



**THE ELECTRICITY SUPPLY CORPORATION OF MALAWI LIMITED**

**TERMS OF REFERENCE (TOR)**

**FOR**

**ENGINEERING CONSULTANCY SERVICES FOR THE DESIGN, MARKETING AND  
COMMERCIAL PLANNING SUPPORT, CONSTRUCTION SUPERVISION SUPPORT,  
AND ASSOCIATED TRAINING FOR THE MALAWI ELECTRICITY ACCESS  
PROJECT (MEAP)**

**Credit No: P164331**

**Reference No: MW-ESCOM-146987-CS-QCBS**

**Date: JUNE 2020**

## Contents

1	BACKGROUND .....	1
2	OBJECTIVE(S) OF THE ASSIGNMENT .....	2
3	SCOPE OF SERVICES, TASKS AND EXPECTED DELIVERABLES .....	2
3.1	PHASE 1 – DESIGN .....	2
3.2	PHASE 2 – CONSTRUCTION SUPERVISION .....	3
3.3	DETAILED TASKS.....	3
3.3.1	Phase 1 .....	3
A.	Desktop Survey .....	3
B.	Preparation of Marketing, Commercial, and Customer Service Plan at Headquarters and Regional Head Offices .....	4
C.	Site survey .....	5
D.	Design and costing for connections and selective reinforcing of network/substation elements.....	5
E.	Implementation Plan .....	6
F.	Training.....	6
3.3.2	Phase 2 .....	7
A.	Construction Supervision Support.....	7
B.	Training.....	10
3.4	EXPECTED DELIVERABLES .....	10
3.4.1	Phase 1 .....	10
A.	Implementation plan.....	10
B.	Desktop survey .....	10
C.	Marketing, Commercial, and Customer Service Plan.....	11
D.	Site survey .....	11
E.	Design and Costing.....	11
F.	Training.....	11
3.4.2	Phase 2 .....	12
A.	Construction Supervision Support.....	12
B.	Training.....	12
4	TEAM COMPOSITION AND QUALIFICATIONS.....	13
4.1	KEY EXPERTS.....	13
4.2	KEY EXPERTS QUALIFICATION REQUIREMENTS. ....	13
5	REPORTING REQUIREMENTS .....	15
5.1	INCEPTION REPORT .....	16
5.2	MONTHLY AND QUARTERLY PROGRESS REPORTS .....	16
5.3	DRAFT COMPLETION REPORT.....	16

5.4	FINAL COMPLETION REPORT .....	16
5.5	OTHER DELIVERABLES.....	17
5.6	ENVIRONMENTAL AND SOCIAL SAFEGUARDS REPORTING OBLIGATIONS	17
6	CLIENT'S INPUT AND COUNTERPART PERSONNEL .....	17
7	ENVIRONMENTAL AND SOCIAL POLICY.....	18
8	DURATION.....	18
	Annexure A: Sample Bill of Quantities (BoQ) .....	19

## 1 BACKGROUND

Malawi has one of the lowest electricity access rates in the world. Currently, the electrification rate stands at 11 percent with severe disparities between urban (42 percent) and rural areas (4 percent). The current electrification rate has not been able to cope with the annual population growth rate of 2.8 percent.

In 2018, the Government of Malawi (“GoM”) updated the National Energy Policy of 2003 to define the national energy development agenda in relation to the Malawi Vision 2020, the Malawi Growth and Development Strategy III, and the Sustainable Development Goals. The overall goal of the National Energy Policy 2018 (“NEP”) is to establish a guiding framework including policy and strategic direction for achieving increased access to affordable, reliable, sustainable, efficient, and modern energy for every person in the country. In April 2019, supported by World Bank technical assistance (“TA”), the National Electrification Strategy (“NES”) was finalized and adopted by the Ministry of Natural Resources Energy and Mining (“MoNREM”). Together the GoM’s NEP and NES establish the enabling policy platform and institutional framework for the World Bank financed Malawi Electricity Access Project (“MEAP”) that was approved in June 2019.

The development objective of the MEAP is to increase access to electricity in Malawi and the main features of the project include:

**a. Component 1 – Grid electrification:**

This component will finance cost-effective, priority investments in grid electrification by providing electricity to households living close to existing distribution infrastructure (transformer connection range) leveraging on the geospatial least cost electrification plan analysis to maximize the number of, and minimise the cost per connection. Specifically, the component will finance low voltage (LV) extensions, uprating of distribution transformers, service drops, and pre-payment meters. Some of the new connections may also require reinforcing the upstream network to ensure the quality and reliability of power supply. The project will also support the elimination of connection barriers due to unaffordable internal house wiring costs by providing ready boards to low-income households that cannot afford internal house wiring costs.

**b. Component 2 – Off-grid market development fund:**

This component will bridge the financing gap faced by solar companies operating in Malawi and hence address the challenges to developing the Off-Grid Solar (“OGS”) market through an Off-Grid Market Development Fund. The OG Market Development Fund will provide financing through three windows - a working capital window, a results-based financing window, and a mini-grid window.

**c. Component 3 – Technical assistance:**

This component will finance various TA and capacity building activities to ensure ESCOM, MoNREM and other sector stakeholders have adequate technical, planning, and operational capacity to implement the electrification roll-out activities under Component 1 and 2 of the MEAP.

The following are TA efforts which have been undertaken to facilitate the detailed design and implementation framework of the MEAP:

- i) High level geospatial least-cost electrification program plan: The objective of this TA was to undertake a GIS mapping of population settlement patterns to understand their proximity to existing medium voltage (MV) grid infrastructure and to develop first-order estimates of the capex requirements for connecting these settlements to the grid. In addition, the study also identified

off-grid / mini-grid sites where the grid is unlikely to reach in the near term. The study found that most of Malawi's population lives close to the existing network and that grid extension is probably the most effective option for achieving universal access.

