COUNTY GOVERNMENT OF KISUMU

Department of Energy and Industrialization

TENDER NAME: REQUEST FOR PROPOSAL (RFP) FOR SOLAR DEVELOPMENT PROJECT

TENDER NO: CGK/EI/RFP/06/2019

November 19

Standard Bidding Document

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Section I - Instructions to Bidders

A. General

1. Scope of Bid

1.1 In connection with the Invitation for Bids **specified in the Bid Data Sheet (BDS)**, the **County Government of Kisumu**, issues these Bidding Documents for the procurement of the Works as specified in Section VII, Works Requirements. The name, identification, and number of lots (contracts) of this bidding are **specified in the BDS**.

1.2 Throughout this Bidding Document:

(a) the term "in writing" means communicated in written form and delivered against receipt;

(b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and

(c) "day" means calendar day.

2. Source of Funds

2.1 Contracted firms will design, construct and equip the solar PV facilities and may turn the projects over to CGK or own and operate them under mutually agreed terms and conditions. CGK has a strong preference for build, operate and transfer or equivalent financing mechanisms that deliver similar risk, cost, and performance characteristics

2.2 The respondent shall provide a total "turnkey" project including all necessary equipment, materials and design, manufacturing, and installation services for the installation of a utility-interactive PV system that shall power hospitals, markets, water pumping, street lighting, at a minimum of 5kW for the mini-grids. CGK will review the proposed project financing and ownership structure, including a system to be directly owned by the CGK or as deemed suitable. The respondent should prepare a system summary detailing, applicable equipment/size, and predicted system energy production in kilowatt-hour (kWh). The project shall meet all requirements of statement of work and other specifications included that apply.

3. Corrupt and Fraudulent Practices

3.1 CGK requires compliance with guidelines in Public Procurement and disposal act.

4. Eligible Bidders

4.1 A Bidder may be a firm that is a private entity, or a government-owned entity or any combination of them in the form of a joint venture (JV), under an existing agreement, or with the intent to enter into 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 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 bidding process and, in the event the JV is awarded the Contract, during contract execution. **Unless specified in the BDS**, there is no limit on the number of members in a JV.

4.2 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest for the purpose of this bidding process, if the Bidder:

(a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or

(b) receives or has received any direct or indirect subsidy from another Bidder; or

(c) has the same legal representative as another Bidder; or

(d) has a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or

(e) participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which such Bidder is involved. However, this does not limit the inclusion of the same subcontractor in more than one bid; or

(f) or 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 bid; or

(g) or any of its affiliates has been hired (or is proposed to be hired) by the Employer or Borrower as Engineer for the Contract implementation;

(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 project specified in the BDS ITB 2.1 that it provided or were provided by any

affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm;

4.3 A Bidder may have the nationality of any country, subject to the restrictions pursuant to ITB 4.7. A Bidder shall be deemed to have the nationality of a country if the Bidder 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 sub-contractors or sub-consultants for any part of the Contract including related Services.

4.4 Bidders that are Government-owned enterprises or institutions in the Employer's Country may participate only if they can establish that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not dependent agencies of the Employer. To be eligible, a government-owned enterprise or institution shall establish to the CGK's satisfaction, through all relevant documents, including its Charter and other information the CGK may request, that it: (i) is a legal entity separate from the government (ii) does not currently receive substantial subsidies or budget support; (iii) operates like any commercial enterprise, and, inter alia, is not obliged to pass on its surplus to the government, can acquire rights and liabilities, borrow funds and be liable for repayment of its debts, and can be declared bankrupt; and (iv) is not bidding for a contract to be awarded by the department or agency of the government which under their applicable laws or regulations is the reporting or supervisory authority of the enterprise or has the ability to exercise influence or control over the enterprise or institution.

4.5 A Bidder shall not be under suspension from bidding by the Employer as the result of the operation of a Bid–Securing Declaration.

4.6 A Bidder shall provide such evidence of eligibility satisfactory to the Employer, as the Employer shall reasonably request.

5. Eligible Materials, Equipment and Services

5.1 The materials, equipment and services to be supplied under the Contract may have their origin in any country subject to the restrictions specified in Section V, Eligible Countries, and all expenditures under the Contract will not contravene such restrictions. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services.

B. Contents of Bidding Document

6. Sections of Bidding Document

6.1 The Bidding Document consist of Parts 1, 2, and 3, which include all the Sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITB 8.

PART 1 Bidding Procedures
Section I - Instructions to Bidders (ITB)
Section II - Bid Data Sheet (BDS)
Section III - Evaluation and Qualification Criteria
Section IV - Bidding Forms

PART 2 Works Requirements
Section VII - Works Requirements

PART 3 Conditions of Contract and Contract Forms
Section VIII - General Conditions of Contract (GCC)
Section IX - Particular Conditions of Contract (PCC)
Section X - Contract Forms

6.2 The Invitation for Bids issued by the Employer is not part of the Bidding Document.

6.3 Unless obtained directly from the Employer, the Employer is not responsible for the completeness of the Bidding Documents, responses to requests for clarification, the minutes of the pre-Bid meeting (if any), or Addenda to the Bidding Documents in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Employer shall prevail.

6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents and to furnish with its bid all information and documentation as is required by the Bidding Documents.

7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting

7.1 Respondents may obtain additional information as follows:

Questions about this RFP shall be submitted to the e-mail address: **energy@kisumu.go.ke** with a subject line that reads: "CGK Solar RFP Questions." All questions must be received by **18th November, 2019** to guarantee a response. Questions will be promptly answered via email.

7.2 The Bidder is advised to visit and examine the Sites of Work and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for execution of the Works. The costs of visiting the Site shall be at the Bidder's own expense.

7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

7.4 **If so specified in the BDS**, the Bidder's designated representative is invited to attend a pre-bid meeting. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

7.5 The Bidder is requested, to submit any questions in writing, to reach the Employer not later than one week before the meeting.

7.6 Minutes of the pre-bid meeting, if applicable, including the text of the questions asked by Bidders, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Documents in accordance with ITB 6.3. Any modification to the Bidding Documents that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting. Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.

8. Amendment of Bidding

8.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Documents by issuing

Document

addenda.

8.2 Any addendum issued shall be part of the Bidding Documents and shall be communicated in writing to all who have obtained the Bidding Document from the Employer in accordance with ITB 6.3. The Employer shall also promptly publish the addendum on the Employer's web page in accordance with ITB 7.1.

8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB 22.2.

C. Preparation of Bids

9. Cost of Bidding

9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

10. Language of Bid

10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the language **specified in the BDS**. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language **specified in the BDS**, in which case, for purposes of interpretation of the Bid, such translation shall govern.

11. Documents Comprising the Bid

11.1 The Bid shall comprise the following:

(a) Letter of Bid in accordance with ITB 12;

(b) completed Schedules, in accordance with ITB 12 and 14: **as specified in the BDS**;

(c) Bid Security or Bid Securing Declaration, in accordance with ITB 19.1;

(d) alternative bids, if permissible, in accordance with ITB 13;

(e) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;

(f) documentary evidence in accordance with ITB 17 establishing the Bidder's qualifications to perform the contract if its Bid is accepted;

(g) Technical Proposal in accordance with ITB 16; and

(h) any other document **required in the BDS**.

11.2 In addition to the requirements under ITB 11.1, bids 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 bid shall be signed by all members and submitted with the bid, together with a copy of the proposed Agreement.

11.3 The Bidder shall furnish in the Letter of Bid information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.

12. Letter of Bid and Schedules

12.1 The Letter of Bid and Schedules shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.2. All blank spaces shall be filled in with the information requested.

13. Alternative Bids

13.1 Unless otherwise **specified in the BDS**, alternative bids shall not be considered.

13.2 When alternative times for completion are explicitly invited, a statement to that effect will be **included in the BDS**, as will the method of evaluating different times for completion.

13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Document must first price the Employer's design as described in the Bidding Document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, 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 lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.

13.4 When **specified in the BDS**, Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be **identified in the BDS** and described in Section VII. Works Requirements. The method for their evaluation will be stipulated in Section III. Evaluation and Qualification Criteria.

14. Bid Prices and

14.1 The prices and discounts (including any price reduction) quoted

Discounts

by the Bidder in the Letter of Bid and in the Schedules shall conform to the requirements specified below.

14.2 The Bidder shall submit a bid for the whole of the works described in ITB 1.1 by providing separately financial proposal of all the items captured in the proposal.

14.3 The price to be quoted in the Letter of Bid, in accordance with ITB 12.1, shall be the total price of the bid, excluding any discounts offered.

14.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Bid, in accordance with ITB 12.1.

14.5 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates and prices[1] and the total bid price submitted by the Bidder.

15. Currencies of Bid and Payment

15.1 Bidders may be required by the Employer to justify, to the Employer'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 are reasonable[2], in which case a detailed breakdown of the foreign currency requirements shall be provided by Bidders.

16. Documents Comprising the Technical Proposal

16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, Bidding Forms, in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.

17. Documents Establishing the Qualifications of the Bidder

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

17.2 If a margin of preference applies as specified in accordance with ITB 33.1, domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITB 33.1.

18. Period of Validity of Bids

18.1 Bids shall remain valid for the period **specified in the BDS** after the bid submission deadline date prescribed by the Employer in accordance with ITB 22.1. A bid valid for a shorter period shall be rejected by the Employer as nonresponsive.

18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended for twenty-eight (28) days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid, except as provided in ITB 18.3.

19. Bid Security

19.1 The Bidder shall furnish as part of its bid, either a Bid-Securing Declaration or a bid security **as specified in the BDS**, in original form and, in the case of a bid security, in the amount and currency **specified in the BDS**.

19.2 A Bid Securing Declaration shall use the form included in Section IV, Bidding Forms.

19.3 If a bid security is specified pursuant to ITB 19.1, the bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's signing the Contract and furnishing the performance security pursuant to ITB 42.

20. Format and Signing of Bid

20.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 11 and clearly mark it **"ORIGINAL**". Alternative bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE". In addition, the Bidder shall submit copies of the bid in the number **specified in the BDS,** and clearly mark each of them "**COPY."** In the event of any discrepancy between the original and the copies, the original shall prevail.

20.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as **specified in the BDS** and shall be

attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.

20.3 In case the Bidder is a JV, the Bid 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.

20.4 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.

D. Submission and Opening of Bids

21. Sealing and Marking of Bids

21.1 The Bidder shall enclose the original and all copies of the bid, including alternative bids, if permitted in accordance with ITB 13, in separate sealed envelopes, duly marking the envelopes as "ORIGINAL", and "COPY." These envelopes containing the original and the copies shall then be enclosed in one single envelope.

21.2 The inner and outer envelopes shall:

(a) bear the name and address of the Bidder;

(b) be addressed to the Employer as **provided in the BDS** pursuant to ITB 22.1;

(c) bear the specific identification of this bidding process specified in accordance with BDS 1.1; and

(d) bear a warning not to open before the time and date for bid opening.

21.3 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the bid.

22. Deadline for Submission of Bids

22.1 Bids must be received by the Employer at the address and no later than the date and time **specified in the BDS**. When so **specified in the BDS**, bidders shall have the option of submitting their bids electronically. Bidders submitting bids electronically shall follow the electronic bid submission procedures **specified in the BDS.**

22.2 The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document in

accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

23. Late Bids

23.1 The Employer shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 22. Any bid received by the Employer after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder.

24. Withdrawal, Substitution, and Modification of Bids

24.1 A Bidder may withdraw, substitute, or modify its bid 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 ITB 20.2, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the bid must accompany the respective written notice. All notices must be:

(a) prepared and submitted in accordance with ITB 20 and ITB 21 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL," "SUBSTITUTION," "MODIFICATION;" and

(b) received by the Employer prior to the deadline prescribed for submission of bids, in accordance with ITB 22.

24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.

24.3 No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof.

25. Bid Opening

25.1 Except in the cases specified in ITB 23 and 24, the Employer shall publicly open and read out in accordance with ITB 25.3 all bids received by the deadline, at the date, time and place **specified in the BDS**, in the presence of Bidders` designated representatives and anyone who choose to attend. Any specific electronic bid opening procedures required if electronic bidding is permitted in accordance with ITB 22.1, shall be **as specified in the BDS**.

25.2 First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with the corresponding bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening. Next, envelopes marked "SUBSTITUTION" shall be

opened and read out and exchanged with the corresponding bid being substituted, and the substituted bid shall not be opened, but returned to the Bidder. No bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at bid opening. Envelopes marked "MODIFICATION" shall be opened and read out with the corresponding bid. No bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at bid opening. Only envelopes that are opened and read out at bid opening shall be considered further.

25.3 All other envelopes shall be opened one at a time, reading out: the name of the Bidder and whether there is a modification; the total Bid Price, per lot (contract) if applicable, including any discounts and alternative bids; the presence or absence of a bid security, or Bid Securing Declaration, if required; and any other details as the Employer may consider appropriate. Only discounts and alternative bids read out at bid opening shall be considered for evaluation. The Letter of Bid and the Bill of Quantities are to be initialed by representatives of the Employer attending bid opening in the manner **specified in the BDS**. The Employer shall neither discuss the merits of any bid nor reject any bid (except for late bids, in accordance with ITB 23.1).

25.4 The Employer shall prepare a record of the bid opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; the Bid Price, per lot (contract) if applicable, including any discounts and alternative bids; and the presence or absence of a bid security, if one was required. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders.

