trade secrets, or commercial or financially sensitive information.

22.3 The original and all copies of the Tender shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Tenderer. This authorization shall consist of a written confirmation **as specified in the TDS** 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 where entries or amendments have been made shall be signed or initialed by the person signing the Tender.

22.4 In case the Tenderer is a JV, the Tender shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.

22.5 Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Tender.

D. Submission and Opening of Tenders

23 Sealing and Marking of tenders

23.1 The Tender shall deliver the Proposals (technical and Financial) in a single sealed envelope, or in a single sealed package, or in a single sealed container bearing the name and Reference number of the Tender addressed to the Procuring Entity and a warning "DO NOT OPEN BEFORE……. (the time and date for Tender opening date". Within the single envelope, package or container, the Tenderer shall place the following separate, sealed envelopes:

23.2 In the single sealed envelope, or in a single sealed package, or in a single sealed container the following documents shall been closed and shall be addressed as follows:

a. in an envelope or package or container marked "ORIGINAL", all documents comprising the Technical Proposal, and

b. in an envelope or package or container marked "COPIES", all required copies of the Technical Proposal; and

c. in an envelope marked “ORIGINAL” the Form of Tender; and The inner envelopes or packages or containers shall:

i. bear the name and address of the Procuring Entity.

ii. bear the name and address of the Tender; and

iii. bear the name and Reference number of the Contract.

23.3 If an envelope or package or container is not sealed and marked as required, the *Procuring Entity* will assume no responsibility for the misplacement or premature opening of the proposal. Tenders that are misplaced or opened prematurely will not be accepted.

23.4 The Proposal or its modifications must be sent to the address indicated in the **Data Sheet** and received by the Procuring Entity no later than the deadline indicated in the Data Sheet, or any extension to this deadline. Any Proposal or its modification received by the Procuring Entity after the deadline shall be declared late and rejected, and promptly returned unopened.

24 Deadline for Submission of Tenders

24.1 Tenders must be received by the Procuring Entity at the address **specified in the TDS** and no later than the date and time also **specified in the TDS. When so specified in the TDS**, Tenderers shall have the option of submitting their Tenders electronically. Tenderers submitting Tenders electronically shall follow the electronic Tender submission procedures **specified in the TDS**.

24.2 The Procuring Entity may, at its discretion, extend the deadline for the submission of Tenders by amending the Tender Documents in accordance with ITT 8, in which case all rights and obligations of the Procuring Entity and Tenderers previously subject to the deadline shall thereafter be subject to the deadline as extended.

25 Late Tenders

25.1 The Procuring Entity shall not consider any Tender that arrives after the deadline for submission of tenders, in accordance with ITT 24. 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.

26 Withdrawal, Substitution, and Modification of Tenders

26.1 A Tenderer may withdraw, substitute, or modify its Tender after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITT 22.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Tender must accompany the respective written notice. All notices must be:

a. prepared and submitted in accordance with ITT 22 and ITT 23 (except that withdrawals notices do not require copies), and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL,” “SUBSTITUTION,” “MODIFICATION;” and

b. Received by the Procuring Entity prior to the deadline prescribed for submission of Tenders, in accordance with ITT 22.

26.2 Tenders requested to be withdrawn in accordance with ITT 26.1shall be returned unopened to the Tenderers.

26.3 No Tender may be withdrawn, substituted, 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 Form of Tender or any extension thereof.

27 Tender Opening

27.1 The Procuring Entity's opening committee shall conduct the opening of the Technical Proposals in the presence of the Tenders representatives who choose to attend. The opening date, time and the address are stated in the **TDS.** The envelopes with the Form of Tender (Financial Proposal) shall remain sealed and shall be securely stored by the Procuring Entity until they are opened.

27.2 At the opening of the Technical Proposals the following shall be read out: (i) the name and the country of the Tender or, in case of a Joint Venture, the name of the Joint Venture, the name of the lead member and the names and the countries of all members; (ii) the presence or absence of a duly sealed envelope of the Form of Tender (Financial Proposal); (iii) any modifications to the Proposal submitted prior to Tender submission deadline; and (iv) any other information deemed appropriate or as indicated in the **TDS**.

27.3 First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelopes with the corresponding Tender shall not be opened, but returned to the Tenderer. No Tender withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is readout at Tender opening.

27.4 Next, envelopes marked "SUBSTITUTION" shall be opened and read out and exchanged with the corresponding Tender being substituted, and the substituted Tender shall not be opened, but returned to the Tenderer. No Tender substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is readout at Tender opening.

27.5 Next, envelopes marked "MODIFICATION" shall be opened and read out with the corresponding Tender. No Tender modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is readout at Tender opening.

27.6 Next, all remaining envelopes shall be opened one at a time, reading out: the name of the Tenderer and whether there is a modification; including any discounts and alternative Tenders; the presence or absence of a Tender Security or Tender-Securing Declaration, if required; and any other details as the Procuring Entity may consider appropriate.

27.7 Only Tenders, alternative Tenders and discounts that are opened and read out at Tender opening shall be considered further for evaluation.

27.8 At the Tender Opening, the Procuring Entity shall neither discuss the merits of any Tender nor reject any Tender (except for late Tenders, in accordance with ITT 25.1).

27.9 The Procuring Entity shall prepare minutes of the opening of technical proposals that shall include, as a minimum:

a. the name of the Tenderer and whether there is a withdrawal, substitution, or modification; and any discounts offered as a separate letter;

b. presence of a sealed Form of Tender Price;

c. any alternative technical proposals, if any;

d. the presence or absence of a Tender Security, if one was required.

27.10 The Tenderers' representatives who are present shall be requested to sign the minutes. The omission of a Tenderer's signature on the minutes shall not invalidate the contents and effect of the minutes. A copy of the tender opening register shall be distributed to all Tenderers upon request.

27.11 After the technical evaluation is completed, the Procuring Entity shall notify those Tenderers whose Proposals were considered non-responsive to the Tender document for not meeting the minimum qualifying technical score, advising them the following: (i) their Proposal was not responsive to the Tender Document and did not meet the minimum qualifying technical score; (ii) provide information relating to the Tenderer's overall technical score, as well as scores obtained; (iii) their Forms of Tender will be returned unopened after completing the tender process and contract signing; and (iv) notify them of the date, time and location of the public opening of the Forms of Tender (Financial Proposals) and invite them to attend.

27.12 The opening date of the Forms of Tender should allow the Tenders sufficient time to decide for attending the opening and shall be not less than five (5) Business Days from the date of notification of the results of the technical evaluation. Tenderer's attendance at the opening of the Forms of Tender is optional and is at the Tenderer's choice. The Forms of Tender shall be opened publicly by the Procuring Entity's opening committee in the presence of the representatives of the Tenderers who chooses to attend.

27.13 At the opening, the names of the Tenders, and the overall technical scores, shall be read aloud. The Forms of Tender will then be inspected to confirm that they have remained sealed and unopened. These Forms of Tender shall be then opened, and the total prices read aloud and recorded. Upon request, copies of the record shall be sent to all Tenders who submitted Tenders.

E. Evaluation and Comparison of Tenders

28 Confidentiality

28.1 Information relating to the evaluation of Tenders and recommendation of contract award shall not be disclosed to Tenderers or any other persons not officially concerned with the Tender process until information on Intention to Award the Contract is transmitted to all Tenderers in accordance with ITT 44.

28.2 Any effort by a Tenderer to influence the Procuring Entity in the evaluation of the Tenders or Contract award decisions may result in the rejection of its tender.

28.3 Not with standing ITT 28.2, from the time of tender opening to the time of contract award, if a tenderer wishes to contact the Procuring Entity on any matter related to the tendering process, it shall do so in writing.

29 Clarification of Tenders

29.1 To assist in the examination, evaluation, and comparison of the tenders, and qualification of the tenderers, the Procuring Entity may, at its discretion, ask any tenderer for a clarification of its tender, given a reasonable time for a response. Any clarification submitted by a tenderer that is not in response to a request by the Procuring Entity shall not be considered. The Procuring Entity's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, 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 the tenders, in accordance with ITT 33.

29.2 If a tenderer does not provide clarifications of its tender by the date and time set in the Procuring Entity's request for clarification, its Tender may be rejected.

30 Deviations, Reservations, and Omissions

30.1 During the evaluation of tenders, the following definitions apply:

"Deviation" is a departure from the requirements specified in the tender document;

"Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the tender document; and "Omission" is the failure to submit part or all of the information or documentation required in the Tender document.

31 Determination of Responsiveness

31.1 The Procuring Entity's determination of a Tender's responsiveness is to be based on the contents of the tender itself, as defined in ITT 13.

31.2 A substantially responsive Tender is one that meets the requirements of the Tender document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that, if accepted, would:

a. Affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or

b. limit in any substantial way, inconsistent with the tender document, the Procuring Entity's rights or the tenderer's obligations under the proposed contract; or

c. if rectified, would unfairly affect the competitive position of other tenderers presenting substantially responsive tenders.

31.3 The Procuring Entity shall examine the technical aspects of the tender submitted in accordance with ITT 18, to confirm that all requirements of Section VII, Works' Requirements have been met without any material deviation, reservation or omission.

31.4 If a tender is not substantially responsive to the requirements of the tender document, it shall be rejected by the Procuring Entity and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

32 Non-material Non-conformities

32.1 Provided that a tender is substantially responsive, the Procuring Entity may waive any non-conformities in the tender.

32.2 Provided that a Tender is substantially responsive, the Procuring Entity may request that the tenderer submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial non-conformities in the tender related to documentation requirements. Requesting information or documentation on such non-conformities shall not be related to any aspect of the price of the tender. Failure of the tenderer to comply with the request may result in the rejection of its tender.

32.3 Provided that a tender is substantially responsive, the Procuring Entity shall rectify quantifiable nonmaterial non-conformities related to the Tender Price. To this effect, the Tender Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner specified **in the TDS.**

32.4 Provided that the tender is substantially responsive, no correction of errors is expected in this tender.

33 Correction of Arithmetical Errors

33.1 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.

33.2 Provided that the Tender is substantially responsive, the Procuring Entity shall handle errors on the following basis:

a. Any error detected if considered a major deviation that affects the substance of the tender, shall lead to disqualification of the tender as non-responsive.

b. Any errors in the submitted tender arising from a miscalculation of unit price, quantity, subtotal and total bid price shall be considered as a major deviation that affects the substance of the tender and shall lead to disqualification of the tender as non-responsive. and

c. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail.

34 Breakdown of the Tender Price

34.1 The completed Form of Tender shall have a table indicating the a detailed of the Tender Price which must include:

a. Preliminary items such as insurance for works, noticeboards, statutory payments, site office costs, etc.,

b. Monthly cost of design/supervisory staff and site agents (up to contract completion);

c. Monthly cost of major items of equipment (up to contract completion);

d. Cost of the works (a lump sum figure).

e. Any items specified in the **TDS.**

34.2 The Breakdown of the Tender Price will form the basis of the Bills of Quantities and Payment Schedule and will be agreed with the Procuring Entity prior to signing of the contract and it will be part of the Contract Agreement. In addition, the Contract or shall be required to submit non-binding quarterly estimates of the payments which he expects to become due during the execution of the works.

34.3 In preparing the Schedule of Payments, every effort must be taken to ensure that the schedule is not is seriously unbalanced and/or front loaded. If in the Procuring Entity's opinion, the schedule is seriously unbalanced and/or front loaded, the Procuring Entity may require the Tenderer to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the schedule of prices with the scope of works, proposed methodology, schedule and any other requirements of the Contract.

34.4 On award of Contract, within the period specified in the **TDS,** the tenderer will prepare a complete Bills of Quantities for the works in conformity with ITT 31.1 (d) which will form the basis of preparing payment certificates. If in the Procuring Entity's opinion, the pricing in the Bills of Quantities is seriously unbalanced and/or front loaded, the Procuring Entity may require the Tenderer to provide written clarifications.

Clarifications may include detailed price analyses to demonstrate the consistency of the schedule of prices with the scope of works, proposed methodology, schedule and any other requirements of the Contract.

35 Conversion to Single Currency

35.1 For evaluation and comparison purposes, the currency (ies) of the Tender shall be converted into a single currency **as specified in the TDS**.

36 Margin of Preference and Reservations

36.1 A margin of preference may be allowed only when the contract is open to international competitive tendering where foreign contractors are expected to participate in the tendering process and where the contract exceeds the value/threshold specified in the Regulations.

36.2 A margin of preference shall not be allowed unless it is specified so in the **TDS**.

36.3 Contracts procured on basis of international competitive tendering shall not be subject to reservations exclusive to specific groups as provided in ITT36.1.

37 Nominated Subcontractors

37.1 **Unless** otherwise stated **in the TDS,** the Procuring Entity does not in tend to execute any specific elements of the Works by subcontractors selected in advance by the Procuring Entity.

37.2 Tenderers may propose subcontracting up to the percentage of total value of contracts or the volume of works as specified **in the TDS**. Subcontractors proposed by the Tenderer shall be fully qualified for their parts of the Works.

37.3 The subcontractor's qualifications shall not be used by the Tenderer to qualify for the Works unless their specialized parts of the Works were previously designated by the Procuring Entity **in the TDS** as can be met by subcontractors referred to hereafter as 'Specialized Subcontractors', in which case, the qualifications of the Specialized Subcontractors proposed by the Tenderer may be added to the qualifications of the Tenderer.

38 Evaluation of Tenders

38.1 To assist in the examination, and evaluation of Technical Proposals, and qualification of the tenderers, the Procuring Entity may, at its discretion, ask any tenderer for a clarification of its Tender, given a reasonable time for a response. Any clarification submitted by a tenderer that is not in response to a request by the Procuring Entity shall not be considered. The Procuring Entity's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the tender shall be sought, offered, or permitted, except to confirm the correction of any errors discovered by the Procuring Entity in the evaluation of the tenders, in accordance with ITT 33.

38.2 If a tenderer does not provide clarifications of its tender by the date and time set in the Procuring Entity's request for clarification, its Tender may be rejected.

38.3 The Procuring Entity's evaluation committee shall evaluate the Technical Proposals that have passed the eligibility and mandatory criteria, on the basis of their responsiveness to the Tender Documents. The eligibility and mandatory criteria shall include the following and any other that may include in the **Data sheet.**

a) Firm has submitted the required number of copies of the Technical Proposals.

b) Firm has submitted a sealed form of Tender (Financial proposal).

c) The Proposal is valid for the required number of days.

d) The Technical Proposal is signed by the person with power of attorney, without material deviation, reservation, or omission.

e) The Technical Proposal is complete with all the forms and required documentary evidence submitted.

f) Valid Tax Compliance Certificate for Kenyan firms.

g) Key Experts are from eligible countries.

h) A tenderer has not participated in more than one tender, except for alternative tenders if so allowed.

i) The tender is not in solvent, in receivership, bankrupt or in the process of being wound up.

j) The Tenderer, its sub-consultants and experts have not engaged in or been convicted of corrupt or fraudulent practices.

k) The Tenderer is neither precluded from entering into a Contract nor debarred by PPRA.

l) The Tenderer has not proposed employing public officials, civil servants and employees of public institutions.

m) The Tenderer, its sub-consult as and experts have no conflicts of interest.

n) Any other material requirement in the ITT.

38.4 Only Technical proposals of tenderers that pass the preliminary examination will be evaluated. A Proposal shall be rejected at this stage if it does not respond to important aspects of the tender document if it fails to achieve the minimum technical score indicated in the **TDS.**

39 Comparison of Tender Prices

39.1 The Procuring Entity shall use the criteria and methodologies listed in the ITT and Section III, Evaluation and Qualification Criteria. No other evaluation criteria or methodologies shall be permitted. By applying the criteria and methodologies the Procuring Entity shall determine the Lowest Evaluated Tender in accordance with ITT 40.

39.2 To evaluate a Tender, the Procuring Entity shall consider the following:

a) The Tender price, including Provisional Sums, if any;

b) Price adjustment due to unconditional discounts offered in accordance with ITT 16.4;

c) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITT 35;

d) any additional evaluation factors specified **in the TDS** and Section III, Evaluation and Qualification Criteria.

39.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be considered in Tender evaluation.

39.4 In the case of multiple contracts or lots, Tenderers are allowed to tender for one or more lots and the methodology to determine the lowest evaluated cost of the lot (contract) and for combinations, including any discounts offered in the Form of Tender, is specified in Section III, Evaluation and Qualification Criteria.

39.5 The Procuring Entity shall compare the evaluated costs of all substantially responsive Tenders established in accordance with ITT 38.2 to determine the Tender that has the lowest evaluated cost.

40 Abnormally Low Tenders

40.1 An Abnormally Low Tender is one where the Tender price, in combination with other elements of the Tender, appears so low that it raises material concerns as to the capability of the Tenderer in regards to the Tenderer's ability to perform the Contract for the offered Tender Price.

40.2 In the event of identification of a potentially Abnormally Low Tender, the Procuring Entity shall seek written clarifications from the Tenderer, including detailed price analyses of its Tender price in relation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the Tender document.

40.3 After evaluation of the price analyses, in the event that the Procuring Entity determines that the Tenderer has failed to demonstrate its capability to perform the Contract for the offered Tender Price, the Procuring Entity shall reject the Tender.

41 Abnormally High Tenders

41.1 An abnormally high tender price is one where the tender price, in combination with other constituent elements of the Tender, appears unreasonably too high to the extent that the Procuring Entity is concerned that it (the Procuring Entity) may not be getting value for money or it may be paying too high a price for the contract compared with market prices or that genuine competition between Tenderers is compromised.

41.2 In case of an abnormally high price, the Procuring Entity shall make a survey of the market prices, check if the estimated cost of the contract is correct and review the Tender Documents to check if the specifications, scope of work and conditions of contract are contributory to the abnormally high tenders. The Procuring Entity may also seek written clarification from the tenderer on the reason for the high tender price. The Procuring Entity shall proceed as follows:

i) If the tender price is abnormally high based on wrong estimated cost of the contract, the Procuring Entity may accept or not accept the tender depending on the Procuring Entity's budget considerations.

ii) If specifications, scope of work and/or conditions of contract are contributory to the abnormally high tender prices, the Procuring Entity shall reject all tenders and may retender for the contract based on revised estimates, specifications, scope of work and conditions of contract, as the case may be.

41.3 If the Procuring Entity determines that the Tender Price is abnormally too high because genuine competition between tenderers is compromised (*often due to collusion, corruption or other manipulations*), the Procuring Entity shall reject all Tenders and shall institute or cause competent Government Agencies to institute an investigation on the cause of the compromise, before retendering.

42 Qualifications of the Tenderer

42.1 The Procuring Entity shall determine to its satisfaction whether the eligible Tenderer that is selected as having submitted the lowest evaluated cost and substantially responsive Tender, meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.

42.2 The determination shall be based upon an examination of the documentary evidence of the Tenderer's qualifications submitted by the Tenderer, pursuant to ITT 19. The determination shall not take into consideration the qualifications of other firms such as the Tenderer's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the Tender document), or any other firm (s) different from the Tenderer.

42.3 An affirmative determination shall be a prerequisite for award of the Contract to the Tenderer. A negative determination shall result in disqualification of the Tender, in which event the Procuring Entity shall proceed to the Tenderer who offers a substantially responsive Tender with the next lowest evaluated price to make a similar determination of that Tenderer's qualifications to perform satisfactorily.

43 Lowest Evaluated Tender

43.1 Having compared the evaluated prices of Tenders, the Procuring Entity shall determine the Lowest Evaluated Tender. The Lowest Evaluated Tender is the Tender of the Tenderer that meets the Qualification Criteria and whose Tender has been determined to be:

a) Substantially responsive to the Tender document; and

b) The lowest evaluated price.

44 Procuring Entity's Right to Accept Any Tender, and to Reject Any or All Tenders.

The Procuring Entity reserves the right to accept or reject any Tender and to annul the Tender process and reject all Tenders at any time prior to Contract Award, without there by incurring any liability to Tenderers. In case of annulment, all Tenders submitted and specifically, Tender securities, shall be promptly returned to the Tenderers.

A. AWARD OF CONTRACT

45 Award Criteria

The Procuring Entity shall award the Contract to the successful tenderer whose tender has been determined to be the Lowest Evaluated Tender.

46 Notice of Intention to enter into a Contract/Notification of award

46.1 Upon award of the contract and Prior to the expiry of the Tender Validity Period the Procuring Entity shall issue a Notification of Intention to Enter into a Contract/Notification of award to all tenderers which shall contain, at a minimum, the following information:

a. The name and address of the Tenderer submitting the successful tender;

b. The Contract price of the successful tender;

c. a statement of the reason(s) the tender of the unsuccessful tenderer to whom the letter is addressed was unsuccessful, unless the price information in (c) above already reveals the reason;

d. the expiry date of the Standstill Period; and

e. instructions on how to request a debriefing and/or submit a complaint during the standstill period;

47 Standstill Period

47.1 The Contract shall not be signed earlier than the expiry of a Standstill Period of 14 days to allow any dissatisfied tender to launch a complaint. Where only one Tender is submitted, the Standstill Period shall not apply.

47.2 Where a Standstill Period applies, it shall commence when the Procuring Entity has transmitted to each Tenderer the Notification of Intention to Enter in to a Contract with the successful Tenderer.

48 Debriefing by the Procuring Entity

48.1 On receipt of the Procuring Entity's Notification of Intention to Enter in to a Contract referred to in ITT 46, an unsuccessful tenderer may make a written request to the Procuring Entity for a debriefing on specific issues or concerns regarding their tender. The Procuring Entity shall provide the debriefing within five days of receipt of the request.

48.2 Debriefings of unsuccessful Tenderers may be done in writing or verbally. The Tenderer shall bear its own costs of attending such a debriefing meeting.

49 Letter of Award

49.1 Prior to the expiry of the Tender Validity Period and upon expiry of the Standstill Period specified in ITT 44.1, upon addressing a complaint that has been filed within the Standstill Period, the Procuring Entity shall transmit the Letter of Award to the successful Tenderer. The letter of award shall request the successful tenderer to furnish the Performance Security within 21days of the date of the letter.

50 Signing of Contract

50.1 UpontheexpiryofthefourteendaysoftheNotificationofIntentiontoenterintocontractanduponthepartiesmeeting their respective statutory requirements, the Procuring Entity shall send the successful Tenderer the Contract Agreement.

50.2 Within fourteen (14) days of receipt of the Contract Agreement, the successful Tenderer shall sign, date, and return it to the Procuring Entity.

50.3 The written contract shall be entered into within the period specified in the notification of award and before expiry of the tender validity period

50.4 Notwithstanding ITT 50.2 above, in case signing of the Contract Agreement is prevented by any export restrictions attributable to the Procuring Entity, to Kenya, or to the use of the Information System to be supplied,

50.5 Where such export restrictions arise from trade regulations from a country supplying those Information System, the Tenderer shall not be bound by its Tender, provided that the Tenderer can demonstrate that signing of the Contract Agreement has not been prevented by any lack of diligence on the part of the Tenderer in completing any formalities, including applying for permits, authorizations and licenses necessary for the export of the Information System under the terms of the Contract.

51 Performance Security

51.1 Within twenty-one (21) days of the receipt of the Letter of Acceptance from the Procuring Entity, the successful Tenderer shall furnish the Performance Security and, any other documents required in the **TDS**, in accordance with the General Conditions of Contract, subject to ITT 38.2 (b), using the Performance Security and other Forms included in Section X, Contract Forms, or another form acceptable to the Procuring Entity. A foreign institution providing a bank guarantee shall have a correspondent financial institution located in Kenya, unless the Procuring Entity has agreed in writing that a correspondent bank is not required.

51.2 Failure of the successful Tenderer to submit the above-mentioned Performance Security and other documents required in the **TDS**, or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender Security. In that event the Procuring Entity may award the Contract to the Tenderer offering the next Lowest Evaluated Tender.

51.3 Performance security shall not be required for contracts estimated to cost less than Kenya shillings five million shillings.

52 Publication of Procurement Contract

Within fourteen days after signing the contract, the Procuring Entity shall publish the awarded contract at its notice boards and websites; and on the Website of the Authority. At the minimum, the notice shall contain the following information:

a) Name and address of the Procuring Entity;

b) name and reference number of the contract being awarded, a summary of its scope and the selection method used;

c) the name of the successful Tenderer, the final total contract price, the contract duration.

d) Dates of signature, commencement and completion of contract;

e) Names of all Tenderers that submitted Tenders, and their Tender prices as read out at Tender opening.

53 Procurement Related Complaint and Administrative Review

53.1 The procedures for making Procurement-related Complaints or a request for review shall be specified in the **TDS.**

53.2 A request for administrative review shall be made in the form provided under contract forms.

SECTION II - TENDER DATA SHEET (TDS)

The following specific data shall complement, supplement, or amend the provisions in the Instructions to Tenderers (ITT). Whenever there is a conflict, the provisions herein shall prevail over those in ITT.

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
A. General	
ITT 1.1	The name of the contract is**: Procurement for Design, Supply, Installation, Testing and Commissioning of 1no. 150kW Solar PV-Diesel Hybrid Plant in Dadajabula Trading Centre Wajir County** The reference number of the Contract is; **RFX 1000001239**
ITT 2.3	Firms that provided consulting services for the contract being tendered for are: N/A
ITT 3.1	Maximum number of members in the Joint Venture (JV) shall be: ***2***
B. Contents of Tender Document	
ITT 8.1	For Clarification of Tender purposes, for obtaining further information address is: **e-mail: info@rerec.co.ke; tenders@rerec.co.ke;** TEL NO.254-20-2710955/2713921 (1) Name of Procuring Entity: **Rural Electrification & Renewable Energy Corporation** (2) Physical address for hand Courier Delivery to an office: **Kawi House, South C,** (3) Postal Address: **P.O. Box 34585, 00100 Nairobi, Kenya** (4) Insert name, telephone number and e-mail address of the officer to be contacted. **tenders@rerec.co.ke**: TEL NO.254-20-2710955/2713921
ITT 8.2	A Pre-Tender conference shall not take place (B) A mandatory site visit conducted by the Procuring Entity shall take place at the following date, time and place: Date: 6th January, 2025 Time: 9:00am – 4:00pm Place: Proposed mini-grid site in Hodhan- Dadajabula village at Dadajabula sub-location, Dadajabula location, Dadajabula ward in Wajir County
ITT 8.4	(1) Minutes of the pre-tender conference will be published on Website. Name of Website: www.rerec.co.ke under tender documents
ITT 9.1	The Procuring Entity shall publish its responses at the website www.rerec.co.ke under tender documents
C. Preparation of Tenders	
ITT 13.1(h)	The Tenderer shall submit the following additional documents in its Tender: Preliminary/mandatory evaluation criteria under Section III - Evaluation and Qualification Criteria.
ITT 15.1	Alternative Tenders *shall not be* considered.
ITT 15.2	Alternative times for completion *shall not be* permitted.
ITT 15.4	Alternative technical solutions shall be permitted for the following parts of the Works: N/A
ITT 16.5	The prices quoted by the Tenderer shall be: ***fixed***
ITT 17.2.2	The rates of exchange shall be those published by **The Central bank of Kenya** as on the date **for Submission of the Tenders**
ITT 20.1	The Tender validity period shall be **147** days.
ITT 21.1	A Tender Security ***shall be*** required.

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
	A Tender-Securing Declaration: N/A The amount and currency of the Tender Security shall be **KES; 2,317,489.66**
ITT 22.1	In addition to the original of the Technical Proposal, the number of copies is: **Only Electronic Tenders Shall be permitted** **No copies will be required for the Form of Tender.**
ITT 22.3	The written confirmation of authorization to sign on behalf of the Tenderer shall consist of: **A written Power of Attorney commissioned by a Commissioner of Oaths which shall accompany the tender if the tenderer/company is owned by more than one director or if the signatory to the tender is not a director of the company (provide name and attach proof of citizenship of the signatory to the tender**
D. Submission and Opening of Tenders	
ITT 24.1	(A) For Tender submission purposes only, the Procuring Entity's address is: **tenders@rerec.co.ke** Attention: **Chief Executive Officer** Kawi House, South C, P.O. Box 34585, 00100 **Nairobi, Kenya** **e-mail: info@rerec.co.ke; tenders@rerec.co.ke;** TEL NO.254-20-2710955/2713921 **The deadline for Tender submission is:** Date: **28.01.2025** Time: **10:00am** Tenderers ***shall*** submit their Tenders electronically
ITT 24.1	Tenderers ***are allowed*** to submit Tenders electronically. Tenderers shall follow the electronic tender submission procedures specified below*:* (a) Login to REREC portal via url https://suppliers.rea.co.ke:44300/irj/portal **N/B:** It is assumed that you have already completed the registration process and that your registration has been approved by REREC and you have created an employee user account to transact with REREC via url; https://suppliers.rea.co.ke:44200/supportal(bD1lbiZjPTUwMCZkPW1pbg==)/bsp da pplication.do#VIEW_ANCHOR-ROS_TOP **For the purpose of bidding, each firm must ensure the following** • Each company must have two user accounts; **Admin Account and Employee Account**. Ensure that the following roles are **NOT ASSIGNED** to the employee; **Employee Administrator and Supplier Master Data manager**. • Ensure that the admin account and employee account does not share same email address • Ensure that the Employee user name is between 4 and 12 characters. • For the purpose of this tender bidding, **the employee account** shall be used to submit your RFX responses. (b) Choose RFx and Auction link in the navigation pane (c) Click on the RFx number to open it (d) Click Register and then Click Participate (e) Click Create response; You will get a unique number for your response for the RFx (f) Navigate to the Notes and Attachments tab and click on Collaboration link at the bottom of the screen (the link will be in the format "RFX Response No: Company Name". If under your notes and attachment no link is formed in the collaboration room, you are advised to delete the response and create a new one until the link is formed, in this link all the documents of the tender shall be uploaded.

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
	NB: **All supplier bid documents/Responses shall be uploaded to the Collaboration ROOM in the link with "RFX Response Number: Company Name". Bidders shall not attach their documents at any other Tab of the Portal. Attachments placed elsewhere in the portal shall be declared non-responsive and the attachments shall not be evaluated.** You are to login to the collaboration link and upload all the required documents; (g) Enter bid price in the item tab and fill in all required information for the response. This price shall be read out price during the opening. **(h) No value shall be entered under the RFX information "Target Value for RFX"** (i) Check for errors by clicking the Check button Click on Save to review later or Submit to send the response to REREC
ITT 27.1	The Tender opening shall take place at the time and the address for Opening of Tenders provided below: **Rural Electrification & Renewable Energy Corporation** Kawi House, South C, Procurement Office, Ground Floor P.O. Box 34585, 00100 **Nairobi, Kenya** Date: **28.01.2025** Time: **10:00am**
E. Evaluation, and Comparison of Tenders	
ITT 32.3	The Procuring Entity shall rectify quantifiable nonmaterial nonconformities related to the Tender Price in the following manner: N/A
ITT 34.1 (e)	Any items specified in the Breakdown of the Tender Price **Detailed in the form of tender**
ITT 34.4	The Contractor will prepare a complete Bills of Quantities for the work within_____7_____ days after award of Contract.
ITT 35.1	The currency that shall be used for Tender evaluation and comparison purposes to convert at the selling exchange rate all Tender prices expressed in various currencies into a single currency is: **Kenya Shilling (Kes)** The source of exchange rate shall be: **The Central bank of Kenya** The date for the exchange rate shall be*:* **the deadline date for Submission of the Tenders.**
ITT 36.2	A margin of preference ***shall not*** apply.
ITT 37.1	At this time, the Procuring Entity ***does not intend*** to execute certain specific parts of the Works by subcontractors selected in advance.
ITT 37.1	Contractor's may propose subcontracting: Maximum percentage of subcontracting permitted is: ***(N/A)*** *% of the total contract amount.* Tenderers planning to subcontract more than 10% of total volume of work shall specify, in the Form of Tender, the activity (ies) or parts of the Works to be subcontracted along with complete details of the subcontractors and their qualification and experience
ITT 37.1	The parts of the Works for which the Procuring Entity permits Tenderers to propose Specialized Subcontractors are designated as follows: **N/A** For the above-designated parts of the Works that may require Specialized Subcontractors, the relevant qualifications of the proposed Specialized Subcontractors will be added to the qualifications of the Tenderer for the purpose of evaluation. **N/A**
ITT 37.2	The qualifications of the Specialized Subcontractors proposed by the Tenderer **may not be added** to the qualifications of the Tenderer.

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
ITT 38.4	A Proposal shall be rejected if it fails to achieve the minimum technical score of _____ out of 100.
ITT 34.3	The parts of the Works for which the Procuring Entity permits Tenderers to propose Specialized Subcontractors are designated as follows: **N/A** For the above-designated parts of the Works that may require Specialized Subcontractors, the relevant qualifications of the proposed Specialized Subcontractors will be added to the qualifications of the Tenderer for the purpose of evaluation. **N/A**
ITT 39.2(d)	Additional requirements apply. These are detailed in the evaluation criteria in Section III, Evaluation and Qualification Criteria. 1. The tenderer SHALL submit Manufacturers Authorizations & Warranty form for the major equipment on manufacturer's letterhead duly filled, signed and stamped. – Solar PV panels, Lithium-Ion batteries, inverters, step up transformer, Generator,11KV Outdoor Circuit breaker and other major equipment. 2. The tenderer SHALL submit detailed drawings and cable schedules of the proposed system configuration, battery wiring diagram, layout and civil / structural designs signed and stamped by professional engineer, T3 solar and class B electrical licensed. 3. Submission of manufacturers contact details including a valid official email address (Gmail or yahoo email address will not be accepted) and secure website for international companies. 4. Submission of details of experience and past performance on works of a similar nature within the past five years and details of current work on hand and other contractual commitments. The tenderer to attach at least 3 completion certificates from the owner of the works undertaken. Tenderer should have at least 2 years past experience in relevant works. 5. Submission and verification of Professional Qualification and experience for key staff, which key staff shall be the Project Supervisor and two (2) Technicians. At least one key staff shall be a holder of a valid EPRA Class T3 license. 6. Confirmation of business Premise, workshops and service center with relevant tools and equipment whether owned or leased with evidence of valid lease agreements and OSHA registration of workplace certificate. 7. Submission of valid EPRA License (Company's Valid EPRA license C1 or V1 – solar and class B electrical). 8. Submission of valid NCA 7 and above – electrical services or Mechanical services with solar works. 9. Submission of Manufacturer's ISO 14001:2015 certificate OR NEMA license for key equipment 10. Submission of Manufacturer's ISO9001:2015 certificate for quality management OR KEBS certification for the key equipment i.e. Solar PV panels, Lithium Ion batteries, inverters. 11. Submission of evidence of an established up to date safety program, policies and work practices. Bidder to provide a written occupational health and safety policy. 12. Confirmation that the contractor has no REREC pending works beyond the project implementation period provided in the contract. This is a mandatory fulfillment and a bidder who fails on this parameter shall be deemed non responsive
ITT 39.4	Tenderers shall be **not allowed** to quote separate prices for different lots (contracts) and the methodology to determine the lowest tenderer is specified in Section III, Evaluation and Qualification Criteria.
ITT 51.2	**Performance Security;** 10% of the contract amount.
ITT 53.1	**The procedures for making a Procurement-related Complaint are detailed in the "Notice of Intention to Award the Contract" herein and are also available from the PPRA website www.ppra.go.ke.** If a Tenderer wishes to make a Procurement-related Complaint, the Tenderer should submit its complaint following these procedures, in writing (by the quickest means available, that is either by hand delivery or email to: For the attention: **Dr. Rose N. Mkalama**

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
	Title/position: **Chief Executive Officer** Procuring Entity: ***Rural Electrification and Renewable Corporation*** Email address*: info@rerec.co.ke and tenders@rerec.co.ke* In summary, a Procurement-related Complaint may challenge any of the following: i. the terms of the Tendering Documents; and ii. the Procuring Entity's decision to award the contract..

SECTION III - EVALUATION AND QUALIFICATION CRITERIA

1. General Provisions

1.1 This section contains the criteria that the Procuring Entity shall use to evaluate tender and qualify tenderers. No other factors, methods or criteria shall be used other than specified in this tender document. The Tenderer shall provide all the information requested in the forms included in Section IV, Tendering Forms. The Procuring Entity shall use **the Standard Tender Evaluation Document for Goods and Works** for evaluating Tenders.

1.2 Wherever a Tenderer is required to state a monetary amount, Tenderers should indicate the Kenya Shilling equivalent using the rate of exchange determined as follows:

a. For construction turn over or financial data required for each year -Exchange rate prevailing on the last day of the respective calendar year (in which the amounts for that year is to be converted) was originally established.

b. Value of single contract- Exchange rate prevailing on the date of the contract signature.

c. Exchange rates shall be taken from the publicly available source identified in the ITT. Any error in determining the exchange rates in the Tender may be corrected by the Procuring Entity.

1.3 Evaluation and contract award Criteria

The Procuring Entity shall use the criteria and methodologies listed in this Section to evaluate tenders and arrive at the Lowest Evaluated Tender. The tender that (i) meets the qualification criteria, (ii) has been determined to be substantially responsive to the Tender Documents, and (iii) is determined to have the Lowest Evaluated Tender price shall be selected for award of contract.

2. Preliminary examination for Determination of Responsiveness

The Procuring Entity will start by examining all tenders to ensure they meet in all respects the eligibility criteria and requirements in the ITT35.3, and that the tender is complete in all aspects in meeting the requirements of "Part 2 – Procuring Entity's Works Requirements". Tenders that do not submit a Financial offer will also be rejected at this stage. The Standard Tender Evaluation Report Document for Goods and Works for evaluating Tenders provides clear guide on how to deal with review of these requirements. Tenders that do not pass the Preliminary Examination will be considered irresponsive and will not be considered further.

The following are the MANDATORY Requirements that SHALL constitute the evaluation criteria at the Preliminary Evaluation Stage

1. Confirmation that the Bidder documents/Attachments have been submitted in the Collaboration folder of the SAP SRM System. Bidders shall not attach their documents at any other Tab of the Portal. Attachments placed elsewhere in the portal shall be declared non-responsive and the attachments shall not be evaluated.
2. Confirmation that the bidder's prices appear during tender opening. The entered prices in the items tab of SRM portal must be the same as the prices in the tender form/price schedules and the same prices are read out during opening (Award shall be based on read out price)
3. Confirmation of Submission of a valid tender security during opening in form of a Bank guarantee. The value of the Tender Security shall be as specified in TDS and valid for 170 days.
4. Submission of copies of Company or Firm's Registration Certificate, Company's E-PIN Certificate with both VAT & Income Tax obligations & Valid Tax compliance certificate
5. Submission of a valid (CR12/CR13) form from Registrar of Companies, not more than Three (3) months old for all companies as is applicable and certified by a Commissioner of Oaths or a Magistrate of the Kenyan Judiciary. Attach commissioner's current year practicing license
6. Submission of a copy of valid Trade License/Business permit in the county of operation. . (to be verified using scan codes). In addition the company must submit up to date company profile with organization chart
7. Power of attorney authorizing the signatory of the tender to commit the tenderer in

accordance with the Tender requirements. The Power of attorney shall be commissioned by a Commissioner of Oaths or a Magistrate of the Kenyan Judiciary which shall accompany the tender if the tenderer/company is owned by more than one director or if the signatory to the tender is not a director of the company (provide name and attach proof of citizenship of the signatory to the tender. Attach commissioner's current year practicing license. Companies owned by one director need not to submit Power of Attorney.

8. Confirmation of Submission and verification that the tender form is duly completed, stamped and signed by the bidder in the format provided in the tender and all the instructions on it complied to. All the attachments thereto that accompanies the tender form must be commissioned by a commissioner of Oaths or a Magistrate of the Kenyan Judiciary.
    i. Certificate of independent tender determination
    ii. Self-declaration **forms** of the tender (SD1 & SD2)
    iii. Confidential business questionnaire
    iv. Declaration and commitment to the code of ethics for persons participating in public procurement and asset disposal.
9. Submission of a dully filled, signed and stamped price schedule/BoQs form.
10. Submission of dully filled Qualification forms
    i. Form EQU
    ii. Form Personnel
    iii. Tenderer Information Form
    iv. Form Con -2
    v. Form Fin 3.1, 3.2, 3.3, & 3.4
    vi. Form Exp 4.1, 4.2 (a) & 4.2 (b)
11. The tenderer SHALL provide latest Audited financial reports for the last two (2) years signed and stamped by the auditor and company directors. A valid ICPAK Practicing License or equivalent for foreign tenderers must be attached.
12. The tenderer SHALL submit Manufacturers Authorizations & Warranty form for the major equipment on manufacturer's letterhead duly filled, signed and stamped. – Solar PV panels, Lithium-Ion batteries, inverters, step up transformer, Generator,11KV Outdoor Circuit breaker and other major equipment.
13. The tenderer SHALL submit detailed drawings and cable schedules of the proposed system configuration, battery wiring diagram, layout and civil / structural designs signed and stamped by professional engineer, T3 licensed.
14. Submission of manufacturers contact details including a valid official email address (Gmail or yahoo email address will not be accepted) and secure website for international companies.
15. Submission of details of experience and past performance on works of a similar nature within the past five years and details of current work on hand and other contractual commitments. The tenderer to attach at least 3 completion certificates from the owner of the works undertaken. Tenderer should have at least 2 years past experience in relevant works.
16. Submission and verification of Professional Qualification and experience for key staff, which key staff shall be the Project Supervisor, Civil Engineer and two (2) Technicians. At least one key staff shall be a holder of a valid EPRA Class T3 license and EPRA Class B electrical and above.
17. Confirmation of business Premise, workshops and service center with relevant tools and equipment whether owned or leased with evidence of valid lease agreements and OSHA registration of workplace certificate.
18. Submission of valid EPRA License (Company's Valid EPRA license class C1 or V1 – solar and B electrical).
19. Submission of valid NCA 7 and above – electrical services or Mechanical services with solar works.
20. Submission of Manufacturer's ISO 14001:2015 certificate OR NEMA license for key

equipment

21. Submission of Manufacturer's ISO9001:2015 certificate for quality management OR KEBS certification for the key equipment i.e. Solar PV panels, Lithium-Ion batteries, inverters, step up transformer, Generator,11KV Outdoor Circuit breaker and other major equipment.
22. Submission of evidence of an established up to date safety program, policies and work practices. Bidder to provide a written occupational health and safety policy.
23. Confirmation that the contractor has no REREC pending works beyond the project implementation period provided in the contract. This is a mandatory fulfillment and a bidder who fails on this parameter shall be deemed non responsive.

NB: Tenderers which do not satisfy any of the requirements set out above shall be rejected as per public procurement and disposal Act, 2015 and will not proceed to technical evaluation stage.

3. Evaluation of the Technical Proposal

3.1 Technical Proposal shall be comprised of the Design Proposals for the Works and other forms as called for in Section IV, Tendering Forms. The Procuring Entity shall then consider the Technical Proposal of the Tenders who have been found responsive. The Procuring Entity shall allocate scores for each criterion on the Table of Scores below. The Procuring Entity will evaluate the Technical Proposals of all tenders that pass Preliminary examination for Determination of Responsiveness using the following criteria and scoring system as indicated below.

The following SHALL constitute the evaluation criteria at the Technical Evaluation stage:

1. Full compliance to technical specifications for – Solar PV panels, Lithium-Ion batteries, inverters, step up transformer, Generator,11KV Outdoor Circuit breaker and other major equipment. This is a mandatory fulfillment and a bidder who fails on any of the critical parameters shall be deemed non responsive. Only one brochure / technical specification per equipment should be offered, bids with more than one brochure / technical specifications per equipment will be considered non-responsive.
2. Verification of Professional Qualification and experience for key staff, which key staff shall be the Project Supervisor, two (2) Technicians. The Project Supervisor shall have at least a degree in Electrical or Mechanical or Renewable Energy Engineering and Registered with EBK as a graduate engineer and with at least five (5) years of experience. The technicians shall have at least a Diploma in Electrical or Mechanical Engineering with a minimum of two (2) years of experience. Signed CV's by the technicians and the owner/director and Certified copies of Certificates MUST be submitted. At least one staff member with EPRA license minimum T3 solar and EPRA Class B electrical and above.
3. Confirmation of relevant Drawings and Technical Data as requested. The Drawings should be legible and the dimensions and ratings should be clearly marked accurate. All cable sizing designs and calculations to be provided.
4. Detailed Mobilization Plan & Detailed Construction Schedule. This should be clear and demonstrate/indicate for each activity for period not exceeding 40 weeks
5. Previous works undertaken. The tenderer to attach at least 3 completion certificates from the owner of the works undertaken. One of which should be of a mini-grid or grid-tie solar system not less than 30kW.
6. Provision of the Lithium ion phosphate batteries IEC certification.

NB: Tenders which do not satisfy any of the requirements set out above shall be rejected as per public procurement and disposal Act, 2015 and SHALL not proceed to financial evaluation stage.

4. Tender Evaluation (ITT 35)

Price evaluation: in addition to the criteria listed in ITT 36.2 (a) – (d) the following criteria shall apply:

(i) Alternative Completion Times, if permitted under ITT 13.2, will be evaluated as follows:
……

(ii) Alternative Technical Solutions for specified parts of the Works, if permitted under ITT 13.4, will be evaluated as follows: ……

(iv) Other Criteria; if permitted under ITT 36.2(e):
……

5. Multiple Contracts

Multiple contracts will be permitted in accordance with ITT 36.4. Tenderers are evaluated on basis of Lots and the lowest evaluated tenderer identified for each Lot. The Procuring Entity will select one Option of the two Options listed below for award of Contracts.

OPTION 1

i) If a tenderer wins only one Lot, the tenderer will be awarded a contract for that Lot, provided the tenderer meets the Eligibility and Qualification Criteria for that Lot.

ii) If a tenderer wins more than one Lot, the tender will be awarded contracts for all won Lots, provided the tenderer meets the aggregate Eligibility and Qualification Criteria for all the Lots. The tenderer will be awarded the combination of Lots for which the tenderer qualifies and the others will be considered for award to second lowest the tenderers.

OPTION 2

The Procuring Entity will consider all possible combinations of won Lots [contract(s)] and determine the combinations with the lowest evaluated price. Tenders will then be awarded to the Tenderer or Tenderers in the combinations provided the tenderer meets the aggregate Eligibility and Qualification Criteria for all the won Lots.

6. Alternative Tenders (ITT 13.1)

An alternative if permitted under ITT 13.1, will be evaluated as follows:

The Procuring Entity shall consider Tenders offered for alternatives as specified in Part 2- Procuring Entity's requirements. Only the technical alternatives, if any, of the Tenderer with the Best Evaluated Tender conforming to the basic technical requirements shall be considered by the Procuring Entity.

7. MARGIN OF PREFERENCE

Apply Margin of Preference, if so allowed to all evaluated and accepted tender as follows.

7.1 If the TDS so specifies, the Procuring Entity will grant a margin of preference of fifteen percent (15%) to be loaded on evaluated prices of the foreign tenderers, where the percentage of shareholding of Kenyan citizens on the entire consortium team is less than fifty-one percent (51%).

7.2 Contractors applying for such preference shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity, a particular contractor or group of contractors qualifies for a margin of preference.

7.3 After Tenders have been received and reviewed by the Procuring Entity, responsive Tenders shall be assessed to ascertain their percentage of shareholding of Kenyan citizens. Responsive tenders shall be classified into the following groups:

i) Group A: tenders offered by Kenyan Contractors and other Tenderers where percentage of shareholding by Kenyan citizens on the entire consortium team is less than fifty-one percent (51%), where Kenyan citizens hold shares of over fifty one percent (51%).

ii) Group B: tenders offered by foreign Contractors and other Tenderers where percentage of

shareholding by Kenyan citizens on the entire consortium team is less than fifty-one percent (51%).

7.4 All evaluated tenders in each group shall, as a first evaluation step, be compared to determine the lowest tender, and the lowest evaluated tender in each group shall be further compared with each other. If, as a result of this comparison, at tender from Group A is the lowest, it shall be selected for the award. If a tender from Group B is the lowest, an amount equal to the percentage indicated in Item 3.1 of the respective tender price, including unconditional discounts and excluding provisional sums and the cost of day works, if any, shall be added to the evaluated price offered in each tender from Group B. All tenders shall then be compared using new prices with added prices to Group B and the lowest evaluated tender from Group A. If the tender from Group A is still the lowest tender, it shall be selected for award. If not, the lowest evaluated tender from Group B based on the first evaluation price shall be selected.

8. Post qualification and Contract ward (ITT39), more specifically,

a) In case the tender was subject to post-qualification, the contract shall be awarded to the lowest evaluated tenderer, subject to confirmation of prequalification data, if so required.

b) In case the tender was not subject to post-qualification, the tender that has been determined to be the lowest evaluated tenderer shall be considered for contract award, subject to meeting each of the following conditions.

i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow of Kenya Shillings _____ _____.

ii) Minimum average annual construction turnover of Kenya Shillings_____*[insert amount]*, equivalent calculated as total certified payments received for contracts in progress and/or completed within the last_____*[insert of year]* years.

iii) At least_____(*insert number)* of contract(s) of a similar nature executed within Kenya, or the East African Community or abroad, that have been satisfactorily and substantially completed as a prime contractor, or joint venture member or sub-contractor each of minimum value Kenya shillings _____equivalent.

iv) Contractor's Representative and Key Experts which are specified as_____ _____ _____

v) Contractors key equipment listed on the table "Contractor's Equipment" below and more specifically listed as *[specify requirements for each lot as applicable]* _____ _____ _____

iv) Other conditions depending on their seriousness.

a) **History of non-performing contracts**:

Tenderer and each member of JV in case the Tenderer is a JV, shall demonstrate that Non-performance of a contract did not occur because of the default of the Tenderer, or the member of a JV in the last_____(*specify years*). The required information shall be furnished in the appropriate form.

b) Pending Litigation

Financial position and prospective long-term profitability of the Single Tenderer, and in the case the Tenderer is a JV, of each member of the JV, shall remain sound according to criteria established with respect to Financial Capability under Paragraph (i) above if all pending litigation will be resolved against the Tenderer. Tenderer shall provide information on pending litigations in the appropriate form.

c) Litigation History

There shall be no consistent history of court/arbitral award decisions against the Tenderer, in the last_____(*specify years*). All parties to the contract shall furnish the information in the appropriate form about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the years specified. A consistent history of awards against the Tenderer or any member of a JV may result in rejection of the

tender.

QUALIFICATION FORMS SUMMARY

1	2	3	*4*	*5*
Item No.	**Qualification Subject**	**Qualification Requirement**	***Document To be Completed by Tenderer***	***For Procuring Entity's Use (Qualification met or Not Met)***
1	Nationality	Nationality in accordance with ITT 3.6	Forms ELI – 1.1 and 1.2, with attachments	
2	Conflict of Interest	No conflicts of interest in accordance with ITT 3.2	Form of Tender	
3	PPRA Eligibility	Not having been declared ineligible by the PPRA as described in ITT 3.7	Form of Tender	
4	State- owned Enterprise	Meets conditions of ITT 3.8	Forms ELI – 1.1 and 1.2, with attachments	
5	Goods, equipment and services to be supplied under the contract	To have their origin in any country that is not determined ineligible under ITT 4.1	Forms ELI – 1.1 and 1.2, with attachments	
6	History of Non-Performing Contracts	Non-performance of a contract did not occur as a result of contractor default since 1st January […….].	Form CON-2	
7	Not debarred Based on Execution of Tender/Proposal Securing Declaration by the Procuring Entity	Not debarred based on-execution of a Tender/Proposal Securing Declaration pursuant to ITT 19.9	Form of Tender	
8	Pending Litigation	Tender's financial position and prospective long-term profitability still sound according to criteria established in 3.1 and assuming that all pending litigation will NOT be resolved against the Tenderer.	Form CON – 2	
9	Litigation History	No consistent history of court/arbitral award decisions against the Tenderer since 1st January *[insert year]*	Form CON – 2	
10	Financial Capabilities	(i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as Kenya Shillings *[insert amount]* equivalent for the subject contract(s) net of the Tenderer's other commitments. (ii) The Tenderers shall also demonstrate, to the satisfaction of the Procuring Entity, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments. (iii) The audited balance sheets or, if not required by the laws of the Tenderer's country, other financial statements acceptable to the Procuring Entity, for the last *[insert*	Form FIN – 3.1, with attachments	

1	2	3	4	5
Item No.	**Qualification Subject**	**Qualification Requirement**	***Document To be Completed by Tenderer***	***For Procuring Entity's Use (Qualification met or Not Met)***
		number of years] years shall be submitted and must demonstrate the current soundness of the Tenderer's financial position and indicate its prospective long-term profitability.		
11	Average Annual Construction Turnover	Minimum average annual construction turnover of Kenya Shillings *[insert amount]*, equivalent calculated as total certified payments received for contracts in progress and/or completed within the last *[insert of year]* years, divided by *[insert number of years]* years	Form FIN – 3.2	
12	General Construction Experience	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last *[insert number of years]* years, starting 1st January *[insert year]*.	**4.** Form EXP – 4.1 **Experience**	
13	Specific Construction & Contract Management Experience	A minimum number of *[state the number]* similar contracts specified below that have been satisfactorily and substantially completed as a prime contractor, joint venture member, management contractor or sub-contractor between 1st January [*insert year*] and tender submission deadline i.e. …. (number) contracts, each of minimum value Kenya shillings…….. equivalent. [*In case the Works are to be tender as individual contracts under multiple contract procedure, the minimum number of contracts required for purposes of evaluating qualification shall be selected from the options mentioned in ITT 35.4]* The similarity of the contracts shall be based on the following: [*Based on Section VII, Scope of Works, specify the minimum key requirements in terms of physical size, complexity, construction method, technology and/or other characteristics including part of the requirements that may be met by specialized subcontractors, if permitted in accordance with ITT 34.3]*	Form EXP 4.2(a)	

SECTION IV – TENDERING FORMS

QUALIFICATION FORMS

1. FOREIGN TENDERERS 40%RULE

Pursuant to ITT 3.10, a foreign tenderer must complete this form to demonstrate that the tender fulfils this condition.

ITEM	Description of Work Item	Describe location of Source	COST in K. shillings	Comments, if any
A	Local Labor			
1				
2				
3				
4				
5				
B	Sub contracts from Local sources			
1				
2				
3				
4				
5				
C	Local materials			
1				
2				
3				
4				
5				
D	Use of Local Plant and Equipment			
1				
2				
3				
4				
5				
E	Add any other items			
1				
2				
3				
4				
5				
6				
	TOTAL COST LOCAL CONTENT		XXXXX	
	PERCENTAGE OF CONTRACT PRICE			

2. FORM EQU: EQUIPMENT

The Tenderer shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Tenderer.

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	

Omit the following information for equipment owned by the Tenderer.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

3. FORM PER - 1 Contractor's

Representative and Key Personnel Schedule

Tenderers should provide the names and details of the suitably qualified Contractor's Representative and Key Personnel to perform the Contract. The data on their experience should be supplied using the Form PER-2 below for each candidate.

Contractor' Representative and Key Personnel

1.	**Title of position:** Contractor's Representative	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
2.	**Title of position:** *[_____]*	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]

	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
3.	**Title of position:** *[_____]*	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
4.	**Title of position:** *[_____]*	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
5.	**Title of position:** *[insert title]*	
	Name of candidate	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]

4. FORM PER-2:

Resume and Declaration - Contractor's Representative and Key Personnel

Name of Tenderer

Position [*#1*]: [*title of position from Form PER-1*]		
Personnel information	Name:	Date of birth:
	Address:	E-mail:
	Professional qualifications:	
	Academic qualifications:	
	Language proficiency: *[language and levels of speaking, reading and writing skills]*	
Details		
	Address of Procuring Entity:	
	Telephone:	Contact (manager / personnel officer):
	Fax:	
	Job title:	Years with present Procuring Entity:

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

Project	Role	Duration of involvement	Relevant experience
[main project details]	*[role and responsibilities on the project]*	*[time in role]*	*[describe the experience relevant to this position]*

Declaration

I, the undersigned *[insert either "Contractor's Representative" or "Key Personnel" as applicable]*, certify that to the Lowest of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Tender:

Commitment	**Details**
Commitment to duration of contract:	*[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]*
Time commitment:	*[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]*

I understand that any misrepresentation or omission in this Form may:

a) be taken into consideration during Tender evaluation;

b) result in my disqualification from participating in the Tender;

c) result in my dismissal from the contract.

Name of Contractor's Representative or Key Personnel: *[insert name]*

Signature:_____

Date: (day month year): _____

Countersignature of authorized representative of the Tenderer:

Signature:_____

Date: (day month year): _____

5. TENDERERS QUALIFICATION WITHOUT PREQUALIFICATION

To establish its qualifications to perform the contract in accordance with Section III, Evaluation and Qualification Criteria the Tenderer shall provide the information requested in the corresponding Information Sheets included hereunder.

FORM ELI-1.1

Tenderer Information Form

Date:_____

ITT No. and title:_____

Tenderer's name
In case of Joint Venture (JV), name of each member:
Tenderer's actual or intended country of registration: *[indicate country of Constitution]*
Tenderer's actual or intended year of incorporation:
Tenderer's legal address [in country of registration]:
Tenderer's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
1. Attached are copies of original documents of ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITT 4.4 ☐ In case of JV, letter of intent to form JV or JV agreement, in accordance with ITT 4.1 ☐ In case of state-owned enterprise or institution, in accordance with ITT 4.6, documents establishing: • Legal and financial autonomy • Operation under commercial law • Establishing that the Tenderer is not under the supervision of the Procuring Entity 2. Included are the organizational chart and a list of Board of Directors.

FORM ELI - 1.2

Tenderer's JV Information Form
(to be completed for each member of Tenderer's JV)

Date:_____

ITT No. and title:_____

Tenderer's JV name:
JV member's name:
JV member's country of registration:
JV member's year of constitution:
JV member's legal address in country of constitution:
JV member's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
1. Attached are copies of original documents of ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITT 4.4. ☐ In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Procuring Entity, in accordance with ITT 4.6. 2. Included are the organizational chart and a list of Board of Directors.

5.3 FORM CON –2

Historical Contract Non-Performance, Pending Litigation and Litigation History

Tenderer's Name:_____

Date:_____

JV Member's Name_____

ITT No. and title:_____

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria			
☐ Contract non-performance did not occur since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.1. ☐ Contract(s) not performed since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, requirement 2.1			
Year	**Non- performed portion of contract**	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and Kenya Shilling equivalent)**
[insert year]	*[insert amount and percentage]*	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Procuring Entity: *[insert full name]* Address of Procuring Entity: *[insert City/ street/building/floor number/room number/country]* Reason(s) for non-performance: *[indicate main reason(s)]*	*[insert amount]*
Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria			
☐ No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3. ☐ Pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3 as indicated below.			

Year of dispute	**Amount in dispute (currency)**	**Contract Identification**	**Total Contract Amount (currency), Kenya Shilling Equivalent (exchange rate)**
		Contract Identification: _____ Name of Procuring Entity: _____ Address of Procuring Entity: _____ Matter in dispute: _____ Party who initiated the dispute: ____ Status of dispute: _____	
		Contract Identification: Name of Procuring Entity: Address of Procuring Entity: Matter in dispute: Party who initiated the dispute: Status of dispute:	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria			
☐ No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4. ☐ Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below.			
Year of award	**Outcome as percentage of Net Worth**	**Contract Identification**	**Total Contract Amount (currency), Kenya Shilling**

			Equivalent (exchange rate)
[insert year]	*[insert percentage]*	Contract Identification: [indicate complete contract name, number, and any other identification] Name of Procuring Entity: *[insert full name]* Address of Procuring Entity: *[insert City/ street/building/floor number/room number/country]* Matter in dispute: *[indicate main issues in dispute]* Party who initiated the dispute: *[indicate "Procuring Entity" or "Contractor"]* Reason(s) for Litigation and award decision *[indicate main reason(s)]*	*[insert amount]*

5.4 FORM FIN – 3.1:

Financial Situation and Performance

Tenderer's Name: _____
Date: _____
JV Member's Name_____
ITT No. and title: _____

5.4.1. Financial Data

Type of Financial information in_____ (currency)	**Historic information for previous _____*years*, _____ (amount in currency, currency, exchange rate*, KES equivalent)**				
	Year 1	Year 2	Year 3	Year 4	Year 5
Statement of Financial Position (Information from Balance Sheet)					
Total Assets (TA)					
Total Liabilities (TL)					
Total Equity/Net Worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Working Capital (WC)					
Information from Income Statement					
Total Revenue (TR)					

Type of Financial information in_____ (currency)	Historic information for previous _____*years,* _____ (amount in currency, currency, exchange rate*, KES equivalent)				
Profits Before Taxes (PBT)					
Cash Flow Information					
Cash Flow from Operating Activities					

*Refer to ITT 15 for the exchange rate

5.4.2 Sources of Finance

Specify sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.

No.	Source of finance	Amount (Kenya Shilling equivalent)
1		
2		
3		

5.4.3 Financial documents

The Tenderer and its parties shall provide copies of financial statements for _____years pursuant Section III, Evaluation and Qualifications Criteria, Sub-factor 3.1. The financial statements shall:

(a) reflect the financial situation of the Tenderer or in case of JV member, and not an affiliated entity (such as parent company or group member).

(b) be independently audited or certified in accordance with local legislation.

(c) be complete, including all notes to the financial statements.

(d) correspond to accounting periods already completed and audited.

☐ Attached are copies of financial statements[1] for the _____years required above; and complying with the requirements

5.5 FORM FIN – 3.2:

Average Annual Construction Turnover

Tenderer's Name: _____
Date: _____
JV Member's Name_____
ITT No. and title: _____

[1] If the most recent set of financial statements is for a period earlier than 12 months from the date of Tender, the reason for this should be justified.

	Annual turnover data (construction only)		
Year	**Amount Currency**	**Exchange rate**	**Kenya Shilling equivalent**
[indicate year]	*[insert amount and indicate currency]*		
Average Annual Construction Turnover *			

* See Section III, Evaluation and Qualification Criteria, Sub-Factor 3.2.

5.6 FORM FIN – 3.3:

Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as specified in Section III, Evaluation and Qualification Criteria

Financial Resources		
No.	**Source of financing**	**Amount (Kenya Shilling equivalent)**
1		
2		
3		

5.7 FORM FIN – 3.4:

Current Contract Commitments / Works in Progress

Tenderers and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Current Contract Commitments					
No.	**Name of Contract**	**Procuring Entity's Contact Address, Tel,**	**Value of Outstanding Work [Current Kenya Shilling /month Equivalent]**	**Estimated Completion Date**	**Average Monthly Invoicing Over Last Six Months [Kenya Shilling /month)]**
1					
2					
3					
4					
5					

5.8 FORM EXP - 4.1

General Construction Experience

Tenderer's Name: _____
Date: _____
JV Member's Name_____
ITT No. and title: _____

Page _____of _____pages

Starting Year	**Ending Year**	**Contract Identification**	**Role of Tenderer**
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	

5.9 FORM EXP -4.2(a)

Specific Construction and Contract Management Experience

Tenderer's Name:_____

Date:_____

JV Member's Name_____

ITT No. and title:_____

Similar Contract No.	**Information**			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount			**Kenya Shilling**	
If member in a JV or sub-contractor, specify participation in total Contract amount				
Procuring Entity's Name:				
Address: Telephone/fax number E-mail:				

5.10 FORM EXP - 4.2 (a) (cont.)

Specific Construction and Contract Management Experience (cont.)

