



**THE KENYA POWER AND LIGHTING COMPANY PLC**

**CONSULTANCY SERVICES**

**TERMS OF REFERENCE**

**PROJECT NAME: THE KENYA OFF-GRID SOLAR ACCESS  
PROJECT FOR UNDERSERVED COUNTIES (KOSAP)**

**CREDIT NO. 6135    PROJECT ID NO. P160009**

**TITLE OF CONSULTANCY SERVICES: SUPERVISION AND  
MANAGEMENT OF WORKS CONTRACTS FOR MINI GRIDS  
(COMPONENT 1)**

**RFP: KPLC395979-CS-QCBS**

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# Table of Contents

<b>1. Background .....</b>	<b>3</b>
<b>2. Scope of Works for Component 1 (Mini-grids for Community Facilities, Enterprises, and Households).....</b>	<b>3</b>
<b>3. Project Management.....</b>	<b>6</b>
<b>4. Project Implementation Schedule .....</b>	<b>6</b>
<b>5. Objectives of the Consultancy Services.....</b>	<b>6</b>
<b>6. Scope of the Consultancy Services.....</b>	<b>7</b>
<b>7. Facilities to be provided by: .....</b>	<b>12</b>
<b>1. KPLC .....</b>	<b>12</b>
<b>2. Consultant.....</b>	<b>12</b>
<b>8. Conduct of Work.....</b>	<b>13</b>
<b>9. Qualification and Experience.....</b>	<b>13</b>
<b>10. Reports .....</b>	<b>16</b>
<b>11. Person-Month Allocation .....</b>	<b>17</b>
<b>Appendix I – Distribution of Resident Engineers in the Lots and Counties .....</b>	<b>19</b>

## **1. Background**

The Kenya Off-Grid Solar Access Project for Underserved Counties (KOSAP) is financed by the World Bank for USD150 million. The Project will be implemented by the Ministry of Energy (MOE), Kenya Power and Lighting Company (KPLC) and Rural Electrification and Renewable Energy Corporation (REREC). The Project Development Objective is to increase access to modern energy services in underserved counties of Kenya by providing electricity services to households, enterprises, community facilities and boreholes.

The project will be implemented in the following 14 counties in Kenya that have been defined as marginalized by the Commission on Revenue Allocation (CRA): Garissa, Isiolo, Kilifi, Kwale, Lamu, Mandera, Marsabit, Narok, Samburu, Taita Taveta, Tana River, Turkana, Wajir, and West Pokot. The project has Four (4) components as follows:

**Component 1:** Mini-grids for Community Facilities, Enterprises, and Households to be implemented by KPLC and REREC.

**Component 2:** Standalone Solar Systems, and Clean Cooking Solutions for Households to be Implemented by The Ministry of Energy

**Component 3:** Standalone Solar Systems and Solar Water Pumps for Community Facilities. This component has two sub components:

Sub-component 3A- Standalone Solar Systems for Community Facilities to be implemented by KPLC. The Community Facilities considered in this component are Health Facilities, Educational Facilities and Administrative Offices e.g. Assistant County Commissioner offices.

Sub-component 3B- Solar Water Pumps for Community Facilities to be implemented by REREC.

**Component 4:** Implementation Support and Capacity Building.

KPLC will be responsible for the implementation of Component 1(Mini Grids) and Component 3A(Stand Alone Systems for Community Facilities). On this note, KPLC intends to apply part of the financing received for this project towards financing of consultancy services for Component 1.

## **2. Scope of Works for Component 1 (Mini-grids for Community Facilities, Enterprises, and Households)**

The project works for this assignment includes Design, Supply, Installation, Metering and Commissioning of 99 No. Mini grids with 7 years Operations and Maintenance services in the following 8 Counties: Mandera, Wajir, Garissa, Lamu, Tana River, Kilifi, Kwale and Narok. The scope covers design, supply, installation and commissioning of Solar Power Generation Plant (SPGP) with associated Battery Energy Storage System and Diesel Generator as well as Low Voltage Power Distribution Network (PDN) and connection to customers including installation of 43,894 electronic pre-paid energy meters (including earthing at the customer premise and issuing statutory wiring documents).

