

REPUBLICS OF MOZAMBIQUE & MALAWI



MOZAMBIQUE – MALAWI TRANSMISSION INTERCONNECTION PROJECT

Project ID: P164354 (I2-MOMA/2018)

**Terms of Reference
(ToR)**

for

Consulting Services for the Owners' Engineer

for

**Mozambique-Malawi 400 kV Transmission
Interconnection**

Financed by IDA, KFW and EU

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1. INTRODUCTION

On April 3, 2013, the Governments of Malawi and Mozambique signed a power interconnection Agreement that includes two phases: (i) the construction of the Mozambique-Malawi EHV Transmission Line from the Matambo substation in Tete, Mozambique, to the new Phombeya substation in Balaka, Malawi; and (ii) construction of a second transmission line from Balaka to Nacala, Mozambique.

The proposed Mozambique-Malawi Transmission Line Project will interconnect the Malawi and the Mozambique electricity grids, thereby interconnecting Malawi with the Southern African Power Pool (SAPP) network.

These Terms of Reference refer to the procurement of construction supervision services as well as technical assistance during the defects liability period related to construction of an EHV Transmission Interconnection Line between Mozambique and Malawi.

Under the context of the project, the two countries have formally established a Project Steering Committee and already recruited one international consulting firm which carried out an update on Technical-Economic studies for the Mozambique-Malawi Transmission Line that were done in 2005. This assignment had been ongoing since June 2016 to September 2017. The contracted International Consultant did not only carry out an update to the previous Feasibility Study but also prepared the Conceptual Design and Engineering Design including Tender Documents for procurement of a contractor for the Mozambique-Malawi EHV Transmission Line Project.

In parallel to the technical-economic study, a separate consultancy was conducted covering an Environmental and Social Impact Assessment (ESIA), Resettlement Policy Framework (RPF) and Resettlement Action Plan (RAP). This consultant was also responsible for generating the ESMP that will be included by the technical consultant in the Tender Documents.

Bidding documents for Supply and Installation to be supervised have been prepared using World Bank Standard Bidding Documents for contracts under International Competitive Bidding (ICB) Procedures for the whole scope of the project, covering the transmission line section and the substation section related to the Mozambican side, the transmission line section and the substation section related to the Malawian side. The project will be implemented using turnkey, Design, Supply and Installation (Single Stage, Post Qualification) contracts following the updated versions of the respective Procurement Regulations.

The Client has also hired another consultant for the role of Tender Agent who will be responsible for procurement of the construction contractors up to contracts awards.

The consultancy under these current ToRs shall use the Contract Documents that will already have been prepared by the Tender Agent which will also have been approved by the Client, the project Lenders and the respective Governments in the project Countries. The consultant under this procurement shall carry out the assignment under separate contracts for each country realized through a single process of procurement. The assignment is comprised of mobilization,

construction supervision, and technical assistance during the Defects Liability Period (DLP). To this effect, the Consultant shall propose two different teams, one for each country with qualified key staff as defined in this document.

2. PROJECT BACKGROUND

Southern Africa exhibits substantial variations in energy resource endowments, degrees of industrial development, levels and patterns of power consumption, and power costs. These differences present opportunities for a coordinated development of the regional power sector to generate savings through aggregation of loads with different load profiles and efficient use of energy resources by exploiting large-scale power generation schemes that are viable on the basis of large, multi-country markets; and manage the risks of climate-related power shortages in hydro-dependent countries.

The Southern Africa Region as a whole is experiencing generation capacity shortage. At least 1,000MW of additional capacity will be required each year to meet demand growth. Much of the new demand could be met through large, regional generation projects. Regional trade in electricity is expected to increase, highlighting the need to address transmission-related constraints.

In August 1995, Southern African Development Community (SADC) member countries created the Southern African Power Pool (SAPP) by concluding an Intergovernmental Memorandum of Understanding (MOU) and related agreements. The utilities of 12 Southern African countries were the original members of the SAPP. The main grid systems of Botswana, the Democratic Republic of the Congo, Lesotho, Mozambique, Namibia, South Africa, Swaziland, Zambia, and Zimbabwe form the existing regional network. Angola, Malawi, and Tanzania are not yet connected. In February 2006, membership in the SAPP was expanded to include private generation and transmission companies.

One of the immediate challenges is the need to strengthen and expand the regional transmission infrastructure as demand in the region grows and several existing interconnections are overloaded or in need of rehabilitation. Connection to the regional grid of non-connected SAPP member power systems is a priority in terms of SAPP planning. In the 2013 SAPP Annual Report, the Mozambique-Malawi Transmission Interconnection is explicitly noted as a high priority for the regional Pool.

3. BACKGROUND INFORMATION ON THE POWER SECTOR AND GRID

Malawi context

The existing Malawian high voltage power system extends from the power generation stations along the Shire River in the south up to the northern districts near the border to Tanzania over a length of about 800 km. The transmission voltage levels currently used in Malawi are 132 kV and 66 kV.

Within the Infrastructure Development Project (IDP) of the Millennium Challenge Corporation Compact (MCC Compact) the 400 kV level transmission line backbone including two 400 kV substations which are Phombeya Substation (South) and Nkhoma Substation (Center) were introduced for the Malawi power system.

Mozambique context

The current high voltage (HV) power system in the northern part of Mozambique consists mainly of 220 kV and 110 kV grids with a 400 kV interconnection to Zimbabwe and a ± 535 kV HVDC link between Cahora Bassa and South Africa. An extensive development of the HV power system has been established as part of the overall extension of the South African power system. In Mozambique, the so called STE Backbone Project includes e.g. a 400 kV north-south backbone power system and various developments in the northern regions.

Regarding the Mozambique - Malawi Transmission Line Interconnector Project, it is noted that Matambo Substation in the Tete region is operated at 220 kV.

4. THE PROPOSED ASSIGNMENT

The proposed assignment includes construction supervision and technical assistance during the defects liability period of the project related to scope of works, for each of the countries under two separate contracts. The assignment will be based on the engineering design and tender documents that have already been prepared by the Feasibility Study Technical Consultant with inputs from the ESIA Consultant who carried out safeguard studies for the project, as well as based on Contract Documents that will have already been finalized by the Tender Agent after negotiations with successful bidders. The procurement of construction contractors, to be done by the Tender Agent, and the current assignment of procuring an Engineering firm (Owner's Engineer) for the works are financed by the World Bank administered Norwegian Trust Fund, World Bank, KfW and EU (implemented by KfW).

The result of the feasibility study has recommended the construction of a 218km, 400kV double circuit design transmission line with only one circuit implemented initially, including an extension and upgrade of the Matambo substation in Mozambique from 220kV to 400kV, as well as an extension of the existing 400kV substation at Phombeya in Malawi.

The works will therefore comprise three project components (“Project Components”) which will be procured as the following two separate and independent project procurement packages to be subsequently handled by the Tender Agent as well as by the Consultant being procured under the current TORs aimed to play the role of Owner’s Engineer:

1. Supply and Installation of 218 km, 400kV Transmission Line which includes OPGW, comprising the following two separate sections to be procured under the same procurement process as Package 1 and implemented under two separate contracts:
 - a) 142 km of length related to the Mozambican side from Matambo substation, in Tete, to the border with Malawi, as Section 1, under contract to be signed in Mozambique; and,
 - b) 76 km of length, related to the Malawian side, from the border with Mozambique to Phombeya substation, in Balaka including construction of the landing bay at 400kV Phombeya substation related to the Malawian side, as Section 2, under contract to be signed in Malawi.
2. Extension/upgrade of the Matambo substation related to the Mozambican side from 220 to 400kV, under another procurement process as Package 2 and implemented under one separate contract.

The ESIA and RPF Studies will culminate in the preparation of RAP (Resettlement Action Plan) and ESMP(s) Environmental and Social Management Plan(s). The RAP and ESMP will be implemented in compliance with their respective schedules, to address any Project Affected Persons (PAPs) issues and other safeguard matters. In a linear project such as this, parts/areas that completed RAP will be able to commence construction as well as ESMP and elements of livelihood restoration which can be ongoing concurrently.

Therefore, the current TORs are intended for selection of an internationally experienced technical consultant to carry out construction supervision works including to support implementation of ESMPs for all the above three Project Components (corresponding to three separate contracts).

5. SCOPE OF SERVICES

The Owners’ Engineer shall provide technical and management support to the two Project Implementation Units (the PIU from EDM in Mozambique and the PIU from ESCOM in Malawi) in terms of construction supervision. The Owners’ Engineer **will sign two separate contracts** in the two different Project Countries for the supervision of works in the respect countries. This includes to assist and report to respective Project Implementation Units.

The Owners’ Engineer will:

- (i) Review the three Contract Documents prepared by the Tender Agent to familiarize themselves with their content;
- (ii) Carry out checks and approve final surveys and detailed designs prepared and submitted by Contractor (s) for each Project Component before commencement of any construction work.
- (iii) Support the client with contract management and carry out construction supervision and facilitate skills transfer to the client representatives during implementation of all Project Component;
- (iv) Perform the detailed tasks related to managing Environmental, Social, Health and Safety (ESHS) impacts and risks as described below according to national regulations and requirements of WB and KfW. This shall take into account ESHS related analysis of documentation which has been prepared for the project in the preparatory stages;
- (v) Supervise and monitor implementation of Environmental, Social, Health and Safety (ESHS) mitigation measures, and compliance with ESHS standards, and
- (vi) Undertake post construction activities during the Defects Liability Period (DLP) , including training for the client's staff.