Similar Contract No.	**Information**
Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:	
1. Amount	
2. Physical size of required works items	
3. Complexity	
4. Methods/Technology	
5. Construction rate for key activities	
6. Other Characteristics	

5.11 FORM EXP - 4.2(b)

Construction Experience in Key Activities

Tenderer's Name: _____
Date: _____
Tenderer's JV Member Name: _____
Sub-contractor's Name[2] (as per ITT 34): _____
ITT No. and title: _____

All Sub-contractors for key activities must complete the information in this form as per ITT 34 and Section III, Evaluation and Qualification Criteria, Sub-Factor 4.2.

1. Key Activity No One: _
_____

	Information			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount			**Kenya Shilling**	
Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year	Total quantity in the contract (i)	Percentage participation (ii)		Actual Quantity Performed (i) x (ii)
Year 1				
Year 2				
Year 3				
Year 4				

[2] If applicable

	Information
Procuring Entity's Name:	
Address: Telephone/fax number E-mail:	

	Information
Description of the key activities in accordance with Sub-Factor 4.2(b) of Section III:	

2. Activity No. Two
3. ……

OTHER FORMS

6. FORM OF TENDER

(Amended and issued pursuant to PPRA CIRCULAR No. 02/2022)

INSTRUCTIONS TO TENDERERS

i) All italicized text is to help the Tenderer in preparing this form.

ii) The Tenderer must prepare this Form of Tender on stationery with its letterhead clearly showing the Tenderer's complete name and business address. Tenderers are reminded that this is a mandatory requirement.

iii) Tenderer must complete and sign CERTIFICATE OF INDEPENDENT TENDER DETERMINATION and the SELF DECLARATION FORMS OF THE TENDERER as listed under (xxii) below.

Date of this Tender submission:.....*[insert date (as day, month and year) of Tender submission]*

Tender Name and Identification:.....*[insert identification]*

Alternative No.:.....*[insert identification No if this is a Tender for an alternative]*

To: ..... *[Insert complete name of Procuring Entity]*
Dear Sirs,

1. In accordance with the Conditions of Contract, Specifications, Drawings for the execution of the above named Works, we, the undersigned offer to construct and complete the Works and remedy any defects therein for the sum of Kenya Shillings [*[Amount in figures]*……..Kenya Shillings *[amount in words]*_____

The above amount is broken down as per the Table below:

Breakdown of the Tender Price

Item	Description	Amount (in KES)	% to be paid in foreign currency	Foreign Currency
1	Preliminary items such as insurance for works, notice boars, statutory payments, site office costs, etc.			
2	Monthly cost of design/supervisory staff and site agents (up to contract completion).			
3	Monthly cost of major items of equipment (up to contract completion).			
4	Cost of the works (a lumpsum figure).			
5	Any items specified in the **TDS** *(Describe them here)*			
	TOTAL TENDER PRICE			

The amount quoted above does not include provisional sums, and only allows not more than two foreign currencies.

2. We undertake, I four tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Project Manager's notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Particular Conditions of Contract.

3. We agree to adhere by this tender until_____*[Insert date],* and it shall remain binding upon us and may be accepted at any time before that date.

4. Unless and until a formal Agreement is prepared and executed this tender together with your written acceptance thereof, shall constitute a binding Contract between us. We further understand that you are not bound to accept the lowest or any tender you may receive.

5. We, the under signed, further declare that:

(i) No reservations: We have examined and have no reservations to the tender document, including Addenda issued in accordance with ITT8;

(ii) Eligibility: We meet the eligibility requirements and have no conflict of interest in accordance with ITT 3 and 4;

(iii) Tender-Securing Declaration: We have not been debarred by the Authority based on execution of a Tender- Securing Declaration or Tender Securing Declaration in Kenya in accordance with ITT 19.8;

iv) Conformity: We offer to execute in conformity with the tendering documents and in accordance with the implementation and completion specified in the construction schedule, the following Works: *[insert a brief description of the Works];*

(v) Tender Price: The total price of our Tender, excluding any discounts offered in item1 above is: *[Insert one of the options below as appropriate]*

(vi Option 1, in case of one lot: Total price is: [*insert the total price of the Tender in words and figures, indicating the various amounts and the respective currencies*]; Or

Option 2, in case of multiple lots:

a) Total price of each lot [*insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies*]; and

b) Total price of all lots (sum of all lots) [*insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies*];

vii) Discounts: The discounts offered and the methodology for their application are:

viii) The discounts offered are: [*Specify in detail each discount offered.*]

ix) The exact method of calculations to determine the net price after application of discounts is shown below: [*Specify in detail the method that shall be used to apply the discounts*];

x) Tender Validity Period: Our Tender shall be valid for the period specified in TDS 18.1 (as amended, if applicable) from the date fixed for the Tender submission deadline specified in TDS 22.1 (as amended, if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

xi) Performance Security: If our Tender is accepted, we commit to obtain a Performance Security in accordance with the Tender ding document;

xii) One Tender Per Tender: We are not submitting any other Tender (s) as an individual Tender, and we are not participating in any other Tender(s) as a Joint Venture member or as a subcontractor, and meet the requirements of ITT 3.4, other than alternative Tenders submitted in accordance with ITT 13.3;

xiii) Suspension and Debarment: We, along with any of our subcontractors, suppliers, Project Manager, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Public Procurement Regulatory Authority or any other entity of the Government of Kenya, or any international organization.

xiv) State-owned enterprise or institution: *[select the appropriate option and delete the other] [We are not a state-owned enterprise or institution] / [We are a state-owned enterprise or institution but meet the requirementsofITT3.8];*

xv) Commissions, gratuities, fees: We have paid, or will pay the following commissions, gratuities, or fees with respect to the tender process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]*

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate "none.")

xvi) Binding Contract: We understand that this Tender, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;

xvii) Not Bound to Accept: We understand that you are not bound to accept the lowest evaluated cost Tender, the Most Advantageous Tender or any other Tender that you may receive;

xviii) Fraud and Corruption: We here by certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption;

xix) Collusive practices: We hereby certify and confirm that the tender is genuine, non-collusive and made with the intention of accepting the contract if awarded. To this effect we have signed the "Certificate of Independent Tender Determination" attached below.

xx) **Code of Ethical Conduct:** We undertake to adhere by the Code of Ethical Conduct for Persons Participating in Public Procurement and Asset Disposal Activities in Kenya, copy available from ***www.pppra.go.ke*** during the procurement process and the execution of any resulting contract.

xxi) **Beneficial Ownership Information:** We commit to provide to the procuring entity the Beneficial Ownership Information in conformity with the Beneficial Ownership Disclosure Form upon receipt of notification of intention to enter into a contract in the event we are the successful tenderer in this subject procurement proceeding.

xxii) We, the Tenderer, have duly completed, signed and stamped the following Forms as part of our Tender:

a) Tenderer's Eligibility; Confidential Business Questionnaire–to establish we are not in any conflict to interest.

b) Certificate of Independent Tender Determination–to declare that we completed the tender without colluding with other tenderers.

c) Self-Declaration of the Tenderer - to declare that we will, if awarded a contract, not engage in any form of fraud and corruption.

d) declaration and commitment to the code of ethics for Persons Participating in Public Procurement and Asset Disposal Activities in Kenya,

Further, we confirm that we have read and understood the full content and scope of fraud and corruption as informed in **"Appendix 1- Fraud and Corruption**" attached to the Form of Tender.

Name of the Tenderer: *[*insert complete name of person signing the Tender*]

Name of the person duly authorized to sign the Tender on behalf of the Tenderer: ***[insert complete name of person duly authorized to sign the Tender]*

Title of the person signing the Tender: *[insert complete title of the person signing the Tender]*

Signature of the person named above: *[insert signature of person whose name and capacity are shown above]*

Date signed *[insert date of signing] day of [insert month], [insert year]*

Date signed_____day of_____,_____

Notes
** In the case of the Tender submitted by joint venture specify the name of the Joint Venture as Tenderer*
*** Person signing the Tender shall have the power of attorney given by the Tenderer to be attached with the Tender.*

TENDERER'S ELIGIBILITY- CONFIDENTIAL BUSINESS QUESTIONNAIRE

Instruction to Tenderer

Tender is instructed to complete the particulars required in this Form, *one form for each entity if Tender is a JV.* Tenderer is further reminded that it is an offence to give false information on this Form.

a) Tenderer's details

	ITEM	DESCRIPTION
1	Name of the Procuring Entity	
2	Reference Number of the Tender	
3	Date and Time of Tender Opening	
4	Name of the Tenderer	
5	Full Address and Contact Details of the Tenderer.	1. Country 2. City 3. Location 4. Building 5. Floor 6. Postal Address 7. Name and email of contact person.
6	Current Trade License Registration Number and Expiring date	
7	Name, country and full address (*postal and physical addresses, email, and telephone number*) of Registering Body/Agency	
8	Description of Nature of Business	
9	Maximum value of business which the Tenderer handles.	
10	State if Tenders Company is listed in stock exchange, give name and full address (*postal and physical addresses, email, and telephone number*) of state which stock exchange	

General and Specific Details

b) Sole Proprietor, provide the following details.

Name in full_____Age_____

Nationality_____Country of Origin_____

Citizenship _____

c) Partnership, provide the following details.

	Names of Partners	Nationality	Citizenship	% Shares owned
1				
2				
3				

d) Registered Company, provide the following details.

I) Private or public Company _____

ii) State the nominal and issued capital of the Company:-

Nominal Kenya Shillings (Equivalent).....

Issued Kenya Shillings (Equivalent).....

iii) Give details of Directors as follows.

	Names of Director	Nationality	Citizenship	% Shares owned
1				
2				
3				

e) DISCLOSURE OF INTEREST- Interest of the Firm in the Procuring Entity.

i) Are there any person/persons in …… …… (*Name of Procuring Entity)* who has/have an interest or relationship in this firm? Yes/No……

If yes, provide details as follows.

	Names of Person	Designation in the Procuring Entity	Interest or Relationship with Tenderer
1			
2			
3			

ii) Conflict of interest disclosure

	Type of Conflict	Disclosure YES OR NO	If YES provide details of the relationship with Tenderer
1	Tenderer is directly or indirectly controls, is controlled by or is under common control with another tenderer.		
2	Tenderer receives or has received any direct or indirect subsidy from another tenderer.		
3	Tenderer has the same legal representative as another tenderer		
4	Tender has a relationship with another tenderer, directly or through common third parties, that puts it in a position to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process.		
5	Any of the Tenderer's affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the tender.		
6	Tenderer would be providing goods, works, non-consulting services or consulting services during implementation of the contract		

	Type of Conflict	Disclosure YES OR NO	If YES provide details of the relationship with Tenderer
	specified in this Tender Document.		
7	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract.		
8	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who would be involved in the implementation or supervision of the such Contract.		
9	Has the conflict stemming from such relationship stated in item 7 and 8 above been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.		

f) Certification

On behalf of the Tenderer, I certify that the information given above is complete, current and accurate as at the date of submission.

Full Name_____

Title or Designation_____

(Signature) *(Date)*

CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

I, the undersigned, in submitting the accompanying Letter of Tender to the_____ *[Name of Procuring Entity]* for: *[Name and number of tender]* in response to the request for tenders made by: *[Name of Tenderer]* do here by make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of *[Name of Tenderer]* that:

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

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

3. I am the authorized representative of the Tenderer with authority to sign this Certificate, and to submit the Tender on behalf of the Tenderer;

4. For the purposes of this Certificate and the Tender, I understand that the word "competitor" shall include any individual or organization, other than the Tenderer, whether or not affiliated with the Tenderer, who:
   a) Has been requested to submit a Tender in response to this request for tenders;
   b) could potentially submit a tender in response to this request for tenders, based on their qualifications, abilities or experience;

5. The Tenderer discloses that [check one of the following, as applicable]:
   a) The Tenderer has arrived at the Tender independently from, and without consultation, communication, agreement or arrangement with, any competitor;
   b) the Tenderer has entered into consultations, communications, agreements or arrangements with one or more competitors regarding this request for tenders, and the Tenderer discloses, in the attached document(s), complete details thereof, including the names of the competitors and the nature of, and reasons for, such consultations, communications, agreements or arrangements;

6. In particular, without limiting the generality of paragraphs (5)(a) or (5)(b) above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
   a) prices;
   b) methods, factors or formulas used to calculate prices;
   c) the intention or decision to submit, or not to submit, a tender; or
   d) the submission of a tender which does not meet the specifications of the request for Tenders; except as specifically disclosed pursuant to paragraph(5)(b) above;

7 In addition, there has been no consultation, communication, agreement or arrangement with any competitor regarding the quality, quantity, specifications or delivery particulars of the works or services to which this request for tenders relates, except as specifically authorized by the procuring authority or as specifically disclosed pursuant to paragraph(5)(b) above;

8 the terms of the Tender have not been, and will not be, knowingly disclosed by the Tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening, or of the awarding of the Contract, whichever comes first, unless otherwise required by law or as specifically disclosed pursuant to paragraph (5)(b) above.

Name_____

Title_____

Date

_____

[Name, title and signature of authorized agent of Tenderer and Date]

SELF-DECLARATION FORMS

FORM SD1

SELF DECLARATION THAT THE PERSON/ TENDERER IS NOT DEBARRED IN THE MATTER OF THE PUBLIC PROCUREMENT AND ASSET DISPOSAL ACT 2015.

I, ……., of Post Office Box …….……. being a resident of …….. in the Republic of ……. do hereby make a statement as follows: -

1. THAT I am the Company Secretary/ Chief Executive/ Managing Director/ Principal Officer/ Director of ……...…….. *(insert name of the Company)* who is a Bidder in respect of **Tender No.……** for……. *(insert tender title/ description)* for……. *(insert name of the Procuring entity)* and duly authorized and competent to make this statement.

2. THAT the aforesaid Bidder, its Directors and subcontractors have not been debarred from participating in procurement proceeding under Part IV of the Act.

3. THAT what is deponed to here in above is true to the best of my knowledge, information and belief.

…….	…….	……
(Title)	(Signature)	(Date)

Bidder Official Stamp

FORM SD2

SELF DECLARATION THAT THE PERSON/TENDERER WILL NOT ENGAGE IN ANY CORRUPT OR FRAUDULENT PRACTICE.

I, ...of P. O. Box.....being a resident of..... in the Republic of..... do hereby make a statement as follows: -

1. THAT I am the Chief Executive/ Managing Director/ Principal Officer/ Director of..... *(insert name of the Company)* who is a Bidder in respect of **Tender No.**.....for ……. *(insert tender title/description)* for …… *(insert name of the Procuring entity)* and duly authorized and competent to make this statement.

2. THAT the aforesaid Bidder, its servants and/or agents /subcontractors will not engage in any corrupt or fraudulent practice and has not been requested to pay any inducement to any member of the Board, Management, Staff and/ or employees and/ or agents of……. *(insert name of the Procuring entity)* which is the procuring entity.

3. THAT the aforesaid Bidder, its servants and/or agents/subcontractors have not offered any inducement to any member of the Board, Management, Staff and/ or employees and/ or agents of……. *(name of the procuring entity).*

4. THAT the aforesaid Bidder will not engage /has not engaged in any corrosive practice with other bidders participating in the subject tender.

5. THAT what is deponed to here in above is true to the best of my knowledge information and belief.

……	……..……	….....……
(Title)	(Signature)	(Date)

Bidder's Official Stamp

DECLARATION AND COMMITMENT TO THE CODE OF ETHICS

I…….....….....(person) on behalf of ***(Name of the Business/ Company/ Firm***) ……. declare that I have read and fully understood the contents of the Public Procurement& Asset Disposal Act, 2015, Regulations and the Code of Ethics for persons participating in Public Procurement and Asset Disposal activities in Kenya and my responsibilities under the Code.

I do hereby commit to abide by the provisions of the Code of Ethics for persons participating in Public Procurement and Asset Disposal.

Name of Authorized signatory…….…….....

Sign…….....

Position…….....

Office address……..…. Telephone…….....

E-mail…….....……

Name of the Firm/Company…….....……

Date…….....……

(Company Seal/ Rubber Stamp where applicable)

Witness

Name…….....…….

Sign…….....…….

Date…….....……

APPENDIX 1- FRAUD AND CORRUPTION

(Appendix 1 shall not be modified)

1. Purpose

The Government of Kenya's Anti-Corruption and Economic Crime laws and their sanction's policies and procedures, Public Procurement and Asset Disposal Act *(no. 33 of 2015)* and its Regulation, and any other Kenya's Acts or Regulations related to Fraud and Corruption, and similar offences, shall apply with respect to Public Procurement Processes and Contracts that are governed by the laws of Kenya.

2. Requirements

2.1 The Government of Kenya requires that all parties including Procuring Entities, Tenderers, (applicants/ proposers), Consultants, Contractors and Suppliers; any Sub-contractors, Sub-consultants, Service providers or Suppliers; any Agents (whether declared or not); and any of their Personnel, involved and engaged in procurement under Kenya's Laws and Regulation, observe the highest standard of ethics during the procurement process, selection and contract execution of all contracts, and refrain from Fraud and Corruption and fully comply with Kenya's laws and Regulations as per paragraphs1.1above.

2.2 Kenya's public procurement and asset disposal act *(no. 33 of 2015)* under Section 66 describes rules to be followed and actions to be taken in dealing with Corrupt, Coercive, Obstructive, Collusive or Fraudulent practices, and Conflicts of Interest in procurement including consequences for offences committed. A few of the provisions noted below highlight Kenya's policy of no tolerance for such practices and behavior:

1) A person to whom this Act applies shall not be involved in any corrupt, coercive, obstructive, collusive or fraudulent practice; or conflicts of interest in any procurement or asset disposal proceeding;

2) A person referred to under subsection (1) who contravenes the provisions of that sub-section commits an offence;

3) Without limiting the generality of the subsection (1) and (2), the person shall be: -

   a) disqualified from entering in to a contract for a procurement or asset disposal proceeding; or

   b) if a contract has already been entered into with the person, the contract shall be voidable;

4) The voiding of a contract by the procuring entity under sub section (7) does not limit any legal remedy the procuring entity may have;

5) An employee or agent of the procuring entity or a member of the Board or committee of the procuring entity who has a conflict of interest with respect to a procurement: -

   a) Shall not take part in the procurement proceedings;

   b) Shall not, after a procurement contract has been entered in to, take part in any decision relating to the procurement or contract; and

   c) Shall not be a subcontractor for the tenderer to whom was awarded contract, or a member of the group of tenderers to whom the contract was awarded, but the subcontractor appointed shall meet all the requirements of this Act.

6) An employee, agent or member described in subsection (1) who refrains from doing anything prohibited under that subsection, but for that subsection, would have been within his or her duties shall disclose the conflict of interest to the procuring entity;

7) If a person contravenes subsection (1) with respect to a conflict of interest described in subsection (5) (a) and the contract is awarded to the person or his relative or to another person in whom one of them had a direct or indirect pecuniary interest, the contract shall be terminated and all costs incurred by the public entity shall be made good by the awarding officer. Etc.

2.3 In compliance with Kenya's laws, regulations and policies mentioned above, the Procuring Entity:

   a) Defines broadly, for the purposes of the above provisions, the terms set forth below as follows:

i) "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;

ii) "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;

iii) "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

iv) "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

v) "obstructive practice" is:

- Deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede investigation by Public Procurement Regulatory Authority (PPRA) or any other appropriate authority appointed by Government of Kenya 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; or
- Acts intended to materially impede the exercise of the PPRA's or the appointed authority's inspection and audit rights provided for under paragraph 2.3e. below.

b) Defines more specifically, in accordance with the above procurement Act provisions set forth for fraudulent and collusive practices as follows:

"fraudulent practice" includes a misrepresentation of fact in order to influence a procurement or disposal process or the exercise of a contract to the detriment of the procuring entity or the tenderer or the contractor, and includes collusive practices amongst tenderers prior to or after tender submission designed to establish tender prices at artificial non-competitive levels and to deprive the procuring entity of the benefits of free and open competition.

c) Rejects a proposal for award[1] of a contract if PPRA determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

d) Pursuant to the Kenya's above stated Acts and Regulations, may sanction or debar or recommend to appropriate authority (ies) for sanctioning and debarment of a firm or individual, as applicable under the Acts and Regulations;

e) Requires that a clause be included in Tender documents and Request for Proposal documents requiring (i) Tenderers (applicants/proposers), Consultants, Contractors, and Suppliers, and their Sub-contractors, Sub- consultants, Service providers, Suppliers, Agents personnel, permit the PPRA or any other appropriate authority appointed by Government of Kenya to inspect[2] all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the PPRA or any other appropriate authority appointed by Government of Kenya; and

f) Pursuant to Section 62 of the above Act, requires Applicants/Tenderers to submit along with their Applications/Tenders/Proposals a "Self-Declaration Form" as included in the procurement document declaring that they and all parties involved in the procurement process and contract execution have not engaged/ will not engage in any corrupt or fraudulent practices.

[1] *For the avoidance of doubt, a party's ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in A consultancy, and tendering, either directly or as a nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.*

[2] *Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Investigating Authority or persons appointed by the Procuring Entity to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies there of as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.*

FORM OF TENDER SECURITY-[Option 1–Demand Bank Guarantee]

Beneficiary:_____

Request forTenders No:

_____

Date:_____

TENDER GUARANTEE No.:_____

Guarantor: _____

1. We have been informed that_____(here inafter called "the Applicant") has submitted or will submit to the Beneficiary its Tender (here inafter called" the Tender") for the execution of_____ under Request for Tenders No._____(“the ITT”).

2. Furthermore, we understand that, according to the Beneficiary's conditions, Tenders must be supported by a Tender guarantee.

3. At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of_____(_____) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

(a) has withdrawn its Tender during the period of Tender validity set forth in the Applicant's Letter of Tender (“the Tender Validity Period”), or any extension thereto provided by the Applicant; or

b) having been notified of the acceptance of its Tender by the Beneficiary during the Tender Validity Period or any extension there to provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the Performance.

4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii) thirty days after the end of the Tender Validity Period.

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

_____

[signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

FORMAT OF TENDER SECURITY [Option 2–Insurance Guarantee]

TENDER GUARANTEE No.: _____

1. Whereas …… [*Name of the tenderer]* (hereinafter called "the tenderer") has submitted its tender dated …… [*Date of submission of tender]* for the …… *[Name and/or description of the tender]* (hereinafter called "the Tender") for the execution of__under Request for Tenders No._____("the ITT").

2. KNOW ALL PEOPLE by these presents that WE …… of …… [**Name of Insurance Company**] having our registered office at …… (hereinafter called "the Guarantor"), are bound unto …….. [*Name of Procuring Entity*] (hereinafter called "the Procuring Entity") in the sum of …… (Currency and guarantee amount) for which payment well and truly to be made to the said Procuring Entity, the Guarantor binds itself, its successors and assigns, jointly and severally, firmly by these presents.

Sealed with the Common Seal of the said Guarantor this ___day of _____ 20 __.

3. NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Applicant:

   a) has withdrawn its Tender during the period of Tender validity set forth in the Principal's Letter of Tender ("the Tender Validity Period"), or any extension thereto provided by the Principal; or

   b) having been notified of the acceptance of its Tender by the Procuring Entity during the Tender Validity Period or any extension thereto provided by the Principal; (i) failed to execute the Contract agreement; or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to tenderers ("ITT") of the Procuring Entity's Tendering document.

   then the guarantee undertakes to immediately pay to the Procuring Entity up to the above amount upon receipt of the Procuring Entity's first written demand, without the Procuring Entity having to substantiate its demand, provided that in its demand the Procuring Entity shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii)twenty-eight days after the end of the Tender Validity Period.

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

_____	_____
[Date]	*[Signature of the Guarantor]*
_____	_____
[Witness]	*[Seal]*

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

TENDER-SECURING DECLARATION FORM {r 46 and 155(2)}

[The Bidder shall complete this Form in accordance with the instructions indicated]

Date: *[insert date (as day, month and year) of Tender*

Submission] Tender No.: *[insert number of tendering*

process] To: *[insert complete name of Purchaser]*

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Tender-Securing Declaration.

2. I/We accept that I/we will automatically be suspended from being eligible for tendering in any contract with the Purchaser for the period of time of [insert number of months or years] starting on [insert date], if we are in breach of our obligation (s) under the bid conditions, because we– (a) have withdrawn our tender during the period of tender validity specified by us in the Tendering Data Sheet; or (b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the instructions to tenders.

3. I/We understand that this Tender Securing Declaration shall expire if we are not the successful Tenderer (s), upon the earlier of:

   a) Our receipt of a copy of your notification of the name of the successful Tenderer; or

   b) Thirty days after the expiration of our Tender.

4. I/We understand that if I am/we are/in a Joint Venture, the Tender Securing Declaration must be in the name of the Joint Venture that submits the bid, and the Joint Venture has not been legally constituted at the time of bidding, the Tender Securing Declaration shall be in the name so fall future partners as named in the letter of intent.

Signed:……..……..

Capacity / title (director or partner or sole proprietor, etc.) …….…….

Name:…….. Duly authorized to sign the

bid for and on behalf of: *[insert complete name of Tenderer]* Dated on……. day

of…….…… *[Insert date of signing]*

Seal or stamp

SITE VISIT FORM

REF NO: ..... **DATE: .....**

RE: SITE VIST FORM

This is to confirm that ..... (Name of Representative)

of ..... (Company Name)

P.o. BOX .....

did a site visist for **PROCUREMENT OF REMEDIAL WORKS FOR THE KAKUMA DIESEL POWER STATION.**

Name of Representative: .....

Name of Site visited .....

Company Name:-.....

Company Seal/Stamp

REREC REPRESENTATIVE

Name: .....

Sign.....

Company Stamp

APPENDIX TO TENDER

Schedule of Currency requirements

Summary of currencies of the Tender for_____*[insert name of Section of the Works]*.

Name of currency	***Amounts payable***
Local currency: _____	
Foreign currency #1: _____	
Foreign currency #2: _____	
Foreign currency #3: _____	
Provisional sums expressed in local currency _____	[To be entered by the Procuring Entity]

PART II – PROCURING ENTITY'S INFRASTRUCTURAL FACILITY REQUIREMENTS

SECTION VII - PROCURING ENTITY'S REQUIREMENTS

Notes on preparing the Procuring Entity's Requirements

1.1 This Section contains the Scope, site information, the Specifications, the Drawings, the Environmental requirements, Supplementary Information that describe the Works and Forms to be used during the implementation of the contract.

1.2 This is a "single responsibility contract". The Procuring Entity is not expected to invite proposals with detailed technical specifications. However, the Procuring Entity does and must know what it wants and must communicate its needs to the Tenderers. Hence, this section on Procuring Entity's Requirements replaces the usual Technical Specifications of a more traditional approach.

1.3 To enable Tenderers to offer appropriate solutions, the Procuring Entity should specify the purpose for which the Works are intended (seal so Sub-Clause4.1of the Conditions of Contract) and its particular requirements as clearly as possible. The Procuring Entity's requirements must therefore, specify exactly the particular requirements for the completed Works. It will also be necessary to specify the tests that will be carried out on completion of the Works to verify compliance with the requirements specified.

1.4 The Procuring Entity may perform appropriate front-end tasks (such as geotechnical/environmental investigations and permit acquisitions) to enable the Procuring Entity to: (a) develop a realistic understanding of the contract's scope and budget; and (b) furnish Tenderers within formation that they can reasonably rely upon in establishing their price and other commercial decisions.

1.5 While this section of the Tender document should endeavor to define the Procuring Entity's Requirements as precisely as possible *care must be taken to avoid over specifying details to the extent that the flexibility and pot*ential benefits associated with a "single responsibility" tender proposal approach are seriously eroded or threatened. This section on Procuring Entity's Requirements should, therefore, be carefully prepared *by experts who are familiar with the requirements and with the technical aspect of the required Works.* As the contractor is expected to carry out the design, the Procuring Entity should provide the criteria to which it expects the design to confirm. The functional/performance specifications may specify the characteristics, nature and performance of the finished work and any limitations which the Procuring Entity wishes to impose.

1.6 The Procuring Entity's requirements should specify the Contractor's Documents (Sub-Clause5.2 of the General Conditions of Contract) that are required and their submission/approval procedures.

1.7 The Procuring Entity's Requirements must be drawn up to permit the widest, possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials performance and/or functions of the Works. The Procuring Entity's Requirements should stipulate that all goods and materials to be incorporated in the Works are new, unused, of the most recent or current models and incorporate all recent improvements in design and materials.

1.8 Care must be taken when drafting the Procuring Entity's Requirements to ensure that the requirements are not restrictive. Recognized international standards should be used as much as possible for the description of goods, materials and workmanship. Where other particular standards are specified, whether national standards of Kenya or other standards, it should be stated that goods, materials and workmanship meeting other authoritative standards and which promise to ensure equal or higher quality than the standards specified, will also be acceptable. Where a brand name of a product is specified it should always be qualified with the terms "or equivalent".

1.9. For such a turnkey contract, no detail drawings would generally be available when inviting proposals. It would, however, be useful to include **conceptual drawings** and/or outline design, if any and as appropriate, to supplement or help explain the general concept of the Procuring Entity's needs. Tenderers should be advised to the extent to which the Procuring Entity's outline design is a suggestion or a requirement.

1.10 Pursuant to Sub-Clause 4.10 of the Conditions of Contract, the Procuring Entity shall make available to Tenderers all relevant information in the Procuring Entity's possession pertaining to the site and the proposed works. Typical information to be provided by the Procuring Entity may include:

a) Statuary planning and zoning constraints

b) Orders consents permits, licenses and compliance requirements

c) Topographic survey

d) Ground investigation and condition information

e) Utility records and L and ownership information

f) Ground water, surface water and hydrological information

g) Environmental and social baseline data

h) Details of known accommodation works requirements

i) As built records of existing infrastructure

j) Details of any risks or hazards

k) Any other physical constraints

l) Quality and Environmental, health and safety systems to apply

m) Stakeholder engagement records and requirements on sub-surface and hydrological conditions at the Site, including environmental aspects.

1.11 In addition, the Procuring Entity's Requirements should also include, as appropriate, information of a technical nature referring to Procuring Entity's Requirements in the following Sub-Clauses of the Conditions of Contract:

Sub-Clause No.	**Information required**	**Remarks**
1.8	Number of copies of Contractor's Documents Publications to be kept on Site	
1.11	Intellectual Property rights retained by the Procuring Entity	
1.13	Permissions being obtained by the Procuring Entity	
2.1	Phased possession of foundations, structures, plant or means of access	Please also refer to Sub-Clause 2.1 (Part A- Contract Data) to ensure consistency and applicability.
4.1	Intended purposes for which the Works are required	As mentioned above
4.6	Other contractors and others on Site, if any	
4.7	Setting- out points, lines and levels of reference	The Sub-Clause states: "… specified in the contract or notified by the Engineer"
4.18	Emissions, surface discharges and effluent	
4.19	Details and prices of electricity, water, gas and other services if the services are to be available for the Contractor to use.	
4.20	Details of Procuring Entity's equipment and free-issue material, if any.	
5.1	Criteria (if any) for design personnel	Consistent with any such requirement in Section III- Evaluation and Qualification Criteria
5.2	Contractor's Documents required and whether for approval	Specify, as appropriate, the extent to which the Contractor's Documents are required, which of them are required for approval (not just review), and the submission procedures. Some examples, which are in no way exhaustive and have to be adapted, are given under Contractor's Documents in this Section VII.
5.4	Applicable Technical Standards and regulations	
5.5	Training of Procuring Entity's Personnel	
5.6	As- built drawings and other records of the Works	
5.7	Operation and maintenance manuals and any other	

Sub-Clause No.	Information required	Remarks
	manuals for these purposes	
6.6	Facilities for Personnel	
7.2	Samples	
7.4	Testing	
7.8	Royalties	
9.1	Tests on Completion	
9.4	Damages for failure to pass Tests on Completion	
12.1	Tests after Completion	
12.4	Damages for failure to pass Tests after Completion	

1.11 Any additional sustainable procurement technical requirements (beyond the ESHS requirements stated in the Environmental, Social, Health and Safety Requirements section below) shall be clearly specified. The sustainable procurement requirements may be specified to enable evaluation of such a requirement on a pass/fail basis and/orated criteria (point system), as appropriate.

1.12 Environmental, social, health and safety requirements; The Procuring Entity should use the services of a suitably qualified environmental, social, health and safety specialist/s to prepare this section, working with a procurement specialist/s. The Procuring Entity should attach or refer to the Procuring Entity's environmental, social, health and safety policies that will apply to the project.

1.13 SUGGESTED CONTENT FOR AN ENVIRONMENTAL AND SOCIAL POLICY

1.13.1 The Works' policy goal, as a minimum, should be stated to integrate environmental protection, occupational and community health and safety, gender, equality, child protection, vulnerable people (including those with disabilities), gender-based violence, HIV/AIDS awareness and prevention and wide stakeholder engagement in the planning processes, programs, and activities of the parties involved in the execution of the Works. The policy should set the frame for monitoring, continuously improving processes and activities and for reporting on the compliance with the policy.

1.13.2 The policy should, as far as possible, be brief but specific and explicit, and measurable, to enable reporting of compliance with the policy in accordance with the Particular Conditions of the Contract Sub-Clause 4.21 and Appendix C to the General Conditions of Contract.

As a minimum, the policy is set out to the commitments to:

i) apply good international industry practice to protect and conserve the natural environment and to minimize unavoidable impacts;
ii) provide and maintain a healthy and safe work environment and safe systems of work;
iii) protect the health and safety of local communities and users, with particular concern for those who are disabled, elderly, or otherwise vulnerable;
iv) ensure that terms of employment and working conditions of all workers engaged in the Works meet the requirements of national labor laws of Kenya;
v) be intolerant of, and enforce disciplinary measures for illegal activities. To be intolerant of, and enforce disciplinary measures for gender violence, child sacrifice, child defilement, and sexual harassment;
vi) incorporate a gender perspective and provide an enabling environment where women and men have equal opportunity to participate in, and benefit from, planning and development of the Works;
vii) work co-operatively, including with end users of the Works, relevant authorities, contractors and local communities;
viii) engage with and listen to affected persons and organizations and be responsive to their concerns, with special regard for vulnerable, disabled, and elderly people;
ix) provide an environment that fosters the exchange of information, views, and ideas that is

free of any fear of retaliation;

x) minimize the risk of HIV transmission and to mitigate the effects of HIV/AIDS associated with the execution of the Works;

1.13.3 The policy should be signed by the senior manager of the Procuring Entity. This is to signal the intent that it will be applied rigorously. When preparing the specifications have regard to the relevant General Conditions of Contract and Particular Conditions of Contract.

2 Scope of the Works

3 Site Information

4 Specifications

DADAJABULA TRADING CENTRE SOLAR MINI-GRID SCOPE/SITE INFORMATION & SPECIFICATIONS

PART I

Power Plant Specifications

1. General Description

Rural Electrification and Renewable Energy Corporation (REREC) invites eligible bidders for the design, supply, installation, testing and commissioning of 1No. 150kW solar PV-Diesel hybrid plant in Dadajabula Trading Centre in Wajir County.

2. Project Location

The off-grid solar Photovoltaic (PV) Power Plant to be supplied and set to work under this contract shall have an output of not less than 150 kW at the point of the Inverter Output. The plants shall be installed in Dadajabula trading center in off-grid county of Wajir.

Annex 1.

The document has tender for design, supply, testing and commissioning of a 1no. 150kW solar PV-Diesel hybrid generation plants complete with their solar modules, Hybrid inverters with a capacity not less than 150kW, Lithium ion Phosphate batteries for back-up with a capacity not less than 400KWh, intelligent controller/manager, mounting support, electrical controls, protection and instrumentation, a diesel generator backup of not less than 50KVA and Step up substation (0.415/11KV) complete with all associated accessories and civil works.

3. System Description

During the daytime, the Solar Power Generation Plant should supply power directly to the Loads in online mode, along with charging of the batteries in continuous mode. On most non-cloudy days during the year (“regular day”), batteries should get fully charged during the day time. In evening or morning (Sun period) battery should support the Solar Power Generation Plant to meet the load, if required

The solar PV hybrid power plant shall consist of the following main components:

- Solar PV modules
- Solar PV modules structures
- Hybrid inverters

- lithium ion batteries
- Diesel thermal generator for reserve power
- Switchgear
- Step up substation (0.415/11 KV)
- Outdoor sub-station equipment

The tenders are for design, supply and commissioning of a new solar PV hybrid generation plant complete with its solar modules, inverter, lithium ion phosphate batteries with battery rack, diesel thermal generator with automatic startup function, mounting structure for modules, electrical controls, protection and instrumentation and Step-up substation (0.415/11KV) complete with all associated accessories and civil works. The plant shall be installed at the Dadajabula trading center, Wajir County, Wajir South Constituency.
The solar PV power plant is also equipped with a Diesel Generator, which shall be used normally as reserve power. The diesel generator should switch on automatically whenever the state of charge of the battery reaches a set depth of discharge. This will be defined at commissioning stage. The diesel generator shall be sized to charge the lithium ion batteries so that the power plant is operating at its optimum power rate. The diesel generator shall comprise a 50kVA unit in three-phase operation. The diesel generator has to be equipped with automatic startup function controlled by a robust energy management system (EMS). The priority has to be given to use the solar energy and the diesel generator will meet the energy deficit. In case of a power outage of the inverter, the critical loads have to be bypassed to the diesel generator by manual switch over.

The battery bank shall be charged by solar power during the day and its capacity shall be determined with C_{10} capacity rate.

3.1 Description of Electrical Components and Requirements

1. Solar PV Modules

1.1 SPV Mono crystalline modules of minimum 72-cells; and minimum 23% moduleefficiency.

1.2 Solar modules offered shall be;

i) Tier-1 Manufacturer
ii) Certified as per IEC 61215
iii) Qualify IEC 61730- Part -1: PV Module Safety Qualification Part -1 Requirement for Construction.
iv) Qualify IEC 61730- Part -2: PV Module Safety Qualification Part -2 Requirements for Testing.

1.3 As SPV modules shall be used in highly corrosive atmosphere throughout their life time so they must qualify IEC 61701.

1.4 Solar PV Module design shall conform to following requirement:

i) Weather proof, DC rated MC4 connector and a lead cable coming out as a part of the module, making connections easier and secure, not allowing any loose connections.
ii) Resistant to water ingress, abrasion, hail impact, humidity, sea water & other harsh environmental factors for the worst situation at site.

1.5 Module rating is considered under standard test conditions; however Solar Modules shall be designed to operate and perform under site conditions including high temperature, dusty conditions, high humidity and corrosive atmosphere.

1.6 Identification and Traceability:

Each PV module shall have Radio Frequency Identification (RFID) Tag. The following information must be mentioned in the RFID used on each module. This can

be inside or outsidethe laminate but must be able to withstand harsh environmental conditions.

i) Name of the manufacturer of SPV module.
ii) Name of the manufacturer of Solar cells.
iii) Month and year of the manufacturer (separately for solar cell and module).
iv) Country of origin (separately for solar cell and module).
v) I-V curve for the module.
vi) Peak wattage, Im, Vm and PF for the module.
vii) Unique Serial No and Model No of the module.
viii) Date and year of obtaining IEC SPV module qualification certificate
ix) Name of the test lab issuing IEC certificate other relevant information on traceability ofsolar cell and module as per ISO 9001and ISO14001.

1.7 Any other markings as required in the specifications shall also be made on the modules.

1.8 Warranties for Modules:

Product Warranty The manufacturer should warrant the solar module(s) to be free from thedefects and/or failures specified below for a period not less than ten (10) years from the date of sale to the original customer ("Employer")

i) Defects and /or failures due to manufacturing.
ii) Defects and/or failures due to quality of materials.
iii) Non-conformity to specifications due to faulty manufacturing and/ or inspection processes.

1.9 Performance Warranty

i) A 25-year long-term performance warranty with a maximum linear decrease in peak power at STC of 2.5% in the first year, 0.6%/year in subsequent years. At year 25, the peak power shall be not less than 83%.
ii) Bidder shall provide data sheet for solar PV module (under standard testing condition) along with their offer as per Guaranteed Technical Particular.

2 Module Mounting Structure (MMS)

2.1 The MMS to be used for mounting the SPV modules shall be as under:

i) Fixed-tilt type.
ii) Azimuth: 0º True South/North.
iii) Tilt angle: 10º -15º tilt angle shall provide for all sites with adequate spacing to preventinter row shading.
iv) Structure shall comply with IEC 61215/61646.

2.2 The mounting steel structure and its galvanizing shall be as per the required standards.

2.3 The mounting structure shall be suitably designed for mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loadsalong with applicable wind loads to the base properly.

2.4 While designing of MMS additional care is needed to ensure that the material size used is capable to withstand the wind forces generated on account of heavy wind speed of respective sea wind zone. MMS with documented results of wind tunnel testing and resonant frequency dampening is preferred.

2.5 To reduce the pressure on structure and foundation, clear spacing between two adjacent modules shall be sufficient to allow wind passage.

2.6 The minimum clearance between the lower edge of the modules and developed ground level shall be adequately elevated above relevant flood plain. Minimum 1000 mm or higher and toemployer's approval.

2.7 Contractor has to choose suitable foundation design(s) depending on soil conditions, geographical condition, regional wind speed, bearing capacity, slope stability etc.

2.8 The structure shall be designed to allow easy replacement of any module.

2.9 Spacing between rows shall be so designed that shadow of one row of modules to next isavoided.

2.10 The Contractor (successful bidder) shall furnish detailed design calculation.

2.11 Nut & bolts, supporting structures including module mounting structures shall have to beadequately protected against all climatic conditions prevailing in the area.

2.12 All fasteners shall be of stainless steel of grade SS 304 or suitable equivalent.

2.13 The mounting structure shall be grounded properly using maintenance free earthing kit.

2.14 The mounting structure & foundation shall be designed to withstand applicable speed of wind zone of the applicable site as given in relevant International/Kenya wind load codes / standards. Suitable fastening arrangement such as grouting and clamping should be provided to secure the installation against the specific wind speed. The contractor shall ensure that the design has been certified by a recognized lab/ institution in this regard and submit the same to the Employer.

3 Array Junction Boxes (AJB)/String Monitoring Box (SMB)

3.1 To receive the DC output from field array, junction box / string monitor Box (SMB) as per design requirement shall be provided in between solar array and DCDB/PV Inverters. They shall be rated for 600/1000V and comply with IEC61439-2, UL1741 and standards.

3.2 AJB can also be integrated into Inverter for space saving.

3.3 AJB having polycarbonate enclosure of dust & vermin proof shall conform to IP 65 protection.

3.4 Array junction box allows several PV strings to be connected in parallel.

3.5 Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the inverter along with necessary surge arrestors.

3.6 A DC dis-connector switch must isolate the array DC circuit as per requirement

4. DC Distribution Board/DC combiner box

4.1 To receive the DC output from junction box /string monitor box (SMB) as per approved design requirement DCB to be provided in between JCB/SMB and PV inverter. They shall be rated for 600/1000V and comply with IEC61439-2, UL1741 and standards.

4.2 Sufficient no. of switchboards / DC DB wherever required shall be provided.

4.3 DCDB should be equipped with appropriate functionality, safety (including fuses, grounding,etc.) and protection.

4.4 The terminals will be connected to bus-bar arrangement of proper sizes to be provided. The panels/ boxes will have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables.

4.5 DC DB enclosure of dust & vermin proof shall conform to IP 65 protection if out door.

4.6 DC DB allows requisite connections from JB/SMB to be connected in parallel.

4.7 Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PV inverter along with necessary surge arrestors.

4.8 DC DB shall be provided with the purpose of providing option for isolating the battery bank.

4.9 There shall be copper bus bars of desired size/rating and can either be independent or integrated in PSU.

4.10 A DC dis-connector switch in DCDB must isolate the array DC circuit as per requirement

5. Hybrid Inverter integrated with MPPT Charge Controller

The hybrid Inverter Unit shall be hybrid Inverter with power exporting facility to the Grid.

5.1 All the Inverters should contain the following clear and indelible Marking Label &

Warning Label as per IS16221 Part II, clause 5. The equipment shall, as a minimum, be permanently marked with:

a. The name or trademark of the manufacturer or supplier.
b. A model number, name or other means to identify the equipment.
c. A serial number, code or other markings allowing identification of manufacturing location and the manufacturing batch or date within a three-month time period.
d. Input voltage, type of voltage (A.C. or D.C.), frequency, and maximum continuouscurrent for each input.
e. Output voltage, type of voltage (A.C. or D.C.), frequency, maximum continuous current, and for A.C. outputs, either the power or power factor for each output.
f. The Ingress Protection (IP) rating

5.2 The Hybrid inverter output shall be 415 VAC, 50 Hz, 3 phase.

5.3 The Hybrid inverter should have all the technical requirements for connecting to the Gridand provision of Intentional Islanding with facility for connecting to a battery bank

5.4 The Hybrid inverter shall include appropriate self-protective and self-diagnostic featureto protect itself and the PV array from damage in the event of inverter component failure or from parameters beyond the inverter's safe operating range due to internal or external causes.

5.5 Maximum Power Point Tracker (MPPT) shall be integrated into the inverter to maximize energy drawn from the solar PV array. MPPT shall be microprocessor/micro controller based to minimize power losses and maximize energy utilization. The details of working mechanism of MPPT shall be mentioned by the Bidder in its proposal. The MPPT unit shall confirm to IEC 62093 for design qualification.

5.6 The Inverter shall always give preference to Solar power, and will use BESS power only when the solar power is unable to meet the loads requirement

5.7 Inverter should comply with IEC 61683 for efficiency and measurements and should comply with IEC 60068-2 for environmental testing.

5.8 The efficiency of the inverter shall be more than 95% at full load. The inverter shall have high overload capacity. The Bidder should specify the overload capacity in the bid.

6. Battery Energy Storage System (BESS)

6.1 Supply of Battery Energy Storage System (BESS) with Lithium-ion Battery pack, conforming to IEC62619 standards with warranty of 5 years, 6,000 cycle's minimum. Complete in all respects as under and confirming to Employer's Requirement & technical specification, consisting of;

i) Lithium-ion Battery Power Packs for required energy capacity, or equivalent as per approved design, minimum 80% Depth of Discharge (DOD) for Lithium-Ion. Batteries should be capable of at least C/4 charge and discharge rate.
ii) Enclosures confirming to IP35 for Indoor /IP65, or better for outdoor.
iii) All accessories for correct installation, foundation, connection, controls, and operation of BESS.

6.2 The battery storage shall be Lithium Iron Phosphate (LFP) type and shall be installed in a well-insulated and air-conditioned room or container.

6.3 Warranted number of cycles for the BESS at the supplier recommended depth of discharge should not be less than 6,000 cycles at full DOD indicated by the battery manufacturer specifications.

6.4 The battery warranty should be 5 years minimum. If due to any reason battery is required replacement, then the Contractor is to replace the same in warranty period without any extra cost to the Employer.

6.5 System voltage of above 48V. All equipment to have matching voltages to the

existing system voltage

6.6 Suitable number of corrosion resistant and acid-proof storage racks shall be supplied to accommodate the cells, testers and other accessories. The rack design shall be such that minimum space is required, without any way obstructing the maintenance requirements. For metallic racks, standards specified for control panel enclosures and other metallic shallgovern.

6.7 There shall be no environmental hazards caused due to:

i) Improper use and maintenance of the battery bank.

ii) Improper disposal of batteries at the time of replacement.

iii) Any manufacturing defects.

6.8 All technical and other details pertaining to the storage cells shall be supplied including but not limited to the following:

i) Rated voltage and ampere-hour capacity of each storage cell as the rated discharge rate,

ii) Permitted maximum DOD,

iii) Self-discharge rate

iv) Cycle life of the storage cell and the anticipated life (in years) of the battery bank.

v) Total number of storage cells in use.

vi) Details on cell interconnections, if any

vii) Charging system used for battery

6.9 The system should allow for the load current to be supplied at the same time as the battery charging current.

6.10 The contractor shall submit (in 4 sets) complete design and expected performance of BESS Calculation, drawings, reports and data for approval of the Employer during detailed engineering.

6.11 The design of BESS with critical parameters such as response time discharge duration, Depth of Discharge, frequency of discharge, cycle life, round trip cycle efficiency performance degradation, self-discharge characteristics, short time discharge rating, transient response characteristics, auxiliary system requirement etc shall be included in the detailed engineering.

6.12 Suitable Fire protection and suppression system shall be designed for BESS in line with IEC or international requirements/specifications regulation as applicable and system requirement considering project site. BESS to be housed in one room in the control room/building. The battery room shall have an automated fire detection, prevention and suppression system fitted with a dry aerosol agent to put out Lithium-Ion battery fires. Thesystem shall include smoke detectors, horn strobes and other components required to enable it function properly and suppress fires while preventing unintended release.

6.13 BESS confirming to International Safety and Electrical Standards shall be Complete in all respect consisting of:

i) Complete with programmable control and regulation parameters, protection system, control system, surge protection system etc.

ii) Requisite numbers of battery pack, the combination of which shall equal or exceed the estimated capacity shown in design characteristics in this document, with Minimum. 80 % DOD,

iii) Enclosures conforming to IP35 for Indoor.

iv) All accessories and connection for correct installation and operation of BESS.

v) All cables for inter connection with main AC distribution board.

vi) Support structure to keep batteries at a suitable clearance level from ground to take care of water flooding etc. The design shall be submitted to the employer before itsimplementation.

vii) Test certificate and test reports as per IEC62619 standard applicable to battery technology shall be submitted for approval of the Employer. All other test certificate and test reports as per international standards and requirements/specifications for large scale BESS shall be submitted for approval of the Employer during submission of detailed engineering.

6.14 Suitable protection/isolation for the battery system should be provided with proper rating of 40 fuses and isolators for DC application. This should be connected between battery bank and battery inverter/charger.

3.1.6 Diesel Generator

The Diesel Generator shall have a 3-phase 50KVA power output with 415 V at 50 Hz. It should include a highly corrosion resistant enclosure, control panel and monitoring, fuel tank and circuit breaker protection. The diesel generator shall be suitable for outdoor installation and perform accordingly with the battery inverter and the system design. The diesel generator shall work in a fully automated manner with the above stated component. A concrete plinth to be constructed for the generator placement plus a shed of steel hollow sections and IT 4 sheets to engineer's approval to house the generator.

3.1.7 Data Monitoring

In order to achieve a high performance of the solar PV hybrid power plant, the incorporation of automatic data acquisition and monitoring technology is essential. This allows that the yield of the PV plant can be monitored easily and compared with calculations made from solar irradiation data to raise warnings on a daily basis in case of a shortfall. Important information on for example State of Charge of the battery storage and other relevant energy and power value from the system including time stamps of diesel generator operation can be detected and rectified before they have an appreciable effect on system performance. A data monitoring system shall be installed to meet the requirements above and has to give the opportunity to receive the system data via GSM and to allow remote access to the solar PV hybrid power plant. The electrical power supply of the data monitoring system shall be from DC power of the battery. Corresponding electrical adaption of the monitoring to the DC power supply level shall be installed. Remote monitoring and data acquisition through Remote Monitoring System Software at the REREC location with latest software/hardware configuration and service connectivity for online / real time data monitoring complete to be supplied by the supplier. Provision for interfacing these data on REREC server and portal in future shall be kept. Reliable sensors for solar radiation, temperature & other electrical parameters are to be supplied with the data logger unit. Communication interface the entire system can be operated and monitored via various interface viz (RS232, RS485, MPI, Profit-bus, Telephone modem), in addition to the information indicated on the operator panel. Remote Monitoring may be achieved directly via inverter interface or via third party data acquisition system. Remote monitoring system should allow for rudimentary parameter adjustment.

3.1.8 Lightning & Over Voltage Protection

- The Solar plant shall be provided with lightning and over voltage protection connected to proper earth pits. Earthing pits shall be measured to have an earthing resistance of 1Ω or less at the time of installation. If this level cannot be obtained with the soil at the facility, then soil conditioning (engineered backfill) shall be implemented to improve the earthing resistance within acceptable levels.
- The main aim of over voltage protection is to reduce the over voltage to a tolerable level before it reaches the PV or other sub-system components as per NFC 17-102. The source of over voltage can be lightning or other atmospheric disturbance.

- Lightning mast/conductor, placed at strategic locations, shall be used to protect the arrays against lightning protection. The bidder shall give detailed design showing location of lightning conductor/masts and the protection coverage on array without causing any shadow on the modules to the Employer.
- All design shall be submitted to the Employer before its implementation.
- Necessary concrete foundation for holding the lightning conductor in position to be made after giving due consideration to maximum wind speed and maintenance requirement at site in future.
- The lightning conductor shall be earthed through GI flats and connected to with earth pits per applicable International Standards. Three earth pits shall be provided for each lightning arrestor. Each lightning conductor shall be fitted with individual earth pit as per required Standards including accessories, and providing masonry enclosure with cast iron cover plate having locking arrangement, watering pipe using charcoal or coke and salt as required as per provisions of IS.
- Design calculations, technical specification and requisite test reports of lightning mast conforming to international standards along with detailed write up in 4 sets shall be provided for approval to the Employer.

3.1.9 Earthing Protection

- Earthing system shall be in strict accordance with IEC specified and applicable Electricity Rules / Acts and Guidelines for connections.
- Earthing system network / earth mat shall be of interconnected mesh of GI flats buried in ground in the plant. The interconnections shall be done with GI flats of suitable sizes. The earth conductors shall be free from pitting, laminations, rust, scale and other electrical, mechanical defects.
- Metallic frame of all electrical equipment shall be earthed by two/three separate (as per KPLC norms) and distinct connections to earthing system, each of 100% capacity, with the exception of solar panels, for which alternate means of code-compliant earthing shall be admissible if integrated with racking design.
- Metallic sheaths / screens, and armor of multi-core cables shall be earthed at both ends. Metallic sheaths and armor of single core cables shall be earthed at switchgear end only unless otherwise approved.
- Each continuous laid lengths of cable tray shall be earthed at minimum two places by G.S. flats to earthing system, the distance between earthing points shall not exceed 30 meter/ KPLC norms. Wherever earth mat is not available, necessary connections shall be done by driving an earth electrode in the ground.
- Neutral connections and metallic conduits/pipes shall not be used for the equipment earthing.
- Lightning protection system down conductors shall be terminated to separate earth electrodes & not be connected to other earthing conductors.
- Connections between earth leads and equipment shall normally be of bolted type. Contact surfaces shall be thoroughly cleaned before connections. Equipment bolted connections after being tested and checked shall be painted with anti-corrosive paint / compound.
- Back filling material to be placed over buried conductors shall be free from stones and harmful mixtures. Back filling shall be placed in layers of 150 mm.
- Earth pit shall be constructed as per IEC standard specified, Minimum spacing between electrodes shall be 2000 mm. Earth pits shall be treated with salt and charcoal/chemical Powder Earthing.

- Earth resistance at earth terminations shall be measured and recorded. All equipment required for testing shall be furnished by successful bidder.
- Each array structure of the SPGP yard/shed shall be grounded properly as per standard.
- The Array Structure is to be connected to earth pits as per standards. Junction boxes shall be connected to the main earthling conductor/electrode.
- The arrays shall be in protected zone of lightning arrester/spheres by installation of suitable lightning surge diverters/arrestors. The earth electrodes for the same shall have to be completely separate from the plant/array earthing.
- All metal casing/shielding of the plant shall be thoroughly grounded in accordance with applicable electricity act/rules/guidelines. Total earthing system installation shall be in strict accordance with the latest editions of Electricity Rules, relevant Standards and code of practices and the local statutory authority regulations.
- Necessary test point provision shall be made for bolted isolating joints of each earthing pit for periodic checking of earth resistance.
- All non-current carrying metal parts shall be earthed with two separate and distinct earth continuity conductors to an efficient earth electrode.
- Earthing Design And Layout
    i) The successful bidder shall submit Design along with drawings showing the location of lightning arresters and protection zones to cover all arrays against lightning for approval from Employer.
    ii) The earth mesh system design consisting of G.I Flat shall be submitted for approval of Employer.
    iii) Total plant earthing system shall be designed to give an earth resistance of less than 1 ohm all along the earth mesh.
    iv) Earthing conductors in outdoor areas shall be buried 1.5 to 2M below finished graded level and these buried conductors shall be brought 500 mm above ground level for making tap connections to the equipment.
    v) All the electrodes shall be 50 mm diameter GI pipe, 3.0 m long and shall strictly be as per IS: 3043/IEC of latest revision.
- Each phase of lightning arrestor shall be earthed through GI flat (considering salty weather) connected to an individual earth electrode.
- If present, air break switches and DO fuses shall also be earthed GI flat to the main earthing flat.
- Metallic conduits and pipes shall not be used as earth continuity conductor.
- GI conductors shall be provided for earthing the lighting fixtures, receptacles, junction boxes, lighting conduits and this conductor in turn shall be connected to the main earthing conductor / electrode.

4. Equipment Housing

4.1.1 Power House

The Multi-Mode Inverter (hybrid), data monitoring equipment, and all monitoring equipment shall be installed indoors with equipped Air conditioner and fire suppressing Unit according to the equipment manufacturer's recommendations. All electrical boards and LV protections will also be installed indoors. The battery storage shall be installed indoors in a separate room equipped also with Air Conditioner and fire suppressing unit according to the equipment manufacturer's recommendations. All recommendation and regulations for installing the selected batteries in has to

be taken into account. The Diesel Generator shall be installed outdoors.

The Power House shall also be equipped with safety and protective elements required for operations, maintenance and emergencies. This will include fire extinguisher, water source, protective goggles and clothing, etc.

- Air Conditioner is a must for all rooms / compartments in the Power House.
- "Double Layer Roof" to reduce heating room from direct sunlight.
- Outer roof layer must be big enough to avoid direct sunlight heating technical rooms / compartments, over the course of the year.
- Insulated walls to reduce outside heat energy flow

4.1.2 Housing Solution

The inverters and all monitoring equipment shall be installed with Air conditioner according to the equipment manufacturer's recommendations in a standard structure and the tenderer to submit with the bid document detailed design of the structure which will house all the equipment and present for approval. The structure has to be delivered and placed on reinforced concrete blocks by the tenderer. The Structure shall be further placed under an open shed made of steel hollow sections and IT4 sheet roof so that direct sunshine does not fall on structure and there is adequate space between the shed and Structure to allow air circulation. The place has to be appropriate and protected from lightning. Location has to be chosen that no heavy rain or seasonal flooding can enter the structure. Foundation above ground has to be minimum 2 steps, each 14 cm.

Thermal insulation inside the structure is advised. Proper wall mounting support for Inverter and AC distributions is advised. Pre-installed Inverter and other equipment is not recommendable. Preinstalled equipment will lead to loss of manufacturer warranty as damage may occur due to transport (shaking). Pre-installed battery is not possible due to safety regulations.

The inverters installed under the solar panels mounting with a small shed above to reduce risk of rain/water on the inverter but with adequate room for air circulation to reduce temperature build-up. The inverters shall have protection of at least IP54

4.2.1 Electrical Protection

The solar PV hybrid system shall contain all necessary electrical protection to ensure the safety of persons and goods. At the LV distribution boards, thermomagnetic circuit breakers with C trip curve shall be included meeting IEC 60947-2 requirements. It shall also be included differential residual current circuit breaker for the person protection (RCD).

It is also important to implement a lighting protection system, ensuring the coverage of the whole PV plant, Power House, Container and Diesel Generator. Installation & Commissioning by approved / certified / licensed company.

4.2.2 Transmission and Distribution Line

The electricity distribution from the generation plant to the end consumers will be done by means of a distribution line formed by a Medium voltages (MV) line at 3-phase 11 KV/ 50 Hz. This will be done in a separate scope from this tender.

The power from the solar plant shall be connected to the electrical system of REREC through a 500

amps breaker and isolator of the same capacity to be provided by the tenderer. The tenderer shall also provide and install an energy tariff meter complete with current transformers (CTs) for measuring energy generated by the solar PV hybrid power plant and .

4.3 Balance of System

The Balance of System (BOS) encompasses all components of a solar PV hybrid power plant that includes wiring, switches, a mounting system, and one or many inverter battery bank. BOS refers to all components of a PV system other than the modules. In addition to inverters and racking, this includes

4.5 General Rating

The solar PV hybrid power plant has to be capable of producing the maximum output under the continuous ambient temperatures, altitude and relative humidity given below:

Temperature: Max. 45 degrees Celsius
Min. 18 degrees Celsius
Average 32 degrees Celsius

Relative humidity: 90 – 100 %

4.6 Cables & Wiring

All instruments and panel wiring shall be of heat resisting and self-extinguishing type in compliance with IS. Plastic or porcelain cleats of the limited compression type shall be used for holding wiring runs. All wires shall be suitable for bending to meet the terminal studs at right angles. Metal cases of all apparatus mounted on panels shall be separately earthed by means of copper wire or strips.

The following color scheme of the wiring shall be used as per standard for three phase systems.

a) AC three phase circuits:
   i) No.1 Phase : Red.
      No.2 Phase : Yellow.
      No.3 Phase : Blue
   ii) Neutral conductor : Black
   iii) Connection to earth : Green
b) D.C. circuits
   i) Positive :Red
   ii) Negative :Black

4.7 Cables and Accessories

Cables of appropriate size to be used in the system shall have the following characteristics:

i) Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards
ii) Temp. Range: -10^0C to $+80^0$C
iii) Excellent resistance to heat, cold, water, oil, abrasion, UV radiation.
iv) Flexible.
v) Sizes of cables between array interconnections, array to junction boxes, junction boxes to inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use.

All the cables shall conform to the requirements of the related standards and codes for:

i) DC cable for photovoltaic system
ii) XLPE / PVC insulated (heavy duty) electric cables for working voltages up to and including 1100V.

iii) Recommended current ratings
iv) Low carbon galvanized steel wires, formed wires and tapes for armoring of cables
v) VC insulation and sheath
vi) Cross linked polyethylene insulated PVC sheathed cables
vii) Conductors for insulated electrical cables and flexible cords.
viii) Standard test method for density of smoke from the burning or decomposition of plastics.
ix) Tests on gases evolved during combustion of electric cables.
x) Tests on electric cables under fire conditions.

5. Main Technical Specification of Solar PV Hybrid Power Plant

Table 1 summarizes the required main technical specification of the solar PV hybrid power plant.