These will be grouped in eight (8) Lots. Each lot shall be treated as a separate contract as detailed

below:

**Lot 1:** Design, Supply, Installation and Commissioning of Solar Photovoltaic Generation Plants with Associated Power Distribution Network (Mini-Grids) in parts of Mandera County (Banissa, Mandera North, Lafey and Mandera East Constituencies) with 7 Years Operations and Maintenance (O&M) Services

**Lot 2:** Design, Supply, Installation and Commissioning of Solar Photovoltaic Generation Plants with Associated Power Distribution Network (Mini-Grids) in parts of Mandera County (Mandera South and Mandera West Constituencies) with 7 Years Operations and Maintenance (O&M) Services

**Lot 3:** Design, Supply, Installation and Commissioning of Solar Photovoltaic Generation Plants with Associated Power Distribution Network (Mini-Grids) in parts of Wajir County (Wajir South, Wajir East and Tarbaj Constituencies) with 7 Years Operations and Maintenance (O&M)

**Lot 4:** Design, Supply, Installation and Commissioning of Solar Photovoltaic Generation Plants with Associated Power Distribution Network (Mini-Grids) in parts of Wajir County (Wajir North, Eldas and Wajir West Constituencies) with 7 Years Operations and Maintenance (O&M) Services

**Lot 5:** Design, Supply, Installation and Commissioning of Solar Photovoltaic Generation Plants with Associated Power Distribution Network (Mini-Grids) in parts of Garissa County (Lagdera, Ijara and Balambala Constituencies) with 7 Years Operations and Maintenance (O&M) Services

**Lot 6:** Design, Supply, Installation and Commissioning of Solar Photovoltaic Generation Plants with Associated Power Distribution Network (Mini-Grids) in parts of Garissa County (Dadaab Constituency) with 7 Years Operations and Maintenance (O&M) Services

**Lot 7:** Design, Supply, Installation and Commissioning of Solar Photovoltaic Generation Plants with Associated Power Distribution Network (Mini-Grids) in parts of Tana River, Lamu and Narok Counties with 7 Years Operations and Maintenance (O&M) Services

**Lot 8:** Design, Supply, Installation and Commissioning of Solar Photovoltaic Generation Plants with Associated Power Distribution Network (Mini-Grids) in parts of Kilifi and Kwale Counties with 7 Years Operations and Maintenance (O&M) Services

<b>Lot No.</b>	<b>Counties</b>	<b>Scope of Works</b>
Lot 1	Parts of Mandera County (Banissa, Mandera North,	<ul style="list-style-type: none"><li>• Design, Supply, Installation and Commissioning of Solar Power Generation Plant with associated BESS</li></ul>

<b>Lot No.</b>	<b>Counties</b>	<b>Scope of Works</b>
	Lafey and Mandera East Constituencies)	<ul style="list-style-type: none"> <li>and Diesel Generator (SPGP) and Power Distribution Network (PDN) for 18No. Mini Grids.</li> <li>• Customer connections to 8583 No. customers</li> <li>• O&amp;M services for 7 years</li> </ul>
Lot 2	Parts of Mandera County (Mandera South and Mandera West Constituencies)	<ul style="list-style-type: none"> <li>• Design, Supply, Installation and Commissioning of Solar Power Generation Plant with associated BESS and Diesel Generator (SPGP) and Power Distribution Network (PDN) for 12No. Mini Grids.</li> <li>• Customer connections to 3854 No. customers</li> <li>• O&amp;M services for 7 years</li> </ul>
Lot 3	Parts of Wajir County (Wajir South, Wajir East and Tarbaj Constituencies)	<ul style="list-style-type: none"> <li>• Design, Supply, Installation and Commissioning of Solar Power Generation Plant with associated BESS and Diesel Generator (SPGP) and Power Distribution Network (PDN) for 11No. Mini Grids.</li> <li>• Customer connections to 7869 No. customers</li> <li>• O&amp;M services for 7 years</li> </ul>
Lot 4	Parts of Wajir County (Wajir North, Eldas and Wajir West Constituencies)	<ul style="list-style-type: none"> <li>• Design, Supply, Installation and Commissioning of Solar Power Generation Plant with associated BESS and Diesel Generator (SPGP) and Power Distribution Network (PDN) for 19No. Mini Grids.</li> <li>• Customer connections to 9914 No. customers</li> <li>• O&amp;M services for 7 years</li> </ul>
Lot 5	Parts of Garissa County (Lagdera, Ijara and Balambala Constituencies)	<ul style="list-style-type: none"> <li>• Design, Supply, Installation and Commissioning of Solar Power Generation Plant with associated BESS and Diesel Generator (SPGP) and Power Distribution Network (PDN) for 9 No. Mini Grids.</li> <li>• Customer connections to 4768 No. customers</li> <li>• O&amp;M services for 7 years</li> </ul>
Lot 6	Parts of Garissa County (Dadaab Constituency)	<ul style="list-style-type: none"> <li>• Design, Supply, Installation and Commissioning of Solar Power Generation Plant with associated BESS and Diesel Generator (SPGP) and Power Distribution Network (PDN) for 8 No. Mini Grids.</li> <li>• Customer connections to 2583 No. customers</li> <li>• O&amp;M services for 7 years</li> </ul>
Lot 7	Tana River, Lamu and Narok Counties	<ul style="list-style-type: none"> <li>• Design, Supply, Installation and Commissioning of Solar Power Generation Plant with associated BESS and Diesel Generator (SPGP) and Power Distribution Network (PDN) for 9 No. Mini Grids.</li> <li>• Customer connections to 2739 No. customers</li> <li>• O&amp;M services for 7 years</li> </ul>
Lot 8	Kilifi and Kwale Counties	<ul style="list-style-type: none"> <li>• Design, Supply, Installation and Commissioning of Solar Power Generation Plant with associated BESS and Diesel Generator (SPGP) and Power Distribution Network (PDN) for 13 No. Mini Grids.</li> <li>• Customer connections to 3584 No. customers</li> </ul>