The scope of services for this assignment covers three phases of the project: (I) in depth familiarization of the project, resource requirements, outage management and review of the contract documents as well as the tender documents prepared by others (II) perform supervision and client/contractor coordination during supply and installation works; and (III) provide technical assistance during post-construction DLP.

For further information regarding the scheduled implementation of the individual phases, a tentative project implementation plan is enclosed in the **Annex 1– Tentative Time Schedule**

As mentioned above, the assignment will be managed via a two separate Time-Based Contracts, one for Mozambique and another for Malawi.

The Scope of the Services to be covered under the proposed Consulting Services for this assignment is detailed in Section 7. The details on the Scope of Works for Construction Contractors will be given in the contract documents to be prepared by the recently contracted Tender Agent.

6. CONSULTANT'S OUTPUTS

The expected output of the Consultant for construction supervision of the Project as indicated above, shall be as follows:

<u>PRE-CONSTRUCTION (PROJECT FAMILIARIZATION PHASE): PHASE I</u>	
Task 0	Joint Kick-off Meeting of the project involving the two project entities (EDM & ESCOM) and presentation of the two separate teams (one to be deployed in Mozambique and a separate team in Malawi), setting up of the project respective schedules, and definition of roles and responsibilities.
Task 1	Review of contract documents for each one of the three (3) Project Components as prepared by the Tender Agent including to realize site visits to the main project sites both in Mozambique and in Malawi in order to familiarize themselves with the project content. For better familiarization of the consultant to the project it is recommended that the consultant shall visit the departing substation in Mozambique and the landing substation in Malawi and shall also travel by car along the transmission line corridor to become acquainted with all technical, social and environmental aspects related to the transmission line corridor. The Consultant shall prepare a Construction Supervision Manual delineating a consistent, comprehensive and uniform system of quality assurance and quality control, Health and safety, as well as environmental and social safeguard issues 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.

<u>CONSTRUCTION SUPERVISION: PHASE II</u>	
Task 1	Supervision of Contractor's works for all contract packages, including review and approval of design & drawings submitted by the Contractor and consolidation of client comments. This role also includes Monitoring of the Implementation of the Environmental Social Management Plan (ESMP) to ensure that the Contractors are implementing the management plans and attaining the Monitoring Indicators established in the ESMP. Selected Clients' staff shall be attached to the Consultant for on-the-job training in construction supervision.
Task 2	Monitoring and Control progress of the works and ensure application of all necessary measures to mitigate potential time slippages by the contractors so as to keep the project within scheduled time frames.
Task 3	Liaising with RAP Implementation Consultant in order to ensure a smooth implementation of the construction activities in full compliance with the

	requirements for the access to site only when the resettlement activities are completed.
Task 4	<p>Supervise and Monitor Environmental, Social, Health and Safety, put in place mitigation measures and confirm compliance with the ESHS requirements;</p> <p>Perform the following reporting requirements:</p> <ul style="list-style-type: none"> (a) “The Owners Engineer shall provide immediate notification to the Client should any incident in the following categories occur while carrying out the Services. Full details of such incidents shall be provided to the Client within the timeframe agreed with the Client. <ul style="list-style-type: none"> (i) confirmed or likely violation of any law or international agreement; (ii) any fatality or serious (lost time) injury; (iii) significant adverse effects or damage to private property (e.g. vehicle accident); or (iv) any allegation of gender based violence (GBV), sexual exploitation or abuse (SEA), sexual harassment or sexual misbehavior, rape, sexual assault, child abuse or defilement, or other violations involving children, (b) Ensure that contractor immediate notifications on ESHS aspects are shared with the Client immediately; (c) Immediately inform and share with the Client any immediate notification related to ESHS incidents 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 ESHS metrics, as required of the Contractor as part of the Progress Reports.” (e) “Monitor Compliance of the contractors with respect to Environmental and Social Policy and Code of Conduct
Task 5	<p>Follow and control payments to the contractor(s):</p> <p>The Consultant shall be required to assist the respective two Project Implementation Units in the financial monitoring and reporting of the project implementation. In this respect the Consultant shall, among others:</p> <ul style="list-style-type: none"> • Monitor cost and project accounting of each of the three contracts (two contracts for the Supply and Installation of Transmission Line and one contract for the Supply and Installation of Matambo Substation); • Examine invoices of the contractors and confirm disbursement requests.
Task 6	<p>Assistance during the Handing Over of installations</p> <ul style="list-style-type: none"> • Coordinate installation, testing and commissioning of works across Project Components

	<ul style="list-style-type: none"> • Approval of test and commissioning schedules from contractors, supervise and approve commissioning works • Prepare completion certificates for employer • Prepare and administer handover/takeover schedule for employer • Confirm compliance with ESHS requirements • Coordinate full handover of all technical documentation by contractor to the client
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<u>POST-CONSTRUCTION (DEFECTS LIABILITY PERIOD): PHASE III</u>	
Task 1	Part Time support during the Defects Liability Period <ul style="list-style-type: none"> • Ensure that all defects are cleared prior to completion of the defects liability phase • Prepare project closure report • Perform all necessary reviews during the Defects Liability Period to ensure successful project completion.

7. TASK DESCRIPTION

7.1 PHASE 1: Review and familiarization on the Project Documents and Project Sites

7.1.1 Task 1 - Joint Kick-off meeting between the Client and the Owners' Engineer

The Owner's Engineer shall organize the joint kick-off meeting with the client (EDM and ESCOM) in Tete with the objective to present the full Consultant's team (including the two separate teams for Mozambique and Malawi respectively) for the project, confirming the project schedules and roles and responsibilities, including the communication channels.

7.1.2 Task 2 - Familiarization with Contract Documents and with full project details

Immediately after realization of joint kick off meeting, with both project management teams from EDM and ESCOM, which is planned to take place in Tete, the consultant shall start reviewing the two tender/contract documents for the prospective three contracts. Review of the project should include site visits to the main project sites, identification of possible construction, environmental and social hot spots both in Mozambique and in Malawi in order to ensure proactive risk mitigation and efficient implementation of the project:

- Detailed familiarization with scope of works, engineering design, specifications and contract documents for each Project Component;
- Following up on implementation of RAP (to be supervised by the RAP Implementation Consultant) that will be ongoing in parallel to this assignment;
- Familiarize with Transmission Line routing details and substations layout;
- Detailed familiarization with definitions concerning telecommunication and SCADA systems in line with Client and SAPP requirements that would have been prepared by the Feasibility Study and Engineering Design Consultant.
- Familiarization with client's training requirements in the form of on-the-job-training as well as conventional training at each phase of the deliverables throughout the project according to the details in the construction contractors' contract documents.

7.1.3 Task 3 – Preparation of Project Monitoring Scheme and Reporting Formats

The Consultant shall prepare a project monitoring scheme (which will include technical, physical, financial, environment and social aspects of the project) and finalize formats for reporting progress of supply and installation works and procedures for following up, supplying materials and equipment for installation in accordance with the technical specifications.

7.1.4 Task 4 – Joint Review Meeting on the Consultant's Familiarization Process

The Consultant shall organize a joint meeting in Tete with EDM and ESCOM with the intention to review the consultant's familiarization process on the contract documents as well as on the full project details. For that purpose, the Consultant shall make presentations in which he will demonstrate his full understanding of the assignment under his contract.

The Consultant shall present the detailed and adjusted projected implementation schedule based on the full understanding of his assignment as well as on the Consultant's experience.

The Consultant shall further present the detailed projected disbursement schedule based on construction contractors' contract documents as well as the Consultant's experience.

7.1.5 Task 5 – Joint Kick-off Meeting between the Owners' Engineer, the Client and the Construction Contractors

The Consultant shall organize two separate kick-off meetings with the Construction Contractors as follows:

- a) The first kick-off meeting shall be held in Tete between the Owners' Engineer, the Client (EDM and ESCOM) and the Construction Contractor who will have signed two

separate contracts for the two different transmission line sections (one contract for Mozambique section and another contract for Malawi section); and,

- b) The second kick-off meeting shall be held in Tete between the Owners' Engineer, the Client (EDM and ESCOM) and the Construction Contractor who will have signed the contracts for the substation component for Mozambique.

7.1.6 Task 6 – Overall Pre-Construction Joint Coordination Meeting between the Owners' Engineer, the Client and the two Construction Contractors

In order to clear up all possible pending issues identified during the above two kick-off meetings that will have been held separately with the two construction contractors (the first with transmission line contractor and the second with the substation contractor), the Consultant will organise the first joint coordination meeting to be held in Tete before commencement of construction works in view to ensure full synchronization of all related issues required for a smooth implementation of the project.

7.2 PHASE 2 Supervision of Construction Works and Supplies

7.2.1 Task 1 - Supervision of Contractor's Works (Administration, Contract Management and Supervision of Supply & Installation Phase)

In order to assist the employer with the detailed engineering design and supervision work needed for implementation of Project, the Consultant will start by providing a travel schedule to get to the project sites to make the preliminary assessment. This preliminary assessment is to review the functional designs provided in the feasibility to develop a strategy that will ensure compliance of contractor's work with each project component's design requirements. The Consultant will then approve final surveys and detailed designs prepared and submitted by Contractors for the project component(s) prior to commencement of any construction work.

Furthermore, the Consultant shall have in place Supervisors during contractor's preliminary site visits, detailed design phase, mobilisation and the construction phases.

For further information regarding the scheduled implementation of the individual phases, a tentative project implementation plan is enclosed in Annex 1.