Pos 1	General Specification	
1.1	Name of project site	Hodhan- Dadajabula village at Dadajabula sub-location, Dadajabula location, Dadajabula ward in Wajir County
1.2	Coordinates	coordinates 0°34'27.53"N 40°47'3.9"E.
1.3	Site altitude	
1.4	Daily load demand	500 kWh/day
1.5	Annual yearly demand rising for the next 5 years	3 %
1.6	Renewable Energy fraction	90 %
Pos 2	Solar PV Generator	
2.1	Solar PV Generator Capacity (Minimum)	150kWp
2.2	Module type	Silicon monocrystalline (Mono PERC)
2.3	Module nominal power	>400 W
2.4	Inverter type	Hybrid inverter
Pos 3	Battery Storage	
3.1	Battery type	Lithium-Ion type
3.2	Battery String Voltage	=> 500 V DC
3.3	Battery Usable Capacity	400KWh
3.4	Battery cycles	6000 at 80% DOD @ 25°C
Pos 4	Diesel Generator	
4.1	Fuel type	Diesel
4.2	Generator type	Synchronous generator
4.3	Generator power output	3-phase

4.4	Number of generators	1
4.5	Rated power	50 kVA
4.6	Start behavior	Automatic-startup
Pos 5	AC distribution line (To be done by REREC)	
5.1	Distribution type	Medium voltage 11KV/50 Hz
5.2	Number of LV transformer	None
Pos 6	Data Monitoring system	
6.1	Energy and power values from solar PV power plant	1No.
6.2	Data from battery management	1No.
6.3	Digital energy tariff meter for the Trading Centre Out Put	2No.
6.4	Control Panel for Energy and power values from Diesel Generator)	1No.
6.5	GPRS/ GSM Modem for remote assess	1No.
6.6	Meteorological sensors (solar radiation, ambient temperature, wind speed)	1No.

Table 1: Required technical specification of the solar PV hybrid power plant

6. Documentation

All work steps will be documented in detail throughout the construction phase. The documentation will include as build plans, datasheets, technical specifications, and installation and operation manuals for each component of the installed system.

6.1 Operation & Maintenance Manuals

One (1) original and two (2) copy sets (hard and soft copies) of comprehensive operating and maintenance manuals bound in hard covers shall be supplied prior to handing over the plant to the employer. The manuals shall detail out the operating regimes and critical settings and tolerance to be maintained during inspection of the plant. The O & M manuals will be provided after completion of the installation.

6.2 Drawings

The tenderer shall submit together with the tender document drawings and parts identification lists for every item of the plant together with a full list of all sub-contractor's addresses fax numbers, emails, etc. The drawings shall contain exploded views/diagrams of the main assemblies comprising the plant together with a means of identifying each component including its part number, reference and description as per the manufacturer's coding system. The contractor's coding system shall not be acceptable.

The tenderer shall submit with original and two copies of his tender general arrangement drawings and typical details of the essential items of the plant offered which will be used in during the

erection period.

All drawings shall be submitted folded to A4 size with the drawings box visible on the outside. After commissioning the plant, two sets of as built drawings will be handed over to the Employer, which shall include but not limited to:

- General arrangement drawings, assembly drawings, pipe work layouts, terminal point details, foundation and erection drawings.
- Single line logic diagrams for all control systems and main electrical systems
- Wiring and pipe work diagrams, interconnection diagrams and schematic diagrams for equipment modules and systems.

After award of the tender, discussions will be held with the employer on the drawings submitted with the tender that will lead to final approval of the drawings by the employer. Before the final approval, the drawings shall be modified as necessary if requested by the employer.

The taking over certificate will not be issued until the built drawings, O&M manuals and catalogues have been submitted and accepted by the employer.

7. Site Preparation

The tenderer or the local contractor has to prepare the site. The services will include all deliverables as mentioned below.
The site preparation will include:

Trenching for underground cables, preparation of ways and pipes for wiring are not part of site preparation. The installation contractor has to prepare and use a container as power-house in respect with the individual components manufacturer installation notices if container solution is required

The tenderer will execute the following work in regards to the site set-up:

- Clearing of scrubs and leveling of grounds
- Erection of brick buildings to host the batteries, inverters and Generator if required
- The preparation of an adequate space where the container shall be placed if required
- Installation of a steel mounting structure on which the panels will be mounted.
- Storm water drainage works as may be necessary based on the topography of site provided

The installation company is to note that the steel mounting structure will be prepared according to the dimensions of the quoted solar panels. The steel structure will be including the aluminum frames, which are to be supplied by contractor.

8. Installation Phase

The installation phase will include the following steps depending on the solar PV hybrid power plant design and specification:

- Mounting of modules on pre-installed mounting structures
- Installation of PV grid tied inverters and cabling with the AC distribution
- Installation of battery inverter charger and cabling with the battery and AC distribution
- Installation of battery bank and cabling with the system

- Installation of the Generator and cabling with the system
- Cabling of solar array, array to grid powerhouse or container
- Installation of auxiliaries and remote monitoring devices
- Labeling of the completed system
- System DC and AC wiring
- Installation of 0.415/11KV substation and associated protection systems
- Further necessary installation work

9. Commissioning Test

Complete commissioning of the power plant, function tests, and trial service of the power plant. All installations and equipment will be inspected and their functionality will be tested. All components, electrical works and civil works will be visually checked for compliance with the technical specification, Guidelines/Manuals of delivered equipment, build plans, state of the art engineering works.

Commissioning tests will be carried out to demonstrate that the solar PV hybrid power plant is operated according to the technical specifications and under all available operating conditions. The contractor will sign a final acceptance certificate.

The tenderer shall submit with the bid document a schedule of commissioning test to be contacted during testing and commissioning and the expected output values where applicable

10. Operator Training

The technical commissioning of the solar plant will include training on the operation of the power plant components. The training will include the maintenance of the batteries, the remote monitoring and operation of the Generator both on manual and automatic mode. It will be verified that the operating personnel are adequately trained.

11. Information for Installer Companies

The contractor is obliged to adhere to the Energy (Solar Photovoltaic Systems) Regulations from 2012, which state “A person shall not import, distribute, promote, sell or install any solar PV system unless he is licensed by the Commission as a vendor.

12. System Layout

The solar PV hybrid power plant shall consist of following main equipment’s/components following the design specifications of the contractor.

- Solar module array
- Mounting structure and civil foundation
- Hybrid inverters
- Battery bank
- Battery mounting rack
- Diesel generator and diesel tank
- 415V Control Panel set with 1No incomer and 1 No Feeder panels.
- 0.415/11KV substation
- DC and AC-Cabling
- Control panel with switcher, disconnectors and safety elements
- Sub-station outdoor equipment – CTs, VTs, Isolators

- Earthing and lightening protections.
- Data monitoring system
- Housing of equipment

12.1 Schematic Diagram

The design of the solar PV hybrid power plant has to follow DC coupled architecture operation. The system has to be modular expandable for future development. The installer has to provide the schematic drawings for approval by the employer before installation.

13. Notice Board

A notice board 1.5m by 1m made of a continuous sheet metal with steel angle line supports 2" by 2" by 3mm and 1.5m high shall be erected at the gate of the beneficiary institutions and shall read as thus:

THIS SOLAR PV HYBRID SYSTEM **AT**
(*FULL NAME OF THE TRADING CENTRE*)
HAS BEEN IMPLEMENTED BY THE NATIONAL GOVERNMENT THROUGH
THE RURAL ELECTRIFICATION AND RENEWABLE ENERGY COPORATION

This writing should cover over 80% space of the notice board (65mm Text Height).
Any other writings should **strictly** not be included.

14 CIVIL AND STRUCTURAL WORKS

14.1 Types of works

14.1.1 The civil and structural works to be constructed under this Contract include the following:

-Work for access and SPGP internal road.

-Earthworks for SPGP platform and associated works.

-100mm layer of ballast aggregates to solar field platform.

-Water harvesting and Storage.

-Storm water drainage.

- Perimeter fence, solar field fence substation fence, gate, guard house

-Concrete foundation bases and Mounting works.

-Genset Plinth foundation, its shed and fencing off of the genset.

-Cable trenches.

-Control room containerized technology to accommodate all indoor equipment including BESS.

-Office building containerized technology fitted with furniture (cabinets, chairs and office table) to accommodate two to three operators.

-2 Door VIP Pit latrine.

-Lightning protection system.

- Fire protection system. (Fire extinguishers, fire detection and fire suppression)

-Any other works necessary for full completeness of SPGP.

14.1.2 The contractor shall be responsible for designs of all the civil and structural components and implementation of approved designs. Detailed Geotechnical investigation and Topographical survey at required locations for the purposes of foundation design will be done. The required locations for the geotechnical survey shall be agreed with the employer. The details of beacons and benchmarks shall be provided in the topographical drawings.

14.2 Control Room

14.2.1 The control room shall be Containerized Solution. The containers to be made of corrugated steel mounted on reinforced concrete strip foundations raised to allow for self-drainage subject to employer's approval. The flooring to be made of either chequered plate steel covered with pvc or wood. Metalwork shall be carried out in accordance with the provision of B.S. 5950 and other relevant BS standards. The size of the control room to be a minimum 40 feet container with a minimum height of 9 feet and a standard width of 8 feet cladded with waterproof gypsum. There shall be 2 No. equipment containers with a separate container to accommodate the BESS system and the other container to accommodate other equipment subject to employer's approval. The wall mounted equipment shall be erected on Medium Density Fireboard (MDF) mounting boards, fixed to design and subject to approval. A separate key board shall be provided for hanging of equipment keys. Adequate cable conduits rails shall be mounted to design and approval for cabling purposes with all trays and fittings provided with a separation between the control and power cables. Cladding of the ceiling and the wall shall be done with materials suitable for insulation and control of temperatures and subject to employer's approval and painted with three coats of silk vinyl emulsion paint to improve on the aesthetics appearance. The external wall shall be painted with the first coat of red Oxide primer and then consequently painted with Zinc Chromate, anti-rust primer to approved layers and the final coat of paint shall be in accordance to the employer's approved company color codes. A roof shall be constructed above the container, to allow for heat insulations as well as provide a catchment surface for water harvesting.

14.2.2 The Control room shall accommodate the following:

- The Battery Energy Storage System (BESS)
- The inverters.
- AC/DC distribution Boards.
- Remote/local monitoring equipment.
- All other indoor electrical equipment/switchgear

14.2.3 The control room shall be fitted with Fire extinguishers to be mounted both indoor and Outdoor on positions approved by the employer.

14.2.4 The control room shall be fitted with Air Conditioners as specified in this document. The sizes of all ACs shall be optimized design based on the room spaces, temperature and equipment type (including Lithium Ion batteries as per manufacturer's specifications) and subject to employer's approval.

14.2.5 An emergency door exit to be provided in the control room, subject to approval by the employer.

Note:The control room design shall be subject to employer's approval.

14.3 Office Building.

14.3.1 The office building shall be Containerized Solution. The containers to be made of corrugated steel mounted on reinforced concrete foundations raised to allow for self-drainage and to employer's approval. The flooring to be made of tiles to project manager's approval. Metalwork shall be carried out in accordance with the provision of B.S. 5950 and other relevant BS standards. The size of the control room to be a minimum 20 feet container with a minimum height of 9 feet and a standard width of 8 feet. The container walls and ceiling shall be cladded internally with material suitable for control of temperatures and subject to employer's approval and painted with three coats of silk vinyl emulsion paint to improve on the aesthetics appearance. The external wall shall be painted with the first coat of red Oxide primer and then consequently painted with Zinc Chromate, anti-rust primer to approved layers and the final coat of paint shall be in accordance to the employer's approved company color codes. A roof shall be constructed above the container, to allow for heat insulations as well as provide a catchment surface for water harvesting.

14.3.2 Office furniture (cabinets, chairs and office table) to employer's approval shall be supplied and fixed to accommodate a minimum of three operators.

14.3.3 Fire extinguishers shall be mounted on positions approved by the employer.

14.3.4 Sufficient windows and ventilation to be provided for lighting and cooling taking into account the expected high temperatures in the proposed project areas.

14.4 Guard House

14.4.1 A guard house located at the main gate shall be constructed. The guard house shall be of Masonry. The guard house design shall be subject to employer's approval.

14.5 Pit Latrine

14.5.1 A twin VIP masonry pit latrine to design, shall be constructed. The walling and floor to be tiled and doors to be made of steel. A ventilation pipe of minimum 150mm to be installed and the roof sheeting shall be hot dip galvanized troughed mild steel sheeting and shall be of minimum thickness 0.5 mm. A security light shall be provided for purpose of lighting at night.

14.6 Sequence of Construction

14.6.1 The Contractor must complete all the civil and structural works in time to provide a clean and complete site for the mechanical and electrical erection.

14.6.2 The Contractor shall be responsible for timely delivery of materials to site and for compliance with the specified or agreed construction Programme.

14.6.3 The office building, control room, guard house and pit latrine shall be constructed away from the solar field to avoid shading effect.

14.7 Drawings

14.7.1 Any Drawings issued with these documents are for tendering purposes only. Drawings for this project hall be made by the Contractor or his civil consultant, and shall be to the approval of the Employer.

14.8 Plan of Operations and Temporary Works

14.8.1 The Contractor shall, submit to the Employer a fully detailed programme showing the order of procedure and method by which he proposes to carry out the construction and completion of the Civil Engineering works, and particulars of the organization and staff proposed to direct and administer the performance of the Works.

14.8.2 The information to be supplied to the Employer shall include Drawings showing the general arrangements of his temporary offices, camps, storage sheds, buildings and access roads, and details of Constructional Plant and Temporary Works proposed.

14.9 Water Supplies, Storage and Reticulation

14.9.1 The Contractor shall make his own arrangements for the supply of palatable water for his staff on site and water for construction works and all the mini-grids water needs for the O&M period including soft water for regular cleaning of solar panels as per specifications.

14.9.2 The Contractor shall obtain the Employer's or the Project Manager’s prior approval before utilizing any water source for the Works.

14.9.3 The quality of water shall be safe for drinking and washing of panels, and should be tested to meet the requirements. Important to Note is that, washing of solar panels does not require salty water and also the quality of drinking water should be within acceptable standards as guided by relevant authorities, otherwise it should be treated and purified if it does not meet the threshold. Storage tanks and distribution tank shall be provided, with one 10,000 liters water tank and one 5000 liters water tank for water harvesting, both ground mounted to supply water in the mini-grids.

14.9.4 The cleaning of the panels shall be done using soft water or any other suitable alternative method subject to employers’ approval.

14.9.5 The Contractor must make all arrangements to abstract water and must pay royalty to the owners. These costs shall be included in his prices.

14.10 Employer's Approval of Finished Works

14.10.1 The Contractor shall obtain the approval of the Employer for each section and each stage of

construction. The Contractor shall not proceed with any subsequent stage, until all tests required by the Employer have been carried out, and the results have shown that the section complies with the Specification. Any works rejected by the Employer as not complying with the Specification and quality standards, shall be replaced by the Contractor at his own expense.

14.11 Basic Survey and Setting Out

14.11.1 The Contractor will survey the sites in detail, and the exact locations shall be agreed with the Employer.

14.11.2 The details of beacons and benchmarks shall be provided in the topographical drawing.

14.11.3 The Works shall be located on the drawings and the Contractor shall appoint a suitably qualified Surveyor to set out the Works from the beacons and shall plot cross sections at 20 m intervals and submit to the Employer for approval.

14.11.4 No separate payment will be made for any work in connection with the setting out of the Works, nor any other Works required by the Contractor to ensure the accurate location and construction of the Works.

14.12 Earthworks

14.12.1 Earthworks shall be under the contractors' scope and considered fully priced by the contractor. The turnkey contractor is responsible for making the site ready by clearing of bushes, removal of trees (if required), leveling of ground (wherever required) etc. for commencing the SPGP.

14.12.2 The contractor is also responsible for any necessary earthworks (cut and fill) to modify the site to suitable profiles. Slope protection and landscaping shall also be carried out on any areas with steep Cuts or fills.

14.12.3 All earthworks up to formation shall be formed and completed to the correct lines, slopes, widths and levels shown on the Drawings and with the sub grade parallel to and at the correct depth below the profile, camber, cross fall or super elevation shown for the finished level, unless otherwise directed by the Employer.

14.12.4 Embankments and fills shall be constructed only of suitable material obtained from the excavation of cuttings. If the Contractor encounters material which he considers unsuitable for earthworks, then he shall forthwith inform the Employer, who shall instruct the method of use or disposal of such material. If insufficient material can be obtained from the cuttings, additional material may be borrowed from approved borrow pits.

14.12.5 The Employer may direct that certain soils be excluded from certain layers and other

soils set apart or obtained from borrow and used only for these layers, in which case the Contractor shall comply with the Employer's or the Employer's directions and shall allow in his price for such selection of materials.

14.12.6 Where, in the opinion of the Employer, unsuitable material occurs in cuttings, the Contractor shall excavate it to the depths and widths specified in the Geotechnical report and replace it with selected fill material to form an improved formation.

14.13 Order of Work

14.13.1 The construction of cuttings, side drains and embankments shall proceed in a methodical and orderly manner. It shall be solely the Contractor's responsibility to arrange his methods and programme of work so as to ensure that the earthworks are carried out by the most efficient and economical method possible with the type of plant employed on the Works.

14.13.2 All trimming of cuttings and embankments, drains and shoulders to the specified slopes and shapes, shall be carried out concurrently with the earthworks that are being carried out at that particular site and level.

14.14 Fill Material

14.14.1. "Fill-material" shall mean material deposited in accordance with these specifications from any of the classes specified in order to build up an earthworks construction to formation level as shown on the Drawings or as ordered by the Employer. The Contractor shall obtain the fill material from a source approved by the Employer.

14.14.2. After doing the necessary earthworks (cut and fill) to modify the SPGP site to suitable approved design profiles, the contractor shall fill the finished ground level (FGL) of the solar field with Murram and compact to the designed FGL formation. In addition to the murram layer at the solar field, a ballast surfacing of minimum thickness of 100mm will be done.

14.14.3. Fill materials will generally be obtained from cuttings. If the material obtained from this source is insufficient or unsuitable, extra material shall be obtained from borrow areas. All fill material (other than rock fill in lower layers) shall pass 75mm BS sieve size. The aggregates for the solar field ballast surfacing will be obtained from the nearest quarry, subject to employer’s approval.

14.14.4. The following materials are generally unsuitable for construction of fills.

- All materials containing more than 5% by weight of organic matter (such as top soil, materials from swamps, plants and vegetable matter)
- All expansive soils such as black cotton soils with swells of more than 3% as measured

in the CBR test.

- All clay soils with plasticity index exceeding 50.
- All materials having a moisture content of 105% of the optimum moisture content (standard compaction)

14.14.5. Rock fill can be used provided that boulders greater than 0.2 M3 in volume or 600 mm in size are not used and that this material is not placed within the top 600 mm to formation level. The best materials from cuttings or borrow areas should be reserved for the upper layers of the fill.

14.15 Compaction of fill

14.15.1. Embankments and fills shall be laid out and compacted to achieve a stable platform with sufficient bearing capacity and stability.

14.15.2. Materials other than rock fill shall be placed in layers of compacted thickness not exceeding 300 mm. Thicker layers can only be permitted where very heavy compacting equipment is available and trial sections have proved that the required compaction will be readily achieved over the layer depth. The minimum layer thickness shall be twice the maximum particle size of the compacted material.

14.15.3. Fill material shall be compacted throughout to a dry density of at least 95% MDD at OMC (standard Compaction AASHTOT99) except the top 300 mm of the fill which shall be compacted to 100% MDD (AASHTO T99).

14.15.4. Where rock fill is used it should be placed in the bottom of the embankment. The largest sizes shall be placed in layers of 1.0 meter thick. The interstices shall then be filled with smaller rocks and approved filler material. The whole layer shall then be compacted until the interstices are completely filled or until the required settlement is obtained. Heavy vibratory rollers are generally the most suitable machines for compacting rock fill.

14.15.5. The specified compaction shall be achieved over the full width of the embankment. Any area inaccessible to the roller shall be consolidated and compacted using approved mechanical tampers.

14.16 Compaction of in situ Sub grades

14.16.1 After removing the top soil and/or 600 mm of unsuitable /expansive soils or as directed in the geotechnical report and before placing fill, improved sub grade or gravel wearing course, the upper 300 mm of in situ sub grade will be compacted to 100% MDD standard compaction. Compaction in cuts without improved sub grade will likewise be compacted to 100% MDD

standard compaction.

14.17 Spoil Material

14.17.1 "Spoil-material" shall mean material excavated in accordance with these specifications from any of the classes specified, and which, being obtained from the excavation of side drains, cuttings or below the road, embankment is unsuitable for the requirements of the Works. Spoil material shall be removed from the Site to a spoil tip which should be to an approved site acceptable by respective local authorities and shall be approved by the Employer.

14.18 Expansive Material

14.18.1 When expansive material is encountered, it shall be removed to a depth 600 mm below the formation or the existing ground level, whichever is greater. Material removed shall be stockpiled for later use in slope protection or spoiled to a tip as instructed by the Employer.

14.19 Surplus Material

14.19.1 "Surplus-material" shall mean material excavated in accordance with these specifications from any of the classes specified and which is temporarily surplus to the fill requirements and shall be carted to a designated stockpile for re-use later elsewhere in the Works, or to an approved spoil tip.

14.20 Excavation in "Rock"

14.20.1. **Excavation Level**

Unless otherwise directed, the formation of the platform can be founded on rock. However, rock shall be excavated to an average level 150 mm below the formation and in no place less than 100 mm below the formation.

14.20.2. **Backfilling for Surfaces**

Any excess excavation in rock below the formation shall be backfilled and compacted. Excess excavation in the invert of drains shall not be backfilled, but the rock surfaces shall be trimmed, and all loose particles removed, to allow free drainage of water.

14.20.3. **Excess Excavation of Slopes**

Where side slopes are over-excavated, no backfilling will be required but the slopes shall be trimmed to a neat shape and safe angle as is acceptable to the Employer. The sloping sides of all cuttings shall be cleared of all rock fragments, which move when prized with a crowbar.

14.20.4. **Hard Material**

The provisions of this Clause do not apply to hard and common materials, which materials shall be

excavated to the lines and levels shown on the Drawings or as instructed, within the permitted tolerances.

14.21 Drainage of Earthworks

14.21.1. All cuttings, embankments and borrow pits shall be kept free of standing water and drained during the whole of the construction.

14.21.2. Should water accumulate on any part of the earthworks, either during construction or after construction, until the end of the maintenance period, giving rise to soaking or eroding conditions in the earthworks, the Employer may order the Contractor to remove and replace at the Contractor's

expense any material which has been so affected.

14.21.3. All drains shall be maintained throughout the Contract in proper working order.

14.21.4. The Contractor must allow in his price for draining the earthworks satisfactorily at all stages during the construction and arrange his methods and order of working accordingly.

14.21.5. The entire platform shall be adequately drained and all buildings; control room and office should be well drained.

14.22 Removal of Top Soil

14.22.1. The top soil within the areas of the development of SPGP shall be stripped to an approximate depth of 200 mm and stockpiled at locations agreed with the Employer for later use on embankment slopes or dumbed in approved areas.

14.22.2. Overburden in the borrow pit shall also be stripped to a depth specified by the Employer and stockpiled for later use in rehabilitation.

14.23 Access and Internal Road

14.23.1. Suitable approach road and internal access road in all mini-grids within the complex boundary of SPGP as per approved design shall be made to ensure safe and easy transportation of equipment and material.

14.23.2. Where necessary access roads to the SPGP sites shall be constructed to gravelling / murram standard. In general, for gravel access, gravel wearing course materials should comply with the following:

- They should have sufficient cohesion to bind the particles together and prevent the surface from raveling and becoming corrugated in the dry season.
- The amount of fines and plasticity should be limited so as to avoid the occurrence of dusty and slippery conditions during the dry and wet weather respectively.

14.23.3. Gravel materials are excessively coarse in their “as dug” state. Appropriate processing is therefore necessary to bring them to the required gradation. This is normally done on the road by using grid, cleat or sheep’s foot rollers. Oversized particles which cannot be broken down to the required size shall be removed.

14.23.4. The minimum thickness of a compacted layer shall not be less than 125 mm.

14.23.5. Internal SPGP road and walk paths shall be compacted to 100% MDD after grading. The road shall have a well-done gravel finish. The road shall be constructed to a fall that will allow proper drainage of the road. The road shall have adequate drainage provided. The design shall be to road design manuals. The road shall have minimum width of Four (4) meters.

14.23.6. For the gravel finish internal SPGP road, the single gravel layer should consist of a minimum thickness necessary to avoid excessive compressive strain in the sub grade and to compensate for the expected gravel loss under traffic during the period between re-gravelling.

14.23.7. Where the top 300 mm layer of the formation level embankment or natural ground sub grade has a CBR greater than 5%, the following thicknesses shall be provided:

- Roads not subjected to heavy commercial vehicles– The minimum compacted thickness of 125mm.
- Access roads outside the SPGP plant and roads within the site likely to be subjected to heavy commercial vehicles during construction and during periodic maintenance. – Provide a 250 mm thick compacted layer.

In addition to the above, where the in-situ sub grade or the embankment material has CBR strength of less than 5% then:

- Top 300 mm layer of the fill / embankment shall be made with selected imported material with CBR (after 4 days soak) of between 7 and 13%.
- Where in situ sub grade, an improved sub grade 300 mm thick of imported materials with CBR (4 days Soak) of between 7 and 13% shall be laid.

The above thickness shall extend to cover the shoulders. A cross fall of 4% shall be provided.

14.23.8. Compaction will be in layers not thicker than 200 mm and will achieve compacted densities of 95% MDD (Modified AASHTO T180) at compaction moisture contents of between 80% and 105% OMC.

14.24 Grading Requirements

14.24.1 Grading curve of the gravel should be within the class 1 envelope (initial daily number of commercial vehicles less than 150) to guarantee good stability. The grading to consider is that obtained after processing and compaction.

Table 14.24.2: Gravel Grading Requirements

Grading after compaction		
Sieve Size (mm)	**% Passing by weight**	
	Class 1	**Class 2**
37.5	-	100
28	100	95 – 100
20	95 – 100	85 – 100
14	80 – 100	65 – 100
10	65 – 100	55 – 100
5	45 – 85	35 – 92
2	30 – 68	23 – 77
1	25 – 56	18 – 62
0.425	18 – 44	14 - 50
0.075	12 – 32	10 - 50

14.25 Plasticity Requirements

14.25.1 Plasticity index of the gravel should not exceed 15 and shall not be less than 5 in wet areas (annual rainfall greater than 500 mm per year). In dry areas (annual rainfall less than 500 mm per year) maximum plasticity index shall be 30 but subject to a minimum of 10.

14.26 Bearing Strength Requirements

14.26.1 A minimum CBR (after 4 days soak) of 20% at 95% MDD and OMC (Modified AASTO T180) is required.

14.27 Quality Control

14.27.1. Tests shall be performed by the contractor on soils and gravels undergoing compaction under the supervision of and at frequencies determined by the Employer and shall include:

- Determination of the Atterberg Limits in accordance with BS 1377.
- Determination of particle size distribution in accordance with BS 1377.
- Determination of dry density / moisture content relationship in accordance with BS standard compaction and modified AASHTO T180 as appropriate.

• California Bearing ratio (CBR) in accordance with AASHTO T193.

• Field dry density as set out in BS 1377.

14.28 Tolerances

14.28.1 The following tolerances will be permitted in the finish of the formation to roads and platform:

a) The level of the formation should be within +/- 100 mm of that specified.

b) On the final trimmed slope of earthworks, a variation of + or - one fifth of the specified slope will be allowed.

c) The tolerances permitted in the overall width of the bottom of cuttings shall be plus or minus 150 mm in the distance between center lines and the toe of cuttings slopes, and plus 150 mm in the case of embankments.

14.29 Materials for The Works

14.29.1. General

14.29.1.1 All materials shall comply with appropriate local or regional standards unless otherwise required hereinafter. Such standards shall be to the approval of the Employer.

14.29.1.2 The Contractor shall before placing any order for materials or manufactured articles for incorporation in the Civil and structural Works, submit for the approval of the Employer the names of the firms from whom he proposes to obtain such materials, etc., together with a list of the materials and manufactured articles giving the origin, quality, weight, strength, description, etc., which he proposes that the firms should supply. No materials or manufactured articles shall be ordered or obtained from any firm of which the Employer shall not have previously approved.

14.29.1.3 All materials shall be delivered to the site within sufficient period of time before they are required for use in the Works to enable the Employer to take such samples as he may wish for testing and approval. Any materials condemned as unsuitable for Works shall be removed from the Site at the Contractor's expense. Contractors price to include these testing of materials.

14.29.1.4 The Contractor may propose alternative materials to those specified, provided that they are of equivalent quality and, subject to the Employer's or the Employer's approval such materials may be used in the Works.

14.29.2. Standards

Concrete pipes, porous concrete pipes, cast iron manhole covers and gratings, bricks, concrete kerbs, bituminous surfacing, cement, steel and aggregates shall comply with local or regional standards as per specified standards in the document.

14.29.3. Stone for Pitching

Stone for pitching to drains, inlets and outlets of culverts, to embankments and around structures shall consist of sound un-decomposed rock. Precast concrete tiles may also be used.

14.29.4. Stone for Solar Field Platform Surfacing

14.29.4.1 The stone shall be hard and durable crushed rock with a maximum particle size of 60 mm and not more than 15% shall pass a 9.5 mm sieve.

14.29.4.2 The stone layer to be spread uniformly over the finished surface of the platform shall have a thickness of 100 mm.

14.30 Drainage and Storm Water

14.30.1. The contractor shall construct the SPGP station to a fall that will allow proper self-drainage of the site. This shall be done in conjunction with the earthworks design to ensure no flooding shall be experienced within the site. The drainage designs shall refer to data acquired from the Kenya

Meteorological department with site specific criteria over a period of minimum 50 years and shall provide for the worst-case scenarios. The number of runs and outfalls and pipe sizing must be sufficient to cope with the severest precipitation, with a factor of safety of 1:2 within the SPGP site and other areas in the site. The drainage must allow uninterrupted access.

14.30.2. Drainage shall be in accordance with relevant Codes for Practice published by authoritative Standards organization such as the British Institution, e.g., BS 8301, BS 6031 and Eurocodes.

14.30.3. Embankments and cuttings are to have drainage facilities at their top or bottom. The formation level of the site is to be formed with uniform cross-falls of about 1 in 300 in the same direction as the natural drainage path of the surrounding environment. Drainage minimum slope shall be 1 in 200.

14.30.4. Surface water from roofs of buildings shall be drained to down pipes, which connect with the general site drainage system. Surface water from the control room building and office roof shall be drained to the main storage reservoir tank.

14.30.5. In areas where there is a risk of water runoff the SPGP Plant shall be protected from failure by means of gabions, retaining walls, and stone pitching or otherwise to the employer's approval.

14.31 Boundary Fencing and Additional Security Measures

14.31.1. **Fencing**

The contractor shall fence the entire perimeter of the acquired land, to secure the developed area

(Solar Field, Office, Control room etc.). There shall be a second fence to barricade the solar field, located at a sufficient distance from the solar panels, to avoid shading effect. The third fece shall be for the substation area. The Contractor shall construct all the three fences including gates where necessary and shall comply with the requirements of the following Clauses. The design of the fences shall be subject to employer's approval.

14.31.1.1. All the perimeter fences shall be of chain link with concrete posts. The fencing shall have barbed wire on top of the perimeter fence. Perimeter lighting shall be provided to employer's approval.

14.31.1.2. The Solar Field fence shall be of chain Link with steel sections of optimized design, with a minimum height of 1.5m, to barricade unauthorized persons from accessing the Solar plant area.

14.31.2. **Dimensions**

Height of chain link fabric for the perimeter fence: 2 400 mm Height of chain link fabric for the Solar Field: 1500 mm

14.31.3. **Barbed wire:** 3 wires above fabric, height of 300 mm, on supporting arms facing outwards from Site at 450 angles.

Maximum distance between posts or columns: 3 000 mm, except where interrupted by gate.

14.31.4. **Tension bars and bands**: located at terminal posts to fix fabric, bottom wire and barbed wire.

14.31.5. **Top rail**: "extra-strong" pipe, 43 mm outside diameter.

14.31.6. **Braces:** "extra-strong" pipe, 43 mm outside diameter for attaching end and gate posts to adjoining posts. Use two braces at corner and restraining posts.

14.31.7. **Gate width**: free distance between 2 gate posts, 1 500 mm for single gate, 5 000 mm double gates.

14.31.8. **Double gates:** one leaf for normal traffic, other leaf to remain closed by means of drop bolt locking into center rest, inoperable from exterior.

14.31.9. **Gates:** able to open in either direction to 900.

14.31.10. **Gate hardware**: three hinges, latch with padlock accessible from either side of gate, latch catch.

14.31.11. **Top of posts and uprights:** weatherproof tops.

14.31.12. **Materials**

14.31.12.1. Fabric: ASTM A 392, 2 000 mm high, 3.8 mm diameter (No. 9 gauge) steel wire, 50 mm diamond pattern, twisted and barbed finish at top, knuckled wires at bottom, zinc coated.

14.31.12.2. Pipes: ASTM A 120, steel pile, hot-dipped zinc coated after welding, diameter and weight size as shown on drawings, unthreaded ends, free from burrs.

14.31.12.3. Fence fittings: ASTM F 626, hot-dipped zinc coated according to ASTM A 123.

14.31.12.4. Barbed wire: ASTM A 121, 2.51 mm diameter wire in strand (No.12-1/2 gauge), 3 strands with 4-point barbs spaced at 125 mm, Class 3 zinc coating.

14.31.12.5. Bottom wires: 5 mm (No. 6 gauge) steel wire, 500 g/m2 zinc coating. This shall be surrounded by a concrete beam (C20), to hold down the fabric.

14.31.12.6. Fence fittings: ASTM F 626, steel tension bars and bands, nuts and bolts, weather proof tops of commercial alluminium alloy, malleable cast iron, or rolled or pressed steel, cast iron and steel fittings hot-dipped galvanized with 500 g/m2 according to ASTM A123.

14.31.12.7. Concrete: 20MPA at 28 days

14.31.13. **Installation**

14.31.13.1. Install fencing and gates according to ASTM F 567 unless otherwise indicated, and to drawings and this Specification.

14.31.13.2. Level ground surface so that space between finished ground surface elevation and bottom of fabric does not exceed 50 mm.

14.31.13.3. Plumb and align posts to within 10 mm.

14.31.13.4. Install posts of the gate at same elevation regardless of difference in ground level.

14.31.13.5. Set posts in concrete footings in form of truncated cone, according to ASTM F 567, and as follows:

Table 14.31.5.1: Chain Link Concrete Post Footings Guidelines.

FOUNDATIONS (Dimensions)	ORDINARY SOIL		SOLID ROCK	
	Line Posts	Terminal Posts	Line Posts	Terminal Posts
Depth Diameter	1000 mm	1600 mm	300 mm	500 mm
at top	250 mm	300 mm	150 mm	150 mm
Diameter at bottom	350 mm	400 mm	150 mm	150 mm

Make joints in fabric at terminal posts.

14.31.13.6. Fasten as follows:

a) Every 450 mm along top rail, braces and bottom wire;

b) Every 300 mm on line posts.

Secure barbed wire to terminal and gate posts with tension bands, and to gate uprights with hooks.

14.31.13.7. Install bottom wire in middle of last line of mesh.

14.32 Additional Security Measures

The contractor shall provide the following additional security measurers;

14.32.1. Warning plates/danger plates etc. shall be provided in sufficient numbers all around the fencing as per safety requirements.

14.33 Concrete Works

14.33.1. Soil Investigations

The contractor shall collect all data he deems necessary for preparation of his bid. The foundation design shall be based on the bearing strength data, obtained from the geotechnical survey.

The Contractor shall be required to perform sub-soil tests within the area of the SPGP to the depth and by the method of test specified by the Employer. The details of performing the test, tools and equipment to be used for, shall be submitted to the Employer for approval.

The sub-soil tests shall be carried out by any method as stated hereafter under the supervision of a qualified person, who shall be subject to approval of the Employer.

14.33.2. Excavation

Excavation for concrete foundations shall be carried out in strict accordance with the requirements of the Employer and to fit in with the program of construction.

14.33.3. Shoring and Timbering of Excavation

The Contractor shall be entirely responsible for the safety of all excavations, for the prevention of injury to workmen and for the stability of the faces of the excavation.

The adjacent road surfaces must remain trafficable, and cracking or cave-ins must be avoided. All shoring and timbering shall be done to the approval of the Employer, who may order such shoring or timbering to be strengthened or altered if he considers this necessary in the interests of the work or to safeguard against accidents to workmen or cave-ins. For the purpose of measurement, the following categories of shoring shall apply:

14.33.4. Dewatering

The whole Works shall be constructed in dry conditions and the Contractor shall be held responsible for keeping all excavations free from water, whatever the source or cause may be, and shall properly deal with and dispose of water by use of sufficient temporary works, plant and appliances so as to ensure that the whole Works is executed in a satisfactory dry and safe manner, and costs for all dewatering operations shall be included in the price for civil works.

14.33.5. Excavation to be approved

In no case shall broke stone for under drainage or concrete be placed in an excavation until the surface on which such materials are to be placed has been approved by the Employer.

The Contractor shall advise the Employer whenever the bottom of any excavation is ready for inspection or whenever it is necessary to cover up the work. In default of such notice the foundation shall on the order of the Employer be uncovered by the Contractor and reinstated without extra charge.

14.33.6. **Disposal of Excavated Material**

All material excavated under this Contract shall be disposed of in accordance with the instructions issued by the Employer. Selected material required for back-filling shall be removed to a tip found by the Contractor and the Contractor shall be responsible for ensuring that the required amount of spoil is set aside.

14.33.7. **Other Services**

Where trenches pass near or across other services, the Contractor shall take every precaution against damaging such services. These services shall be properly supported in the trench until back-filling is complete and the back-filling shall be thoroughly compacted under and around such services.

14.33.8. **Backfilling**

Back-filling shall be carried out either with selected spoil as set aside, or with imported selected spoil, or other material to the approval of the Employer. No back-filling shall be done until all the formwork has been removed together with pieces of timber, cement bags, vegetation and or other rubbish.

All back-filling shall be compacted in layers not exceeding 150 mm thick and shall be sprayed with water to bring the moisture content to the optimum for dense compaction.

Compaction shall be to approved standard.

14.34 Concrete, Formwork and Reinforcement

14.34.1. Material

14.34.1.1. Aggregates

a) Shall conform to BS 882.

b) Shall be heaped separately on hard, self-draining surfaces.

c) Normal size of coarse aggregate shall be 20 mm.

14.34.1.2. Water Shall be fit to drink

14.34.1.3. Reinforcement Shall conform to BS 4449.

14.34.1.4. Reinforced Concrete

Shall be designed to BS 8110, Foundation BS 8004

14.34.1.5. Steel

Shall be designed to BS 5950

14.34.1.6. Cement Shall

a) Conform to BS 12.

b) Be either normal Portland or P.C. 15.

c) Be used within 6 weeks of manufacture.

d) Be stored in a manner to exclude any moisture.

e) Be stored in a manner to ensure use of the earliest consignment.

f) Different types of cement from different manufacturers shall not be mixed for a single cast or structural element.

g) Additives shall not be used

14.34.2. Before concreting

14.34.2.1. Design Mixes

Not less than 2 weeks before the start of concrete work, the Contractor shall submit to the Employer for his approval a statement of proposed mix proportions for the various grades required in the project. (Note: the grade is the characteristic strength or the cube strength below which not more than 5% of the result may be expected to fall when tested at 28 days).

The statement shall include proportions of cement, fine and coarse aggregate, and water, the maximum and minimum slump and the target strength for each grade.

A certificate by recognized laboratory that the proposed mix will meet the requirements must accompany the statement.

The proportions stated may not later be altered without the written approval of the Employer.

Cost of mix designs to be borne by the Contractor.

14.34.2.2. Formwork

Formwork shall be sufficient to leave the concrete finishes specified on drawings and to be within the tolerances specified in the following table and to provide an acceptable surface for applied finished, where required.

Line and Level 1 mm per meter not exceeding 5 mm Pockets, Sleeves etc. +/- 5 mm

Bases +/- 50 mm

The concrete shall have a smooth finish free of projections, voids, etc. The type of ties to be used shall be such that the required finish is achieved and does not become marred by subsequent corrosion. Ties to be set out to definite pattern to the Employer's or the Employer's approval. Rubbing down is allowed only after the Employer's approval of the surface to be treated.

14.34.2.3. Reinforcement

Shall not be heated or re-bent without the Employer's permission.

Shall be free from any material likely to impair bond or initiate corrosion.

Shall be bent and fixed according to the Employer's approved bending schedules.

Shall be tied with soft iron wire.

Shall be supported to maintain the following minimum cover during concreting.

a) The greater of the diameter of the bar or 40 mm for external un-plastered face.

b) The greater diameter of the bar or 15 mm for internal face. Shall be inspected by the Employer.

14.34.2.4. Construction Joints

Shall be avoided, if possible, but if inevitable shall be pre-planned in consultation with the Employer and temporary stop ends inserted. Before placing of concrete against a construction joint, the formed face shall be hacked down to expose the coarse aggregate, kept continuously wet for 24 hours. Vertical faces should be covered with cement/water slurry and horizontal faces should be covered with 15 mm layer of cement/sand grout. New concrete should then be placed immediately.

14.34.2.5. Camber

To formwork shall not be at the expense of the overall depth of the concrete.

14.34.2.6. Weather

The expected temperatures in Turkana, Marsabit, and Samburu regions are more than 30 degrees Celsius. The contractor shall adopt use of membranes for curing, to manage the desired moisture and temperature conditions and hydrate the cement to avoid concrete cracking.

14.34.2.7. Batching Shall

a) Be by mass in accurately calibrated scales or be volume in soundly constructed gauge boxes making due allowance for bulking of the fine aggregate.

b) Be in proportion to whole sacks of cement.

14.34.2.8. Mixing Shall

a) Be in a machine in good condition, large enough to carry the whole mix, controlled by a competent experienced operator.

b) Be for sufficient time to ensure complete mixing of the ingredients.

14.34.2.9. Placing Shall

a) Be under the control of a competent, experienced overseer.

b) Be in a manner to prevent separation of the ingredients.

c) Be a continuous process until the pour is complete.

14.34.2.10. Compaction

a) Shall be by immersion (poker) vibrator in the hands of experienced operators.

b) Concrete shall not be moved by vibrator.

c) Shall be sufficient to remove all air pockets and honey-combing and to ensure complete dense concrete cover to all reinforcement.

14.34.2.11. Testing

a) Making of concrete cubes by Contractor under Employer's supervision. Contractor shall arrange for transport of cubes to approved testing laboratories. Cubes to be in sets of 3.

14.34.2.12. Curing

a) Shall commence early on the morning following the placing of the concrete.

b) Shall be effected by keeping the concrete in a permanently wet state.

c) Membranes shall be used due to expected high temperatures.

d) Shall continue for a minimum of fourteen (14) days or such longer time as may be required by the Employer.

14.34.2.13. Stripping of Formwork

a) To soffits shall not be struck until 7 days after placing of concrete (but see below for (props).

b) To vertical faces shall not be struck until 14 days after placing concrete.

c) Props to soffits shall not be struck until 14 days after placing concrete.

d) Shall not be stripped without the Employer's approval who has the power to vary the above items.

14.34.2.14. Patching

a) To defective work shall not be undertaken before the item has been shown to the Employer.

b) Is a sign of poor workmanship. The Employer shall have the right to reject the complete element if an unreasonable amount of patching has to be done, or if patching will spoil the appearance of the finished concrete.

14.34.2.16 Records

Are to be kept by the Contractor, showing date and time of each concrete pour, the weather conditions, the temperature, the number of the cubes which represent the concrete, the slump and any other items which the Contractor and/or the Employer consider relevant. These records are to be made available for the Employer’s inspection when required.

14.35 Foundations

The contractor shall construct reinforced concrete structural foundations for the Equipment Enclosure as well as for the Solar Equipment as required. These shall be designed to relevant standards and reviewed by the Employer before implementation.

14.36 Cable Ducts and Conduits.

14.36.1. The Contractor is responsible for all civil engineering works required for the cable runs between the Solar field site and the control room and/buildings, in buried heavy gauge

installation ducts of minimum 150mm to connect cables from the solar panels and equipment to the Control room and/office as required. Manholes for inspections shall be provided at approved intervals.

14.36.2. Where the cable trench is crossing roads, the ducts shall be constructed in such way that they will be able to withstand the weight imposed on them.

14.36.3. The contractor shall appropriately mark the cable route.

14.36.4. Cable entries into buildings/control room and road crossings shall be through 150 mm diameter heavy gauge ducts.

14.36.5. Two (2) lines of 150 mm diameter heavy gauge of spare ducts shall be provided.

14.36.6. After installation of cables the ducts shall be sealed with duct sealing compound where required. Cable entries into building/control room shall be sealed to prevent the entry of dust, vermin water, etc., using suitable materials

14.36.7. The cable system design including manholes shall be subject to employer's approval.

14.37 Builder's Work

14.37.1. Setting out Walling

The Contractor shall provide proper setting out rods and set out all work on the same for courses, openings, heights, etc. and shall build the walls and piers, etc. to the widths, depths and heights indicated on the drawings and as directed and approved by the Employer.

14.37.2. Materials

14.37.2.1. Cement

Cement shall be as described in concrete Works, Part 5.34.1.6

14.37.2.2. Fine Aggregates

Fine aggregates for concrete blocks shall be as described for fine aggregate in Concrete Works.

14.37.2.3. Coarse Aggregate

Coarse aggregate for concrete blocks shall be good, hard, clean aggregates from an approved quarry. It shall be free from all de-composted materials and shall be graded up to 7 mm, and all as described for coarse aggregate, Concrete Works.

14.37.2.4. Machine cut stone.

This shall be to approval of employer and meet minimum required specifications.

14.37.2.5. Concrete Blocks.

Concrete blocks for walling shall be provided by the Contractor complying with B.S. 6073, and made in approved block manufacturing machines.

Minimum thickness of blocks in external walls shall be 150 mm, and in internal walls the thickness

shall be minimum 100 mm.

Samples of the proposed block types shall be approved by the Employer before any walling work is commenced.

Blocks shall be cast under sheds in suitable block manufacturing machines either power driven or hand operated. The form shall be of steel, and accurately made to size to give the required shape and squareness of block. The concrete shall be vibrated during casting to achieve a dense and uniform concrete. The material shall contain only sufficient water to obtain full chemical reaction of the cement and to give proper workability of the constituents.

The ratio of combined aggregate to cement shall not exceed 3:1. The Contractor shall present his proposal for mix recipe supported by test results for the Employer's approval.

Concrete shall have minimum 28 days strength of 20 N/mm2 in accordance with B.S. 1881. Mixing shall take place in mechanical mixers so as to thoroughly mix the constituents to a uniform consistency before casting.

On removal from the machine the blocks shall be carefully deposited on edge on boarding or a clean concrete floor under sheds so as to prevent drying out by the sun for 3 days. During this time blocks shall be kept constantly damp. The blocks may then be laid on edge in the open and kept damp by spraying or covering with wet hessian or by other means for a further 5 days. The blocks may then be stacked if required, but not more than one meter high, and in such a way as to prevent damage to the edges and corners.

No blocks may be used in building or be transported to site before having reached required 28 days strength criterion. All concrete blocks shall be of even texture and properly mixed ingredients and all portions of the block shall be properly set and hardened concrete.

Blocks shall be free from cracks or blemishes and shall be true to shape and size with clean sharp edges and corners and with corners truly square. Damaged blocks shall immediately be removed from the site. No dimension of a block shall deviate individually by more than 3 mm from the correct size. The average length, width and height of a sample of 15 blocks should neither be longer nor less than 2 mm than the correct size.

Dressed natural/foundation stone blocks at least 200mm width may be used as alternative to the concrete blocks.

14.37.2.6. Cement Mortar

The cement mortar is to be mixed in the proportions of 1 Cement, 4 Sand, and thoroughly incorporated with a sufficiency of water. Any cement mortar which has been left for more than one hour shall not be used in the Works.

14.37.2.7. Building Walling

All blockwork shall be laid in raking stretcher bond solidly bedded, jointed and flushed up in mortar. Where wall faces are to be plastered the joints shall be raked out to form a key. The blocks shall be thoroughly wetted for at least 24 hours before laying. Walls shall be carried up evenly course by course. During laying an open joint not less than 15 mm wide shall be left between the ends of all concrete lintels, whether pre-cast or cast in-situ and the blocks adjacent to these ends. These open joints shall be left as long as possible during construction and not filled until plastering or other works render such filling necessary. All such joints shall be properly filled in before the completion of the work. External walls shall be reinforced with two 8 mm high yield steel bars in every third horizontal mortar joint. The building shall be designed as a framed structure.

Blockwork which is not to be rendered or plastered shall be finished with a fair face and the blocks shall be selected for even texture and unmarked faces, regular shape and square unbroken arises. The blockwork shall be pointed as the work proceeds with a neat joint. Where blockwork is to be rendered or plastered the joint shall be raked out 10 mm deep as the work proceeds to form an adequate key. Galvanized steel ties with fishtailed end cast into the concrete spaced at alternate courses and extending not less than 150 mm into the block joints. All mortar joints are not to exceed 15 mm or less than 12 mm.

14.37.2.8. Lintels

Concrete lintels shall be used for all openings and shall be reinforced and constructed as per approved structural designs for the gourd house.

14.38 Structural Steelworks

14.38.1. Structural steelwork shall be shop-fabricated from structural shapes of medium grade carbon steel in suitable lengths for easy transport and erection. The structural members shall be jointed or fixed on site by bolting or welding. Site welds should be minimized. Design shall comply with BS 5950.

14.38.2. All workmanship and fabrication shall be in accordance with the best practice and shall generally comply with the requirements of B.S.4449. The greatest accuracy shall be observed to ensure that all parts fit together correctly on erection within the tolerances stated in this section. Steelworks shall include all materials, bolts and attachments, cleats, brackets, gussets, etc.

14.38.3. Where required in the Contract, the Contractor shall design the steelwork to comply with the information given on the Contract Drawings. Loading and factors of safety shall comply with relevant codes and regulations. Shop drawings shall be prepared using welding symbols to B.S. 499 where appropriate. Design calculations and shop drawings must be submitted to the

Employer for his approval prior to fabrication of members. The approval of shop drawings and calculations by the Employer shall not relieve the Contractor of the full responsibility for any discrepancies, errors,

Omissions or failure arising therefrom.

14.38.4. All steelwork shall be transported, handled, stored on Site and erected so that members are not damaged or subjected to excessive stresses. Fabrication and erection shall comply with B.S. 5950 Part 2.

14.38.5. The contractor shall provide steel support structures to support all equipment and solar panels at a minimum of 1m clearance from the finished ground level, on the lower side of the elevated panels.

14.38.6. The structures shall be galvanized to the required specification, with a minimum coating of 614mg/m2.

14.38.7. The Mounting of the Solar panels shall be done on steel rails and frames and shall be designed to carry all the loadings and in accordance to provision of B.S 5950 and any other relevant BSI standards.

14.39 Roofing-Control Room, Office Building Guard House and VIP Latrine

14.39.1. Materials, accessories and fixings shall be ordered from an approved supplier and the Contractor shall as and when required by the Employer, submit and deliver samples of all materials for inspection and testing. Roof trusses shall be in steel.

14.39.2. Roof sheeting shall be hot dip galvanized troughed mild steel sheeting and shall be of minimum thickness 0.5 mm. The sheeting shall have approved plastic coating on face side. Type and brand of such sheeting shall be proposed by the Contractor with his Tender together with supporting specifications.

14.39.3. The sheets shall be laid with 200 mm end laps and double corrugation side laps away from the prevailing wind. The sheets shall be fixed to light gauge steel purlins with galvanized coach screws and seating washers.

14.39.4. Holes for screws shall be carefully drilled in the ridges of the corrugations. Great care shall be exercised to avoid damage and disfiguration to the surface coating of the sheets.

Maximum load acting on the building shall be in accordance with local or regional standards.

14.40 Roof Drainage

14.40.1. Gutters and down pipes shall, unless otherwise shown on the drawings, be approved plastic coated steel or heavy gauge PVC of diameters 200 mm and 150 mm respectively.

14.40.2. Joints shall be lapped 150 mm in the direction of the flow and soldered. Slip joints shall be provided to allow for expansion. All hangers, brackets, and fastenings should be of the same metal as the gutter or of compatible materials. Gutters and down pipes including supports shall be designed for a concentrated load of 100 kg. Screens or strainers shall be provided to prevent debris from clogging the down pipes.

14.41 Metalwork and Containerized Control Room Solutions.

14.41.1. Unless otherwise specified, metalwork shall be carried out in accordance with the provision of B.S. 5950 and other relevant BSI standards.

14.41.2. All steel shall unless otherwise specified, be hot dip galvanized. The minimum galvanized coating shall be 614mg/m2.

14.41.3. For the case of containerized control room, the material shall be in good condition, Durable and environmentally friendly. The containers shall be fitted with insulations for temperature regulations, as an addition to Air conditioners installed for temperature control to specification, due to sensitivity of the equipment to high temperature conditions. Rejected containers due to poor Quality, shall be replaced at the contractor's expense. The container shall be painted with the first coat of red Oxide primer and then consequently painted with Zinc Chromate, anti-rust primer to approved layers and the final coat of paint shall be in accordance to the employer's approved company color codes.

14.41.4. Prior to fabrication the Contractor shall submit shop drawings for the Employer's approval.

14.42 Metal Doors

14.42.1. General

Metal doors shall be supplied by approved manufacturers.

All doors shall be painted as specified under Painting and Decorating. All locks shall be master-keyed with three master keys supplied in addition to three regular keys for each door or gate.

Doors shall be measured by the number of doors of specified dimensions. The rate shall include all supplies, site works, painting and hardware.

14.42.2. Doors

Door frames shall be pressed steel frames made from minimum 2 mm thick steel sheeting and reinforced where door closers are fixed.

Thresholds shall be made from rolled steel sheeting approximately 100 mm wide and 12 mm high.

Placing of doors in accordance with control room and office building drawing.

Internal door frames are to be built to walls truly vertical and square with three ties per

frame. External door frames are to be built in to walls truly vertical and square with six ties per frame.

All door frames are to be from an approved manufacturer and illustrated in the Manufacturer's Catalogue.

Door frames are to be complete with 100 mm, loose pin steel hinges welded in position and adjustable striking plate.

Door frames and similar components shall be fixed with countersunk screws or bolts with heads set into the frames.

Doors wider than 800 mm shall have three 100 mm hinges. Other doors may have two hinges except where specified or detailed otherwise.

Door stops shall be fitted by screwed fixings where necessary.

14.43 Aluminium or Steel Windows

Unless otherwise indicated windows shall consist of aluminium sub frame with clear glass. Windows shall be from an approved supplier and the details thereof shall be approved by the Employer. Windows shall be operable and provided with corrosion resistant metal insect screens or as directed by the Employer.

Frames shall generally be built-in during construction of the walls and securely fixed.

Placing of windows in accordance with approved control room and office building drawings. Windows are to be built in to walls truly vertical square with six ties per frame.

All aluminium or steel windows are to be from an approved manufacturer and illustrated in the Manufacturer's Catalogue.

Windows are to be fitted complete with casement fastening, stays etc.

All windows shall have approved burglar bars, and approved means of opening/locking.

14.44 Door and Window Furniture

Ironmongery shall be strongly made, well finished and of good quality. Ironmongery for windows and doors shall be galvanized or other approved manufacture for external use. Samples of all items shall be submitted to the Employer for approval before they are used for the Works.

All doors shall be lockable. External doors shall have approved security locks.

Three keys for each lock, clearly labelled, shall be placed in a key cabinet in the control room and all ironmongery shall be cleaned, oiled, adjusted and left in perfect working order.

Emergency doors shall be provided accordingly as per the safety requirements.

14.45 Control room, Guard House, VIP Latrine and office building

The specifications of the finishing should be read in conjunction to section 5.2 and 5.3 for the containerized control room and office.

Table 14.45.1: Schedule of Materials and Finish

ROOM	FLOOR	WALLS	CEILING	REMARKS/NOTES
Control room/ Office building	Wood tiles/ Ceramic tiles/steel chequered plate	Cladding with Approved material	Cladding with Approved material	Subject to employer's approval

NOTES:

Sheets for ceilings: prefabricated/manufactured color and type in according to approval of the employer.

Control room and office building: External/internal color in accordance with approval of the employer.

14.45.1. Plaster and Floor Coverings Materials

Cement and water to be as before described. The sand to be screened through a sieve of 10 to 15 and meshes to 1 cm and to be washed if directed.

14.45.2. Mixing

All materials for mixing are to be used in proper gauge boxes and they are to be strike measured and not tamped down in boxes. Proper non-absorbent stages are to be used for mixing and storing mortar. No foreign matter must be mixed with the mortar.

The materials are to be mixed dry before adding water through a fine hose spray. No cement mortar which has taken its initial set will be allowed to be used.

14.45.3. Plaster Thickness

Unless otherwise specified all wall plasters should not be less than 13 mm thick and not more than 19 mm thick.

14.45.4. Cement Plaster

Cement plaster for external use to be composed of one part cement to four parts sand and for internal use to be one part cement to five parts sand.

14.45.5. Form Key

Rake out joints and roughen if necessary to form key for plaster.

For concrete surfaces, hack and apply 1:1 cement sand slush to form key. Continuously wet for 7 days and then apply plaster.

All brickwork and concrete works should be brushed down to remove dust and any other loose material.

14.45.6. Wetting

All internal and external brick or concrete surfaces are to be wetted well before plastering.

All cement plaster must be kept wet for at least 7 days.

14.45.7. Repairing Defects

All defective plaster, cracks, hollows, etc., are to be cut out to a rectangular shape, the edges undercut to form a dovetail key and to be made good to finish flush with the edge of the surrounding Plaster work.

All patches will be to the approval of the Employer and if the defects cannot be made good

satisfactorily then the whole surface is to be removed and re-plastered at the Contractor's expense.

14.45.8. Glazing and Painting

14.45.1. Glass

All glass is to be of approved manufacture, free from bubbles, waveness, scratches or other imperfections and is to be well bedded, puttied and back puttied and secured with glazing pins or clips in steel sashes or with sprigs in wood sashes.

All glass shall be carefully cut to the required sizes so that all panes of figured or textured glass are uniform in appearance with the pattern parallel to the edges and wired glass shall be so cut that the wires are parallel to the edges.

The window glass for control room shall be shatterproof type.

14.45.2. Putty

Putty for glazing to steel sashes is to be of approved proprietary brand. Rebates are to be thoroughly back puttied before glazing and all putty is to be carefully trimmed and cleaned off so that back putty finishes level with the top of sections internally, external putty covers sight lines exactly and finished straight and true. Rough surfaces to putty will not be allowed and any defective putty will be cut out and replaced at the Contractor's expense.

Rebates of wood sashes are to be given one coat of priming immediately before glazing.

14.45.3. Mirrors

Glass mirrors are to be of the thickness specified, of selected quality glass, silvered on back, with protective sealing coat and arrised edges, unless otherwise described.

Generally

Allow for removing and replacing all cracked, broken or defective glass and leave thoroughly clean and perfect at completion.

14.45.9. Materials for Decoration

All paints, primers, varnishes, emulsions, stopping, etc., to be of approved manufacture. The contractor is to use proprietary ready mixed paints obtained from an approved supplier.

When a coat of proprietary paint is applied, the manufacturer's priming and previous coats suitable for the particular type are to be used.

All materials must be brought on to the site in unopened tins, and no dilution or adulteration will be permitted, unless approved by the Employer.

14.45.10. Emulsion Paint

Emulsion paint shall be PVA (Polyvinyl Acetate) alkali-resisting formulated with high washability and capable of resisting a 8000 scrub test. The first coat to be specially formulated base coat for direct application to the specified surface.

14.45.11. Fillers

Higher grade cellulose fillers are to be used internally and premixed filler to be used externally.

14.45.12. High Gloss Paints

Primers for application to bare metal to be red oxide primer for iron and steel. For galvanized metal to be an approved zinc chromate or galvanized iron primer. For application on wood or plaster etc., to be an approved alkali primer.

14.45.13. Finish enamels

Finish enamels to be synthetic enamel high-capacity paint with high coverage and high gloss finish unless otherwise described.

14.45.14. Workmanship

All surfaces are to be free from moisture, dust, grease and dirt and rubbed down smooth according to approved practice.

All plaster to be free from efflorescence and treated with one coat of petrifying liquid, approved sealer or alkali primer if required. Hard wall plaster to be glass papered before decorating.

Rectifying defects to decorated surfaces due to dampness, efflorescence, chemical reaction, etc., will be to the Contractor's account, as these surfaces must be checked and the appropriate precautions taken before applying the decoration.

Metalwork must be scraped free of rust, primed as described and finished as later specified.

Galvanized sheet iron, pipes, etc., are to be cleaned down to remove manufacturer's ammoniated dichromate protective covering, primed as described and finished as later specified.

Coated pipes are to be cleaned down, stopped and primed with one coat of aluminium primer and finished as later specified.

All metal to have the specified number of coats in addition to the priming coat.

Every coat of paint must be a good covering coat and must dry hard and be well rubbed down to a smooth surface before the next coat is applied, otherwise the Contractor will be required to apply extra coats at his own expense.

Each coat of paint to be of a distinctive color: sample colors are to be prepared for the final coat which is to be an approved color scheme and must not be applied without the permission of the Employer.

After undercoats are on, the painter shall check all work and grain fill as necessary with filler as described.

NOTE:

a) All paints specified are to be obtained from an approved manufacturer and used in strict accordance with their instructions. Their representative will check the paints being used and the method of application and will advise accordingly.

b) This section of the work to be carried out by an approved firm of decorators who must allow for the very best finish possible and of the highest quality obtainable.

c) The prices must allow for the removal and refitting of all beads, fittings, fastenings, ironmongery, etc., removed for decoration purposes to be carried out by skilled tradesmen of the appropriate trade.

14.46 Control Room and Office Building Sizes.

The sizes are as specified in clause 5.2 and 5.3 of this document.

14.47 Ironmongery and Metalwork

14.47.1. General

All ironmongery shall be of the best respective types required and no alternative articles will be accepted unless approved. Articles described as brass must be solid brass and not brass finish. Chromium plated articles must be plated satin finish on solid brass or other approved metal.

Where items for ironmongery are required to be fitted to steel door frames, etc., the Contractor must ensure that the Manufacture makes provisions for the correct fitting or lock striking plates, hinges, cleat holes, bolt keeps, etc.

14.47.2. Locks and Keys

Locks are to be two levers unless otherwise described. All locks are to be provided with two keys which must be handed over to the owner on completion of the Works with identification labels attached.

14.47.3. Steel

Steelwork for general building construction is to be of approved manufacture complying generally with the appropriate British Standards and free from all defects, oil, dirt, loose rust, scale or other deleterious matter.

14.48 Electrical Installation

14.48.1. The contractor shall supply, install, test and commission the complete electrical services within the Control room both outdoor and indoor, office building both outdoor and indoor, Guard house, VIP latrine and SPGP outdoor security lighting/perimeter lighting.

14.48.2. The complete electrical installation shall comply with all local standards and rates and shall be as per KPLC requirements/specifications.

14.48.3. Lighting

a. Luminaries shall be fluorescent lamps except for the toilets and outdoor lighting. SPGP and/Perimeter Outdoor lighting to use flood lights subject to employer's approval.

b. All luminaries shall be supplied, installed and tested by the electrical sub-contractor.

c. Outdoor lighting shall be controlled from an automatic photo cell.

d. Lighting control switches shall be flush pattern with white finished plates.