E. Evaluation and Comparison of Bids

26. Confidentiality

26.1 Information relating to the evaluation of bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with the bidding process until information on Contract award is communicated to all Bidders in accordance with ITB 40.

26.2 Any attempt by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its bid.

26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if a Bidder wishes to contact the Employer on any matter related to the bidding process, it shall do so in writing.

27. Clarification of Bids

27.1 To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid given a reasonable time for a response. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer'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 bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids, in accordance with ITB 31.

27.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.

28. Deviations, Reservations, and Omissions

28.1 During the evaluation of bids, the following definitions apply:

(a) "Deviation" is a departure from the requirements specified in the Bidding Document;

(b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and

(c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.

29. Determination of Responsiveness

29.1 The Employer's determination of a bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.

29.2 A substantially responsive bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

(a) if accepted, would:

(i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or

(ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the

Bidder's obligations under the proposed Contract; or

(b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.

29.3 The Employer shall examine the technical aspects of the bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section VII (Works Requirements) have been met without any material deviation, reservation or omission.

29.4 If a bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

30. Nonconformities, Errors, and Omissions

30.1 Provided that a bid is substantially responsive, the Employer may waive any nonconformities in the bid.

30.2 Provided that a bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

30.3 Provided that a bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price may be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. The adjustment shall be made using the methods specified in Section III (Evaluation and Qualification Criteria).

31. Correction of Arithmetical Errors

31.1 Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:

(a) only for admeasurement contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;

(b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

(c) 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 subject to (a) and (b) above.

31.2 Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 31.1, shall result in the rejection of the Bid.

32. Conversion to Single Currency

32.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as **specified in the BDS**.

33. Margin of Preference

33.1 **Unless otherwise specified in the BDS,** a margin of preference for domestic bidders[3] shall not apply.

34. Subcontractors

34.1 Unless otherwise stated in the BDS, the Employer does not intend to execute any specific elements of the Works by sub-contractors selected in advance by the Employer.

34.2 The Employer may permit subcontracting for certain specialized works as indicated in Section III. When subcontracting is permitted by the Employer, the specialized sub-contractor's experience shall be considered for evaluation. Section III describes the qualification criteria for sub-contractors.

34.3 Bidders may propose subcontracting up to the percentage of total value of contracts or the volume of works as **specified in the BDS.**

35. Evaluation of Bids

35.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.

35.2 To evaluate a bid, the Employer shall consider the following:

(a) the bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities[4] for admeasurement contracts, but including Daywork[5] items, where priced competitively;

(b) price adjustment for correction of arithmetic errors in

accordance with ITB 31.1;

(c) price adjustment due to discounts offered in accordance with ITB 14.4;

(d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 32;

(e) price adjustment for nonconformities in accordance with ITB 30.3;

(f) the additional evaluation factors are specified in Section III (Evaluation and Qualification Criteria);

35.3 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 taken into account in bid evaluation.

35.4 If this Bidding Document allows Bidders to quote separate prices for different lots (contracts), the methodology to determine the lowest evaluated price of the contract combinations, including any discounts offered in the Letter of Bid, is specified in Section III. Evaluation and Qualification Criteria.

35.5 If the bid for an admeasurement contract, which results in the lowest Evaluated Bid Price, is seriously unbalanced or, front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.

36. Comparison of Bids

36.1 The Employer shall compare the evaluated prices of all substantially responsive bids established in accordance with ITB 35.2 to determine the lowest evaluated bid.

37. Qualification of the Bidder

37.1 The Employer shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated and substantially responsive bid meets the qualifying criteria specified in Section III. Evaluation and Qualification Criteria.

37.2 The determination shall be based upon an examination of the documentary evidence of the Bidder’s qualifications submitted

by the Bidder, pursuant to ITB 17.1.

37.3 An affirmative determination of qualification shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the bid, in which event the Employer shall proceed to the next lowest evaluated bid to make a similar determination of that Bidder's qualifications to perform satisfactorily.

38. Employer's Right to Accept Any Bid, and to Reject Any or All Bids

38.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.

F. Award of Contract

39. Award Criteria

39.1 Subject to ITB 37.1, the Employer shall award the Contract to the Bidder whose bid has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

40. Notification of Award

40.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, via the Letter of Acceptance included in the Contract Forms, that its bid has been accepted. At the same time, the Employer shall also notify all other Bidders of the results of the bidding as required by PPDA

40.2 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.

40.3 The Employer shall promptly respond in writing to any unsuccessful Bidder who, after notification of award in accordance with ITB 40.1, requests in writing the grounds on which its bid was not selected.

41. Signing of Contract

41.1 After 14 days upon notification, the Employer shall send the successful Bidder the Contract Agreement as required by PPDA.

42. Performance Security

42.1 Within 30 days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, subject to ITB 35.5, using for that purpose the Performance Security Form included in Section X. Contract Forms, or another form acceptable to the Employer. If the performance security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a bond shall have a correspondent financial institution located in the Employer's Country.

42.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security. In that event the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.

Section II - Bid Data Sheet (BDS)

A. Introduction

ITB 1.1	The number of the Invitation for Bids is : The Employer is: ***County Government of Kisumu***
ITB 1.1	The name of the bidding process is: ***National Competitive Bidding NCB***
ITB 2.1	Financier : ***Successful bidder***
ITB 2.1	The name of the Project is: ***SOLAR DEVELOPMENT PROJECT***
ITB 4.1	Maximum number of members in the JV shall be: ***3***
ITB 4.4	A list of debarred firms and individuals ***N/A***

B. Bidding Documents

ITB 7.1	For **clarification purposes** only, the Employer's address is: Chief Officer - Energy and Industrialization Department P.O.Box 2738-40100 Kisumu. Requests for clarification should be received by the Employer no later than: ***7Days before tender opening***
ITB 7.1	Web page: ***N/A***
ITB 7.4	A Pre-Bid meeting ***"Shall take place upon Bidders request"***. A site visit conducted by the Employer ***This will be conducted in various facilities, institutions and potential locations in Kisumu County at the respondent's expense.***

C. Preparation of Bids

ITB 10.1	The language of the bid is: ***English***

ITB 11.1 (b)	***Not Applicable***
ITB 11.1 (h)	The Bidder shall submit with its bid the following additional documents: ***1. The following documents must be attached.*** ***2. Certificate of Incorporation/Business Name Certificate*** ***3. Trading Certificate*** ***4. Business Permits*** ***5. Certificate from relevant regulatory authority (where applicable)*** ***6. Kenya Bureau of Standards certifications, Manufacturers Authorization/or equivalent (where applicable).*** ***7. TAX PIN Certificate*** ***8. Tax Compliance certificate.*** ***9. Form CR 12 as issued by the Registrar of Companies (original) or certified as true copy*** ***10. Certified Audited Accounts(Last three years)*** ***11. Organogram/Organization Chart***
ITB 13.1	Alternative bids ***"shall not be"*** permitted.
ITB 13.2	Alternative times for completion ***"shall not be"*** *permitted*.
ITB 13.4	***Not Applicable***
ITB 14.5	The prices quoted by the Bidder ***"shall not be"*** subject to adjustment during the performance of the Contract.
ITB 15.1	The prices shall be quoted by the bidder in: ***Kenya Shillings***
ITB 18.1	The bid validity period shall be: ***180*** days.
ITB 18.3 (a)	The bid price shall be adjusted by the following factor(s): ***Not Applicable***
ITB 19.1	A Bid Security ***"shall not be"*** required. A Bid-Securing Declaration ***"shall be"*** required.
ITB 19.3 (d)	Other types of acceptable securities: ***Not Applicable***

ITB 19.9	***Not Applicable***
ITB 20.1	In addition to the original of the bid, the number of copies is: ***One copy***
ITB 20.2	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: ***Any Director or person Given Power of Attorney by the Directors.***

D. Submission and Opening of Bids

ITB 22.1	Bidders ***"shall not"*** have the option of submitting their bids electronically.
ITB 22.1	For **bid submission purposes** only, the Employer's address is: **THE COUNTY SECRETARY,** **KISUMU COUNTY GOVERNMENT** **P.O. BOX 2738 - 40100,** **KISUMU** **The deadline for bid submission is:** Date: 25th November 2019 Time: 12.00 Noon Bidders ***shall not*** have the option of submitting their bids electronically.
ITB 25.1	The bid opening shall take place at: Date: 25th November 2019 Time: 12.00 Noon
ITB 25.3	*Each Bid shall be initialed by all representatives and shall be numbered, any modification to the unit or total price shall be initialed by the Representative of the Employer.*

E. Evaluation and Comparison of Bids

ITB 32.1	***Not applicable.***
ITB 33.1	A margin of preference ***"shall not"*** apply.

ITB 34.1	***Not Applicable***
ITB 34.3	Contractor's proposed subcontracting: Maximum percentage of subcontracting permitted is: *0 % of the total contract amount or 0% of the volume of work.* b) Bidders planning to subcontract more than 10% of total volume of work shall specify, in the Letter of Bid, the activity (ies) or parts of the works to be subcontracted along with complete details of the sub-contractors and their qualification and experience. The qualification and experience of the sub-contractors must meet the minimum criteria for the relevant work to be sub-contracted failing which such sub-contractors will not be permitted to participate. c) Sub-contractors' qualification and experience will not be considered for evaluation of the Bidder. The Bidder on its own (without taking into account the qualification and experience of the sub-contractor) should meet the qualification criteria.

F. Award of Contract

ITB 43.1	The Adjudicator proposed by the Employer is***: Institute of Arbitrators (Kenya Chapter).*** Appeal: ***Public procurement Oversight authority (PPOA)*** The hourly fee for this proposed Adjudicator shall be: ***KShs 20,000.00.***

Section III - Evaluation and Qualification Criteria

This section contains all the criteria that the Employer shall use to evaluate bids and qualify The Bidder shall provide all the information requested in the forms included in Section 4 (Bidding Forms).

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1.4 Technical Alternatives ..... 1-**Error! Bookmark not defined.**
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1. Evaluation

In addition to the criteria listed in ITB 34 and ITB 11.1 (h) the proposals will be reviewed by the CGK evaluation committee. The following qualitative merit criteria will be used to determine the technical value of the offer in meeting the objectives of the solution.

S/No.	Parameters	Marks	Allocat
1.	Past experience	10	
2.	Successful solar energy project management and implementation experience from at least three reputable cliets	10	
3.	Qualifications and competence of the key staff for the assignment	10	
4.	Proposed terms of engagement	10	
5.	Proposed solution provided and technical component	30	
6.	Demonstration of succession plans	5	
7	Provision of the proposed work plan	10	
9.	Evidence of technological transfer(training to KISUMU COUNTY STAFF)	10	
10.	Corporate social responsibility programs	5	
	TOTAL	**100**	

2. Qualification

Factor	2.2 Historical Contract Non-Performance					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture, Consortium or Association			
			All partners combined	Each partner	At least one partner	
2.2.1 History of non-performing contracts	Non-performance of a contract did not occur within the last **Five (5)** years prior to the deadline for application submission, based on all information on fully settled disputes or litigation. A fully settled dispute or litigation is one that has been resolved in accordance with the Dispute Resolution Mechanism under the respective contract, and where all appeal instances available to the bidder have been exhausted.	Must meet requirement by itself or as partner to past or existing JV	N / A	Must meet requirement by itself or as partner to past or existing JV	N / A	Form CON - 2
2.2.2 Pending Litigation	All pending litigation shall in total not represent more than **Fifty (50%) percent** of the Bidder's net worth and shall be treated as resolved against the Bidder.	Must meet requirement by itself or as partner to past or existing JV	N / A	Must meet requirement by itself or as partner to past or existing JV	N / A	Form CON – 2

Factor	2.3 Financial Situation					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture, Consortium or Association			
			All partners combined	Each partner	At least one partner	
2.3.1 Historical Financial Performance	Submission of audited balance sheets or if not required by the law of the bidder's country, other financial statements acceptable to the Employer, for the last **Three [3]** years to demonstrate the current soundness of the bidders financial position and its prospective long term profitability.	Must meet requirement	N / A	Must meet requirement	N / A	Form FIN – 3.1 with attachments
2.3.2. Average Annual Turnover	Minimum average annual **turnover of total value of the project,** calculated as total certified payments received for contracts in progress or completed, within the **last Five(5)** years	Must meet requirement	Must meet requirement	Must meet _____ percent (**25%**) of the requirement	Must meet _____ percent (**40%**) of the requirement	Form FIN –3.2

Factor	2.3 Financial Situation					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture, Consortium or Association			
			All partners combined	Each partner	At least one partner	
2.3.3. Financial Resources	The Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet: (i) the following cash-flow requirement: **Kshs 50,000,000** and (ii) the overall cash flow requirements for this contract and its concurrent commitments.	Must meet requirement	Must meet requirement	Must meet _____ percent (**25%)** of the requirement	Must meet _____ percent (40%) of the requirement	Form FIN –3.3

Factor	***2.4 Experience***					
Sub-Factor	*Criteria*					***Documentation Required***
	Requirement	***Bidder***				
		Single Entity	***Joint Venture, Consortium or Association***			
			All partners combined	***Each partner***	***At least one partner***	
2.4.1 General Experience	Experience under contracts in the role of contractor, subcontractor, or management contractor for at least the last **Five [5]** years prior to the applications submission deadline, and with activity in at least nine (9) months in each year.	Must meet requirement	N / A	Must meet requirement	N / A	Form EXP-4.1
2.4.2 Specific Experience	(a)Participation as contractor, management contractor, or subcontractor, in at least one **year (1)** contracts within the last **Five (5)**years , each with a value of at least Kenya shillings Ten Million(**10,000,000**) that have been successfully and substantially completed and that are similar to the proposed Works. The similarity shall be based on the physical size, complexity, methods/technology or other characteristics as described in Section VI, Employer's Requirements.	Must meet requirement	Must meet requirements for all characteristics	N / A	Must meet requirement for one characteristic	Form EXP 2.4.2(a)

Factor	***2.4 Experience***					
Sub-Factor	*Criteria*					***Documentation Required***
	Requirement	***Bidder***				
		Single Entity	***Joint Venture, Consortium or Association***			
			All partners combined	***Each partner***	***At least one partner***	
2.4.2 Specific Experience	b) For the above or other contracts executed during the period stipulated in 2.4.2(a) above, a minimum experience in the following key activities: **Building Construction and Civil Engineering Works**	Must meet requirements	Must meet requirements	N / A	Must meet requirements	Form EXP-2.4.2(b)

2.5 Personnel

The Bidder must demonstrate that it will have the personnel for the key positions that meet the following requirements:

No.	Position	Total Work Similar Experience (years)	In Similar Works Experience (years)
1			
2			
3			
4			
5			

The Bidder shall provide details of the proposed personnel and their experience records in the relevant Forms included in Section IV, Bidding Forms.

