



REQUEST FOR EXPRESSION OF INTEREST (REOI)

Kigali, on 08/07/2024

Ref No: RW-REG/EDCL-425329-CS-QCBS

Project: Accelerating Sustainable and Clean Energy Transformation (ASCENT)

Client: Energy Development Corporation Limited (EDCL)

Tender Name: Hiring consultant firm for supervision for transmission and distribution projects.

1. BACKGROUND AND CONTEXT

The project forms part of the Government of Rwanda (GoR)'s Rwanda's National Strategy for Transformation (NST1) which aims to achieve Universal Electricity Access to Rwandan households. To support this development, the Government of Rwanda through Rwanda Energy Group (REG)/Energy Development Corporation Limited (EDCL) launched a program to increase access to electricity as well as strengthen both distribution and transmission system in Rwanda. This project will increase the capacity and ease of operation of both distribution and transmission networks as well as improving the reliability of electricity supplies in the country; and contribute to the target of having universal access to electricity. The Project funded by World Bank and Asia Infrastructure Investment Bank includes construction of Transmission lines and associated Substations, upgrading existing substations, construction of medium voltage (MV) distribution lines and low voltage (LV) networks, Strengthening of distribution network. This component will mainly be implemented on a turnkey contract basis.

2. OBJECTIVE OF THE ASSIGNMENT

The project's broad objective is to support "improvement of existing network, supply reliable power, increase access to reliable and cost-effective electricity services for productive user and priority public institutions and sustain the reliability of electricity supply in Rwanda and strengthen the institutional capacity of key sector players in the project."

3. DURATION OF THE ASSIGNMENT

The duration of the assignment is 48 months and 12 months of defect Liability Period.

4. SCOPE OF THE ASSIGNMENT

In general, the scope of consultancy services shall include, but not limited to the following activities:

- ✚ Render technical expertise to the executing agency for design review, project implementation for the transmission lines, associated substations, existing substations and distribution network reinforcement,



- ✦ Supervise the implementation works of all contracts and ensuring the compliance with the contract requirements, quality and standards.
- ✦ Etc (other scope activities can be seen in detailed ToR).

5. SELECTION PROCESS

Consultant Firm may associate with other firms to enhance their qualifications but should indicate clearly whether the association is in the form of a joint venture and/or a sub-consultancy. In the case of a joint venture, all the partners in the joint venture shall be jointly and severally liable for the entire contract, if selected.

A Consultant will be selected in accordance with the Quality Cost Based Selection (QCBS) method set out in the Procurement Regulations.

Consultant firms between (5 to 8) shall be shortlisted and be invited to submit their technical and financial proposals.

To be shortlisted the consultant firm should meet the following criteria:


At least 2 similar projects executed in the last 8 years (since 2016).

- The similar project to be considered should have a value of at least 2,500,000USD
- The similar experience should be in supervision of the transmission lines, substations, distribution systems projects.
- The certificate of good completion of the project and the related copies of contract should be considered.

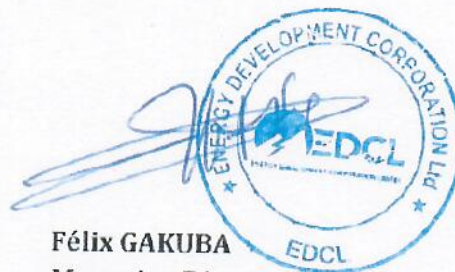
Note: Firms will be ranked based on the number of provided experience.

The expression of interests must be submitted in written form (electronically) addressed to the Managing Director of the Energy Development Corporation Limited (EDCL) through the e-mails: procurement@edcl.reg.rw copy to jdruberanziza@edcl.reg.rw not later than 03/09/2024 at 5:00pm Kigali time (GMT +2).