Lot No.	Counties	Scope of Works
		<ul style="list-style-type: none"> <li>• O&amp;M services for 7 years</li> </ul>

**Contract Structure**

A single Contractor will be responsible for the Supply & Installation (S&I) Phase of the Mini Grids for each Lot. The same contractor will provide long-term Operations & Maintenance (O&M) services for 7 years for the Mini-grids. Therefore, two (2) Contracts will be signed between KPLC and the Contractor, one for the S&I Phase and the other one for the O&M Phase.

**3. Project Management**

The Project Implementation Unit (PIU) established under Kenya Power and Lighting Company Limited (KPLC) will manage the successful completion of the Project. The PIU comprises of staff from KPLC and will be full time assigned to the project.

The Consultant shall assign a full time Resident Team Leader responsible for supervision and management of the project i.e. administration of contracts, supervision of contractors and liaison with the Project Implementation Unit. The Consultant shall also avail one (1) Power Distribution Engineer, four (4) Resident Engineers and one (1) ESHS Specialist to supervise the contractors on a day to day basis.

The overall responsibility of site supervision shall remain with the Consultant.

The Resident Engineers will be distributed in the lots and counties as shown in Appendix I.

**4. Project Implementation Schedule**

**(A) Project Implementation Time:**

It is envisaged to take 15 Months to complete the works contracts for Mini Grids.

**(B) Consultancy Services Time:**

Based on (A) above, it is envisaged that the consultancy services shall be required for 15 months.

**5. Objectives of the Consultancy Services**

The objective of the supervision consultant is to provide technical assistance to KPLC in supervising the contractors implementing the project under the Supply and Installation(S&I) Phase. This will entail quality assurance, ensuring high standard of workmanship, project delivery

on schedule and within the budget, compliance with agreed specifications, adherence to ESHS standards in accordance with the World Bank's and GOK's Safeguard Policies.

The Services under this assignment have the following major objectives:

- i. Provide engineering expert service/advise in pre-construction, construction and post-construction phases of the project.
- ii. Provide technical support related to supervision of works and connections for the eight (8) contract lots for the Mini Grids.
- iii. Ensure quality and standard construction works and transparent project execution.
- iv. Ensure Contractors implement the approved Environmental, Social, Health and Safety mitigations measures for the project as stipulated in the Environmental and Social Management Plans (ESMPs).
- v. Provide Monitoring and Evaluation (M&E) expert services of the project for the individual Contract lots as outlined in (ii) above.
- vi. Mitigate/resolve probable technical problems/deadlocks associated with the project and hence accelerate project execution.
- vii. Ensure technically sound project implementation and contract administration.

## **6. Scope of the Consultancy Services**

The Supervision Consultant shall assist Kenya Power by providing comprehensive Engineering, Contract Management and any other technical support during the Supply & Installation Phase of Mini Grids (Component 1) so that above mentioned objectives shall be achieved. The specific responsibilities of the Consultant are broadly divided into the following main activities:

- i. Pre-Construction phase responsibilities
- ii. Implementation Support and Post Construction phase responsibilities.
- iii. Supervision and Monitoring of Adherence to the Management Strategies and Implementation Plans (MSIP) to manage the Environmental & Social (ES) risks; including Environmental, Social, Health and Safety Management Plan (ESHSM) by Contractors.
- iv. Training and Transfer of Knowledge.
- v. Project and Contracts Closure.