2.6 Equipment

The Bidder must demonstrate that it will have access to the key Contractor's equipment listed hereafter:

No.	Equipment Type and Characteristics	Minimum Number required
1		
2		
3		
4		
5		

The Bidder shall provide further details of proposed items of equipment using the relevant Form in Section IV.

Section IV - Bidding Forms

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Financial Situation and Performance 16
Average Annual Construction Turnover.....18
Financial Resources 19
General Construction Experience 20
Specific Construction and Contract Management Experience 21
Construction Experience in Key Activities.....23

Letter of Bid to be put in a separate envelope with financial proposal

The Bidder must prepare the Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and address.

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

Date: ***[insert date (as day, month and year) of Bid Submission]***
Invitation for Bid No.: ***[insert identification]***

To: **[*insert complete name of Employer*]**

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB 8)___;

(b) We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;

(c) We have not been suspended nor declared ineligible by the Employer based on execution of a Bid Securing Declaration in the Employer's country in accordance with ITB 4.6

(d) We offer to execute in conformity with the Bidding Documents the following Works: **[*insert a brief description of the Works*]**;

(e) The total price of our Bid, excluding any discounts offered in item (f) below is:

In case of only one lot, total price of the Bid ***[insert the total price of the bid in words and figures, indicating the various amounts and the respective currencies]*;**

In case of multiple lots, total price of each *lot* ***[insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies]*;**

In case of multiple lots, 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]***;

(f) The discounts offered and the methodology for their application are:

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

(ii) 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]****;*

(g) Our bid shall be valid for a period of **[*specify the number of calendar days*]** days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(h) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;

(i) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB 4.2(e), other than alternative bids submitted in accordance with ITB 13;

(j) We, including any of our subcontractors or suppliers for any part of the contract, have not been declared ineligible by the government, under the Employer's country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council;

(k) We are not a government owned entity/ We are a government owned entity but meet the requirements of ITB 4.5;[6]

(l) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding 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.")

(m) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and

(n) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

(o) We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any type of fraud and corruption

Name of the Bidder* ***[insert complete name of person signing the Bid]***

Name of the person duly authorized to sign the Bid on behalf of the Bidder** ***[insert complete name of person duly authorized to sign the Bid]***

[6] *Bidder to use as appropriate*

Title of the person signing the Bid ***[insert complete title of the person signing the Bid]***

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]***

*: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

**: Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid Schedules.

Form of Bid-Securing Declaration

Date: *[insert date (as day, month and year)]*
Bid No.: *[insert number of bidding process]*
Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[insert complete name of Employer]*

We, the undersigned, declare that:

We understand that, according to your conditions, bids must be supported by a Bid-Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding in any contract with the entity that invited Bids 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 Bid during the period of bid validity specified in the Letter of Bid; or

(b) having been notified of the acceptance of our Bid by the Employer 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 ITB.

We understand this Bid-Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Name of the Bidder*_____ ***[insert complete name of person signing the Bid]***

Name of the person duly authorized to sign the Bid on behalf of the Bidder** ***[insert complete name of person duly authorized to sign the Bid]***

Title of the person signing the Bid ***[insert complete title of the person signing the Bid]***

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]***

*: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

**: Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid *[Note: In case of a Joint Venture, the Bid-Securing Declaration must be in the name of all members to the Joint Venture that submits the bid.]*

Technical Proposal

Technical Proposal Forms

Personnel

Equipment

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Others

Forms for Personnel

Form PER – 1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements for each of the positions listed in Section III (Evaluation and Qualification Criteria). The data on their experience should be supplied using the Form below for each candidate.

1.	**Title of position**
	Name
2.	**Title of position**
	Name
3.	**Title of position**
	Name
4.	**Title of position**
	Name
5.	**Title of position**
	Name
6.	**Title of position**
	Name
etc.	**Title of position**
	Name

Form PER – 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below. Fields with asterisk (*) shall be used for evaluation.

Position*		
Personnel information	**Name ***	**Date of birth**
	Professional qualifications	
Present employment	**Name of** Employer	
	Address of Employer	
	Telephone	**Contact (manager / personnel officer)**
	Fax	**E-mail**
	Job title	**Years with present** Employer

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

From*	To*	Company, Project , Position, and Relevant Technical and Management Experience*

Forms for Equipment

The Bidder 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 Bidder. The Bidder shall provide all the information requested below, to the extent possible. Fields with asterisk (*) shall be used for evaluation.

Type 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**	

The following information shall be provided only for equipment not owned by the Bidder.

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**	

Bidder's Qualification

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

Form ELI -1.1: Bidder Information Form

Date: _____

Bidder's name
In case of Joint Venture (JV), name of each member:
Bidder's actual or intended country of registration: *[indicate country of Constitution]*
Bidder's actual or intended year of incorporation:
Bidder's legal address [in country of registration]:
Bidder'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 ITB 4.3.

☐ In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1.

☐ In case of Government-owned enterprise or institution, in accordance with ITB 4.5 documents establishing:

- Legal and financial autonomy
- Operation under commercial law
- Establishing that the Bidder is not dependent agency of the Employer

2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

Form ELI -1.2: Information Form for JV Bidders

(to be completed for each member of Joint Venture)

Date: _____
ICB No. and title: _____
Page _____ of _____ pages

Bidder's Joint Venture 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 ITB 4.3. ☐ In case of a Government-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and absence of dependent status, in accordance with ITB 4.5. 2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

Form CON – 2: Historical Contract Non-Performance, Pending Litigation and Litigation History

Bidder's Name: _____
Date: _____
Joint Venture Member's Name_____
ICB No. and title: _____
Page _____of _____pages

Non-Performed Contracts in accordance with Section III, Evaluation Criteria and Qualifications			
☐ Contract non-performance did not occur since 1st January *[insert year]* specified in Section III, Evaluation Criteria and Qualifications, Sub-Factor 2.1. ☐ Contract(s) not performed since 1st January *[insert year]* specified in Section III, Evaluation Criteria and Qualifications, requirement 2.1			
Year	**Non-performed portion of contract**	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and US$ equivalent)**
		Contract Identification: Name of Employer: Address of Employer: Reason(s) for non performance:	
Pending Litigation, in accordance with Section III, Evaluation Criteria and Qualifications			
☐ No pending litigation in accordance with Section III, Evaluation Criteria and Qualifications, Sub-Factor 2.3. ☐ Pending litigation in accordance with Section III, Evaluation Criteria and Qualifications, Sub-Factor 2.3 as indicated below.			

Form CCC: Current Contract Commitments / Works in Progress

Bidders and each partner 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.

Name of contract	Employer, contact address/tel/fax	Value of outstanding work (current US$ equivalent)	Estimated completion date	Average monthly invoicing over last six months (US$/month)
1.				
2.				
3.				
4.				
5.				
etc.				

Form FIN – 3.1: Financial Situation and Performance

Bidder's Name: _____
Date: _____
Joint Venture Member's Name_____
ICB No. and title: _____
Page _____of _____pages

1. Financial data

Type of Financial information in (currency)	**Historic information for previous _____*years,*** **_____ (amount in currency, currency, exchange rate, USD equivalent)**				
	Year 1	Year 2	Year 3	Year4	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)					
Profits Before Taxes (PBT)					
Cash Flow Information					
Cash Flow from Operating Activities					

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 (US$ equivalent)
1		
2		
3		

2. Financial documents

The Bidder and its parties shall provide copies of financial statements for _____years pursuant Section III, Evaluation and Qualifications Criteria, Sub-factor 3.2. The financial statements shall:

(a) reflect the financial situation of the Bidder 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[7] for the _____years required above; and complying with the requirements

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

Form FIN - 3.2: Average Annual Construction Turnover

Bidder's Name: _____
Date: _____
Joint Venture Member's Name_____
ICB No. and title: _____
Page _____of _____pages

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

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

Form FIN3.3: 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)

Source of financing	Amount (US$ equivalent)
1.	
2.	
3.	
4.	

Form EXP - 4.1: General Solar Development Experience

Bidder's Name: _____
Date: _____
Joint Venture Member's Name_____
ICB No. and title: _____

Starting Year	Ending Year	Contract Identification	Role of Bidder
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of Employer: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of Employer: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of Employer: _____ Address: _____	

Form EXP - 4.2(a): Specific Solar Construction and Contract Management Experience

Bidder's Name: _____
Date: _____
Joint Venture Member's Name_____
ICB No. and title: _____
Page _____of _____pages

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			US$ *	
If member in a JV or sub-contractor, specify participation in total Contract amount			*	
Employer's Name:				
Address: Telephone/fax number E-mail:				

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	

Form EXP - 4.2(b): Construction Experience in Key Activities

Bidder's Name: _____
Date: _____
Joint Venture Member's Name_____
Sub-contractor's Name[8] (as per ITB 34.2 and 34.3): _____

ICB No. and title: _____
Page _____of _____pages

Sub-contractor's Name (as per ITB 34.2 and 34.3): _____
All Sub-contractors for key activities must complete the information in this form as per ITB 34.2 and 34.3 and Section III, Qualification Criteria and Requirements, 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			US$	
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				
Employer's Name:				

[8] If applicable.

Address: Telephone/fax number E-mail:	

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

2. Activity No. Two

3. ……

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

1. CONFIDENTIAL BUSINESS QUESTIONNAIRE

You are requested to give the particulars indicated in Part 1 and either Part 2(a), 2(b) or 2 (c) whichever applied to your type of business. You are advised that it is a serious offence to give false information on this form

Part 1 – General:

Business Name ……
Location of business premises.……
Plot No…… Street/Road ……....
Postal Address …….. Tel No. ……. Fax ……. E mail ……..
Nature of Business ……
Registration Certificate No.…….
Maximum value of business which you can handle at any one time – shs.……
Name of your bankers …….. Branch……

	Part 2 (a) – Sole Proprietor Your name in full ……Age …….. Nationality …… Country of origin ……. 5.5.2 Citizenship details…….
	Part 2 (b) Partnership Given details of partners as follows: Name Nationality CitizenshipDetails Shares 1…….. 2…… 3…… 4……
	Part 2 (c) – Registered Company Private or Public …… State the nominal and issued capital of company- NominalKshs.…… Issued Kshs.…… Given details of all directors as follows Name Nationality CitizenshipDetails Shares 1…… 2. …… 3…… 4. ……
Date …… Signature of Candidate ……..	

If a Kenya Citizen, indicate under "Citizenship Details" whether by Birth, Naturalization orregistration

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2.1 DRAWINGS

Before manufacture or Fabrication is commenced the contractor shall submit Two copies of detailed drawings of all control pillars, meter cubicles, medium voltage switchboards including their components showing all pertinent information including sizes, capacities, construction details, etc, as may be required to determine the suitability of the equipment for the approval of the Engineer. Approval of the detailed drawings shall not relieve the contractor of the full responsibility of errors or the necessity of checking the drawings himself or of furnishing the materials and equipment and performing the work required by the plans and specifications.

2.2 RECORD DRAWINGS

These diagrams and drawings shall show the completed installation including sizes, runs and arrangements of the installation. The drawings shall be to scale not less than 1:50 and shall include plan views and section.

The drawings shall include all the details which may be useful in the operation, maintenance or subsequent modifications or extensions to the installation.

Three sets of diagrams and drawings shall be provided, all to the approval of the Engineer.

One coloured set of line diagrams relating to operating and maintenance instructions shall be framed and, mounted in a suitable location.

2.3 REGULATIONS AND STANDARDS

All work executed by the Contractor shall comply with the current edition of the "Regulations" for the Electrical Equipment of Buildings, issued by the Institution of Electrical Engineers, and with the Regulations of the Local Electricity Authority.

Where the two sets of regulations appear to conflict, they shall be clarified with the Engineers. All materials used shall comply with relevant Kenya Bureau of Standards Specification.