The scope of work for Task 1 of Phase II will include but not be limited to:

- Preparation of a detailed (master) implementation schedule (DIS) for the project and estimate implementation periods and costs for the individual- and overall packages;
- Take an active part in following-up the detailed implementation schedule for the project prepared and submitted by the Contractor(s), review and update the disbursement forecasts and estimate, need for additional funds, if found necessary. The Consultant shall prepare, and issue certificates as indicated in the contract. Co-signing of such

certificates by EDM and ESCOM shall not relieve the Consultant of any of his responsibilities under the contract between the Consultant and the Client;

- Develop a detailed Outage Management Plan to minimise disturbance of current supplies in Mozambique and Malawi including works that will involve integration into the main substations and crossing of major and minor power lines or any major obstacles within the line route, wayleave and work areas. This should also include any disturbances that may be caused by contractor mobilisation to sites, access roads, etc.;
- Review and recommend for approval, the Contractor's supply and installation schedules or revisions;
- Assist the Client with formal handover of sites including verification that any RAP and ESMP site preparation activities have been completed.
- Provide consulting services for contract management including the clarifications/amendments of Contract Documents and preparation of change order request for the different Project Components as and when needed for the Client.
- Assist EDM and ESCOM in assessment and approval of the sub-contractors, which the main contractors may engage;
- Prepare a risk matrix which will be reviewed throughout the project period;
- Organise site meetings and elaborate and distribute minutes from such meetings and in any way follow-up the works progress as per the agreed work programme. If the Contractor faces problems due to unforeseen conditions or due to requirements of different authorities, the Consultant shall proactively intervene to solve the problems in order for progress to continue. The Consultant may seek EDM and ESCOM's advice and guidance particularly in solving problems with Mozambican and Malawian authorities;
- In the event of contractual disputes, assist the Client in collating and preparing factual documentation and recommend a line of actions. If required by the Client, the Consultants will attend hearings;
- Inform the Client on problems or potential problems which may arise in connection with the implementation of each contract and make recommendations to the Client for possible solutions;
- Issue instructions to construction contractors as needed, as per the contract conditions of the contractor's contract;
- Confirm that the contractor's schedule of personnel is as stated in the contract and recommend changes in the contractor's personnel where necessary;
- Assist the Client with regard to all questions relating to the contract, in particular compliance with insurance, time extensions, claims, etc.

7.2.2 Task 2 - Control and Monitoring of the Works

7.2.2.1 Review, Approval of Design and Drawings as well as sub-contractors

- Oversee the contractor's design of the interface between the supplied systems and Utilities (EDM and ESCOM) and regional (SAPP) systems as applicable;
- Ensure that the principles, scope and technical specifications in the technical documents prepared earlier, pertaining to system control, protection, metering and communication are complied with;
- Propose and present for approval of 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 and time of completion of the project and prepare all specifications and other details arising thereof;
- Review of geotechnical investigations and soil classification;
- Review the Contractor's Quality Assurance program and routines;
- Assisting EDM and ESCOM with assessment and approval of the sub-contractors which the main contractor may engage;

7.2.2.2 Assisting EDM and ESCOM during Preparation and Installation Services

- Supervise the installation works to ensure that they are carried out in compliance with the specifications and contract plans including procurement of materials and deployment of personnel as well as equipment;
- Ensure that all the sites (if any) and support facilities like storage yards are restored and decommissioned in line with the Contractors decommissioning plans;
- Assist the Client in issuing the completion and take-over certificates;
- Supervise implementation of the ESMP activities included in the Contractor's contract;
- Verify together with the Client that the workers' safety protocols are understood and will be followed in accordance with the ESM.

7.2.2.3 Inspection, Testing and Acceptance during Manufacturing

The work includes inspection and factory test witnessing of equipment and material for the project. The equipment and materials to be supplied under this project should be inspected and tested in the manufacturers testing stations.

The consultant shall be responsible for quality assurance of all equipment and material to be supplied under the project including:

- Monitor contractor's compliance and progress in equipment manufacturing;
- Examining and approving the program for factory testing and acceptance proposed by the contractor;

- Coordinating with contractors and the client prior to and during Factory Tests (FAT) of major equipment or plant (i.e. power transformer, circuit breakers, measuring transformers, protection and control panels, SCADA, telecom equipment, underground cables, overhead power conductors, steel towers, insulators and other relevant equipment) to be supplied by Contractors. For the purpose of a fair evaluation, the Consultant shall state in his proposal day rates for FAT to be witnessed in different geographical areas i) in Europe, ii) in Africa and iii) in Asian countries. Such rates shall include remuneration, hotel accommodation, air and ground travel as well as miscellaneous travel cost. It shall be assumed that there will be an average of 5 FAT of 5 days per each one of the Contracts;
- The consultant shall also:
 - i. Ensure contractor's compliance with deadlines for manufacturing, testing, shipping and supplying equipment on site;
 - ii. Ensure that equipment and materials conforms with contract specifications and standards;
 - iii. Ensure that the equipment and materials do not contain any internationally banned chemicals or substances and also ensure that specifications (environmental related like noise levels of transformers) are in line with the national environmental requirements and standards.
 - iv. Examine and approve the program for factory testing and acceptance proposed by the contractor, participate in works acceptance procedures and draw up the reports for each works inspection;
 - v. Ensure that all equipment and materials have been subjected to type tests already and certified and all additional test described in the Bid documents have to be performed accordingly.
 - vi. Participate at factory tests for main items of equipment at contractor/suppliers factories in collaboration with the Client. The Client will facilitate the Consultant to witness factory tests.

7.2.2.4 Inspection, Testing and Acceptance on Shipment as well as On Site

- Conduct post shipment material quality inspection audits prior to acceptance of the project materials and equipment on site.
- The Consultant shall ensure that equipment and materials delivered on site are in conformity with stipulated specifications and work schedules;
 - i. Check that materials delivered meet technical specifications
 - ii. Inspect and monitor damages, defects and accordingly reject unacceptable materials, and ensure corresponding replacement of damaged equipment and materials;
 - iii. Issue acceptance certificates for goods;
 - iv. Check proper storage of materials and equipment as per the

- manufacturer's storage procedure and recommendation.
- v. Check the quantities of equipment/materials supplied

- Witness and approve the contractor on site tests and commissioning for each equipment, accessories and materials covered by the Project.
- Carry out final inspection of the installation works, including deficiency lists, witness commissioning tests, perform acceptance procedures for all equipment, and issue the corresponding completion certificates in accordance with the relevant conditions of contract with prior consent of the Client.

7.2.2.5 Assist EDM and ESCOM on review and approval of the post-construction documentation

- Review for adequacy and completeness of the as-built drawings, operation and maintenance manuals provided by contractors.
- Ensure that the Contractors have submitted final as-built drawings, operation and maintenance manuals as per the requirement and quantity specified in the contracts.
- Ensure availability of hand-over requirements including manuals, drawings, list of PAPs compensated and wayleaves consent forms for handover to the service provider

7.2.3 Task 3 – Reporting and Project Documentation

- Prepare and submit to the Client the detailed monthly and quarterly progress reports and any other reports according to Client's requirements for the works. These reports shall:
 - a) describe work progress, the contractor's performance, quality of work, delays, deficiencies, constraints, and the project's financial status, forecasts, and giving recommendations for action;
 - b) mention any authorized changes in the original design and specifications;
- Facilitate preparation and updating of detailed O&M manuals as well as As-Built documentation to be issued by the contractors.
- Inspect regularly the records of the contractor's site activities (site diaries) and ensure that they adequately document the progress and performance of the work. Recommend corrections/changes to the records as required;
- Monitor contractor's preparation of As-Built Documents and Operation and Maintenance Manuals.
- Issue Interim and Final Project Completion Report (PCR) upon completion of the project construction activities of all Contracts.

7.2.4 Task 4 - Supervision and Monitoring of the Implementation of Environmental, Social, Health and Safety Measures

7.2.4.1 During Pre-Construction Phase

- Approve after due revision all Contractor's Environmental and Social Management Plans (C-ESMP) based on the ESIA-ESMP.
- In compliance with the ESMPs, supervise that Contractors establish plans for: e.g. Waste Management; Revegetation, Erosion and Sediment Control; Cultural and Archaeological Heritage Management; Emergency Response; Traffic Management; Occupational and Community Health and Safety; and Labour Force Management etc. in their bid proposal, as specified and outlined in the ESMP for the Project;

7.2.4.2 During Construction Phase

- Supervise and monitor the Contractor's implementation of the Contractor-ESMP during all stages of the Project.
- During Construction, ensure that the Project Supervisors and Site Supervisors supervise the contractors for all aspects of implementation of the ESHS requirements, including without limitation to the following:
 - a. Checking proper storage and operation of equipment facilities and maintenance,
 - b. Consideration of on-site clinic and staff assistance for construction labourers and the provision of medical emergency facilities,
 - d. Ensuring full participation of affected people in the planning and implementation processes (see ESMP, RPF, RAP and VMGF),
 - e. Ensure that during the commissioning and operation phase the contractor has undertaken the final clean-up operation,
 - f. Ensure that the contractor prepare acceptable, and detailed Waste Management; Revegetation plan, Erosion and Sediment Control; Emergency Response; Traffic Management; Occupational and Community Health and Safety (including HIV/AIDS Awareness and Prevention measure); and Labour Force Management (including GBV/SEA prevention and worker codes of conduct) plans and review and approve these prior to commencement of site preparation and construction activities; and updates and revisions not less than once every 6 months;
 - g. Ensure that all the construction contractors implement the C-ESMP and all pertinent ESHS plans and method statements including the detailed Waste