14.48.4. The outdoor SPGP flood lights/perimeter security lighting to be achieve the recommended luminaries and mounted on concrete poles.

14.48.5. Socket outlets to be mounted at 300 mm above floor level in the office, guard house and control room.

14.48.6. Conduit cast into the building structure shall be of the heavy-duty PVC type. PVC conduits shall not be fixed to the surface of the structure.

14.49 AC Installation

The contractor to supply the ACs in the control room. The Contractor shall supply and install a minimum of two number AC units, including wiring and all necessary accessories. The number of ACs and its capacity shall be determined by calculations and design will be based on the equipment manufacturers ratings adopted and the rooms requirement (Including Lithium-Ion Batteries) and subject to approval by the employer.

14.50 Fire Safety Facilities

14.50.1. Portable fire extinguishers shall be provided under this Contract. Portable, wall mounted, hand held extinguishers shall be 6kg pressurized control discharge Bromochlorodifluoromethane (BCF) units in the office and control room. The number of units within the Control room and office shall be a minimum of 3 Number.

14.50.2. A minimum of 1 No. 13 kg pressurized control discharge BCF units shall be provided in the SPGP area.

14.50.3. The body of the extinguisher shall be seamless, welded and brazed as appropriate.

14.50.4. The extinguisher shall be capable of being released by means of a lever-operated valve provided with a safety pin.

14.50.5. Extinguishers shall be capable of controlled partial discharge.

14.50.6. The type shall be of that recharge unit that is locally available.

14.50.7. The extinguishers shall be wall mounted and attached and located in a manner affording quick release from the supporting bracket. They shall be installed so that the top of the extinguisher is not more than 1.5meters above the floor. In no case shall the clearance between the bottom of the extinguisher and the floor be less than 0.1 meter. The extinguishers shall be positioned so that the

instructions for operation face outwards.

14.50.8. BESS to be housed in one room in the control room. The battery room shall have an automated fire detection, prevention and suppression system fitted with a suitable dry aerosol agent to put-out Lithium-Ion battery fires. The system shall include smoke detectors, horn strobes and other components required to enable it function properly and suppress fires while preventing unintended release. Suitable Fire protection and suppression system shall be designed for BESS in line with IEC or international requirements/specifications regulation as applicable and system requirement considering project site.

14.50.9. The fire safety design shall be subject to approval by the employer. The contractor shall train the local staff on use of the installed system.

Part II

14. Detailed Technical Specification and Requirements

The proposed project under this tender for setting the solar PV hybrid power plant shall broadly follow technical specifications given below.

- These specifications describe the requirements for the equipment. Tenderers are requested to submit with their offers the detailed specifications, drawings and catalogues, for the products they intend to supply. **The details in the provided catalogues SHALL be used in the tender evaluation for specification compliance.**
- Tenderers must indicate on the specifications sheets whether the equipment offered comply with each specified requirement.
- All the dimensions and capacities of the equipment to be supplied **SHALL** not be less than those required in these specifications.

The Tenderer shall indicate in the technical specification of each component brand name, model and country of origin. Comparative specification should indicate any derivations from technical parameter, design, or functional description of tender specification

14.1 Documentation and Instructions (Required during installation and commissioning)

No.	PRODUCTS DOCUMENTATION AND SPECIFICATION	BIDDERS RESPONSE
1	Product description and data sheets, manufacture description, and operation manual	
2	Installation instructions	
3	Connection plans, single line diagram	
4	Commissioning instructions, manual for start and stop operation, commissioning protocol	
5	Operating instructions, do´s and don´ts	
6	Maintenance instructions, maintenance interval, maintenance effort, necessary staff	
7	Error sources, error diagnosis and troubleshooting instructions	

14.2 Solar Photovoltaic Modules

ITEM	REREC'S REQUIREMENT FOR SOLAR MODULE		BIDDERS RESPONSE
1.	Name of Manufacturer, Brand Name		
2.	Model No.		
3.	Cell type	Mono crystalline	
4.	Originality Verification system	Barcode or Serial number with batch number	
5. 6.	Solar cells encapsulated in EVA (ethylene-vinyl acetate); anti- reflection coating; Module on the front side protected by tempered, highly translucent glass.		
7.	Glass-foil laminated in anodized aluminum-frame		
8.	Wind load certification	0.024 bars	
9.	Front glass	High transmission, low iron,	

ITEM	REREC'S REQUIREMENT FOR SOLAR MODULE		BIDDERS RESPONSE
		Tempered glass	
10.	Weather resistant Junction box with 3 Bypass-diodes on the backside of the modules with protection class min. IP 67 rated		
11.	Wiring of the modules with pin-and-socket connector according to EN50521		
12.	Quantity of cells	State	
13.	Temperature coefficient PMPP:	<=-0.45%/C	
14.	Temperature coefficient Voc:	<=-0.27%/C	
15.	Temperature coefficient Isc:	<=0.05%/C	
16.	Operating temperature range:	-0°C < =T< =45 °C	
17.	Nominal operating cell temperature(NOCT)	45+/- 2 °C	
18.	Module efficiency	at STC-conditions > 22%	
19.	Current at maximum power point (A) (maximum)	State	
20.	Voltage at maximum Power Point (V) (minimum)	State	
21.	Open Circuit voltage (Voc)	State	
22.	Short circuit current (Isc)	State	
23.	Minimum rating	400W	
24.	10 years product warranty		
25.	25 years linear performance guarantee (90% up to 12 years and 80%up to 25 years)		
26.	CE- conformity, DVE GS, TUV quality certified for product		
27.	Horizontal and vertical assembly possible		
28.	High Mechanical load (acc. IEC 61215 (5400Pa superimposed loadand 2400Pa suction load))		
29.	Pre-cabled with MC4 Plug –connectors (IP 67)		
30.	Nominal power at IEC-Conditions (radiation 1000W/m2, Air-Mass 1.525°C)		
31.	Output cables	Minimum TUV 1x4.0mm SQ	
32.	Product certification	IEC 61215 (Ed.2)	
33.	Protection class	II/ IEC 61730	
34.	Salt mist corrosion test	IEC 61701 (Ed. 2)	
35.	Documentation: English	Please indicate:	
36.	Power Tolerance	Positive power tolerance -0/+3%	
37.	Cell dimension (length x width) in mm		
38.	Module dimension (length x width x height) in mm		
39.	Module weight in kg		

14.3 Hybrid Inverter

ITEM	DESCRIPTION	REREC MINIMUM SPECIFICATION	BIDDER RESPONSE
Battery Input Data			
1	Battery type	Li-ion	
2	Nominal battery voltage (V)	Indicate(above 48V)	
3	Max Charging Current(A)	100	
4	Max Discharging Current(A)	100	
5	No. of Battery Input	State	
6	Max. Charge / Discharge Power (KW)	State	
PV String Input Data (or DC-DC Converter)			
7	Max. Input Power (KW)	52	
8	Max. Input Voltage (V)	State	
9	MPPT Operating Voltage Range (V)	150-850	
10	MPPT Voltage Range at Nominal Power(V)	500-850	
11	Start-up Voltage (V)	Indicate	
12	Nominal Input Voltage (V)	State	
13	Max. Input Current per MPPT (A)	120	
14	Max. Short Circuit Current per MPPT (A)	150	
15	Max. Back-feed Current to the Array (A)	Indicate	
16	Number of MPPTs Trackers	Indicate	
17	Number of Strings per MPPT (based on current limit)	Indicate	
AC Output Data (On-grid)			
18	Nominal Apparent Power Output to Utility Grid (VA)	State	
19	Output Rated Active Power (W)	State	
20	Max. Apparent Power Output to Utility Grid	1.5 times of rated power,10s	
21	Nominal Apparent Power from Grid (KVA)	State	
22	Max. Apparent Power from Utility Grid(KVA)	State	
23	Nominal Output Voltage (V)	400, 3L / N / PE	
24	Output Voltage Range (V)	312~460 (AS) / 318~497	
25	Nominal AC Grid Frequency (Hz)	50	
26	AC Grid Frequency Range (Hz)	47~52 (AS) / 47.5~51.5	
27	Max. AC Current Output to Utility Grid (A)	76	
28	Max. AC Current from Utility Grid (A)	100	

ITEM	DESCRIPTION	REREC MINIMUM SPECIFICATION	BIDDER RESPONSE
29	Max. Output Fault Current (Peak& Duration) (A)	156A@150us	
30	Inrush Current (Peak & Duration) (A)	160	
31	Nominal Output Current (A)	72.5	
32	Output Power Factor	-1(Adjustable from 0.8 leading to 0.8 lagging)	
33	Max. Total Harmonic Distortion	<3%	
34	Generator input/Smart load/Ac Couple current	Indicated	
Efficiency			
35	Max. Efficiency	97.60%	
36	Max. Battery to Load Efficiency	97.20%	
Protection			
37	DC Insulation Resistance Detection	Integrated	
38	Residual Current Monitoring Unit	Integrated	
39	Anti-islanding Protection	Integrated	
40	DC Reverse Polarity Protection	Integrated	
41	AC Overcurrent / Overvoltage Protection	Integrated	
42	AC Short Circuit Protection	Integrated	
43	DC / AC Surge Arrester	Type II (Type I Optional)	
44	DC / AC Switch	Integrated	
45	Emergency Power Off	Integrated	
46	Rapid Shutdown	Optional	
47	Remote Shutdown	Integrated	
General Data			
48	Operating Temperature Range (°C)	-20~+60°C (>45°C derating)	
49	Relative Humidity	0~95% (Non-condensing)	
50	Max. Operating Altitude (m)	4000	
51	Cooling Method	Fan Cooling	
52	User Interface	LCD & LED & APP	
53	Communication with BMS	RS485/CAN	
54	Communication with Meter	RS485/CAN	
55	Weight (Kg)	Indicate	
56	Dimension W × H × D -in (mm)	Indicate	
57	Noise Emission (dB)	50	
58	Topology	Transformerless	
59	DC / AC Connector	NC	
60	Protective Class	I	
61	Environmental Category	4K4H	
62	Storage Environment (°C)	-30~+60°C	
63	Overvoltage Category	DC II / AC III	

ITEM	DESCRIPTION	REREC MINIMUM SPECIFICATION	BIDDER RESPONSE
64	The Decisive Voltage Class (DVC)	C	
65	Installation Style	Wall -Mounted	

14.4 Battery Storage

ITEM	REREC MINIMUM SPECIFICATION FOR THE BATTERY STORAGE		BIDDERS RESPONSE
1	Type of battery	Lithium-ion Phosphate	
2	Name of manufacturer, Brand Model, Type name,		
3	Type of technology		
4	State of charge	Pre-charged	
5	DC-Voltage	V/cell	
6	DC-Voltage battery bank	V	
7	Qty of cells	State	
8	String configuration	Provide drawing	
9	Number of Strings	State	
10	Rated energy capacity/string	100 kWh (Max)	
11	Total rated Capacity (kWh)	400 kWh (Minimum)	
12	Energy (kWh) per Piece	10 kWh (Max.)	
13	Nominal Voltage (V)	≥48	
14	Discharge Voltage (V)	Indicate	
15	Charging Voltage (V)	Indicate	
16	Max. Charging Current (A)	100A	
17	Max. Discharge Current (A)	100A	
18	Storage temperature	0~35℃	
19	Max. working altitude (M)	4000M	
20	Relative humidity	0~95% non-condensing	
21	Installation	Frame	
22	Ingress protection	IP21	
23	Operating temperature	-25℃~55℃	
24	Designed according	DIN 40736	
25	Certification	UN 38.3, IEC 62619	
26	Self-discharge per month at 20° degrees	< 3%	
27	Cycles at 80% DoD(according to IEC 896- 1)	> 5000@ 25℃ 80% (Minimum)	
28	Max. DOD in operation	> 90 %	
29	At least 10 years without losing more than 20% of the rated Capacity		

ITEM	REREC MINIMUM SPECIFICATION FOR THE BATTERY STORAGE		BIDDERS RESPONSE
30	Battery management system (BMS)	Cell balancing	
31		Protection overcharge, over-discharge each cell	
32		Protection over and under temperature	
33		Isolation of battery if any of the above occur	
34		Alert if there is a failure	
35		Communication with Battery inverter	
36	BMS Communication interface	RS485,Ethernet	
37	BMS Communication protocol	Modbus RTU, Modbus TCP	
38	Warranty	5 Years	
39	Performance guarantee	10 Years	

14.5 Diesel Generator

ITEM	SPECIFICATION OF 3-PHASE DIESEL GENERATOR		BIDDERS RESPONSE
1	Name of manufacturer, Brand name, Model, Type		
2	Type of Diesel generator	Synchronous generator	
3	Diesel Generating Set, water cooled, incl. sound and weather proofed canopy; Stationary version, incl. lifting hook; tropicalized, ready for use, fitted as complete unit on a rigid base frame (e.g. skid mounted), consisting of Motor, Alternator, Battery, Fuel tank and separate switch board and accessories mentioned below. Norms and reference values to be followed: VDE, EN, DIN, ISO or equivalent norms. In p articular VDE 0100, Part 551/560, VDE 0108, DIN ISO 8528, DIN ISO 30 46 and/or norms or other guidelines as may be mentioned in the present specification.		
4	Output power (Tolerance + 2,5 / - 0 KVA) taking into consideration the environmental conditions	50 kVA	
5	Output power	50 kVA	
6	Fuel consumption at 50 % load	l	
7	Fuel consumption at 80 % load	l	
8	Overall efficiency	%	

9	Site of operation / Purpose / En vironmental conditions Outdoor installation up to +35°C, Altitude see, air humidity 70 %		
10	Environmental conditions	Ambient temperature up to +35°C	
11	CE declaration of conformity by the manufacturer exists. Please attach the document to your offer.		
12	Welded sectional steel base frame, warp resistant, lifting hook on each corner for easy lifting		
13	Motor, Norms and reference values: ISO 3046, DIN 6271, BS 5514		
14	Type: Diesel, direct injection, forced oil lubrication, fuel transfer pump		
15	Revs: 1500 rpm		
16	Speed regulation: electrical		
17	Cooling: water cooled, considering a surrounding temperature of 40°C		
18	Alternator, battery charging: Integrated 24V		
19	Starter motor: integrated 24V		
20	Starter battery fitted to the aggregate incl. hood, 24V, dry pre-charged		
21	Fuel tank: steel, fitted to the frame, incl. fuel level gauge. Tank capacity: at least for a 8 hours run under maximum continuous output.		
22	Motor brand and designation, Model and Type		
23	Number of cylinders and cubic capacity		
24	Fuel tank capacity		
25	Oil capacity		
26	Motor capacity as per ISO 3046-7 based on 25°C intake temperature, 25°C cooling water intake temperature, 1.000 mbar air pressure, 30% air humidity – (KW)		
27	Motor capacity as per ISO 3046 in reference of the environmental conditions, mechanical (KWm)		
28	Motor capacity as per ISO 3046 in reference to the environmental conditions, electrical (KWe)		
29	Fuel consumption as per ISO 3046-1 including attached pumps. Lower fuel heating value 42.700 KJ/kg Tolerance + 5% at PRP 100% load in g/KWh		
30	Lubrication oil consumption (ltr/h) under standard conditions		
31	Alternator brand, model, type		
32	Efficiency factor of Alternator		
33	Alternator: Norms and reference values: VDE 0530, BS 4999, UTE NFnC 51.111, IEC 34.1, NEMA MG 21		
34	Three-phase current alternator as per VDE 0530, internal pol machine with damping winding, self-regulating, self-starting		

35	Voltage rigidity: max 5 %	
36	Nominal voltage: Per phase 240V alternating current, 415 V three-phase current	
37	Frequency: 50 Hz	
38	Power factor: cos phi 0,8	
39	Insulation class: H or F	
40	Isolation good for tropic climate	
41	Radio interference suppression according to VDE 0875 “N”	
42	Protection class DIN 40050, IP 23	
43	G3 Classification according to DIN ISO 8528	
44	Exhaust system, sound protection	
45	Weather and sound proofed canopy incl. exhaust silencer. High corrosion resistance: stainless covered with zinc and made in dichromate. Large doors allow easy access to the generator set for service and monitoring purposes. Lockable doors with one window showing the control panel, fully assembled for immediate use. Exhaust system fully integrated (inner mounted).sound protection LWA below 89 dB (A)pW. Emergency stop button is accessible from outside enclosure.	
46	Please indicate:	
47	Acoustic power (LWA) [dB (A)]	
48	Acoustic pressure level at 1 m distance	
49	Acoustic pressure level at 7 m distance	
50	Acoustic pressure level at 10 m distance	
51	Control fittings / Measuring Instruments / Switch board	
52	Switch cabinet - vibration proof – fitted to the steel base frame - Digital control panel	
53	Motor protection accessories (Oil pressure, water temperature, excessive revs) Generator protection switch, thermic-magnetic overload protection, protection of Instruments and indicators	
54	Battery-charging control light, oil-pressure warning light, excessive temperature warning light, light test, excessive revs alarm, false start light, emergency-off light, central warning light	
55	Measuring instruments, switches; Ampere, Volt, frequency, operation hours counter, Energy production, emergency “off” button, manual mode switch	
56	30 m reinforced electrical cable for electrical power supply, under- or above ground use	
57	5 m yellow-green cable with ground pin	
58	Labeling of all components in English language	
59	Please indicate:	
60	Dimensions of one unit: (length x width x height)	
61	Weight of one unit in kg (without any fillings)	
62	Documentation	
63	Manual for installation, commissioning and use plus a spare parts catalogue for each part of the generator (motor, generator, switch board, wiring diagram) in English	

64	Spare parts / Maintenance parts / Consumables covering 1000 hrs of operation	
65	2 pcs. Oil filters	
66	1 pcs. Air filter	
67	2 pcs. Fuel filter ext.	
68	1 set of seals, screws, nuts, etc, for 1000 hrs of operation	
69	1 pcs. V-belt	
70	Standard tool set	
71	Standard tool set to provide maintenance and small repairs up to 1000 hrs of operation	

14.6 LAPTOP

ITEM	DESCRIPTION	REREC'S REQUIREMENT	TENDERER RESPONSE
1	Name of the Manufacturer		
2	RAM	16GB	
3	Processor	Core i7	
4	Storage	SSD 512GB	
5	Processing Speed	4.6 GHz	
6	Graphic Card	8 GB	
7	Operating System	Windows 11	

14.6 Data Monitoring

ITEM	SPECIFICATION OF MONITORING SYSTEM			BIDDERS RESPONSE
1	Name of manufacturer, Brand name, Model, Type			
2	Data logging and transmission of PV inverter data or charge controller	All inverter production data to be continuously transmitted via internet		
3		Programmable data resoluti min:	on from 1 min - 60	
4		DC current, DC voltage		
5		DC power, DC energy		
6.		AC current, AC voltage		
7		AC power, AC energy		

ITEM	SPECIFICATION OF MONITORING SYSTEM			BIDDERS RESPONSE
8		Ambient temperature (°C)		
9		Solar radiation (W/m^2)		
10	Option	Transmission of inverter equivalent	data by GSM or	
11	One radiation sensor (precision >90%) for global horizontal irradiance for the PV technology. Installed in shadow free position with access for regular cleaning.			
12	One sensor corresponding with the monitoring system including to measure ambient temperature			
13	Option: Three phase meters to be installed to measure power delivered to the loads			
14	Data monitoring supply from DC power supply of installed battery storage with corresponding step down converter.			

14.7 Balance of System (Required during installation)

ITEM	SPECIFICATION OF BALANCE OF SYSTEM (BOS)		BIDDERS RESPONSE
	The following material/Equipment will adhere to the prescribed standards		
1	Outdoor cabinets	UV and water resistant material, min IP 54	
2	Cabinets/enclosures (where applicable shall contain)	MCB	
3		MCCB	
4		SPDs, class II IEC 61643-11	
5		Operating temperature up to 80 C	
6		Non-metallic fiberglass enclosures with clear polycarbonate covers	
7	Electricity meter	Bidirectional, 3 phase class 0,5	
8	AC cabling- Inverter distribution to grid connection point	IEC 60364	
9		KS 04-192: 1988	
10		KS 04 -194: 1990	
11		KS 04 -187/188	
12		KS 04 -290: 1987	
13	Lightning protection	IEC 62305	
14	Miscellaneous accessories (if applicable) Conduit outlets and junction boxes	KS 04-179: 1983	

ITEM	SPECIFICATION FOR DC CABLING AND CONNECTORS The following material/Equipment will adhere to the prescribed standards		BIDDERS RESPONSE
1	Fine copper for PV string connection to inverter		
2	Outdoor use TUV approval Nr.	TUV PfG 1169/08.2007	
3	Ozone resistant	EN 50396	
4	Flame retardant	IEC/EN 60332-1-2	
5	UV resistant	HD 605/A1	
6	Halogen free	EN 50267-2-1, EN 60684-2	
7	Acid + Alkaline resistant	IEC /EN 60811-2-1	
8	Low corrosively of gases	EN 50267-2-2	
9	Weather resistant	HD 605/A1	
10	DC wiring losses	Total DC wiring losses max. 1,5%	
11	DC connectors	EN 50521	
12		Crimped according to manufacturer instructions using only certified tools	

14.8 Commissioning and training

ITEM	COMMISSIONING AND TRAINING ON SITE The following shall be carried out during commissioning	BIDDERS RESPONSE
1	Complete commissioning and trial operation of the system. Please indicate.	
2	Training on the operation of the power plant components, maintenance and monitoring of the system. General information, system description and scope of delivery. Please indicate	

15. Performance Guarantees

ITEM	PERFORMANCE GUARANTEES	BIDDERS RESPONSE
1	Upon commissioning of the solar PV hybrid power plant and 1 month of operation the final acceptance of the solar PV hybrid system will be confirmed after. During this one month the contractor should fix all installation problems that arise.	
2	After final acceptance, a 12-month defect liability period shall commence.	

PART II
Sub-Station Specifications

The Scope of the project;

A mini-grid comprising of photovoltaic solar (PV) generation, battery storage and a generator backup. The entire generation is to be synchronized and managed by the solar PV controllers at 415Volts and stepped to 11KV distribution network.

Protection at the HV (High Voltage) side shall be done with the 11KV Circuit breaker complete with its Control and protective relay panel and the LV protection up to the step up transformer to be enhanced by the feeder which shall be installed in the 20feet air conditioned containers provided by the contractor.

Specifications For 415 V Ac Metal-Clad Switchgear Board

1.0 General Specifications

1.1 Scope

This Specification covers the Design and Engineering, Manufacture, Testing at The Manufacturer's Factory, painting, packing for transport, insuring, shipping, delivering to the port of Kenya, landing, customs clearing, Local Transportation and Delivery to Site, Unpacking, Erection, Test and Commissioning of 415 V AC Indoor Metal Clad Switchgear Panels.

Subsequent paragraphs will give detailed descriptions and requirements for the Switchgear Panels, including Air Circuit Breakers, Current Transformers, Protection Relays, Metering, Measuring, Indicating and Control devices and other equipment/Devices, specified herein.

1.2 Standards

Ratings, characteristics, tests and test procedures, etc. for the 415V AC Metal-Clad Switchgear Board and all the Protection Relays, Measuring and Indicating Instruments and the control and monitoring devices and Accessories, including Current transformers shall comply with the provisions and requirements of the standards of the International Electro- technical Commission
(IEC), and also relevant ANSI Standards where Specified.

The latest revision or edition in effect at the time of Bid Invitation shall apply. Where references are given to numbers in the old numbering scheme from IEC it shall be taken 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 and Tested. The Bid Document may not contain a full list of standards to be used, as they only are referred to where useful for clarification of the text.

1.3 Service Conditions

From the geographical condition, the area where the switchgear panels shall be installed is categorized into the tropical climate zone.

In choosing materials and their finishes, due regard shall be given to the humid tropical conditions under which the switchgear panels shall be called upon to work. The Manufacturer of the Switchgear panels shall submit details of his usual practice of tropicalization which have proven satisfactory for application to the Switchgear panels and associated equipments to prevent Rusting and Ageing in the Tropical Climate Zone. The Applicable standards for tropicalization shall be listed.

i) **Climatic Conditions & Geo-Reference**

Unless otherwise specifically stated in Particular Technical Specifications, any equipment or component or assembly shall be designed for the following service conditions:

Parameter		
Ambient air temperature	**Max**	**Min**
Outdoor	+40°C	-1°C
Indoor	+40°C	-1°C
24 hour average maximum	+30°C	-1°C
Relative humidity	90 -100%	
Height above sea level	1000 m	
EMC Class (IEC 61000)	Industrial environments Seismic coefficient	1.5
Rainfall conditions		
Average	800-1700 mm/year	
Maximum	160mm in 24 hrs	

Annual mean isokeraunic level Max 180 thunderstorm days
Pollution (IEC 60815) Heavy: class II

Geo-Reference Latitude (o) Longitude (o) Altitude (m) a.s.l.

Switchgear room Temperature

The Switchgear shall be installed in a room without Air conditioning but with ventilation to allow natural cooling. Therefore, All the Protection and control devices employed shall be capable of operating in this environment without failure for their designed life time. Particularly the power supply modules of the Protection and Control devices shall be designed for minimum heat generation and effective heat dissipation to ensure that the temperature of these devices enclosed in the relay panels at the above listed Ambient temperatures shall not exceed the Maximum operating temperature of the device.

ii) **Tropicalization**

a) All equipment must be designed for operations in the severe tropic climate conditions and fully comply with climatic aging tests as per IEC 60932- class 2

Metals:

Iron and Steel are generally to be painted or galvanized as appropriate. Indoor parts may alternatively have chromium or copper-nickel plates or other approved protective finish. Small iron and steel parts (other than rustless steel) of all instruments and electrical equipment, the cores of electromagnets and the metal parts of relays and mechanisms shall be treated in an appropriate manner to prevent rusting.

Screws, Nuts, Springs, Etc

The use of Iron and steels shall be avoided in instruments and electrical relays wherever possible. Steel screws shall be zinc, cadmium or chromium plated or where plating is not possible owing to tolerance limitations, shall be of corrosion resisting steel. Instrument screws (except those forming part of a magnetic circuit) shall be of brass or bronze. Springs shall be of non- rusting material, e.g., phosphor-bronze or nickel silver, as far as possible.

1.4 Working Stress And Equipment/Apparatus Design

i) **General**

The design, dimensions and materials of all parts shall be such that they will not suffer damage under the most adverse conditions nor result in deflections and vibrations, which might adversely affect the operation of the equipment. Mechanisms shall be constructed to avoid sticking due to rust or corrosion.

The equipment and apparatus shall be designed and manufactured in the best and most substantial and workmanlike manner with materials best suited to their respective purpose and generally in accordance with up-to-date recognized standards of good practice.The equipment shall be designed to cope with 0.10G acceleration of seismology on the centers of gravity.All equipment shall be designed to minimize the risk of fire and consequential damage, to prevent ingress of vermin and dust and accidental contact with electrically energized or moving parts. The switchgear panels shall be capable of continuous operation with minimum attention and maintenance in the exceptionally severe conditions likely to be obtained in a tropical climate and where the switchgear is called upon to frequently interrupt fault currents on the system and also where the duty of operation is high.

ii) **Strength and quality**

Liberal factors of safety shall be used throughout, especially in the design of all parts subject to alternating stresses or shocks.

iii) **Design data low voltage equipment**

Low voltage equipment and installation shall be designed in accordance with EMC directives.
The rating and design criteria for low voltage equipment shall be as follows:

a) AC Supply Rating system

voltage between phase	415 V

ection type	3ph 4wire
voltage between phase to earth	240 V
ading system	Solid Earthing
ency	50 HZ
ge variation	+/-10%
ency variation	+/-2%
r frequency 1 min, Test Voltage	3 kV

The three-phase supply shall be used for power circuit and the single- phase supply for lighting, indication, motor controls and similar small power circuits. Unless otherwise specified, the equipment provided under this Tender is to be capable of reliable operation at voltages as low as 85% of the rated voltage, and to withstand continuously up to 110% supply voltage above the rated value of 240V single phase or 415V AC three phase.

b) DC Auxiliary Supply Rating

Equipment/Device Rated voltage	24V DC
Connection type	2 wire
Voltage variation	18-36 V DC

The Auxiliary DC Supply shall be used for controls, indication, alarm, protection relays, and Circuit breaker tripping and closing circuit, e.t.c.

All equipment and apparatus including the Circuit Breakers, Protective relays, Control Devices and Accessories, Measuring and Indicating Instruments and electronic equipment shall be capable of satisfactory operation at 80% to 125% of the rated supply voltage.

1.5 Basic Requirements For Electrical Equipment

All materials supplied under this Contract shall be new and of the best quality and of the class most suitable for working under the conditions specified. They shall withstand the variations of temperature and atmospheric conditions arising under working conditions without distortion, deterioration or undue stresses in any parts and also without affecting the suitability of the various parts of the Works for which they were designed.

a) **Electrical controls, auxiliaries and power supplies**

i) Responsibility for electrical control and auxiliaries

The Manufacturer shall provide all control, indication, alarm and protection devices and all auxiliary equipment with wiring and interconnecting cable which are integral parts of or are directly associated with or mounted on the Switchgear panels to be supplied under this Tender. The design of Protection and Control schemes for the switchgear panels shall be subject to approval by the Employer.

ii) Operation and control

Interlocking devices shall be incorporated in the control circuit to ensure Safety, and Proper sequence and correct operation of the equipment.

b) **Measuring instruments**

i) All measuring instruments, including energy meters, shall be of flush-mounted, back-connected, dust-proof and heavy-duty switchboard type. Each measuring instrument shall have a removable cover, either transparent or with a transparent window. Each instrument shall be suitable for operation with the instrument transformers detailed in this specification, under both normal and short-circuit conditions.

ii) For analog type instruments, scale plates shall be of a permanent white circular or rectangular finish with black pointer and markings. The scale range shall be determined from the current

transformer and voltage transformer ratios and is given in the detailed specifications for each instrument.

All measuring instruments of analog type shall be approximately 110mm2 enclosures and shall be provided with clearly readable long scale, approximately 240 degrees. The maximum error shall be not more than one and a half (1.5) percent of full-scale range.

c) **Indicating lamps**

Indicating lamp assemblies shall be of the switchboard type, insulated for 24 V D.C. service, with appropriately colored lens and integrally mounted resistors for 110-volt service. The lens shall be made of a material, which will not be softened by the heat from the lamps.

For the Circuit Breakers, Red indicating lamps shall be used for "ON" position, green lamps for "OFF" position Indication and Amber for Transition

d) **Nameplate and Escutcheon Plates**

i) Each cubicle, panel, meter, switch and device shall be provided with a nameplate or escutcheon plate for identification with English description and also where appropriate the IEC Number on the front of the panel directly below each device as appropriate. On the inside of the control compartment of the switchgear panel, a yellow label, engraved in Black Letters and Numbers shall be fixed below each device. The Device Name/Number fixed on the inside of the control compartment shall correspond to the Name/Number used in the drawings. Each equipment shall be provided with a rating plate containing the necessary information specified in the relevant IEC standards.

ii) The plates shall be made of weatherproof and corrosion-proof materials and shall not be deformed under the service conditions at the site. The entries on the plates shall be indelibly marked by engraving with black letter on a white background.

e) **Wiring**

i) <u>General</u>

1. All wiring inside the switchgear panel shall be done with PVC insulated wire not less than 2.5 sq.mm, flexible cable. A suitable wiring duct system firmly fixed on the panel and having covers shall be installed for all inter-panel and front-to-rear panel wiring as well as for wiring within the panels, which will provide easy access for inspection and replacement of the wires.
2. Wiring between terminals of the various devices shall be point to point. Splices or tee connection will not be acceptable. Wire runs from the duct to the device shall be neatly trucked or clamped.
3. Exposed wiring shall be kept to a minimum, but where used, shall be formed into compact groups suitably bound together and properly supported.
4. Instrument transformer secondary circuits shall be grounded only on the Terminal Block in the Control Compartment. Cable supports and clamp type terminal lugs shall be provided for all incoming and outgoing power wiring terminated at each panel. All wiring conductors (wires) shall be marked at each point of termination onto the terminal block or device. These wire markers shall be of an approved type and permanently attached to the conductor insulation. The method of ferruling shall be subject to approval by the Employer; It is however preferred that the Wire marker (ferrule) correspond to the device terminal Number of the device or the Terminal Block Number where it is terminated.

ii) Phase arrangement

The standard phase arrangement when facing the front of the panel shall be R-S-T- N, and P-N from the left to right, from top to bottom, and front to back for A.C three- phase and single-phase circuits. 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.

f) **Terminal blocks**

i) Terminal blocks for control wiring shall be rated not less than 600V AC.

ii) 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.

iii) 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.

2.0 Equipment And Switchgear Earthing

2.1 General

All the Compartments including the hinged doors of the Switchgear Panels and all the earthing points of the equipment installed/mounted in the Switchgear panels shall be connected to the grounding conductor at the bottom of the panel for external connection to the substation earthing System.

Earthing conductors shall be of annealed high conductivity copper. The earthing conductor on the primary equipment such as the Earth Switch and also for inter-panel earth-bonding as well as for external connection to the substation Earthing – grid shall be adequate to carry the rated switchgear short-circuit current of 65kA for 1 seconds.

3.0 Materials And Workmanship

3.1 General

Materials shall be new; the best quality of their respective kinds and such as are usual and suitable for work of like character. All materials shall comply with the latest issues of the specified standard unless otherwise specified or permitted by the Employer.

Workmanship shall be of the highest class throughout to ensure reliable and vibrations free Operations. The design, dimensions and materials of all parts shall be such that the stresses to which they may be subjected shall not cause distortion, undue wear, or damage under the most severe conditions encountered in service.

All parts shall conform to the dimensions shown and shall be built in accordance with approved drawings. All joints, datum surfaces and meeting components shall be machined and all castings shall be spot faced for nuts. All machined finished shall be shown on the drawings. All screw, bolts, studs and nuts and threads for pipe shall conform to the latest standards of the International Organization for Standardization covering these components and shall all conform to the standards for metric sizes

All materials and works that have cracks, flaws or other defects or inferior workmanship will be rejected by the Employer.

3.2 Assembly

Necessary items of equipment shall be assembled in the factory prior to shipment and Routine tests shall be performed by the Manufacturer as per the requirements of the latest issue of IEC as specified under each equipment in these specifications to demonstrate to the satisfaction of the Employer that the Switchgear panels comply with the requirements of the relevant IEC standards.

3.3 Casting

Casting shall be true to pattern, of workmanlike finish and of uniform quality and condition, free from blowholes, porosity, hard spots, shrinkage defects, cracks or other injurious defects, shall be satisfactorily cleaned for their intended purpose.

3.4 Operational Details

Instructions shall be engraved on the switchgear panel, on the circuit breaker compartment describing in simple steps how to carry out correct and safe Isolation, racking-in and switching operations on the circuit breaker. Similar details should be provided for the operation of the earth switch.

4.0 Protection, Cleaning And Painting

All outside panel surfaces shall be primed, filed where necessary, and given not less than two coats of synthetic undercoat. The finishing coat for the indoor installations shall be gloss paint.

Primer shall be applied to surfaces prepared in accordance with the plant manufacturer’s instructions. The surface shall be wiped clean immediately prior to applying the paint. The primer and finish coats of paint shall be applied using the methods and equipment recommended by the manufacturer.

No painting or protection is required for finished or unfinished stainless steel parts.

The humid and tropical conditions shall be taken into account on selection of the paints and painting procedure.

5.0 Drawings

5.1 Before starting manufacture of the Switchgear panels, dimensioned drawings and data showing all significant details of the equipment and materials to be used shall be submitted to the Employer for approval. Four 4 weeks shall be allowed for discussions between the manufacturer and the employer leading to final Approval of the drawings by the Employer. Manufacturing of the switchgear panels shall not commence under any circumstances without receipt of Approved drawings by the Manufacturer from the employer.

5.2 The drawings shall be modified as necessary if requested by the Employer, and resubmitted for final approval.

5.3 The manufacture of the switchgear shall then proceed strictly in accordance with the Approved drawings and also in accordance with the Detailed specifications as contained herein. Where conflict may arise between the specifications and the approved drawings, the Specifications will take precedence, unless it's specifically indicated in writing on the Approved drawings that the conflicting clause in the specifications is superseded, or where following discussions between the Manufacturer and the employer, the employer gives approval in writing to supersede the conflicting clause in the specifications.

5.4 It is to be understood, however, that approval of the drawings will not relieve the manufacturer of any responsibility in connection with the works that the switchgear will fully comply with the relevant IEC/ANSI standards and with these specifications.

5.5 All drawings submitted for approval or sent to the Employer for any other reason shall be in hard copy form and shall be sent by courier. Drawings for Approval shall not by any means be forwarded via e-mail or any other media except in hard copy form.

Following completion of the manufacture of the switchgear Panels, the manufacturer shall carry out the following Checks and Tests before Inviting the Employer for Factory Acceptance Tests. Dimensional checks for the switchgear Board and the Busbars. Primary Injection Tests to check correct connection of the current transformers to the relays and instruments and Measuring devices.

Electrical Functional Tests
Mechanical/Interlock
checks.

Any problems noted will be rectified and the switchgear panels shall only be shipped once the above tests and Checks are confirmed to be satisfactory.

Upon testing of the panels as in e) above the drawings will be edited to capture any minor wiring errors detected in order to produce the final construction drawings. A copy of the final construction drawings signed by the Manufacturer shall be send by courier to the employer before the panels are shipped.

All Protection and Control drawings shall be done on A4 - size paper. The function of each drawing shall be clearly indicated. Related drawings shall be arranged sequentially, and have the same drawing number but different sheet numbers. The drawings shall include the following; All Protection and Control drawings shall be done on A4 - size paper. The function of each drawing shall be clearly indicated. Related drawings shall be arranged sequentially, and have the same drawing number but different sheet numbers. The drawings shall include
the following;

a) Ac single line drawing
b) AC Schematics
c) DC Schematics
d) Functional Drawings
e) Panel wiring and cable terminations and schedules
f) Panel device layout drawing
g) General layout drawings for the switchgear panels
h) Relays and accessories list.

Five (5) Copies of Final As built drawings shall be supplied after commissioning of the Switchgear.

6.0 Operating And Maintenance Instructions

The Contractor shall supply detailed instructions manuals concerning the correct manner of assembling/Installing/Erection, configuring, setting, Testing and Commissioning, operating and maintaining the equipment and devices constituting the Switchgear Board, including the board itself. The maintenance details of each component shall also be described, including the frequency of inspections and lubrication.

The instruction manual shall include a separate and complete section describing the normal and emergency operating procedures for the Switchgear, and shall include explanatory diagrammatic drawings to facilitate understanding the instructions.

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.

The manual shall give specific information as to oil, grease, or any other materials needed for maintenance operations. This information shall include brand names and manufacturer's numbers or designations for at least two brands available in Kenya, preferably manufactured in Kenya.

A complete set of the Operating and Maintenance manuals for All the Plant, Equipment and Accessories to be installed/mounted in the switchgear panels shall be sent to the Employer together with the Drawings for Approval. The operating and maintenance manuals shall be original copies printed by the manufacturer. Any illegible copies of the operating and maintenance manuals submitted shall be rejected by the employer.

Before Approval of Shipment of the switchgear Panels, Five (5) Copies of the Operating and Maintenance Instructions/Manuals shall be sent to the Employer by Courier. The operating and maintenance manuals shall be original copies printed by the manufacturer. Any illegible copies of the operating and maintenance manuals submitted shall be rejected

In addition, three (3) Soft copies of the manuals shall be sent to the employer by Courier.

7.0 Testing At Place of Manufacture

The manufacturer shall be responsible for performing or for having performed all the required tests specified under the specification for the switchgear and all the Current Transformers, Protection Relays, Energy Meter, Measuring and Indicating instruments.

Tender documents shall be accompanied by copies of Type test and Routine test reports & certificates for similar rated equipment for the purpose of tender evaluation. Type test reports & certificates shall be certified by the National Standards and Testing Authority (NSTA) of the country of origin or by a third party Reputable Testing Authority. Where a body other than NSTA is used to certify the type-test reports, a copy of the certificate of accreditation shall be attached. Current contact information of the testing and certification authority shall be provided. Tenderers should note that this requirement is Mandatory.

Upon completion of the manufacturing process, routine tests shall be carried out as per the respective IEC standards of each equipment as follows:

i) Circuit Breaker IEC 60298, IEC 60947
ii) Switchgear panels, IEC 60294
iii) Current Transformers, IEC 60044-1
iv) Voltage Transformer, IEC 60044-2
v) Protection Relays and Measuring and Indicating Instruments, IEC 60255 & 51

Only Upon receipt of Authentic certified copies of the Routine Test Reports/certificates and special Tests shall the Employer give clearance for shipment of the Switchgear Board once all the other listed requirements on Drawings, Instruction and maintenance manuals and software are met.

8.0 Software

One copy of each different type of Software in a CD Rom, for Protection Relays and other measuring and Control Devices whose Configuration and Settings is Software based and the connection Cable (Two for each type of device) shall be sent to the employer by courier before Approval for Shipment of the Switchgear Board is granted by the Employer. All the software indicated in the Technical

Schedules shall be supplied. The software shall also be capable of downloading and analyzing data form the Relay/measuring device.

It shall be possible to load the software into at Least 2No. Different Laptop Computers without requirement for additional licenses, in order to facilitate Operations. Where additional licenses are required, the cost shall be considered to have been included in the bid.One b (1) set of hard cover manuals for each type of software Supplied providing detailed instructions for programming settings and configuration of the relays and other devices and downloading of data, shall be supplied with the switchgear.

9.0 Spare Parts

The manufacturer shall furnish spare parts as listed in the specifications.
The spare parts supplied shall be packed or treated in such a manner as to be suitable for storage under the climate conditions at the Site for a period of not less than two years, and each part shall be clearly marked with the description and purpose on the outside of the package. The manner of storage shall be recommended by the manufacturer.
Spare parts so provided shall be delivered with the switchgear to the employer's stores. Delivery of spare parts will not be deemed to be complete until the packages have been opened and their contents checked by a representative of the Employer.

10.0 Detailed Specifications For 415 V Ac Metal-Clad Indoor Switchgear Panels

10.1 Construction For Each Panel

10.1.1 The whole switchgear equipment and components shall be designed and constructed in accordance with IEC 60298 and IEC 60947. The Board shall be complete with all the relevant components including, Busbars, Circuit Breaker, Cable Compartment, Instrument Transformers, Protection Relays, instruments and controls.

10.1.2 The Switchgear Board, shall be constructed to 1P42 degree of Protection in accordance with IEC 60529. A type test Report for the Degree of Protection of the Switchgear panels 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.

10.1.3 The switchgear panel or cubicle shall be built up of separate metal clad- compartmented cubicles with earthed metal partitions. The compartments shall be for busbar, cable connection and current transformer, Air circuit breaker, and Protection and Control compartments.

10.1.4 The Air circuit breakers shall be mounted on an inbuilt carriage to facilitate Isolation and withdrawal of the Air Circuit Breaker. Where the carriage is fixed in the compartment and does not allow complete withdraw of the Air circuit breaker outside it's compartment, then a purposely built Trolley shall be provided equipped with a lowering/raising gear to lower the Air circuit breaker to the floor, and to raise the circuit breaker to it's compartment by one switching operator.

10.1.5 The complete switchgear shall be such that the complete switchboard is of flush- front design.

10.1.6 All the Protection Relays, Auxiliary Relays, Energy Meters Indication Lamps, Instruments, Control and selection switches and any other associated accessories will be mounted in the Protection and Control compartment. All the Protection Relays, Auxiliary Relays, Energy Meters Indication Lamps, Instruments, Control and selection switches and any other associated accessories will be mounted in the Protection and Control compartment.

10.1.7 The cable compartment should have an anti vermin guard plate giving protection against rats, rodents etc.

10.1.8 The Circuit breaker compartment door shall be provided with provisions for padlocking.

10.1.9 The doors shall be capable of withstanding the effects of maximum internal arcing fault without being blown off and causing danger to other equipment/personnel.

10.1.10 The busbar shall be single, three phase, air insulated. The primary busbars and connections shall be of high conductivity and electrolytic material, high grade copper, and shall be in unit lengths.

10.1.11 Busbars, connections and their support shall be rated 800Amps continuously under ambient conditions and capable of carrying the short-time current associated with the short circuit ratings of the circuit breakers, of 65kA for 1 Seconds.

10.1.12 Busbars shall be extensible at both ends, such extension shall entail the minimum possible disturbance to the existing busbar.

10.1.13 Provision shall be made for locking busbar and circuit shutters separately in the Circuit Breaker compartment.

10.1.14 Provision shall be made for integral circuit earthing and for busbar earthing. Means of earthing shall be by circuit breaker or purposely built earth switch. Mechanical interlocks to ensure correct switching operation shall then be provided.

10.1.15 The earth switch shall be easy to operate by one operator and be spring loaded to ensure Effective Make Operation independent of the Operator Action. The earth switch shall be rated to make and carry for 3 seconds, the rated short-circuit current of the Air Circuit Breaker.

10.1.16 The Status of the earth Switch shall be visible from the front of the Panel.

10.1.17 The operation of the Earth Switch shall be set in such a way that during both the Close and Open Operations, a clearance of at least 9 inches shall be maintained between the operating handle and the bottom of the switchgear panel.

10.1.18 It shall not be possible to insert the Earth switch Operating handle into Position except when the Circuit breaker is in the Test or Isolated Position.

10.1.19 All earthing facilities shall be rated for fault making at the rated switchgear short- circuit current.

10.1.20 The Panel wiring for protection, instruments, indication and metering circuits and other control accessories shall be completely done. All circuits for connection to external cables such DC & AC auxiliary supplies, external tripping, and Indications shall be wired up to the terminal Block at the Back of the panel where external cables shall be connected. At least 12 spare terminals shall be provided on the terminal board for any future requirements.

10.1.21 It is emphasized that Each Switchgear panel will have a terminal block at the back of the panel where all external cables such as Auxiliary DC supply, shall be made.

10.1.22 Auxiliary 24V DC supplies for Circuit Breaker control, Alarm circuits and Protection relays, shall be controlled by suitably rated Miniature Circuit Breakers.

10.1.23 The cubicle shall be tropical vermin proof. The plates shall be of mild steel thoroughly cleaned by shot blasting or other approved methods. They shall then be given a primary coat and two coats of contrasting colour of durable and weather resisting paint. The final coat shall be gloss and of Admiralty Grey (Shade 632) as specified in BS 381C. The final thickness of the paint shall not be less that 80 Microns at any point within the switchgear panel

10.1.24 Anti-condensation heaters shall be provided inside each cubicle. They shall be located so as not to cause injury to personnel or damage to equipment. The heaters shall be controlled by a hygrostat with a variable humidity and temperature setting. The Heaters shall be dimensioned to ensure that condensation cannot occur within the switchgear panel.

10.1.25 The 240V AC supply, for the heaters shall be controlled by a suitably rated single pole miniature circuit Breaker.

All the switchgear panels shall be rodent and vermin proof.

10.2 Circuit Breakers

10.2.1 The circuit breaker shall be three pole operated, indoor type, Air Circuit Breakers.

10.2.2 The moving portion of each circuit breaker shall consist of a three-pole circuit breaker, operating mechanism, primary and secondary disconnecting devices, auxiliary switches, position indicators and necessary control wiring. The Auxiliary switches shall be of the plug-in type, with the male contacts mounted on the Breaker carriage and the female contacts on the plug-in cable connected to the Panel wiring. Other options may be considered where there is adequate proof that the auxiliary contacts will always be making firmly without mis-alignment. Finger contacts will however not be acceptable.

10.2.3 The circuit breakers of the same current and voltage ratings shall be fully interchangeable, both electrically and mechanically.

10.2.4 Name plate for the circuit breaker shall be provided with all the required details as per IEC Standards.

10.2.5 The circuit breaker operating mechanism shall be motor wound spring operated, power closing with electrical release and with provision for hand charge.

10.2.6 Mechanical indication shall be provided to indicate the state of the spring.

10.2.7 The operating mechanism shall be completely trip free both mechanically and electrically.

10.2.8 The circuit breaker shall have a mechanical operations counter

10.2.9 One mechanical ON/OFF indicator, with inscription “ON” white letters on red background and inscription “OFF” white letters on green background shall be provided for the circuit breaker.

10.2.10 One mechanical indication of the state of the spring inscription – SPRINGS CHARGED (white letters on red background); SPRINGS FREE, (white letters on green background) shall be provided for the circuit breaker.

10.2.11 Where the Circuit Breaker is used for Circuit or Busbar Integral earthing, the control wiring of the breaker housing should be such that when the breaker is in circuit earth or busbar earth positions it shall only be operated mechanically and not electrically.

10.2.12 The Circuit Breaker Maintenance and Operations Manual shall contain clear instructions on the Maintenance requirements of the Circuit Breaker (if any), to prevent Switchgear failure in service, due to excessive Fault Current Clearance or any other cause.

10.3 Current Transformers

10.3.1 Current transformers shall be Cast Resin Type and shall be accommodated inside the cubicle, in a separate compartment.

10.3.2 The current transformers shall be in accordance with the requirement of IEC 60044- 1 and shall have the specified accuracy under load conditions and shall be able to withstand the effect of short-circuit fault current rating of the switchgear, of 65kA for 1 seconds.

10.3.3 Current transformers shall have a rated burden as specified, sufficient for the connected Numerical Protection relays and Energy meters and instruments.

10.3.4 Copies of Type Test certificates and routine Test Reports/Certificates as per IEC 60044-1, of CTs of similar Rating and Class as the specified CTs shall be submitted with the Tender for tender Evaluation Purposes. The Specified CTs must be within the Product Range of the manufacturer.

10.4 Protection Relays

10.4.1 The Measurement relays shall be Flush mounted and of Numeric Design, with event recording, Fault recording, power measurement, and shall be in accordance to IEC 60255.*

10.4.2 Besides the communication port, the relays shall have a human – machine interface facility (MMI) with and LCD Screen where one can easily access relay information.

10.4.3 Relay contacts shall be suitable for making and breaking the maximum currents, which they are required to control in normal service. Where contacts of the protective relays are not sufficient for Circuit Breaker Tripping, auxiliary Trip relays shall be provided, in order to prevent Damage to output contacts of the Measuring relay.

10.4.4 Relay contacts shall make firmly without bounce and the relay mechanism shall not be affected by Panel vibration or external magnetic fields.

10.4.5 Relays shall be provided with clearly inscribed labels describing their functions and IEC Device Function numbers.

10.4.6 Relays shall be suitable for operation on the station D.C. supply without use of dropping resistors or diodes.

10.4.7 To reduce the effect of electrolysis, relay coils operating on DC shall be so connected such that they are not continuously connected from the positive pole of the station battery.

10.4.8 The relay Thermal rating shall be such that the fault clearance times on any

Combination of current and time multiplier settings shall not exceed the thermal withstand capability of the relay. (Max. fault current = 25kA).

10.4.9 The relays shall be EMC 89/336/EEC compliant.

10.5 Indications And Instruments

10.5.1 All instruments shall be flush mounted and shall be in accordance with the requirement of IEC 51.

10.5.2 Each cubicle shall have the following indications:-

i) One indicator lamp to show the breaker in closed position - RED colour

ii) One indicator lamp to show the breaker in open position - GREEN colour

10.5.3 The instruments shall be supplied as described under each panel in the subsequent sections.

10.5.4 Power Cable Termination

Cable compartment design shall be suitable for heat shrinkable (or equivalent) jointing application termination. The compartment shall be adequate for connection of cables to evacuate the total load of 800 Amps.

10.6 Accessories:

The following accessories shall be supplied with the switchboard at no extra cost:

Spring charging handle	FOUR SETS
Circuit breaker draw out handle	FOUR SETS
Recommended set of circuit breaker maintenance tools	ONE SET

10.7 Ratings Of Switchgear and Equipments

10.7.1 Incomer and Feeder Air Circuit Breaker

Interrupting Medium	Air
Number of poles	3
Highest equipment Voltage	600 V AC
Nominal System Voltage	415 V AC
One minute power frequency withstand voltage	3 kV
Impulse withstand voltage (BIL)	8 kVp
Frequency	50 Hz
Rated short time current	50 kA
Rated Short circuit current withstand	50 kA, 1 seconds
Auxiliary D.C. voltage for closing and tripping coils	24 V DC
Auxiliary a.c. voltage	240V AC, 50Hz
Tripping/closing coil auxiliary voltage	24 V DC
Spring charging motor supply	240 V AC
Rated normal Current	800 A

10.7.2 Current Transformers for Incomer and Feeder Panels

i)	Rated Short time current (STC) withstand	25 kA for 3 seconds
ii)	Rated Voltage of the CT	600 V
iii)	One minute power frequency withstand voltage	3kV
iv)	Impulse withstand voltage	8 kVp
v)	Rated maximum continuous current	800 Amps

Ratio and class:

i) Feeder Panels:

Core1:	C.T Ratio	: 800-400/1 A
	Class	: 5P10
	VA	: 10VA
Core2:	C.T Ratio	: 800-400/1 A
	Class	: 0.5
	VA	: 10VA

ii) Incomer panels:

Core1:	C.T Ratio	: 800-400/1 A
	Class	: 5P10
	VA	: 10VA
Core2:	C.T Ratio	: 800-400/1 A
	Class	: 0.5
	VA	: 10VA

10.7.3 Tests

All switchgear shall be tested in accordance with the requirement of IEC 60298. Tests shall be carried out on the circuit breakers as per the requirement of IEC 60947. Current transformers shall be tested in accordance with the requirement of IEC 60044-1.

10.7.3.1 Schedule of Tests to be carried out at the Manufacturer's plant

a) Test on Complete 415 V AC Switchgear Board

i) Power frequency Withstand Test
ii) Megger Test
iii) Contact resistance test of Primary joints
iv) Power frequency Withstand Test on secondary Wiring
v) Dimensional Checks
vi) Operational/Functional Tests
vii) Primary Injection Tests
viii) Calibration Tests on Relays and Instruments.

b) 600 V AC Air Circuit Breaker

i) Routine tests.
   1. Operation test.
   2. High Voltage test, dry. 3kV Power frequency Voltage test on controls and auxiliary circuits.
   3. Measurement of resistance of the main circuit.

ii) Type Tests: Submit copies of Type test Reports and Certificate
   1. Mechanical endurance test
   2. Temperature rise test.
   3. Impulse voltage test
   4. Interrupting Capacity test.

NB: Copies of Type Test Certificates for similar rated Circuit Breakers and Certified by National Standards and Testing Authority body or Reputable Third Party Test Laboratory shall be submitted with the Tender for Evaluation Purposes.

c) Current Transformer

Type and routine tests shall be carried out at the manufacturer's plant as per the requirement of IEC 60044-1, as listed below.

i) Polarity Test and Verification of terminal markings
ii) Ratio and phase angle error test (accuracy class composite error test)
iii) Power frequency Tests on Primary and secondary windings

10.8 Protection Relays, Controls And Measuring Devices

Requirements For 415 V Ac Switchgear Panels:

10.8.1 General Requirements

Protection against electrical faults and abnormal conditions on 415 V AC Switchboard and the outgoing 11 kV feeders shall be conducted by the protective relays and associated switchgear. The Protection schemes shall be designed to ensure detection of all faults, fast discriminative fault clearance in order to ensure safety of personnel, equipment and continuity of Electric Power Supply.

10.8.2 **Bill Of Materials**:

a) Feeder Panels Requirements

Each Feeder Panel shall be equipped with the following Protection Relays, Measuring and indicating devices, Controls and other Accessories.

i) Three phase overcurrent and earth fault.
ii) Combined Earth Fault and sensitive Earth Fault Relay.
iii) Three Ammeters with MDI with face plates available for both CT ratios. The Ammeter shall indicate both the instantaneous Load current and also the Maximum Demand Load current since the last reset.
iv) Energy Meter
v) Voltmeter and Voltage Selector Switch, Circuit breaker control switch (Close, Open &Neutral), with a mechanical Lock, to prevent unintended tripping of the Circuit Breaker.
vi) Sensitive Earth Fault (SEF) mechanical isolation link or switch.
vii) Circuit Breaker ON(red) and OFF(green) Indication lamps.
viii) Door switch Operated Lighting point and Bulb.

ix) 3 Pin - Square Power Socket Outlet with red neon indicator.
x) Suitably rated MCBs for Auxiliary 24V DC and for 240 V AC supplies.

b) Common Alarm System

A common Alarm System shall be supplied equipped with the following:

i) Urgent Alarm relay
ii) Non-urgent Alarm relay. NB: The urgent and non-urgent Alarm relays will be separate Relays.
iii) 16 window Annunciator relay.
iv) Hooter.
v) Suitably rated MCBs for Auxiliary 24V DC and 240 V AC supplies.

c) Incomer Panels Requirements

The Generator Panel shall be equipped with the following Protection Relays, Measuring and indicating devices, Controls and other Accessories:

i) Three phase overcurrent and earth fault relay.
ii) Reverse Power Relay.
iii) Three Ammeter with MDI The Ammeter shall indicate both the instantaneous Load current and also the Maximum Demand Load current since the last reset.
iv) Energy Meter.
v) Kilowatt Meter.
vi) Power Factor Meter.
vii) Voltage meter.
viii) Auto/Manual Selector Switch.
ix) Voltage selector switch.
x) Circuit breaker control switch (Close, Open & Neutral) with mechanical locking to prevent un-intended operation.
xi) Circuit Breaker status ON(red) and OFF(green) Indication lamps.
xii) Door switch Operated Lighting point and Bulb.
xiii) Pin - Square Power Socket Outlet with neon indicator.
xiv)Suitably rated MCBs for Auxiliary 24V DC and 240 V supplies.

10.9 Protection Relays And Control Devices

Reference Standards IEC 60255: Electrical Relays

10.9.1 General Requirements

a) The electrical Measuring protective relays shall be of Numeric Design. The Protective Relays and Auxiliary Relays shall operate successfully for any value of the DC supply voltage between 85% and 125% of the rated voltage of 24 V DC without exceeding the temperature rise limits for the operating coils.

b) Each Measuring protection relay shall be of the Panel flush mounted, back connected, type with rectangular case. Each relay shall have a removable transparent cover or cover with a transparent window making the front of the relay visible. It is preferred that each measuring relay shall be of a withdrawable type from the front of the panel with sliding contacts, without opening the current transformer secondary circuits, disturbing external circuits or requiring disconnection of leads on the rear of the panels.

c) Each protection relay shall be equipped with adequate electrically independent contacts, of adequate rating for Trip and alarm functions.

d) Relays contacts shall be suitable for making and breaking the maximum currents, which they may be required to control in normal service. Where contacts of the protective relays are unable to deal directly with the tripping currents, Auxiliary Trip relays shall be provided. This will ensure safety for the protection relays output contacts.

e) Relays contacts shall make firmly without bounce and the whole of the relay mechanism shall be as far as possible unaffected by vibration or external magnetic fields.

f) Relays shall be provided with clearly inscribed labels on the surface of the panel describing their application in words e.g., "Three Overcurrent & Earth Fault Relay" in addition to the IEC numbering and outside.

g) The Numerical Relays will be equipped with an RS232 Communication Port to facilitate connection to a Laptop. Also a communication port shall be provided on each Numerical Relay for Remote Interrogation and Programming of the Numerical Relays.

h) The Relays will also have an MMI with LCD screen and Keypad to facilitate manual Relay programming and Data access.

i) Relay Operation due to system fault, shall be indicated by a Red L.E.D. and the fault details (flags) shall be displayed on the MMI. Both the Relay Fault flags and Red L.E.D shall be reset via Reset push buttons without opening the Relay Cover.

10.9.2 Detailed Specifications For Relays, Measuring And Indicating Instruments, Control Switches And Other Accessories

These specifications indicate the required performance characteristics for each of the Protection Relays and are in accordance with IEC 60255.

a) Three phase over-current and earth fault relay

Should incorporate the following Features:

i) Relay must be of Numerical Design.
ii) Shall be suitable for mounting on the panel front.
iii) Current setting range for overcurrent relay 0.2In-2.4In.
iv) Current setting range for earth fault relay 0.05In-0.8In.
v) I.D.M.T characteristics according to BS142 or IEC255 i.e. SI, VI, EI, LTI, including definite time for the high-set Elements.
vi) Time setting multiplier 0.05 - 1.0.
vii) Broken conductor protection feature
viii) Highest Element for both overcurrent and earth fault with.
ix) Protection, with a setting range of 1-30In and a definite time delay setting of 0 - 60 Seconds.
x) Drop off /pickup ratio >90%.
xi) Low transient overreach < 10%.
xii) LCD screen where the Settings and Measurement can be read.
xiii) Keypad for manual programming of settings and data access Serial RS232 Port for Programming of the Relay and Access of Data using a Laptop Computer on the front surface of the Relay.

b) Earth Fault Relay

Should incorporate the following Features:

i) Relay must be of Numerical Type.

ii) Current setting range 0.05In-0.8In.
iii) I.D.M.T characteristics according to BS142 or IEC255 i.e. SI VI, EI, LTI, including definite time for the high-set Elements.
iv) Time setting multiplier 0.05 - 1.0.
v) Highest Element with a setting range of 1-30In.
vi) Circuit Breaker Maintenance.
vii) Drop off /pickup ratio >90%.
viii) Low transient overreach < 10%.
ix) LCD screen where the Settings and Measurements can be read.
x) Keypad for manual programming of settings and data access Serial RS232 Port for Programming of the Relay and Access of Data using Laptop Computer on the front surface of the Relay.

c) Sensitive Earth Fault Relay

Should incorporate the following Features:

i) Relay must be of Numerical Type.
ii) Current setting range for earth fault relay 0.010In- 0.8In.
iii) Definite time delay characteristic; setting range, 0- 30 Seconds.
iv) Drop off /pickup ratio >90%.
v) Low transient overreach < 10%.
vi) LCD screen where the Settings and Measurements can be read.
vii) Keypad for manual programming of settings and data access.
viii) Serial RS232 Port for Programming of the Relay and Access of Data using a Laptop Computer on the front surface of the Relay.

d) Reverse Power Relay

Should incorporate the following Features:

i) Relay must be of Numerical design.
ii) Directional Power setting range, 0.2 to 20%.
iii) Definite time Delay; 0.4 to 10 seconds in suitable steps.
iv) LCD screen where the Settings and Measurements can be read.
v) Keypad for manual programming of settings and data access Serial RS232 Port for Programming of the Relay and Access of data using a Laptop Computer on the front surface of the Relay.

e) Annunciator Relay Unit

i) Shall have Silence, Accept and Reset, push buttons, to control the Alarms.
ii) Shall be equipped with At Least 16 separate alarm Elements.
iii) Each of the elements shall be freely assigned to one of two common output.
iv) Alarms; Urgent and NON-urgent Alarm.
v) Each Alarm Element shall have a Red L.E.D. to indicate ON status. It shall also have provision for fixing of Identification Label changeable on site. A flashing Alarm element shall be clearly visible.
vi) The Urgent and Non-Urgent common Alarms Shall be freely configurable to the output Relays.
vii) High Immunity against Electrical interference.
viii) Relay output for audible alarm and for self-supervision shall be provided.
ix) Integrated event register to provide analysis of the latest sixteen (16) events.

f) Circuit breaker Close/Open control Switch

The switch shall have a mechanical interlock to prevent accidental operation of the switch. It shall have a close, Neutral and Open positions engraved on the switch. After an operation, the switch shall return to the neutral Position by spring Action.

g) Indicating Instruments, Directly connected

ALL the instruments shall be of Moving Iron type

i) The IP Protection Class shall be IP54.
ii) Accuracy class shall be 1.5, with maximum tolerated error of 1.5% of final scale value.
iii) Overload withstand shall be at least 20% continuous.
iv) All instruments shall be suitable for continuous operation under Tropical Climatic conditions.
v) Ammeter Instrument with MDI– 800A

Indicating Range, 0 – 800 A for current input of 0 – 1A Full Scale Deflection, 800 A
Black Scale on white background Dimensions, 96X96 mm.
Shall have a resetable maximum demand indicator having a different color from the normal pointer as well as the normal instantaneous demand pointer.
Shall be Suitable for Flush Mounting on the panel.

vi) Voltmeter Instrument - 415 V AC

Indicating Range, 0 – 500 V AC Black Scale on white background Dimensions, 96X96 mm.
Suitable for Flush Mounting on the panel

vii) Signaling Hooter

The actuator system shall consist of a strong, non polarized electromagnet with an impact resistance sturdy casing.
Rated frequency 50 HZ.
Rated voltage shall be 240V AC; +6/-10 % Protection degree shall be IP 55
Operating mode continuous
Volume approximately 108 dB(A) 1 ¼ m Connection terminals shall be 2.5 mm 2

10.10 Detailed Specifications For The Energy Meters

NB: These energy meters are for tariff metering similar to those used by Utilities
These specifications are for energy meters to be installed on the switchgear panels for purposes of Recording delivered Electrical Energy, and are in accordance with IEC 61334-4-4-1(DLMS Standard protocol).
The Energy Meter Supplied shall meet all the requirements detailed below:
The meters shall conform fully to IEC 687 for class 0.5S Energy Meters and any other relevant specifications.
The meters shall be programmable and relevant software and connection cable to laptop shall be provided. Meters complying with IEC 61334-4-4-1(DLMS Standard protocol) shall be preferred. The meters shall have memory and be capable of storage of at least 12 months load profile and other data.
The meters shall be capable of bi-directional metering so as to record faithfully, both export and import quantities. The accuracy shall be as per IEC 687 in both directions. The quantities to be displayed shall be determined by the user through use of Software that shall be provided. The meters shall be configurable for use in three phase 3/4-wire networks systems as follows:

3x240/415 V, 10 (100) A
3x240/415 V, /5 (1) A
3x /110V, /5 (1) A

The meters shall be usable on phase voltages of magnitudes ranging from 100V to 500V, 50 Hz. Meters with voltage-surge protection that meets IEC 687 specifications. The meters shall be for flush panel mounting. The meters shall have a non-volatile memory so as to ensure no loss of data during power failures. Security passwords and switches shall be provided to prevent unauthorized programming of the meter. The meters shall be fully year 2000 compliant and a certificate of confirmation shall accompany the tender.