- ii) Power Adequacy Analysis: This TA aimed to ensure that new generation capacity and network construction, and extension can provide power for new connections. These include amongst others a new interconnection with Mozambique, solar IPPs, and new generation plants.
- iii) Feeder level techno-economic plan: The objective of this TA was to carry out a feeder level techno-economic plan for implementing 180,000 connections over the first two years of ESCOM's four-year corporate plan to connect 90,000 connections per year. The primary input into this analysis was the First Order Geospatial Plan. The aim was to use this information to estimate the impact of the potential connections on the network and provide preliminary estimates of material requirements. The study found that the bulk of the material requirements are associated with extending the existing LV network to reach new customers.

## **2 OBJECTIVE(S) OF THE ASSIGNMENT**

With a focus on the grid electrification/densification component of the MEAP, this assignment aims to support the connection of 180,000 customers (averaging 90,000 per annum over 2 years) that are close to existing network infrastructure.

It is envisaged that most connections under MEAP financing will entail; a prepayment meter, service drop, LV extension or a combination of any of the three. Additionally, MEAP financing has a capex provision for selectively reinforcing the upstream network to enable the new connections.

## **3 SCOPE OF SERVICES, TASKS AND EXPECTED DELIVERABLES**

This assignment will be executed in two phases with the Consultant's appointment in the second phase being conditional on the performance<sup>1</sup> of the consultant in the first phase.

The appointed Consultant must utilise ESCOM counterpart staff as much as possible under a twinning arrangement whereby ESCOM staff are trained by the consultant to take over the activities under this TA upon handover at the end of the consultancy. The second year of this consultancy shall therefore focus on transition to ESCOM for all activities undertaken by the consultant for ultimate handover.

The consultant will ultimately be responsible for:

### **3.1 PHASE 1 – DESIGN**

- a) Recommending a project implementation structure that utilizes ESCOM personnel to the extent feasible – and otherwise, temporarily supplement their human and technical resources and skills in the interim – to achieve the project connection targets in the required timeframe;
- b) Identification of potential household connections through a desktop survey using appropriate GIS software.
- c) Coordinating with ESCOM to carry out a site survey to verification of the number of connections on each feeder and their specific locations through site survey;
- d) Prepare and implement a marketing and customer commercial service plan that lays the groundwork for the arrival of the design and construction teams

---

<sup>1</sup> As determined by ESCOM and the World Bank

- e) Carrying out engineering designs and works packaging, and all times ensuring that the connections are based on the least capital cost
- f) Ensuring that designs incorporate environmental and social safeguards considerations as stipulated in the safeguards instruments developed for the project
- g) Providing technical assistance to ESCOM with the appointment of the EPC Contractor(s);
- h) Providing appropriate training to ESCOM personnel assigned to work alongside the Consultant

### 3.2 PHASE 2 – CONSTRUCTION SUPERVISION

- a) Reviewing and approving contractor designs, where applicable, to ensure they are “least cost” and comply with ESCOM’s standards and specifications;
- b) Providing construction supervision support to ESCOM to ensure Contractor(s) compliance with, ESCOM specifications and generally accepted standards as well as compliance with all Safeguard requirements.
- c) Providing appropriate training to ESCOM personnel assigned to work alongside the Consultant and to Contractor(s) personnel working on the project.
- d) Providing supervision of Environmental and social safeguards instruments implementation compliance

### 3.3 DETAILED TASKS

The assignment will be executed in two phases with the Consultant’s appointment in the second phase being conditional on its performance<sup>2</sup> in the first phase. The project covers the entire country with the construction sites located in clusters identified as part of the “High level geospatial least-cost electrification program plan” and the “Feeder level techno-economic plan which will be made available to the Consultant.

#### 3.3.1 Phase 1

##### A. Desktop Survey

The input into the desktop survey is the areas identified in the Feeder Level Techno-Economic Plan<sup>3</sup> which was produced by another Consultant. The survey shall be carried out using suitable GIS software, which shall be made available to ESCOM. The overall scope of the desktop survey will be:

- I. Confirm and indicate the number of households, disaggregated by relevant social categories (e.g. income levels, vulnerable groups) for each of the clusters identified in Year 1 of the Feeder Level Techno-Economic Plan. Attributes for each point should be linked to a cluster-ID, region, service transformer, transformer rating and MV feeder.
- II. Define project works packages by indicating the boundaries in GIS which corresponds to the households identified through this exercise. Furthermore, the Consultant shall take note of the following:-
  - a. Definition of the boundaries is a relatively subjective exercise, but the starting point shall be the cluster buffer shapefile<sup>4</sup>, as well as the number of connections. In certain cases, it may be obvious that the boundary, as defined in the cluster buffer shapefile, may need to be

---

<sup>2</sup> As determined by ESCOM and the World Bank

<sup>3</sup> 19022019\_Investment plan.xlsx [Excel spreadsheet] to be made available at an appropriate time

<sup>4</sup> Year 1\_Buffer.shp. [QGIS shp file] to be made available at an appropriate time

- expanded to encompass neighbouring areas or be reduced or in some cases shifted. It may also be optimal to combine clusters, where this makes sense. When defining boundaries, one must also consider clusters that are not included in the Year 1 Plan, so as not to inadvertently include households which have been earmarked for future phases.
- b. The methodology which is to be used to define the boundaries must be clearly defined and discussed with all stakeholders. The boundary attributes should indicate the cluster-ID, the Potential number of households identified in the Investment Plan, confirmed number of households, electrified households, area, household density, closest service transformer/s, transformer rating/s, MV feeder/s, ESCOM region.
- III. Any deviation from the potential number of households per cluster as defined in the investment spreadsheet must be noted and once the above exercise is completed, the total deviation must be reported. It is recognised that there are 2 possible outcomes of this process:
- a. *There is a net increase in the total number of households*  
The investment spreadsheet must be updated with the new household numbers and the analysis redone (only on the Year 1 investment clusters). The lowest cost/connection clusters that yield the required number of households must be selected and the remainder shifted to Year 2. This may result in portions of the Year 2 clusters being moved to Year 3. In addition, the impact of any additional load on feeder capacity must be confirmed and discussed with the ESCOM Distribution Planning department.
  - b. *There is a net decrease in the total number of households*  
In this case, the exercise must be repeated using clusters from the Year 2 investment plan until the required number of households is achieved.