2.4 SETTING OUT WORK

The contractor at his own expenses; is to set out works and take all measurements and dimensions required for the erection of his materials on site; making any modifications in details as may be found necessary during the progress of the works, submitting any such modifications or alterations in detail to the Engineer before proceeding and must allow in his Tender for all such modifications and for the provision of any such sketches or drawings related thereto.

2.5 POSITIONS OF ELECTRICAL PLANT AND APPARATUS

The routes of cables and approximate positions of switchboards etc, as shown on the drawings shall be assumed to be correct for purpose of Tendering, but exact positions of all electrical

Equipment and routes of cables must be agreed on site with the Engineer before any work is carried out.

2.6 MCB DISTRIBUTION PANELS AND CONSUMER UNITS

All cases of MCB Panels and consumer units shall be constructed in heavy gauge sheet with hinged covers.

Removable undrilled gland plates shall be provided on the top and bottom of the cases. Miniature circuit breakers shall be enclosed in moulded plastic with the tripping mechanism and arc chambers separated and sealed from the cable terminals.

The operating dolly shall be trip free with a positive movement in both make and break position. Clear indication of the position of the handle shall be incorporated.

The tripping mechanism shall be on inverse characteristic to prevent tripping in temporary overloads and shall not be affected by normal variation in ambient temperature.

A locking plate shall be provided for each size of breaker; A complete list of circuit details on typed cartridge paper glued to stiff cardboards and covered with a sheet of perspex, and held in position with four suitable fixings, shall be fitted to the inner face of the lids of each distribution panel. The appropriate MCB ratings shall be stated on the circuit chart against each circuit in use: Ivorine labels shall be secured to the insulation barriers in such a manner as to indicate the number of the circuits shown on the circuit chart.
Insulated barriers shall be fitted between phases, and neutrals in all boards, and to shroud live parts.

Neutral cables shall be connected to the neutral bar in the same sequence as the phase cables are connected to the MCB‟s. This shall also apply to earth bars when installed.

2.7 FUSED SWITCHGEAR AND ISOLATORS

All fused switchgear and isolators whether mounted on machinery, walls or industrial panels shall conform to the requirements of KS 04 – 226 PART: 1: 1985.

All contacts are to be fully shrouded and are to have a breaking capacity on manual operations as required by KS 04 – 182 : 1980.

Fuse links for fused switches are to be of high rupturing capacity cartridge type, conforming to KS 04 – 183 : 1978.

Isolators shall be load breaking/fault making isolators.

Fused switches and isolators are to have separate metal enclosures. Mechanical interlocks are to be provided between the door and main switch operating mechanism so arranged that the door may not be opened with the switch in the „ON‟ position. Similarly; it shall not be possible to close the switch with the door open except that provision to defeat the mechanical interlock and close the switch with the door in the open position for test purposes. The „ON‟ and „OFF‟

positions of all switches and isolators shall be clearly indicated by a mechanical flag indicator or similar device. In T.P & N fused switch units, bolted neutral links are to be fitted.

2.8 CONDUITS AND CONDUIT RUNS

Conduit systems are to be installed so as to allow the loop-in system of wiring:

All conduits shall be black rigid super high impact heavy gauge class „A" PVC in accordance with KS 04 – 179: 1988 and IEE Regulations. No conduit less than 20mm in diameter shall be used anywhere in this installation.

Conduit shall be installed buried in plaster work and floor screed except when run on wooden or metal surface when they will be installed surface supported with saddles every 600mm. Conduit run in chases shall be firmly held in position by means of substantial pipe hooks driven into wooden plugs.

The Contractors attention is drawn to the necessity of keeping all conduits entirely separate from other piping services such as water and no circuit connections will be permitted between conduits and such pipes.
All conduits systems shall be arranged wherever possible to be self-draining to switch boxes and conduit outlet points for fittings:

The systems, when installed and before wiring shall be kept plugged with well fitting plugs and when short conduit pieces are used as plugs, they shall be doubled over and tied firmly together with steel wire; Before wiring all conduit systems shall be carried out until the particular section of the conduit installation is complete in every respect.

The sets and bends in conduit runs are to be formed on site using appropriate size bending springs and all radii of bends must not be less than 2.5 times the outside diameter of the conduit. No solid or inspection bends, tees or elbows will be used.

Conduit connections shall either be by a demountable (screwed up) assembly or adhesive fixed and water tight by solution. The tube and fittings must be clean and free of all grease before applying the adhesive. When connections are made between the conduit and switch boxes, circular or non-screwed boxes, care shall be taken that no rough edges of conduit stick out into the boxes.

Runs between draw in boxes are not to have more than two right angle bends or their equivalent . The contractor may be required to demonstrate to the Engineers that wiring in any particular run is easily withdrawable and the contractor may, at no extra cost to the contract; be required to install additional draw-in boxes required. If conduit is installed in straight runs in excess of 6000mm, expansion couplings as manufactured by Egatube shall be used at intervals of 6000mm.

Where conduit runs are to be concealed in pillars and beams, the approval of the Structural Engineer, shall be obtained. The contractor shall be responsible for marking the accurate

position of all holes, chases etc, on site, or if the Engineer so directs, shall provide the Main Contractor with dimensional drawings to enable him t o mark out and form all holes and chases. Should the contractor fail to inform the main contractor of any inaccuracies in this respect they shall be rectified at the contractors expense.

It will be the Contractors responsibility to ascertain from site, the details of reinforced concrete or structural steelwork and check from the builder‟s drawings the positions of walls, structural concrete and finishes. No reinforced concrete or steelwork may be drilled without first obtaining the written permission of the Structural Engineer.

The drawings provided with these specifications indicate the appropriate positions only of points and switches, and it shall be the Contractors responsibility to mark out and centre on site the accurate positions where necessary in consultation with the Architect and the Engineer. The contractor alone shall be responsible for the accuracy of the final position.

2.13 CONDUIT BOXES AND ACCESSORIES

All conduit outlets and junction boxes are to be either malleable iron and of standard circular pattern of the appropriate type to suit saddles being used or super high impact PVC manufactured to KS 04 – 179 : 1983.

Small circular pattern boxes are to be used with conduits up to and including 25mm outside diameter. Rectangular pattern adaptable boxes are to be used for conduits of 32mm outside diameter and larger. For drawing in of cables in exposed runs of conduit, standard pattern through boxes are to be used:

Boxes are to be not less than 50mm deep and of such dimensions as will enable the largest appropriate number of cables for the conduit sizes to be drawn in without excessive bending.

Outlet boxes for lighting fittings are to be of the loop-in type where conduit installation is concealed and the contractor shall allow one such box per fitting, except where fluorescent fittings are specified when two such boxes per fitting shall be fitted flush with ceiling and if necessary fitted with break joint rings. Pattresses shall be fitted where required to outlets on surface conduit runs.

Adaptable boxes are to of PVC or mild steel (of not less than 12swg) and black enamelled or galvanised finish according to location. They shall be of square or oblong shape location. They shall be of square or oblong shape complete with lids secured by four 2 BA brass roundhead screws; No adaptable box shall be less than 75mm x 75mm x 50mm or larger than 300mm x 300mm x 75mm and shall be adequate in depth in relation to the size of conduit entering it. Conduits shall only enter boxes by means of conduit bushes.

2.14 LABELS

Labels fitted to switches and fuseboards;-

(i) Shall be Ivorine engraved black on white.

(ii) Shall be secured by R.H brass screws of same manufacturing throughout.

(iii) Shall be indicated on switches:-
a) Reference number of switch

b) Special current rating

c) Item of equipment controlled

(iv) Shall indicate on MCB panels
a) Reference number
b) Type of board, i.e;, lighting, sockets, etc,.
c) Size of cable supplying panel
d) where to isolate feeder cable

(v) Shall be generally not less than 75mm x 50mm.

2.15 EARTHING

The earthing of the installation shall comply with the following requirements;-

(i) It shall be carried out in accordance with the appropriate sections of the current edition of the Regulations, for the Electrical Equipment of Buildings issued by Institute of Electrical Engineers of Great Britain.

(ii) At all main distribution panels and main service positions a 25mm x 3mm minimum cross sectional area Copper tape shall be provided and all equipment including the lead sheath and armouring of cables, distribution boards and metal frames shall be bonded thereto.

(iii) The earth tape in Sub-clause (ii) shall be connected by means of a copper tape or cable of suitable cross sectional area to an earth electrode which shall be a copper earth rod (see later sub-clause).

(iv) All tapes to be soft high conductivity copper, untinned except where otherwise specified and where run underground on or through walls, floors, etc., it shall be served with corrosion resisting tape or coated with corrosion compound and braided

(v) Where the earth electrode is located outside the building a removable test link shall be provided inside the building as near as possible to the point of entry to the tape, for isolating the earth electrode for testing purposes.

(vi) Earthing of sub-main equipment shall be deemed to be satisfactory where the sub-main cables are M.I.C.S. or conduit with separate earth wire, and installation is carried out in accordance with the figures stated in the current edition of the I.E.E Regulations.

(vii) Where an earth rod is specified (see Sub-clause (iii) it shall be proprietary manufacture, solid hand drawn copper of 15mm diameter driven into the ground to a minimum depth of 3.6m . It shall be made up to 1.2m sections with internal screw and socket joints and fitted with hardened steel tip and driving cap.

(viii) Earth plates will not be permitted

(ix) Where an earth rod is used the earth resistance shall be tested in the manner described in the current edition of the IEE Regulations, by the Contractor in the presence of the Engineer and the Contractor shall be responsible for the supply of all test equipment.

(x) Where copper tape is fixed to the building structure it structure it shall be by means of purpose made non-ferrous saddles which space the conductor away from the structure a minimum distance of 20mm. Fixings, shall be made using purpose made plugs; No fixings requiring holes to be drilled through the tape will be accepted.

(xi) Joints in copper tape shall be tinned before assembly riveted with a minimum of two copper rivets and seated solid.

(xii) Where holes are drilled in the earth tape for connection to items of equipment the effective cross sectional area must not be less than required to comply with the IEE regulations.

(xiii) Bolts, nuts and washers for any fixing to the earth tape must be of non-ferrous material.

(xiv) Attention is drawn to the need for the earthing metal parts of lighting fittings and for bonding ball joint suspension in lighting fittings.

2.16 CABLES AND FLEXIBLE CORDS

All cables used in this Contract shall be manufactured in accordance with the current appropriate Kenya standard Specification which are as follows:-

P.V.C. Insulated Cables and Flexible Cords	-	Ks 04-192:1988
PVC Insulated Armoured Cables	-	Ks 04-194:1990
Armouring of Electric cables	-	Ks 04-290:1987

The successful Contractor will, at the Engineers discretion be required to submit samples of cables for the Engineers approval; the Engineer reserves the right to call for the cables of an alternative manufacture without any extra cost being incurred.
P.V.C. insulated cables shall be 500/1000 volt grade. No cables smaller than 1.5mm² shall be used unless otherwise specified. The installation and the finish of cables shall be as detailed in later clauses. The colour of cables shall conform with the details stated in the “Cable Braid and insulation Colours” Clause.

2.17 ARMOURED P.V.C. INSULATED AND SHEATHED CABLES:

Shall be 600/1000 volt grade manufactured to Ks 04-194:1988 and Ks 04-187/188 with copper stranded conductors.

The wire armour of the cable shall be used wholly as an earth continuity conductor and the resistance of the wire armour shall have a resistance not more than twice of the largest current carrying conductor of the cable.

P.V.C./S.W.A./P.V.C. cables shall be terminated using "Telecom" "B" type or approved equal or approved equal glands and a P.V.C. tapered sleeve shall be provided to shroud each gland.

Where cables rise from floor level to switchgear etc., they shall be protected by P.V.C. conduit, to a height of 600mm from finished floor level, whether the cable is run on the surface or recessed into the wall.

2.18 CABLE SUPPORTS, MARKERS AND TILES

All PVC/SWA/PVC cables run inside the building shall be fixed in rising ducts or on ceilings by means of die cost cables hooks or clamps, or appropriate size to suit cables, fixed by studs and back nuts to their channel sections.

Alternatively, fixing shall be by BICC claw type cleating system with die-cast cleats and galvanized mild steel back straps or similar approved equal method. For one or two cables run together the cleats shall be fixed a special channel section supports or backstraps described above which shall in turn be secured to walls or ceilings of ducts by rawbolts.

In excessively damp or corrosive atmospheric conditions special finishes may be required and the Contractor shall apply to the Engineer for further instructions before ordering cleats and channels for such areas.

The above type of hooks and clamps and channels or cleats and blackstraps shall also be used for securing cables in vertical ducts.

Cables supports shall be fixed at 600mm maximum intervals, the supports being supplied and erected under this Contract. Saddles shall not be used for supporting cables nor any other type of fixing other than one of the two methods described above or other system which has received prior approval of the Engineer;

Cables are to be kept clear of all pipe work and the Contractor shall work in close liaison with other services Contractors.

The Contractor shall include for the provision of fixing of approved type coloured slip on cables end markers to indicate permanently the correct phase and neutral colours on all ends.

Provision shall be made for supplying and fixing approved non-corrosive metal cable markers to be attached to the outside of all PVC/SWA/PVC cables at 15mm intervals indicating cable size and distinction.

Where PVC/SWA/PVC cables are outside the building they shall be laid underground 750mm deep with protecting concrete interlocking cover tiles laid over which shall be provided and laid under this Contract.