### **Activity 1: Pre-construction Phase Responsibilities**

Responsibilities of the Consultant under this includes, but not necessarily limited to the following:

- Review and Approval of the Contractors' designs and drawings to ascertain that they comply with the specifications and in accordance with sound and best engineering practice
- Review the Technical specifications of equipment and components to ensure that they meet relevant local and international quality and performance standards.

- Review and approval of Contractors' Project Implementation schedule
- Confirm the contractors schedule of personnel is as stated in the contract and recommend changes in the contractors' personnel where necessary
- Review and Approval of the Contractors' screening forms, Management Strategies and Implementation Plans (MSIP) to manage the (ES) risks; including Construction ESHSMP.
- Prepare a Construction Supervision Manual delineating a consistent, comprehensive and uniform system of quality assurance and quality control for the works, including but not limited to systems of checks and reviews that will be enforced during construction to ensure the highest standards of quality and safety.
- Take part in contracts clarifications and kick off meetings for all the lots.
- Prepare a Monitoring and Evaluation Plan for each of the contract Lots. This plan will help in tracking the progress of each lot against set targets/milestones (project time schedule, budget, number of customer connections and adherence to ESHSMP).

## **Activity 2: Implementation Support & Post Construction Phase Responsibilities**

The Consultant, as the Client's Representative under the various works contracts, will Supervise construction of the project in the 8 Counties.

Responsibilities of the Consultant under this includes, but not necessarily limited to the following:

- i. Provide necessary technical support to the client on its project management, including risk management, cost control, scheduling, monitoring and reporting.
- ii. Monitor construction methods and quality control; Verification of Customer information as collected by contractors to ensure completeness and accuracy, approval of design drawings submitted by contractors, certify that the quality of works conforms to the specifications, norms, standards and drawings.
- iii. Scrutinize and approve the detailed work programs including resource planning by all the contractors, prepare and certify cash flow forecasts for disbursement requests.
- iv. Supervise and monitor construction of all project components, verify modifications of designs as required by site conditions and issue variation orders to all the contractors; check measurements for works completed and verify bills for payments to all the contractors as per the conditions of contract.
- v. Supervise all aspects of construction work including periodical inspection of all the contractors' machinery and equipment.
- vi. Supervise proper implementation of environmental and social specifications by the contractor, through monthly inspection of the sites, with production of E&S monitoring reports highlighting potential non-conformities.
- vii. Factory Test Witnessing: The Major materials to be supplied under this project should be inspected and tested in the manufacturers testing stations to ensure that they meet relevant local and international quality and performance standards. The Consultant together with the Client's personnel shall inspect and witness all factory tests for all materials supplied under all contracts. It is not required to assign permanently an inspector in the manufacturer's country. The Consultant price proposal shall include at least eight (8) test witnessing, travel expenses (travel, hotel



and allowance expenses) in the manufacturer's facility. Written reports shall be provided by the Consultant on each test witnessed by the Consultant together with the Client. The Consultant shall be responsible for quality assurance of all materials to be supplied under all contracts.

- viii. Monitor mobilization and progress of works and services including confirmation of materials delivery to sites.
- ix. Oversee pre-commissioning and commissioning activities by the contractors for each lot, including but not limited to performance guarantee tests and other acceptance tests to ensure that they meet the required standards and procedures.
- x. The Consultant shall organize monthly meetings between the Client and all the contractors to review progress of the project, resolve any problems encountered during the progress of construction and report any challenges to the Client. Minutes of the meetings shall be prepared by the Consultant and signed by all the participating parties. The Consultant shall be responsible to chair the meetings and handling of the minutes.
- xi. Prepare reports as described in chapter 10 below.
- xii. Maintain detailed records of scope of the completed works.
- xiii. Take part in Joint Measurement Certifications, review and confirm quantity and quality of works completed, and approve interim certificates for progress of payments and verify the quantities for such certificates and recommend for payment to the Client.
- xiv. Verification of necessary statutory certifications/requirements for the completion of the project.
- xv. Verify and certify all the contractors' invoices to ascertain that the invoiced amount conforms to the works done.
- xvi. Examine the contractor's claims for variation, time extensions, contract amendments, additional compensation and prepare recommendation for approval by the Project Manager.
- xvii. Take part in resolution of contractual issues in liaison with the Client.
- xviii. Check and certify 'as-constructed' drawings/reports for the works done by all the contractors at the end of assignment and ensure that the client receives as constructed drawings. The 'as constructed' drawings/reports shall be maintained in the Facilities Database (FDB) system as required by the Client.
- xix. Prepare and submit monthly, quarterly and annual progress reports as outlined in chapter 10 below.
- xx. At the completion of the works, assist the Client in preparing a consolidated Project Completion Report in the format as prescribed by the client.
- xxi. Undertake any other tasks and responsibilities requested by the PIU from time to time