The above study should use the following data sources:

- a. Latest ESCOM IGEA dataset on metering points, service transformers and MV networks.
- b. GIS dataset developed as part of the First Order Geospatial Plan<sup>5</sup>
- c. GIS dataset developed as part of Feeder level techno-economic plan<sup>4,6</sup>
- d. Google or other commercially available satellite imagery

#### **B. Preparation of Marketing, Commercial, and Customer Service Plan at Headquarters and Regional Head Offices**

A key component of the electrification process is the marketing which aims to ensure that the customer and other interested persons are aware of the activities to take place. The Consultant should begin by defining a framework that lays the groundwork before the designers and subsequent construction teams arrive on site. The framework should include:

- a. A marketing campaign that informs affected parties about the MEAP and indicates that not all residents within the area will be connected;
- b. the process that was used for selecting customers;
- c. a system for handling queries and complaints regarding the process in line with the Grievance Redress Mechanism (“GRM”) that will be set up;
- d. information that is required from prospective customers to load them onto the billing system;
- e. upfront payments that must be made by customers before receiving a connection;
- f. assisting ESCOM with capturing the customer information into their billing system; and
- e. informing customers regarding the prepayment system and how to purchase electricity.

<sup>5</sup> Developed by another Consultant and shall be made available at an appropriate time

<sup>6</sup> Year 1 Project List.shp to be made available at an appropriate time

### C. Site survey

This phase will follow the *Desktop Survey* and must be done in conjunction with the *Design*. The aim will be to confirm the number of connections identified in the *Desktop Survey* as well as for the Consultant to get an appreciation of the site conditions. The output of this study will be completed Electricity Application Forms (and any other necessary information) as well as the GPS coordinates of the customers.

### D. Design and costing for connections and selective reinforcing of network/substation elements.

The key inputs to this activity are:

1. The project packages identified in the Site Survey;
2. Confirmation of the number of connections (which is an output of the Site Survey); and
3. The extent of the existing LV and MV network for the affected cluster.

Ideally, this component should run concurrently or towards the tail end of the *Site survey*. The Consultant will utilise ESCOM counterpart staff where possible to undertake the design. The scope for the design will be:

- 1 Determine the infrastructure required to connect the identified customers to the grid.
  - a. A GIS file must be provided for each cluster indicating the position of proposed poles, pole top boxes, LV routes, customer position and service cable.
  - b. Each pole attribute must indicate the type of pole, length of the pole, LV structure, description of pole top box, number of connected customers.
  - c. The LV cable attribute must indicate the type of cable (ABC, AAC, etc.), area, conductor material, number of phases and section length.
  - d. The service cable attribute must indicate the type of cable, area, conductor material and length

**NOTE: *The design must be ultimately uploaded into the ESCOM NDM system.***

- 2 Discuss with ESCOM Planning Engineers the potential load that will be added to the transformer. If there are concerns that the additional customers will overload the transformer, then this must be noted and the investment spreadsheet<sup>3</sup> updated to include the cost of an additional transformer. It may be necessary in this case to shift this cluster to a future year depending on the recalculated cost/connection.
- 3 Capture the extent of the existing LV network by capturing the position of poles, pole top boxes, LV routes and the number of customers connected per pole top box for each of the affected transformer zones. The attributes for these items should be similar to those mentioned in the preceding bullets.
- 4 The Consultant should look at the network in totality and consider the impact of the additional connections on the upstream network. This will entail modelling and simulation of the upstream network that considers 1) the additional electrification customers being connected as part of this program; 2) the natural growth of existing customers; 3) additional new customers which ESCOM may connect and 4) network reinforcements and refurbishment which are carried out as part of ESCOM's normal expansion and refurbishment activities. The Consultant must compile a BoQ and CAPEX plan for these required upstream reinforcements .
- 5 The consultant shall adhere to Environmental and Social safeguards frameworks and plans guiding the implementation of MEAP project and where conflicts between designs and



safeguards instruments arise, s/he shall provide alternative options and report to client as necessary.

### E. Implementation Plan

In consultation with ESCOM and the World Bank, the Consultant must develop a project implementation plan that addresses:

- a. The optimal project implementation structure that utilises ESCOM personnel as far as possible, with the understanding that in the short term it may be necessary to supplement ESCOM technical skills and resources, while it develops its internal capacity;
- b. A material handling and management system that ensures the project materials are ringfenced and accounted for according to World Bank guidelines;
- c. Environmental and Social Safeguards as stipulated in Safeguards instruments and as required by the Client and World Bank.

### F. Training

The Consultant must provide training on distribution network design to ESCOM personnel. To this end, the Consultant shall fully involve or work alongside the ESCOM Training Department for the entire training period starting from needs assessment, curriculum development, training design, implementation, evaluation and impact assessment. The Consultant shall recommend/provide the required facilities for the implementation of the training program.

The Consultant should take note that the training will likely be ongoing throughout the project depending on the need and the training plan. The following shall be considered:

Training	Tasks & Resultant Impact	
Provide training on distribution network design using modern technology	Conduct needs assessment to identify the knowledge gap	If there is a knowledge gap, proceed to train
	Conduct in-depth Geospatial training	Expertise in Geospatial analytics in the trainees
	Enhance desktop modelling and simulation skills for MV & LV reticulation	Expertise in desktop modelling and simulation for MV & LV reticulation in the trainees
Provide training in project Management	Conduct needs assessment to identify training needs in project management	If there is a knowledge gap, proceed to train
	Train ESCOM staff in project management	Expertise in effective project management

### **3.3.2 Phase 2**

#### **A. Construction Supervision Support**

The objective of this activity is to ensure that the Contractor(s) implement the works; 1) with acceptable quality, 2) within the required timeframe, 3) within budget and with compliance to Environmental and Social safeguards.