The meters shall be suitable for operation in any part of the Republic of Kenya where the climate varies largely from temperatures between -5 and 40 Degrees Celsius and relative humidity reaching 95% in some parts. Operating altitudes ranging from sea level to 2200 meters above sea level. The meters shall support multi-tariff metering.
The Meters shall incorporate instrumentation for the following measurements: -
MW, MVAR, MVA, p.f., Phase Currents, Phase voltages and the angle between individual Phase Voltage and corresponding phase current. These measurements shall be visible on the Meter display.
The meters MUST have a capability of freezing billing readings on any selected date of the month.
The meters will measure maximum demand for MW, MVAR and MVA and these will be accessible on the

Meter display. The Demand integration period will be programmable.

The CT and VT ratios shall be programmable. The meters shall have an accurate internal quartz controlled clock. It should be possible to reset the clock without loss of billing data. The supplier shall show proof of ISO 9000 and ISO 14000 standards compliance by attaching copies. The meters shall be provided with adequate sealing facilities to prevent tampering. The nameplate and meter details shall be clearly marked using materials and colors that are durable and indelible.
In addition to requirements of IEC 687 the name-plate shall carry the following particulars:

i) The inscription " The property of REREC"
ii) Owner's serial numbers as directed with a minimum 5mm figure height.
iii) Year of manufacture.

The meter base cover shall be of non-metallic, non-hygroscopic, flame retardant, polished material having high impact-resilience and low dirt absorption properties. The front cover may be of translucent material with a clear transparent front. The meter shall have a minimum of three sealing - provisions for the meter body, terminal cover and front cover (where applicable).

The meter terminal cover shall be the normal short length with provisions of easy bottom breakage for cable entry. The terminals shall be of bottom entry, and the arrangement shall be:

L1 L 1: L2 L2: L3 L3: N or
I1 V1 I1: I2 V2 I2: I3 V3 I3: N

The accuracy shall be Class 0.5. The meter errors shall comply with the requirement IEC 687 and shall be adjusted at the manufacturer's works to be within between low and high load and shall exhibit good stability. The meter shall have a warranty against any defects, which may develop due to faulty material, calibration, transportation or workmanship for a period of not less than eighteen months from the date of delivery. All defective meters shall be replaced at the supplier's cost.
The following drawings and information shall be required with the tender:
Meter drawing giving all the relevant dimensions. Wiring diagrams.
Description leaflet including details of programming of the meters User's and service manuals.

10.11 Schedule

The Tenderer shall after reading through the Technical Specifications and the Tender Documents in general complete the technical schedules below. The completed schedules shall accompany the bid.

ANNEX 2 – TECHNICAL REQUIREMENTS

I	SWITCHGEAR PANEL		
ITEM	**DESCRIPTION**	**REREC'S REQUIREMENT**	**BIDDERS RESPONSE**
1	Manufacturers name	State	
2	Manufacturers letter ofauthorization	Provide copy	
3	Copy of ISO 9001/2certificate.	Provide copy	
4	Type or designation numberof Switchgear offered.	To provide	
5	enclosure [IP] class ofprotection	IP42	
6	Rated voltage	600 V	
7	Rated power frequencywithstand	2kV	
8	Rated lighting impulsewithstand	8 kVp	
9	Metal clad compartments [CB, Busbar, LV, CT& Cable] attach layout drawing	4	
10	Busbar material	Tinned copper	
11	Dimensions [WxHxD [attach layout drawing]	Provide	
12	Short circuit withstand	25kV, 3 sec	
13	Lockable door with viewing glass in CB compartments.	Yes	
14	Shutters for Busbars [red] and circuit [yellow]provided.	Provide	
15	Busbar rating	800A	
16	Circuit rating - Incomer	800A	
17	Circuit rating - Feeder	800A	

II	600 V AC AIR CIRCUIT BREAKER		
ITEM	**DESCRIPTION**	**REREC'S REQUIREMENT**	**BIDDERS RESPONSE**
1	Manufacturers' name	State	
2	Type or designation number of circuit breaker offered	Indicate	
3	Name of manufacturer of vacuum interrupter	Provide	

4	Rated circuit breaker voltage	600 V	
5	1-minute power frequencywithstand	2kV	
6	Impulse withstand voltage	8kV	
7	Rated short circuit current and withstand	65kA, 1 sec	
8	Auxiliary DC voltage for closing and tripping coils	24 VDC	
9	Auxiliary AC supply	240 VAC	
10	CB mechanism	Motor woundspring	
11	Visible spring charged Mechanical indication on CB as per specifications.	Provide	
12	Visible CB ON/OFF indications as per specifications	Provide	
13	Connection of CB to auxiliary panel circuits via a plug-in cable	Yes	
14	Operations counter	Provide	
15	ACB Continuous CurrentRating	800 A	

III	**CURRENT TRANSFORMERS**		
ITEM	**DESCRIPTION**	**REREC'S REQUIREM ENT**	**BIDDERS RESPONSE**
1	Manufacturers name	Indicate	
2	Type or designation numberof CT	Indicate	
3	Rated voltage of offered CT	600 V	
4	1 minute power frequency withstand voltage	2 kV	
5	Impulse voltage withstand	8 kVp	
6	Short-circuit withstand current and duration	65kA, 1 sec	
8	Incomer Panel CT Details Ratio 800-400/1A Core 1: clx; VR≥250V;Ie≤0.02A Core 2: 15 VA, 5P10 Core 3: 15 VA cl 0.5	 Indicate Indicate Indicate Indicate	

IV	**PROTECTION RELAYS, AUXILIARY RELAYS AND CONTROL DEVICES:**		
[a]	**THREE PHASE OVERCURRENT AND EARTH FAULT RELAY**		
ITEM	**DESCRIPTION**	**REREC'S REQUIREM ENT**	**BIDDERS RESPONSE**
I	Manufacturers	State	
Ii	Type of designation name	State	
Iii	Design	Numeric	
Iv	Flush mounting on panel	State	
V	One time delayed element and two high set elements	Provide	
Viii	MMI with keypad and screen	Provide	
Ix	Software to be provided –	Provide	
X	2 No. connection cable fromrelay to laptop computer to be provided	Provide	
Xi	Serial RS232 port	Provide	
[b]	**EARTH FAULT RELAY**		
ITEM	**DESCRIPTION**	**REREC'S REQUIREM ENT**	**BIDDERS RESPONSE**
I	Manufacturers name	Sate	
Ii	Type or designation name	State	
Iii	Design	Numeric	
Iv	Flush mounting on panel	State	
V	One time delayed element and two high set elements	Provide	
Vi	Software to be provided –name	Provide	
Vii	MMI with keypad and LCDscreen	Provide	
Viii	Serial RS 232 port	Provide	

[c]	SENSITIVE EARTH FAULT RELAY		
ITEM	**DESCRIPTION**	**REREC'S REQUIREM ENT**	**BIDDERS RESPONSE**
I	Manufacturers name	Sate	
Ii	Type or designation name	State	
Iii	Design	Numeric	
V	Software to be provided –name	Provide	
Vi	MMI with keypad and LCDscreen	Provide	
Vii	Serial RS 232 port	Provide	

[d]	THREE-PHASE DIRECTIONAL POWER RELAY		
ITEM	**DESCRIPTION**	**REREC'S REQUIREM ENT**	**BIDDERS RESPONSE**
I	Manufacturers name	Sate	
Ii	Type or designation name	State	
Iii	Design	Numeric	
Iv	Directional Power Setting Range	State	
V	Flush mounting on panel	State	
Vi	Definite time delay	Provide	
Vii	Software to be provided – name	Provide	
Viii	MMI with keypad and LCD screen	Provide	
Ix	Serial RS 232 port	Provide	

[e]	ANNUNCIATOR RELAY UNIT		
ITEM	**DESCRIPTION**	**REREC'S REQUIREMENT**	**BIDDERS RESPONSE**
I	Manufacturers name	State	
Ii	Type or designation name	State	
Iii	Incorporates 16 Alarmelements	State	
Iv	Has RED LED for visual indication	Provide	
V	Has silence, accept and rest push buttons	Provide	
Vi	Alarms freely assigned tourgent or non-urgent bus-wires	State	
[f]	**CIRCUIT BREAKER CLOSE/OPEN SWITCH**		
ITEM	**DESCRIPTION**	**REREC'S REQUIREMENT**	**BIDDERS RESPONSE**
I	Manufacturers name	State	
Ii	Type or designation name	State	
Iii	Close and open position marked on the escutcheon plate	State	

[g]	DIRECTLY CONNECTED INSTRUMENTS		
ITEM	**DESCRIPTION**	**REREC'S REQUIREM ENT**	**BIDDERS RESPONSE**
	1 AMMETER WITH MDI- 800A		
I	Manufacturers name	State	
Ii	Type or designationname	State	
Iii	96 mm x 96 mm	State	
Iv	Flush panel mounting	State	
	2. FREQUENCY METERS		
I.	Range	45-55hz	
II.	Mounting	Flush in 48*96 sq.mm	
	3. VOLTMETERs		
I.	Mounting	Flush	
II.	Size	48 *96 sqm case	
III.	Frequency	50Hz	
IV.	Operating voltage	415vac	
V.	Dielectric strength	2kv rms for 1 min	

[h]	MULTIFUNCTIONAL ELECTRICITY METER		
ITEM	**DESCRIPTION**	**REREC'S REQUIREMENT**	**BIDDERS RESPONSE**
I.	Class of accuracy	0.5	
II.	CT ratio	800A-400/1A	
III.	Type or designation name	State	
IV.	Mounting	Flush	
V.	Measuring Parameter	KWh,kVAh,kVAR Instantaneous P.F,KW,KVA, supply frequency,Phase voltage and Phase currents	
VI.	Display	Customized backlit liquid crystal display	

PART III

Lv Single Core Aluminium Cables (Pvc)		
0.	**Fore Word**	
	0.1	This standard lays down specification for LV single core PVC insulated cables.
	0.2	This specification is intended for procurement of materials and does not include provision of contract.
	0.3	This specification is based on IEC 502 and BS 6346. It is subject to revision as and when required.
	0.4	This specification supersedes all specifications for LV single core PVC insulated cables issued before the revision date.
1.	**Scope**	
	1.1	This specification is for single core, stranded aluminium conductors, polyvinyl chloride (PVC) insulated, armoured, PVC outer sheathed power cables for operation up to and including 600 volts to sheath and 1000 volts between conductors.
	1.2	This specification is for following cable sizes:
		630 sq. mm Aluminium conductor PVC insulated single core cable.
		300 sq. mm copper conductor PVC insulated single core cable.
2.0	**Materials And Construction**	
	2.1	The cable shall be made from circular stranded compact plain aluminium conductor as per IEC 228.
	2.2	The insulation shall be polyvinyl chloride (PVC) complying with the requirement of IEC 502 for type PVC/A.
	2.3	The insulation shall be applied by extrusion process and shall form a compact homogeneous body. The insulation shall concentrically cover the conductor
	2.4	Extruded over-sheath shall be of black polyvinyl chloride (PVC).
	2.5	The cable shall be clearly and permanently embossed with the following information throughout the length of the over-sheath. Letters and figures raised and consist of upright block characters. Minimum size of characters not less than 15% of average overall cable diameter.
		600/1000 VOLTS PVC CABLE
		Year of manufacture
		(Example: '600/1000 VOLTS PVC CABLE 1996')

3.0	**Standard Sizes And Characteristics**				
	3.1	The characteristics of the cables shall comply with the following table			
		Item		Characteristics	
		Conductor resistance		Not more thank the value indicated	
		A.C. withstand voltage		To withstand the indicated value for 5 min.	
		Insulation resistance		Not less than the value indicated.	
		Tensile strength	PVC	Tensile strength, minimum	12.5N/mm (1.27 Kg/mm)
		Ageing requirement*	PVC	Elongation, Minimum percentage of unaged value	150% 75 - 125%
	* Treatment: PVC temperature 100 - 20°c duration 168 hrs				
	3.2	The cable shall conform with the following requirements			

		Cable size	630 sq. mm	300 sq. mm
		Nominal sectional area	630 sq. mm	300 sq. mm
		Thickness of insulation	2.8 mm	2.4 mm
		Thickness of outer sheath	2.2 mm	2.2 mm
		Nominal overall diameter	38.8mm	28.0 mm
		Approximate net weight	6200 kg/km	3100 kg/km
		Test voltage	3kV/5min	3kV/5min
		Maximum conductive resistance	0.007 ohms/km	0.0120 ohms/km

4.0	**Tests**		
	4.1	The cable core, sheath and completed cable shall be tested in accordance with the requirements of BS 6346.	
5.0	**Packing**		
	5.1	The cable shall be wound on wooden drums such as to prevent damage during transportation. The wooden drums shall be made from treated timber resistant to termite attack.	
	5.2	The following description shall be marked on one flange of the reel	
		(a)	Direction of rotation of the reel
		(b)	Type of cable
		(c)	Number of conductors and size
		(d)	Length
		(e)	Net weight and gross weight
		(f)	Manufacturer's name
		(g)	Year of manufacture
6.0	References		

	6.1	The following documents were referred to during the preparation of this specification. In cases of conflict, the provisions of this specification shall take precedence.
		Unless otherwise specified, the latest revision, edition and amendments shall apply
		IEC 502:(1983): Extruded solid dielectric insulated power cables for rated voltages from 1 kV up to 30 kV.
		IEC 228(1978): Conductors of insulated cables.
		BS 6346 PVC insulated cables for electricity supply

PART IV
Specifications for 0.415/11kV Step-up Transformer

FOREWORD

This specification has lays down requirements for 0.415/11 kV Step-up Transformer. It is intended for use in purchasing the transformers.

It shall be the responsibility of the manufacturer to ensure adequacy of the design and good engineering practice in the manufacture of the 0.415/11kV Step-up Transformer for REREC. The manufacturer shall submit information, which confirms satisfactory service experience with products, which fall within the scope of this specification.

It is expected that manufacturers will provide energy efficient standard design that will provide high level of efficiency and significant initial cost saving.

1. SCOPE

This specification is for oil-immersed, air-cooled, outdoor type three phase 0.415/11 Kv Step-up Transformer for ac system operated at 50 Hz.
The transformers shall be connected to an off-grid power station to step-up generation output of 415V to 11 kV distribution network.

2. REFERENCES

The following documents were referred to during the preparation of this specification; in case of conflict, the requirements of this specification shall take precedence.

IEC 60076: Power Transformers
BS 381C: Specification for colours for identification, coding and special purposes
IEC 60296: Specification for unused mineral insulating oil for transformers and switchgear
IEC 60354: Loading guide for oil – immersed power transformers.
BS 6436: Specification for Ground Mounted Distribution Transformers for Cable Box or Unit Substation Connection.

3. TERMS AND DEFINITIONS

For the purpose of this specification the definitions given in the reference standards shall apply.

4. REQUIREMENTS

4.1 SERVICE CONDITIONS

4.1.1 Operating conditions

4.1.1.1 The transformers shall be suitable for continuous operation outdoors in tropical areas at altitudes of up to 1500m above sea level, humidity of up to90%, average ambient temperature of +30ºC with a minimum of -1ºC and a maximum of +40ºC and heavy saline conditions along the coast.

4.1.2 System characteristics

4.1.2.1 The primary shall be 415V, 50Hz while the secondary shall be 11 000V, 50Hz, three wire (the neutral solidly earthed).

4.1.2.2 The 11kV overhead system is of unearthed construction (i.e. without aerial earth wire).

4.2 DESIGN AND CONSTRUCTION

4.2.1 General

4.2.1.1 The transformer shall be three phase, oil immersed type, air cooled, core type, outdoor and shall be designed, manufactured and tested as per IEC 60076 and this specification.

4.2.1.2 The transformer shall be free breathing type provided with a conservator and a dehydrating breather (cobalt free). The conservator shall be in such a position as not to obstruct the electrical connections to the transformer and shall have oil gauge at one end marked with oil levels. The conservator shall have a feed valve.

4.2.1.3 The complete transformer shall be painted and protected against corrosion, and the final colour of the exterior surface shall be Dark Admiralty Grey colour No. 632 as per BS 381C. The inside of the tank shall be coated with oil resisting varnish or paint so that oil cannot come into contact with tank or metal at any point.

4.2.1.4 Each transformer shall be suitable for ground mounting (on a plinth).

4.2.1.5 Drawings and documentation for the transformer offered shall be given, clearly detailing important dimensions, clearances, accessories, fittings, internal assembly, material details and any special features of the offered design.

4.2.2 Tank

4.2.2.1 The transformer tank shall be constructed of mild steel plates. Tank thickness shall be stated in the Technical Particulars

4.2.2.2 The transformer tank shall be sealed by means of suitable gasket and be fitted with earthing terminals. Eight(8No.)non-standard shearing bolts to deter unauthorised opening shall be used on bolted corners and centres of sides of the top cover. Relevant tools for unbolting the transformer shall be delivered with the transformer.

4.2.3 Core

4.2.3.1 The cores shall be constructed of high quality low loss grain oriented electrical steel laminations. The design shall ensure no hot sections due to overfluxing or circulating currents across the laminations. The flux density at any point shall not exceed 1.65 Tesla.

4.2.3.2 The cores shall be clamped effectively with metal cross-arms and be fitted with core lifting lugs. The manufacturer shall demonstrate experimentally or via a previous test report, that the whole structural frame-work supporting the transformer windings and the core can definitely withstand repeated transformer short-circuits.

4.2.4 Windings

4.2.4.1 The windings shall be of electrolytic copper capable of sustaining short circuit forces on the transformer.

4.2.4.2 The primary windings shall be of full coil copper wires as opposed to segmented winding and the secondary windings shall be coil or foil of copper.

4.2.4.3 The HV and LV windings shall be separated so as to allow for cooling and ease of repair. Insulating sleeves for the transformer tappings shall be in crepe paper or better.

4.2.5 Tapping

4.2.5.1 The secondary winding (11 kV) shall have tappings at 2 X 2.5% operated by an off-circuit self-positioning tapping switch with marked position indicators. Tapping details shall be included on the transformer name plate.

4.2.5.2 Switch position No. 1 shall correspond to maximum plus tapping. The make contacts of the tap changer shall be robust and of sufficient surface area.

4.2.6 Vector Group

4.2.6.1 The three-phase transformer shall be wound to IEC vector reference YNd11.

4.2.6.2 The star point of the secondary winding shall be brought out to a neutral bushing.

4.2.7 Cable Boxes, Bushings and Clearances

4.2.8.1 The transformer shall be fitted with cable box on the primary side (LV) and have open bushings on the secondary side (11 kV).
The LV cable box shall be unfilled type and suitable for terminating up to 7No. single core PVC cables of 240 mm2 on a clamp pad, cables entry from bottom.

4.2.8.2 The 11 kV bushings shall be open and shall have outdoor brown glazed weather proof bushings provided with external stud for conductor sizes from 7.8 mm to 18.2 mm diameter mounted on the tank top cover.

a) Clamp connector shall be provided on each bushing.

b) The bushings shall be constructed, arranged and fitted in such a manner as to be changed without opening the transformer.

c) Each bushing shall be fitted with adjustable double-gap arcing horns set at 2 X 25mm gaps.

d) The minimum external electrical clearances and minimum creepage distances of the 11 kV bushings shall be as indicated below:

Nominal System Voltage between Phases		11 kV
Minimum clearances between phase to earth	mm	250
Minimum Clearances between phases	mm	300
Creepage distance	mm	300

4.2.8 Oil and Cooling

4.2.8.1 Cooling of the transformer shall be by natural circulation of oil and natural circulation of air (ONAN). Loading will be as per IEC 60354.

4.2.8.2 Each transformer shall be dispatched filled with oil to the correct level and ready for service. The oil shall be new (unused), uninhibited mineral insulating oil class I as per IEC 296. The oil shall be PCB-free.

4.2.9 Fittings and Accessories

4.2.9.1 No drain valve shall be fitted.

4.2.9.2 Oil gauge shall be provided on each transformer and shall be of dial or floater type. The oil gauge shall be clearly readable by an operator standing at a distance of 5 meters away from the transformer. The maximum and minimum oil level marks shall fall within 50% of the full range of the gauge with the nominal oil level being at the center of the range.

4.2.9.3 Each transformer shall be complete with an oil temperature thermometer in a visible and secure position.

4.2.9.4 Each transformer shall be complete with a pressure relief device fitted in a visible and secure position. No part of the pressure relief device shall extend to a height greater than the HV bushings.

4.2.10 Rating

4.2.10.1 The transformer shall be capable of carrying its full normal rated current continuously under the tropical conditions stated (maximum ambient temperature of 40□C) and at any tapings without the temperature rise in the hottest region exceeding 55□C and 60□C in oil and winding respectively. Documents to support this shall accompany the tender.

4.2.10.2 The transformer shall be capable of sustaining a three-phase symmetrical short circuit on the secondary side with power maintained on the primary side without damage or distress for 2 seconds.

4.2.10.3 The rated withstand voltages for the transformers shall be as follows:

	Rated short duration power frequency withstand voltage (r.m.s.)
0.415/11 kV Transformer	38kV

4.2.11 Impedance Voltage

4.2.12.1 The impedance voltage measured at the principal tap shall not exceed 5.0%.

4.2.12 Losses and Capitalisation

4.2.12.1 The guaranteed transformer losses, measured at full load operation, unity power factor and rated voltage shall be submitted with the tender. The loss measurements (no-load and full-load) shall be adjusted to 75 degree Celsius and submitted for evaluation.

5.0 TESTS AND INSPECTION

5.1 Type tests and routine tests shall be done in accordance with the requirement of IEC 60076 and this specification. It shall be the responsibility of the manufacture to perform or to have performed all the tests specified.

5.2 Certified true copies of previous type test reports by the relevant International or National Testing/Standards Authority of the country of manufacture (or ISO/IEC 17025 accredited laboratory) shall be submitted with the offer for evaluation (all in English Language). A copy of accreditation certificate for the laboratory shall also be submitted.

5.3 Routine test reports for the transformer to be supplied shall be submitted to REA for approval before shipment/delivery. REA shall witness routine tests as well as impulse withstand voltage and temperature rise tests at the factory before dispatch.

6.0 MARKING AND LABELLING

6.1 Each transformer shall be provided with a rating plate of weatherproof material, fitted in a visible position, showing the appropriate details listed in IEC 76. The entries on the plate shall be indelibly marked (either by etching, engraving or stamping).

6.2 In addition, the name plate shall include load and no load losses for the highest, lowest and principle tap positions, temperature class of insulation, connection diagram and the inscription 'PROPERTY OF RURAL ELECTRIFICATION AND RENEWABLE ENERGY CORPORATION all marked indelibly as in 6.1

ANNEX C: TECHNICAL REQUIREMENTS FOR STEP-UP TRANSFORMER

Item	Description		REREC'S REQUIREMENT	BIDDER'S RESPONSE
1	Quantity		1	
2	Transformer Rating	kVA	315KVA	
3	System Frequency	Hz	50	
4	Transformer external paint		Dark Admiralty Grey colour No. 632 as per BS 381C	
5	Corrosive environment		High	
6	Dimensions overall height overall length overall width Total mass	 mm mm mm kg	 State State State State	
7	Tank type		Breathing	
8	Tank sealing;		Bolted	
9	Under-base;		Flat	
10	Skids and Jacking lugs for concrete plinth mounting		40 mm diameter axle holes	
11	Details of jacking pads		State	
12	Lifting lags for cover for tank for core		 To provide To provide To provide	
13	Terminations		Cable box	
14	Position of bushings		11kV: Top, LV: Cable Box	

Item	Description		REREC'S REQUIREMENT	BIDDER'S RESPONSE
15	Medium-voltage bushings colour material creepage distance phase to earth clearance phase to phase clearance Low-voltage bushings material/colour creepage distance phase to earth clearance phase to phase clearance Terminal: stem & nuts or clamp	 mm mm mm mm mm mm	 Brown Porcelain 25 mm/kV Specify Specify Brown Porcelain 25 mm/kV Specify Specify Clamp pad	
16	Cooling method		ONAN	
17	Core type		Laminated stackings	
18	Core clamping		Specify	
19	HV Winding		Full coils of electrolytic copper	
20	LV Winding		Electrolytic copper coils or copper foils	
21	Primary voltage Secondary voltage Number of phases;	V V	415 11000 Three phase	
22	Rating of neutral terminal		As phase terminal	
23	Tap Changer		NLTC, □2X2.5% Tapping Range	
24	Vector symbol		YNd11	
25	Losses corrected to 75°C no-load losses full load cu losses full load totallosses Transformer efficiency at unity power factor, rated voltage and full load (75°C)	 W W W %	 Specify Specify Specify Specify	
26	Impedance voltage maximum tap nominal tap minimum tap	 % % %	 Specify Specify Specify	
27	Insulation level medium-voltage low-voltage	 kV kV	 38 3	

Item	Description		REREC'S REQUIREMENT	BIDDER'S RESPONSE
28	BIL Tests (IEC 60076)		To be done at 38kV during factory visit (clause 5.3)	
29	Temperature Rise Test (IEC 60076)		To be done during factory visit (clause 5.3)	
30	Routine Tests (IEC 60076)		To be done during factory visit (clause 5.3)	
31	Transformer Leakage Test		To be done during factory visit (clause 5.3)	
32	Tank Thickness		Specify (Not less than 6.40mm)	
33	Transformer Bachholz Relay fitting		To provide	
34	Transformer pressure relief valve		To provide	
35	Temperature gauge		To provide	
36	LV termination Box		To provide	

PART V

Specification for 11 KV Circuit Breakers (Triple Pole)

FOREWORD

The specification is intended for use in procurement of the Circuit Breaker from manufacturers. The specification is based on IEC 56 and BS5311 and is subject to revision as and when required.

It shall be the responsibility of the manufacturer to ensure adequacy of the design and good engineering Practices in the manufacture of the 11 KV Circuit Breaker. The manufacturer shall submit information, which confirms satisfactory service experience with products, which fall within the scope of this specification.

1. SCOPE

This specification covers design, engineering, manufacture, testing, inspection before dispatch packing, forwarding, transportation, insurance during transit, delivery to site of 11 KV Outdoor Vacuum Circuit Breakers together with controls, auxiliary equipment and support structure for use in 0.415/11KV substation, off grid Solar plant.

The specification is for triple pole operated circuit breaker.

2. REFERENCES

The following documents were referred to during the preparation of this specification; in caseof conflict, the requirements of this specification shall take precedence.

IEC 60056: High Voltage alternating current circuit breakers.

IEC 2300: Designed and manufacturing of VCB.

IEC 144: Degree of protection of enclosures for low voltage switch gear and control gear.

BS 5311: Specification for A.C. circuit breakers of rated voltage above 1 kV.

This particular standard or recommendation in this specification does not relieve the Supplier of the necessity of providing the goods and services complying with other relevant standards or recommendation

3. TERMS AND DEFINITIONS

For the purpose of this specification the definitions given in the references mentioned in clause2 shall apply.

4. REQUIREMENTS

4.1. SERVICE CONDITIONS

4.1.1 Operating conditions

4.1.1.1 The circuit breaker shall be suitable for continuous outdoor operation in tropical areas with the following atmospheric characteristics:

(a) Altitude: 2200m above means sea level

(b) Pollution: Heavy saline atmosphere

(c) Humidity: Up to 90%

(d) Ambient temperatures of +30^{o} C average, (+45^{o} C Max. and -1^{o} C Min.)

(e) Isokeramic level: Up to 180 thunderstorm days.

4.1.2 The circuit breaker shall be connected to an overhead system which is generally unearthed (without aerial earth wire).

4.1.3 The circuit breakers shall be suitable for 3 phase 50Hz solidly grounded neutral system and shall have normal current carrying capacity and symmetrical short circuit current breaking capability as mentioned hereunder.

4.2 CONSTRUCTION

4.2.1 The circuit breakers shall be structure mounted open type with vacuum as interrupting media incorporating interrupter. There shall be a common drive mechanism actuating the interrupter, which must work in synchronism. These breaker shall be provided with suitable local control while provision shall be made for remote control.

4.2.2 The circuit breakers shall be three pole operated, out-door type, Vacuum insulated and shall comply with the requirements of IEC 60056 and/or BS 5311.

4.2.3 The circuit breakers shall be fitted with spring mechanism. The inherent design of these circuit breakers shall be such that they shall satisfactorily perform all test duties and interrupt out-of- phase current and produce very low over voltage (<2.0p.u.) on all switching circuits, capacitive and inductive to IEC:56, IS:13118 and other associated standards mentioned in the clause of this specification.

4.2.4 All the three poles shall be interconnected by a suitable shaft, linked to the

operating mechanism so that poles are operated simultaneously with common gas pressure monitor.

4.2.5 All the three poles of circuit breaker shall be operated by local electrical from the mechanism in the housing and remote electrical from remote panel.

4.2.6 The mechanism box shall have a mechanical facility for manually operating the three poles.

4.2.7 Insulation creepage distance shall not be less than 25mm per kV of maximum operating voltage between phases.

4.3 OPERATING MECHNANISM

4.3.1 (a) The operating mechanism shall be suitable for mounting at the circuit breaker supporting structure, and below the circuit breaker in a weather-proof, dust- proof, vermin-proof and well ventilated housing.

(b) The degree of protection shall be class IP 54 as per the requirement of IEC 144.

(c) The housing shall be provided with padlocking facility.

4.3.2 Operating mechanism shall be trip free during the entire closing sequence.

4.3.3 (a) Operating mechanism shall be provided with motor wound spring charging mechanism with provision for hand operated manual charging. Pressure actuated mechanism **shall not** be accepted.

(b) The Motor shall be universal with operating voltage of either 110 Volts d.c or110 Volts a.c.

4.3.4 A set of at least five normally closed and five normally open spare potential free contacts shall be provided for remote electrical indication as well as electrical interlocking and shall be wired to a terminal block in the housing.

4.3.5 A minimum of twenty (20) spare terminals shall be provided for connection to the current and voltage transformers.

(a) Sixteen (16) of these spare terminals shall be specifically used for current transformers and shall be capable of carrying 10Amps continuously and have facilities for shorting terminals.

(b) Four (4) of these terminals shall be used for the voltage transformer and shall have facilities for isolation.

4.3.6 The circuit breaker shall be provided with Local/Remote selector switch. The selection of the local operation shall inhibit the operation of the circuit breaker from any remote source.

4.3.7 The circuit breaker shall be provided with a local switch for Open/Neutral/Close operation.

4.3.8 The breaker shall normally be operated by remote electrical control with electrical tripping by shunt trip coil. Provision shall be made for local electrical operation and mechanical operation.The following facilities shall be provided in the circuit breaker local control cabinet:

- LOCAL/ REMOTE selector switch of stay put type. The selection of 'local' operation shall inhibit the operation of the breaker from any remote source.
- ON/NEUTRAL/ OFF control switch or ON and OFF push buttons. The push buttons shall be momentary contract type with rear terminal connections. The close push button shall be of green colour and the open push button red colour.
- MECHANICAL EMERGENCY TRIP DEVICE: suitable for manual operation in the event of failure of electrical supplies. The device shall be accessible without opening any access doors and distinctly labelled. It shall be shrouded and protected against inadvertent operation.
- Means shall be provided for manual operation of these circuit breakers during failure of auxiliary power in addition to electrical operation.
- Means shall be provided to prevent the mechanism from responding to a close signal when the trip coil is energized or to reclosing from a sustained close signal either opening due to a trip signal or failure to hold in the closed position.
- The circuit breaker shall be able to perform 10,000 operating cycles at no load in accordance with IEC: 17A/474/CD for circuit breakers for auto reclosing duties.

4.3.9 Mechanically operated indication to show the status of the circuit breaker operations(open/close and springs charged/discharged) shall be provided.

4.3.10 A mechanically operated circuit breaker position indicator of non corroding material shall be provided in a location visible from the operating side of the breaker without the necessity to open the mechanism door. The word 'OFF' in white letter on green background shall be used to indicate that the breaker is in the opening position and the word 'ON' in white letters on a red

background to indicate that the breaker is in the closed position. The drive for the device shall be positive in both directions and provision shall be made for local and remote electrical indication.

4.3.11 Indication of spring charging condition shall be provided as mentioned in this specification. Mechanical counters to record the number of closing operations shall be provided for circuit breaker mechanism.

4.3.12 The circuit breaker shall be provided with suitable terminals for connecting 3"(outside diameter) tinned copper tubes.

4.3.13 The circuit breaker shall be provided with means to prevent contact pumping should the circuit be energized while tripping command is issued.

4.1.12 Mechanical interlock arrangement shall be provided on the mechanism such that it shall not be possible to withdraw the interlock with circuit breaker in closed position.

5 RATINGS

	Description	**Rating**
1	Nominal Voltage	11 kV
2	Highest Voltage	12 kV
3	Frequency	50 Hz
4	Normal Current	630 Amps
5	Rated short circuit Current	21KAmps
6	Duration of short circuit	3 Sec.
7	First pole to clear factor	1.5
8	Transient recovery voltage peak value	62 kV
9	Operating sequence	0-0.3 sec – CO – 3min – CO
10	Auxiliary D.C Voltage for closing &tripping coils	110 V d.c.
11	Motor charging supply	110 V d.c.
12	Auxiliary A.C. Voltage	415/240 V, 50 Hz
13	Impulse withstand voltage	75 kV peak
14	One minute power frequency withstandvoltage	28 kV r.m.s.
15	Creepage distance of insulator	350 mm
16	Minimum clearance between phases	250 mm
17	Minimum clearance to earth	300 mm

6 CONTROL AND RELAY PANEL

6.1 The bidder to design and Manufacture control and relay panel for remote operation of the outdoor 11KV circuit breaker, it will be used for control and monitoring of

Circuit breaker.

6.2 The control and relay panel shall be complete with all main and auxiliary relays, annunciationrelay,fuses,links,swiches,wiring,lebels,terminal blocks,bolts,illumination,cable glands etc.

6.3 The indoor control panel for outdoor VCB should be equipped with the following:

- IDMT Numerical relay
- Master trip relay
- Trip Circuit Supervision relay.
- Indication
- Voltmeter
- Ammeter
- Switches

7 DRAWING AND MANUALS

7.1 Two sets of operational manuals and drawings detailing dimensions, panel layout, wiring and schematic shall be provided.

8 PACKING

8.1 The circuit breaker and associated components shall be packed in a manner as to protect it from any damage in transportation and repeated handling.

8.2 Each assembly and package of items associated with the circuit breaker shall be suitably marked.

8.3 Where an item includes a number of components to form a complete assembly, all components shall be included in one composite package which shall be firmly strapped and bound together.

9 TESTS

9.1 The manufacturer shall be responsible for performing or for having performed all therequired tests specified in this specification. Tenderers shall

confirm the manufacturer's capabilities in this regard when submitting tenders. Any limitation shall be clearly specified.

9.2 Tender documents shall be accompanied by copies of Type test and Routine rest reports and certificates for similar rated equipment for the purpose of tender evaluation. Type test reports and certificates shall be certified by the National Standards and Testing Authority (NSTA) of the country of origin. Where a body other than NSTA is used to certify the type-test reports, a copy of the certificate of accreditation shall be attached. Current contact information of the testing and certification Authority shall be provided. Tenderers should note that this requirementis mandatory.

9.3 Upon completion of the manufacturing process, routine tests shall be carried out as per IEC 60056. In addition to these tests, Impulse and short circuit breaking tests shall be carried out on a sample of the circuit breakers and the results endorsed by the NSTA of the country of manufacture.

9.4 Routine test reports shall be completed for breaker and made available before the inspection by REREC representatives.

9.5 All circuit breakers shall be subjected to inspection by two REREC Engineers or her representative at place of manufacture and all routine tests on randomly picked breakers carried out in their presence. REREC representatives shall approve shipment of the equipment if they are satisfied that the requirements of the specification are fully met. The supplier shall quote separately for this inspection. The full cost of the visit, including air tickets shall however be borne by the supplier of the equipment.

9.6 A detailed list and contract addresses of previous customers shall be submitted with the tender. The manufacturer shall indicate a monthly and annual production capacity and experience in the production of the type and size of circuit breaker he is offering. List of workshop tools and equipment shall also be appended.

10 INFORMATION

10.1 Draft design and construction drawings shall be submitted to REREC before themanufacturing of breakers commence. REREC undertake to submit their comments or approval for the drawings within three weeks of receiving the

draft copies.

10.2 Sufficient relevant technical details and drawings shall be submitted for the purpose of Tender Evaluation. Tenders which do not meet this requirement shall be considered non-responsive.

10.3 Before manufacturing commences, REREC engineers or her Agents will need to inspectthe manufacturing facility at no extra cost to REA, excepting the cost of their transportation to the nearest major airport in the country. Such inspection shall not in any way prejudice the purchaser's rights and privileges throughout.

10.4 Manufacturers shall indicate any additional measure taken to mitigate electrical andmechanical stress resulting from system surges.

ANNEX D: TECHNICAL REQUIREMENTS FOR:

A. 11kV CIRCUIT BREAKER

Item	Particulars	RERE'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Service type	Outdoor	
4.	No of Poles	3	
5.	Interrupting Medium	Vacuum	
6.	Nominal Voltage	11 kV	
7.	Highest Voltage	12 kV	
8.	Frequency	50 Hz	
9.	Normal Current	630 Amps	
10.	Rated short circuit Current	21KAmps	
11.	Duration of short circuit	3 Sec.	
12.	First pole to clear factor	1.5	
13.	Transient recovery voltage peak value	62 kV	
14.	Operating sequence	0-0.3 sec – CO – 3min – CO	
15.	Auxiliary D.C Voltage for closing &tripping coils	110 V d.c.	
16.	Motor charging supply	110 V d.c.	
17.	Auxiliary A.C. Voltage	415/240 V, 50 Hz	
18.	Impulse withstand voltage	75 kV peak	
19.	One minute power frequency withstand voltage	28 kV r.m.s.	
20.	Creepage distance of insulator	350 mm	
21.	Minimum clearance between phases	250 mm	
22.	Minimum clearance to earth	300 mm	
23.	Auxiliary switch	At least 5No + 5NC	
24.	Degree of Protection	IP54	
25.	Applicable Standards	IEC62271-100,IS13118	
26.	Warrant	2 year	

B. NEUTRAL CURRENTTRANSFORMERS; RATIO 50-25/1, 0.2S CLASS

Item No.	Particulars	RERE'S Requirement	Bidder's Response
1.	Manufacturer's name & address	State	
2.	Model	State	
3.	Type.	Outdoor, Oil-Immersed live tank effectively earthed neutral Current transformers	
4.	Warranty	3 Years	
5.	Rated Voltage/Highest Voltage.	11KV/12KV	
6.	Frequency	50HZ	
7.	Rated primary Current.	50A and 25A	
8.	(i) Core 1	50-25A	
9.	(ii) Core 2	50-25A	
10.	Secondary Core details.		
11.	(a) Number of Cores.	2	
12.	(b) Rated secondary current.	1A	
13.	(i) Core 1	1A	
14.	(ii) Core 2	1A	
15.	(c) Rated output/Burden	5VA	
16.	(d) Class of accuracy	0.2S	
17.	(e) Accuracy limit factor.	<5	
18.	Turns Ratio.	50/1A and 25/1A	
19.	Short time thermal current & its duration	12.5 KA/ 1 Sec	
20.	i) Rated continuous thermal current. ii)Temperature rise over ambient.	1.2 times continuous 45 deg C, as per IS 2705	
21.	One minute power frequency dryand wet withstand voltage on primary.	38 KV (rms)	
22.	One minute power frequency withstand test voltage on secondary.	2KV	
23.	Total creepage distance of the bushing.	>300 mm (min)	
24.	Live part to ground clearance.	>125 mm (min)	

C. OUTDOOR CURRENT TRANSFORMER (CT) SPECIFIACATIONS

Item No.	Particulars	RERE'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Transformation ratio	50-25/1	
4.	Standard reference	IEC	
5.	Rated Voltage (KV)	11	
6.	Frequency (Hz)	50	
7.	Rated Short time current for 1 min (kA)	25	
8.	Creepage Distance	>370	
9.	Rated Continuous Thermal current (A)	1, 2xIn	
10.	Number of Secondary windings	2	
11.	**1st winding**		
12.	Rated primary current, In (A)	50A and 25A	
13.	Rated Secondary current, (A)	1	
14.	Accuracy class	0.5	
15.	**2nd winding**		
16.	Rated primary current, In (A)	50A and 25A	
17.	Rated Secondary current, (A)	1	
18.	Accuracy class	5P10	

D. OUTDOOR VOLTAGE TRANSFORMER (VT) SPECIFIACATIONS

Item No.	Particulars	RERE'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Transformation ratio	11000/110Vac	
4.	Standard reference	IEC	
5.	Rated Voltage (KV)	11	
6.	Frequency (Hz)	50	
7.	Thermal Burden, VA	450	
8.	Creepage Distance	>1000	
9.	Number of Secondary windings	2	
10.	Rated output, VA	50	
	1st winding		
11.	Rated primary voltage, KV	11	
12.	Rated Secondary Voltage, V	110	
13.	Accuracy class	0.5	
	2nd winding		
14.	Rated primary voltage, KV	11	
15.	Rated Secondary Voltage, V	110	
16.	Accuracy class	0.5	

E. 11KV SURGE DIVERTERS SPECIFICATIONS

Item No.	Particulars	RERE'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Standard Reference	IEC	
4.	Normal system voltage, KV	11	
5.	Highest system voltage, KV	12	
6.	System fault level, kA	20	
7.	Line Discharge Class	10	
8.	Lighting Impulse Residual voltage, KV	95	

F. ISOLATOR WITHOUT EARTH SWTCH

Item No.	Particulars	RERE'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Standard Reference	IEC	
4.	Rated Voltage, KV	12	
5.	Rated Frequency, HZ	50	
6.	Rated lighting impulse withstand voltage,1.2/50µS (KV)	95	
7.	Rated power frequency withstand voltage,Wet, 50HZ, 60secs (KV)	38	
8.	Minimum creepage distance of insulators,mm	320	
9.	Rated normal current, A	800	
10.	Rated short time withstand current for 3secs,Ka	25	

G. ISOLATOR WITH EARTH SWITCH

Item.	Particulars	RERE'S Requirement	Bidders Response
1.	Manufacturer	State	
2.	Model	State	
3.	Standard Reference	IEC	
4.	To be fitted with Earth Switch	To provide	
5.	Rated Voltage, KV	11	
6.	Rated Frequency, HZ	50	
7.	Rated lighting impulse withstand voltage,1.2/50µS (KV)	95	
8.	Rated power frequency withstand voltage,Wet, 50HZ, 60secs (KV)	38	
9.	Minimum creepage distance of insulators,mm	320	
10.	Rated normal current, A	800	
11.	Rated short time withstand current for 3secs,kA	25	

H. Rectifier- Battery Charger Technical Specification

Item No.	Particulars	RERE'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Warranty	State	
	Input Data		
4.	Input Voltage	240VAC+-10%	
5.	Inrush Current	<15In	
6.	Power factor	0.8	
7.	Frequency range	47-63Hz	
	Output Data		
8.	Output Voltage range	110-125VDC	
9.	Nominal Output voltage	110VDC	
10.	Static Regulation	1%	
11.	Voltage ripple 3-phase	(Disconnected battery) <0.7%	
	General data		
12.	Rectifier efficiency	83%-94%	
13.	Operating temperature range	0 to 40 degrees	
14.	Storage temperature	-20 to +70 degrees Celsius	
15.	Relative humidity	<95% non-condensing at 20 degrees Celcius	
16.	Operating altitude	1000m without system duration	
17.	Cooling	Natural or fan assisted	
18.	Noise at 1m in front of the unit	1dB	
19.	Protection	Protection against battery reversed polarity	
20.	Compliance	IEC 61000-6-4	

SECTION VII

1. **ESIA CONSULTANCY**

The key objective of this study is to conduct ESIA with a view to identify the critical environmental and social concerns in Dadajabula town solar PV minigrid, including the involved transmission line, and address them as an integral part of project design and obtain license from NEMA

The specific objective includes:

i) To assess the existing environment and social status in the study area and area of influence to identify threats and issues which have potential to adversely impact important environmental and social features of the project influence area.

ii) Carry out environmental and social analysis of solar PV minigrid area and potential activities envisaged under the project, including internal evacuation infrastructure from the solar PV to sub-station.

iii) Conduct labour influx risk assessment and the key focus would be to assess impacts on local communities associated with the temporary influx of labour that typically results from construction works.

iv) Analyse various options available in the site layout and arrangements for ancillary facilities, like water supply, with special reference to sources – whether local groundwater or water from distant sources would be used; in case of the latter situation, conveyance facilities will also be analyzed for impacts, drainage, access, etc. to minimize adverse impacts and enhance positive impacts, where feasible.

v) Identification of the project affected families; assessment of loss of livelihood / property resources for people living within the proposed site and in its immediate vicinity through primary surveys covering all project affected families/ consultations.

vi) Prepare a site-specific ESIA report by documenting environmental features of the project area, socio-economic and cultural status of community in and around the probable project site. This assessment should also include considerations of safety – both for the workers in the site and related facilities, as well as of nearby residents, especially those that live close to ancillary facilities like borrow areas.

vii) To identify the environmental and social issues associated with implementation of Solar PV minigrid and develop environmental codes of practices for common activities, like site preparation, installation of panels, management of waste, occupational health and safety, etc. and social exclusion list that need to be followed during various stages, such as planning, construction and operation & maintenance.

ESIA Methodology

As a chapter of the ESIA report, the consultant will describe the methods used for conducting the ESIA (scoping and bounding, impact analysis and public consultation process, etc.). The consultant will include a public participation plan to include stakeholder identification process, stakeholders identified, stages within the ESIA process where stakeholders have participated, and the different levels of participation used. Identification of impacts will include the identification of the important environmental components, and selection criteria used for identifying the significant impacts (positive and negative) whenever possible. Significant levels may be determined through the application of a scoring system if the consultant feels that such an approach is warranted. The consultant will employ environmental economic analysis where applicable, particularly to justify significant impacts to be mitigated.

Potential Impacts of the Proposed Project

Using the collected baseline data and the system or monitoring and evaluation, the consultant will take a systematic approach to identification, mitigation and evaluation of all impacts and will identify potential

changes which the proposed project may cause.

These would include, but not be limited to, changes in the following:

i) Physical environment: geological, topography, soils climate and meteorological; ground water and surface hydrology
ii) Biological environment: flora, fauna; rare or endangered significant natural sites, etc; species of commercial importance and species with potential to become a nuisance, vector or dangerous.
iii) Socio-cultural environment. (Include both present and projected where appropriate); population affected (number of subsistence systems), land use where appropriate and property (including houses, crops/plants and other properties etc); planned development activities; public health; cultural characteristics (including cultural property and heritage); and gender differentiation.
iv) Economic activities: Livelihood; employment; gender composition. Some examples of the specific activities are based on field surveys; identification of any species of special concerns, namely species with conservation status of endemic to the area including birds; commentary on conservation status of specific species; complication of a broad scale vegetation or habitant map of the area indicating the extent to which the proposed project can affect each vegetation or habitant type; description of current land use and complication of a broad land use map.
v) Employment opportunities.
vi) Safety issues, including (i) measures to assure safety of local residents in relation to project development activities (ii) ensure that the safety and health concerns of permanent, temporary and migrant workers are addressed and (iii) an HIV, AIDS program for workers and affected communities.
vii) Construction phase impacts.
viii) Waste management for the entire project, including the work camps and construction sites.
ix) Traffic density, safety and dust control.
x) Land acquisition and resettlement as per national and international guidelines.

The Consultant will analyze:

i) Positive and negative impacts.
ii) Direct and indirect impacts, short term and long term.
iii) Impacts that are avoidable/unavoidable; reversible/irreversible.
iv) Pre-construction actions to avoid or minimize negative impacts.
v) Construction and operational phase impacts.
vi) Cumulative impacts occurring as a consequence of other activities in the project area: existing activities, projects under construction or planned activities within a reasonable time frame.
vii) Impacts in critical and non-critical habitats.
viii) Identify the potential risk of the spread of HIV/AIDS and other sexually transmitted diseases during the construction period, and prepare a detailed plan for awareness and prevention including resource implications.
ix) Wherever possible, the consultant will describe impacts quantitatively. In terms of environmental costs and benefits, and assign economic values when feasible. Impact analysis should be divided between construction and operation impacts.

Environmental and Social Management Plan

i) An Environmental and Social Management Plan (ESMP) that addresses the following aspects should be prepared:
ii) Activities and impacts: Predicted adverse environmental and social impacts (and any uncertainties about their effects) for which mitigation is necessary should be identified and summarized. Effective measures to prevent or reduce significant negative impacts to acceptable levels during (i) construction and (ii) operation. Estimate the impacts and costs of those measures. Estimate the costs of any residual impacts. Another area of impacts that could contribute substantially are the cumulative effects of construction and operational phases of the Project. Most of these, if not all, can be avoided by following a set of best practices that the consultant will prepare.
iii) Description of implementation and monitoring program: Prepare a detailed arrangement (responsibilities) for implementing and for monitoring implementation of mitigation measures and the impacts of the project during construction and operation and maintenance. This will include a description of monitoring methodology, specific operations and features to be monitored, monitoring reporting relationships, and arrangements to ensure that monitoring is effective and leads to modifications where required to ensure minimal impact on the

environment. Include in the plan an estimate of costs and description of other inputs such as training and institutional strengthening to ensure effective monitoring. An indication of what performance indicators to be used is to be provided.

iv) Institutional strengthening and training: Identification of institutional needs to implement environmental recommendations:

REPORTING

i) The consultant will produce the following reports in draft and final versions:
ii) Environmental and Social Impact Assessment reports
iii) Environmental Management Plan
iv) Stakeholder Engagement Plan (SEP)/ Stakeholder Consultation Plan (SCP)
v) Land Acquisition & Compensation Plan (LACP)/Resettlement Action Plan
vi) Executive Summary of Environmental and Social Impact Assessment Report – Final Report

SECTION VIII: DRAWINGS AND TOOLS

1.0 DRAWINGS

NO DRAWINGS WILL BE PROVIDED BY THE CLIENT

2.0 Tools and Equipment's

The Bidder must demonstrate they will have access to the key equipment required to perform the contract.

No.	Equipment Type and Characteristics	Minimum Number required
1	Insulation resistance test set	One per lot
2	Earth resistance test set (electronic)	One per lot
3	Primary injection Kit	One per lot
4	Secondary Injection kit	One per lot
5	CMEs	One per lot
6	Digital Multimeter	One per lot
7	Digital clamp on meter	One per lot
8	Polarity tester/ earth leakage meter	One per lot
9	Battery Analyzer	One per lot
10	Tool box (Solar PV technician tool box).	One per Lot
11	Loop impedance tester	One per Lot
12	Insulation resistance tester	One per Lot
13	Cordless drill	One per Lot
14	Electric hand air blower	One per Lot
15	PPE and safety gear for the commissioning team	One per Lot
16	Variable Dummy Load Tester (For testing Full Load and Surge Capability of the system)	One per Lot

NB:

- Bidder to fill form EQU for each of the tools and Equipment listed above.
- Successful bidder to avail the Tools necessary for system testing during commissioning exercise.
- Successful bidder to generate Test protocol and Test Sheet necessary for system testing and successful commissioning for employers approval.(Test should not be limited to Earth resistance test, Insulation Resistance test, Impedance Test, Earth Leakage current test, Load capacity test, Battery state of health test etc.).

SECTION IX: BILLS OF QUANTITIES

The Bill of Quantities shall form part of the Contract Documents and is to be read in conjunction with the Instructions to Tenderers, Conditions of Contract Parts I and II, Specifications and Drawings.

The brief description of the items in the Bill of Quantities is purely for the purpose of identification, and in no way modifies or supersedes the detailed descriptions given in the conditions of Contract and Specifications for the full direction and description of work and materials.

The Quantities set forth in the Bill of Quantities are estimated and provisional, representing substantially the work to be carried out, and are given to provide a common basis for tendering and comparing of Tenders. There is no guarantee to the Contractor that he will be required to carry out all the quantities of work indicated under any one particular item or group of items in the Bill of Quantities. The basis of payment shall be the Contractor's rates and the quantities of work actually done in fulfillment of his obligation under the Contract.

The prices and rates inserted in the Bills of Quantities will be used for valuing work executed, and the Engineer will measure the whole of the works executed in accordance with this Contract.

A price or rate shall be entered in ink against every item in the Bill of Quantities with the exception of items, which already have provisional sums, affixed thereto. The Tenderers are reminded that no "nil" or "included" rates or "lump-sum" discounts will be accepted. The rates for various items should include discounts if any. Tenderers who fail to comply will be disqualified.

Provisional sums (including day works) in the Bill of Quantities shall be expended in whole or in part at the discretion of the Engineer in accordance with Sub-clause 52.4 and Clause 58 of part of the Conditions of Contract.

The price and rates entered in the Bill of Quantities shall, except insofar as it is otherwise provided under the Contract, include all Constructional plant to be used, labour, insurance, supervision, compliance, testing, materials, erection, maintenance or works, overheads and profits, taxes and duties together with all general risks, liabilities and obligations set out or implied in the Contract, transport, electricity and telephones, water, use and replenishment of all consumables, including those required under the Contract by the Engineer and his staff.

The Employer for any arithmetic errors in computation or summation will correct errors as follows:

Where there is a discrepancy between amount in words and figures, the amount in words will govern; and

Where there is a discrepancy between the unit rate and the total amount derived from the multiplication of the unit price and the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer, there is an obviously gross misplacement of the decimal point in the unit price, in which event the total amount as quoted will govern and the unit rate will be corrected.

If a Tenderer does not accept the correction of errors as outlined above, his Tender will be rejected.

The Bills of Quantities, unless otherwise expressly stated therein, shall be deemed to have been prepared in accordance with the principles of the latest edition of the Civil Engineering Standard Method of Measurement (CESMM).

"Authorized" "Directed" or "Approved" shall mean the authority, direction or approval of the Engineer.

Unless otherwise stated, all measurements shall be net taken on the finished work carried out in accordance with the details shown on the drawings or instructed, with no allowance for extra cuts or fills, waste or

additional thickness necessary to obtain the minimum finished thickness or dimensions required in this Contract. Any work performed in excess or the requirements of the plans and specifications will not be paid for, unless ordered in writing by the Engineer.

Hard material, in this Contract, shall be defined as the material which, in the opinion of the Engineer, require blasting, or the use of metal wedges and sledgehammers, or the use of compressed air drilling for their removal, and which cannot be extracted by ripping with a dozer tractor of at least 150 brake horse power (112 kilowatt) with a single, rear-mounted, hydraulic ripper. Boulders of more than $0.2m^3$ occurring in soft material shall be classified as hard material. Soft material shall be all material other than hard material.

1. CIVIL WORKS SPECIFICATIONS AND BILL OF QUANTITIES

Tender to provide layout plans and drawings for approval by employer before commencement of construction.