**Note: Approval by the Employer:** The Consultant will be required to obtain specific approval from the Client before taking any of the following actions specified below:

- Issuing variation orders.
- Contract amendments.
- Approving contract time extensions.

### **Activity 3: Supervision and Monitoring of Adherence to the Management Strategies and Implementation Plans (MSIP) to manage the (ES) risks**

The Consultant shall ensure that all the Environmental and Social impact mitigation measures included in the MSIP (including ESHSMP) are executed by the contractor and make written reports on any non-conformity of work with E&S guidelines.

The Consultant shall perform Environmental and social monitoring during all stages of the Project. The Consultant shall perform, among others, the following activities during the pre-construction and construction phases of the Project for each contract, through monthly inspection of the sites;

- a. Checking proper storage and operation of equipment and maintenance by the contractor,
- b. Ensure that during the commissioning and operation phase the contractor has undertaken the final cleanup operation,
- c. Ensure that the contractor prepares an acceptable, detailed Construction ESHSMP and an HIV/AIDS Awareness and Prevention Plan prior to commencement of site preparation and construction activities,
- d. Ensure that all the construction contractors implement the detailed Construction ESHSMP and HIV/AIDS Awareness and Prevention Plan and adhere to sound construction management guidelines,
- e. Ensure the safety measures are followed during the implementation of the project.
- f. Ensure Contractors adhere to OSHA Regulations.
- g. Review of all E&S documentation of the contractor, including follow-up documentation on non-conformities, incidences and accidents, recruitments, internal grievance management, waste management, and all other documents as per the works contract, and check the quality of E&S reporting by the contractor.
- h. Management of all ESHS non-conformities as per corresponding section of the works contract.
- i. Review and ensure implementation of MSIP; The Construction and Community Health and Safety Management Plans, HR and Labour Influx Management Plans, Sexual Exploitation, and Abuse (SEA) prevention and response action plan, Stakeholder Engagement Plan.

The Consultant shall include in his quarterly report activities performed concerning all Environmental, Social, Health and Safety related issues. The reports shall be verified by KPLC.

### **Activity 4: Training and Transfer of Knowledge**

The Client considers this Consultant services contract as an opportunity for knowledge transfer to a number of their staff and contractors' staff through formal courses combined with on-the-job training while the Client's staff monitor the Consultant and contractors.

During the Consultant's services contract, the Consultant shall organize the following training and transfer of knowledge sessions:

- Pre-construction 1: Organize a 3-day classroom training course on Solar PV stand alone and hybrid mini grid systems planning, sizing and design; construction; testing and commissioning, for at least 20 client technical staff.
- Pre-construction 2: Organize a 2-day classroom training course on the Construction Supervision Manual and Project Management, for at least 20 Client staff that would include engineers, financial management specialists, procurement specialists, environmental specialists and social management specialists. The goal of the session is to receive feedback and comments on the Manual.
- Construction: One (1) month after mobilization of all contractors: Organize a 1-day classroom training course on the Construction Supervision Manual, for at least 2 key staff from each contractor and approximately seven (7) Client staff.
- Construction: Four (4) months after mobilization of all contractors: Organize a 1-day classroom training course on the Construction Supervision Manual, for at least 2 key staff from each contractor and approximately 7 Client staff. The goal of the training session is to review current questions and issues on the procedures in the Manual, and receive suggestions and feedback on how to improve the Manual, including management of ESHS risks.
- Construction: Twelve (12) months after mobilization of all contractors: Organize a 1-day classroom training course on on-the-job training provided by Consultant to the Client and contractors for at least 2 key staff from each contractor and approximately 20 Client staff. The goal of the training session is to review current questions and issues on the lessons learned on knowledge transfer through on-the-job training.

The cost of this training shall be borne entirely by the Consultant (conference/training rooms, coffee breaks, audio-visual support, printed supports, software, fees for trainers, etc.). Per Diem, accommodation and transportation of KPLC staff will be covered by KPLC.