##### **I. Review and Approval of Contractor(s) Designs**

- a. The Consultant shall work with Contractor(s) to review and approve final surveys and detailed designs prepared and submitted by the Contractor(s) before the commencement of any construction work;
- b. Propose and present for approval to the Client changes in the technical documents that may be deemed necessary for the completion of works including information on any effects the changes may have on the contract amount, Environmental Safeguards compliance and time of completion of the project and prepare all specifications and other details arising thereof;
- c. Review the Contractor's Quality Assurance program and work procedures;
- d. Assisting ESCOM with assessment and approval of the sub-contractors which the main contractor may engage;

##### **II. Assisting ESCOM during Contractor(s) mobilisation**

- a. Ensure that all the sites and support facilities like storage yards comply with the Environmental Social Management Plans (ESMP) and Health and Safety Plans;
- b. Implement a streamlined platform and protocols for operational coordination, oversight and accountabilities, including the scope of key functions, progress monitoring and reporting system(s), flagging corrective actions as needed; as well as quality control and tracking actual costs per connection against design projections;
- c. Verify together with the Client that the workers' safety protocols are understood and will be followed in accordance with the environment and social safeguard requirements as outlined in the ESMP and Health and Safety Plans;
- d. In liaison with the Client, ensure compliance by the Contractor(s) with ESCOM construction guidelines on Social and Gender Integration requirements.

##### **III. Supervision of Contractor's Works including supervision and oversight of the implementation of environment and social safeguard requirements**

- a. Review of a detailed implementation schedule ("DIS") for the project and implementation periods and costs for the individual- and overall packages;
- b. Generally, monitor the execution of the Works for compliance with the Contract and attending site meetings at such a frequency for the successful and timeous completion of the Works;
- c. Submitting regular reports regarding progress towards anticipated completion date(s);
- d. Prepare Variation Orders on request and upon approval by the Client;
- e. Review construction material for compliance with the requirements of the design and specifications;
- f. Ensure compliance to ESCOM construction standards;
- g. Review, preferably at the earliest opportunity, a sample of each important construction milestone;
- h. Maintain a presence on site to review random samples and review important completed work before the closure or on completion as appropriate;
- i. Ensure that site registers are filled in daily by the Contractor;
- j. Arrange for quality assessment meetings;

- k. Identify the cost of non-conformance and report to the Client;
- l. Undertake follow-up inspections to ensure findings are closed out and preventative action is in place;
- m. Develop a detailed Outage Management Plan where necessary to minimise disturbance of current supplies works that will involve integration into the existing power lines. This should also include any disturbances that may be caused by contractor mobilisation to sites, access roads, etc.;
- n. In the event of contractual disputes, assist the Client in collating and preparing factual documentation and recommend a line of actions;
- o. Inform the Client of problems or potential problems which may arise in connection with the implementation of each contract and make recommendations to the Client for possible solutions.

#### **IV. Environmental and Social Safeguards obligations**

Ensure that the Contractor delivers its ES obligations under its contract. This includes, but is not limited to the following:

- a. review the Contractor's Environment and Social Management Plan (C-ESMP), including all updates and revisions at frequencies specified in the Contractor's contract (normally not less than once every 6 months);
- b. review all other applicable contractor's documents related to ES aspects including the health and safety manual, security management plan and SEA and SH prevention, waste management plan traffic management plan and response action plan;
- c. review and consider the ES risks and impacts of any design change proposals and advise if there are implications for compliance with ESIA, ESMP, consent/permits and other relevant project requirements;
- d. undertake, as required, audits, supervisions and/or inspections of any sites where the Contractor is undertaking activities under its contract, to verify the Contractor's compliance with ES requirements (including, where appropriate, its SEA and SH prevention and response obligations);
- e. undertake audits and inspections of Contractor's accident logs, community liaison records, monitoring findings and other ES related documentation, as necessary, to confirm the Contractor's compliance with ES requirements;
- f. agree remedial action/s and their timeframe for implementation in the event of a noncompliance with the Contractor's ES obligations;
- g. ensure appropriate representation at relevant meetings including site meetings, safety meetings and progress meetings to discuss and agree appropriate actions to ensure compliance with ES obligations;
- h. check that the Contractor's actual reporting (content and timeliness) is in accordance with the Contractor's contractual obligations;
- i. review and critique, in a timely manner, the Contractor's ES documentation (including regular reports and incident reports) regarding the accuracy and efficacy of the documentation;
- j. undertake liaison, from time to time and as necessary, with project stakeholders to identify and discuss any actual or potential ES issues;
- k. establish and maintain a grievance redress mechanism including types of grievances to be recorded and how to protect confidentiality e.g. of those reporting allegations of SEA and/or SH.

#### **V. Follow and control payments to the Construction Contractor(s)**

- a. Follow up and updates on disbursement projection estimate for the different phases of the project;
- b. Examine invoices submitted by Contractor(s) based on the installation service contracts to determine whether the services being invoiced were performed, the payment has fallen due and all necessary documents are available as required. The Consultant will then give the clients the corresponding “payment applications”.
- c. Determine the amount to be added to, or deducted from, payments to the contractor for any additional work or work omitted, respectively;
- d. In so far as the above-mentioned conditions are met, recommend the disbursement request for onward processing by the client;
- e. Ensure the monitoring and reporting on all project relevant guarantees according to the relevant World Bank guidelines and obligations of the client towards the World Bank to ensure that these guarantees will remain in place until the complete fulfilment of all claims under the supply and service agreements secured by such guarantee or until the full reimbursement of the loan (whichever is earlier). The Consultant shall support the client in fulfilling its obligations. The Consultant shall inform the Client immediately and promptly before the expiring of the guarantee if relevant problems occur with the extension of the guarantee and, if necessary, will assist the employer with the call on the guarantee.
- f. Support monitoring, checking and approving construction work on site, which forms the basis for Contractor’s periodic invoicing.