Management; Revegetation, Erosion and Sediment Control; Cultural and Archaeological Heritage Management; Emergency Response; Traffic Management; Occupational and Community Health and Safety (including HIV/AIDS Awareness and Prevention measure); and Labour Force Management (including worker code of conduct) plans and otherwise adhere to sound construction management guidelines;

- h. Inspect and ensure the contractor safety measures, including labour and surrounding population welfare, as per the Occupational and Community Health and Safety plan prepared by contractor are followed during the implementation of the project and notify immediately both the Employer and the Contractor of any infringement or violation. In that regard, the Consultant shall prepare a safety patrol report and submit to PIU monthly.
- i. Ensure that working conditions including H&S and use of protective procedures and equipment are in place and that the contractor has in place an effective worker's grievance management process
- j. Ensure that the contractor is implementing any aspects of the project GRM under his responsibility and reporting thereon.
- k. Ensure that the construction methods as proposed by the Contractor for carrying out the works are satisfactory, with particular reference to the technical requirements of sound environmental and social standards specified and outlined in the project ESMP, Resettlement Policy Framework (RPF)/Resettlement Action Plans (RAPs) and based on World Bank safeguards policies including inspection of contractor's construction equipment, safety of the works, property, personnel, and general public; adherence to strict prohibitions against, inter alia, any hunting, bush-meat purchase, unauthorized burning; disturbance and pollution of waterways (including by washing vehicles); improper waste disposal, unnecessary noise and vibration; speeding or other careless driving; and any inappropriate behaviour towards local residents (including, but not limited to sexual misconduct leading to gender based violence and sexual exploitation and abuse); hiring of local labour including female workers, where possible, particularly from the surrounding villages;
- j. Verify that civil works contractors follow Chance Finds Procedure (as described in the ESMP) where applicable during infrastructure construction, and that all relevant bidding documents and contracts include Chance Finds Procedure along with the other Environmental and Social Rules for Contractors. If any archaeological relics or other physical cultural resources are discovered during construction, the Consultant will report to the PIUs seeking advice on how to handle such discoveries. Items of cultural interest will be systematically catalogued and stored or displayed, in accordance with guidance provided by the Department of Antiquities;

k. Verify that civil works contractors have put in place and operationalize grievance redress mechanism for workers/labour and monitor its functionality and use including types of grievances to be recorded and how to protect confidentiality e.g. of those reporting allegations of GBV/SEA and ensuring any GBV/SEA instances and complaints that come to the attention of the consultant are registered in the grievance redress mechanism. Monitor how the feedback from GRM is integrated in project implementation.

l. Verify that civil works contractors have, in advance of any construction works, effected the worker code of conduct (based on the Labour Force Management plan that will be prepared) and monitor enforcement and compliance with strict and transparent penalties;

m. Undertake audits, supervisions and/or inspections of any sites where the Contractor is undertaking activities related to the works, to inspect documentation and verify the Contractor's compliance with Environmental Social Health and Safety requirements as outlined in plans including its GBV/SEA obligations, with and without contractor and/or client relevant representatives, as necessary, but not less than once per month.

n. Ensure appropriate representation at relevant meetings including site meetings, and progress meetings to discuss and agree appropriate actions on the compliance of with Environmental Social Health and Safety obligations and agree on remedial action/s and their timeframe for implementation in the event of a noncompliance with the Contractor's Environmental Social Health and Safety obligations as outlined in plans;

m. Ensure that campsites have all safety and health measures as stipulated in the ESMP and in accordance with national regulations and World Bank labour management guidelines.

n. Confirm that all related ESHS requirements have been fulfilled and reported on.

- Documenting Contractor's non-conformances. Review and approve the Contractor's proposals for remedial action/s and their timeframe for implementation. Follow-up on correction/remediation;
- Follow up on the results of any inspections or audits by labor, health, safety, environmental and any other relevant regulatory authorities;
- Check if the Contractor provides instructions and trainings to workers, Subcontractors and Suppliers (in particular those for major supply items) to assure that they understand their respective ESHS requirements and that the Contractor complies with the Code of Conduct;
- Follow-up on the resolution of any complaints or grievances in relation to ESHS;

- Ensure that non-conformities are addressed through measures adapted to the severity of the situation and which include, but are not limited to the suspension of sub-standard works and/or of payments in accordance with the contract.

7.2.4.3 ESHS reporting requirements (for Template see Annex)

- Report ESMP compliance
- Report semiannually (to be defined) on compliance with the ESMP and ESHS Works Requirements; This includes health and safety performance and conformance with labour and working condition standards in case of severe ESHS violations (and in particular OHS risks to life), the Consultant shall suspend sub-standard works until the Contractor has rectified the situation;
- Review the Contractor's monthly progress reports, and check if detected nonconformities are documented and analyzed and are addressed by corrective actions;
- Inform the owner on any ESHS related situation that might arise which could jeopardize the successful completion of the Project. Reflect such situations in the periodic reporting.

The Consultant shall include in his quarterly report activities performed concerning environmental and social mitigation measures. As part of reporting the following shall be addressed:

- (a) "The Owners Engineer shall provide immediate notification to the Client should any incident in the following categories occur while carrying out the Services. Full details of such incidents shall be provided to the Client within the timeframe agreed with the Client.
 - (i) confirmed or likely violation of any law or international agreement;
 - (ii) any fatality or serious (lost time) injury;
 - (iii) significant adverse effects or damage to private property (e.g. vehicle accident);
 - or
 - (iv) any allegation of gender based violence (GBV), sexual exploitation or abuse (SEA), sexual harassment or sexual misbehavior, rape, sexual assault, child abuse or defilement, or other violations involving children,
- (b) Ensure that contractor immediate notifications on ESHS aspects are shared with the Client immediately;
- (c) Immediately inform and share with the Client any immediate notification related to ESHS incidents 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 ESHS metrics, as required of the Contractor as part of the Progress Reports."

For the complete progress reporting on the ESHS, please refer to the template in annex III.

7.2.5 Task 5 - Follow and control payments to the Construction Contractor(s)

In following and controlling payments to the contractors, the Consultant shall:

- Follow up and updates on disbursement projection estimate for the different phases of the project;
- Examine invoices submitted by Contractors on the basis of the supply and service contracts to determine whether the services and supplies being invoiced were actually performed, the payment has fallen due and all necessary documents are available as required. The Consultant will then give the clients the corresponding “payment certificates”. The documents to be presented include, for example, valid down payment and implementation guarantees in accordance with the specimen required by client, insurance policies and transport documents. The Consultant will keep the relevant documents ready for inspection by the client;
- Determine the amount to be added to, or deducted from, payments to the contractor for any additional work or for work omitted, respectively;
- Examine whether the regulations concerning the disbursement procedure that are agreed between the Client and the Lenders passed on to the Contractor are being adhered to;
- In so far as the above mentioned conditions are met, certify the disbursement request for onward processing by the client;
- Ensure the monitoring and reporting in table form on all project relevant guarantees pursuant to the relevant Lender’s guidelines and obligations of the client towards the Lenders 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 in a timely manner 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.
- Monitor, check and approve construction works on site, which forms the basis for Contractor’s periodic invoicing;
- Review the contractor’s claims for additional time or costs and submit recommendations to EDM and ESCOM; anticipate possible problems that the project execution might encounter and recommend appropriate solutions (in particular identify possible sources of time delays and cost overruns and propose measures to overcome them);

7.2.6 Task 6 - Assistance during Commissioning and Handing Over of Installations

At the completion of supply and installation works by the contractors of the different project packages, the Consultant shall assist the two clients with all activities related to inspection, testing and commissioning of all equipment and 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 ESHS compliance) for proper documentation of the handed over facilities.

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 set in the contract requirements

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

- Notify the Client on the readiness of the project to enable mobilization of key stakeholders.
- Coordinate all the tests to be performed by the contractor in line with the equipment and network test protocols. Carry out final inspection of the works, witness commissioning tests, perform acceptance procedures for all equipment, and issue the corresponding completion certificates in accordance with the relevant conditions of contract with prior consent of the Client.
- 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.
- Review for adequacy and completeness of the as-built drawings, operation and maintenance manuals provided by contractors.
- Participate in the structure-by-structure audit exercise scheduled by the Client and prepare the report. The Client shall provide the structure audit template.
- Approve the contractor's as-built drawings.
- Ensure availability of hand-over requirements including manuals, drawings, list of PAPs compensated and wayleaves consent forms for handover to the service provider.
- All the areas (if any) and support facilities like storage yards are restored and decommissioned in line with the Contractors decommissioning plans.

- Carry final environmental and social audits to ensure that no environmental liabilities are left behind by the Contractors. Prepare an environmental and social management closure report.
- 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.

7.2.7 Task 7 – Coordination of the Project Progress Meetings

To better coordinate the implementation of the project, two types of project meetings shall be coordinated by the Consultant during the progress of the project. The minutes of meetings shall be prepared by the Consultant. The manual and electronic formats of the minutes will be agreed upon by the parties beforehand.

The following are the two types of project meetings to be held during the project implementation:

Site meetings

The site meetings will be held at the site of the project implementation in each individual country in a monthly basis starting from the commencement of the works by the contractor and will focus on coordination of all the practical issues related to the works on the ground involving the Client (PIU), the consultant and the contractor, and they shall be led by the Consultant's Project Manager of the corresponding country.

Among other issues, the meeting shall deal with approval or rejection of executed work elements, contractor's work schedule, contractor's work method, implementation of environmental and social safeguards of the project, temporary works and additional works (if any).

Project management meetings

Management meetings are aimed to coordinating the strategic issues of project implementation at high level and will be held in quarterly bases at the alternate employers (PIUs) of the two countries. The Clients, the Consultant and Contractors of both countries are the parties expected to participate in the meetings. The meetings shall be led by the Consultant's Project Director.