After the delivery of the formal courses, during the remainder of the pre-construction phase and continuing into the construction phase of the consultant's assignment, the consultant should continue with transfer-of-knowledge program to Client staff and contractors' staff.

The Consultant should name a coordinator for the proposed program of formal and on-the-job knowledge transfer.

For the technical proposal (RFP), the Consultant shall describe the transfer of knowledge (training) program for both: (a) formal classroom courses and (b) follow-up on-the-job-training. The proposed program will be scored during technical evaluation in terms of: (i) the relevance of training program, (ii) training approach and methodology, and (iii) qualifications of the trainers (both consultant's own experts and experts from external institutions), as will also be indicated on the Instructions to Consultants (ITC) Data Sheet.

#### **Activity 5: Project and Contracts Closure**

In order to facilitate Project and Contracts closure, the Consultant will perform the following;

- a. Issuance of Completion Certificates and Operational Acceptance Certificates.
- b. Determine Snag list per contract lot and ensure that the snags are attended to by the contractors.
- c. Verify digitization of the constructed Medium Voltage (MV) and Low Voltage (LV) networks in the KPLC Facilities Database (FDB).
- d. Verify As-Built drawings before being submitted to KPLC.
- e. Final Contracts (per lot) Bill of Quantities (BoQs) determination.
- f. Materials reconciliation.
- g. Financial reconciliation.
- h. Review the O&M manuals developed by the contractors.
- i. Review the O&M ESMPs developed by the contractors.
- j. Prepare Project Closure Report as stipulated in clause 10 (d).

## **7. Facilities to be provided by:**

### **1. KPLC**

The “Client” will provide access to relevant information to the Projects.

The “Client” will NOT provide office accommodation or transport.

### **2. Consultant**

The Consultant shall provide the following;

#### **a) Office Accommodation**

The consultant will establish a minimum of five (5) offices one of which will be the head office and located in Nairobi. This will be the head office of the firm.

The other four (4) offices will be used by the personnel supervising work in the following clusters:

- (i) Mandera County
- (ii) Wajir County
- (iii) Garissa, Tana River and Lamu Counties
- (iv) Kilifi and Kwale Counties

Note: The Narok County cluster could be administered from Nairobi office.

#### **b) Transportation**

The consultant shall provide five (5) vehicles for his own use during this assignment. One of these will be used by the Consultant’s Team Leader at Head Office in Nairobi and the other four (4) will be based in the cluster offices for use by the Resident Engineers.

Vehicle specification - A standard production Double cabin, 4x4, utility vehicle, designed for medium duty specifications, capable of operating in tropical conditions of mud and dust and most suitable for operating on both "on and off" road conditions.

The consultant shall provide

- Competent licensed drivers for each vehicle
- All necessary fuel, lubricant, tools, spares, full maintenance
- Temporary replacement vehicles for any vehicle under repair or maintenance for more than forty-eight (48) hours;
- Permanent replacement vehicles for vehicles beyond repair or during extensive repair period;
- Insurance and licences for normal operation on and off site and on and off duty

The price for the vehicles and associated costs shall include all expenses required for the duration of the Consultancy Service Contract such as insurance, registration and plate fees, and local customs, duties charges, etc. The local customs and duty charges should be quoted separately in the local currency.

The cost of the vehicles and its associated running costs for this Project shall be included in the consultancy service costs.

## **8. Conduct of Work**

The consultant will be expected to be fluent in English and be able to work closely with the Kenya Power staff, Contractors and other third parties associated with the implementation of this project.

All documentation shall be in English.

Standards for design and equipment used shall be based on IEC, IEEE, EIA/TIA, recommendations and/or other National standards approved by Kenya Power, modified for Kenyan environmental conditions and the Kenya Power practices.

Operations shall be under the Kenyan Law and statutes, including EMCA 1999, NEMA, NCA, KCA, WATER ACT, and ENERGY ACT 2019.

## **9. Qualification and Experience**

### **9.1 Qualifications of the Consultancy Firm**

The supervision consultant will be a firm or a consortium of firms. Interested consultancy firms/consortium must have at least 10 years of experience and must have undertaken similar assignments in a developing country within the last 5 years.

### **9.2 Qualifications of the Key Personnel**

The assignment shall be managed by a single team leader. The members of the team will have the skill and experience necessary to undertake the range of tasks set out in these terms of reference. Each individual on the team must be personally available to do the work as and when required.