## **VI. Assistance during Commissioning and Handing Over of Installations**

At the completion of construction and installation works by the Contractor(s) of the different project packages, the Consultant shall assist the client with all activities related to inspection, testing and commissioning of all installations and ensure that such installations and equipment are properly handed over to the clients in acceptable and satisfactory conditions to the requirements of the respective contracts.

The Consultant shall put in place handover procedures and checklist (including Environmental, Social, Health and Safety compliance) for proper documentation of the handed over infrastructure.

In the case of defects, the Consultant shall ensure that all details noted are recorded and acknowledged by the contractor. The Consultant should then ensure that the contractor rectifies all defects within the defects liability phase to the quality standard as defined in the contract.

Furthermore, the Consultant shall perform the following tasks at the end of the construction works but not limited to:

- a. Checking the Contractor’s commissioning procedures and witnessing performance or acceptance tests on site.
- b. Ensure that the Contractor prepared and submitted the as-built drawings, operation and maintenance manuals as per the requirement and quantity specified in the contracts.
- c. Review for adequacy and completeness of the as-built drawings, operation and maintenance manuals provided by Contractor(s).
- d. Participate in the structure-by-structure audit exercise scheduled by the Client and prepare the report. The Client shall provide the structure audit template.
- e. Approve the contractor’s as-built drawings.
- f. Ensure availability of hand-over requirements including drawings, list of PAPs compensated as well as compensation details, and wayleaves consent forms for handover to the service provider.

- g. All the areas (if any) and support facilities like storage yards are restored and decommissioned in line with the Contractor(s) decommissioning plans.
- h. Facilitate the return of all surplus material to the stores.
- i. Facilitate final inspections at the end of Defects Notice Period before the release of retention.
- j. Upon completion of the project construction activities of all Contracts/Lots, the Consultant shall prepare a Project Completion Report (“PCR”), which will form a comprehensive record of the construction and installation works accomplished.

**B. Training**

The Consultant must provide training on construction to ESCOM and Contractor(s) personnel. To this end, the Consultant shall fully involve or work alongside the ESCOM Training Department from needs assessment, curriculum development, training design, implementation, evaluation and impact assessment. The Consultant shall recommend/provide the required facilities for the implementation of the training program.

The Consultant should take note that the training related to construction Contractor(s) may have to be ongoing throughout the project. The following shall be considered:

Training	Tasks & Resultant Impact	
Provide Training to ESCOM Linespersons	Train ESCOM linespersons in aerial bundled conductor construction and maintenance	Expertise in construction and maintenance of networks using ABC technology
Provide Training to Contractor(s) personnel	Train Contractor(s) in aerial bundled conductor construction and customer connection	Expertise in construction and customer connection
Provide customer liaison training	Training of front desk and back-office staff in customer handling	Expertise handling of large numbers of customers

**3.4 EXPECTED DELIVERABLES**

**NOTE: A key performance measure for the success of the appointed Consultant is the ability of ESCOM to continue with the program of electrifying 90,000 customers per annum on its own.**

**3.4.1 Phase 1**

**A. Implementation plan**

The deliverable will be a detailed implementation plan that addresses:

- a. The optimal project implementation structure;
- b. A material handling and management system;
- c. Environmental and Social Safeguards.

**B. Desktop survey**

The deliverable will be:

- a. A GIS dataset that contains project boundaries. Each boundary should correspond to the cluster-ID contained in the Year 1 shapefile<sup>4</sup>. The attributes of each boundary should indicate cluster-ID, the Potential number of households identified in the Investment Plan, Confirmed number of households, electrified households, area, household density, closest service transformer/s, transformer rating/s, MV feeder/s, ESCOM region.
- b. Updated investment plan spreadsheet<sup>3</sup> showing the revised cluster implementation schedule and programme material requirements.

### **C. Marketing, Commercial, and Customer Service Plan**

The Consultant is expected to define a framework that indicates how customers will be engaged before the arrival of the design and construction teams. It should address, but not be limited, to the following issues surrounding the MEAP:

- a. the customer selection process;
- b. information and upfront payments that are required from customers;
- c. prepayment electricity purchase process;
- d. cost of energy;
- e. appliance and their impact on electricity usage;
- f. queries and complaints from the community regarding the process, in line with the Grievance Redress Mechanism that will be set up.

The deliverable will be a framework that facilitates the loading of 70,000 customers annually onto the ESCOM billing system.

### **D. Site survey**

Completed Electricity Application Forms with all required information necessary for processing the connection (and any other information which ESCOM currently captures) as well as the GPS coordinates of the customer.

### **E. Design and Costing**

The deliverable for each cluster must be:

- a. Detailed scope of works
- b. GIS file showing the extent of existing LV network within the cluster as well as proposed network
- c. Hardcopy drawing clearly showing the position of new poles, LV structures, pole top boxes, LV cables and service cables.
- d. Design that has been uploaded into the ESCOM NDM system.
- e. Detail BoQ, similar to the format shown in Annexure A.
- f. Detail planning study, BoQ and CAPEX plan for the upstream reinforcements that are required to support the connection program.

### **F. Training**

The Consultant shall provide the required training and associated material to the identified ESCOM staff and Contractor(s) Staff including among others the following:

- Training Needs Assessment Report

- Training Plan and syllabus
- Training materials including manuals
- Training Timetable
- Training Progress & Completion Reports
- Training in selected Environmental and Social Safeguards topics such as Community and Occupational Health and Safety

### **3.4.2 Phase 2**

#### **A. Construction Supervision Support**

The Consultant is expected to assist ESCOM in monitoring the execution of the Works for compliance with the Contract and attending site meetings at such frequency for the successful and timeous completion of the Works.