I. FENCE

CHAIN LINK FENCE					
ITEM	**DESCRIPTION**	**UNITS**	**QTY**	**RATE**	**AMOUNT**
1.1	**Preliminaries**				
1.1.1	Allow for updating of existing ESIA report and application of license including license fees	Sum	1		
1.2	**Compound fence**				
1.2.1	Provide all materials and install 2400mm high chain link fence above ground level consisting of 125x125x3000mm overall cranked precast concrete post (mix 1:2:4) to BS 1722 posts with 450mm long cranks at 3.0m centers reinforced with 4 No. 8mm diameter high tensile bars including 6mm diameter stirrups at 300 centers complete with 14 1/2 gauge x6 strand galvanized barbed wire fencing and mortised in mass concrete surround 1:3:6 including all excavations, formwork and disposals	LM	640		-
1.2.2	Extra over ditto; for 100x100mm precast concrete struts 2600mm long at every 50m interval	No.	26		-
1.3	**Minigrid Palisade Gate**				-
	Supply and fix double leaf steel palisade gate with a passengers gate including building in lugs and jamb to concrete columns	LM	4.8		
1.4	**Solar PV Yard fence**				

1.4.1	Provide all materials and install 2400mm high chain link fence above ground level consisting of 125x125x3000mm overall cranked precast concrete post (mix 1:2:4) to BS 1722 posts with 450mm long cranks at 3.0m centers reinforced with 4 No. 8mm diameter high tensile bars including 6mm diameter stirrups at 300 centers complete with 14 1/2 gauge x6 strand galvanized barbed wire fencing and mortised in mass concrete surround 1:3:6 including all excavations, formwork and disposals. Allow for 1.5 M pedestian Gate	LM	300		
1.4.5	Extra over ditto; for 100x100mm precast concrete struts 2600mm long at every 50m interval	No.	12		
1.4.6	**Solar PV yard Gate**				
	Supply and fix double leaf steel palisade gate with a passengers gate including building in lugs and jamb to concrete columns	LM	3		
4.5	**Substation fence**				
1.5.1	Provide all materials and install 2400mm high chain link fence above ground level consisting of 125x125x3000mm overall cranked precast concrete post (mix 1:2:4) to BS 1722 posts with 450mm long cranks at 3.0m centers reinforced with 4 No. 8mm diameter high tensile bars including 6mm diameter stirrups at 300 centers complete with 14 1/2 gauge x6 strand galvanized barbed wire fencing and mortised in mass concrete surround 1:3:6 including all excavations, formwork and disposals. Allow for 1.5 M pedestian Gate	LM	100		
1.5.2	Extra over ditto; for 100x100mm precast concrete struts 2600mm long at every corner	No.	4		
1.5.3	**Substation Gate**				
	Supply and fix double leaf steel palisade gate with a passengers gate including building in lugs and jamb to concrete columns	LM	3		
	TOTAL CARRIED TO GRAND SUMMARY				

II. Guard House

CONTAINER OFFICE, EQUIPMENT ROOM, SUBSTATION WORKS,STORM WATER, DRAINAGE, WATER SUPPLY, FIRE PROTECTION & ACCESS ROAD				
ITEM	**DESCRIPTION**	**UNITS**	**QTY**	**RATE**
4.1	Planters or the Like			
4.1.1	Excavate pits 1000X1000X500mm deep :part cart away, part back fill soil and manure mixture in 4.1 ratio	NO	40	
4.1.2	Provide plant well established assorted plants including watering and weeding until well established	NO	40	
4.2	Access road			
4.2.1	Excavate in soil to remove top vegetable soil to 250mm deep	CM	300	
4.2.2	Excavate to reduce levels in any type of soil 400mm deep	CM	400	
4.2.3	Back fill excavated areas with approved hardcore compacted in layers not exceeding 150mm thick to 100% maximum dry density. As base for the access road and parking	CM	300	
4.2.4	Lay murram as finish compacted in layers not exceeding 150mm thick to 100% maximum dry density. With -2.5% camber in the access road to allow for drainage	CM	200	
4.2.5	125 x 250 mm Splayed kerb to BS 340 including 125 x 100 mm channel on and including concrete Class 'E' foundation and 200mm haunching to back of a kerb including all necessary excavation, formwork and disposal.	LM	600	
4.3	**Container Yard**			
4.3.1	Excavate in soil to remove top vegetable soil to 500mm deep	CM	100	
4.3.2	Back fill excavated areas with approved hardcore compacted in layers not exceeding 150mm thick to 100% maximum dry density. As base for the access road and parking	CM	100	
4.3.3	Supply, Deliver and spread 3/4 Ballast under and around the containers (100mm Thick)	CM	60	
4.4	**Water Supply**			
4.4.1	Supply and installation of one ground mounted 10,000 litres PVC water tank including construction of its base	No.	1	

4.4.2	Supply and installation of one ground mounted 5,000 litres PVC water tank including construction of its base for storage of rain water harvested	No.	1	
4.4.3	Allow for water reticulation from the nearest water source to the site storage tank.	LM	400	
4.4.4	Allow for water reticulation from the storage tank to solar yard area and outside the office, Including installation of 2 taps.	LM	30	
4.5	Office Container			
4.5.1	Supply, deliver and install 20ft container on site and allow for modification of the container to an office with box profile gauge 28 IT5 roof and installation of gutters and down pipe for rain water harvesting, casting 400mm wide strip foundations atleast 500mm above the original ground level including steps for accessing the container (to engineers Approval).	No.	1	
4.5.2	Supply, deliver and install two 40ft container on site and allow for modification of the containers to an equipment room with box profile gauge 28 IT5 roof and installation of gutters and down pipe for rain water harvesting, casting 400mm wide strip foundations atleast 500mm above the original ground level including steps for accessing the containers (to engineers Approval).	No.	2	
4.5.3	Supply, Deliver and spread 3/4 Ballast under and around the containers (100mm thick)	CM	14	
4.5.4	Supply and fix air conditioners in the equipment rooms and office container complete with all fixing accesories to control room temperartures from approved suppliers	No.	5	
4.6	Furniture			
4.6.1	One office Table	No.	2	
4.6.2	Chairs	No.	4	
4.6.3	Storage Cabinet (Metal Drawers) Control house	No.	1	
4.7	Allow for design and construction of stone pitched storm water drainage for the entire station inluding culverts to engineers approval	Sum	1	
4.8	FIRE EXTINGUISHERS			

4.8.1	Supply and fix controlled discharge 9Kg carbon dioxide gas fire extinguisher manufactured to BS EN 3-9:2006, Bs 7863:2009, BS 5306-4:2001 and the cylinder manufactured to BS 5045 complete with the following: Charge and fixing bracket, pictorial instructions, colour code, servicable on site, discharge horn and hose, Brass hot stamping, Operating valve, local Fire Bridge approval.	No	1	
4.8.2	Ditto but DRY powder fire extinguishers	No	4	
5	SUBSTATION WORKS			
5.1	Supply of Transformer and any other equipment Plinth including laying of ballast at the substation at least 100mm as per approved Design of Plant	SUM	1	
5.2	Cable trenches			
5.2.1	provide cable trenches (600x500) length aprox. 100m at various Positions including HATARI slabs as per the approved layout	M	100	
	TOTAL CARRIED TO GRAND SUMMARY			

III. **2 DOOR VIP LATRINE**

ITEM	DESCRIPTION	UNITS	QTY	RATE
3.1	**Excavation and Earthworks**			
3.1.1	Clear site of all vegetation and small trees and dispose off Bulk excavations	SM	10	
3.1.2	Excavation of a latrine pit not less than 5meters deep Planking and strutting	CM	32	

ITEM	DESCRIPTION	UNITS	QTY	RATE
3.1.3	Allow for Planking and strutting to sides of excavated pits: including removal of fallen materials Water disposal	ITEM	1	
3.1.4	Allow for keeping all excavations from all types of water including rain and spring water by pumping or through any method	ITEM	1	
3.2	**Concrete Works**			
3.2.1	Supplying and placing of Grade 20 concrete as specified on 100mm thick beds	CM	0.5	
3.2.2	Supplying and placing of Grade 25 concrete as specified in strip footings	CM	1.1	
3.2.3	Ditto: suspended slabs: 150mm thick with a slab. Formwork	CM	1.5	
3.2.4	Formwork as specified to vertical sides of strip footing	SM	2	
3.2.5	Ditto: soffites of suspended slabs	SM	5	
3.2.6	Ditto: edges of floor beds	SM	3	
3.2.7	Boxing Formwork to form opening size 450 x 450mm for manhole	NO	2	
3.2.8	Ditto: opening in slab size 200 x 300mm	NO	2	
3.2.9	Ditto: opening in slab size 110mm dia Reinforcement: (All provisional)	NO	2	
3.2.10	Y12 high yield reinforcement bars with 6mm dia links at 200mm c/c.	KG	145	
3.2.11	Lintel size 200 x 150 mm in cross section: including 4No. Y10 bars and R 6 links at 200mm centers complete with all formwork: as per Drawing.	LM	10	
3.3	**Masonry Works**			
3.3.1	Up to DPC level-Substructure (Lining) 200 mm Thick solid block walls: bedded and jointed in cement and sand (1:4) mortar to lining. Reinforced with oop iron wall ties at every alternate course	SM	52	
	Concrete block work			
3.3.2	200mm thick walls in blocks in cement sand (1:3) mortar: reinforced with hoop iron wall ties at every alternate course Damp proof course	SM	31	
3.3.3	Horizontal damp proof course: bituminous: laid horizontally on screed 20 mm thick (1:3) screed beds to receive block walls.	LM	10	
	Roof structures			
3.3.4	Supply & fix seasoned timber (cypress) for roof trusses(100 x50mm) and purlins (75 x50mm) complete with all the required paint works and all necessary supports	ITEM	1	
3.4	**Roof Covering**			

ITEM	DESCRIPTION	UNITS	QTY	RATE
3.4.1	Supplying & fixing of gauge 28 pre-painted IT5 box profiled roofing sheets (0.32mm) of approved colour Nailed to 75x50 timber purlins (measured separately) :	SM	6	
	Valance / Barge Board			
3.4.2	25x225mm high timber valance board / barge board Nailed to 75x50 timber purlins: all complete with approved wood preservative as specified and as per	LM	10	
3.5.1	**Doors**			
	Steel Door: to fit structural opening size 900mm wide x 2100mm high overall, comprising of 50 x 50x4mm Angle iron door frame: including all iron mongery and hardware: fixed to concrete or block work: complete with all required painting and decoration	NO	2	
3.5.2	**Manhole cover**			
	Supply and install 450 x 450 mm mild steel man hole cover	NO	1	
3.6	**Ventilation**			
	Vent pipes			
	Supply and install 2 (two) vent pipes- 110mm dia and at least 300mm above the highest point of the roof	NO	2	
3.7	**Finishes**			
	Wall Finishes			
3.7.1	15mm thick wood float finished render 1:4 below window sill	SM	1	
3.7.2	Ditto to lintel and walls	SM	0.5	
3.7.3	Recessed horizontal key pointing to brick walls	SM	21	
3.7.4	15mm thick two coat lime plaster to walls Floor finishes	SM	21	
3.7.5	40 mm thick coloured cement sand (1:4) screed finished smooth including hardener additive	SM	6	
3.7.6	Ditto but 150x10mm skirting	SM	5	
3.8	**Painting**			
3.8.1	Painting and decoration Preparing and apply three coats plastic silk emulsion paint to: Plastered walls internally	SM	33	
3.8.2	Prepare and apply three coat matt enamel paint to: General surfaces of metal doors	SM	8	
	TOTAL CARRIED TO GRAND SUMMARY			

IV. CONTAINER OFFICE, DRAINAGE, WATER SUPPLY & ACCESS ROAD

CONTAINER OFFICE, EQUIPMENT ROOM, SUBSTATION WORKS,STORM WATER, DRAINAGE, WATER SUPPLY, FIRE PROTECTION & ACCESS ROAD				
ITEM	**DESCRIPTION**	**UNITS**	**QTY**	**RATE**

4.1	**Planters or the Like**			
4.1.1	Excavate pits 1000X1000X500mm deep :part cart away, part back fill soil and manure mixture in 4.1 ratio	NO	40	
4.1.2	Provide plant well established assorted plants including watering and weeding until well established	NO	40	
4.2	**Access road**			
4.2.1	Excavate in soil to remove top vegetable soil to 250mm deep	CM	300	
4.2.2	Excavate to reduce levels in any type of soil 400mm deep	CM	400	
4.2.3	Back fill excavated areas with approved hardcore compacted in layers not exceeding 150mm thick to 100% maximum dry density. As base for the access road and parking	CM	300	
4.2.4	Lay murram as finish compacted in layers not exceeding 150mm thick to 100% maximum dry density. With -2.5% camber in the access road to allow for drainage	CM	200	
4.2.5	125 x 250 mm Splayed kerb to BS 340 including 125 x 100 mm channel on and including concrete Class 'E' foundation and 200mm haunching to back of a kerb including all necessary excavation, formwork and disposal.	LM	600	
4.3	**Container Yard**			
4.3.1	Excavate in soil to remove top vegetable soil to 500mm deep	CM	100	
4.3.2	Back fill excavated areas with approved hardcore compacted in layers not exceeding 150mm thick to 100% maximum dry density. As base for the access road and parking	CM	100	
4.3.3	Supply, Deliver and spread 3/4 Ballast under and around the containers (100mm Thick)	CM	60	
4.4	**Water Supply**			
4.4.1	Supply and installation of one ground mounted 10,000 litres PVC water tank including construction of its base	No.	1	
4.4.2	Supply and installation of one ground mounted 5,000 litres PVC water tank including construction of its base for storage of rain water harvested	No.	1	
4.4.3	Allow for water reticulation from the nearest water source to the site storage tank.	LM	400	

4.4.4	Allow for water reticulation from the storage tank to solar yard area and outside the office, Including installation of 2 taps.	LM	30	
4.5	**Office Container**			
4.5.1	Supply, deliver and install 20ft container on site and allow for modification of the container to an office with cladding on all sides, box profile gauge 28 IT5 roof and installation of gutters and down pipe for rain water harvesting, casting 400mm wide strip foundations at least 500mm above the original ground level including steps for accessing the container (to engineers Approval).	No.	1	
4.5.2	Supply, deliver and install two 40ft container on site and allow for modification of the containers to an equipment room with, cladding on all sides, box profile gauge 28 IT5 roof and installation of gutters and down pipe for rain water harvesting, casting 400mm wide strip foundations at least 500mm above the original ground level including steps for accessing the containers (to engineers Approval).	No.	2	
4.5.3	Supply, Deliver and spread 3/4 Ballast under and around the containers (100mm thick)	CM	14	
4.5.4	Supply and fix air conditioners, in the equipment rooms and office container complete with all fixing accessories to control room temperatures from approved suppliers. (Minimum 24,000 BTU each)	No.	5	
4.6	**Furniture**			
4.6.1	Office Table	No.	2	
4.6.2	Chairs	No.	4	
4.6.3	Storage Cabinet (Metal Drawers) Control house	No.	1	
4.7	Allow for design and construction of stone pitched storm water drainage for the entire station inluding culverts to engineers approval	Sum	1	
4.8	**FIRE EXTINGUISHERS**			

4.8.1	Supply and fix controlled discharge 9Kg carbon dioxide gas fire extinguisher manufactured to BS EN 3-9:2006, Bs 7863:2009, BS 5306-4:2001 and the cylinder manufactured to BS 5045 complete with the following: Charge and fixing bracket, pictorial instructions, color code, serviceable on site, discharge horn and hose, Brass hot stamping, Operating valve, local Fire Bridge approval.	No	1	
4.8.2	Ditto but DRY powder fire extinguishers	No	4	
5	**SUBSTATION WORKS**			
5.1	Supply of Transformer and any other equipment Plinth including laying of ballast at the substation at least 100mm as per approved Design of Plant	SUM	1	
5.2	Cable trenches			
5.2.1	provide cable trenches (600x500) length aprox. 100m at various Positions including HATARI slabs as per the approved layout	M	100	
6	**GENERATOR HOUSING**			
6.1	5500mm long*4500mm wide Generator housing comprising of a stub masonry wall, mild steel grill comprising of 50*25*3mm RHS framings, vertical standards at 600mm centers, balusters size 20*20*3mm RHS at 150mm centers including welding and priming with red oxide, a double leaf mild steel door size 1500*3000mm and gauge 28 IT5 box profile roof.	SUM	1	
	TOTAL CARRIED TO GRAND SUMMARY			

GRAND SUMMARY FOR CIVIL

ITEM	DESCRIPTION	AMOUNT (KSH)
1	Chain Link Fence	
2	Guard House	
3	2 door pit latrine	
4	Container Office, Equipment Room, Substation Works, Storm Water, Drainage, Water Supply, Fire Protection & Access Road	
SUB TOTAL		
ADD 16% VAT		
SUBTOTAL		
GRAND TOTAL for Civil works (Item 1)		

2. BILL OF QUANTITIES AND PRICE SCHEDULE FOR STEP UP SUBSTATION

Item	Description	Unit	Qty	Unit Price	Total Price
	CURRENCY:				
1	Control Panels (Set with 1 Incomer and 1 Feeder) as per the requirement.	Set	1		
2	Energy Meter (Tariff type, 415V three phase meter) For Feeder	No.	1		
3	Cabling and Earthing for the step-uptransformer and the outdoor equipment. The Transformer will be approximately 35 meters from the control room. (Cable size 240mm sq) and associated cable tray or trenches. Control Panels will be placed inside the inverter room. The bidder will provide all control and power cables for all equipment's	No.	1		
4	Step-up transformer 315 KVA, 0.415/11 KV Step-up TX, fitted with Buchholz relay, and pressure relief valve (See specs)	No.	1		
5	11 KV Circuit Breaker (Triple Pole) complete with indoor Control and Protective relay panel and its accessories	No.	1		

6	Outdoor Neutral current transformer (NCT) as per the requirement	No.	1		
7	11Kv Outdoor Current Transformers (CT) as per the requirement	No.	3		
8	11Kv Outdoor Voltage Transformers (VT) as per the requirement	No.	3		
9	11kv Lighting Arrester (LA)/ Surge Diverters	No.	3		
10	11Kv Isolator without Earth Switch (DS)	Set	1		
11	11Kv Isolator with Earth Switch (DSE)	Set	1		
12	Mounting Structures for CT, VT, LA, DS and DSE	Set	1		
13	110VDC battery Bank supply	Set	1		
14	110VDC, 100AH Battery Charger	Set	1		
15	Laptop computer fully loaded with the relays software initially stated in the specs.	Lot	1		
	SUB-TOTAL				
	ADD 16% VAT				
	TOTAL COST				

3. 150 KWp SOLAR PV SYSTEM

Item	Description	Unit	Qty	Unit Price	Total
1.	Supply of Solar PV modules with junction box , Bypass Diodes, cable and MC4 connecter for inter connection with other module along with galvanized steel nuts & bolts for fixing up with module mounting structure as per the requirement & technical specification	KWp	150		
2.	Supply of hot dip galvanized MS steel/Aluminum Anodized made module-mounting structures(MMS) for above Modules of 150KWp capacity for holding modules including all necessary nuts and bolts as well as necessary clamps, foundations bolts etc as per requirements and technical specifications and duly approved design by REREC	Lot	1		
3.	Supply of 600/1000v DC Distribution Board for Power distribution /Accumulation at DC side with MCBS/MCCBS protection system/Surge protection System	Lot	1		

Item	Description	Unit	Qty	Unit Price	Total
4.	Supply, and installation of Minimum 60kW Hybrid Inverters, for conversion of Solar generation along with all protections and controlling arrangement for integration with BESS and DG along with AC Distribution Board for accumulation on AC side and equipment for remote monitoring facilities as per the requirement & technical specification.	No	3		
5.	Supply and install a 3-phase 50KVA power output diesel generator with 415 V at 50 Hz. It should include a highly corrosion resistant enclosure, control panel and monitoring, fuel tank and circuit breaker protection. The diesel generator shall be suitable for indoor or outdoor installation and shall perform accordingly with the battery inverter and the system design. The diesel generator shall work in a fully automatic manner with the above stated component	Set	1		
6.	Supply and installation of a battery bank (Lithium Iron Phosphate) to store at least 65% of the energy generated during the day complete with BMS and conforming to IEC62619 standard applicable to battery technology, Long life (10 years minimum) Complete in all respect and conforming to Requirement & technical specifications. All these enclosed in standard 40 feet steel container with ready to use air- conditioned battery room - detailed designs to be presented with the tender document	KWh	400		
7.	Cabling complete with all necessary accessories for connection of solar modules to battery bank, inverter, to intelligent controller/manager and to agreed connection point at the station through an energy meter and generator to the battery bank. This to also include cabling from the diesel generator for integration with power from the solar plant.	Lot	1		
8.	Supply of galvanized steel trays for cabling installation including all necessary nuts and bolts for Installation as per requirement of approved design as per Employer's requirements and Technical specification	Lot	1		
9.	Supply of Early Streamer Emissions (E S E) Terminals with fulfilment of Standards UNE21186 and NF c 17102 to protect the arrays yard area and buildings against lightning protection as per approved design along with clamps and masts of requisite height.	Lot	1		
10	Supply and install SCADA along all associated equipment, Data acquisition, data logger, Display Unit and industrial type PC with remote data monitoring.	Lot	1		

Item	Description	Unit	Qty	Unit Price	Total
11	Supply and install Weather monitoring system to check solar irradiation, wind speed and ambient temperature and integrate it with SCADA system.	Lot	1		
12	Supply and install Security equipment including IP night vision 4 no's Long vision Telescopic Closed Circuit Television (CCTV),IR motion sensors and 2 no's short vision camera CCTV cameras with Video display at the control room	Lot	1		
13	Laptop computer fully loaded with software for remote monitoring(to be use by REREC to monitor solar plant)	No	1		
	Sub-Total(Non Vatable Materials)				
	Sub-Total(Vatable Materials)				
	ADD 16% VAT (Only goods that attract VAT)				
	Total Cost For Solar Plant				

4. Tools and Critical spares

Item	Description	Unit	Qty	Unit Price	Total Price
	Tools				
1	Electrical Workshop 55+ Piece Inlay Tool Set with case	No	1		
2	Mechanical Workshop 450+ Pieces (Cr-V) Drawer Tool Trolley (with plastic/foam modular inlay tool control system) –robust, sturdy and lockable.	No	1		
3	Electric Hand Drill Chuck Capacity Of 1.5 – 13 Mm With Case	No	1		
4	Angle Grinder 4 ½ '' with case	No	1		
5	Electric Blower 800w	No	1		
6	Electrical Digital Multi Meter	No	2		
7	Electrical Clamp-On Meter	NO	2		
	Critical Spares				
1	Fan belt	No	2		
2	Air filter	No	4		
3	Thermostat	No	1		
4	Oil filter	No	10		
5	Fuel filter	No	10		
6	Engine Oil (litres)	No	210		
7	Engine additive (litres)	No	10		
8	Diodes set	No	I set		
9	AVR	No	1		
10	Electronic Fuel Control Units (Governor)	No	1		
	SUB-TOTAL				
	ADD 16% VAT (Only goods that attract VAT)				
Total For Tools And Critical Spares					

5. Services

Item	Description	Unit	Qty	Unit Price	Total Price
1.	Transport all to the station, installation, testing and commissioning of all equipment under supervision of REREC	Lot	1		
2.	Operation for 1 month inclusive of 1 month operator training.				
3.	12 Months maintenance plus training of maintenance staff.	Lot	1		
4.	Factory acceptance test for the distribution board and outdoor Switchgear for 2 REREC/KPLC engineers.	Lot	1		
5.	Factory acceptance test for the transformer for 2 REREC/KPLC engineers.	Lot	1		
6.	Factory acceptance test for the Solar Modules for 2 REREC/KPLC engineers	Lot	1		
7.	Factory acceptance test for the Inverters for 2 REREC/KPLC engineers	Lot	1		
8.	Factory acceptance test for the lithium ion batteries for 2 REREC/KPLC engineers	Lot	1		
	Sub Total				
	Add 16% VAT				
	Total for Services				

COST SUMMARY TO BE TRANSFERRED TO FORM OF TENDER AND ITEM TAB IN SRM SYSTEM

DADAJABULA SOLAR POWER MINI GRID					
ITEM	**DESCRIPTION**	**UNIT**	**QTY**	**RATE**	**AMOUNT**
1	Total Civil Works,	Sum	1		
2	Total Substation works	Sum	1		
3	Total 150kW Solar Power Generation plant and equipment	Sum	1		
4	Tools and Critical spares	Sum	1		
5	Total Services	Sum	1		
6	5% Contingency**(to be used with the approval of the Project Manager)**	Sum	1		
	GRAND TOTAL				

4. Notes for preparing Specifications

4.1 Specifications must be drafted to present a clear and precise statement of the required standards of materials, and workmanship for tenderers to respond realistically and competitively to the requirements of the Procuring Entity and ensure responsiveness of tenders. The Specifications should require that all materials, plant, and other supplies to be permanently incorporated in the Works be new, unused, of the most recent or current models, and incorporating all recent improvements in design and materials unless provided otherwise in the Contract. Where the Contractor is responsible for the design of any part of the permanent Works, the extent of his obligations must be stated.

4.2 Specifications from previous similar projects are useful and may not be necessary to re-write specifications for every Works Contract.

4.3 There are considerable advantages in standardizing **General Specifications** for repetitive Works in recognized public sectors, such as highways, urban housing, irrigation and water supply. The General Specifications should cover all classes of workmanship, materials and equipment commonly involved in constructions, although not necessarily to be used in a particular works contract. Deletions or addend a should then adapt the General Specifications to the particular Works.

4.4 Care must be taken in drafting Specifications to ensure they are not restrictive. In the Specifications of standards for materials, plant and workmanship, existing Kenya Standards should be used as much as possible, otherwise recognized international standards may also be used.

4.5 The Procuring Entity should decide whether technical solutions to specified parts of the Works are to be permitted. Alternatives are appropriate in cases where obvious (and potentially less costly) alternatives are possible to the technical solutions indicated in tender documents for certain elements of the Works, taking into consideration the comparative specialized advantage of potential tenderers.

4.6 The Procuring Entity should provide a description of the selected parts of the Works with appropriate reference to Drawings, Specifications, Bills of Quantities, and Design or Performance criteria, stating that the alternative solutions shall be at least structurally and functionally equivalent to the basic design parameters and Specifications.

4.7 Such alternative solutions shall be accompanied by all information necessary for a complete evaluation by the Procuring Entity, including drawings, design calculations, technical specifications, breakdown of prices, proposed construction methodology, and other relevant details. Technical alternatives permitted in this manner shall be considered by the Procuring Entity each on its own merits and independently of whether the tenderer has priced the item as described in the Procuring Entity's design included with the tender documents.

5. Drawings *(Tenderer to prepare drawings to demonstrate the intended works)*

5.1 No list of drawings is required, given the Tenderer will design the facility, unless these are provided only for guidance and or to demonstrate what is required so as not to leave any doubts of the requirements of the Procuring Entity.

5.2 Required Drawings should include only preliminary designs, layouts, perspectives, etc. detailed working drawings are not required at this stage.

6. Contractor's Documents

(reference Sub-Clause 5.2 of the General Conditions of Contract)

6.1.1 Note to the Procuring Entity: See the note on Sub- Clause 5.2 above in "Notes on preparing the Procuring Entity's Requirements." List the documents that are required to be submitted by the Contractor, for the Procuring Entity's evaluation and approval of the Tenderer' proposal e.g.

Description	**For review**	**For approval and evaluation of the Tenderer' proposal**
1. Design Schedule		
2. Preliminary Design		
3. Detailed Design		
4. Design for Construction		
5. Drainage Design		
6. Design Safety Report		
7. Construction Safety Report		
8. etc.		

6.2 The Procuring Entity should carefully weigh-in the documents that it requires for review and/or for approval and evaluation. Unreasonable proposal requirements may interfere in the Contractor's design process. Further, notwithstanding the last paragraph of Sub-Clause 5.2 of the General Conditions, it may be difficult, in case a dispute arises, for the Procuring Entity to refute all liability for an approved submission. The Procuring Entity shall specify any independent verification requirements for any of the Contractor's Documents. The Procuring Entity's Requirements shall also require the Contractor to provide, for approval and evaluation, for example the following Documents.

a. A plan describing value engineering (design change)

b. The strategy for gathering baseline information in time to inform design development;

c. a plan describing the measures to ensure geotechnical investigations or other advance works meet the requirements;

d. stakeholder engagement plan;

e. Construction management plan;

f. occupational, health and safety management plan;

7. Supplementary Information *(Procuring Entity to add if any).*

PART III - THE CONDITIONS OF CONTRACT AND CONTRACT FORMS

SECTION VIII - GENERAL CONDITIONS OF CONTRACT (GCC)

[Name of Procuring Entity] [Name of

Contract] [Project Manager's Name

and Address] **General Conditions of**

Contract

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1. GENERAL PROVISIONS

1.1 Definitions-

In this Contract, except where context otherwise requires, the following terms shall be interpreted as indicated below. Words indicating persons or parties include corporations and other legal entities, except where the context requires otherwise.

"Accepted Contract Amount" means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.

"Bill of Quantities" means the priced and completed Bill of Quantities forming part of the tender.

"Completion Date" means the date of completion of the Works as certified by the Project Manager.

"Contract" means the agreement entered into between the Procuring Entity and the Contractor as recorded in the Agreement Form and signed by the parties including all attachments and appendices thereto and all documents incorporated by reference therein to execute, complete, and maintain the Works.

"Contractor" means the person(s) named as contractor in the Form of Tender accepted by the Procuring Entity.

"Particular Conditions of Contract" means the pages completed by the Procuring Entity entitled Particular Conditions of Contract which constitute Part A of the Particular Conditions.

"Contractor's Documents" means the calculations, computer programs and other software, progress reports, drawings, manuals, models and other documents of a technical nature (if any) supplied by the Contractor under the Contract.

"Contractor's Equipment" means all apparatus, machinery, vehicles and other things required for the execution and completion of the Works and the remedying of any defects. However, Contractor's Equipment excludes Temporary Works, Procuring Entity's Equipment (if any), Plant, Materials and any other things intended to form or forming part of the Permanent Works.

"Contract Price" means the price defined in the contract and thereafter as adjusted in accordance with the provisions of the Contract.

"Contractor's Personnel" means the Contractor's Representative and all personnel whom the Contractor utilizes on Site, who may include the staff, labor and other employees of the Contractor and of each Subcontractor; and any other personnel assisting the Contractor in the execution of the Works.

"Contractor's Representative" means the person named by the Contractor in the Contractor appointed from time to time by the Contractor who acts on behalf of the Contractor.

"Cost" means expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.

"Day" means a calendar day and **"year"** means 365 days.

"Day works" means Work inputs subject to payment on a time basis for labor and the associated materials and plant.

"Defects Notification Period" means the period for notifying defects in the Works or a Section (as the case may be) under Sub-Clause11.1 [Completion of Outstanding Work and Remedying Defects], which extends over the days stated in the Particular Conditions of Contract.

"Defects Liability Period" means the period named in the Particular Conditions of Contract and calculated from the Completion Date, within which the contractor is liable for any defects that may develop in the handed over works.

"Defect" means any part of the Works not completed in accordance with the Contract.

"Defects Liability Certificate" means the certificate issued by Project Manager upon correction of defects by the Contractor.

"Drawings" means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Procuring Entity in accordance with the Contract.

"Procuring Entity" means the Procuring Entity named as Procuring Entity in the Particular Conditions of Contract.

"Procuring Entity's Personnel" means the Project Manager, the Project Manager, the assistants and all other staff, labor and other employees of the Project Manager and of the Procuring Entity; and any other personnel notified to the Contractor, by the Procuring Entity or the Project Manager, as Procuring Entity's Personnel.

"Procuring Entity's Equipment" means the apparatus, machinery and vehicles (if any) made available by the Procuring Entity for the use of the Contractor in the execution of the Works, as stated in the Specification; but does not include Plant which has not been taken over by the Procuring Entity.

"Project Manager" means the person appointed by the Procuring Entity to act as the Project Manager for the purposes of the Contract and named in the Particular Conditions of Contract, or other person appointed from time to time by the Procuring Entity and notified to the Contractor

"Final Payment Certificate" means the payment certificate issued under Sub-Clause 14.13 [Issue of Final Payment Certificate].

"Final Statement" means the statement defined in Sub-Clause 14.11 [Application for Final Payment

Certificate]. **"Force Majeure"** is defined in Clause19 [Force Majeure].

"Foreign Currency" means a currency of another country (not Kenya) in which part (or all) of the Contract Price is payable, but not the Local Currency.

"Goods" means Contractor's Equipment, Materials, Plant and Temporary Works, or any of them as appropriate.

"Interim Payment Certificate" means a payment certificate issued under Clause 14 [Contract Price and Payment], other than the Final Payment Certificate.

"Laws" means all national (or state) legislation, statutes, ordinances and other laws, and regulations and by-laws of any legally constituted public authority.

"Letter of Acceptance" means the letter of formal acceptance, signed by the Procuring Entity, including any annexed memoranda comprising agreements between and signed by both Parties.

"Local Currency" means the currency of Kenya.

"Materials" means things of all kinds (other than Plant) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.

"Notice of Dissatisfaction" means the notice given by either Party to the other under Sub-Clause 20.3 indicating its dissatisfaction and intention to commence arbitration.

"Party" means the Procuring Entity or the Contractor, as the context requires.

"Payment Certificate" means a payment certificate issued under Clause 14 [Contract Price and Payment].

"Performance Security" means the security (or securities, if any) under Sub-Clause 4.2 [Performance Security]. **"Performance Certificate"** means the certificate issued under Sub-Clause 11.9 [Performance Certificate]. **"Permanent Works"** means the permanent works to be executed by the Contractor under the Contract.

"Plant" means the apparatus, machinery and other equipment intended to form or forming part of the Permanent Works, including vehicles purchased for the Procuring Entity and relating to the construction or operation of the Works.

"Provisional Sum" means a sum (if any) which is specified in the Contract as a provisional sum, for the execution of any part of the Works or for the supply of Plant, Materials or services under Sub-Clause 13.5 [Provisional Sums].

"Project Manager" is the person named in the Appendix to Conditions of Contract (or any other competent person appointed by the Procuring Entity and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract and shall be an "Architect" or a "Quantity Surveyor" registered under the Architects and Quantity Surveyors Act Cap 525 or an "Project Manager" registered under Project Managers Registration Act Cap 530.

"Retention Money" means the accumulated retention moneys which the Procuring Entity retains under Sub-Clause 14.3 [Application for Interim Payment Certificates] and pays under Sub-Clause 14.9 [Payment of Retention Money].

"Schedules" means the document (s) entitled schedules, completed by the Contractor and submitted with the Form of Tender, as included in the Contract.

"Section" means a part of the Works specified in the Particular Conditions of Contract as a Section (if any)

"Site" means the places where the Permanent Works are to be executed, including storage and working areas, and to which Plant and Materials are to be delivered, and any other places as may be specified in the Contract as forming part of the Site.

"Site Investigation Reports" are those reports that may be included in the tendering documents which are factual and interpretative about the surface and subsurface conditions at the Site.

"Specification" means the document entitled specification, as included in the Contract, and any additions and modifications to the specification in accordance with the Contract. Such document specifies the Works.

"Statement" means a statement submitted by the Contractor as part of an application, under Clause 14 [Contract Price and Payment], for a payment certificate.

"Start Date" or "Commencement Date" is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with the Site possession date(s).

"Subcontractor" means any person named in the Contract as a subcontractor, or any person appointed as a subcontractor, for a part of the Works.

"Taking-Over Certificate" means a certificate issued under Clause 10 [Procuring Entity's Taking Over].

"Temporary Works" means all temporary works of every kind (other than Contractor's Equipment) required on Site for the execution and completion of the Permanent Works and the remedying of any defects.

"Tender" means the Form of Tender and all other documents which the Contractor submitted with the Form of Tender, as included in the Contract.

"Tests on Completion" means the tests which are specified in the Contractor agreed by both Parties or instructed as a Variation, and which are carried out under Clause 9 [Tests on Completion] before the Works or a Section (as the case maybe) are taken over by the Procuring Entity.

"Tests after Completion" means the tests (if any) which are specified in the Contract and which are carried out in accordance with the Specification after the Works or a Section (as the case may be) are taken over by the Procuring Entity.

"Time for Completion" means the time for completing the Works or a Section (as the case may be) as stated in the Particular Conditions of Contract (with any extension calculated from the Commencement Date.

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

"Unforeseeable" means not reasonably foreseeable by an experienced contractor by the Base Date.

"Variation" means any change to the Works, which is instructed or approved as a variation under Clause 13 [Variations and Adjustments].

"Works" means the items the Procuring Entity requires the Contractor to construct, install, and turnover to the Procuring Entity, as defined in the Appendix to Conditions of Contract. **"Works" may** also mean the Permanent Works and the Temporary Works, or either of them as appropriate.

1.2 Interpretation

In the Contract, except where the context requires otherwise:

a) Words indicating one gender include all genders;

b) words indicating the singular also include the plural and words indicating the plural also include the singular;

c) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing;

d) "written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record; and

e) The marginal words and other headings shall not be taken in to consideration in the interpretation of these Conditions.

1.3 Communications

Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

a) In writing and delivered by hand (against receipt), sent by mail or courier, or transmitted using any of the agreed systems of electronic transmission as stated in the Particular Conditions of Contract; and

b) delivered, sent or transmitted to the address for the recipient's communications as stated in the Particular Conditions of Contract. However:

   i) if the recipient gives notice of another address, communications shall thereafter be delivered accordingly; and

   ii) if the recipient has not stated otherwise when requesting an approval or consent, it may be sent to the address from which the request was issued.

Approvals, certificates, consents and determinations shall not be unreasonably withheld or delayed. When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Project Manager, a copy shall be sent to the Project Manager or the other Party, as the case may be.

1.4 Law and Language

1.4.1 The Contract shall be governed by the laws of **Kenya.**

1.4.2 The ruling language of the Contract shall be **English.**

1.5 Priority of Documents

1.5.1 The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:

a) The Contract Agreement,

b) The Letter of Acceptance,

c) The Form of Tender,

d) The Particular Conditions–Part A,

e) The Particular Conditions–Part B

f) These General Conditions of Contract

g) The Specifications

h) the Drawings, and

i) the Schedules and any other documents forming part of the Contract.

If an ambiguity or discrepancy is found in the documents, the Project Manager shall issue any necessary clarification or instruction.

1.5.1 Prior to commencing construction works, the Contractor shall prepare and submit to the Procuring Entity for approval drawings and specifications (including Bills of Quantities, (if need be) which will guide on the contract works to be carried out The Specifications shall be prepared taking the following Notes for preparing Specifications.

Specifications

1. Specifications must be drafted to present a clear and precise statement of the required standards of materials, and workmanship to the requirements of the Procuring Entity. The Specifications should require that all materials, plant, and other supplies to be permanently incorporated in the Works be new, unused, of the most recent or current models, and incorporating all recent improvements in design and materials unless provided otherwise in the Contract.

2. Specifications from previous similar projects are useful and may not be necessary to re-write specifications for every Works Contract.

3. There are considerable advantages in standardizing **General Specifications** for repetitive Works in recognized public sectors, such as highways, urban housing, irrigation and water supply. The General Specifications should cover all classes of workmanship, materials and equipment commonly involved in constructions, although not necessarily to be used in a particular works contract. Deletions or addenda should then adapt the General Specifications to the particular Works.

4. Care must be taken in drafting Specifications to ensure they are not restrictive. In the Specifications of standards for materials, plant and workmanship, existing Kenya Standards should be used as much as possible, otherwise recognized international standards may also be used.

5. The Procuring Entity should decide whether technical solutions to specified parts of the Works are to be permitted. Alternatives are appropriate in cases where obvious (and potentially less costly) alternatives are possible to the technical solutions indicated in tender documents for certain elements of the Works, taking into consideration the comparative specialized advantage of potential tenderers.

6. The Contractor should provide a description of the selected parts of the Works with appropriate reference to Drawings, Specifications, Bills of Quantities, and Design or Performance criteria, stating that the alternative solutions shall be at least structurally and functionally equivalent to the basic design parameters and Specifications.

7. Such alternative solutions shall be accompanied by all information necessary for a complete evaluation by the Procuring Entity, including drawings, design calculations, technical specifications, breakdown of prices, proposed construction methodology, and other relevant details. Technical alternatives permitted in this manner shall be considered by the Procuring Entity each on its own merits and independently of whether the contractor has priced the item as described in his design included with the contract documents.

1.6 Contract Agreement

The Parties shall enter into a Contract Agreement within 28 days after the Contractor receives the Letter of Acceptance, unless the Particular Conditions establish otherwise. The Contract Agreement shall be based upon the form annexed to the Particular Conditions. The costs of stamp duties and similar charges (if any) imposed by law in connection with entry into the Contract Agreement shall be borne by the Procuring Entity.

1.7 Assignment

Neither Party shall assign the whole or any part of the Contractor any benefit or interest in or under the Contract. However, either Party:

a) May as sign the whole or any part with the prior agreement of the other Party, at the sole discretion of such other Party, and

b) may, as security in favor of a bank or financial institution, assign its right to any moneys due, or to become due, under the Contract.

1.8 Care and Supply of Documents

1.8.1 The Specifications and Drawings shall be in the custody and care of the Procuring Entity. Unless otherwise stated in the Contract, two copies of the Contract and of each subsequent Drawings and Bills of Quantities shall be supplied to the Contractor, who may make or request further copies at the cost of the Contractor.

1.8.2 Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Procuring Entity. Unless otherwise stated in the Contract, the Contractor shall supply to the Project Manager two copies of each of the Contractor's Documents.

1.8.3 The Contractor shall keep, on the Site, a copy of the Contract, publications named in the Specification, the Contractor's Documents (if any), the Drawings and Variations and other communications given under the Contract.TheProcuringEntity'sPersonnelshallhavetherightofaccesstoallthesedocumentsatallreasonable times.

1.8.4 If a Party become saw are of an error or defect in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.

1.9 Delayed Instructions

1.9.1 TheContractorshallgivenoticetotheProjectManagerwhenevertheWorksarelikelytobedelayedordisrupted if any necessary instruction is not issued to the Contractor within a particular time, which shall be reasonable. The notice shall include details of the necessary instruction, details of why and by when it should be issued, and the nature and amount of the delay or disruption likely to be suffered if it is late.

1.9.2 If the Contractor suffers delay and/or incurs Cost as a result of a failure of the Project Manager to issue the notified instruction within a time which is reasonable and is specified in the notice with supporting details, the Contractor shall give a further notice to the Project Manager and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

1.9.3 After receiving this further notice, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

1.9.4 However, if and to the extent that the Project Manager's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.

1.10. Procuring Entity's Use of Contractor's Documents

1.10.1 As between the Parties, the Contractor shall retain the copyright and other intellectual property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor.

1.10.2 The Contractor shall be deemed (by signing the Contract) to give to the Procuring Entity a non-terminable transferable non-exclusive royalty-free license to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This license shall:

a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,

b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and

c) in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor.

1.10.3 The Contractor's Documents and other design documents made by (or on behalf of) the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the ProcuringEntityforpurposesotherthanthosepermittedunderSub-Clause1.10.2.

1.11. Contractor's Use of Procuring Entity's Documents

1.11.1 As between the Parties, the Procuring Entity shall retain the copyright and other intellectual property rights in the Specification, the Drawings and other documents made by (or on behalf of) the Procuring Entity. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the Contract. They shall not, without the Procuring Entity's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.

1.12 Confidential Details

1.12.1 The Contractor's and the Procuring Entity's Personnel shall disclose all such confidential and other information as may be reasonably required in order to verify compliance with the Contract and allow its proper implementation.

1.12.2 The Contractor's and the Procuring Entity's Personnel shall also treat the details of the Contract as private and confidential, except to the extent necessary to carry out their respective obligations under the Contract or to comply with applicable Laws. Each of them shall not publish or disclose any particulars of the Works prepared by the other Party without the previous agreement of the other Party. However, the Contractor shall be permitted to disclose any publicly available information, or information otherwise required to establish his qualifications to compete for other projects.

1.13 Compliance with Laws

1.131 The Contractor shall, in performing the Contract, comply with applicable Laws. Unless otherwise stated in the Particular Conditions:

a) The Procuring Entity shall have obtained (or shall obtain) the planning, zoning, building permit or similar permission for the Permanent Works, and any other permissions described in the Specifications as having been (or to be) obtained by the Procuring Entity; and the Procuring Entity shall indemnify and hold the Contractor harmless against and from the consequences of any failure to do so; and

b) the Contractor shall give all notices, pay all taxes, duties and fees, and obtain all permits, licenses and approvals, as required by the Laws in relation to the execution and completion of the Works and the remedying of any defects; and the Contractor shall indemnify and hold the Procuring Entity harmless against and from the consequences of any failure to do so, unless the Contractor is impeded to accomplish these actions and shows evidence of its diligence.

1.14 Joint and Several Liability

If the Contractor constitutes (under applicable Laws) a joint venture, consortium or other unincorporated grouping of two or more persons:

a) These persons shall be deemed to be jointly and severally liable to the Procuring Entity for the performance of the Contract;

b) these persons shall notify the Procuring Entity of their leader who shall have authority to bind the Contractor and each of these persons; and

c) the Contractor shall not alter its composition or legal status without the prior consent of the Procuring Entity.

1.15 Inspections and Audit by the Procuring Entity

Pursuant to paragraph 2.2 e. of Appendix B to the General Conditions, the Contractor shall permit and shall cause its subcontractors and sub-consultants to permit, the Public Procurement Regulatory Authority, Procuring Entity and/or persons appointed or designated by the Government of Kenya to inspect the Site and/or the accounts and records relating to the procurement process, selection and/or contract execution, and to have such accounts and records audited by auditors appointed by the Procuring Entity if requested by the Procuring Entity. The Contractor's and its Subcontractors' and sub-consultants' attention is drawn to Sub-Clause 15.6 (Fraud and Corruption) which provides, inter alia, that acts intended to materially impede the exercise of the Procuring Entity's inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of in eligibility pursuant to the Procuring Entity's prevailing sanctions procedures).

2. THE PROCURING ENTITY

2.1 Right of Access to the Site

2.2 The Procuring Entity shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) stated in the **Particular Conditions of Contract.** The right and possession may not be exclusive to the Contractor. If, under the Contract, the Procuring Entity is required to give (to the Contractor) possession of any foundation, structure, plant or means of access, the Procuring Entity shall do so in the time and manner stated in the Specification. However, the Procuring Entity may withhold any such right or possession until the Performance Security has been received.

2.3 If no such time is stated in the Particular Conditions of Contract, the Procuring Entity shall give the Contractor right of access to, and possession of, the Site within such times as required to enable the Contractor to proceed without disruption in accordance with the programme submitted under Sub-Clause 8.3 [Programme].

2.4 If the Contractor suffers delay and/or incurs Cost as a result of a failure by the Procuring Entity to give any such right or possession within such time, the Contractor shall give notice to the Project Manager and shall be entitled subject to Sub-Clause20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

2.5 After receiving this notice, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

2.6 However, if and to the extent that the Procuring Entity's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.

2.2. Permits, Licenses or Approvals

2.2.1 The Procuring Entity shall provide, at the request of the Contractor, such reasonable assistance as to allow the Contractor to obtain properly:

a) Copies of the Laws of Kenya which are relevant to the Contract but are not readily available, and

b) Any permits, licenses or approvals required by the Laws of Kenya:

i) Which the Contractor is required to obtain under Sub-Clause1.13[Compliance with Laws],

ii) For the delivery of Goods, including clearance through customs, and

iii) For the export of Contractor's Equipment when it is removed from the Site.

2.3 Procuring Entity's Personnel

2.31 The Procuring Entity shall be responsible for ensuring that the Procuring Entity's Personnel and the Procuring Entity's other contractors on the Site:

a) co-operate with the Contractor's efforts under Sub-Clause4.6 [Co-operation], and

b) take actions similar to those which the Contractor is required to take under sub-paragraphs (a), (b) and (c) of Sub-Clause 4.8[Safety Procedures]and under Sub-Clause 4.18 [Protection of the Environment].

2.4 Procuring Entity's Financial Arrangements

The Procuring Entity shall submit, before the Commencement Date and thereafter within 28days after receiving any request from the Contractor, reasonable evidence that financial arrangements have been made and are being maintained which will enable the Procuring Entity to pay the Contract Price punctually (as estimated at that time) in accordance with Clause 14 [Contract Price and Payment]. Before the Procuring Entity makes any material change to his financial arrangements, the Procuring Entity shall give notice to the Contractor with detailed particulars.

2.5 Procuring Entity's Claims

2.5.1 If the Procuring Entity considers himself to be entitled to any payment under any Clause of these Conditions or otherwise in connection with the Contract, and/or to any extension of the Defects Notification Period, the Procuring Entity or the Project Manager shall give notice and particulars to the Contractor. However, notice is not required for payments due under Sub-Clause 4.19 [Electricity, Water and Gas], under Sub-Clause 4.20 [Procuring Entity's Equipment and Free-Issue Materials], or for other services requested by the Contractor.

2.5.2 The notice shall be given as soon as practicable and no longer than 28 days after the Procuring Entity became aware, or should have become aware, of the event or circumstances giving rise to the claim. A notice relating to any extension of the Defects Notification Period shall be given before the expiry of such period.

2.5.3 The particulars shall specify the Clause or other basis of the claim, and shall include substantiation of the amount and/ or extension to which the Procuring Entity considers himself to be entitled in connection with the Contract. The Project Manager shall then proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the amount (if any) which the Procuring Entity is entitled to be paid by the Contractor, and/ or (ii) the extension (if any) of the Defects Notification Period in accordance with Sub-Clause 11.3 [Extension of Defects Notification Period].

2.5.4 This amount may be included as a deduction in the Contract Price and Payment Certificates. The Procuring Entity shall only be entitled to set off against or make any deduction from an amount certified in a Payment Certificate, or to otherwise claim against the Contractor, in accordance with this Sub-Clause.

3. The Project Manager

3.1 Project Manager's Duties and Authority

3.1.1 The Procuring Entity shall appoint the Project Manager who shall carry out the duties assigned to him in the Contract. The Project Manager's staff shall include suitably qualified Assistants and other professionals who are competent to carry out these duties. The Project Manager's Name and Address shall be provided in the **Particular Conditions of Contract.**

3.1.2 The Project Manager shall have no authority to amend the Contract.

3.1.3 The Project Manager may exercise the authority attributable to the Project Manager as specified in or necessarily to be implied from the Contract. If the Project Manager is required to obtain the approval of the Procuring Entity before exercising a specified authority, the requirements shall be as stated in the Particular Conditions. The Procuring Entity shall promptly inform the Contractor of any change to the authority attributed to the Project Manager.

3.1.4 However, whenever the Project Manager exercises a specified authority for which the Procuring Entity's approval is required, then (for the purposes of the Contract) the Procuring Entity shall be deemed to have given approval.

3.1.5 Except as otherwise stated in these Conditions:

a) Whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Project Manager shall be deemed to act for the Procuring Entity;

b) The Project Manager has no authority to relieve either Party of any duties, obligations or responsibilities under the Contract;

c) Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Project Manager (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances; and

d) any act by the Project Manager in response to a Contractor's request except as otherwise expressly specified shall be notified in writing to the Contractor within 28days of receipt.

3.1.6 The following provisions shall apply:

The Project Manager shall obtain the specific approval of the Procuring Entity before acting under the-following Sub-Clauses of these Conditions:

a) Sub-Clause 4.12: agreeing or determining an extension of time and / or additional cost.

b) Sub-Clause 13.1: instructing a Variation, except;

i) In an emergency situation as determined by the Project Manager, or

ii) if such a Variation would increase the Accepted Contract Amount by less than the percentage specified in the **Particular Conditions of Contract.**

c) Sub-Clause13.3: Approving a proposal for Variation submitted by the Contractor in accordance with Sub Clause13.1or13.2.

a) Sub-Clause13.4: Specifying the amount payable in each of the applicable currencies.

3.1.7 Notwithstanding the obligation, asset out above, to obtain approval, if, in the opinion of the Project Manager, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibility under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Project Manager, be necessary to abate or reduce the risk. The Contractor shall forthwith comply, despite the absence of approval of the Procuring Entity, with any such instruction of the Project Manager. The Project Manager shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause13 and shall notify the Contractor accordingly, with a copy to the Procuring Entity.

3.2 Delegation by the Project Manager

3.2.1 The Project Manager may from time to time assign duties and delegate authority to assistants, and may also revoke such assignment or delegation. These assistants may include a resident Project Manager, and/or independent inspectors appointed to inspect and/or test items of Plant and/or Materials. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both Parties. However, unless otherwise agreed by both Parties, the Project Manager shall not delegate the authority to determine any matter in accordance with Sub-Clause3.5 [Determinations].

3.3.2 Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorized to issue instructions to the Contractor to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Project Manager. However:

b) Any failure to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Project Manager to reject the work, Plant or Materials;

c) If the Contractor questions any determination or instruction of an assistant, the Contractor may refer the matter to the Project Manager, who shall promptly confirm, reverse or vary the determination or instruction.

3.3 Instructions of the Project Manager

3.3.1 The Project Manager may issue to the Contractor (at any time) instructions and additional or modified Drawings which may be necessary for the execution of the Works and the remedying of any defects, all in accordance with the Contract. The Contractor shall only take instructions from the Project Manager, or from an assistant to whom the appropriate authority has been delegated under this Clause. If an instruction constitutes a Variation, Clause13[Variations and Adjustments] shall apply.

3.3.2 The Contractor shall comply with the instructions given by the Project Manager or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing. If the Project Manager or a delegated assistant:

d) Gives an oral instruction,

e) receives a written confirmation of the instruction, from (or on behalf of) the Contractor, within two working days after giving the instruction, and

f) does not reply by issuing a written rejection and/ or instruction within two working days after receiving the confirmation, then the confirmation shall constitute the written instruction of the Project Manager or delegated assistant (as the case may be).

3.4 Replacement of the Project Manager

If the Procuring Entity intends to replace the Project Manager, the Procuring Entity shall, not less than 21 days before the intended date of replacement, give notice to the Contractor of the name, address and relevant experience of the intended replacement Project Manager. If the Contractor considers the intended replacement Project Manager to be unsuitable, he has the right to raise objection against him by notice to the Procuring Entity, with supporting particulars, and the Procuring Entity shall give full and fair consideration to this objection.

3.5 Determinations

3.51 Whenever these Conditions provide that the Project Manager shall proceed in accordance with this Sub-Clause 3.5 to agree or determine any matter, the Project Manager shall consult with each Party in an endeavor to r each agreement. If agreement is not achieved, the Project Manager shall make a fair determination in accordance with the Contract, taking due regard of all relevant circumstances.

3.5.2 The Project Manager shall give notice to both Parties of each agreement or determination, with supporting particulars, within 28 days from the receipt of the corresponding claim or request except when otherwise specified. Each Party shall give effect to each agreement or determination unless and until revised under Clause 20 [Claims, Disputes and Arbitration].

4. The Contractor

4.1 Contractor's General Obligations

4.1 The Contractor shall design (to the extent specified in the Contract), execute and complete the Works in accordance with the Contract and with the Project Manager's instructions, and shall remedy any defects in the Works.

4.1.1 The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

4.1.2 All equipment, material, and services to be incorporated in or required for the Works shall have their origin in any eligible source country.

4.1.3 The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction. Except to the extent specified in the Contract, the Contractor (I) shall be responsible for all Contractor's Documents, Temporary Works, and such design of each item of Plant and Materials as is required for the item to be in accordance with the Contract, and (ii) shall not otherwise be responsible for the design or specification of the Permanent Works.

4.1.4 The Contractor shall, whenever required by the Project Manager, submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works. No significant alteration to these arrangements and methods shall be made without this having previously been notified to the Project Manager.

4.1.5 If the Contract specifies that the Contractor shall design any part of the Permanent Works, then unless otherwise stated in the Particular Conditions:

a) The Contractor shall submit to the Project Manager the Contractor's Documents for this part in accordance with the procedures specified in the Contract;

b) These Contractor's Documents shall be in accordance with the Specification and Drawings, shall be written in the language for communications defined in Sub-Clause 1.4 [Law and Language], and shall include additional information required by the Project Manager to add to the Drawings for co-ordination of each Party's designs;

c) The Contractor shall be responsible for this part and it shall, when the Works are completed, befit for such purposes for which the part is intended as are specified in the Contract; and

d) prior to the commencement of the Tests on Completion, the Contractor shall submit to the Project Manager the "as-built" documents and, if applicable, operation and maintenance manuals in accordance with the Specification and in sufficient detail for the Procuring Entity to operate, maintain, dismantle, reassemble, adjust and repair this part of the Works. Such part shall not be considered to be completed for the purposes of taking-over under Sub-Clause10.1[Taking Over of the Works and Sections] until these documents and manuals have been submitted to the Project Manager.

4.2 Performance Security

4.2.1 The Contractor shall obtain (at his cost) a Performance Security for proper performance, in the amount stated in the **Particular Conditions of Contract** and denominated in the currency (I e s) of the Contract or in a freely convertible currency acceptable to the Procuring Entity. If an amount is not stated in the Particular Conditions of Contract, this Sub-Clause shall not apply.

4.2.2 The Contractor shall deliver the Performance Security to the Procuring Entity within 28days after receiving the Letter of Acceptance, and shall send a copy to the Project Manager. The Performance Security shall be issued by a reputable bank selected by the Contractor, and shall be in the form annexed to the Particular Conditions, as stipulated by the Procuring Entity in the Particular Conditions of Contract, or in another form approved by the Procuring Entity.

4.2.3 The Contractor shall ensure that the Performance Security is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects. If the terms of the Performance Security specify its expiry date, and the Contract or has not become entitled to receive the Performance Certificate by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the Performance Security until the Works have been completed and any defects have been remedied.

4.2.4 The Procuring Entity shall not make a claim under the Performance Security, except for amounts to which the Procuring Entity is entitled under the Contract.

4.2.5 The Procuring Entity shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Procuring Entity was not entitled to make the claim.

4.2.6 The Procuring Entity shall return the Performance Security to the Contractor within 14 days after receiving a copy of the Taking-Over Certificate.

4.2.7 Without limitation to the provisions of the rest of this Sub-Clause, whenever the Project Manager determines an addition or a reduction to the Contract Price as a result of a change in cost and/ or legislation, or as a result of a Variation, amounting to more than 25 percent of the portion of the Contract Price payable in a specific currency, the Contractor shall at the Project Manager's request promptly increase, or may decrease, as the case may be, the value of the Performance Security in that currency by an equal percentage.

4.3 Contractor's Representative

4.3.1 The Contractor shall appoint the Contractor's Representative and shall give him all authority necessary to act on the Contractor's behalf under the Contract. The Contractor's Representative's Name and Address shall be provided in the **Particular Conditions of Contract.**

4.3.2 Unless the Contractor's Representative **is named in the Contract**, the Contractor shall, prior to the Commencement Date, submit to the Project Manager for consent the name and particulars of the person the Contract or proposes to appoint as Contractor's Representative. If consent is withheld or subsequently revoked in terms of Sub-Clause 6.9 [Contractor's Personnel], or if the appointed person fails to act as Contractor's Representative, the Contractor shall similarly submit the name and particulars of another suitable person for such appointment.

4.3.3 The Contractor shall not, without the prior consent of the Project Manager, revoke the appointment of the Contractor's Representative or appoint a replacement.

4.3.4 The whole time of the Contractor's Representative shall be given to directing the Contractor's performance of the Contract. If the Contractor's Representative is to be temporarily absent from the Site during the execution of the Works, a suitable replacement person shall be appointed, subject to the Project Manager's prior consent, and the Project Manager shall be notified accordingly.

4.3.5 The Contractor's Representative shall, on behalf of the Contractor, receive instructions under Sub-Clause3.3 [Instructions of the Project Manager].

4.3.6 The Contractor's Representative may delegate any powers, functions and authority to any competent person, and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the Project Manager has received prior notice signed by the Contractor's Representative, naming the person and specifying the powers, functions and authority being delegated or revoked.

4.3.7 The Contractor's Representative shall be fluent in the language for communications defined in Sub-Clause1.4 [Law and Language]. If the Contractor's Representative's delegates are not fluent in the said language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Project Manager.

4.4 Subcontractors

4.4.1 The Contractor shall not subcontractor sublet the whole of the Works.

4.4.1 The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if they were the acts or defaults of the Contractor. Unless otherwise stated in the Particular Conditions:

e) The Contractor shall not be required to obtain consent to suppliers solely of Materials, or to a subcontract for which the Subcontractor is named in the Contract;

f) The prior consent of the Project Manager shall be obtained to other proposed Subcontractors;

g) the Contractor shall give the Project Manager not less than 28 days' notice of the intended date of the commencement of each Subcontractor's work, and of the commencement of such work on the Site; and

h) each subcontract shall include provisions which would entitle the Procuring Entity to require the subcontract to be assigned to the Procuring Entity under Sub-Clause 4.5 [Assignment of Benefit of Subcontract] (I for when applicable) or in the event of termination under Sub-Clause15.2 [Termination by Procuring Entity].

4.4.3 The Contractor shall ensure that the requirements imposed on the Contractor by Sub-Clause1.12 [Confidential Details] apply equally to each Subcontractor.

4.4.4 Where practicable, the Contractor shall give fair and reasonable opportunity for contractors from Kenya to be appointed as Subcontractors.

4.5 Assignment of Benefit of Subcontract

4.5.1 If a Subcontractor's obligations extend beyond the expiry date of the relevant Defects Notification Period and the Project Manager, prior to this date, instructs the Contractor to assign the benefit of such obligations to the

Procuring Entity, then the Contractor shall do so. Unless otherwise stated in the assignment, the Contractor shall have no liability to the Procuring Entity for the work carried out by the Subcontractor after the assignment takes effect.

4.6 Co-operation

4.6.1 The Contractor shall, as specified in the Contract or as instructed by the Project Manager, allow appropriate opportunities for carrying out work to:

i) The Procuring Entity's Personnel,

j) Any other contractors employed by the Procuring Entity, and

k) The personnel of any legally constituted public authorities, who may be employed in the execution on or near the Site of any work not included in the Contract.

4.6.2 Any such instruction shall constitute a Variation if and to the extent that it causes the Contractor to suffer delays and/or to incur Unforeseeable Cost. Services for these personnel and other contractors may include the use of Contractor's Equipment, Temporary Works or access arrangements which are the responsibility of the Contractor.

4.6.3 If, under the Contract, the Procuring Entity is required to give to the Contractor possession of any foundation, structure, plant or means of access in accordance with Contractor's Documents, the Contractor shall submit such documents to the Project Manager in the time and manner stated in the Specification.

4.7 Setting Out

4.7.1 The Contractor shall set out the Works in relation to original points, lines and levels of reference specified in the Contractor notified by the Project Manager. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the Works.

4.7.2 The Procuring Entity shall be responsible for any errors in these specified or notified items of reference, but the Contractor shall use reasonable efforts to verify their accuracy before they are used.

4.7.3 If the Contractor suffers delay and/or incurs Cost from executing work which was necessitated by an error in these items of reference, and an experienced contractor could not reasonably have discovered such error and avoided this delay and/or Cost, the Contractor shall give notice to the Project Manager and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

l) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

m) payment of any such Cost-plus profit, which shall be included in the Contract Price.

4.7.4 After receiving this notice, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent the error could not reasonably have been discovered, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this.

4.8 Safety Procedures

4.8.1 The Contractor shall:

a) Comply with all applicable safety regulations,

b) Take care for the safety of all persons entitled to be on the Site,

c) Use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons,

d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under Clause 10 [Procuring Entity's Taking Over], and

e) provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land.

4.9 Quality Assurance

4.9.1 The Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Project Manager shall be titled to audit any aspect of the system.

4.9.2 Details of all procedures and compliance documents shall be submitted to the Project Manager for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Project Manager, evidence of the prior approval by the Contractor himself shall be apparent on the document itself.

4.9.3 Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.

4.10 Site Data

4.10.1 The Procuring Entity shall have made available to the Contractor for his information, prior to the Base Date, all relevant data in the Procuring Entity's possession on sub-surface and hydrological conditions at the Site, including environmental aspects. The Procuring Entity shall similarly make available to the Contractor all such data which come into the Procuring Entity's possession after the Base Date. The Contractor shall be responsible for interpreting all such data.

4.10.1 To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works. To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation):

n) The form and nature of the Site, including sub-surface conditions,

o) The hydrological and climatic conditions,

p) The extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects,

q) The Laws, procedures and labor practices of Kenya, and

r) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.

4.11 Sufficiency of the Accepted Contract Amount

4.11.1 The Contractor shall be deemed to:

s) Have satisfied himself as to the correctness and sufficiency of the Accepted Contract Amount, and

t) have based the Accepted Contract Amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters referred to in Sub-Clause 4.10 [Site Data].

4.11.2 Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Contractor's obligations under the Contract (including those under Provisional Sums, if any) and all things necessary for the proper execution and completion of the Works and the remedying of any defects.

4.12 Unforeseeable Physical Conditions

4.12.1 In this Sub-Clause, “physical conditions” means natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including sub-surface and hydrological conditions but excluding climatic conditions.

4.12.2 If the Contractor encounters adverse physical conditions which he considers to have been Unforeseeable, the Contractor shall give notice to the Project Manager as soon as practicable.

4.12.3 This notice shall describe the physical conditions, so that they can be inspected by the Project Manager, and shall set out the reasons why the Contractor considers them to be Unforeseeable. The Contractor shall continue executing the Works, using such proper and reasonable measures as are appropriate for the physical

conditions, and shall comply with any instructions which the Project Manager may give. If an instruction constitutes a Variation, Clause13 [Variations and Adjustments] shall apply.

4.12.4 If and to the extent that the Contractor encounters physical conditions which are Unforeseeable, gives such a notice, and suffers delay and/or incurs Cost due to these conditions, the Contractor shall be titled subject to notice under Sub-Clause 20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b) payment of any such Cost, which shall be included in the Contract Price.

4.12.5 Upon receiving such notice and inspecting and/or investigating these physical conditions, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent these physical conditions were Unforeseeable, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.

4.12.6 However, before additional Cost is finally agreed or determined under sub-paragraph (ii), the Project Manager may also review whether other physical conditions in similar parts of the Works (if any) were more favorable than could reasonably have been foreseen when the Contractor submitted the Tender. If and to the extent that these more favorable conditions were encountered, the Project Manager may proceed in accordance with Sub- Clause 3.5 [Determinations] to agree or determine the reductions in Cost which were due to these conditions, which may be included (as deductions) in the Contract Price and Payment Certificates. However, the net effect of all adjustments under sub-paragraph (b) and all these reductions, for all the physical conditions encountered in similar parts of the Works, shall not result in a net reduction in the Contract Price.

4.12.7 The Project Manager shall take account of any evidence of the physical conditions foreseen by the Contractor when submitting the Tender, which shall be made available by the Contractor, but shall not be bound by the Contractor's interpretation of any such evidence.

4.13 Rights of Way and Facilities

Unless otherwise specified in the Contract the Procuring Entity shall provide effective access to and possession of the Site including special and/or temporary rights-of-way which are necessary for the Works. The Contractor shall obtain, at his risk and cost, any additional rights of way or facilities outside the Site which he may require for the purposes of the Works.

4.14 Avoidance of Interference

4.14.5 The Contractor shall not interfere unnecessarily or improperly with:

a) The convenience of the public, or

b) The access to and use and occupation of all roads and foot paths, irrespective of whether they are public or in the possession of the Procuring Entity or of others.

4.14.6 The Contractor shall indemnify and hold the Procuring Entity harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.

4.15 Access Route

4.15.5 The Contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the Site at Base Date. The Contractor shall use reasonable efforts to prevent any road or bridge from being damaged by the Contractor's traffic or by the Contractor's Personnel. These efforts shall include the proper use of appropriate vehicles and routes.

4.15.6 Except as otherwise stated in these Conditions:

a) The Contractor shall (as between the Parties) be responsible for any maintenance which may be required for his use of access routes;

b) the Contractor shall provide all necessary signs or directions along access routes, and shall obtain any permission which may be required from the relevant authorities for his use of routes, signs and directions;

c) the Procuring Entity shall not be responsible for any claims which may arise from the use or otherwise of any access route;

d) the Procuring Entity does not guarantee the suitability or availability of particular access routes; and

e) Costs due to non-suitability or non-availability, for the use required by the Contractor, of access routes shall be borne by the Contractor.