All necessary excavations and reinstatement of ground including sanding or trenches will be carried out by the Contractor, unless otherwise stated.

2.19 PVC INSULATED CABLES

Shall be of non-braided type as CMA reference 6491 x 600/1000/1000 volt grade cables, or equal approved.

PVC cables shall conform to the details of the "Cables and Flexible cords" and "Cable Braid and Insulation Colours" clauses.

2.20 HEAT RESISTING CABLES

Final connections to cookers, water heaters, etc., shall be made using butyl rubber insulated cable as CMA reference 610 butyl (Single core 600/1000 Volt).

This type of cable shall be used in all instances where a temperature exceeding 100°F, but not exceeding 150°F is likely to be experienced. Final connections to all lighting fittings (and other equipment where a temperature in excess of 150°c likely to be experienced) shall be made using silicon rubber insulated cable or equal and approved.

2.21 FLEXIBLE CORDS

Shall be in accordance with the "Cable and Flexible Cords" clause. No cord shall be less than 24/0.2mm in size unless otherwise specified.

Circular white twin TRS flex shall be used for plain pendant fittings up to 100 watts. For all other types of lighting fittings the flexible cable shall be silicone rubber insulated.

No polythene insulated flexible cable shall be used in any lighting fitting or other appliance (see "Heat Resisting Cables" Clause 30).

2.22 CABLE ENDS AND PHASE COLOURS

All cable ends connected up in switchgear, MCB panels etc;, shall have the insulation carefully cut back and the ends sealed with Hellerman rubber slip on cable end markers.

The markers shall be of appropriate phase colour for switch and all other live feeds to the details of the "Cable Insulation Colours" clause. Black cable with black end markers shall only be used for neutral cables.

2.23 CABLE INSULATION COLOURS

Unless otherwise stated in later clauses the insulation colours shall be in accordance with the following table.

Where other systems are installed the cable colours shall be in accordance with the details stated in the appropriate clause.

	INSULATION COLOUR	CABLE END MARKER
Main and Sub-Main		
a) Phase	Red	Red
b) Neutral	Black	Black
1) Sub-Circuits Single Phase		
a) Phase	Red	Red
b) Neutral	Black	Black

2.24 SUB-CIRCUIT WIRING

For all lighting and sockets wiring shall be carried out in the "looping in" system and there shall be no joints whatsoever. No lighting circuits shall comprise more than 20 points when protected by 10A MCB. Cables with different cross-section area of copper shall not be used in combination.

Lighting circuits P. V.C. cable 1.5mm² for all lighting circuits indicated on the drawing.
Power circuits P.V.C cable (minimum sizes).

(i) 2.5mm² for one, two or three 5Amp sockets wired in parallel.

(ii) 2.5mm² for one 15Amp socket.

(iii) 2.5mm² for maximum of ten switched 13 Amp sockets wired from 30 Amp MCB.

The wiring sizes for lighting circuits and sockets are shown on the drawings. In such cases, the sizes shown on the drawings shall prevail over the sizes specified.

Wiring sizes for other appliances shall be shown on the drawing or specified in later clauses of this specification.

2.25 SPACE FACTOR

The maximum number of cables that may be accommodated in a given size of conduit or trunking or duct is not to exceed the number in Tables B.5 and B.6 or as stated in Regulation B.91, B.117 and B.118 of the I.E.E Regulations whichever is appropriate.

2.26 INSULATION

The insulation resistance to earth and between poles of the whole wiring system, fittings and lumps, shall not be less than the requirements of the latest edition of the I.E.E Regulations. Complete tests shall be made on all circuits by the Contractor before the installations are handed over.

A report of all tests shall be furnished by the Contractor to the Engineer. The Engineer will then check test with his own instruments if necessary.

2.27 LIGHTING SWITCHES

These shall be mounted flush with the walls, shall be contained in steel or alloy boxes and shall be of the gangs ratings and type shown in the drawings. They shall be as manufactured by M.K. Electrical Ltd., or other equal and approved to KS 04 – 247: 1988

2.28 SOCKETS AND SWITCHED SOCKETS

These shall be flush pattern in steel/pvc box and shall be of the gangs and type specified in the drawings.

They shall be 13- Amp, 3-pin, shuttered, switched and as manufactured by “M.K. Electrical Co. Ltd.”, or other approved equal to KS 04 – 246: 1987

2.29 FUSED SPUR BOXES

These shall be flush, D.P switched as in steel/pvc box and of type and make specified in the drawings complete with pilot light and as manufactured by “M. K. Electrical Company Ltd”, or other approved equal. KS 04 – 247: 1988

2.30 COOKER OUTLETS

These shall be flush mounted with 13-A switched socket outlet and neon indicator Lamps. The cooker control units shall be as manufactured by “M.K. Electrical Company Ltd”, or other approved equal KS 04 – 247: 1988

2.31 CONNECTORS

Shall be specified in the drawings and appropriate rating. These shall be fitted at all conduit box lighting point outlets for jointing of looped P.V.C cables with flexible cables of specified quality.

2.32 LAMPHOLDERS

Shall be of extra heavy H.O skirted and shall be provided for every specified lighting fitting and shall be B.C;, E.S;, or G.E.S as required. All E.S. and G.E.S. holders shall be heavy brass type (except for plain pendants where the reinforced bakelite type shall be used). The screwed cap of the E.S and G.E.S. holders shall be connected to the neutral.

Where lampholders are supported by flexible cable, the holders shall have "cord grip" arrangements and in the case of metal shades earthing screws shall be provided on each of the holders.

The Contractor must order the appropriate type of holder when ordering lighting fittings, to ensure that the correct types of holders are provided irrespective of the type normally supplied by the manufacturers.

2.33 LAMPS

All lamps shall be suitable for normal stated supply voltage and the number and sizes of lamps detailed on the drawings shall be supplied and fixed. The Contractor must verify the actual supply voltage with the supply authority before ordering the lamps.

Tungsten filament lamps shall be manufactured in accordance with KS 04 – 112:1978 for general service lamps and KS 04 – 307:1985 for lamps other than general services. Tubular fluorescent lamps shall comply with KS 04 – 464:1982

Pearl lamps shall be used in all fittings unless otherwise specified.

2.34 LIGHTING FITTINGS AND STREET LIGHTING LANTERNS

This Contract shall include for the provision, handling charges, taking the delivery, safe storage, wiring (including internal wiring) assembling and erecting of all lighting fittings shown on the drawings.

All fittings and pendants shall be fixed to the conduit boxes with brass R/H screws. These to be in line with metal finish of fittings. The lighting fittings are detailed for the purpose of establishing a high standard of finish and under no circumstances will substitute fittings be permitted.
In case of rectangular shaped ceiling fittings, the extreme ends of the fittings shall be secured to suitable support in addition to the central conduit box fittings. Supports shall be provided and fixed by the Contractor.

The whole of the metal work of each lighting fittings shall be effectively bonded to earth. In the case of ball and/or knuckle joints short lengths of flexible cable shall be provided, bonded to the metal work on either side of the joints. If the above provisions are not made by the manufacturers -, the Contractor shall include cost of additional work necessary in his tender. See "Flexible Cords" clause for details of internal wiring of lighting fittings. Minimum size of internal wiring shall be 20/0.20mm (23/0067). Each lighting fitting shall be provided with number type and size of lamps as detailed on the drawings. It is to be noted that some fittings are suspended as shown on the drawings.

Where two or more points are shown adjacent to each other on the drawings, e.g socket outlet and telephone outlet, they shall be lined up vertically or horizontally on the centre lines of the units concerned

Normally, the units shall be lined up on vertical centre lines, but where it is necessary to mount units at low level they shall be lined up horizontally.

2.35 POSITIONS OF POINTS AND SWITCHES

Although the approximate positions of all points are shown on the drawings, enquiry shall be made as to the exact positions of all M.C.B panels, lighting points, socket outlets etc, before work is actually commenced. The Contractor must approach the Architect with regard to the final layout of all lights on the ceiling and walls.

The Contractor must consult with the Engineer in liaison with the Clerk of Works, or the General Foreman on site regarding the positions of all points before fixing any conduit etc. The Contractor shall be responsible for all alterations made necessary by the non-compliance with the clause.

2.36 STREET/SECURITY OUTDOOR LIGHTING COLUMNS:

The column shall be at a minimum of 225mm in the ground on 75mm thick concrete foundations and the pole upto 150mm shall be surrounded with concrete. The top bracket and plain section of the columns shall be common to and interchangeable with all brackets with maximum mismatching tolerance of 3mm between any pole and bracket. After manufacture and before erection the columns shall be treated with an approved mordant solution which shall be washed off and the whole allowed to dry. Thereafter, the columns shall be painted with one undercoat and two coats of gloss paint to an approved colour. All columns shall be complete with fused cut-outs.

2.37 TIMING CONTROL SWITCH

These shall be installed where shown on the drawings. Photocell timing control circuits which will operate „on" with a specified level of darkness and „off" with a given level of light. The initial adjustment will be done with approval of the Electrical Engineer.

2.38 WIRING SYSTEM FOR STREETLIGHTING

Cables shall be as indicated on the drawings, and shall be laid in a cable trench 450mm deep along the road sides and 600mm deep across the roads and 900mm away from the road kerb or 1500mm away from the edges of the road. „Loop-in" and „Loop-out" arrangement shall be used at every pole. Wiring to the lanterns on each pole shall be with 1.5mm² PVC twin insulated and sheathed cable with earth wire shall be laid at least 600mm below the finished road level on a compact bed of murram at least 50mm thick and covered with a concrete surrounded 150mm thick.

2.39 METAL CONTROL PILLAR

These shall be metal clad and fabricated as per contract drawings and specification. The Contractor shall supply, install, test and commission control pillars including supplying, fixing connecting switchgears as detailed on the appropriate drawings.

2.40 CURRENT OPERATED EARTH LEAKAGE CIRCUIT BREAKER

Current operated earth leakage circuit breaker shall conform to B.S.S. 4293:68 rated at 240 volts D.P. 50 cycles A.C. Mains.

The breaker shall be provided with test switch and fitted in weather proof enclosure for surface mounting. The rated load current and earth fault operating current shall be as specified in the drawings. These shall be as manufactured by Crabtree, Siemens or other equal and approved.

2.41 M.V. SWITCHBOARD AND SWITCHGEAR

The switchboard shall be manufactured in accordance with KS04-226 which co-ordinates the requirements for electrical power switchgear and associated apparatus. It is not intended that this K.S. should cover the requirements for specified apparatus for which separate Kenyan Standard exist. All equipment and material used in the switchboard shall be in accordance with the appropriate Kenya Standard.

The switchboard shall comprise the equipment shown on the drawings together with all current transformers, auxiliary fuses, labels, small wiring and interconnections necessary for the satisfactory operation of the switchboard

Switchboard shall be of the flush fronted, enclosed, metal clad type with full front or rear access as called for in the particular specifications, suitable for indoor use, sectionalized as necessary to facilitate transport and erection. The maximum height of the switchboard is to be approximately 2.0 meters. A suitable connection chamber containing all field terminals shall be provided at the top or bottom of the switchboard as appropriate.

Before manufacture, the Contractor shall submit to the consulting Engineer for approval of detailed drawings showing the layout, construction and connection of the switchboard.

All bus-bars and bus-bar connections shall consist of high conductivity copper and be provided in accordance with KS 04-226: 1985. The bus-bars shall be clearly marked with the appropriate phase and neutral colours which should be red, yellow, blue for the phases and black for neutral. The bus-bars shall be so arranged in the switchboard that the extensions to the left and right may be made in the future with ease should the need arise.

Small wiring, which will be neatly arranged and cleated, shall be executed in accordance with B.S. 158 and the insulation of the wiring shall be colored according to the phase or neutral connection.

Switches and fuse switches, shall be in strict accordance with KS04-183:1978 Class 2 switches. Means of locking the switch in the “OFF” position shall be provided.

All fuse switches shall comply with KS04-183:1978, PARTS 2 and 3 a fault rating at least equal to the fault rating of the switchboard in which they are installed. Cartridge fuse links to KS 04-183:1978 category A.C. 46, class Q1 and fusing factor not exceeding 1.5 shall be supplied with each fused switch.

Mounting arrangements shall be such that individual complete fuse switches may be disconnected and withdrawn when necessary without extensive dismantling work. When switches are arranged in their formation all necessary horizontal and vertical barriers shall be provided to ensure segregation from adjacent units. Means of locking the switch in the “OFF” position shall be provided.

2.42 STEEL CONDUITS AND STEEL TRUNKING

Conduits shall be of heavy gauge class “B” welded to Standard specification KS 04-180:1985. In no case will conduit smaller than 20mm diameter be used on the works. Conduits installed within buildings shall be black enameled finish except where specified otherwise. Where installed externally or in damp conditions they shall be galvanised. Conduit fittings, accessories or equipment used in conjunction with galvanised conduits shall also be galvanised or otherwise as approved by the service engineer.

Metal trunking shall be fabricated from mild steel of not less than 18 swg. All sections of trunking shall be rigidly fixed together and attached to the framework or fabric or the building at intervals of not less than 1.2m. Joint trunking shall not overhang fixing points by more than 0.5m.

All trunking shall be made electrically continuous by means of 25 x 3mm copper links across each joint and where the trunking is galvanised, the links shall be made by galvanised flat iron strips.