The Consultant shall produce monthly and quarterly progress reports that shall be available within two weeks after the expiry of the reporting period that addresses the following:

- a. Performances to date
- b. Problems experienced
- c. Priorities for (the next two weeks) upcoming reporting period.
- d. Corrective actions necessary and needed
- e. Overall performance of Contractor(s)
- f. Physical progress on all aspects of the project including variance explanations
- g. Capital expenditure report including variance explanations
- h. Environment and Social Safeguards implementation progress

#### **B. Training**

The Consultant shall provide the required training and associated material to the identified ESCOM staff and Contractor(s) Staff including among others the following:

- Training Needs Assessment Report
- Training Plan and syllabus
- Training materials including manuals
- Training Timetable
- Training Progress & Completion Reports
- Training in selected Environmental and Social safeguards topics such as community and occupational health and safety

## 4 TEAM COMPOSITION AND QUALIFICATIONS

### 4.1 KEY EXPERTS

The following are the key experts required for this project:

No	Key Expert	Number of Experts
1	Team Leader / Project Manager	1
2	Senior Distribution Design Engineer	1
3	GIS Expert	1
4	Senior Distribution Construction Engineer	3
5	Environmental Safeguards Specialist	1
6	Social Safeguards and Gender Expert	1
7	Training and Knowledge Transfer Expert	1
8	Electrification Marketing Consultant	1
9	Monitoring and Evaluation Specialist	1

### 4.2 KEY EXPERTS QUALIFICATION REQUIREMENTS.

#### a. Project Manager

The Project Manager should have a degree in electrical/civil engineering or other relevant area and a minimum of 10 years of relevant professional experience (planning, managing and supervising works related to design, and supervision of construction of LV and MV lines. A higher qualification like an MSc or MBA will be preferred. The project manager should present evidence on having managed at least 3 (three) projects of a similar nature and complexity. In addition, the Project Manager shall prove to have an experience of management of at least two (2) international supply and installation contracts for International Financial Institutions (IFI) funded power sector projects of a similar nature and complexity.

The Project Manager will be responsible for the overall coordination of the Consultant's services to ensure the satisfactory fulfilment of the requirements of the Terms of Reference in respective contracts and will be stationed in Blantyre, Malawi.

The Project Manager should be an individual with good team management and resource management, with communication skills in the English language, both written and verbal and a high sense of organization to ensure required results.

The Project Manager should have experience in similar project coordination in developing countries, preferably in African countries.

#### b. Senior Distribution Design Engineer

He/she should have at least a BSc. Degree in Electrical Engineering. A Masters degree in Electrical Engineering would be more preferable.



The Senior Distribution Design Engineer should be a registered Engineer with not less than 10 years' experience of planning and designing distribution networks including customer connections. He/she should have experience of at least three similar projects. He/she should also have experience in the design of greenfield and brownfield projects, preferably in Africa. The Senior Distribution Design Engineer should have excellent oral and written communication skills in the English language

**c. Surveyor/GIS Expert**

He/she must possess BSc. Degree or equivalent in Survey & Photogrammetry or related field and with at least five (5) years of professional experience. He/she must be registered with the relevant Institute of Surveyors or equivalent. He/she must have served in a similar capacity in at least three projects of similar magnitude. He/she must be familiar with the latest electronic survey equipment including GPS, Total Stations and associated latest computer applications including GIS.

**d. Senior Distribution Construction Engineer**

He/she should have at least a BSc. Degree in Electrical Engineering. A Masters degree in Electrical Engineering would be more preferable.

The Senior Distribution Construction Engineer should be a registered Engineer with not less than 5 years' experience of supervising works related to construction and installation of distribution networks including customer connections. He/she should have experience in at least three similar projects. He/she should also have experience in construction in urban, peri-urban and rural settings preferably in Africa. The Senior Distribution Construction Engineer should have excellent oral and written communication skills in the English language.

**e. Environmental Safeguards Specialist.**

He/she should have at least a BSc. in Environmental Management/Environmental Sciences/ natural resources management. The Environment Safeguards Specialist should have not less than 10 years' experience of supervising works related to construction and installation of distribution network including customer connections. The Specialist should have the knowledge and hands-on experience in community participation and the management of construction-related safety and environmental issues such as waste management, emergency response, occupational and community health and safety, enhancing environmental good approaches and grievance redress mechanisms, among others. Sound experience in Project Management is required and experience in Malawi or similar environment is preferable. He/she should have excellent oral and written communication skills in the English language.

**f. Social Safeguards and Gender Expert**

The Social Safeguards and Gender Specialist shall have a minimum qualification of a relevant Degree in social sciences, Social and Community Studies, and Rural Development with a special bias towards Gender Mainstreaming.

The Specialist shall also have ten (10) years of hands-on experience working on Environmental and Social Impact Assessment studies and monitoring of the implementation of Environmental and Social Management Plans ("ESMP") or Resettlement Action Plans ("RAP"), particularly in overseeing the implementation of the social safeguard measures outlined in the ESMP/RAP including GRM and Vulnerable and Marginalized Groups Framework ("VMGF") for Contractor(s) compliance and enhancing best practice social approaches to labour force management and grievance redress mechanisms

The experience of the Social Safeguards and Gender Specialist, who shall also monitor the Contractor(s) and report to the Project Manager, therefore should include experience in similar environment related to legal, social and cultural gender aspects; considerable familiarity with gender and social issues in Malawi, be able to undertake and sustain engagement with a wide range of stakeholders and collaborate with interdisciplinary teams in addition to strong Social & Gender Programming and Community liaison skills. The Specialist should have adequate knowledge of policies, laws and regulations related to social inclusion and gender equality including Labour Laws, Trafficking in Persons Laws, Gender-Based Violence, Child Protection laws and with relevant experience in addressing sexual exploitation, sexual abuse and sexual harassment cases.

The Specialist should also have the ability to drive integration and mainstreaming of social safeguards and gender issues in large scale and widespread projects and ability to evaluate the technical adequacy of and provide inputs related to social safeguards & gender issues in any design studies of the project including ESIA<sup>7</sup>/ESMP, RAP and mitigation plans for risks associated child labour, gender-based violence, human trafficking, and or HIV/AIDS.