Sincerely,


gentile
umushashi
2024.07.03
18:30:33
+03'00'

Gentile UMUSHASHI
Head Procurement Management Services



Félix GAKUBA
Managing Director



TERMS OF REFERENCE FOR HIRING CONSULTANT FIRM FOR ENGINEERING, SUPERVISION AND CONTRACT MANAGEMENT FOR TRANSMISSION LINES AND DISTRIBUTION NETWORK PROJECTS.

1. INTRODUCTION

The project forms part of the Government of Rwanda (GoR)'s Rwanda's National Strategy for Transformation (NST1) which is aimed to achieve Universal Electricity Access to Rwandan households. To support this development, the GoR through Rwanda Energy Group (REG)/Energy Development Corporation Limited (EDCL) launched a programme to increase access to electricity as well as strengthen both distribution and transmission system in Rwanda. This project will increase the capacity and ease of operation of both distribution and transmission networks as well as improving the reliability of electricity supplies in the country and contribute to the target of having Universal Electricity Access.

2. SUMMARY PROJECT DESCRIPTION

The Project funded by World Bank and Asia Infrastructure Investment Bank includes construction of Transmission lines and associated Substations, construction of medium voltage distribution lines and low voltage networks, reinforcement of distribution network.

3. PROJECT OBJECTIVE

The objective of this project is to reinforce the transmission network, improve the quality of power supply nationwide and increase the rate of access to electricity.

4. PROJECT EXECUTING AGENCIES

Rwanda Energy Group (REG) through Energy Development Corporation Limited (EDCL) has established its own project implementation unit (PIU). The PIUs will manage all aspects of project implementation, assisted by the project engineering, supervision and contract management consultant.

5. PROJECT FINANCING

The World Bank and Asia Infrastructure Investment Bank will finance the total cost of the Project.

6. CONSULTANT'S SCOPE OF SERVICES

The Consultant's scope of assignment will include supervision services of **EPC Contract** for ASCENT program dedicated to the component of Transmission Lines, MV&LV network reinforcement and associated substations.

The Engineering, supervision and contract management firm will manage, monitor, and follow up day to day implementation activities for seven (7) contracts signed between the selected contractor(s) and REG/EDCL.

The transmission lines, substations and MV&LV Network under this service are defined in below table:

Item	Project names
1	Upgrade of Three (3)110/30kV (Kigoma, Rukarara, Kibuye) and two (2) (Rwinkwavu and Birembo)110/15 kV power transformers in the existing five (5) HV substations
2	Construction of Muhanga SS 110/30kV, 2x20MVA transformers with a cut-in cut-out (double circuit) 110kV transmission line Kigoma SS- Mt Kigali SS (21km)
3	Construction of 220kV double circuit transmission line connecting Bwishyura Substation to Kigoma substation (56km)
4	Construction of four (4) 5MVA, 30/15kV distribution substations and associated MV feeders (lines) connections at Karumuna (Bugesera), Poid Lourd (Rubavu), Shyorongi (Rulindo) and Nyagatovu (Rwamagana)
5	Construction of new three (3) MV Switching Cabins in Rubavu (1) and Kigali (2)
6	Strengthening of MV & LV Distribution network in Kigali City, Southern Province, and Western Province
7	Construction of 29.8km ,30KV MV lines linking of new HV/MV Substations to the distribution network

7. SUMMARY SCOPE OF THE CONSULTANCY SERVICES

In general, the scope of consultancy services shall include, but not limited to the following tasks:

- a) Review, assess and follow-up and approve of the detailed designs of the EPC Contractor's investigations for the purpose of construction design preparation for all equipment to be installed at all substations.
- b) Issue provisional and final acceptance certificates as per the terms and conditions of the contract
- c) Supervision and contract management of civil, electromechanical, and electrical works for all projects including all the related facilities and structures.
- d) Approval of all necessary working drawings ensuring quality construction and strict compliance with the resettlement plan tailored to site-specific environmental management plan (EMP) and specifications, and measurement /certification of completed works facilitating contractor's progress payments.
- e) Review and approve the Health Safety and Environment (HSE) Plan and prepare Change Management Statement and supervise their implementation
- f) Ensure the Protection Setting Study, Integration into Load Dispatch Centers of Rwanda of installed equipment are respected as per contract.
- g) Assess and approve manufacturers/vendors for all the materials and equipment for the lines and substations.
- h) Approve factory acceptance tests (FATs)' plan for major equipment as specified in the EPC contracts and attend it together with nominated client' representatives.