All trunking fittings (i.e. Bends, tees, etc) shall leave the main through completely clear of obstructions and continuously open except through walls and floors at which points suitable fire resisting barriers shall be provided as may be necessary. The inner edge of bends and tees shall be chamfered where cables larger than 35mm² are employed.

Where trunking passes through ceilings and walls the cover shall be solidly fixed to 150mm either side of ceilings and floors and 50mm either side of walls.

Screws and bolts securing covers to trunking or sections of covers together shall be arranged so that damage to cables cannot occur either when fixing covers or when installing cables in the trough.

Where trunking is used to connect switchgear of fuseboards, such connections shall be made by trunking fittings manufactured for this purpose and not by multiple conduit couplings.

Where vertical sections of trunking are used which exceed 4.5m in length, staggered tie off points shall be provided at 4.5m intervals to support the weight of cables.

Unless otherwise stated, all trunking systems shall be painted as for conduit.

Where a wiring system incorporates galvanized conduit and trunking, the trunking shall be deemed to be galvanized unless specified otherwise.

The number of cables to be installed in trunking shall be such as to permit easy drawing in without damage to the cables, and shall in no circumstances be such that a space factor of 45% is exceeded.

Conduit and trunking shall be mechanically and electrically continuous. Conduit shall be tightly screwed between the various lengths so that they butt at the socketed joints. The internal edges of conduit and all fittings shall be smooth, free from burrs and other defects. Oil and any other insulating substance shall be removed from the screw threads; where conduits terminate in fuse-gear, distribution boards, adaptable boxes, non-spouted switchboxes, etc., they shall, unless otherwise stated, be connected thereto by means of smooth bore male brass bushes, compression washers and sockets. All exposed threads and abrasions shall be painted using an oil paint for black enamelled tubing and galvanising paint for galvanised tubing immediately after the conduits are erected. All bends and sets shall be made cold without altering the section of the conduit. The inner radius of the bed shall not be less than four (4) times the outside diameter of the conduit. Not more than two right angle bends will be permitted without the inter-position of a draw-in-box. Where straight runs of conduit are installed, draw-in-boxes shall be provided at distances not exceeding 15mm. No tees, elbows, sleeves, either of inspection or solid type, will be permitted.

Conduit shall be swabbed out prior to drawing in cables, and they shall be laid so as to drain of all condensed moisture without injury to end connections.

Conduits and trunking shall be run at least 150mm clear of hot water and steam pipes, and at least 75mm clear of cold water and other services unless otherwise approved by the services engineer.

All boxes shall conform to KS 04 – 668: 1986, to be of malleable iron, and black enamelled or galvanised according to the type of conduit specified. All accessory boxes shall have threaded brass inserts.

Box lids where required shall be heavy gauge metal, secured by means of zinc plated or cadmium plated steel screws.

All adaptable boxes and lids of the same size shall be interchangeable.
Boxes used on surface work are to be tapped or drilled to line up with the conduit fixed in distance type saddles allowing clearance between the conduit and wall without the need for setting the conduit.

Where used in conjunction with mineral insulated copper sheathed cable, galvanised boxes shall be used and painted after erection.

Draw-in boxes in the floors are generally to be avoided but where they are essential they must be grouped in positions approved by the services engineer and covered and by the suitable floor traps, with non-ferrous trays and covers.

The floor trap covers are to be recessed and filled in with a material to match the floor surface.

The Contractor must take full responsibility for the filling in of all covers, but the filling in material will be supplied and the filling carried out by the main building contractor.

Where buried in the ground outside the building the whole of the buried conduit is to be painted with two coats of approved bitumastic composition before covering up.

Where run on the surface, unpainted fittings and joints shall be painted with two coats of oil bound enamel applied to rust and grease free metalwork.

2.43 TESTING ON SITE

The Contractor shall conduct during and at the completion of the installation and, if required, again at the expiration of the maintenance period, tests in accordance with the relevant section of the current edition of the Regulations for the electrical equipment of buildings issued by the I.E.E of Great Britain, the Government Electrical Specification and the Electric Supply Company‟s By-Laws.

(a) Tests shall be carried out to prove that all single pole switches are installed in the „live‟ conductor.

(b) Tests shall be carried out to prove that all socket outlets and switched socket outlets are connected to the „live‟ conductor in the terminal marked as such, and that each earth pin is effectively bonded to the earth continuity system. Tests shall be carried out to verify the continuity of all conductors of each „ring‟ circuit.

(c) Phase tests shall be carried out on completion of the installation to ensure that correct phase sequence is maintained throughout the installation. Triplicate copies of the results of the above tests shall be provided within 14 days of the witnessed tests and the Contractor will be required to issue to the service engineer the requisite certificate upon completion as required by the regulations referred to above.

(d) Any faults, defects or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation made apparently by such inspections or tests shall be rectified by the Contractor at his own expense.

(e) The Contractor shall provide accurate instruments and apparatus and all labour required to carry out the above tests. The instruments and apparatus shall be made available to the services engineer to enable him to carry out such tests as he may require.

The Contractor shall generally attend on other contractors employed on the project and carry out such electrical tests as may be necessary.

The Contractor shall test to the services engineer‟s approval and as specified elsewhere in this specification or in standards and regulations already referred to, all equipment, plant and apparatus forming part of the works and before connecting to any power or other supply and setting to work.

Where such equipment, etc., forms part of or is connected to a system whether primarily or of an electrical nature or otherwise (e.g. air conditioning system) the Contractor shall attend on and assist in balancing, regulating testing and commissioning, or if primarily an electrical or other system forming part of works, shall balance, regulate, test and commission the system to the service engineer‟s approval.

APPENDIX TO GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

The electrical contractor shall comply with the following:-

1. Government Electrical Specifications No. 1 and No. 2.

2. All requirements of Kenya Power and Lighting Company Limited, and Communications Commission of Kenya (CCK).

PARTICULAR SPECIFICATIONS

1.0 SITE LOCATION

The site of the proposed sites are located within Kisumu County Kenya as per the attached sites.

2.0 SCOPE OF WORKS

The contract works shall comprise the supply, delivery, erection, testing, commissioning and setting to work the Electrical Engineering Services as detailed in this specification and the accompanying Contract Drawings.

The Contractor shall include for all apparatus and appliances not particularly called for in this specification or on the Contract Drawings but which are necessary for the completion and satisfactory functioning of the Contract works.

No claims for extra payment shall be accepted from the Contractor due to his failure to adhere to the above requirements.

It is deemed that if, in the opinion of the Contractor at the time of tendering, there existed a discrepancy between the specification and the Contract Drawings, that the Contractor clarified this difference with the Engineer before tendering.

The works to be carried out under this contract comprise of but not limited to the supply, installation, testing and commissioning of:

General Scope

The project will cover the following areas:

1. Solar Mini-grids in Rural, Urban, centres
2. Institutional Facilities
3. Solar powered Street lighting and High-masts lighting
4. Changing of all current street lights and high masts to LED in the county
5. Establishment of solar energy power plant

Specific Scope

i. Solar PV modules to be supplied and set to work under this contract is to have an output of not less than 5 kW at the point of connection to the busbar of the distribution board.
ii. Wiring for lighting and power points
iii. Installation of Microprocessor based charge controllers
iv. Installation of Solar combiner boxes
v. Installation of Intelligent PV Inverters
vi. Installation of sealed maintenance free batteries
vii. Distribution Boards, Consumer's Units.
viii. Main and Sub-main Cabling.
ix. Single and Three phase power installation.
x. Earthing.

3.0 MATERIALS FOR THE WORKS

Materials shall be as specified in Section D and in the Bills of Quantities of this document which shall be read in conjunction with contract drawings. The works shall be of high quality and standards, and the Contractor shall be required to submit samples of materials for approval by the engineer before he commences the carrying out of the works. Alternative materials shall be accepted only after approval by the Electrical Engineer.

2.00 ELECTRICAL DISTRIBUTION SYSTEM

2.01 SCOPE OF WORK

This section of the specification covers the supply, installation, testing and commissioning of the sub-main cables and consumers units in accordance with the contract drawings and specifications.

2.02 SUB-MAIN CABLES

The sub-main cables and methods of installation shall be as shown on the Schematic and layout drawings and/or as specified in the specifications. The cables shall be as manufactured by East African cables Ltd, Kenwestfal Works Ltd or other equal and approved.

2.03 SUB-MAIN FEEDER PILLARS, DISTRIBUTION BOARDS AND CONSUMER UNITS

The feeder pillars, distribution boards and consumer units shall conform to the requirements of the specifications and to KS IEC 60439. They shall be as manufactured by M/s Merlin Gerin, M/s ABB, M/s Square D, MK Electric, Crabtree Ltd. or other equal and approved.

Schematic of individual distribution units have been prepared and the Sub-contractor should note that power boards consist of single phase and three phase circuit ways.

All neutral conductors in a single phase distribution board shall be connected in the same circuit sequence as its phase conductors, i.e. phase wire No. 1 connected to No. 1 terminal on the neutral bar, etc.

In addition to this requirement, for every distribution board or consumer unit, each phase and neutral conductor shall have clipped to its sheath in the distribution board or consumer unit a clip-on numbered tag corresponding to its circuit number. All circuit numbering shall commence from left to right.

2.04 ISOLATORS (LOOSE EQUIPMENT)

Isolators shall conform with the requirements detailed in the specifications but with the exception that solid links shall be suitably sized to carry the full rated current of the respective isolators. Unless otherwise stated, isolators shall be designed for load making/load breaking duties.

2.05 CABLE TRAYS

Sizes, proposed fixing arrangements and routes of the galvanized cable tray will be as shown on the Drawing. The cable trays shall conform with the requirements detailed in the specifications.

2.06 CABLE SCHEDULE

The Contractor shall prepare a suitable cable route schedule for all major L.V. cables within the site. The schedule shall be submitted with working Drawings after contracts have been exchanged. During the course of installation, each major cable shall be suitably identified along its route by traffolite cable markers, in accordance with the Contractor's cable schedule.

3.00 LIGHTING AND POWER INSTALLATION

3.01 SCOPE OF WORKS

This section of the specification covers the supply, installation, connection, testing and commissioning of the lighting and power installation in accordance with the contract drawings and specification.

3.02 WIRING SYSTEM

Final circuit wiring shall be carried out using single core PVC insulated copper cables enclosed in conduit/trunking as shown on the contract drawings.

A system of high impact PVC conduits cast in situ in slabs, embedded in the fabric of the building and run in roof space shall be installed. Alternatively a system of heavy gauge galvanised metallic conduits and/or metallic trunking run on the surface shall be installed.

An insulated earth continuity conductor shall be enclosed in all non-metallic conduits.

3.03 LIGHTING LUMINAIRES

Lighting luminaires shall be of the type and manufacture as detailed in the schedule of lighting luminaires and shall be power factor corrected.

All luminaires shall be supplied and installed complete with lamps and tubes of the wattage specified. All fluorescent tubes shall be Thorn Lighting or other equal and approved and shall conform to IEC 60598.

3.04 LIGHTING SWITCHES AND LIGHTING CONTROLS

Lighting switches shall be of the all insulated type flush mounted, single pole, current rating as shown, rocker operated plate switches with ivory moulded plastic cover plates to B.S. 3676.

All lighting switches shall be as manufactured by M/s M.K. Electric Ltd., M/s Legrand, M/s Crabtree Ltd., M/s MEM Ltd. M/s or other equal and approved.

To optimise the use of energy, the main lighting will be provided by low energy luminaires.

3.05 SOCKET OUTLETS AND SPUR UNITS

All single phase 13A socket outlets and spur units shall be flush mounted with rocker operated switches and ivory plastic cover plates to B.S. 1363 or B.S. 4662. All socket outlets shall be wired using 30A ring main circuit system or 20A radial circuit system as shown on the contract drawings and shall be as manufactured by M/s M.K. Electric Ltd., M/s Legrand, M/s Crabtree Ltd., M/s MEM Ltd. M/s or other equal and approved. or other equal and approved and shall match the lighting switches.

3.06 EARTH CONTINUITY CONDUCTORS

The contractor shall supply and install earth continuity conductors in all PVC conduits.

3.07 TIME SWITCHES AND CONTACTORS

All time switches and photoelectric cells shall have additional terminals to provide connection to an overriding switch in order to allow manual switching.

The time switches shall be as manufactured by M/s Legrand, M/s Merlin Gerin, MK Electric or other equal and approved.

3.08 CEILING ROSES

Ceiling roses shall be of the all-insulated type to BS 67.They shall be as manufactured by M/s M.K. Electric Ltd., M/s Legrand, M/s Crabtree Ltd., M/s MEM Ltd. M/s or other equal and approved.

3.09 FLEXIBLE CORDS

Flexible cords shall be heat resisting PVC insulated and sheathed, 0.75 mm two core circular cable to BS 6141.

They shall be as manufactured by M/s East African Cables Ltd. or other equal and approved.

3.10 LAMP HOLDERS

Lamp holders shall be of the all insulated type to BS 5042.

They shall be as manufactured by M/s M.K. Electric Ltd., M/s Legrand, M/s Crabtree Ltd., M/s MEM Ltd. or other equal and approved.