#### **g. Training and Knowledge Transfer Expert.**

He/she should have at least a BSc. Degree in Electrical Engineering. A Masters degree in Electrical Engineering would be an added advantage. He/she should be a registered Engineer with not less than 10 years' experience of planning, designing, managing and supervising works related to construction and installation of distribution network including customer connections and should be conversant with modern and emerging technologies. He/she should have proven experience in Managing Training from Needs Assessments to Impact Assessment. He/she should have experience in conducting training sessions in at least one similar project environment preferably in Africa or similar environment. He/she should have sound knowledge of Modern Training Methods and Techniques applicable to adult learning. He should have excellent oral and written communication skills in the English language

#### **h. Marketing Consultant.**

He/she should have a bachelor's degree in marketing with at least 10 years' experience in developing a streamlined efficient marketing, commercial and customer services plan to support an electrification program.

The Consultant should have excellent oral and written communication skills in the English language

#### **i. Non-Key Experts and Resources**

The project will require several resources over and above those mentioned above. These may include assistant engineers, project administrators, accountants, etc. The Consultant must include in his proposal the number of non-key staff that will be used.

## **5 REPORTING REQUIREMENTS**

All reports will be submitted to the Project Manager and for each of the reports to be submitted by the consultant shall be made in four hard copies including soft copies. All supporting documents such as

---

<sup>7</sup> *Environmental and Social Impact Assessment*

photographs, video graphs, primary and secondary information collected, etc., taken during the assignment shall be submitted in support of the reports, along with an electronic copy of the documents. The following reports shall have to be submitted.

### **5.1 INCEPTION REPORT**

The Consultant shall submit to the Client a draft inception report detailing the plan of action, manpower deployment, schedule, and detailed methodology, within two (2) weeks of the commencement of the assignment which the client shall review and provide comments. Two weeks (2) after the submission of ESCOM comments, the Final Inception Report shall be submitted for approval by ESCOM.

### **5.2 MONTHLY AND QUARTERLY PROGRESS REPORTS**

The Consultant shall submit concise monthly progress reports throughout the assignment period and shall propose an appropriate reporting template to be agreed upon by ESCOM and the World Bank. The monthly progress reports shall include data on input and output indicators as required by the Client, with work charts against the scheduled timeframe of assignment implementation.

The Consultant shall also submit Quarterly Progress Report (QPR) depicting all the aforesaid details. The QPR shall have to be submitted on or before 7th of the First month in the following quarter.

**Monthly Work Plan:** The work plan for the coming month shall be submitted in the monthly meeting along with that of the current month clearly showing site visits, targets v/s achievements, and various other elements.

The Consultant shall document in full details, the supervision process, and a full description of the training imparted (or facilitated) as part of the assignment. The progress achieved construction and connections as per work schedule shall be documented and shall be submitted to the Client as a part of the monthly progress report.

### **5.3 DRAFT COMPLETION REPORT**

The Consultant shall submit a Draft Completion Report at the end of the contract period of each phase summarizing the actions taken during the project, the methods used to carry out the assignment, and a summary of support, and infrastructure put up including related connections against the targets over the assignment period.

The Preliminary Draft Final Report shall be submitted in English in eight (8) hard copies and four (4) electronic copies. It will be reviewed by ESCOM within the following month. The Final Draft Report shall be submitted within two (2) weeks of receipt of the comments, in ten (10) hard copies and ten (10) soft copies in electronic format on Flash Disk.

### **5.4 FINAL COMPLETION REPORT**

The Final Report, which will incorporate all comments from the Client and World Bank shall be submitted within two (2) weeks after receiving of final comments. The Final Report shall be, after formal approval, submitted, in ten (10) hard copies and ten (10) soft copies in electronic format on Flash Disk.

## 5.5 OTHER DELIVERABLES

- a. **Participation in Periodic Review Meetings:** The Consultant Team Leader shall participate in the periodic review meetings of the Client to discuss the progress of the assigned tasks, issues and constraints in carrying out any specific task, etc.
- b. **Submission of Meeting Records:** Minutes of the meeting shall be prepared by the Consultant for all the assignment specific meetings with the Client.

## 5.6 ENVIRONMENTAL AND SOCIAL SAFEGUARDS REPORTING OBLIGATIONS

- (a) Immediately notify the Client of any failure by the Contractor to comply with its SEA and SH obligations;
- (b) Immediately notify the Client of any allegation, incident or accident, which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Client's Personnel, Contractor's Personnel or Experts. In case of SEA and/or SH, while maintaining confidentiality as appropriate, the type of allegation (sexual exploitation, sexual abuse or sexual harassment), gender and age of the person who experienced the alleged incident should be included in the information. The Consultant shall provide full details of such incidents or accidents to the Client within the timeframe agreed with the Client;
- (c) Immediately inform and share with the Client notifications on ES incidents or accidents provided to the Consultant by the Contractor, and as required of the Contractor as part of the Progress Reporting;
- (d) Share with the Client in a timely manner the Contractor's ES metrics, as required of the Contractor as part of the Progress Reports.

## 6 CLIENT'S INPUT AND COUNTERPART PERSONNEL

ESCOM will be the Project Executing Agency ("PEA") for this project and will be ultimately responsible for contract management and successful implementation.

ESCOM has established a Project Implementation Unit (PIU) which will be headed by a Project Manager and supported by Project Coordinators, Site Supervisors, Procurement Specialist, M&E Officer and a Projects Accountant to maintain Project records. The Client will provide to the Consultant office space, office furniture and fittings.

The Consultant will be required to recommend to ESCOM the optimum project structure particularly on technical aspects and the required number of personnel to complete the project within the required timeframe. ESCOM has provisionally committed to assigning the following technical staff, among others, to assist in the implementation of the project. The successful Consultant will also have to refer to the Project Implementation Manual.