Among other issues, the meeting shall deal with implementation of environmental and social safeguards of the project, temporary works and additional works (if any).

7.3 PHASE 3: Post-Construction/Defects Liability Period (Time Based Contracts)

7.3.1 Task 1 - Part-time assistance during defects liability period

With regards to the part-time assistance during defects liability period the Consultant shall:

- Undertake quarterly site inspection, identify snags and issue instructions to the contractor to rectify all snags;
- Ensure that all defects and queries are properly cleared/removed by the contractors before the end of the defect liability period.
- Ensure that compliance with all ESHS requirements has been achieved and no liabilities remain.
- ensure that all post-construction (as-built) drawings are furnished/submitted and bills of quantities and installed equipment specifications that may arise thereof;
- facilitate decisions on all claims and accounts, all questions, disputes and differences which may arise between the client and Contractor and which under the terms of the contracts are left for the Arbitrator's settlement and decisions;
- assist and advise EDM and ESCOM with regard to any matter that may be subject to adjudication, arbitration, inquiry or litigation up to delivery certificate of completion;
- maintain detailed records of relevant events & activities, drawings & documents, minutes of meetings;
- submit to EDM and ESCOM the project completion report;
- assist EDM and ESCOM on the eventual works' defects and issue the final acceptance certificates.

8. INPUT BY THE CONSULTANT

The Consultant shall provide all the input in terms of staff, facilities, expert availability and mobilisation plans, support from Headquarter office and other Services related to the Project whether explicitly mentioned in the present document or not to ensure successful accomplishment of the assignment.

The Consultant shall include in his bid and implement throughout the assignment appropriate codes of professional conduct and behaviour including an ESHS policy statement that includes at least the elements outlined below.

8.1 Staffing Profile of Consultant

It is required that the Consultant has experience in design and supervision of outage management strategies, construction of new Extra High Voltage Transmission and Substation Systems, for voltage level of 400kV and above, including experience in training of power utility

personnel. The Consultant will deploy a team of well qualified personnel/experts to undertake field activities who will be supported by a competent team at the consultant's home office.

The assignment shall involve two contracting agencies (EDM for Mozambique and ESCOM for Malawi). The consultant shall therefore propose two different teams for the assignment. One for Mozambique and one for Malawi, with two separate contracts one for each country. It is therefore a requirement that the consulting firm shall be able to provide two different teams led by two different project managers based in respective countries. In addition, the interested consulting firm shall provide an overall Project Director who shall have the role of an overseer of the overall regional project with specific roles as stated in Section 8.1.1

In particular, the Consultant shall clearly indicate in his technical proposal the presence of each of the Project Managers on site during the entire construction stage of the project. During the Site Supervision Works, the two Project Managers shall be at site on a permanent basis and should be resident in the respective project countries and they will have to travel frequently along the project routes to ensure constant high level supervision of the ongoing construction works for the corresponding project packages. Furthermore, they shall fully prepare for the corresponding monthly project meetings for each country.

In addition to the above separate monthly project meetings, there will be quarterly joint project meetings involving EDM, ESCOM, the two Contractors and the Consultant to be led by the Project Director. The meetings shall be held in alternate project countries and both Consultant's project managers shall attend. This is with the aim to discuss overall project cross-cutting matters.

During annual leaves, the Project Director and the Project Managers shall be deputized by short-term replacement experts duly approved by the client.

In addition, the Consultant shall engage eight (8) key staff plus three (3) site supervisors for Mozambique and similarly, eight (8) key staff plus two (2) site supervisors for Malawi, including one Project Director to cover both countries as per the table below:

Nr.	Mozambican Supervision Team	Consultant's	Malawi Team	Consultant's	Supervision
1	Project Director				
2	Project Manager	1	Project Manager		1
3	Transmission Line Engineer	1	Transmission Line Engineer		1
4	Structural/Civil Engineer	1	Structural/Civil Engineer		1
5	Substation Engineer	1	Substation Engineer		1

Nr.	Mozambican Supervision Team	Consultant's	Malawi Supervision Team	Consultant's	Supervision
6	Protections and Control Engineer	1	Protections and Control Engineer	1	
7	SCADA and Telecoms Engineer	1	SCADA and Telecoms Engineer	1	
8	HSE Specialist	1	HSE Specialist	1	
9	Social Specialist	1	Social Specialist	1	
10	Site Supervisor for OHTL	2	Site Supervisor for OHTL	1	
11	Site Supervisor for Substation	1	Site Supervisor for Substation	1	

Apart from the Project Director, Transmission lines Engineer, Substation Engineer, Civil Engineer, Protections & Control and SCADA & Telecoms Engineers, that will go to site when needed, it is expected that all other above Specialists shall be permanently resident in the two different countries of the project.

For the purpose of evaluation of the quality of the proposed staff, it should be underlined that apart from other important details, the CVs shall clearly indicate the experiences of the staff including types of activities performed and respective client references including financiers.

The total staffing requirements are estimated to be in the range of:

1. 343 person-months (196 for Mozambican Team and 147 for Malawi Team) for the construction supervision period, for both Malawi and Mozambique; and,
2. 19.5 person-months (11.5 person-months for Mozambique Team and 8 person-months for Malawi Team) for technical assistance during the Defects Liability Period.

Such estimate is based on combined foreign and local pooling of staff resources for the different Project Components. Based on competences of the proposed staff, geographical distances between the various sites, the Consultant shall however make its own assessment regarding staffing input to be provided during proposal submission, with proper justifications in case it differs from the one proposed in this ToR.

Key personnel to be assigned shall have adequate academic and professional qualifications and substantial experience in the sector. International experience and experience with World Bank financed projects are necessary to carry out the assignment. The Consultants are free to propose a staffing plan and skill mix necessary to meet the objectives and scope of services taking into consideration the person months provided. If all the required skills are not available within the firm, consultants may associate with others to make up the skills.

The Client's expectations of the Consultant's key staff and requirements for carrying out the assignment are as follows:

8.1.1 Project Director

The Project Director should have a M.Sc. in Electrical/Civil Engineering and a minimum of 15 years of relevant practical experience in directing projects of the same nature. The Project Director should present evidence on having managed at least five (5) projects of similar nature and complexity. He/She should have managed at least two (2) of a similar nature, and complexity international supply and installation contracts financed by International Financial Institutions (IFIs). The Project Director should be an individual with good experience in team management and resource management, with excellent communication skills in the English language, both written and verbal and a high sense of organization to ensure required results.

The project director will be responsible for the overall coordination of the Consultant's services in both Mozambique and Malawi. S/He will be responsible for coordination of quarterly project management meetings for the two project execution agencies. He shall be responsible for coordination and liaising with both countries where project issues are concerned. The Project Director shall coordinate all scheduled joint project meetings to ensure the satisfactory fulfilment of the requirements of the Terms of Reference in both Mozambique and Malawi.

S/He should be able to lead the project teams and oversee performance of project managers and take necessary measures to address any concerns raised by client (s).

8.1.2 Project Manager (s)

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, construction of EHV substations and transmission line). A higher qualification like an M.Sc 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. Moreover, 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.

Each 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 Tete, Mozambique for packages on Mozambican side, and in Blantyre, Malawi for packages on Malawi side.

He/She should be able to lead the project team and be capable of handling the design requirement during detailed engineering design review and construction design, site handovers, contractor mobilization, construction supervision etc.

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. He/She shall execute overseeing responsibilities and may be in charge of one of the technical subjects.

During the site construction works, the Project Manager's presence at site shall be at least 90% of the relevant construction period. During his absence s/he shall be deputised.

8.1.3 Substation Engineer (s)

He/she should have at least a BSc. Degree in Electrical Engineering. A Master degree in Electrical Engineering would be more preferable. The Substation Engineer should be a registered professional electrical engineer with not less than experience of 10 years in planning, designing, managing and supervising works related to updating, construction and rehabilitation of high voltage substations. He/She should also have some familiarity with integration of SCADA, Protection & Communication systems of the same size and complexity as the present assignment. He/she should have a knowledge of Flexible AC Transmission System (FACTS) including series/shunt compensation and Power System Stabilizers (PSSs). He/she should have experience on at least three similar projects. S/He should also have experience on construction on green field and brown field projects, preferably in Africa. The substation Engineer should have excellent oral and written communication skills in English language

8.1.4 Transmission Engineer (s)

He/ She should have a degree in Electrical/Civil or Mechanical Engineering from a recognized university. The Transmission Line Engineer should be a registered professional electrical engineer with not less than experience of 10 years in planning, designing, managing and supervising works related to updating, construction and rehabilitation of high voltage transmission lines of the same nature, size and complexity compared to this assignment. He/she should have experience on at least three similar projects. He/She should also have some familiarity with integration of Overhead Line Protection, fall arrestor systems & Installation of OPGW systems of the same size and complexity as the present assignment. The Transmission Engineer should have excellent oral and written communication skills in English language

8.1.5 SCADA and Telecommunications Specialist (s).

The Specialist shall have at least Bachelor Degree in Electrical / Telecom Engineering (or equivalent) from a recognized university with 15 years' overall experience and minimum 5 years of International experience on supervision, design, install and maintenance of SCADA and Telecommunication systems in the level of at least 400 kV substations and transmission

networks. The specialist should have good oral and written communication skills in English language

8.1.6 Protection and Control Specialist (s)

The Specialist shall have at least Bachelor Degree in Electrical Engineering (or equivalent) from a recognized university with 15 years' overall experience and minimum 5 years of International experience on supervision, design, install and maintenance of protection relays and control systems in the level of at least 400 kV substations and transmission networks. The specialist should have good oral and written communication skills in English language