GENERAL

1. These specifications describe the basic requirements for equipment. Tenderers are requested to submit with their offers the detailed specifications from manufacturers, drawings, catalogues, etc. for the products they intend to supply. Downloads from the internet will not be accepted.
2. Tenderers **MUST** only offer **one set** of detailed specifications per equipment. Failure to comply will render the bid non-responsive.
3. Tenderers must indicate on the specifications sheets whether the equipment offered comply with each specified requirement.
4. All the dimensions and capacities of the equipment to be supplied shall not be less than those required in these specifications. Deviations from the basic requirements, if any, shall be explained in detail in writing with the offer, with supporting data such as calculation sheets, etc. The procuring entity reserves the right to reject the products, if such deviations shall be found critical to the use and operation of the products.
5. The tenderers are requested to present information along with their offers as follows:
    i) Shortest possible delivery period of each product.
    ii) Information on proper representative and/or workshop for back-up service/repair and maintenance including their names and addresses.

6. All offered equipment must comply with the relevant Kenyan Standards for such equipment.
7. Tenderers **MUST** proved a proposed works programme. Failure to comply will render the bid non-responsive.

TECHNICAL SPECIFICATIONS FOR EQUIPMENT AND ACCESSORIES

4.1 DC SYSTEM

4.1.1 PV Modules

Modules shall comply with the International standards: IEC 61215 in the case of crystalline types or IEC 61646 in the case of thin film types.

4.1.2 Minimum voltage and current ratings

Mono and multi- crystalline silicon modules:

All DC components shall be rated, as a minimum, at:
Voltage – Voc (stc) x 1.15
Current – Isc (stc) x 1.25

All other module types:
All DC components shall be rated, as a minimum, from:

a. Specific calculation of worst case Voc and Isc calculated from manufacturer‟s data for a temperature range of -5°C to 80°C and irradiance up to 1250W/m²

b. A calculation of any increase in Voc or Isc over the initial period of operation. This increase is to be applied in addition to that calculated above.

4.1.3 DC Cables - general

The cables used for wiring the DC section of a grid-connected PV system shall be selected to ensure that they can withstand the environmental, voltage and current conditions at which they may be expected to operate. This will include heating effects of both current and solar gain.

Cables routed behind a PV array must be rated for a minimum temperature of 80°C.

Minimum rating of cables to be from multiplication factors in 4.1.2

Standard de-rating factors must be applied (BS 7671).

Cables shall be selected so as to minimise the risk of earth faults and short-circuits.

Cables should be sized such that voltage drop at STC between the array and the inverter is <3%.

External cables shall be UV stable, water resistant, and flexible (multi-stranded).

Use of naked cables not allowed.

4.1.4 DC Junction Box

The DC junction box shall be labelled as `PV array junction", and also labelled with `Danger, contains live parts during daylight". All labels shall be clear, easily visible, constructed and affixed to last, and remain legible as long as the enclosure.

4.1.5 String Fuses

For a system of N parallel connected strings, with each formed of M series connected modules:

String fuses shall be provided for all arrays formed of four or more strings. Fuses shall be fitted in both positive and negative string cables for all strings.

- The string fuse must be rated for DC operation at the fault energies present
- The string fuse shall be rated for operation at Voc (stc) x M x 1.15
- The string fuse shall have a tripping current which is less than 2 x Isc (stc) and the string cable current carrying capability, whichever is the lower value.

For a system of three or fewer strings with NO string fuses, string cables shall have a minimum current rating of: Isc (stc) x (N-1) x 1.25

4.1.6 Blocking Diodes

If specified, a blocking diode must have a minimum reverse voltage rating of 2 x Voc x number of modules in the string (stc).

4.1.7 DC Switch

The DC switch shall provide a means of manually electrically isolating the entire PV array. It should be located adjacent to the inverter.

- The DC switch must be double pole – to effectively isolate both PV array positive and PV array negative.
- The DC switch must be rated for DC operation
- A load break switch-disconnector shall be used for the main DC system isolation
- The DC switch must be rated for the system voltage and current maxima as calculated in 4.1.2
- The DC switch shall be labelled as `PV array main isolator", with the ON and OFF positions clearly marked. The switch enclosure shall also be labelled with `Danger, contains live parts during daylight". All labels shall be clear, easily visible, constructed and affixed to last, and remain legible as long as the enclosure.

4.1.8 DC plug and socket collectors

Suitable plugs and sockets may be fitted to PV modules, inverters, etc to simplify the installation process.

- Connectors must be DC rated.
- Connectors must have the same or greater voltage and current ratings as the string/DC main cable to which they are fitted.
- A sign, `These plugs should not be disconnected under load – turn off AC supply to inverter first must be fixed next to the connectors, except those that are inaccessible to untrained persons.

4.2 Earthing and Lightning Protection

For the DC system, it is recommended that class II equivalent wiring connections and equipment be used where possible.

4.2.1 Array frame Earthing

Note: The intention of array frame earthing is to remove the risk of electric shock to anyone in a position to touch the frame. Earthing the array frame also provides a degree of protection from lightning surges.

Earthing of the array is NOT required:

IF – The inverter has an isolating transformer between AC and DC parts
AND – Array and frame are NOT in the equipotential zone AND – Earthing for lightning protection is not required.

Earthing is required:

IF - The inverter does not have an isolating transformer between AC and DC parts
OR – Any conductive part of Array and frame is IN the equipotential zone

4.2.2 DC Conductor Earthing

The bonding to earth of any of the current carrying DC conductors is not recommended.

4.2.3 Inverter Earthing

The inverter shall be treated as standard electrical apparatus and earthed as per BS 7671. (NB an inverter of class II construction shall not be earthed).

4.2.4 Lightning Protection System

If a lightning protection system (LPS) is already in place, then the array frame shall be bonded to the LPS. Supplementary equipotential bonding may also be required.

4.3 AC system

4.3.1 AC Cabling

The inverter shall be connected via a dedicated circuit, to a spare fuseway in a distribution board.

The AC cable connecting the inverter(s) to the distribution board shall be oversized to minimise the voltage drop. A 1% drop is acceptable.

4.3.2 AC Switch-disconnector

Two AC switch disconnectors in accordance with BS 60947-3 shall be provided between the inverter and the point of connection to the supply. One shall be installed adjacent to the inverter, and the second adjacent to the consumer unit. Only the device next to the consumer unit is required if they are in the same room. They:

- Shall switch all live and neutral cables. (Double pole single throw)
- Shall clearly show the ON and OFF positions and be labelled as `PV system – point of emergency switching‟.

The device adjacent to the consumer unit shall be lockable in the OFF position only and be readily accessible.

At the point of installation of any AC switch-disconnector, the mains supply shall be considered the source and the PV installation the load.

4.3.3 DC/AC Inverter

The inverter shall be of modular design and shall deliver clean sine wave power. It shall incorporate a multi-stage intelligent charger providing efficient charger ability without the risk of overcharge. It shall incorporate audible alarms for battery mode, low battery, system fault and overload.

Note: key considerations addressed by type tests include the prevention of harmonics, flicker, EMC compatibility and DC injection.

The inverter must be capable of withstanding the maximum array voltage and current as calculated in section 4.1.2. This should include any initial overvoltage period which is a feature of some module types.

The inverters shall each have an output of not less than 7 kW, single-phase supply and comply with IEC 147, European EN 60950-1, EN 61000-6-3, EN 61000-3-3, EN 55022 and EN 55014-1, or an equivalent International Standard

4.3.4 Solar Charge Controller

The charge controller shall be Microprocessor based controller capable of the following functions:

- Solar charge control
- Smart transfer switch
- LCD Display
- Communication facility for monitoring and control

The charge controller shall rated at 200A, 24V. The overall efficiency shall be in excess of 85% at full load and rated input.

4.3.6 Storage battery

Storage batteries shall be sealed maintenance free rechargeable lead-lead dioxide technology batteries with provision for pressure release mechanism in the event of overcharge. They shall be rated at 200AH.

4.3.7 PV Modules

These shall be 200Wp multi-crystalline silicon PV modules with operating temperature from -15°C to 85°C

4.3.8 AC Fault Current Protection

Short circuit protection for the dedicated feeder from the inverters must be provided at the consumer unit. This electrical protection is to be installed in accordance with the requirements of BS 7671.

4.4 Installation

4.4.1 General

Standard health and safety practice and conventional electrical installation practice must apply to the PV installation system.

4.4.2 DC Wiring

All persons working on the live DC cabling of a Photovoltaic system shall be experienced/trained in working with such systems and fully acquainted with the voltages present on the system in particular.

Where it is unavoidable to work in any enclosure or situation featuring simultaneously accessible live PV string positive and negative parts, this should be performed only by working at night with appropriate task lighting, covering the PV array or utilising insulating gloves and appropriate personal protective equipment.

Cables are to be well supported, especially those cables exposed to the wind. Cables should be routed in prescribed zones or within mechanical protection. They should also be protected from sharp edges.

1.4.3 Solar PV Array Mounting Structures

- The arrangement shall be on the roof top.
- Solar array support structure shall be made of steel angle lines (1.5"*1.5"*2mm) on aluminium frames of not less than 60mmx40mm using stainless steel bolts.
- The array mounting structure shall be tilted at 15 degrees angle facing the equator Setting of the angle of inclination of the modules shall be done on site so as to give maximum power at midday.

4.4.4 Inspection, testing and commissioning

Inspection and testing of the completed system shall be to the requirements of BS 7671. The following minimum tests will be carried out during commissioning:

(a) Breaker Open/close
(b) Annuciator/Indications/alarms
(c) All indications to be tested and confirmed through initiation from the process.
(d) Panel interlocking confimation
(e) Voltages Confirmation
(f) Capacity test

Inverters shall be programmed such that the automatic protection system operates at:

- Operating voltage greater than 253 V phase to neutral
- Operating voltage less than 207 V phase to neutral
- Operating frequency greater than 50.5 Hz
- Operating frequency less than 47 Hz

SCHEDULLE OF UNIT RATES

ITEM	DESCRIPTION	UNIT RATE (KSHS)
1.0	**PVC/SWA/PVC Copper cables per metre** a) 2.5mm sq. 4 core b) 4mm sq. 4 core c) 6mm sq. 4 core d) 10mm sq. 4 core e) 16mm sq. 4 core	
2.0	**Single core Copper cables per metre – UV stable, water resistant and flexible (multi-stranded)** a) 4mm sq. b) 10mm sq. c) 16mm sq. d) 35mm sq. e) 50mm sq. f) 70mm sq. g) 95mm sq.	
3.0	100W, Poly-crystalline solar panel, make ……..	
4.0	240W, Poly-crystalline solar panel, make ……..	
5.0	250W, Poly-crystalline solar panel, make ……..	
6.0	6KVA,/6KW Inverter with specification similar to inverter in the B Q	
7.0	8KVA,/6KW Inverter with specification similar to inverter in the B Q	
8.0	200AH, 12V sealed maintenance free rechargeable lead-lead dioxide technology batteries with provision for pressure release mechanism in the event of overcharge	
9.0	Ditto but 100AH, 12V	
10.0	2000AH, 2V sealed maintenance free rechargeable AGM batteries with provision for pressure release mechanism in the event of overcharge	
11.0	Ditto but 2200AH, 2V	
12.0	75 X 50mm deep Powder coated metal trunking complete with bends As Manufactured by Power Technics	
13.0	Ditto but 50 X 25mm	
14.0	100A, 4-Way, SPN CU as Crabtree or approved equivalent	
15.0	100A, 10-Way, SPN CU as Crabtree or approved equivalent	
16.0	100x50mm, 14SWG cable tray c/w mounting row bolts for mounting and all the other necessary accessories	

TECHNICAL SPECIFICATION FOR 16.5kW OFF-GRID SOLAR PV SYSTEM

SPECIFICATION OF PV MODULES		Remarks (Indicate brand name, model and country of origin. Comparative specification should indicate any deviation from technical. Parameter or functional description of tender specification. If there is no deviation to the specification on the left side please state "Yes")
Crystalline Types (Monocrystalline or Polycrystalline) with minimum 60 cells		
6-Inch-Wavers with 3 bus bars		
Solar cells encapsulated in EVA (ethylene-vinyl acetate); anti-reflection coating; module on the front side protected by tempered, highly translucent glass.		
Temperature coefficient Pmpp:	>0.3%/K	
Temperature coefficient Voc:	-0.4%/K	
Temperature coefficient Isc:	<0.04%/K	
Operating temperature range:	up to 85C	
Module efficiency	at IEC-conditions > 14.0%	
Positive power sorting		
10 year product warranty		
25 years linear performance guarantee (90% up to 10 years and 80% up to 25 years)		
Product certification	IEC 61215 (Ed.2)	
Protection class II/ IEC 61730		
CE- conformity		
Horizontal and vertical assembly possible		
System voltage 1000V		
Glass-foil laminated in anodized aluminum –frame		
Weather resistant Junction box with 3 Bypass-diodes on the backside of the modules with protection class min. IP 54		
High Mechanical load (acc. IEC 61215 (5400Pa superimposed load and 2400Pa suction load))		

Pre-cabled with MC4 Plug –connectors (IP 65)

Nominal power > 200 Wp at IEC-Conditions (radiation	
1000W/m2,Air-Mass 1.5.25C) Nominal ground coverage >134 Wp/m2 at IEC-conditions	
Documentation : English	
Warranty > 10 years	