The Team Leader will be held accountable, in terms of the consultancy contract, for ensuring project deliverables and for the professional conduct and integrity of the team.

The Consulting firm shall select key personnel to meet the specific requirements of the assignment. The firm will consist of one(1) Team Leader, one(1) Power Distribution Engineer, four(4) Resident Engineers and one(1) ESHS Specialist. The team shall comprise of the following minimum mandatory requirements but not limited to:

### **1) Team Leader – 1 No.**

Strong technical and analytical background, and knowledge of international best practices pertaining to design and deployment of hybrid PV-Diesel power generation mini-grids and stand-alone solar systems. The team leader should be highly experienced in addressing the range of issues typically encountered in the process of identifying and characterizing stand-alone solar PV and hybrid PV-Diesel power generation and mini-grids distribution networks. He/she is expected to bring an established and recognized track record of experience leading teams in undertaking comparable efforts in other countries. The team leader must have:

- A Bachelor's degree in electrical/mechanical/renewable energy engineering. A Master's degree will be an added advantage.
- 10 years' experience in electrical/PV power projects management/supervision
- Strong leadership, management and communication skills.
- At least 10 years' experience in design, procurement and construction of small to high-capacity PV power systems/stations of up to 5 MW, both centralized and stand-alone.
- Registered as a professional Engineer with Engineers Board of Kenya (EBK) for local Engineers, or equivalent for foreign/International Engineers.
- Demonstrated experience in design, construction, testing and commissioning of at least 3 solar PV power systems of at least 500kWp, either stand-alone/ hybrid mini-grid or grid-connected. One of which must have been in sub-sahara African countries.
- Have done at least 5 electrical / PV power projects one of which should be a hybrid PV-Diesel power generation.
- Experience in Low Voltage (LV) / Medium Voltage (MV) power distribution network.
- Demonstrated ability to utilize PV systems design software such as PVSol, etc.
- Demonstrated knowledge of local or international PV standards for equipment and systems including grid/mini-grid connected and stand-alone systems.
- Working Experience of Balance of Systems components (charge controllers, Inverters, Batteries, Switchgear) sizing, installation, cabling and interconnection.
- Fluency in English language.

### **2) Power Distribution Engineer – 1 No.**

This Engineer shall demonstrate expertise in network planning, design, construction and commissioning of MV extensions, design and construction of LV network reticulation for customer connections including internal wiring of buildings. The power distribution engineer must have:

- A Bachelors' degree in electrical engineering or equivalent is required.
- 8 years of experience as a power distribution engineer is a minimum.
- At least 5 years' experience in planning, design, construction and commissioning of LV and MV power line network upto 11kV.
- Registered as a professional Engineer with Engineers Board of Kenya (EBK) for local Engineers, or equivalent for foreign/International Engineers.
- Knowledge and experience in solar PV either stand-alone/ hybrid mini-grid or grid-connected.
- At least 3 years' experience in management of power projects.
- Demonstrated ability to utilize distribution design software.
- Demonstrated knowledge of grid standards, applicable laws, codes, regulations and procedures.
- Registration with Engineers Board of Kenya or equivalent as a professional engineer will be an added advantage.
- Fluency in English language.

### **3) Resident Engineers– 4 No**

The Resident engineers shall demonstrate ability to work within a multi-disciplinary project team with counterparts and other stakeholders. They should also be expected to be able to review PV power systems and distribution network designs for quality and efficiency and suggest means by which errors can be rectified and designs improved. The resident engineer must have;

- A Bachelor's degree in electrical/renewable energy engineering or equivalent.
- At least 6 years' experience in design, construction and commissioning of small to medium capacity PV power systems/stations, both centralized and stand-alone.
- Registered with Engineers Board of Kenya (EBK) for local Engineers, or equivalent for foreign/International Engineers.
- Demonstrated experience in design, construction, testing and commissioning of at least 3 power systems of at least 100kW, either stand-alone PV or PV hybrid mini-grid/grid-connected.
- Experience in design and construction of LV/MV power distribution network up to 11kV.
- Demonstrated ability to utilize PV software such as PVSol for PV systems design and performance simulation.
- Demonstrated knowledge of local or international PV standards for equipment and systems including grid/mini-grid connected and stand-alone systems.
- Knowledge of applicable laws, codes, regulations, and procedures
- At least 3 years' experience in project management.
- Solar PV licensing by EPRA or equivalent will be an added advantage.
- Fluency in English.