8.1.7 Structural/Civil Engineer (s)

The Civil engineers shall have at least Bachelor Degree in Civil Engineering. The candidate shall be a professional civil engineer with at least 10 years' experience in 400kV Lines and Substations construction of which 5-year experience is in planning, designing, managing and supervising of EHV transmission and substations of the same nature, size and complexity compared to this present project. His/Her experience should include steel structure design, quality control, full scale structure testing, design of tower foundations and electrical apparatus foundations. He/she should have experience in at least two similar projects. In addition to the above the Civil Engineer should have good oral and written communication skills in English language

8.1.8 HSE (Health, Safety and Environment) Specialist (s)

The Specialist should have at least a Master degree in environmental science, environmental engineering, geosciences or a closely related field; he/she should have at least 10 years of relevant international work experience in managing environmental and safety compliance processes for large infrastructure and energy projects, especially linear projects such as roads and transmission lines. The Health, Safety and Environmental Specialist will have 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, labour force management and grievance redress mechanisms, among others. Sound experience in Project Management is required and experience in Mozambique (for the specialist based in Mozambique) or respectively experience in Malawi (for the specialist in Malawi) is preferable. The Health, Safety and Environmental Specialist should have excellent oral and written communication skills in the English and Portuguese (for the specialist based in Mozambique) languages.

8.1.9 Social Specialist (s) —one each for Mozambique and Malawi

The Social Specialist shall have a relevant professional degree and at least 10 years' experience from working on Environmental and Social Impact Assessment studies and monitoring of implementation of Environmental and Social Management Plans (ESMP), particularly in overseeing the implementation of the social measures set forth in the ESMP. The ESMP

(including the GRM), RAP and VMGF shall guide the contractors and their social and environment management officers. The experience of the Social Specialist, who shall monitor the contractors and report to the Project Manager, therefore has to include relevant experience in Mozambique or Malawi respectively. The Social Specialist should have excellent oral and written communication skills in English and Portuguese language (for the specialist based in Mozambique).

8.1.10 Mandatory Non-Key Experts

The Consultant shall include in his proposal the following mandatory Non-Key Experts. CVs shall be submitted in the Technical proposal for assessment and all the CVs must meet the minimum requirements to be considered compliant. Non-compliant CVs will be rejected. Those who do not meet the requirements shall have to be replaced at the contract negotiations stage.

8.1.10.1 Site Supervisor for OHTL

He/ She should have a degree in Electrical/Civil or Mechanical Engineering from a recognized university. The Site Supervisor for Transmission Line should have at least seven (7) years of experience in supervising works related to updating, construction and rehabilitation of high voltage transmission lines of the same nature and complexity compared to this assignment. He/she should have experience on at least three similar projects. He/She should preferably have some familiarity with integration of fall arrestor systems and Installation of OPGW systems. The Site Supervisor for Transmission Line should have excellent oral and written communication skills in English language.

8.1.10.2 Site Supervisor for Substations

He/she should have at least a BSc. Degree in Electrical Engineering. The Site Substation Supervisor should be an electrical engineer with not less than 7 years of experience in designing and / or supervising works related to updating, construction and rehabilitation of high voltage substations. He/She should have experience in at least three similar projects and should also have experience with integration of SCADA, Protection & Communication systems of the same complexity as the present assignment. The site supervisor for substation should have excellent oral and written communication skills in English language.

8.2 Logistics, Office and Accommodation

The Consultant shall make its own arrangement for office space and equipment facilities (phone, e-mail, internet, computers, copying, editing, etc.) and accommodations in the two project countries including an appropriate room to conduct meetings, as the case may be, and provide office facilities in Tete and Blantyre and any other facilities deemed necessary for execution of the scope of services.

In addition, the Consultant shall make his own transport arrangements during the Familiarization phase as well as during the Construction Contractors mobilization period.

For the execution of the construction site supervision during the entire project period, the Consultant will benefit from suitable 4WD-vehicles which will be purchased through the Construction Contractor(s) based on specifications that will have been made by the Tender Agent in consultation with the employer and thereafter being specified in Tender Documents for provision of such appropriate number of vehicles. The vehicles shall then be for the exclusive use by the Consultant and Employer, and they shall be fit for the intended services. Such vehicles will have to be handed over to EDM and ESCOM at the end of the assignment. The responsibility for fuel, vehicle maintenance and insurance shall be under the construction contractors.

8.3 Schedule of Reports and Deliverables for each Client

The Consultant will prepare the following reports and documents during the execution of the different phases of the project under separate contracts for each client as per country specific scope.

Type of document and timing	Narrative description
Detailed (master) Implementation Schedule (DIS)	The Consultant is responsible for the preparation of a detailed (master) implementation schedule for each of the project's phases.
Monthly progress reports (MPR) and Quarterly progress reports (QPR);	It is of utmost importance that the consultant prepares and submits monthly progress reports (MPR) in an agreed format during the course of the entire assignment. The report shall be submitted not later than the tenth day of the following month. The reports shall be submitted to employer for review and approval. The Monthly and Quarterly progress reports shall among other things include: (i) information on work in progress and completed (ii) staff strength, time spent by each staff member on each task as an estimated percent of work completed (iii) the percentage of completion of each task shall be shown computed on a weighted average basis (iv) the overall percentage of completion for the work (v) the list of any problems that are causing or may cause delays, including proposed measures to correct the problems (vi) financial summary indicating amounts invoiced and disbursements (vii) a list of contractor's

Type of document and timing	Narrative description
	<p>claims and variation orders and (viii) progress on the ESMP implementation.</p> <p>The approval of the MPR and the Quarterly Progress Reports (QPR) shall be conditional to the payment events of the consultant's invoice.</p>
Draft and Final Project Completion Report (PCR).	<p>This report will summarize all aspects of each project's implementation, risks encountered, mitigation measures employed, final costs, and comparison of the initial cost against final cost, suggestions and recommendations for future design and construction techniques and routine maintenance practice to be followed after the completion of the work.</p> <p>The <u>draft project completion report</u> shall be submitted two (2) months after commissioning and the final version immediately following the expiry of the defects liability period.</p> <p>The report will incorporate comments from EDM and ESCOM and 10 (ten) copies of the final PCR will be printed two weeks after comments are submitted to be delivered to each one of the two Utilities.</p> <p>All reports will contain a Section and a detailed annex on the reportable aspects of ESHS requirements implementation including data on the functioning of the GRM.</p> <p>The approval of the project completion reports by EDM and ESCOM and the Project Lenders shall be a payment event of the consultant's invoice.</p>
Other reports necessary for the assignment.	As required and mutually agreed upon (special reports, claims, assessments, etc.)

The Consultant shall submit all reports/documents in the following manner:

Reports:	EDM/ESCOM	Lenders
Monthly flash reports (max. 4 pages)	digital copy only by email	digital copy only by email
Quarterly/other reports	three (3) hard copies as well as one (1) digital copy for each one of the two Utility PIUs	one (1) hard copy as well as one (1) digital copy for each one of the three Project Lenders
Interim and Final Project Completion Reports	nine (9) hard copies as well as one (1) digital copy for each one of the two Utility PIUs	one (1) hard copy as well as one (1) digital copy for each one of the three Project Lenders

9. TIME SCHEDULE

The Consultant's Services shall be planned in time for submission of the different reports and documents indicated above in relation to the contract's effectiveness.

The project will be implemented over a period of 50 months including Defect Liability Period commencing with contract effectiveness and mobilization of both Owner's Engineer and Construction Contractor. For more details, please see Project Schedule.

The overall time schedule for the project is estimated with following staged time lines:

- Phase I: 02 months for the Owners' Engineer familiarizing with the Contract Documents and Site Visits to key project sites;
- Phase II: 24 months for supervision of mobilisation, construction, installation, testing and commissioning works;
- Phase III: 24 months of the Defects Liability Period;

As illustrated in **Annex 1** to the present Terms of Reference (TOR), Bidders are advised that the contract with the successful consultant and contractors related to the Mozambican Scope of the project must be approved by the Government of Mozambique/EDM before becoming effective, while the contract related to the Malawi Scope, such approvals are not required. A two-month and half (2.5) period is estimated for this approval. Acceleration, however, shall be envisaged whenever possible.

10. DUTIES AND RESPONSIBILITY OF THE CLIENT (EDM AND ESCOM)

The Client shall use its best efforts to ensure that the Governments of the project countries will grant to the Consultant and members of his/her internationally recruited staff whose names shall be communicated in advance, the following facilities and exemptions:

- a) Immunity from national service obligations restrictions for themselves, their spouses and their family dependents;
- b) The facility of bringing into the country a reasonable amount of foreign currency for the purpose of the project or for their personal use and re-exporting such sum, in accordance with the relevant foreign exchange regulations in the country including the exporting of such amount of foreign currency as they may earn in the execution of the project;
- c) Exemption from immigration restrictions for expatriate staff, their spouses and members of their families who are dependent on them;
- d) Inviolability of consultant's documents and papers relating to the project.