SPECIFICATION FOR A BI-DIRECTIONAL INVERTER AND POWER/CHARGE MANAGEMENT AND CONTROL UNIT		**Remarks** (Indicate brand name, model and country of origin. Comparative specification should indicate any deviation from technical parameter or functional description of tender specification. If there is no deviation to the specification on the left side please state "Yes")
Bi-directional battery inverter capable to control and manage different input sources and charge and monitor battery banks		
Inverters parameters		
Rated continuous output power	As per description in the Bills of Quantities	
Nominal output voltage (range)	240 V (216 V - 265 V)	
Nominal frequency (range)	50 Hz ±0.1Hz	
Nominal input voltage (range)	24VDC	
Total harmonic distortion	<3 %	
Power factor (Cos □)	-1 to +1	
Sinus modulation	Pure sine wave	
Max. efficiency	>94 %	
Efficiency at 5% -120% Pnom	>90 %	
Minimum rated charging current	210A	

Generator input voltage parameters		
Nominal generator input voltage (range)	240 V (216 V - 265 V)	
Nominal generator input frequency (range)	50 Hz (40 Hz- 70 Hz)	
Maximum generator input current	100A	
Battery Parameters		
Nominal battery voltage (range)	24 V (20.5 V- 31.5 V)	
Continuous charging current	150 A	
Maximum charging current	210 A	
Serviceable battery capacity	100 Ah – 10000 Ah	
Serviceable battery types	FLA, VRLA, NiCd	
Physical data		
Protection class	IP 40 (with SD/MMC card)	
Housing material	Aluminium die casting	
Cooling principle	Temperature controlled active cooling	
Ambient working conditions		
Ambient working temperate range	-25 □C … + 60 □C	
Features		
Systems configuration options	Master/Slave principle	
	1 and 3 phase operation	
	Multi-cluster operation	
	AC and DC coupling	
	Modular extendable	

Battery management	Determination and display of SOC and SOH	
	Automatic deep discharge protection	
	Automatic overcharge protection	
	IU_oU charging concept with automatic full and equalization and charge	
Generator management	Adjustable warming time, cooling time and minimum run time	
	Permanent monitoring of voltage and frequency	
	Integrated soft start	
	Reverse power protection	
	Generator power support	
Inverter protection features	Anti-islanding protection	
	Short-circuit protection	
	Over temperature protection	
	Over load protection	
	DC reverse polarity protection	
Monitoring features	Visual operation indicators by ED/ LCD Display for Status, I/P & O/P voltage & frequency, load level, Battery voltage & level, temperature. Normal, warning, fault	
	Visual operation indicators by LED/ Display	
	Electronic data storage facility on SD/MMC card	
	Remote access and monitoring via external data logger and /or GSM connection	
	Audible noise of Less than 55dBA (at 1m)	
Certification	CE	
Warranty	20 years	
Documentation	English	

SPECIFICATION FOR MOUNTING A PHOTOVOLTAIC –PANEL **MOUNTING SYSTEM ON ROOF TOP LOT**	**Remarks:** (Indicate brand name, model and country of origin. Comparative specification should indicate any deviation from techn. Parameter or functional description of tender specification. If there is no deviation to the specification on the left side please state "Yes")
The mounting system must be designed to allow the assembly with simple tools, without the use of electric mounting tools and equipment.	
The calculation has to include all fasteners as well as the well as the cross braces in the longitudinal or transversal direction, preferred is the longitudinal mounting of the PV-modules because of less dust deposition.	
The mounting system, including the anchoring on the roof top must be designed to withstand a wind speed up to 95 mph (195km/h).	
Due to continuous temperature changes the continuous row of girders may not exceed 12 metres.	
Module fastening by using end and central clamps with Hex-screws, optional with anti-theft-protection.	
Product warranty > 10 years against corrosion	
Materials	
Support profiles- Aluminium Al Mg SiO, 5 F22 (EN AW 6060)	
Fasteners- stainless steel A2-70	
Quantity depends on the type of used PV panels and the used substructure	

SPECIFICATION FOR THE BATTERY		**Remarks** (Indicate brand name, model and country of origin. Comparative specification should indicate any deviation from technical parameter or functional description of tender specification. If there is no deviation to t specification on the left side please state "Yes")
	sealed maintenance free rechargeable AGM batteries with provision for pressure release mechanism in the event of overcharge	
State of charge	Pre-charged and Pre -filled	
Electrical overview		
Voltage	2 VDC	
Battery rating	2500 Ah	
Certification	IEC 60896-21 (Stationary sealed maintenance free batteries, with provision for pressure release mechanism) IEC 61427 (Secondary cells and batteries for photovoltaic energy systems)	
High cycle stability up to	2500	
Lifetime	>15 years	
Warranty	> 5 years	
Documentation	English	

SPECIFICATION FOR DC CABLING AND CONNECTORS		**Remarks** (Indicate brand name, model and country of origin. Comparative specification should indicate any deviation from technical parameter or functional description of tender specification. If there is no deviation to the specification on the left side please state "Yes")
Fine copper for PV string connection to inverter		
Outdoor use TUV approval Nr.	TUV PfG 1169/08.2007	
Ozone resistant	EN 50396	
Flame retardant	IEC/EN 60332-1-2	
UV resistant	HD 605/A1	
Halogen free	EN 50267-2-1, EN 60684-2	
Acid + Alkaline resistant	IEC /EN 60811-2-1	
Low corrosivity of gases	EN 50267-2-2	
Weather resistant	HD 605/A1	
DC wiring losses	Total DC wiring losses max. 1,5%	
DC connectors	EN 50521 : Crimped according to manufacturer instructions using only certified tools	

PRODUCT DOCUMENT SPECIFICATION
For each product offered the following documentation has to be included
Product description and data sheets
Installation instructions
Connection plans
Commissioning instructions
Operating instructions
Maintenance instructions
Error sources, error diagnosis and troubleshooting instructions

SPECIFICATION OF MONITORING SYSTEM		**Remarks** (Indicate brand name, model and country of origin. Comparative specification should indicate any deviation from technical parameter or functional description of tender specification. If there is no deviation to the specification on the left side please state "Yes")
One radiation sensor (precision >97%) for global horizontal irradiance for each of the PV technology. Installed in shadow free position with access for regular cleaning. To measure solar irradiation, module temperature and ambient temperature.		
Data logging and transmission of PV inverter data	All inverter production data to be continuously transmitted via internet	
	Programmable data resolution from 1 min -15 min: DC current DC voltage DC power DC energy AC current AC voltage AC power AC energy Solar radiation (W/m^2)	
	Transmission of inverter data by GSM or equivalent	
Complete monitoring system including radiation sensors and GSM modems are part of the supply scope		
Three phase meters to be installed to measure power delivered to the loads		

ANNEX 1: LISTING OF SITES AND SITE ELECTRICITY DEMAND

1. Market Centres

S/No.	Facility Name	Sub County	Ward	Average power(kW)	Remarks
1	Kombewa Market	Seme	South Central Seme	10	
2	Korowe Market	Nyando	Kobura	10	
4	Pap Onditi market	Nyakach	Central Nyakach	10	
5	Awasi market	Muhoroni	Awasi/Onjiko	10	

2. Health Facilities

a) Hospitals

S/No.	Facility Name	Sub County	Ward	Daily energy consumption (kWh)	Remarks
1	Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH)	Kisumu Central	Kondele	3016.7	Energy Audit report available
2	Kisumu County Hospital	Kisumu Central	Market/Milimani	870.2	Energy Audit report available
3	Kombewa Hospital	Seme	South Central Seme	191.82	Energy Audit report available

b) Health Centres

S/No.	Facility Name	Sub County	Ward	Average power (kW)	Remarks
1	Dunga Health Centre	Kisumu Central	Nyalenda B	5	Level III
2	Nyalenda Health Centre	Kisumu Central	Nyalenda B	5	Level III
3	Got Nyabondo Dispensary	Kisumu East	Kajulu	5	Level III
4	Kosawo Health Centre	Kisumu East	Manyatta A	5	Level III
5	St Mark's Lela Dispensary	Kisumu West	Central Kisumu	5	Level III
6	Usoma Dispensary	Kisumu West	Central Kisumu	5	Level III
7	Aboge Health Centre	Kisumu West	West Kisumu	5	Level III
8	Rodi Health Centre	Seme	East Seme	5	Level III
9	Otieno Owala Dispensary	Seme	North Seme	5	Level III
10	Bodi Health Centre	Seme	South Central Seme	5	Level III
11	Kibigori Health Centre	Muhoroni	Chemelil	5	Level III
12	Chemelil GOK Health Centre	Muhoroni	Masogo/Nyang'oma	5	Level III
13	Kopere health centre	Muhoroni	Chemelil	5	Level III
14	Oduwo health centre	Muhoroni	chemelil	5	Level III
15	Sango Rota Health Centre	Nyakach	West Nyakach	5	Level III
16	Lisana Dispensary	Nyakach	Central Nyakach	3	Level II
17	Bunde Health Centre	Nyando	Ahero	5	Level III
18	Nyakongo Heallth Centre	Nyando	East Kano Wawidhi	5	Level III
19	Olasi Health Centre	Nyando	East Kano Wawidhi	5	Level III

3. **Solar Water Pumping facilities**

S/No.	Facility Name	Sub County	Ward	Daily energy consumption (kWh)	Remarks
1	Kisumu Water & Sewerage Company Ltd	Kisumu Central	Kisumu Central	Respondent to visit the site and determine	
2	Nyamisri Water Project	Seme	East Seme	Respondent to visit the site and determine	
3	Nyakach Intake and Treatment centres	Nyakach		Respondent to visit the site and determine	
4	Kisumu Rural Intake and Treatment centes	Kisumu East		Respondent to visit the site and determine	

4. **Solar powered Street lighting and High-mast area lighting**

S/No.	Facility Name	Sub County	Ward	Average power (kWh)	Remarks
1	Kit Mikayi Cultural Centre	Seme	Central Seme	Respondent to visit the site and determine	Lighting the centre and 1.5km road leading to the centre

Seme:

Facility Name	Sub County	Ward	GPS
Kombewa Market	Seme	South Central Seme	0.63°S, 34.31°E
Kombewa Hospital	Seme	South Central Seme	0.10°S, 34.52°E
Rodi Health Centre	Seme	East Seme	0°05’53”S, 34°35’39”E
Otieno Owala Dispensary	Seme	North Seme	0°03’31”S, 34°31’12”E
Bodi Health Centre	Seme	South Central Seme	0°09’46”S,34°30’40”E
Nyamisri Water Project	Seme	East Seme	0°07’07”S,34°41’11”E
Kit Mikayi Cultural Centre	Seme	Central Seme	0°07’02”S, 34°32’32”E

Nyakach

Facility Name	Sub County	Ward	GPS
Pap Onditi market	Nyakach	Central Nyakach	0°18’42”S, 34°56’12”E
Sango Rota Health Centre	Nyakach	West Nyakach	0°18’05”S, 34°47’37”E
Lisana Dispensary	Nyakach	Central Nyakach	0°17’33’”S, 34°57’53”E
Nyakach Intake and Treatment centres	Nyakach		

Muhoroni

Facility Name	Sub County	Ward	GPS
Awasi market	Muhoroni	Awasi/Onjiko	0°09’42”S, 35°04’25”E
Kibigori Health Centre	Muhoroni	Chemelil	0°04’32”S, 35°02’47”E
Chemelil GOK Health Centre	Muhoroni	Masogo/Nyang'oma	0°05’02”S, 35°08’05”E
Kopere health centre	Muhoroni	Chemelil	0°02’14”S, 35°10’57”E
Oduwo health centre	Muhoroni	chemelil	0°08’47”S, 35°08’42”E

Kisumu central

Facility Name	Sub County	Ward	GPS
Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH)	Kisumu Central	Kondele	0°04'56"S, 34°46'46"E
Kisumu County Hospital	Kisumu Central	Market/Milimani	0°05'59"S, 34°45'20"E
Dunga Health Centre	Kisumu Central	Nyalenda B	0°08'27"S, 34°44'17"E
Nyalenda Health Centre	Kisumu Central	Nyalenda B	0°07'20"S, 34°45'07"E
Kisumu Water & Sewerage Company Ltd	Kisumu Central	Kisumu Central	0°07'17"S, 34°44'45"E

Kisumu East

Facility Name	Sub County	Ward	GPS
Got Nyabondo Dispensary	Kisumu East	Kajulu	0°00'45"S, 34°48'50"E
Kosawo Health Centre	Kisumu East	Manyatta A	0°05'20"S, 34°41'56"E
Kisumu Rural Intake and Treatment centes	Kisumu East		

Kisumu West

Facility Name	Sub County	Ward	GPS
St Mark's Lela Dispensary	Kisumu West	Central Kisumu	0°04'29"S, 34°41'56"E
Usoma Dispensary	Kisumu West	Central Kisumu	0°06'13"S, 34°43'10"E
Aboge Health Centre	Kisumu West	West Kisumu	

Nyando

Facility Name	Sub County	Ward	GPS
Korowe Market	Nyando	Kobura	0°10'09"S, 34°52'33"E
Bunde Health Centre	Nyando	Ahero	0°13'07"S, 34°53'58"E
Nyakongo Heallth Centre	Nyando	East Kano Wawidhi	0°42'11"S, 34°59'58"E
Olasi Health Centre	Nyando	East Kano Wawidhi	0°16'02"S, 35°02'41"E