#### **4) Environmental, Social, Health and Safety (ESHS) Specialist – 1 No.**

- B.Sc. degree in Environmental Science/Environmental Engineering/Natural Resource Management/Social/Health/Safety degree or any related discipline with combination of appropriate trainings.
- 8 years' experience in managing Environmental, Social, Health and Safety issues in development projects.
- At least 2 years' experience in managing Environmental, Social, Health and Safety issues in projects in a Sub Saharan Country.
- Experience working on donor funded projects will be an added advantage.
- Registration with NEMA will be an added advantage.
- Language proficiency in English language.

## **10. Reports**

### **a) Inception report**

The Consultant shall submit inception reports within one month of the contract award. The report will outline the Consultant's work plan including but not limited to:

- a. consultant's interpretation of the terms of reference
- b. the technical approach to the work
- c. time allocation schedule
- d. detailed work plan
- e. assignments for each individual in the team.
- f. Project management tools and technique.
- g. Construction Supervision Manual.

### **b) Monthly Progress Reports**

The consultant shall compile, summarize and submit monthly progress report on the activities carried out during the month. The progress report will include work charts as against scheduled timeframe of implementation. Challenges (including ESHS non-conformities) encountered during project implementation shall be highlighted and the respective corrective measures adopted (or to be adopted) shall be documented. For cases where KPLC's intervention is required in order to resolve/ mitigate the challenge(s), the report shall document the date when the challenge was communicated to KPLC, whether it has been resolved and how long it took to be resolved.

### **c) Quarterly Progress Reports (QPRs)**

The Quarterly Progress Reports shall cover all aspects of Project implementation: - disbursement schedules, project progress vis-à-vis Monitoring and Evaluation Plan (as per requirement in activity 1) and implementation of environmental and social mitigation measures in respect of ESMP (Environmental and Social Management Plan). The QPRs shall also highlight issues



affecting Projects implementation and proper corrective actions. The QPRs should be received by the Client no later than 10 days after the end of each quarter.

All reports shall be submitted in 3 copies. The reports shall also be submitted in electronic form. Format of the report shall be discussed and agreed upon with the Project Manager.

**d) Project Completion Report (PCR)**

Upon completion of the project construction activities, the Consultant shall prepare a Project Completion Report (PCR) in accordance with client requirements. The PCR will form a comprehensive record of the design, construction and erection works accomplished including:

- i) Project achievements against set objectives,
- ii) A description of changes or modifications to the designs,
- iii) Problems encountered and solutions adopted, including a specific section concerning environmental, social, health and safety issues
- iv) Overall construction volume, quantities and costs and
- v) Lessons learned

The reports shall be submitted as mentioned below;

<b>Report</b>	<b>No. of Copies</b>	<b>Due Date</b>	<b>Submitted To</b>
Inception Report cum supervision manual	4 + (soft copy)	Within one month of contract agreement	Project Manager
Monthly Implementation Progress Reports	4 + (soft copy)	First week of succeeding Month	Project Manager
Quarterly Progress Reports	4 + (soft copy)	Within 10 days of completion of Quarterly reporting period.	Project Manager
Project Completion Reports	4 + (soft copy)	One Month from completion of works	Project Manager
Other Reports		As requested by Project Manager	Project Manager

**11. Person-Month Allocation**

The consultant shall indicate in his proposal sufficient person-months for proper execution of the Project. Considering the technical and financial evaluation, contract shall be awarded to a single consultant whose entire result reflects the evaluation criteria. The consultant shall provide a

schedule with breakdown for various activities called for in the TOR, including the home office and field activities.

The estimated minimum proposed person-months by the consultant shall be as follows:

<b>KEY STAFF</b>	<b>QTY.</b>	<b>ESTIMATED PERSON-MONTHS</b>
Team Leader	1	18
Power Distribution Engineer	1	18
Resident Engineer 1	1	18
Resident Engineer 2	1	18
Resident Engineer 3	1	18
Resident Engineer 4	1	18
ESHS Specialist	1	15
<b>TOTALS</b>	<b>7</b>	<b>123</b>

## Appendix I – Distribution of Resident Engineers in the Lots and Counties

<b>PACKAGE</b>	<b>LOTS</b>	<b>COUNTY</b>	<b>NO. OF RESIDENT ENGS</b>
1	1 & 2	Mandera	1
	3 & 4	Wajir	1
2	1, 2 & 3	Garissa, Tana River and Lamu	1
	4	Kilifi, Kwale and Narok	1