11. PROJECT IMPLEMENTATION UNITS (PIUs)

EDM and ESCOM will be the Project Executing Agencies (PEA). Out of their staff, EDM and ESCOM will assign staff to assist in the implementation of the Project. There will be one focal point and his deputy (Project Manager and the Assistant Project Manager) nominated for the project from each one of the two PIUs. The two PIUs will always coordinate between themselves whenever needed. Other staff may be resourced from the corporate structures of the PEAs. For reasons of ownership, the specific assignment of the PIUs coordinator will be essentially to address the following tasks:

- Invite bidders for the project and evaluate offers as per Procedures and Guidelines from the World Bank;
- Negotiate contracts with the selected firms;
- Provide access to relevant available technical documentation;
- Support pro-actively the receipt of official approvals;
- Control the disbursement of the project funds;
- Submit reports to relevant departments and the project lender for comments;
- Liaise between the consultant and the relevant parties;

- Report to the project lenders as required by the Procedures and Guidelines for Procurement under the World Bank;
- Any other support to the project as it may be agreed upon during the contract negotiations

12. TRAINING AND KNOWLEDGE TRANSFER

Counterpart experts will be attached to consultant during execution of the work as part of knowledge transfer.

4 counterpart staff (2 from EDM and 2 ESCOM) will need to have a two (2) weeks of International Training in Project Management (Planning, Supervision, Monitoring, Risk Management, etc.) related to implementation of high voltage transmission lines and substations at the headquarters of the consultant and the training will be sourced by the Consultant. For that purpose, the consultant will bear the costs related to training material, international transport, accommodation, food, insurance,

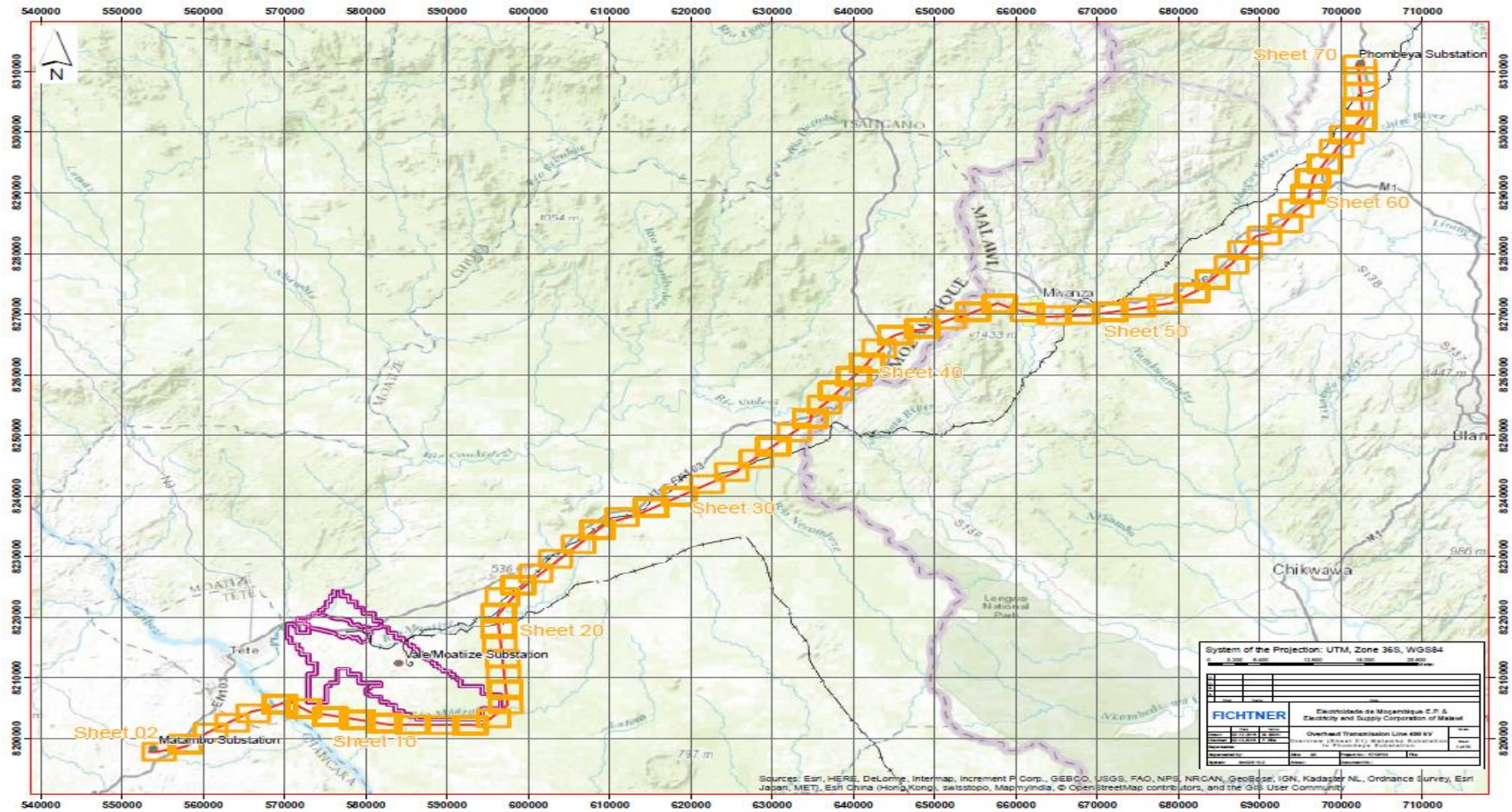
13. ANNEXES

Annex I - Tentative Project Schedule

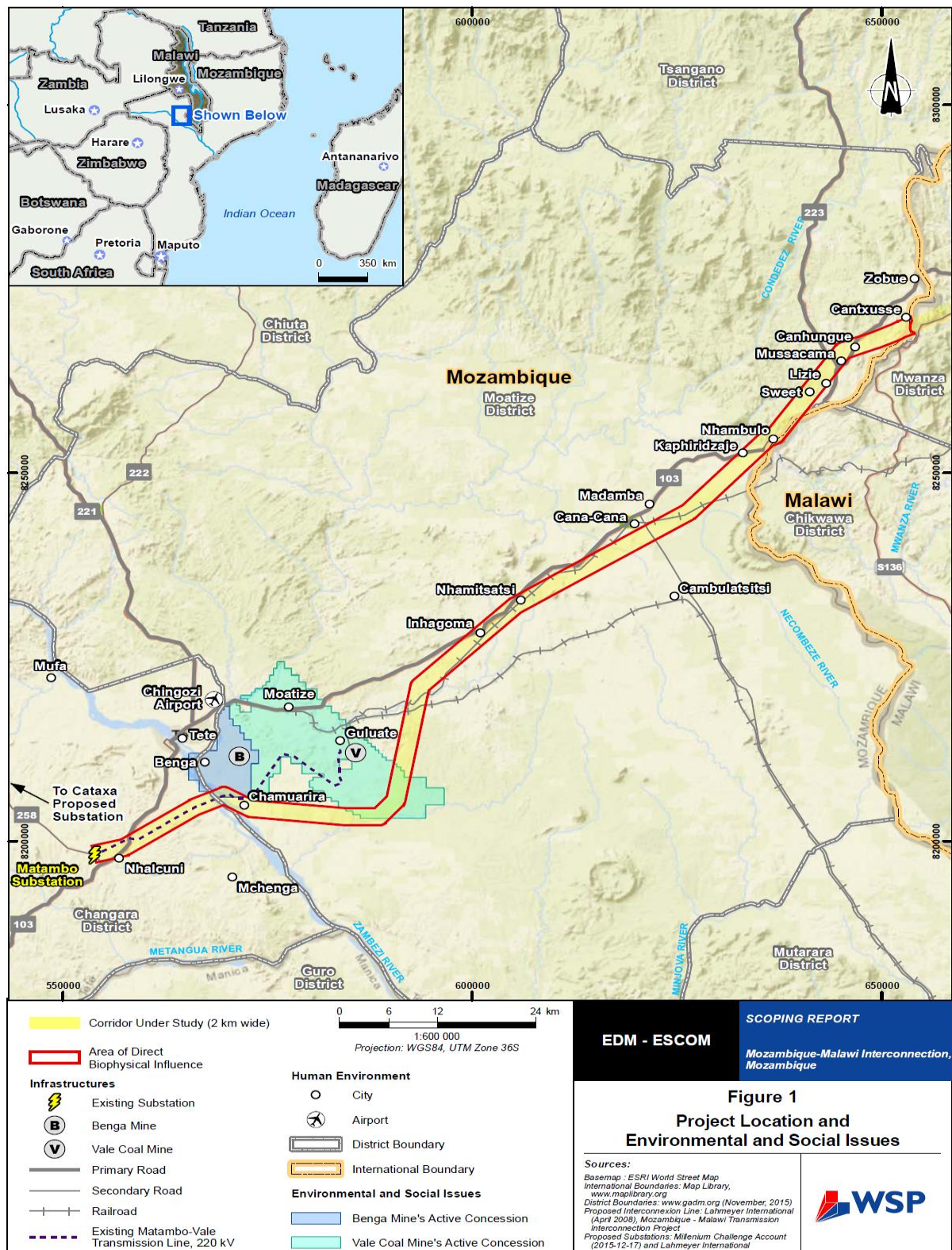
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Annex II - Project Sites Maps