4.16 Transport of Goods

Unless otherwise stated in the Particular Conditions:

a) The Contractor shall give the Project Manager not less than 21 days' notice of the date on which any Plant or a major item of other Goods will be delivered to the Site;
b) the Contractor shall be responsible for packing, loading, transporting, receiving, unloading, storing and protecting all Goods and other things required for the Works; and
c) the Contractor shall indemnify and hold the Procuring Entity harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from the transport of Goods, and shall negotiate and pay all claims arising from their transport.

4.17 Contractor's Equipment

The Contractor shall be responsible for all Contractor's Equipment. When brought on to the Site, Contractor's Equipment shall be deemed to be exclusively intended for the execution of the Works. The Contractor shall not remove from the Site any major items of Contractor's Equipment without the consent of the Project Manager. However, consent shall not be required for vehicles transporting Goods or Contractor's Personnel off Site.

4.18 Protection of the Environment

4.18.5 The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.

4.18.6 The Contractor shall ensure that missions, surface discharges and effluent from the Contractor's activities shall not exceed the values stated in the Specification or prescribed by applicable Laws.

4.19 Electricity, Water and Gas

4.19.5 The Contractor shall, except as stated below, be responsible for the provision of all power, water and other services he may require for his construction activities and to the extent defined in the Specifications, for the tests.

4.19.6 The Contractor shall be entitled to use for the purposes of the Works such supplies of electricity, water, gas and other services as may be available on the Site and of which details and prices are given in the Specifications. The Contractor shall, at his risk and cost, provide any apparatus necessary for his use of these services and for measuring the quantities consumed.

4.19.7 The quantities consumed and the amounts due (at these prices) for such services shall be agreed or determined by the Project Manager in accordance with Sub-Clause 2.5 [Procuring Entity's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Procuring Entity.

4.20 Procuring Entity's Equipment and Free-Issue Materials

4.20.5 The Procuring Entity shall make the Procuring Entity's Equipment (if any) available for the use of the Contractor in the execution of the Works in accordance with the details, arrangements and prices stated in the Specification. Unless otherwise stated in the Specification:

a) The Procuring Entity shall be responsible for the Procuring Entity's Equipment, except that

b) the Contractor shall be responsible for each item of Procuring Entity's Equipment whilst any of the Contractor's Personnel is operating it, driving it, directing it or in possession or control of it.

4.20.6 The appropriate quantities and the amounts due (at such stated prices) for the use of Procuring Entity's Equipment shall be agreed or determined by the Project Manager in accordance with Sub-Clause 2.5 [Procuring Entity's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to

the Procuring Entity.

4.20.7 The Procuring Entity shall supply, free of charge, the "free-issue materials" (if any) in accordance with the details stated in the Specification. The Procuring Entity shall, at his risk and cost, provide these materials at the time and place specified in the Contract. The Contractor shall then visually inspect them, and shall promptly give notice to the Project Manager of any shortage, defect or default in these materials. Unless otherwise agreed by both Parties, the Procuring Entity shall immediately rectify the notified shortage, defect or default.

4.20.8 After this visual inspection, the free-issue materials shall come under the care, custody and control of the Contractor. The Contractor's obligations of inspection, care, custody and control shall not relieve the Procuring Entity of liability for any shortage, defect or default not apparent from a visual inspection.

4.21 Progress Reports

4.21.1 Unless otherwise stated in the Particular Conditions, monthly progress reports shall be prepared by the Contractor and submitted to the Project Manager in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates.

4.21.2 Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works. Each report shall include:

a) charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),

b) photographs showing the status of manufacture and of progress on the Site;

c) for the manufacture of each main item of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of:

i) commencement of manufacture,

ii) Contractor's inspections,

iii) tests, and

iv) shipment and arrival at the Site;

d) the details described in Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment];

e) copies of quality assurance documents, test results and certificates of Materials;

f) list of notices given under Sub-Clause 2.5 [Procuring Entity's Claims] and notices given under Sub-Clause 20.1[Contractor's Claims];

g) safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and

h) comparisons of actual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

4.22 Security of the Site

Unless otherwise stated in the Particular Conditions:

a) The Contractor shall be responsible for keeping un authorized persons off the Site, and

b) Authorized persons shall be limited to the Contractor's Personnel and the Procuring Entity's Personnel; and to any other personnel notified to the Contractor, by the Procuring Entity or the Project Manager, as authorized personnel of the Procuring Entity's other contractors on the Site.

4.23 Contractor's Operations on Site

4.23.1 The Contractor shall confine his operations to the Site, and to any additional areas which may be obtained by the Contractor and agreed by the Project Manager as additional working areas. The Contractor shall take all necessary precautions to keep Contractor's Equipment and Contractor's Personnel within the Site and these additional areas, and to keep them off adjacent land.

4.23.2 During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction, and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works which are no longer required.

4.23.2 Upon the issue of a Taking-Over Certificate, the Contractor shall clear away and remove, from that part of the Site and Works to which the Taking-Over Certificate refers, all Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works. The Contractor shall leave that part of the Site and the Works in a clean and safe condition. However, the Contractor may retain on Site, during the Defects Notification Period, such Goods as are required for the Contractor to fulfil obligations under the Contract.

4.24 Fossils

4.24.1 All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Site shall be placed under the care and authority of the Procuring Entity. The Contractor shall take reasonable precautions to prevent Contractor's Personnel or other persons from removing or damaging any of these findings.

4.24.2 The Contractor shall, upon discovery of any such finding, promptly give notice to the Project Manager, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs Cost from complying with the instructions, the Contractor shall give a further notice to the Project Manager and shall be entitled subject to Sub-Clause20.1[Contractor's Claims] to:

i) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

j) payment of any such Cost, which shall be included in the Contract Price.

After receiving this further notice, the Project Manager shall proceed in accordance with Sub-Clause3.5 [Determinations] to agree or determine these matters.

5 Nominated Subcontractors

5.1 Definition of "nominated Subcontractor"

In the Contract, "nominated Subcontractor" means a Subcontractor:

a) Who is stated in the Contract as being a nominated Subcontractor, or

b) whom the Project Manager, under Clause 13 [Variations and Adjustments], instructs the Contractor to employ as a Subcontractor subject to Sub-Clause 5.2 [Objection to Notification].

5.2 Objection to Nomination

The Contractor shall not be under any obligation to employ a nominated Subcontractor against whom the Contractor raises reasonable objection by notice to the Project Manager as soon as practicable, with supporting particulars. An objection shall be deemed reasonable if it arises from (among other things) any of the following matters, unless the Procuring Entity agrees in writing to indemnify the Contractor against and from the consequences of the matter:

a) there are reasons to believe that the Subcontractor does not have sufficient competence, resources or financial strength;

b) the nominated Subcontractor does not accept to indemnify the Contractor against and from any negligence or misuse of Goods by the nominated Subcontractor, his agents and employees; or

c) the nominated Subcontractor does not accept to enter into a subcontract which specifies that, for the subcontracted work (including design, if any), the nominated Subcontractor shall:

i) undertake to the Contractor such obligations and liabilities as will enable the Contractor to discharge his obligations and liabilities under the Contract;

ii) indemnify the Contractor against and from all obligations and liabilities arising under or in connection with the Contract and from the consequences of any failure by the Subcontractor to perform these obligations or to fulfil these liabilities, and

iii) be paid only if and when the Contractor has received from the Procuring Entity payments for sums due under the Subcontract referred to under Sub-Clause5.3[Payment to nominated Subcontractors].

5.3 Payments to nominated Subcontractors

The Contractor shall pay to the nominated Subcontractor the amounts shown on the nominated Subcontractor's invoices approved by the Contractor which the Project Manager certifies to be due in accordance with the subcontract. These amounts plus other charges shall be included in the Contract Price in accordance with sub- paragraph (b) of Sub-Clause 13.5 [Provisional Sums], except as stated in Sub-Clause 5.4 [Evidence of Payments].

5.4 Evidence of Payments

5.4.1 Before issuing a Payment Certificate which includes an amount payable to a nominated Subcontractor, the Project Manager may request the Contractor to supply reasonable evidence that the nominated Subcontractor has received all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor:

a) Submits this reasonable evidence to the Project Manager, or

b) i) satisfies the Project Manager in writing that the Contractor is reasonably entitled to withhold or refuse to pay these amounts, and

ii) submits to the Project Manager reasonable evidence that the nominated Subcontractor has been notified of the Contractor's entitlement, then the Procuring Entity may (at his sole discretion) pay, direct to the nominated Subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated Subcontractor and for which the Contractor has failed to submit the evidence described in sub-paragraphs (a) or (b) above. The Contractor shall then repay, to the Procuring Entity, the amount which the nominated Subcontractor was directly paid by the Procuring Entity.

6 Staff and Labour

6.1 Engagement of Staff and Labour

6.1.1 Except as otherwise stated in the Specification, the Contractor shall decide for the engagement of all staff and labor, local or otherwise, and for their payment, feeding, transport, and, when appropriate, housing. The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labor with appropriate qualifications and experience from sources with in Kenya.

6.2 Rates of Wages and Conditions of Labour

6.2.1 The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by Procuring Entities whose trade or industry is similar to that of the Contractor.

6.2.2 The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in Kenya in respect of such of their salaries, wages, allowances and any benefits as are subject to tax under the Laws of Kenya for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.

6.3 Persons in the Service of Procuring Entity

The Contractor shall not recruit, or attempt to recruit, staff and Labour from amongst the Procuring Entity's Personnel.

6.4 Labour Laws

6.4.1 The Contractor shall comply with all the relevant labour Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.

6.4.2 The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.

6.5 Working Hours

No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours stated in the **Particular Conditions of Contract**, unless:

a) Otherwise stated in the Contract,

b) The Project Manager gives consent, or

c) The work is un avoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Project Manager.

6.6 Facilities for Staff and Labour

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Procuring Entity's Personnel as stated in the Specifications. The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

6.7 Health and Safety

6.7.1 The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Procuring Entity's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

6.7.2 The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

6.7.3 The Contractor shall send, to the Project Manager, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Project Manager may reasonably require.

6.7.4 The Contractor shall conduct an awareness programmed on HIV and other sexually transmitted diseases via an approved service provider, and shall undertake such other measures as are specified in this Contract to reduce the risk of the transfer of these diseases between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals.

6.8 Contractor's Superintendence

6.8.1 Throughout the execution of the Works, and as long thereafter as is necessary to fulfil the Contractor's obligations, the Contractor shall provide all necessary super in tendencies to plan, arrange, direct, manage, inspect and test the work.

6.8.2 Superintendence shall be given by a sufficient number of persons having adequate knowledge of the language for communications (defined in Sub-Clause 1.4 [Law and Language]) and of the operations to be carried out (including the methods and techniques required, the hazards likely to been countered and methods of preventing accidents), for the satisfactory and safe execution of the Works.

6.9 Contractor's Personnel

6.9.1 The Contractor's Personnel shall be appropriately qualified, skilled and experienced in the irrespective trades or occupations. The Contractors Key personnel shall be named in the **Particular Conditions of Contract**. The Project Manager may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative if applicable, who:

a) Persists in any misconduct or lack of care,

b) Carries out duties incompetently or negligently,

c) Fails to conform with any provisions of the Contract,

d) Persists in any conduct which is prejudicial to safety, health, or the protection of the environment, or

e) based on reasonable evidence, is determined to have engaged in Fraud and Corruption during the execution of the Works.

6.9.2 If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.

6.10 Records of Contractor's Personnel and Equipment

The Contractor shall submit, to the Project Manager, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Project Manager, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.

6.11 Disorderly Conduct

The Contractor shall a tall times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site.

6.12 Foreign Personnel

6.12.1 The Contractor may bring into Kenya any foreign personnel who are necessary for the execution of the Works to the extent allowed by the applicable Laws. The Contractor shall ensure that these personnel are provided with the required residence vis as and work permits. The Procuring Entity will, if requested by the Contractor, use his Lowest endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national or government permission required for bringing in the Contractor's personnel.

6.12.2 The Contractor shall be responsible for the return of these personnel to the place where they were recruited or to their domicile. In the event of the death in Kenya of any of these personnel or members of their families, the Contractor shall similarly be responsible for making the appropriate arrangements for their return or burial.

6.13 Supply of Water

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

6.14 Measures against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce the danger to their health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.

6.15 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Laws of Kenya, on site, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift, barter or disposal thereof by Contractor's Personnel.

6.16 Prohibition of Forced or Compulsory Labour

The Contractor shall not employ forced labour, which consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements.

6.17 Prohibition of Harmful Child Labour

The Contractor shall not employ children in a manner that is economically exploitative, or is likely to be

hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental,

spiritual, moral, or social development. Where the relevant labour laws of Kenya have provisions for employment of minors, the Contractor shall follow those laws applicable to the Contractor. Children below the age of 18years shall not be employed in dangerous work.

6.18 Employment Records of Workers

The Contractor shall keep complete and accurate records of the employment of labour at the Site. The records shall include the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis and submitted to the Project Manager. These records shall be included in the details to be submitted by the Contractor under Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment].

6.19 Workers' Organizations

The Contractor shall comply with the relevant labour laws that recognize workers' rights to form and to join workers' organizations of their choosing without interference.

6.20 Non-Discrimination and Equal Opportunity

The Contractor shall base the labour employment on the principle of equal opportunity and fair treatment, and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, promotion, termination of employment or retirement, and discipline.

7 Plant, Materials and Workmanship

7.1 Manner of Execution

The Contractor shall carryout the manufacture of Plant, the production and manufacture of Materials, and all other execution of the Works:

a) In the manner (if any) specified in the Contract,

b) In a proper work man like and careful manner, in accordance with recognized good practice, and

c) with properly equipped facilities and non-hazardous Materials, except as otherwise specified in the Contract.

7.2 Samples

The Contractor shall submit the following samples of Materials, and relevant information, to the Project Manager for consent prior to using the Materials in or for the Works:

a) manufacturer's standard samples of Materials and samples specified in the Contract, all at the Contractor's cost, and

b) additional samples instructed by the Project Manager as a Variation.

Each sample shall be labelled as to origin and intended use in the Works.

7.3 Inspection

7.3.1 The Procuring Entity's Personnel shall at all reasonable times:

a) Have full access to all parts of the Site and to all places from which natural Materials are being obtained, and

b) during production, manufacture and construction (at the Site and elsewhere), be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of manufacture of Plant and production and manufacture of Materials.

7.3.2 The Contractor shall give the Procuring Entity's Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility.

7.3.3 The Contractor shall give notice to the Project Manager whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport. The Project Manager shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor that the Project Manager does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Project Manager, uncover the work and thereafter reinstate and make good, all at the Contractor's cost.

7.4 Testing

7.4.1 This Sub-Clause shall apply to all tests specified in the Contract, other than the Tests after Completion (if any).

7.4.2 Except as otherwise specified in the Contract, the Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labor, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. The Contractor shall agree, with the Project Manager, the time and place for the specified testing of any Plant, Materials and other parts of the Works.

7.4.3 The Project Manager may, under Clause 13 [Variations and Adjustments], vary the location or details of specified tests, or instruct the Contractor to carry out additional tests. If these varied or additional tests show that the tested Plant, Materials or workmanship is not in accordance with the Contract, the cost of carrying out this Variation shall be borne by the Contractor, notwithstanding other provisions of the Contract.

7.4.4 The Project Manager shall give the Contractor not less than 24hours' notice of the Project Manager's intention to attend the tests. If the Project Manager does not attend at the time and place agreed, the Contractor may proceed with the tests, unless otherwise instructed by the Project Manager, and the tests shall then be deemed to have been made in the Project Manager's presence.

7.4.5 If the Contractor suffers delay and/ or incurs Cost from complying with these instructions or as a result of a delay for which the Procuring Entity is responsible, the Contractor shall give notice to the Project Manager and shall been titled subject to Sub-Clause20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

7.4.6 After receiving this notice, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

7.4.7 The Contractor shall promptly forward to the Project Manager duly certified reports of the tests. When the specified tests have been passed, the Project Manager shall endorse the Contractor's test certificate, or issue a certificate to him, to that effect. If the Project Manager has not attended the tests, he shall be deemed to have accepted the readings as accurate.

7.5 Rejection

7.5.1 If, as a result of an examination, inspection, measurement or testing, any Plant, Materials or workmanship is found to be defective or otherwise not in accordance with the Contract, the Project Manager may reject the Plant, Materials or workmanship by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the defect and ensure that the rejected item complies with the Contract.

7.5.2 If the Project Manager requires this Plant, Materials or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If the rejection and retesting cause the Procuring Entity to incur additional costs, the Contractor shall subject to Sub-Clause2.5 [Procuring Entity's Claims] pay these costs to the Procuring Entity.

7.6 Remedial Work

7.6.1 Notwithstanding any previous test or certification, the Project Manager may instruct the Contractor to:

a) Remove from the Site and replace any Plant or Materials which is not in accordance with the Contract,

b) remove and re-execute any other work which is not in accordance with the Contract, and

c) execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseeable event or otherwise.

7.6.2 The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction, or immediately if urgency is specified under sub-paragraph(c).

7.6.3 If the Contractor fails to comply with the instruction, the Procuring Entity shall be entitled to employ and pay other persons to carry out the work. Except to the extent that the Contractor would have been entitled to payment for the work, the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay to the Procuring Entity all costs arising from this failure.

7.7 Ownership of Plant and Materials

7.7.1 Except as otherwise provided in the Contract, each item of Plant and Materials shall become the property of the Procuring Entity at whichever is the earlier of the following times, free from liens and other encumbrances:

a) When it is incorporated in the Works;

b) when the Contractor is paid the corresponding value of the Plant and Materials under Sub-Clause 8.10 [Payment for Plant and Materials in Event of Suspension].

7.8 Royalties

Unless otherwise stated in the Specification, the Contractor shall pay all royalties, rents and other payments for:

a) Natural Materials obtained from outside the Site, and

b) The disposal of material from demolitions and excavations and of other surplus material (whether natural or man-made), except to the extent that disposal are as within the Site are specified in the Contract.

8 Commencement, Delays and Suspension

8.1 Commencement of Works

8.1.1 Except as otherwise specified in the Particular Conditions of Contract, the Commencement Date shall be the date at which the following precedent conditions have all been fulfilled and the Project Manager's notification recording the agreement of both Parties on such fulfilment and instructing to commence the Work is received by the Contractor:

a. Signature of the Contract Agreement by both Parties, and if required, approval of the Contract by relevant authorities of Kenya;

b. Delivery to the Contractor of reasonable evidence of the Procuring Entity's financial arrangements (under Sub-Clause2.4 [Procuring Entity's Financial Arrangements]);

c. Except if otherwise specified in the Particular Conditions of Contract, effective access to and possession of the Site given to the Contractor together with such permission(s) under (a) of Sub-Clause1.13 [Compliance with Laws] as required for the commencement of the Works

d. Receipt by the Contractor of the Advance Payment under Sub-Clause14.2 [Advance Payment] provided that the corresponding bank guarantee has been delivered by the Contractor.

8.1.2 If the said Project Manager's instruction is not received by the Contractor within 180 days from his receipt of the Letter of Acceptance, the Contractor shall be entitled to terminate the Contract under Sub-Clause 16.2 [Termination by Contractor].

8.1.3 The Contractor shall commence the execution of the Works as soon as is reasonably practicable after the Commencement Date, and shall then proceed with the Works with due expedition and without delay.

8.2 Time for Completion

The Contractor shall complete the whole of the Works, and each Section (if any), within the Time for Completion for the Works or Section (as the case may be), including:

a) Achieving the passing of the Tests on Completion, and

b) completing all work which is stated in the Contract as being required for the Works or Section to be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections].

8.3 Programme

8.3.1 The Contractor shall submit a detailed time programme to the Project Manager within 28 days after receiving the notice under Sub-Clause 8.1 [Commencement of Works]. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations. Each programme shall include:

a. The order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design (if any), Contractor's Documents, procurement, manufacture of Plant, delivery to Site, construction, erection and testing,

b. each of these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),

c. the sequence and timing of inspections and tests specified in the Contract, and

d. a supporting report which includes:

i. a general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and

ii. details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage.

8.3.2 Unless the Project Manager, within 21days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Procuring Entity's Personnel shall be entitled to rely upon the programme when planning their activities.

8.3.3 The Contractor shall promptly give notice to the Project Manager of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price or delay the execution of the Works. The Project Manager may require the Contractor to submit an estimate of the anticipated effect of the future event or circumstances, and/ or a proposal under Sub-Clause13.3[Variation Procedure].

8.3.4 If, at any time, the Project Manager gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Project Manager in accordance with this Sub-Clause.

8.4 Extension of Time for Completion

8.4.1 The Contractor shall be entitled subject to Sub-Clause20.1 [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause10.1 [Taking Over of the Works and Sections] is or will be delayed by any of the following causes:

a. a Variation (unless an adjustment to the Time for Completion has been agreed under Sub-Clause 13.3 [Variation Procedure]) or other substantial change in the quantity of an item of work included in the Contract,

b. a cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions,

c. exceptionally adverse climatic conditions,

d. Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions, or

e. any delay, impediment or prevention caused by or attributable to the Procuring Entity, the Procuring Entity's Personnel, or the Procuring Entity's other contractors.

8.4.2 If the Contractor considers himself to be entitled to an extension of the Time for Completion, the Contractor shall give notice to the Project Manager in accordance with Sub-Clause 20.1 [Contractor's Claims]. When determining each extension of time under Sub-Clause 20.1, the Project Manager shall review previous determinations and may increase, but shall not decrease, the total extension of time.

8.5 Delays Caused by Authorities

If the following conditions apply, namely:

a) The Contractor has diligently followed the procedures laid down by the relevant legally constituted public authorities in Kenya,

b) These authorities delay or disrupt the Contractor's work, and

c) The delay or disruption was Unforeseeable, then this delay or disruption will be considered as a cause of delay under sub-paragraph (b) of Sub-Clause 8.4 [Extension of Time for Completion].

8.6 Rate of Progress

8.6.1 If, at any time:

a. Actual progress is too slow to complete within the Time for Completion, and/or

b. Progress has fallen (or will fall) behind the current programme under Sub-Clause8.3 [Programme], other than as a result of a cause listed in Sub-Clause8.4 [Extension of Time for Completion], then the Project Manager may instruct the Contractor to submit, under Sub-Clause8.3 [Programme], a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion.

8.6.2 Unless the Project Manager notifies otherwise, the Contractor shall adopt these revised methods, which may require increases in the working hours and/or in the numbers of Contractor's Personnel and/or Goods, at the risk and cost of the Contractor. If these revised methods cause the Procuring Entity to incur additional costs, the Contractor shall subject to notice under Sub-Clause 2.5 [Procuring Entity's Claims] pay these costs to the Procuring Entity, in addition to delay damages (if any) under Sub-Clause8.7 below.

8.6.3 Additional costs of revised methods including acceleration measures, instructed by the Project Manager to reduce delays resulting from causes listed under Sub-Clause8.4 [Extension of Time for Completion] shall be paid by the Procuring Entity, without generating, however, any other additional payment benefit to the Contractor.

8.7 Delay Damages

8.7.1 If the Contractor fails to comply with Sub-Clause 8.2 [Time for Completion], the Contractor shall subject to notice under Sub-Clause 2.5 [Procuring Entity's Claims] pay delay damages to the Procuring Entity for this default. These delay damages shall be the sum stated in the **Particular Conditions of Contract**, which shall be paid for every day which shall elapse between the relevant Time for Completion and the date stated in the Taking-Over Certificate. However, the total amount due under this Sub-Clause shall not exceed the maximum amount of delay damages (if any) stated in the Particular Conditions of Contract.

8.7.2 These delay damages shall be the only damages due from the Contractor for such default, other than in the event of termination under Sub-Clause 15.2 [Termination by Procuring Entity] prior to completion of the Works. These damages shall not relieve the Contractor from his obligation to complete the Works, or from any other duties, obligations or responsibilities which he may have under the Contract.

8.8 Suspension of Work

8.8.1 The Project Manager may at any time instruct the Contractor to suspend progress of part or all of the Works. During such suspension, the Contractor shall protect, store and secure such part or the Works against any deterioration, loss or damage.

8.8.2 The Project Manager may also notify the cause for the suspension. If and to the extent that the cause is notified and is the responsibility of the Contractor, the following Sub-Clauses 8.9, 8.10 and 8.11 shall not apply.

8.9 Consequences of Suspension

8.9.1 If the Contractor suffers delay and/or incurs Cost from complying with the Project Manager's instructions under Sub-Clause 8.8 [Suspension of Work] and/or from resuming the work, the Contractor shall give notice to the Project Manager and shall been titled subject to Sub-Clause 20.1 [Contractor's Claims] to:

a. an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b. payment of any such Cost, which shall be included in the Contract Price.

8.9.2 After receiving this notice, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

8.9.3 The Contractor shall not be entitled to an extension of time for, or to payment of the Cost incurred in, making good the consequences of the Contractor's faulty design, workmanship or materials, or of the Contractor's failure to protect, store or secure in accordance with Sub-Clause8.8 [Suspension of Work].

8.10 Payment for Plant and Materials in Event of Suspension

The Contractor shall be entitled to payment of the value (as at the date of suspension) of Plant and/or Materials which have not been delivered to Site, if:

a) The work on Plant or delivery of Plant and/or Materials has been suspended for more than28 days, and

b) the Contractor has marked the Plant and/or Materials as the Procuring Entity's property in accordance with the Project Manager's instructions.

8.11 Prolonged Suspension

If the suspension under Sub-Clause 8.8 [Suspension of Work] has continued for more than 84 days, the Contractor may request the Project Manager's permission to proceed. If the Project Manager does not give permission within 28 days after being requested to do so, the Contractor may, by giving notice to the Project Manager, treat the suspension as an omission under Clause13 [Variations and Adjustments] of the affected part of the Works. If the suspension affects the whole of the Works, the Contractor may give notice of termination under Sub-Clause16.2 [Termination by Contractor].

8.12 Resumption of Work

After the permission or instruction to proceed is given, the Contractor and the Project Manager shall jointly examine the Works and the Plant and Materials affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works or Plant or Materials, which has occurred during the suspension after receiving from the Project Manager an instruction to this effect under Clause 13 [Variations and Adjustments].

9 Tests on Completion

9.1 Contractor's Obligations

9.1.1 The Contractor shall carry out the Tests on Completion in accordance with this Clause and Sub-Clause 7.4 [Testing], after providing the documents in accordance with sub-paragraph (d) of Sub-Clause4.1[Contractor's General Obligations].

9.1.2 The Contractor shall give to the Project Manager not less than 21 days' notice of the date after which the Contractor will be ready to carry out each of the Tests on Completion. Unless otherwise agreed, Tests on Completion shall be carried out within 14 days after this date, on such day or days as the Project Manager shall instruct.

9.1.3 In considering the results of the Tests on Completion, the Project Manager shall make allowances for the effect of any use of the Works by the Procuring Entity on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed any Tests on Completion, the Contractor shall submit a certified report of the results of these Tests to the Project Manager.

9.2 Delayed Tests

9.2.1 If the Tests on Completion are being unduly delayed by the Procuring Entity, Sub-Clause 7.4 [Testing] (fifth paragraph) and/or Sub-Clause10.3 [Interference with Tests on Completion] shall be applicable.

9.2.2 If the Tests on Completion are being unduly delayed by the Contractor, the Project Manager may by notice require the Contractor to carry out the Tests within 21 days after receiving the notice. The Contractor shall carry out the Tests on such day or days within that period as the Contractor may fix and of which he shall give notice to the Project Manager.

9.2.3 If the Contractor fails to carry out the Tests on Completion within the period of 21 days, the Procuring Entity's Personnel may proceed with the Tests at the risk and cost of the Contractor. The Tests on Completion shall then be deemed to have been carried out in the presence of the Contractor and the results of the Tests shall be accepted as accurate.

9.3 Retesting

If the Works, or a Section, fail to pass the Tests on Completion, Sub-Clause7.5 [Rejection] shall apply, and the Project Manager or the Contractor may require the failed Tests, and Tests on Completion on any related work, to be repeated under the same terms and conditions.

9.4 Failure to Pass Tests on Completion

9.4.1 If the Works, or a Section, fail to pass the Tests on Completion repeated under Sub-Clause9.3[Retesting], the Project Manager shall be entitled to:

a. Order further repetition of Tests on Completion under Sub-Clause9.3;

b. if the failure deprives the Procuring Entity of substantially the whole benefit of the Works or Section, reject the Works or Section (as the case may be), in which event the Procuring Entity shall have the same remedies as are provided in sub-paragraph (c) of Sub-Clause11.4 [Failure to Remedy Defects]; or

c. issue a Taking-Over Certificate, if the Procuring Entity so requests.

9.4.2 In the event of sub-paragraph (c), the Contractor shall proceed in accordance with all other obligations under the Contract, and the Contract Price shall be reduced by such amount as shall be appropriate to cover the reduced value to the Procuring Entity as a result of this failure. Unless the relevant reduction for this failure is stated (or its method of calculation is defined) in the Contract, the Procuring Entity may require the reduction to be (i) agreed by both Parties (in full satisfaction of this failure only) and paid before this Taking-Over Certificate is issued, or (ii) determined and paid under Sub-Clause 2.5 [Procuring Entity's Claims] and Sub-Clause 3.5 [Determinations].

10 Procuring Entity's Taking Over

10.1 Taking Over of the Works and Sections

10.1.1 Except as stated in Sub-Clause9.4 [Failure to Pass Tests on Completion], the Works shall be taken over by the Procuring Entity when (i) the Works have been completed in accordance with the Contract, including the matters described in Sub-Clause8.2 [Time for Completion] and except as allowed in sub-paragraph (a) below, and (ii) a Taking-Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this Sub-Clause.

10.1.2 The Contractor may apply by notice to the Project Manager for a Taking-Over Certificate not earlier than 14 days before the Works will, in the Contractor's opinion, be complete and ready for taking over. If the Works are divided into Sections, the Contractor may similarly apply for a Taking-Over Certificate for each Section.

10.1.3 The Project Manager shall, within 28 days after receiving the Contractor's application:

a. Issue the Taking-Over Certificate to the Contractor, stating the date on which the Works or Section were completed in accordance with the Contract, except for any minor outstanding work and defects which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or

b. reject the application, giving reasons and specifying the work required to be done by the Contractor to enable the Taking-Over Certificate to be issued. The Contractor shall then complete this work before issuing a further notice under this Sub-Clause.

10.1.4 If the Project Manager fails either to issue the Taking-Over Certificate or to reject the Contractor's application within the period of 28 days, and if the Works or Section (as the case may be) are substantially in accordance with the Contract, the Taking-Over Certificate shall be deemed to have been issued on the last day of that period.

10.2 Taking Over of Parts of the Works

10.2.1 The Project Manager may, at the sole discretion of the Procuring Entity, issue a Taking-Over Certificate for any part of the Permanent Works.

10.2.2 The Procuring Entity shall not use any part of the Works (other than as a temporary measure which is either specified in the Contract or agreed by both Parties) unless and until the Project Manager has issued a Taking-Over Certificate for this part. However, if the Procuring Entity does use any part of the Works before the Taking- Over Certificate is issued:

a) The part which is used shall be deemed to have been taken over as from the date on which it is used,

b) The Contractor shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the Procuring Entity, and

c) If requested by the Contractor, the Project Manager shall issue a Taking-Over Certificate for this part.

10.2.3 After the Project Manager has issued a Taking-Over Certificate for a part of the Works, the Contractor shall be given the earliest opportunity to take such steps as may be necessary to carry out any outstanding Tests on Completion. The Contractor shall carry out these Tests on Completion as soon as practicable before the expiry date of the relevant Defects Notification Period.

10.2.4 If the Contractor incurs Cost as a result of the Procuring Entity taking over and/or using a part of the Works, other than such use as is specified in the Contractor agreed by the Contractor, the Contractor shall (i) give notice to the Project Manager and (ii) be entitled subject to Sub-Clause 20.1[Contractor's Claims] to payment of any such Cost-plus profit, which shall be included in the Contract Price. After receiving this notice, the Project Manager shall proceed in accordance with Sub-Clause3.5 [Determinations] to agree or determine this Cost and profit.

10.2.5 If a Taking-Over Certificate has been issued for a part of the Works (other than a Section), the delay damages thereafter for completion of the remainder of the Works shall be reduced. Similarly, the delay damages for the remainder of the Section (if any) in which this part is included shall also be reduced. For any period of delay after the date stated in this Taking-Over Certificate, the proportional reduction in these delay damages shall be calculated as the proportion which the value of the part so certified bears to the value of the Works or Section (as the case may be) as a whole. The Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these proportions. The provisions of this paragraph shall only apply to the daily rate of delay damages under Sub-Clause 8.7 [Delay Damages], and shall not affect the maximum amount of these damages.

10.3 Interference with Tests on Completion

10.3.1 If the Contractor is prevented, for more than 14 days, from carrying out the Tests on Completion by a cause for which the Procuring Entity is responsible, the Procuring Entity shall be deemed to have taken over the Works or Section (as the case may be) on the date when the Tests on Completion would otherwise have been completed.

10.3.2 The Project Manager shall then issue a Taking-Over Certificate accordingly, and the Contractor shall carry out the Tests on Completion as soon as practicable, before the expiry date of the Defects Notification Period. The Project Manager shall require the Tests on Completion to be carried out by giving 14 days' notice and in accordance with the relevant provisions of the Contract.

10.3.3 If the Contractor suffers delay and/or incurs Cost as a result of this delay in carrying out the Tests on Completion, the Contractor shall give notice to the Project Manager and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

a an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b payment of any such Cost-plus profit, which shall be included in the Contract Price.

10.3.4 After receiving this notice, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

10.4 Surfaces Requiring Reinstatement

Except as otherwise stated in a Taking-Over Certificate, a certificate for a Section or part of the Works shall not be deemed to certify completion of any ground or other surfaces requiring reinstatement.

11. Defects Liability

11.1.1 Completion of Outstanding Work and Remedying Defects

11.1.2 In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fair wear and tear excepted) by the expiry date of the relevant Defects Notification Period or as soon as practicable thereafter, the Contractor shall:

a) complete any work which is outstanding on the date stated in a Taking-Over Certificate, within such reasonable time as is instructed by the Project Manager, and

b) execute all work required to remedy defects or damage, as may be notified by (or on behalf of) the Procuring Entity on or before the expiry date of the Defects Notification Period for the Works or Section (as the case may be).

11.1.3 If a defect appears or damage occurs, the Contractor shall be notified accordingly, by (or on behalf of) the Procuring Entity.

11.2 Cost of Remedying Defects

11.2.1 All work referred to in sub-paragraph (b) of Sub-Clause11.1 [Completion of Outstanding Work and Remedying Defects] shall be executed at the risk and cost of the Contractor, if and to the extent that the work is attributable to:

a) Any design for which the Contractor is responsible,

b) Plant, Materials or workmanship not being in accordance with the Contract, or

c) Failure by the Contractor to comply with any other obligation.

11.2.2 If and to the extent that such work is attributable to any other cause, the Contractor shall be notified promptly by (or on behalf of) the Procuring Entity, and Sub-Clause13.3 [Variation Procedure] shall apply.

11.3 Extension of Defects Notification Period

11.3.1 The Procuring Entity shall be entitled subject to Sub-Clause2.5 [Procuring Entity's Claims] to an extension of the Defects Notification Period for the Works or a Section if and to the extent that the Works, Section or a major item of Plant (as the case may be, and after taking over) cannot be used for the purposes for which they are intended by reason of a defect or by reason of damage attributable to the Contractor. However, a Defects Notification Period shall not be extended by more than two years.

11.3.2 If delivery and/or erection of Plant and/or Materials was suspended under Sub-Clause8.8 [Suspension of Work] or Sub-Clause 16.1 [Contractor's Entitlement to Suspend Work], the Contractor's obligations under this Clause shall not apply to any defects or damage occurring more than two years after the Defects Notification Period for the Plant and/or Materials would otherwise have expired.

11.4 Failure to Remedy Defects

11.4.1 If the Contractor fails to remedy any defect or damage within a reasonable time, a date may be fixed by (or on behalf of) the Procuring Entity, on or by which the defect or damage is to be remedied. The Contractor shall be given reasonable notice of this date.

11.4.2 If the Contractor fails to remedy the defect or damage by this notified date and this remedial work was to be executed at the cost of the Contractor under Sub-Clause11.2 [Cost of Remedying Defects], the Procuring Entity may (at his option):

a. carry out the work himself or by others, in a reasonable manner and at the Contractor's cost, but the Contractor shall have no responsibility for this work; and the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay to the Procuring Entity the costs reasonably incurred by the Procuring Entity in remedying the defect or damage;

b. require the Project Manager to agree or determine a reasonable reduction in the Contract Price in

accordance with Sub-Clause3.5[Determinations]; or

c. if the defector damage deprives the Procuring Entity of substantially the whole benefit of the Works or any major part of the Works, terminate the Contract as a whole, or in respect of such major part which cannot be put to the intended use. Without prejudice to any other rights, under the Contractor otherwise, the Procuring Entity shall then be entitled to recover all sums paid for the Works or for such part (as the case may be), plus financing costs and the cost of dismantling the same, clearing the Site and returning Plant and Materials to the Contractor.

11.5 Removal of Defective Work

If the defect or damage cannot be remedied expeditiously on the Site and the Procuring Entity gives consent, the Contractor may remove from the Site for the purposes of repair such items of Plant as are defective or damaged. This consent may require the Contractor to increase the amount of the Performance Security by the full replacement cost of these items, or to provide other appropriate security.

11.6 Further Tests

11.6.1 If the work of remedying of any defect or damage may affect the performance of the Works, the Project Manager may require the repetition of any of the tests described in the Contract. The requirement shall be made by notice within 28 days after the defect or damage is remedied.

11.6.2 These tests shall be carried out in accordance with the terms applicable to the previous tests, except that they shall be carried out at the risk and cost of the Party liable, under Sub-Clause11.2 [Cost of Remedying Defects], for the cost of the remedial work.

11.7 Right of Access

Until the Performance Certificate has been issued, the Contractor shall have such right of access to the Works as is reasonably required in order to comply with this Clause, except as may be inconsistent with the Procuring Entity's reasonable security restrictions.

11.8 Contractor to Search

The Contractor shall, if required by the Project Manager, search for the cause of any defect, under the direction of the Project Manager. Unless the defect is to be remedied at the cost of the Contractor under Sub-Clause11.2 [Cost of Remedying Defects], the Cost of the search plus profit shall be agreed or determined by the Project Manager in accordance with Sub-Clause3.5 [Determinations] and shall be included in the Contract Price.

11.9 Performance Certificate

11.9.1 Performance of the Contractor's obligations shall not be considered to have been completed until the Project Manager has issued the Performance Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract.

11.9.2 The Project Manager shall issue the Performance Certificate within 28 days after the latest of the expiry dates of the Defects Notification Periods, or as soon thereafter as the Contractor has supplied all the Contractor's Documents and completed and tested all the Works, including remedying any defects. A copy of the Performance Certificate shall be issued to the Procuring Entity.

11.9.3 Only the Performance Certificate shall be deemed to constitute acceptance of the Works.

11.10 Unfulfilled Obligations

After the Performance Certificate has been issued, each Party shall remain liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract shall be deemed to remain in force.

11.11 Clearance of Site

11.11.1 Upon receiving the Performance Certificate, the Contractor shall remove any remaining Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works from the Site.

11.11.2 If all these items have not been removed within 28 days after receipt by the Contractor of the Performance Certificate, the Procuring Entity may sell or otherwise dispose of any remaining items. The Procuring Entity shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and

restoring the Site.

11.11.3 Any balance of the moneys from the sale shall be paid to the Contractor. If these moneys are less than the Procuring Entity's costs, the Contractor shall pay the outstanding balance to the Procuring Entity.

12 Measurement and Evaluation

12.1 Works to be Measured

12.1.1 The Works shall be measured, and valued for payment, in accordance with this Clause. The Contractor shall show in each application under Sub-Clauses 14.3 [Application for Interim Payment Certificates], 14.10 [Statement on Completion] and 14.11 [Application for Final Payment Certificate] the quantities and other particularsdetailingtheamountswhichheconsiderstobeentitledundertheContract.

12.1.2 Whenever the Project Manager requires any part of the Works to be measured, reasonable notice shall be given to the Contractor's Representative, who shall:

a. Promptly either attend or send another qualified representative to assist the Project Manager in making the measurement, and

b. Supply any particulars requested by the Project Manager.

12.1.3 If the Contractor fails to attend or send a representative, the measurement made by (or on behalf of) the Project Manager shall be accepted as accurate.

12.1.4 Except as otherwise stated in the Contract, wherever any Permanent Works are to be measured from records, these shall be prepared by the Project Manager. The Contractor shall, as and when requested, attend to examine and agree the records with the Project Manager, and shall sign the same when agreed. If the Contractor does not attend, the records shall be accepted as accurate.

12.1.5 If the Contractor examines and disagrees with the records, and/or does not sign them as agreed, then the Contractor shall give notice to the Project Manager of the respects in which the records are asserted to be inaccurate. After receiving this notice, the Project Manager shall review the records and either confirm or vary them and certify the payment of the undisputed part. If the Contractor does not so give notice to the Project Manager within 14 days after being requested to examine the records, they shall be accepted as accurate.

12.2 Method of Measurement

Except as otherwise stated in the Contract and not withstanding local practice:

a) Measurement shall be made of the net actual quantity of each item of the Permanent Works, and

b) the method of measurement shall be in accordance with the Bill of Quantities or other applicable Schedules.

12.3 Evaluation

12.3.1 Except as otherwise stated in the Contract, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the Contract Price by evaluating each item of work, applying the measurement agreed or determined in accordance with the above Sub-Clauses 12.1 and 12.2 and the appropriate rate or price for the item.

12.3.2 For each item of work, the appropriate rate or price for the item shall be the rate or price specified for such item in the Contractor, if there is no such item, specified for similar work.

12.3.3 Any item of work included in the Bill of Quantities for which no rate or price was specified shall be considered as included in other rates and prices in the Bill of Quantities and will not be paid for separately.

12.3.4 However, a new rate or price shall be appropriate for an item of work if:

a) i) the measured quantity of the item is changed by more than 25% from the quantity of this item in the Bill of Quantities or another Schedule,

ii) this change in quantity multiplied by such specified rate for this item exceeds 0.25% of the Accepted Contract Amount,

iii) this change in quantity directly changes the Cost per unit quantity of this item by more than 1%, and

iv) this item is not specified in the Contract as a "fixed rate item"; or

b) the work is instructed under Clause13 [Variations and Adjustments],

ii) no rate or price is specified in the Contract for this item, and

iii) no specified rate or price is appropriate because the item of work is not of similar character, or is not executed under similar conditions, as any item in the Contract.

b) Each new rate or price shall be derived from any relevant rates or prices in the Contract, with reasonable adjustments to take account of the matters described in sub-paragraph (a) and/or (b), as applicable. If no rates or prices are relevant for the derivation of a new rate or price, it shall be derived from the reasonable Cost of executing the work, together with profit, taking account of any other relevant matters.

c) Until such time as an appropriate rate or price is agreed or determined, the Project Manager shall determine a provisional rate or price for the purposes of Interim Payment Certificates as soon as the concerned work commences.

12.4 Omissions

d) Whenever the omission of any work forms part (or all) of a Variation, the value of which has not been agreed, if:
i) The Contractor will incur (or has incurred) cost which, if the work had not been omitted, would have been deemed to be covered by a sum forming part of the Accepted Contract Amount;
ii) The omission of the work will result (or has resulted) in this sum not forming part of the Contract Price; and
iii) This cost is not deemed to be included in the evaluation of any substituted work;

12.4.1 then the Contractor shall give notice to the Project Manager accordingly, with supporting particulars. Upon receiving this notice, the Project Manager shall proceed in accordance with Sub-Clause3.5 [Determinations] to agree or determine this cost, which shall be included in the Contract Price.

13 Variations and Adjustments

13.1 Right to Vary

13.1.1 Variations may be initiated by the Project Manager at any time prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by a request for the Contractor to submit a proposal.

13.1.2 The Contractor shall execute and be bound by each Variation, unless the Contractor promptly gives notice to the Project Manager stating (with supporting particulars) that (i) the Contractor cannot readily obtain the Goods required for the Variation, or (ii) such Variation triggers a substantial change in the sequence or progress of the Works. Upon receiving this notice, the Project Manager shall cancel, confirm or vary the instruction.

13.1.3 Each Variation may include:

a. changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation),

b. changes to the quality and other characteristics of any item of work,

c. changes to the levels, positions and/or dimensions of any part of the Works,

d. omission of any work unless it is to be carried out by others,

e. any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, bore holes and other testing and exploratory work, or

f. changes to the sequence or timing of the execution of the Works.

13.1.4 The Contractor shall not make any alteration and/or modification of the Permanent Works, unless and until the Project Manager instructs or approves a Variation.

13.2 Value Project Managering

13.2.1 The Contractor may, at any time, submit to the Project Manager a written proposal which (in the Contractor's opinion) will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Procuring Entity of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Procuring Entity of the completed Works, or (iv) otherwise be of benefit to the Procuring Entity.

13.2.2 The proposal shall be prepared at the cost of the Contractor and shall include the items listed in Sub-Clause13.3 [Variation Procedure].

13.2.3 If a proposal, which is approved by the Project Manager, includes a change in the design of part of the Permanent Works, then unless otherwise agreed by both Parties:

a. The Contractor shall design this part,

b. sub-paragraphs (a)to (d) of Sub-Clause4.1[Contractor's General Obligations] shall apply, and

c. if this change results in a reduction in the contract value of this part, the Project Manager shall proceed in accordance with Sub-Clause3.5 [Determinations] to agree or determine a fee, which shall be included in the Contract Price. This fee shall be half (50%) of the difference between the following amounts:

   a. such reduction in contract value, resulting from the change, excluding adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost], and

   b. the reduction (if any) in the value to the Procuring Entity of the varied works, taking account of any reductions in quality, anticipated life or operational efficiencies.

13.2.4 However, if amount (i) is less than amount (ii), there shall not be a fee.

13.3 Variation Procedure

13.3.1 If the Project Manager requests a proposal, prior to instructing a Variation, the Contractor shall respond in writing as soon as practicable, either by giving reasons why he cannot comply (if this is the case) or by submitting:

a. A description of the proposed work to be performed and a programme for its execution,
b. The Contractor's proposal for any necessary modifications to the programme according to Sub-Clause8.3 [Programme] and to the Time for Completion, and
c. The Contractor's proposal for evaluation of the Variation.

13.3.2 The Project Manager shall, as soon as practicable after receiving such proposal (under Sub-Clause13.2 [Value Project Managering] or otherwise), respond with approval, disapproval or comments. The Contractor shall not delay any work whilst awaiting a response.

13.3.3 Each instruction to execute a Variation, with any requirements for the recording of Costs, shall be issued by the Project Manager to the Contractor, who shall acknowledge receipt.

13.3.4 Each Variation shall be evaluated in accordance with Clause 12 [Measurement and Evaluation], unless the Project Manager instructs or approves otherwise in accordance with this Clause.

13.4 Payment in Applicable Currencies

If the Contract provides for payment of the Contract Price in more than one currency, then whenever an adjustment is agreed, approved or determined as stated above, the amount payable in each of the applicable

currencies shall be specified. For this purpose, reference shall be made to the actual or expected currency proportions of the Cost of the varied work, and to the proportions of various currencies specified for payment of the Contract Price.

13.5 Provisional Sums

13.5.1 Each Provisional Sum shall only be used, in whole or in part, in accordance with the Project Manager's instructions, and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the Project Manager shall have instructed. For each Provisional Sum, the Project Manager may instruct:

a. Work to be executed (including Plant, Materials or services to be supplied) by the Contractor and valued under Sub-Clause13.3[Variation Procedure]; and/or

b. Plant, Materials or services to be purchased by the Contractor, from a nominated Subcontractor (as defined in Clause5 [Nominated Subcontractors]) or otherwise; and for which there shall be included in the Contract Price:

   i. The actual amounts paid (or due to be paid) by the Contractor, and

   ii. a sum for overhead charges and profit, calculated as a percentage of these actual amounts by

applying the relevant percentage rate (if any) stated in the appropriate Schedule. If there is no such rate, the percentage rate stated in **the Particular Conditions of Contract** shall be applied.

13.5.2 The Contractor shall, when required by the Project Manager, produce quotations, invoices, vouchers and accounts or receipts in substantiation.

13.6 Day works

13.6.1 For work of a minor or incidental nature, the Project Manager may instruct that a Variation shall be executed on a day work basis. The work shall then be valued in accordance with the Day work Schedule included in the Contract, and the following procedure shall apply. If a Day work Schedule is not included in the Contract, this Sub-Clause shall not apply.

13.6.2 Before ordering Goods for the work, the Contractor shall submit quotations to the Project Manager. When applying for payment, the Contractor shall submit invoices, vouchers and accounts or receipts for any Goods.

13.6.3 Except for any items for which the Day work Schedule specifies that payment is not due, the Contractor shall deliver each day to the Project Manager accurate statements in duplicate which shall include the following details of the resources used in executing the previous day's work:

a. The names, occupations and time of Contractor's Personnel,

b. The identification, type and time of Contractor's Equipment and Temporary Works, and

c. The quantities and types of Plant and Materials used.

13.6.4 One copy of each statement will, if correct, or when agreed, be signed by the Project Manager and returned to the Contractor. The Contractor shall then submit priced statements of these resources to the Project Manager, prior to their inclusion in the next Statement under Sub-Clause 14.3 [Application for Interim Payment Certificates].

13.7 Adjustments for Changes in Legislation

13.7.1 The Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws of Kenya (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance of obligations under the Contract.

13.7.2 If the Contractor suffers (or will suffer) delay and/or incurs (or will incur) additional Cost as a result of these changes in the Laws or in such interpretations, made after the Base Date, the Contractor shall give notice to the Project Manager and shall be entitled subject to Sub-Clause20.1[Contractor's Claims] to:

a. an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b. payment of any such Cost, which shall be included in the Contract Price.

13.7.3 After receiving this notice, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

13.7.4 Notwithstanding the fore going, the Contractor shall not be entitled to an extension of time if the relevant delay has already been considered in the determination of a previous extension of time and such Cost shall not be separately paid if the same shall already have been considered in the indexing of any inputs to the table of adjustment data in accordance with the provisions of Sub-Clause13.8 [Adjustments for Changes in Cost].

13.8 Adjustments for Changes in Cost

13.8.1 In this Sub-Clause, “table of adjustment data” means the completed table of adjustment data for local and foreign currencies included in the Schedules. If there is no such table of adjustment data, this Sub-Clause shall not apply.

13.8.2 If this Sub-Clause applies, the amounts payable to the Contractor shall be adjusted for rises or falls in the cost of labor, Goods and other inputs to the Works, by the addition or deduction of the amounts determined by the formulae prescribed in this Sub-Clause. To the extent that full compensation for any rise or fall in Costs is not covered by the provisions of this or other Clauses, the Accepted Contract Amount shall be deemed to have included amounts to cover the contingency of other rises and falls in costs.

13.8.3 The adjustment to be applied to the amount otherwise payable to the Contractor, as valued in accordance with the appropriate Schedule and certified in Payment Certificates, shall be determined from formulae for each of the currencies in which the Contract Price is payable. No adjustment is to be applied to work valued on the basis of Cost or current prices. The formulae shall be of the following general type:

Price Adjustment

Prices shall be adjusted for fluctuations in the cost of inputs only if **provided for in the SCC.** If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type specified below applies:

P = A + B Im/Io

where: P is the adjustment factor for the portion of the Contract Price payable.

A and B are coefficients **specified in the SCC,** representing the non-adjustable and adjustable portions, respectively, of the Contract Price payable and Im is the index prevailing at the end of the month being invoiced and Ioc is the index prevailing 28 days before Tender opening for inputs payable.

NOTE: The sum of the two coefficients A and B should be1(one) in the formula for each currency. Normally, both coefficients shall be the same in the formulae for all currencies, since coefficient A, for the non-adjustable portion of the payments, is a very approximate figure (usually 0.15) to take account of fixed cost elements or other non-adjustable components. The sum of the adjustments for each currency are added to the Contract Price.

13.8.4 The cost indices or reference prices stated in the table of adjustment data shall be used. If their source is in doubt, it shall be determined by the Project Manager. For this purpose, reference shall be made to the values of the indices at stated dates (quoted in the fourth and fifth columns respectively of the table) for the purposes of clarification of the source; although these dates (and thus these values) may not correspond to the base cost indices.

13.8.5 In cases where the "currency of index" is not the relevant currency of payment, each index shall be converted into the relevant currency of payment at the selling rate, established by the Central Bank of Kenya, of this relevant currency on the above date for which the index is required to be applicable.

13.8.6 Until such time as each current cost index is available, the Project Manager shall determine a provisional index for the issue of Interim Payment Certificates. When a current cost index is available, the adjustment shall be recalculated accordingly.

13.8.7 If the Contractor fails to complete the Works within the Time for Completion, adjustment of prices thereafter shall be made using either (i) each index or price applicable on the date 49 days prior to the expiry of the Time for Completion of the Works, or (ii) the current index or price, whichever is more favorable to the Procuring Entity.

13.8.8 The weightings (coefficients) for each of the factors of cost stated in the table(s) of adjustment data shall only be adjusted if they have been rendered unreasonable, unbalanced or in applicable, as a result of Variations.

14 Contract Price and Payment

14.1 The Contract Price

14.1.1 Unless otherwise stated in the Particular Conditions:

a. the Contract Price shall be agreed or determined under Sub-Clause 12.3 [Evaluation] and be subject to adjustments in accordance with the Contract;

b. the Contractor shall pay all taxes, duties and fees required to be paid by him under the Contract, and the Contract Price shall not be adjusted for any of these costs except as stated in Sub-Clause 13.7 [Adjustments for Changes in Legislation];

c. any quantities which may be set out in the Bill of Quantities or other Schedule are estimated quantities and are not to be taken as the actual and correct quantities:

i. of the Works which the Contractor is required to execute, or

ii. for the purposes of Clause12 [Measurement and Evaluation]; and

d. the Contractor shall submit to the Project Manager, within 28 days after the Commencement Date, a proposed breakdown of each lump sum price in the Schedules. The Project Manager may take account of the breakdown when preparing Payment Certificates, but shall not be bound by it.

14.1.2 Notwithstanding the provisions of subparagraph (b), Contractor's Equipment, including essential spare parts there for, imported by the Contractor for the sole purpose of executing the Contract shall be exempt from the payment of import duties and taxes upon importation.

14.2 Advance Payment

14.2.1 The Procuring Entity may make an advance payment, as an interest-free loan for mobilization and cash flow support, when the Contractor submits a guarantee in accordance with this Sub-Clause. The total advance payment, the number and timing of instalments (if more than one), and the applicable currencies and proportions, shall be as stated in the **Particular Conditions of Contract.**

14.2.2 Unless and until the Procuring Entity receives this guarantee, or if the total advance payment is not stated in the Particular Conditions of Contract, this Sub-Clause shall not apply.

14.2.3 The Project Manager shall deliver to the Procuring Entity and to the Contractor an Interim Payment Certificate for the advance payment or its first instalment after receiving a Statement (under Sub-Clause14.3 [Application for Interim Payment Certificates]) and after the Procuring Entity receives (i) the Performance Security in accordance with Sub-Clause4.2 [Performance Security] and (ii) a guarantee in amounts and currencies equal to the advance payment. This guarantee shall be issued by a reputable bank or financial institution selected by the Contractor and shall be in the form annexed to the Particular Conditions or in another form approved by the Procuring Entity.

14.2.4 The Contractor shall ensure that the guarantee is valid and enforceable until the advance payment has been repaid, but its amount shall be progressively reduced by the amount repaid by the Contractor as indicated in the Payment Certificates. If the terms of the guarantee specify its expiry date, and the advance payment has not been repaid by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the guarantee until the advance payment has been repaid.

14.2.5 Unless stated otherwise in the **Particular Conditions of Contract**, the advance payment shall be repaid through percentage deductions from the interim payments determined by the Project Manager in accordance with Sub-Clause14.6 [Issue of Interim Payment Certificates], as follows:

a. Deductions shall commence in the next interim Payment Certificate following that in which the total of all certified interim payments (excluding the advance payment and deductions and repayments of retention) exceeds 30 percent (30%) of the Accepted Contract Amount Less Provisional Sums; and

b. Deductions shall be made at the amortization rate stated in the **Particular Conditions of Contract** of the amount of each Interim Payment Certificate (excluding the advance payment and deductions for its repayments as well as deductions for retention money) in the currencies and proportions of the advance payment until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the time when 90 percent (90%) of the Accepted Contract Amount Less Provisional Sums has been certified for payment.

14.2.6 If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination under Clause 15 [Termination by Procuring Entity], Clause 16 [Suspension and Termination by Contractor] or Clause19 [Force Majeure] (as the case may be), the whole of the balance then outstanding shall immediately become due and in case of termination under Clause 15 [Termination by Procuring Entity], except for Sub-Clause 15.5 [Procuring Entity's Entitlement to Termination for Convenience], payable by the Contractor to the Procuring Entity.

14.3 Application for Interim Payment Certificates

14.3.1 The Contractor shall submit a Statement in six copies to the Project Manager after the end of each month, in a form approved by the Project Manager, showing in detail the amounts to which the Contractor considers himself to be entitled, together with supporting documents which shall include the report on the progress during this month in accordance with Sub-Clause 4.21 [Progress Reports].

14.3.2 The Statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:

a. the estimated contract value of the Works executed and the Contractor's Documents produced up to the endofthemonth(includingVariationsbutexcludingitemsdescribedinsub-paragraphs(b)to(g)below);

b. any amounts to be added and deducted for changes in legislation and changes in cost, in accordance with Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost];

c. any amount to be deducted for retention, calculated by applying the percentage of retention stated in **the Particular Conditions of Contract** to the total of the above amounts, until the amount so retained by the Procuring Entity reaches the limit of Retention Money (if any) stated in **the Particular Conditions of Contract**;

d. any amounts to be added for the advance payment and (if more than one instalment) and to be deducted for its repayments in accordance with Sub-Clause14.2 [Advance Payment];

e. any amounts to be added and deducted for Plant and Materials in accordance with Sub-Clause14.5 [Plant and Materials intended for the Works];

f. any other additions or deductions which may have become due under the Contract or otherwise, including those under Clause 20 [Claims, Disputes and Arbitration]; and

g. the deduction of amounts certified in all previous Payment Certificates.

14.4 Schedule of Payments

14.4.1 The Contract includes a schedule of payments specifying the instalments in which the Contract Price will be paid, unless otherwise stated in this schedule:

a. The instalments quoted in this schedule of payments shall be the estimated contract values for the purposes of sub-paragraph (a) of Sub-Clause14.3 [Application for Interim Payment Certificates];

b. Sub-Clause14.5 [Plant and Materials intended for the Works] shall not apply; and

c. If these instalments are not defined by reference to the actual progress achieved in executing the Works, and if actual progress is found to be less or more than that on which this schedule of payments was based, then the Project Manager may proceed in accordance with Sub-Clause3.5 [Determinations] to agree or determine revised instalments, which shall take account of the extent to which progress is less or more than that on which the instalments were previously based.

14.4.2 The Contract include a schedule of payments, attached to this contract as Document_____

14.4.3 The Contractor shall submit non-binding estimates of the payments which he expects to become due during each quarterly period. The first estimate shall be submitted within 42 days after the Commencement Date. Revised estimates shall be submitted at quarterly intervals, until the Taking-Over Certificate has been issued for the Works.

14.5 Plant and Materials intended for the Works

14.5.1 If this Sub-Clause applies, Interim Payment Certificates shall include, under sub-paragraph (e) of Sub-Clause 14.3, (i) an amount for Plant and Materials which have been sent to the Site for incorporation in the Permanent Works, and (ii) a reduction when the contract value of such Plant and Materials is included as part of the Permanent Works under sub-paragraph (a) of Sub-Clause14.3 [Application for Interim Payment Certificates].

14.5.2 If the lists referred to in sub-paragraphs (b) (i) or (c) (i) below are not included in the Schedules, this Sub-Clause shall not apply.

14.5.3 The Project Manager shall determine and certify each addition if the following conditions are satisfied:

a. The Contractor has:

(i) Kept satisfactory records (including the orders, receipts, Costs and use of Plant and Materials) which are available for inspection, and

(ii) submitted a statement of the Cost of acquiring and delivering the Plant and Materials to the Site, supported by satisfactory evidence;

and either:

b. the relevant Plant and Materials:

(i) are those listed in the Schedules for payment when shipped,

(ii) have been shipped to Kenya, enroute to the Site, in accordance with the Contract; and

(iii) are described in a clean shipped bill of lading or other evidence of shipment, which has been submitted to the Project Manager together with evidence of payment of freight and insurance, any other documents reasonably required, and a bank guarantee in a form and issued by an entity approved by the Procuring Entity in amounts and currencies equal to the amount due under this Sub- Clause: this guarantee may be in a similar form to the form referred to in Sub-Clause14.2 [Advance Payment] and shall be valid until the Plant and Materials are properly stored on Site and protected against loss, damage or deterioration; or

c. the relevant Plant and Materials:

(i) are those listed in the Schedules for payment when delivered to the Site, and

(ii) have been delivered to and are properly stored on the Site, are protected against loss, damage or deterioration, and appear to be in accordance with the Contract.

14.5.4 The additional amount to be certified shall be the equivalent of eighty percent (80%) of the Project Manager's determination of the cost of the Plant and Materials (including delivery to Site), taking account of the documents mentioned in this Sub-Clause and of the contract value of the Plant and Materials.

14.5.6 The currencies for this additional amount shall be the same as those in which payment will become due when the contract value is included under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates]. At that time, the Payment Certificate shall include the applicable reduction which shall be equivalent to, and in the same currencies and proportions as, this additional amount for the relevant Plant and Materials.

14.6 Issue of Interim Payment Certificates

14.6.1 No amount will be certified or paid until the Procuring Entity has received and approved the Performance Security. Thereafter, the Project Manager shall, within 28 days after receiving a Statement and supporting documents, deliver to the Procuring Entity and to the Contractor an Interim Payment Certificate which shall state the amount which the Project Manager fairly determines to be due, with all supporting particulars for any reduction or with holding made by the Project Manager on the Statement if any.

14.6.2 However, prior to issuing the Taking-Over Certificate for the Works, the Project Manager shall not be bound to issue an Interim Payment Certificate in an amount which would (after retention and other deductions) be less than the minimum amount of Interim Payment Certificates (if any) stated **in the Particular Conditions of Contract**. In this event, the Project Manager shall give notice to the Contractor accordingly.

14.6.3 An Interim Payment Certificate shall not be withheld for any other reason, although:

a) if anything supplied or work done by the Contractor is not in accordance with the Contract, the cost of rectification or replacement may be withheld until rectification or replacement has been completed; and/or

b) if the Contractor was or is failing to perform any work or obligation in accordance with the Contract, and had been so notified by the Project Manager, the value of this work or obligation may be withheld until the work or obligation has been performed.

14.6.4 The Project Manager may in any Payment Certificate make any correction or modification that should properly be made to any previous Payment Certificate. A Payment Certificate shall not be deemed to indicate the Project Manager's acceptance, approval, consent or satisfaction.