- a. 1 x Project Manager
- b. 1 x Deputy Project Manager
- c. 1 x Project Coordinator
- d. 4 x Senior Distribution Design Engineers
- e. 29 x Distribution Technicians

- f. 4 x Marketing staff;
- g. 2 x Billing staff
- h. 4 x Clerks of Works
- i. Environmental, Safeguards Expert
- j. Social Safeguards Expert

It is anticipated that during the initial phases of the project the Consultant will take the lead in the execution of the work, but this will gradually decrease as the ESCOM in-house capability is increased.

## 7 ENVIRONMENTAL AND SOCIAL POLICY

The Consultant will refer to the Client’s environmental, social, health and safety policies that will apply to the project.

## 8 DURATION

The Consultant’s expected involvement in the project is shown below.

Task	Estimated duration
<b>Phase 1</b>	
Kick-off, implementation plan desktop survey, marketing, site survey, design, costing, and training	6 Months
<b>Phase 2</b>	
Construction Supervision Support and Training	24 Months

### Annexure A: Sample Bill of Quantities (BoQ)

**NOTE: This BoQ has been included for illustrative purposes and does not purport to include all necessary items.**

Item	Description	Unit	Material	Labour
A	Pole Top Structures for 0.6/1 kV ABC Lines with including all brackets, bolts, nuts, washers, crimp joints, insulators, stay assemblies, Poles and necessary materials			
1	Structure: LV Intermediate 3 Phase	ea.		
2	Structure: LV Section 3 Phase	ea.		
3	Structure: LV Tee Off 3 Phase	ea.		
4	Structure: LV Terminal 3 Phase	ea.		
B	Pole mounted transformers complete with Surge Diverters			
1	11/0.4kV, 200 kVA - 3 phase, 50 Hz, Transformer complete with Surge Diverters and earthing materials	ea.		
2	11/0.4kV, 315 kVA - 3 phase, 50 Hz, Transformer complete with Surge Diverters and earthing materials	ea.		
3	400V Cubicle Distribution Box	ea.		
C	Metering equipment			
1	Single-phase split prepayment energy meter 10(80)A 230V Class 1 with all accessories	ea.		
2	4-way single-phase split din rail prepayment energy meter pole-top enclosure	ea.		
3	16mm Concentric Service Cable, Aluminium with communication	ea.		
D	Pole Top Structures for 11kV Single Circuit Lines with Vertical Conductor Arrangement including all brackets, bolts, nuts, washers, crimp joints, insulators, stay assemblies, Poles and necessary materials			
1	Structure: Intermediate Straight alignment	ea.		
2	Structure: Section structure, Straight alignment	ea.		
3	Structure: Intermediate Angle (>0° - 30° deviation) with 1 x Stay	ea.		
4	Structure: Section structure, Angle (>30° - 60° deviation) with 3 x Stays	ea.		
5	Structure: Terminal Structure	ea.		
6	Structure Isolation structure with D-fuses	ea.		
7	Transformer Structure - including substation earthing materials	ea.		

Structure	Component	Quantity
<b>LV ABC Intermediate 3 Phase</b>		
	9m Wood Pole	1
	ABC Suspension Clamp - 5kN	1
<b>LV ABC Terminal 3 Phase</b>		
	9m Wood Pole	1
	ABC Strain Clamp - 15kN	1
	16mm Stay Rod	1
	LV Stay insulator	1
	7/12 Galvanised Mild Steel Wire GMSW (m)	10
	7/12 Guy grip	3
	IPC, BiMetal Clamp, 95mm <sup>2</sup>	3
<b>LV ABC T-off 3 Phase</b>		
	ABC Strain Clamp - 15kN	3
	16mm Stay Rod	3
	LV Stay insulator	3
	7/12 Galvanised Mild Steel Wire GMSW (m)	30
	7/12 Guy grip	9
<b>Service Connection</b>		
	16mm <sup>2</sup> Concentric Al (m)	1
	D-Iron bracket galvanised complete with bolt & nut	1
	Bobbin insulator	1
	MO-5/8 line tap	2
	Cu/al aluminium copper bimetal clamp (10mm Cu – 16mm Al)	1
<b>11kV 'H' Type Structure with Transformer</b>		
	12m Wood Pole	2
	Iron Channel 4200 x 100 x 75 x 6 mm	1
	Iron Channel 2400 x 75 x 50 x 4 mm	1
	Two Pole Platform 2400 x 100 x 6 mm	2
	M20 EYE Nut, Galvanised	3
	11kV Long Rod Tension Polymeric Insulator	3
	100mm <sup>2</sup> Snail Clamp (Tension Clamp)	3
	Clevis Adaptors (Adaptor socket-eye single tongue)	3
	Insulator Hooks (Ball Ended Hooks)	3
	11kV Polymeric Pin Insulator	3
	Wire Barbed	7
	Staple Wire	20

Danger Plate	2
Plate Number	2
Stay rod assembly M20 conventional	2
7/8 Preformed Guy Grip SWG Dead End	6
7/8 Stay Wire	30
HV Stay Insulator	2
M20 Eye Bolt 350mm, Galvanised	2
<b>MV Intermediate structure</b>	
12m Wood Pole	1
11kV Composite Polymeric Complete	3
Wire Barbed	7
Staple Wire	20
Danger Plate	1
Plate Number	1
<b>MV Strain Structure</b>	
12m Wood Pole	1
11kV Long Rod Tension Polymeric Insulator	6
100mm <sup>2</sup> Snail Clamp (Tension Clamp)	3
Clevis Adaptors (Adaptor socket-eye single tongue)	3
Wire Barbed	7
Staple Wire	20
Danger Plate	1
Plate Number	1
Stay rod assembly M20 conventional	2
7/8 Preformed Guy Grip SWG Dead End	6
7/8 Stay Wire	30
HV Stay Insulator	2
M20 Eye Bolt 350mm, Galvanised	2
Line tap connector split bolt 100mm (MO-5/8)	3