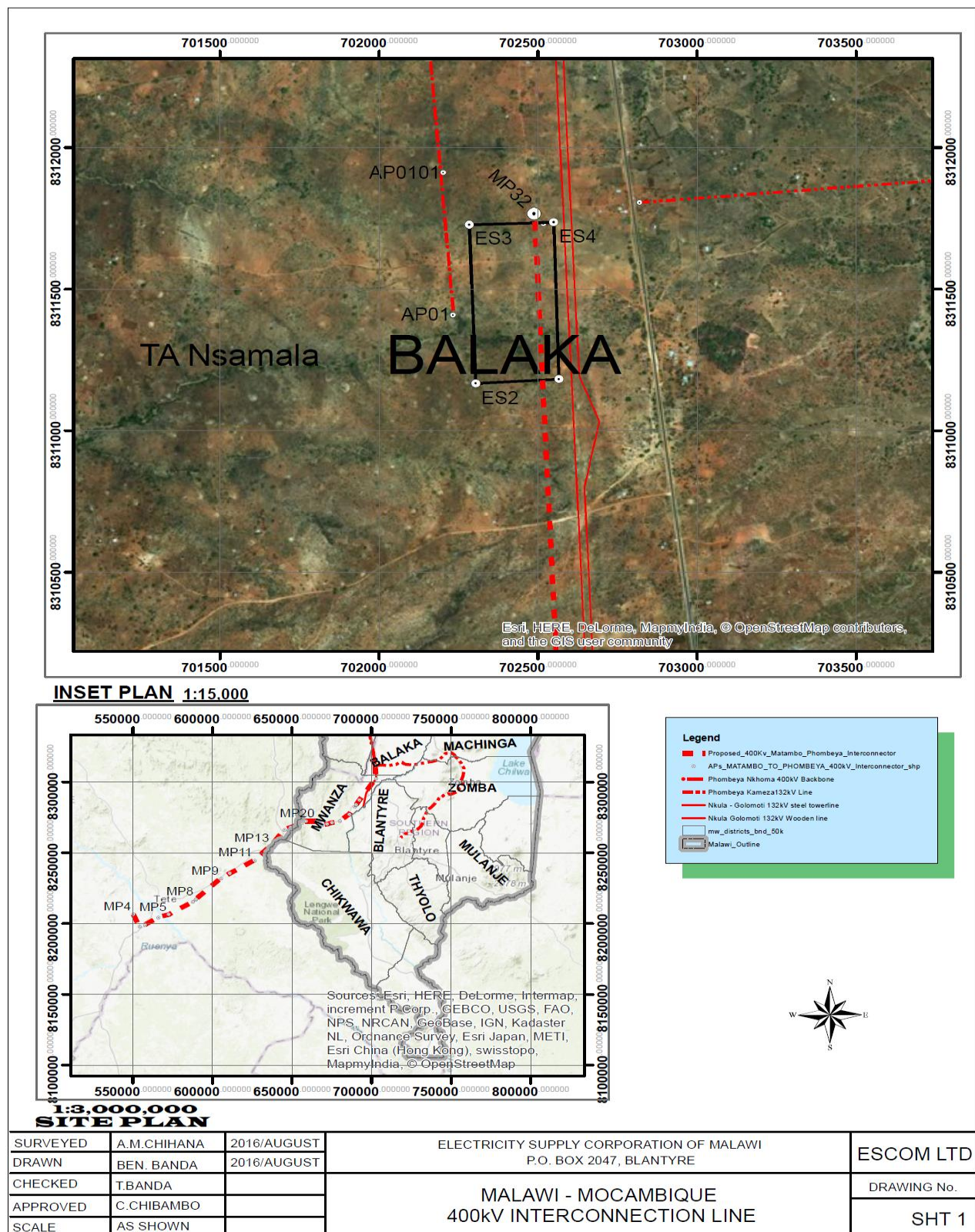
1. Line route Satellite Image



2. Project Location – Mozambique Side



3. Project Location – Malawi Side



Annex III: Template Implementation Progress Report

A. Sample of Table of Contents

Front Page: Key Data

- Project No.
- Client/Financier (name, contact person)
- Consultant (name, contact person)
- Company/Supplier/Subcontractor (name, contact person)
- Reporting number and reporting period
- Main contractual dates (date of order, start of construction works, completion date)
- Time elapsed/remaining
- Contract Value and disbursement status/level of payments

1. Executive Summary:

- 2-3 pages max (for quarterly, [bi-]annual reports)
- Planning and construction progress
- Listing of important concluded project milestones, compliance with time schedules and planned completion date, State of costs/current costs and expected costs at completion
- Major changes to project concept or to the project components
- Specific problems/major accidents and incidents, complaints and disputes
- Highlights

2. Project background

- Short description of main measures, objectives, target group and partner structure

3. Sector Environment

- Information on developments/changes of the general economic and sector conditions which are relevant for the successful implementation of the Project
- E.g. changes in regulations of the sector; changes in the national sector strategy, e.g. planning of high voltage transmission lines and construction of power plants; development of prices and tariff reforms; etc.

4. Consultant's Activities, Staffing and Time Schedule

- Staffing, target/actual comparison, reporting + next period, remaining man-months
- Main activities (e.g. of construction supervision)
- Target/actual comparison of activities
- Time Schedule
- Preparation of planning documents and approval of plans
- Organization of meetings (with project executing agency, construction meetings)

- Table of correspondence
- Audits

5. Progress of Construction Works (per project component)

a) Contractual Information

- List of the Consultant's Contractors incl. brief description of each Contractor's tasks, contract volume and results, appendices

b) Contractor's Resources (Staff and Equipment)

c) Cash Flow

- State of disbursements by the end of the reporting period per contract
- Table with the billing report, summarizing
 - Invoices from all contracts (identification number, date, amount, currency, payment status);
 - Total amount of each contract including amendments;
 - Remainder of each contract incl. amendments, including the difference between the total amount of the contracts and the sum of all invoices being paid, per currency).

d) Progress of Works/Time Schedule

- Comparison of contractual schedule and actual performance dates (start of construction, date of completion) (visualized in a tableau)
- Information on the stage of completion for the components of the project (e.g. water supply network, sewer system, number of house connections, infrastructure such as potable water tanks, pump stations, treatment plant infrastructure etc.)
- Percentage progress of the works compared with the approved program schedule, together with a description and percentage estimate of the work programmed for the following period
- Reasons for deviations/delays, assessment of impact of deviations on time of commissioning and/or financial planning and project completion.
- Updated time schedule, including expected completion date by project component
- Description of risks to meet the planned/updated time schedule
- Claim management: pending/possible claims by the contractor

6. Financial Information

- State of disbursements of total project volume by the end of the reporting period
- Forecast of disbursements for the next reporting period(s), with estimated time and amount of disbursement requests, as well as an overview of the payment schedule until the end of the project

- Disposition Fund: Total volume, remaining funds, state of disbursements, required funds for the next reporting period

7. Quality Management

- Description of quality issues during reporting period including all details and measures , Consultant's assessment and recommendation
- Status of other open quality issues
- Recommendation for improving overall construction quality

8. ESHS Performance

- Status list of ESHS related local permits and clearances
- Status of implementation of the Environmental and Social Management Plan (ESMP) items; and if applicable, site specific ESMPs and of additional measures agreed in the Separate Agreement between KfW and the Borrower.
- Progress on corrective action of ESHS non-conformances identified in previous progress reports.
- Accidents and Incidents
 - OHS performance (statistics: month, number of workers (by contractor), number of health & safety staff on site, number/type of OHS trainings; number of near misses, first aid cases, incidents with more than three days of absence, fatalities; summary on all accidents resulting more than three days of absence;
 - Third party incidents (e.g. community members, road traffic etc.)
 - Workers unrest or strike; community protest;
- Complaints and Disputes
 - Workers complaints (e.g. related to labour/accommodation conditions);
 - community/third party grievances, any ESHS issues-related legal action/litigation against the project.
- Results / follow-up of inspections by local authorities – if any (OHS / labour / environment / equipment safety) or any third party audits.

9. Deviations from Project Concept and Contracts

- Description and reasons for major deviations from original project concept during appraisal
- Description and reasons for major deviations from planned man-months/quantity or structure of the Project Components
- Recommendations and reasoning for future changes/modifications and deviations from the project concept

10. Risk Assessment and Prospect of Achieving the Overall Project Goals

- Analysis of (potential) risks

- Information on progress and status of achieving the financial and technical project goals, specific objectives and outcomes
- Reasons for deviation or current problems (if any)
- Assessment of consequences for sustainable project success, and measures to be taken/proposed solutions, information on any developments that might jeopardize the success of the project; if so, proposition of additional activities which should be included into the project
- State of solutions of previous problems

11. Outlook and Recommendations

- Outlook for the next reporting period (planned activities and results)
- Recommendations and need for action to be taken by project participants

12. Monitoring of Achievements and Impacts

- Indicator baseline (acc. to Separate Agreement) and achievements
- Monitoring of impacts

B. List of Annexes

(examples, not necessarily required for each report)

a) Tool for financial monitoring

- Tool funding
- Expenses per term
- Financial details
- Details of execution
- Status of indicators
- Timeframe

b) Staffing Schedule

- Description for each person/position
- man-months available of each person/position
- required man-months by person/position so far/up to now
- remaining man-months by person/position
- Visualization of actual operating time compared to planned.

c) Time Schedule

- for consulting and construction/delivery
- Contractual/actual

d) Milestone List (if required)

- for each contractual component

- planned/expected/actual date of completion
- delays
- e) Contracts**
 - List of construction and supply contracts
 - Short description of deliveries and services
 - Contract volume
 - Contractual dates: start of works, planned/actual overall completion
- f) Cost Control/Cash Flow**
 - List of project components/contracts
 - estimated costs
 - contract value
 - forecasted billing sum (incl. expected addenda)
 - state of disbursement and forecast
 - short reason for deviations
- g) Disposition Fund (if required)**
 - total funds available
 - funds transferred
 - sum of disbursements
 - expected disbursements and transfer of funds required for next reporting period
- h) Minutes of Meeting and Important Correspondence**
- i) Photo Documentation**
- j) Accident / Incident Reports**
- k) ESHS Complaints / Disputes Description**