14.7 Payment

14.7.1 The Procuring Entity shall pay to the Contractor:

a) The first instalment of the advance payment within 42 days after issuing the Letter of Acceptance or within 21 days after receiving the documents in accordance with Sub-Clause 4.2 [Performance Security] and Sub-Clause14.2 [Advance Payment], whichever is later;

b) the amount certified in each Interim Payment Certificate within 45 days after the Project Manager receives the Statement and supporting documents; and

c) the amount certified in the Final Payment Certificate within 45 days after the Procuring Entity receives this Payment Certificate; or after determination of any disputed amount shown in the Final Statement in accordance with Sub-Clause16.2 [Termination by Contractor].

14.7.2 Payment of the amount due in each currency shall be made into the bank account, nominated by the Contractor,

in the payment country (for this currency) specified in the Contract.

14.8 Delayed Payment

14.8.1 If the Contractor does not receive payment in accordance with Sub-Clause14.7 [Payment], the Contractor shall be entitled to receive financing charges (interest) compounded monthly on the amount unpaid during the period of delay. This period shall be deemed to commence on the date for payment specified in Sub-Clause 14.7 [Payment], irrespective (in the case of its sub-paragraph (b) of the date on which any Interim Payment Certificate is issued.

14.8.2 Unless otherwise stated in **the Particular Conditions**, these financing charges shall be calculated at the annual rate of three percentage points above the discount rate of the central bank in Kenya of the currency of payment, or if not available, the interbank offered rate, and shall be paid in such currency.

14.8.3 The Contractor shall be entitled to this payment without formal notice or certification, and without prejudice 14.9 to any other right or remedy.

14.9 Payment of Retention Money

14.9.2 When the Taking-Over Certificate has been issued for the Works, the first half of the Retention Money shall be certified by the Project Manager for payment to the Contractor. If a Taking-Over Certificate is issued for a Section or part of the Works, a proportion of the Retention Money shall be certified and paid. This proportion shall behalf (50%) of the proportion calculated by dividing the estimated contract value of the Section or part, by the estimated final Contract Price.

14.9.3 Promptly after the latest of the expiry dates of the Defects Notification Periods, the outstanding balance of the Retention Money shall be certified by the Project Manager for payment to the Contractor. If a Taking-Over Certificate was issued for a Section, a proportion of the second half of the Retention Money shall be certified and paid promptly after the expiry date of the Defects Notification Period for the Section. This proportion shall behalf (50%) of the proportion calculated by dividing the estimated contract value of the Section by the estimated final Contract Price.

14.9.4 However, if any work remains to be executed under Clause11 [Defects Liability], the Project Manager shall be entitled to withhold certification of the estimated cost of this work until it has been executed.

14.9.5 When calculating these proportions, no account shall be taken of any adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause13.8 [Adjustments for Changes in Cost].

14.9.6 Unless otherwise stated in the Particular Conditions, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment by the Project Manager, the Contractor shall be entitled to substitute a Retention Money Security guarantee, in the form annexed to the particular Conditions or in another form approved by the Procuring Entity and issued by a reputable bank or financial institution selected by the Contractor, for the second half of the Retention Money.

14.9.5 The Procuring Entity shall return the Retention Money Security guarantee to the Contractor within 14 days after receiving a copy of the Performance Certificate.

14.10 Statement at Completion

14.10.1 Within 84 days after receiving the Taking-Over Certificate for the Works, the Contractor shall submit to the Project Manager six copies of a Statement at completion with supporting documents, in accordance with Sub-Clause14.3 [Application for Interim Payment Certificates], showing:

a) the value of all work done in accordance with the Contract up to the date stated in the Taking-Over Certificate for the Works,

b) any further sums which the Contractor considers to be due, and

c) an estimate of any other amounts which the Contractor considers will become due to him under the Contract. Estimated amounts shall be shown separately in this Statement at completion.

14.10.2 The Project Manager shall then certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates].

14.10 Application for Final Payment Certificate

14.10.1 Within 56 days after receiving the Performance Certificate, the Contractor shall submit, to the Project Manager, six copies of a draft final statement with supporting documents showing in detail in a form approved by the Project Manager:

a. The value of all work done in accordance with the Contract, and

b. Any further sums which the Contractor considers to be due to him under the Contractor otherwise.

14.10.2 If the Project Manager disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Project Manager may reasonably require within 28days from receipt of said draft and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Project Manager the final statement as agreed. This agreed statement is referred to in these Conditions as the "Final Statement".

14.10.3 However, if, following discussions between the Project Manager and the Contractor and any changes to the draft final statement which are agreed, it becomes evident that a dispute exists, the Project Manager shall deliver to the Procuring Entity (with a copy to the Contractor) an Interim Payment Certificate for the agreed parts of the draft final statement. Thereafter, if the dispute is finally resolved under Sub-Clause20.4[Obtaining Dispute Board's Decision] or Sub-Clause20.5[Amicable Settlement], the Contractor shall then prepare and submit to the Procuring Entity (with a copy to the Project Manager) a Final Statement.

14.11 Discharge

When submitting the Final Statement, the Contractor shall submit a discharge which confirms that the total of the Final Statement represents full and final settlement of all moneys due to the Contractor under or in connection with the Contract. This discharge may state that it becomes effective when the Contractor has received the Performance Security and the outstanding balance of this total, in which event the discharge shall be effective on such date.

14.12 Issue of Final Payment Certificate

14.12.1 Within 28 days after receiving the Final Statement and discharge in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Project Manager shall deliver, to the Procuring Entity and to the Contractor, the Final Payment Certificate which shall state:

a. The amount which he fairly determines is finally due, and

b. aftergivingcredittotheProcuringEntityforallamountspreviouslypaidbytheProcuringEntityandfor all sums to which the Procuring Entity is entitled, the balance (if any) due from the Procuring Entity to the Contractor or from the Contractor to the Procuring Entity, as the case may be.

14.12.2 If the Contractor has not applied for a Final Payment Certificate in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Project Manager shall request the Contractor to do so. If the Contractor fails to apply within a period of 28 days, the Project Manager shall issue the Final Payment Certificate for such amount a she fairly determines to be due.

14.13 Cessation of Procuring Entity's Liability

14.13.1 The Procuring Entity shall not be liable to the Contractor for any matter or thing under or in connection with the Contract or execution of the Works, except to the extent that the Contractor shall have included an amount expressly for it:

a) In the Final Statement and also

b) (except for matters or things arising after the issue of the Taking-Over Certificate for the Works) in the Statement at completion described in Sub-Clause14.10 [Statement at Completion].

14.13.2 However, this Sub-Clause shall not limit the Procuring Entity's liability under his indemnification obligations, or the Procuring Entity's liability in any case of fraud, deliberate default or reckless misconduct by the Procuring Entity.

14.14 Currencies of Payment

14.14.1 The Contract Price shall be paid in the currency or currencies named in the Schedule of Payment Currencies. If more than one currency is so named, payments shall be made as follows:

a) If the Accepted Contract Amount was expressed in Local Currency only:

i) The proportions or amounts of the Local and Foreign Currencies, and the fixed rates of exchange to be used for calculating the payments, shall be as stated in the Schedule of Payment Currencies, except as otherwise agreed by both Parties;

ii) payments and deductions under Sub-Clause 13.5 [Provisional Sums] and Sub-Clause 13.7 [Adjustments for Changes in Legislation] shall be made in the applicable currencies and proportions; and

iii) other payments and deductions under sub-paragraphs (a) to (d) of Sub-Clause14.3[Application for Interim Payment Certificates] shall be made in the currencies and proportions specified in sub- paragraph (a) (i) above;

b) payment of the damages specified in the Particular Conditions of Contract, shall be made in the currencies and proportions specified in the Schedule of Payment Currencies;

c) other payments to the Procuring Entity by the Contractor shall be made in the currency in which the sum was expended by the Procuring Entity, or in such currency as may be agreed by both Parties;

d) if any amount payable by the Contractor to the Procuring Entity in a particular currency exceeds the sum payable by the Procuring Entity to the Contractor in that currency, the Procuring Entity may recover the balance of this amount from the sums otherwise payable to the Contractor in other currencies; and

e) if no rates of exchange are stated in the Schedule of Payment Currencies, they shall be those prevailing on the Base Date and determined by the central bank of Kenya.

14.13.1 Termination by Procuring Entity

14.14.1 Notice to Correct

If the Contractor fails to carry out any obligation under the Contract, the Project Manager may by notice require the Contractor to make good the failure and to remedy it within a specified reasonable time.

14.15 Termination by Procuring Entity

14.15.1 The Procuring Entity shall be entitled to terminate the Contract if the Contractor:

a. fails to comply with Sub-Clause 4.2 [Performance Security] or with a notice under Sub-Clause 15.1 [Notice to Correct],

b. abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract,

c. without reasonable excuse fails:

i. to proceed with the Works in accordance with Clause8 [Commencement, Delays and Suspension], or

ii. to comply with a notice issued under Sub-Clause 7.5 [Rejection] or Sub-Clause 7.6 [Remedial Work], within 28days after receiving it,

d. subcontracts the major part or whole of the Works or assigns the Contract without the agreement with Procuring Entity,

e. becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events, or

f. gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an inducement or reward:

i. for doing or for bearing to do any action in relation to the Contract, or

ii. for showing or for bearing to show favor or disfavor to any person in relation to the Contract, or

iii. if any of the Contractor's Personnel, agents or Subcontractors gives or offers to give (directly or indirectly) to any person any such inducement or reward as is described in this sub-paragraph (f).

g. However, lawful inducements and rewards to Contractor's Personnel shall not entitle termination, or based on reasonable evidence, has engaged in Fraud and Corruption as defined in paragraph 2.2 of the Appendix

B to these General Conditions, in competing for or in executing the Contract.

14.15.2 In any of these events or circumstances, the Procuring Entity may, upon giving 14 days' notice to the Contractor, terminate the Contract and expel the Contractor from the Site. However, in the case of sub-paragraph (e) or (f) or (g), the Procuring Entity may by notice terminate the Contract immediately.

14.15.3 The Procuring Entity's election to terminate the Contract shall not prejudice any other rights of the Procuring Entity, under the Contract or otherwise.

14.15.4 The Contractor shall then leave the Site and deliver any required Goods, all Contractor's Documents, and other design documents made by or for him, to the Project Manager. However, the Contractor shall use his Lowest efforts to comply immediately with any reasonable instructions included in the notice (i) for the assignment of any subcontract, and (ii) for the protection of life or property or for the safety of the Works.

14.15.5 After termination, the Procuring Entity may complete the Works and/ or arrange for any other entities to do so. The Procuring Entity and these entities may then use any Goods, Contractor's Documents and other design documents made by or on behalf of the Contractor.

14.15.6 The Procuring Entity shall then give notice that the Contractor's Equipment and Temporary Works will be released to the Contractor at or near the Site. The Contractor shall promptly arrange their removal, at the risk and cost of the Contractor. However, if by this time the Contractor has failed to make a payment due to the Procuring Entity, these items may be sold by the Procuring Entity in order to recover this payment. Any balance of the proceeds shall then be paid to the Contractor.

14.16 Valuation at Date of Termination

As soon as practicable after a notice of termination under Sub-Clause15.2 [Termination by Procuring Entity] has taken effect, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the value of the Works, Goods and Contractor's Documents, and any other sums due to the Contractor for work executed in accordance with the Contract.

14.17 Payment after Termination

After a notice of termination under Sub-Clause 15.2 [Termination by Procuring Entity] has taken effect, the Procuring Entity may:

a) Proceed in accordance with Sub-Clause2.5[Procuring Entity's Claims],

b) withhold further payments to the Contractor until the costs of execution, completion and remedying of any defects, damages for delay incompletion (if any), and all other costs incurred by the Procuring Entity, have been established, and/or

c) recover from the Contractor any losses and damages incurred by the Procuring Entity and any extra costs of completing the Works, after allowing for any sum due to the Contractor under Sub-Clause 15.3 [Valuation at Date of Termination]. After recovering any such losses, damages and extra costs, the Procuring Entity shall pay any balance to the Contractor.

14.18 Procuring Entity's Entitlement to Termination for Convenience

The Procuring Entity shall be entitled to terminate the Contract, at any time for the Procuring Entity's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 28days after the later of the dates on which the Contractor receives this notice or the Procuring Entity returns the Performance Security. The Procuring Entity shall not terminate the Contract under this Sub-Clause in order to execute the Works himself or to arrange for the Works to be executed by another contractor or to avoid a termination of the Contract by the Contractor under Clause16.2 [Termination by Contractor].

After this termination, the Contractor shall proceed in accordance with Sub-Clause16.3 [Cessation of Work and Removal of Contractor's Equipment] and shall be paid in accordance with Sub-Clause16.4[Payment on Termination].

14.19 Fraud and Corruption

The Procuring Entity requires compliance with the Kenya Government's Anti-Corruption Laws and its prevailing sanctions.

14.20 Corrupt gifts and payments of commission

14.20.1 The Contractor shall not;

a. Offer or give or agree to give to any person in the service of the Procuring Entity any gift or consideration of any kind as an inducement or reward for doing or for bearing to do or for having done or for borne to do any act in relation to the obtaining or execution of this or any other Contract for the Procuring Entity or for showing or for bearing to show favour or disfavour to any person in relation to this or any other contract for the Procuring Entity.

b. Enter in to this or any other contract with the Procuring Entity in connection with which commission has been paid or agreed to be paid by him or on his behalf or to his knowledge, unless before the Contract is made particulars of any such commission and of the terms and conditions of any agreement for the payment there of have been disclosed in writing to the Procuring Entity.

15.7.1 Any breach of this Condition by the Contractor or by any one employed by him or acting on his behalf (whether with or without the knowledge of the Contractor) shall be an offence under the provisions of the Public Procurement Regulations issued under The Exchequer and Audit Act Cap412of the Laws of Kenya.

15 Suspension and Termination by Contractor

15.15 Contractor's Entitlement to Suspend Work

15.15.1 If the Project Manager fails to certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates] or the Procuring Entity fails to comply with Sub-Clause 2.4 [Procuring Entity's Financial Arrangements] or Sub-Clause14.7[Payment], the Contractor may, after giving not less than 21days' notice to the Procuring Entity, suspend work (or reduce the rate of work) unless and until the Contractor has received the Payment Certificate, reasonable evidence or payment, as the case may be and as described in the notice.

15.15.2 The Contractor's action shall not prejudice his entitlements to financing charges under Sub-Clause 14.8 [Delayed Payment] and to termination under Sub-Clause16.2 [Termination by Contractor].

15.15.3 If the Contractor subsequently receives such Payment Certificate, evidence or payment (as described in the relevant Sub-Clause and in the above notice) before giving a notice of termination, the Contractor shall resume normal working as soon as is reasonably practicable.

15.15.4 If the Contractor suffers delay and/ or incurs Cost as a result of suspending work (or reducing the rate of work) in accordance with this Sub-Clause, the Contractor shall give notice to the Project Manager and shall be entitled subject to Sub-Clause20.1[Contractor's Claims] to:

a. an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b. payment of any such Cost-plus profit, which shall be included in the Contract Price.

15.15.5 After receiving this notice, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

15.16 Termination by Contractor

15.16.1 The Contractor shall be entitled to terminate the Contract if:

a. the Contractor does not receive the reasonable evidence within 45 days after giving notice under Sub-Clause16.1 [Contractor's Entitlement to Suspend Work] in respect of a failure to comply with Sub-Clause
b. 2.4 [Procuring Entity's Financial Arrangements],

c. the Project Manager fails, within 45days after receiving a Statement and supporting documents, to issue the relevant Payment Certificate,

d. the Contractor does not receive the amount due under an Interim Payment Certificate within 45days after the expiry of the time stated in Sub-Clause14.7[Payment] within which payment is to be made (except for deductions in accordance with Sub-Clause2.5 [Procuring Entity's Claims]),

e. the Procuring Entity substantially fails to perform his obligations under the Contract in such manner as to materially and adversely affect the economic balance of the Contract and/ or the ability of the Contractor to perform the Contract,

f. the Procuring Entity fails to comply with Sub-Clause 1.6 [Contract Agreement] or Sub-Clause 1.7 [Assignment],

g. a prolonged suspension affects the whole of the Works as described in Sub-Clause 8.11 [Prolonged

Suspension], or

h. the Procuring Entity becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events.

i. The Contractor does not receive the Project Manager's instruction recording the agreement of both Parties on the fulfilment of the conditions for the Commencement of Works under Sub-Clause 8.1 [Commencement of Works.

15.16.2 In any of these events or circumstances, the Contractor may, upon giving 14 days' notice to the Procuring Entity, terminate the Contract. However, in the case of sub-paragraph (f) or (g), the Contractor may by notice terminate the Contract immediately.

15.16.3 The Contractor' selection to terminate the Contract shall not prejudice any other rights of the Contractor, under the Contractor otherwise.

15.17 Cessation of Work and Removal of Contractor's Equipment

After a notice of termination under Sub-Clause 15.5 [Procuring Entity's Entitlement to Termination for Convenience], Sub-Clause 16.2 [Termination by Contractor] or Sub-Clause 19.6 [Optional Termination, Payment and Release] has taken effect, the Contractor shall promptly:

a) Cease all further work, except for such work as may have been instructed by the Project Manager for the protection of life or property or for the safety of the Works,

b) hand over Contractor's Documents, Plant, Materials and other work, for which the Contractor has received payment, and

c) remove all other Goods from the Site, except as necessary for safety, and leave the Site.

15.18 Payment on Termination

After a notice of termination under Sub-Clause 16.2 [Termination by Contractor] has taken effect, the Procuring Entity shall promptly:

a) Return the Performance Security to the Contractor,

b) pay the Contractor in accordance with Sub-Clause 19.6 [Optional Termination, Payment and Release], and

c) pay to the Contractor the amount of any loss or damage sustained by the Contractor as a result of this termination.

17. Risk and Responsibility

17.1 Indemnities

17.1.1 The Contractor shall indemnify and hold harmless the Procuring Entity, the Procuring Entity's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:

a. Bodily injury, sickness, disease or death, of any person whatsoever arising out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, willful act or breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, or any of their respective agents, and

b. Damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless and to the extent that any such damage or loss is attributable to any negligence, willful act or breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, their respective agents, or any one directly or indirectly employed by any of them.

17.1.2 The Procuring Entity shall indemnify and hold harmless the Contractor, the Contractor's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of (1) bodily injury, sickness, disease or death, which is attributable to any negligence, willful act or breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, or any of their

respective agents, and (2) the matters for which liability may be excluded from insurance cover, as described in sub-paragraphs (d) (i), (ii) and (iii) of Sub-Clause 18.3 [Insurance Against Injury to Persons and Damage to Property].

17.2 Contractor's Care of the Works

17.2.1 The Contractor shall take full responsibility for the care of the Works and Goods from the Commencement Date until the Taking-Over Certificate is issued (orisdeemedtobeissuedunderSub-Clause10.1[Taking Over of the Works and Sections]) for the Works, when responsibility for the care of the Works shall pass to the Procuring Entity. If a Taking-Over Certificate is issued (or is so deemed to be issued) for any Section or part of the Works, responsibility for the care of the Section or part shall then pass to the Procuring Entity.

17.2.2 After responsibility has accordingly passed to the Procuring Entity, the Contractor shall take responsibility for the care of any work which is outstanding on the date stated in a Taking-Over Certificate, until this outstanding work has been completed.

17.2.3 If any loss or damage happens to the Works, Goods or Contractor's Documents during the period when the Contractor is responsible for their care, from any cause not listed in Sub-Clause 17.3 [Procuring Entity's Risks], the Contractor shall rectify the loss or damage at the Contractor's risk and cost, so that the Works, Goods and Contractor's Documents conform with the Contract.

17.2.4 The Contractor shall be liable for any loss or damage caused by any actions performed by the Contractor after a Taking-Over Certificate has been issued. The Contractor shall also be liable for any loss or damage which occurs after a Taking-Over Certificate has been issued and which arose from a previous event for which the Contractor was liable.

17.3 Procuring Entity's Risks

The risks referred to in Sub-Clause 17.4 [Consequences of Procuring Entity's Risks] below, insofar as they directly affect the execution of the Works in Kenya, are:

a) War hostilities (whether war be declared or not),

b) rebellion, riot, commotion or disorder, terrorism, sabotage by persons other than the Contractor's Personnel,

c) explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such explosives, radiation or radio-activity,

d) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,

e) use or occupation by the Procuring Entity of any part of the Permanent Works, except as may be specified in the Contract,

f) design of any part of the Works by the Procuring Entity's Personnel or by others for whom the Procuring Entity is responsible, and

g) any operation of the forces of nature which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventive precautions.

17.4 Consequences of Procuring Entity's Risks

17.4.1 If and to the extent that any of the risks listed in Sub-Clause17.3 above results in loss or damage to the Works, Goods or Contractor's Documents, the Contractor shall promptly give notice to the Project Manager and shall rectify this loss or damage to the extent required by the Project Manager.

17.4.2 If the Contractor suffers delay and/or incurs Cost from rectifying this loss or damage, the Contractor shall give a further notice to the Project Manager and shall be entitled subject to Sub-Clause20.1[Contractor's Claims] to:

(a) An extension of time for any such delay, if completion is or will be delayed, under Sub-Clause8.4 [Extension of Time for Completion], and
(b) Payment of any such Cost, which shall be included in the Contract Price. In the case of sub-paragraphs(f) and (g) of Sub-Clause 17.3 [Procuring Entity's Risks], Cost plus profit shall be payable.

17.4.3 After receiving this further notice, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

17.5 Intellectual and Industrial Property Rights

17.5.1 In this Sub-Clause, "infringement" means an infringement (or alleged infringement) of any patent, registered design, copyright, trademark, tradename, trade secret or other intellectual or industrial property right relating to the Works; and "claim" means a claim (or proceedings pursuing a claim) alleging an infringement.

17.5.2 Whenever a Party does not give notice to the other Party of any claim within 28days of receiving the claim, the first Party shall be deemed to have waived any right to indemnity under this Sub-Clause.

17.5.3 The Procuring Entity shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement which is or was:

a) An unavoidable result of the Contractor's compliance with the Contract, or

b) A result of any Works being used by the Procuring Entity:

i) For a purpose other than that indicated by, or reasonably to be inferred from, the Contract, or

ii) in conjunction with anything not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the Contract.

17.5.4 The Contractor shall indemnify and hold the Procuring Entity harmless against and from any other claim which arises out of or in relation to (i) the manufacture, use, sale or import of any Goods, or (ii) any design for which the Contractor is responsible.

17.5.5 If a Party is entitled to be indemnified under this Sub-Clause, the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct of any negotiations, litigation or arbitration upon being requested to do so by such other Party.

17.6 Limitation of Liability

17.6.1 Neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contractor for any indirect or consequential loss or damage which may be suffered by the other Party in connection with the Contract, other than as specifically provided in Sub-Clause8.7 [Delay Damages]; Sub-Clause11.2[Cost of Remedying Defects]; Sub-Clause 15.4 [Payment after Termination]; Sub-Clause 16.4 [Payment on Termination]; Sub-Clause 17.1 [Indemnities]; Sub-Clause 17.4(b) [Consequences of Procuring Entity's Risks] and Sub-Clause17.5 [Intellectual and Industrial Property Rights].

17.6.2 The total liability of the Contractor to the Procuring Entity, under or in connection with the Contract other than under Sub-Clause4.19[Electricity, Water and Gas], Sub-Clause4.20 [Procuring Entity's Equipment and Free-Issue Materials], Sub-Clause 17.1 [Indemnities] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights], shall not exceed the sum resulting from the application of a multiplier (less or greater than one) to the Accepted Contract Amount, as stated in the **Particular Conditions of Contract**, or (if such multiplier or other sum is not so stated) the Accepted Contract Amount.

17.6.3 This Sub-Clause shall not limit liability in any case of fraud, deliberate default or reckless misconduct by the defaulting Party.

17.7 Use of Procuring Entity's Accommodation/ Facilities

17.7.5 The Contractor shall take full responsibility for the care of the Procuring Entity provided accommodation and facilities, if any, as detailed in the Specification, from the respective dates of hand-over to the Contractor until cessation of occupation (where hand-over or cessation of occupation may take place after the date stated in the Taking-Over Certificate for the Works).

17.7.6 If any loss or damage happens to any of the above items while the Contractor is responsible for their care arising from any cause whatsoever other than those for which the Procuring Entity is liable, the Contractor shall, at his own cost, rectify the loss or damage to the satisfaction of the Project Manager.

18 Insurance

18.1 General Requirements for Insurances

18.1.1 In this Clause, "insuring Party" means, for each type of insurance, the Party responsible for effecting and maintaining the insurance specified in the relevant Sub-Clause.

18.1.2 Wherever the Contractor is the insuring Party, each insurance shall be effected with insurers and in terms approved by the Procuring Entity. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.

18.1.3 Wherever the Procuring Entity is the insuring Party, each insurance shall be effected with insurers and in terms acceptable to the Contractor. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.

18.1.4 If a policy is required to indemnify joint insured, the cover shall apply separately to each insured as though a separate policy had been issued for each of the joint insured. If a policy indemnifies additional joint insured, namely in addition to the insured specified in this Clause, (i) the Contractor shall act under the policy on behalf of these additional joint insured except that the Procuring Entity shall act for Procuring Entity's Personnel, (ii) additional joint insured shall not be entitled to receive payments directly from the insurer or to have any other direct dealings with the insurer, and (iii) the insuring Party shall require all additional joint insured to comply with the conditions stipulated in the policy.

18.1.5 Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the loss or damage. Payments received from insurers shall be used for the rectification of the loss or damage.

18.1.6 The relevant insuring Party shall, within the respective periods stated in **the Particular Conditions of Contract** (calculated from the Commencement Date), submit to the other Party:

a. Evidence that the insurances described in this Clause have been effected, and

b. copies of the policies for the insurances described in Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment] and Sub-Clause 18.3 [Insurance against Injury to Persons and Damage to Property].

18.1.7 When each premium is paid, the insuring Party shall submit evidence of payment to the other Party. Whenever evidence or policies are submitted, the insuring Party shall also give notice to the Project Manager.

18.1.8 Each Party shall comply with the conditions stipulated in each of the insurance policies. The insuring Party shall keep the insurers informed of any relevant changes to the execution of the Works and ensure that insurance is maintained in accordance with this Clause.

18.1.9 Neither Party shall make any material alteration to the terms of any insurance without the prior approval of the other Party. If an insurer makes (or at tempts to make) any alteration, the Party first notified by the insurer shall promptly give notice to the other Party.

18.1.10 If the insuring Party fails to effect and keep in force any of the insurances it is required to effect and maintain under the Contract, or fails to provides at is factory evidence and copies of policies in accordance with this Sub- Clause, the other Party may (at its option and without prejudice to any other right or remedy) effect insurance for the relevant coverage and pay the premiums due. The insuring Party shall pay the amount of these premiums to the other Party, and the Contract Price shall be adjusted accordingly.

18.1.11 Nothing in this Clause limits the obligations, liabilities or responsibilities of the Contractor or the Procuring Entity, under the other terms of the Contract or otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor and/or the Procuring Entity.

18.1.12 Procuring Entity in accordance with these obligations, liabilities or responsibilities. However, if the insuring Party fails to effect and keep in force an insurance which is available and which it is required to effect and maintain under the Contract, and the other Party neither approves the omission nor effects insurance for the coverage relevant to this default, any moneys which should have been recoverable under this insurance shall be paid by the insuring Party.

18.1.13 Payments by one Party to the other Party shall be subject to Sub-Clause2.5 [Procuring Entity's Claims] or Sub- Clause20.1[Contractor's Claims], as applicable.

18.1.14 The Contractor shall be entitled to place all insurance relating to the Contract (including, but not limited to the insurance referred to Clause18) with insurers from any eligible source country.

18.2 Insurance for Works and Contractor's Equipment

18.2.1 The insuring Party shall insure the Works, Plant, Materials and Contractor's Documents for not less than the full reinstatement cost including the costs of demolition, removal of debris and professional fees and profit. This insurance shall be effective from the date by which the evidence is to be submitted under sub-paragraph (a) of Sub-Clause 18.1 [General Requirements for Insurances], until the date of issue of the Taking-Over Certificate for the Works.

18.2.2 The insuring Party shall maintain this insurance to provide cover until the date of issue of the Performance Certificate, for loss or damage for which the Contractor is liable arising from a cause occurring prior to the issue of the Taking-Over Certificate, and for loss or damage caused by the Contractor in the course of any other operations (including those under Clause11[Defects Liability]).

18.2.3 The insuring Party shall insure the Contractor's Equipment for not less than the full replacement value, including delivery to Site. For each item of Contractor's Equipment, the insurance shall be effective while it is being transported to the Site and until it is no longer required as Contractor's Equipment.

18.2.4 Unless otherwise stated in the Particular Conditions, insurances under this Sub-Clause:

a. Shall be effected and maintained by the Contractor as insuring Party,

b. shall be in the joint names of the Parties, who shall be jointly entitled to receive payments from the insurers, payments being held or allocated to the Party actually bearing the costs of rectifying the loss or damage,

c. shall cover all loss and damage from any cause not listed in Sub-Clause17.3 [Procuring Entity's Risks],

d. shall also cover, to the extent specifically required in the tendering documents of the Contract, loss or damage to a part of the Works which is attributable to the use or occupation by the Procuring Entity of another part of the Works, and loss or damage from the risks listed in sub-paragraphs (c), (g) and (h) of Sub-Clause 17.3 [Procuring Entity's Risks], excluding (in each case) risks which are not insurable at commercially reasonable terms, with deductibles per occurrence of not more than the amount stated **in the Particular Conditions** of Contract (if an amount is not so stated, this sub-paragraph (d) shall not apply),and

e. may however exclude loss of, damage to, and rein statement of:

   a. a part of the Works which is in a defective condition due to a defect in its design, materials or workmanship (but cover shall include any other parts which are lost or damaged as a direct result of this defective condition and not as described in sub-paragraph (ii) below),

   b. a part of the Works which is lost or damaged in order to rein state any other part of the Works if this other part is in a defective condition due to a defect in its design, materials or workmanship,

   c. a part of the Works which has been taken over by the Procuring Entity, except to the extent that the Contractor is liable for the loss or damage, and

   d. Goods while they are not in Kenya, subject to Sub-Clause14.5[Plant and Materials intended for the Works].

18.2.5 If, more than one year after the Base Date, the cover described in sub-paragraph (d) above ceases to be available at commercially reasonable terms, the Contractor shall (as insuring Party) give notice to the Procuring Entity, with supporting particulars. The Procuring Entity shall then (i) be entitled subject to Sub-Clause2.5[Procuring Entity's Claims] to payment of an amount equivalent to such commercially reasonable terms as the Contractor should have expected to have paid for such cover, and (ii) be deemed, unless he obtains the cover at commercially reasonable terms, to have approved the omission under Sub-Clause18.1[General Requirements for Insurances].

18.3 Insurance against Injury to Persons and Damage to Property

18.3.1 The insuring Party shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment]) or to any person (except persons insured under Sub-Clause18.4 [Insurance for Contractor's Personnel]), which may arise out of the Contractor's performance of the Contract and occurring before the issue of the Performance Certificate.

18.3.2 This insurance shall be for a limit per occurrence of not less than the amount stated in **the Particular**

Conditions of Contract, with no limit on the number of occurrences. If an amount is not stated in the **Particular Conditions of Contract**, this Sub-Clause shall not apply.

18.3.3 Unless otherwise stated in the Particular Conditions, the insurances specified in this Sub-Clause:

a. Shall be effected and maintained by the Contractor as insuring Party,

b. Shall be in the joint names of the Parties,

c. shall be extended to cover liability for all loss and damage to the Procuring Entity's property (except things insured under Sub-Clause18.2) arising out of the Contractor's performance of the Contract, and

d. may however exclude liability to the extent that it arises from:

i. the Procuring Entity's right to have the Permanent Works executed on, over, under, in or

ii. through any land, and to occupy this land for the Permanent Works,

iii. damage which is an unavoidable result of the Contractor's obligations to execute the

iv. Works and remedy any defects, and

v. A cause listed in Sub-Clause17.3[Procuring Entity's Risks], except to the extent that cover is

vi. available at commercially reasonable terms.

18.4 Insurance for Contractor's Personnel

18.4.1 The Contractor shall effect and maintain insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel.

18.4.2 The insurance shall cover the Procuring Entity and the Project Manager against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the Procuring Entity or of the Procuring Entity's Personnel.

18.4.3 The insurance shall be maintained in full force and effect during the whole time that these personnel are assisting in the execution of the Works. For a Subcontractor's employees, the insurance may be effected by the Sub contractor, but the Contractor shall be responsible for compliance with this Clause.

19 Force Majeure

19.1 Definition of Force Majeure

19.1.1 In this Clause, “Force Majeure” means an exceptional event or circumstance:

a. Which is beyond a Party's control,

b. Which such Party could not reasonably have provided against before entering in to the Contract,

c. which, having arisen, such Party could not reasonably have avoided or overcome, and

d. which is not substantially attributable to the other Party.

19.1.2 Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

i) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,

ii) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,

iii) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel,

iv) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and

v) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

19.2 Notice of Force Majeure

19.2.1 If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.

19.2.2 The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.

19.2.3 Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.

19.3 Duty to Minimize Delay

Each Party shall at all times use all reasonable endeavors to minimize any delay in the performance of the Contract as a result of Force Majeure. A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.

19.4 Consequences of Force Majeure

19.4.1 If the Contractor is prevented from performing his substantial obligations under the Contract by Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims]to:

a. an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b. if the event or circumstance is of the kind described in sub-paragraphs (i) to (iv) of Sub-Clause 19.1 [Definition of Force Majeure] and, in sub-paragraphs(ii)to(iv), occurs in Kenya, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destroyed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in Sub-Clause18.2[Insurance for Works and Contractor's Equipment].

19.4.2 After receiving this notice, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

19.5 Force Majeure Affecting Subcontractor

If any Subcontractor is entitled under any contract or agreement relating to the Works to relief from force majeure on terms additional to or broader than those specified in this Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's non-performance or entitle him to relief under this Clause.

19.6 Optional Termination, Payment and Release

19.6.1 If the execution of substantially all the Works in progress is prevented for a continuous period of 84days by reason of Force Majeure of which notice has been given under Sub-Clause19.2 [Notice of Force Majeure], or for multiple periods which total more than 140days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 days after the notice is given, and the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment].

19.6.2 Upon such termination, the Project Manager shall determine the value of the work done and issue a Payment Certificate which shall include:

a. The amounts payable for any work carried out for which a price is stated in the Contract;

b. The Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the Contractor is liable to accept delivery: this Plant and Materials shall become the property of (and beat the risk of) the Procuring Entity when paid for by the Procuring Entity, and the Contractor shall place the same at the Procuring Entity's disposal;

c. other Cost or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works;

d. the Cost of removal of Temporary Works and Contractor's Equipment from the Site and the return of

these items to the Contractor's works in his Procuring Entity (or to any other destination at no greater cost); and

e. the Cost of repatriation of the Contractor's staff and labor employed wholly in connection with the Works at the date of termination.

19.7 Release from Performance

Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfil its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance:

a) The Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract, and

b) The sum payable by the Procuring Entity to the Contractor shall be the same as would have been payable under Sub-Clause19.6 [Optional Termination, Payment and Release] if the Contract had been terminated under Sub-Clause19.6.

20 Settlement of Claims and Disputes

20.1 Contractor's Claims

20.1.1 If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Project Manager, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28days after the Contractor became aware, or should have become aware, of the event or circumstance.

20.1.2 If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Procuring Entity shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

20.1.3 The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

20.1.4 The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Project Manager. Without admitting the Procuring Entity's liability, the Project Manager may, after receiving any notice under this Sub-Clause, monitor the record- keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Project Manager to inspect all these records, and shall (if instructed) submit copies to the Project Manager.

20.1.5 Within 42days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Project Manager, the Contractor shall send to the Project Manager a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

a) This fully detailed claim shall be considered as interim;

b) The Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Project Manager may reasonably require; and

c) The Contractor shall send a final claim within 28days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Project Manager.

20.1.6 Within 42days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Project Manager and approved by the Contractor, the Project Manager shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within the above defined time period.

20.1.7 Within the above defined period of 42days, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause8.4 [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.

20.1.8 Each Payment Certificate shall include such additional payment for any claim as has been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

20.1.9 If the Project Manager does not respond within the time frame defined in this Clause, either Party may consider that the claim is rejected by the Project Manager and any of the Parties may refer to Arbitration in accordance with Sub-Clause20.2 [Settlement of Claims and Disputes].

20.1.10 The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.

20.2 Amicable Settlement

Where a Notice of Dissatisfaction has been given, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, the Party giving a Notice of Dissatisfaction in accordance with Sub-Clause 20.1 above should move to commence arbitration after the fifty-sixth day from the day on which a Notice of Dissatisfaction was given, even if no attempt at an amicable settlement has been made.

20.3 Matters that may be referred to arbitration

Notwithstanding anything stated herein the following matters may be referred to arbitration before the practical completion of the Works or abandonment of the Works or termination of the Contract by either party:

a) The appointment of a replacement Project Manager upon the said person ceasing to act.

b) Whether or not the issue of an instruction by the Project Manager is empowered by these Conditions.

c) Whether or not a certificate has been improperly withheld or is not in accordance with these Conditions.

e) Any dispute arising in respect of war risks or war damage.

f) All other matters shall only be referred to arbitration after the completion or alleged completion of the Works or termination or alleged termination of the Contract, unless the Procuring Entity and the Contractor agree otherwise in writing.

20.4 Arbitration

20.4.1 Any claim or dispute between the Parties arising out of or in connection with the Contract not settled amicably in accordance with Sub-Clause 20.3 shall be finally settled by arbitration. Arbitration shall be conducted as follows:

a) If the contract is with foreign contractors, arbitration proceedings shall be administered by the arbitration institution designated in the Particular Conditions of Contract, and conducted under the rules of arbitration of such institution; or, if so specified in the Particular Conditions of Contract, international arbitration in accordance with the arbitration rules of the United Nations Commission on International Trade Law (UNCITRAL); or if neither an arbitration institution nor UNCITRAL arbitration rules are specified in the Particular Conditions of Contract, with proceedings administered by the International Chamber of Commerce (ICC) and conducted under the ICC Rules of Arbitration; by one or more arbitrators appointed in accordance with said arbitration rules;

b) If the Contract is with national contractors, arbitration with proceedings conducted in accordance with the Arbitration Laws of Kenya.

20.4.2 The place of arbitration shall be the neutral location specified in the Particular Conditions of Contract; and the arbitration shall be conducted in the language for communications defined in Sub-Clause 1.4 [Law and Language].

20.4.3 The arbitrators shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Project Manager, relevant to the dispute. Nothing shall disqualify representatives of the Parties and the Project Manager from being called as a witness and giving evidence before the arbitrators on any matter whatsoever relevant to the dispute.

20.4.4 Neither Party shall be limited in the proceedings before the arbitrators to the evidence, or to the reasons for dissatisfaction given in its Notice of Dissatisfaction.

20.4.5 Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, and the Project Manager shall not be altered by reason of any arbitration being conducted during the progress of the Works.

20.4.6 The terms of the remuneration of each or all the members of Arbitration shall be mutually agreed upon by the Parties when agreeing the terms of appointment. Each Party shall be responsible for paying one-half of this remuneration.

20.5 National arbitration with proceedings

20.5.1 In case of any claim or dispute, such claim or dispute shall be notified in writing by either party to the other with a request to submit it to arbitration and to concur in the appointment of an Arbitrator within thirty days of the notice. The dispute shall be referred 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, on the request of the applying party, by the Chairman or Vice Chairman of any of the following professional institutions;

i) Architectural Association of Kenya

ii) Institute of Quantity Surveyors of Kenya

iii) Association of Consulting Engineers of Kenya

iv) Chartered Institute of Arbitrators (Kenya Branch)

v) Institution of Engineers of Kenya

20.5.2 The institution written to first by the aggrieved party shall take precedence over all other institutions.

20.5.3 The arbitration may be on the construction of this Contract or on any matter or thing of whatsoever nature arising thereunder or in connection therewith, including any matter or thing left by this Contract to the discretion of the Project Manager, or the withholding by the Project Manager of any certificate to which the Contractor may claim to be entitled to or the measurement and valuation referred to in clause 23.0 of these conditions, or the rights and liabilities of the parties subsequent to the termination of Contract.

20.5.4 Provided that no arbitration proceedings shall be commenced on any claim or dispute where notice of a claim or dispute has not been given by the applying party within ninety days of the occurrence or discovery of the matter or issue giving rise to the dispute.

20.5.5 Notwithstanding the issue of a notice as stated above, the arbitration of such a claim or dispute shall not commence unless an attempt has in the first instance been made by the parties to settle such claim or dispute amicably with or without the assistance of third parties. Proof of such attempt shall be required.

20.5.6 The Arbitrator shall, without prejudice to the generality of his powers, have powers to direct such measurements, computations, tests or valuations as may in his opinion be desirable in order to determine the rights of the parties and assess and award any sums which ought to have been the subject of or included in any certificate.

20.5.7 The Arbitrator shall, without prejudice to the generality of his powers, have powers to open up, review and revise any certificate, opinion, decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision requirement or notice had been given.

20.5.8 The award of such Arbitrator shall be final and binding upon the parties.

20.6 Failure to Comply with Arbitrator's Decision

In the event that a Party fails to comply with a final and binding Arbitrator's decision, then the other Party may, without prejudice to any other rights it may have, refer the matter to a competent court of law.

SECTION IX - PARTICULAR CONDITIONS OF CONTRACT

The following Particular Conditions shall supplement the GCC. Whenever there is a conflict, the provisions here in shall prevail over those in the GCC.

Part A - Contract Data

Conditions	Sub-Clause	Data
Procuring Entity's name and address	Heading	Rural Electrification and Renewable Energy Corporation P.O Box 34585-00100 Nairobi
Name and Reference No. of the Contract	Heading and 3.1.1	Procurement for Design, Supply, Installation, Testing and commissioning of 1No. 150kW Solar PV-Diesel Hybrid Plant in Dadajabula Trading Centre Wajir County; RFX. 1000001239
Project Managers Name and address	Heading and 3.1.1	Manager Alternative Energy, REREC
Contractor's Representative's name	4.3.1	*[insert the name of the Contractor's Representative agreed by the Procuring Entity prior to Contract signature]*
Key Personnel names	6.9.1	*[insert the name of each Key Personnel agreed by the Procuring Entity prior to Contract signature]*
Time for Completion	1.1.	____280_____days (40Weeks) If Sections are to be used, refer to Table: Summary of Sections below
Defects Notification Period	1.1	_____365_____days
Sections	1.1	*If Sections are to be used, refer to Table: Summary of Sections below*
Electronic transmission systems	1.3	
Time for the Parties entering into a Contract Agreement	1.6	Within 28 days
Commencement Date	8.1.1	
Time for access to the Site	2.1	No later than the Commencement Date, and not later than ____7_____days after Commencement Date
Project Manager's Duties and Authority	3.1.6 (b) (ii)	Variations resulting in an increase of the Accepted Contract Amount in excess of __10__% shall require approval of the Procuring Entity.
Performance Security	4.2.1	The performance security will be in the form of a *performance bond* in the amount(s) of *10%* percent of the Accepted Contract Amount and in the same currency(ies) of the Accepted Contract Amount.
Normal working hours	6.5	Specify
Delay damages for the Works	8.7 & 14.15.1(b)	___2____ % of the Contract Price per day. If Sections are to be used, refer to Table: Summary of Sections below
Maximum amount of delay damages	8.7	__10____% of the final Contract Price.
Provisional Sums	13.5. (b)(ii)	*[If there are Provisional Sums, insert a percentage for adjustment of Provisional Sums]* _____%
Adjustments for Changes in Cost	13.8.3	Period "n" applicable to the adjustment multiplier "Pn": _____ *[Insert the period if different from one (1) month; if period "n" is one (1) month, insert "not applicable"]*

Conditions	Sub-Clause	Data
Total advance payment	14.2.1	__% Percentage of the Accepted Contract Amount payable in the currencies and proportions in which the Accepted Contract Amount is payable *[Insert number and timing of instalments if applicable]*
Repayment amortization rate of advance payment	14.2.5 (b)	_____%
Percentage of Retention	14.3.2 (c)	_____%
Limit of Retention Money	14.3.2 (c)	_____% of the Accepted Contract Amount
Plant and Materials	14.5.3(b)(i)	If Sub-Clause 14.5 applies: Plant and Materials for payment Free on Board _____ *[list]*.
	14.5.3(c)(i)	Plant and Materials for payment when delivered to the Site _____ *[list]*.
Minimum Amount of Interim Payment Certificates	14.6.2	_____ % of the Accepted Contract Amount. 40% on delivery and acceptance 50% on testing and commissioning 10% DLP (12months)
Publishing source of commercial interest rates for financial charges in case of delayed payment	14.8.2	Specify _____% rate per month of delayed payment.
Maximum total liability of the Contractor to the Procuring Entity	17.6.2	*[Select one of the two options below as appropriate]* The product of_____ *[insert a multiplier less or greater than one]* times the Accepted Contract Amount, *or* _____ *[insert amount of the maximum total liability]*
Periods for submission of insurance: a. evidence of insurance. b. relevant policies	18.1.6	*[Insert period for submission of evidence of insurance and policy. Period may be from 14 days to 28 days.]* _____days _____days
Maximum amount of deductibles for insurance of the Procuring Entity's risks	18.2.4 (d)	*[Insert maximum amount of deductibles]*
Minimum amount of third-party insurance	18.3.2	*[Insert amount of third-party insurance]*
The place of arbitration	20.4.2	*Insert city and country*

SECTION IX - CONTRACT FORMS

Table of Forms

FORMNo1: NOTIFICATION OF INTENTION TO AWARD

This Notification of Intention to Award shall be sent to each Tenderer that submitted a Tender. Send this Notification to the Tenderer's Authorized Representative named in the Tender Information Form on the format below.

FORMAT

1. For the attention of Tenderer's Authorized Representative

   i) Name: *[insert Authorized Representative's name]*

   ii) Address: *[insert Authorized Representative's Address]*

   iii) Telephone: *[insert Authorized Representative's telephone/ fax numbers]*

   iv) Email Address: *[insert Authorized Representative's email address]*

   [IMPORTANT: insert the date that this Notification is transmitted to Tenderers. The Notification must be sent to all Tenderers simultaneously. This means on the same date and as close to the same time as possible.]

2. Date of transmission: [*email*] on [*date*] (local time) This Notification

   Is sent by (*Name and designation*)_____

3. Notification of Intention to Award
   i) Procuring Entity: *[insert the name of the Procuring Entity]*
   ii) Project: *[insert name of project]*
   iii) Contract title: *[insert the name of the contract]*
   iv) ITT No: *[insert ITT reference number from Procurement Plan]*

   This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period, you may:

4. Request a debriefing in relation to the evaluation of your tender by submitting a Procurement-related Complaint in relation to the decision to award the contracts.

   a) The successful tenderers
      i) Name of successful Tender_____

      ii) Address of the successful Tender_____

      iii) Contract price of the successful Tender Kenya Shillings_____
      (in words_____)

   b) Other Tenderers

      Names of all Tenderers that submitted a Tender. If the Tender's price was evaluated include the evaluated price as well as the Tender price as read out.

S/No.	Name of Tender	Tender Price as read out	Tender's evaluated price (Note a)	One Reason Why Not Evaluated
1				
2				
3				
4				
5				

(Note a) State NE if not evaluated

5. How to request a debriefing

a) DEADLINE: The deadline to request a debriefing expires at midnight on [*insert date*] (*local time*).

b) You may request a debriefing in relation to the results of the evaluation of your Tender. If you decide to request a debriefing your written request must be made within three (5) Business Days of receipt of this Notification of Intention to Award.

c) Provide the contract name, reference number, name of the Tenderer, contact details; and address the request for debriefing as follows:

i) Attention: [*insert full name of person, if applicable*]

ii) Title/position: [*insert title / position*]

ii) Agency: [*insert name of Procuring Entity*]

iii) Email address: [*insert email address*]

d) If your request for a debriefing is received within the 3 Days deadline, we will provide the debriefing within five (3) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (3) Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end.

e) The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.

f) If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Days from the date of publication of the Contract Award Notice.

6. How to make a complaint

a) Period: Procurement-related Complaint challenging the decision to award shall be submitted by midnight, [*insert date*] (local time).

b) Provide the contract name, reference number, name of the Tenderer, contact details; and address the Procurement-related Complaint as follows:

i) Attention: [*insert full name of person, if applicable*]

ii) Title/position: [*insert title / position*]

iii) Agency: [*insert name of Procuring Entity*]

iv) Email address: [*insert email address*]

c) At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.

d) Further information: For more information refer to the Public Procurement and Disposals Act 2015 and its Regulations available from theWebsitewww.ppra.go.ke.

You should read these documents before preparing and submitting your complaint.

e) There are four essential requirements:

i) You must bean' interested party'. In this case, that means a Tenderer who submitted a Tender in this tendering process, and is the recipient of a Notification of Intention to Award.

ii) The complaint can only challenge the decision to award the contract.

iii) You must submit the complaint within the period stated above.

iv) You must include, in your complaint, all of the information required to support your complaint.

7. Standstill Period

i) DEADLINE: The Standstill Period is due to end at midnight on *[insert date]* (local time).

ii) The Standstill Period lasts ten (14) Days after the date of transmission of this Notification of Intention to Award.

iii) The Standstill Period may be extended as stated in paragraph Section 5 (d) above.

If you have any questions regarding this Notification please do not hesitate to contact

us. On behalf of the Procuring Entity:

Signature: _____

Name: _____

Title/position:

_____

Telephone: _____

Email: _____

FORM NO. 2- REQUEST FOR REVIEW

FORM FOR REVIEW (r.203(1))

PUBLIC PROCUREMENT ADMINISTRATIVE REVIEW BOARD

APPLICATION NO…….OF……..…20……...

BETWEEN

……...…….APPLICANT

AND

……RESPONDENT (Procuring Entity)

Request for review of the decision of the…… (Name of the Procuring Entity of ……dated the…day of ……20…….in the matter of Tender No……..…of ……..20….. for ..... (Tender description).

REQUEST FOR REVIEW

I/We……,the above named Applicant(s), of address: Physical address…….P. O. Box No……. Tel. No……..Email ……, hereby request the Public Procurement Administrative Review Board to review the whole/part of the above mentioned decision on the following grounds , namely:

1.

2.

By this memorandum, the Applicant requests the Board for an order/orders that:

1.

2.

SIGNED ……. (Applicant) Dated on…….day of ……/…20……

FOR OFFICIAL USE ONLY Lodged with the Secretary Public Procurement Administrative Review Board on……day of ……...20….……

SIGNED

Board Secretary

FORM NO 3: LETTER OF AWARD

[letterhead paper of the Procuring

Entity] [date]

To: *[name and address of the Contractor]*
This is to notify you that your Tender dated.....*[date]* for execution of the.....*[name of the Contract and identification number, as given in the Contract Data]* for the Accepted Contract Amount.....*[amount in numbers and words] [name of currency]*, as corrected and modified in accordance with the Instructions to Tenderers, is here by accepted by…… *(name of Procuring Entity).*

You are requested to furnish the Performance Security within 28days in accordance with the Conditions of Contract, using, for that purpose, one of the Performance Security Forms included in Section VIII, Contract Forms, of the Tender Document.

Authorized Signature:_____

Name and Title of Signatory:_____

Name of Procuring Entity:_____

Attachment: *Contract Agreement:*_____

FORM NO 4: CONTRACT AGREEMENT

THIS AGREEMENT made the_____day of_____, 20_____, between _____of _____ (hereinafter "the Procuring Entity"), of the one part, and_____of_____(hereinafter "the Contractor"), of the other part:

WHEREAS the Procuring Entity desires that the Works known as_____should be executed by the Contractor, and has accepted a Tender by the Contractor for the execution and completion of these Works and the remedying of any defects there in,

The Procuring Entity and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to the min the Contract documents referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.

   a) The Letter of Acceptance

   b) The Letter of Tender

   c) The addenda Nos_____(if any)

   d) The Particular Conditions of Contract

   e) The General Conditions of Contract;

   f) The Specifications

   g) The Drawings*;* and

   h) The completed Schedules and any other documents forming part of the contract.

3. In consideration of the payments to be made by the Procuring Entity to the Contractor as specified in this Agreement, the Contractor hereby covenants with the Procuring Entity to execute the Works and to remedy defects there in inconformity in all respects with the provisions of the Contract.

4. The Procuring Entity 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 hereto have caused this Agreement to be executed in accordance with the Laws of Kenya on the day, month and year specified above.

Signed and sealed by_____*(for the Procuring Entity)*

Signed and sealed by_____*(for the Contractor).*

FORM NO. 5 - PERFORMANCE SECURITY
[Option 1 - Unconditional Demand Bank Guarantee]

[Guarantor letterhead]

Beneficiary: *[insert name and Address of* Procuring Entity*]* **Date:**_____*[Insert date of issue]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that_____(hereinafter called "the Contractor") has entered into Contract No._____dated_____with (*name of Procuring Entity*)_____(the Procuring Entity as the Beneficiary), for the execution of _____(herein after called" the Contract").

2. Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

3. At the request of the Contractor, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of_____(*in words*),[1] such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified there in.

4. This guarantee shall expire, no later than the…….... Day of……,2...…[2], and any demand for payment under it must be received by us at the office indicated above on or before that date.

5. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months] [one year]*, in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

_____
[Name of Authorized Official, signature(s) and seals/stamps]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

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[1] *The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency of the Contract or a freely convertible currency acceptable to the Beneficiary.*

[2] *Insert the date twenty-eight days after the expected completion date as described in GC Clause 11.9. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.*

FORM No. 6- PERFORMANCESECURITY [Option2–Performance Bond]

[Note: Procuring Entities are advised to use Performance Security–Unconditional Demand Bank Guarantee instead of Performance Bond due to difficulties involved in calling Bond holder to action]

[Guarantor letterhead or SWIFT identifier code]

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

Date:_____*[Insert date of issue]*

PERFORMANCE BOND No.:_____

Guarantor: [*Insert name and address of place of issue, unless indicated in the letterhead]*

1. By this Bond _____as Principal (hereinafter called "the Contractor") and_____*]* as Surety (hereinafter called "the Surety"), are held and firmly bound unto_____*]* as Obligee (hereinafter called "the Procuring Entity") in the amount of_____for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

2. WHEREAS the Contractor has entered into a written Agreement with the Procuring Entity dated the day of , 20 ____, for_____in accordance with the documents, plans, specifications, and amendments there to, which to the extent here in provided for, are by reference made part here of and are here in after referred to as the Contract.

3. NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Procuring Entity to be, in default under the Contract, the Procuring Entity having performed the Procuring Entity's obligations there under, the Surety may promptly remedy the default, or shall promptly:

(1) Complete the Contract in accordance with its terms and conditions; or

(2) obtain a tender or tenders from qualified tenderers for submission to the Procuring Entity for completing the Contract in accordance with its terms and conditions, and upon determination by the Procuring Entity and the Surety of the lowest responsive Tenderers, arrange for a Contract between such Tenderer, and Procuring Entity and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable here under, the amount set for thin the first paragraph hereof. The term "Balance of the Contract Price," as used in this paragraph, shall mean the total amount payable by Procuring Entity to Contractor under the Contract, less the amount properly paid by Procuring Entity to Contractor; or

(3) pay the Procuring Entity the amount required by Procuring Entity to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

4. The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

5. Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate. No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Procuring Entity named here in or the heirs, executors, administrators, successors, and assigns of the Procuring Entity.

6. In testimony whereof, the Contractor has hereunto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this day_____of_____20_____.

SIGNED ON_____on behalf of

By_____in the capacity of in the presence of

SIGNED ON_____on behalf of

By_____in the capacity of in the presence of

FORM NO. 7 - ADVANCE PAYMENT SECURITY [Demand Bank Guarantee]

[Guarantor letterhead]

Beneficiary: _____*[Insert name and Address of* Procuring Entity*]*

Date: _____*[Insert date of issue]* **ADVANCE PAYMENT**

GUARANTEE No.: *[Insert guarantee reference number]* **Guarantor:** *[Insert name*

and address of place of issue, unless indicated in the letterhead]

1. We have been informed that_____(herein after called "the Contractor") has entered in to Contract No._____*dated*_____with the Beneficiary, for the execution of _____(herein after called "the Contract").

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

3. At the request of the Contractor, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of_____(*in words*_____)[1] upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:

   a) Has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or

   b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Contractor on its account number at_____.

5. The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as specified 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 ninety (90) percent of the Accepted Contract Amount, less provisional sums, has been certified for payment, or on the day of_____, 2 ,[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.

6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months] [one year]*, in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

_____*[Name of Authorized Official, signature(s)and seals/stamps*]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

[1] *The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency of the advance payment as specified in the Contract.*

[2] *Insert the expected expiration date of the Time for Completion. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.*

FORM NO. 8 - RETENTION MONEY SECURITY [Demand Bank Guarantee]

[Guarantor letterhead]

Beneficiary: *[Insert name and Address of* Procuring

Entity*]*

Date: *[Insert date of issue]*

Advance payment guarantee no. *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that *[insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (herein after called "the Contractor") has entered in to Contract No. *[insert reference number of the contract]* dated with the Beneficiary, for the execution of *[insert name of contract and brief description of* Works*]* (hereinafter called "the Contract").

2. Furthermore, we understand that, according to the conditions of the Contract, the Beneficiary retains moneys up to the limit set for thin the Contract ("the Retention Money"), and that when the Taking-Over Certificate has been issued under the Contract and the first half of the Retention Money has been certified for payment, and payment of *[*insert the second half of the Retention Money] is to be made against a Retention Money guarantee.

3. At the request of the Contractor, we, as Guarantor, hereby irrevocably under take to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* (*[insert amount in words])*[1] upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Contractor is in breach of its obligation (s) under the Contract, without your needing to prove or show grounds for your demand or the sum specified there in.

4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the second half of the Retention Money as referred to above has been credited to the Contractor on its account number at *[insert name and address of Applicant's bank]*.

5. This guarantee shall expire no later than the……. Day of……..…,2…[2], and any demand for payment under it must be received by us at the office indicated above on or before that date.

6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months] [one year]*, in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

_____

[Name of Authorized Official, signature(s) and seals/stamps]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

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[1] *The Guarantor shall insert an amount representing the amount of the second half of the Retention Money.*

[2] *Insert a date that is twenty-eight days after the expiry of retention period after the actual completion date of the contract. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.*

FORM NO. 9 BENEFICIAL OWNERSHIP DISCLOSURE FORM
(Amended and issued pursuant to PPRA CIRCULAR No. 02/2022)

INSTRUCTIONS TO TENDERERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM

This Beneficial Ownership Disclosure Form ("Form") is to be completed by the successful tenderer pursuant to Regulation 13 (2A) and 13 (6) of the Companies (Beneficial Ownership Information) Regulations, 2020. In case of joint venture, the tenderer must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.

For the purposes of this Form, a Beneficial Owner of a Tenderer is any natural person who ultimately owns or controls the legal person (tenderer) or arrangements or a natural person on whose behalf a transaction is conducted, and includes those persons who exercise ultimate effective control over a legal person (Tenderer) or arrangement.

Tender Reference No.:_____[*insert identification no*]

Name of the Tender Title/Description:_____*[insert name of the assignment]* to:

_____*[insert complete name of Procuring Entity]*

In response to the requirement in your notification of award dated___*[insert date of notification of award]* to furnish additional information on beneficial ownership:_____*[select one option as applicable and delete the options that are not applicable]*

I) We here by provide the following beneficial ownership information.

Details of beneficial ownership

	Details of all Beneficial Owners		**% of shares a person holds in the company Directly or indirectly**	**% of voting rights a person holds in the company**	**Whether a person directly or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent governing body of the Tenderer** (Yes / No)	**Whether a person directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes / No)**
1.	Full Name		Directly---------- % of shares Indirectly---------- % of shares	Directly…… …….% of voting rights Indirectly---------- % of voting rights	1. Having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer: Yes -----No---- 2. Is this right held directly or indirectly?: Direct…… …… Indirect…… ……...	1. Exercises significant influence or control over the Company body of the Company (tenderer) Yes -----No---- 2. Is this influence or control exercised directly or indirectly? Direct…… ….. Indirect……
	National identity card number or Passport number					
	Personal Identification Number (where applicable)					
	Nationality					
	Date of birth *[dd/mm/yyyy]*					
	Postal address					
	Residential address					
	Telephone number					
	Email address					
	Occupation or profession					

	Details of all Beneficial Owners		**% of shares a person holds in the company Directly or indirectly**	**% of voting rights a person holds in the company**	**Whether a person directly or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent governing body of the Tenderer** (Yes / No)	**Whether a person directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes / No)**
						…
2.	Full Name		Directly---------- % of shares Indirectly---------- % of shares	Directly…… …….% of voting rights Indirectly---------- % of voting rights	1. Having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer: Yes -----No---- 2. Is this right held directly or indirectly?: Direct…… …… Indirect…… ……...	1. Exercises significant influence or control over the Company body of the Company (tenderer**)** Yes -----No---- 2. Is this influence or control exercised directly or indirectly? Direct…… ….. Indirect…… …
	National identity card number or Passport number					
	Personal Identification Number (where applicable)					
	Nationality(ies)					
	Date of birth *[dd/mm/yyyy]*					
	Postal address					
	Residential address					
	Telephone number					
	Email address					
	Occupation or profession					
3. **e.t .c**						

II) Am fully aware that beneficial ownership information above shall be reported to the Public Procurement Regulatory Authority together with other details in relation to contract awards and shall be maintained in the Government Portal, published and made publicly available pursuant to Regulation 13(5) of the Companies (Beneficial Ownership Information) Regulations, 2020.(Notwithstanding this paragraph Personally Identifiable Information in line with the Data Protection Act shall not be published or made public). *Note that Personally Identifiable Information (PII) is defined as any information that can be used to distinguish one person from another and can be used to deanonymize previously anonymous data. This information includes National identity card number or Passport number, Personal Identification Number, Date of birth, Residential address, email address and Telephone number.*

III) In determining who meets the threshold of who a beneficial owner is, the Tenderer must consider a natural person who in relation to the company:

(a) holds at least ten percent of the issued shares in the company either directly or indirectly;

(b) exercises at least ten percent of the voting rights in the company either directly or indirectly;

(c) holds a right, directly or indirectly, to appoint or remove a director of the company; or

(d) exercises significant influence or control, directly or indirectly, over the company.

IV) What is stated to herein above is true to the best of my knowledge, information and belief.

Name of the Tenderer: .....[insert complete name of the Tenderer]*_____

*Name of the person duly authorized to sign the Tender on behalf of the Tenderer: ** [insert complete name of person duly authorized to sign the Tender]*

Designation of the person signing the Tender: ..... [insert complete title of the person signing the Tender]

Signature of the person named above: ..... [insert signature of person whose name and capacity are shown above]

Date this ..... [insert date of signing] day of..... [Insert month], [insert year]

Bidder Official Stamp