-
- i) Attend project level meetings and all other meetings as proposed by the employer (client).
 - j) Approve the testing and commissioning protocols, the tests and commissioning plan, and lead the testing and commissioning activities.
 - k) Supervise all construction and installation activities of the transmission lines, associated substations, distribution network reinforcement and customers connections, including contractor's construction and customers connection procedures and schedules.
 - l) Assist the Client in taking over the contract works and prepare list of items of works to be
 - m) completed by the contractor for defects liability period.
 - n) Prepare taking-over certificates and documents as required for acceptance of works/goods by the Client.
 - o) The Consultant shall carry out final inspection in liaison with EDCL of the works after completion of works and Defects Liability Period and issue the Completion Certificate and Operational Acceptance Certificate in accordance with the provisions of the contract including of as-built drawings.
 - p) Approve quality and quantity of equipment and spares parts supplied by the contractor.
 - q) Provide on-the-job training and Theoretical training for EDCL's staff in contractor's design review, project management and supervision of Design & Installation of SVC at main substations
 - r) Review and approve of training plan and its content for EDCL Staff.
 - s) The Consultant shall submit weekly, monthly and quarterly progress reports, and approve
 - t) the validity of payment requests by contractors to enable EDCL to authorize the payment requests.
 - u) Prepare response to audit observations in respect of payments certified and assist the Client in getting them resolved.
 - v) Perform acceptance procedures for all the structures and equipment (transmission lines, substations and MV LV and service connections and issue the corresponding completion certificates in accordance with the relevant conditions of contract with prior consent of EDCL
 - w) Perform acceptance procedures for all the structures and equipment (transmission lines, substations and MV LV and service connections and issue the corresponding completion certificates in accordance with the relevant conditions of contract with prior consent of EDCL.

8. DETAILED DESCRIPTION OF SCOPE OF SERVICES

8.1 Standards and Regulations

The International System of Units (SI) shall be used in connection with this Contract and all materials, fittings, components, items of plant and equipment supplied for

incorporation in the Works shall be standardized accordingly. If, after making diligent enquiries, the Contractor is unable to obtain an item standardized in SI units, written approval shall be obtained from the Employer to supply non-standard material. SI units shall be used in all correspondence, documentation, calculations, drawings, measurements etc. If reference must be made to non-standard items, the SI units shall be quoted followed by the non-standard units in brackets, all design and construction work, including the materials used and methods applied, shall be in accordance with one or more internationally recognized standards of practice. Such standards comprise organizations such as the ASTM (American Society for Testing and Materials), IEC (International Electrotechnical Commission), ISO (International Organization for Standardization), DIN (German Code), BS (British Standard), SS (Swedish Standard), EN (European Standard), or equivalent. All equipment to be supplied shall have the current appropriate International or National Standards. Supply of Material shall be made prior to the approval by consultant and the Employer. Such approval shall be given only if the Contractor can demonstrate, to the satisfaction of the Employer, that the equipment is of equivalent quality to the appropriate International or National Standards. Installation shall be in accordance with the appropriate standards and the manufacturers' recommendations. The local civil works materials must comply with the current recommendations of Rwanda Bureau of Standards (RBS). In addition, the design of the Works shall satisfy the requirements of relevant Rwandan regulations and Should the Contractor request alternatives to the above standards, other relevant standards may be used subject to Employer's approval. Differences between the standards specified and the proposed alternative standards must be fully described in writing by the Contractor and submitted to the Employer for review and approval. An English translation shall be submitted if the standards and codes proposed by the Contractors are in a language other than English. All specific references to standards and codes throughout these Employer's Requirements and the Specifications are governed by this part.

8.2. Review and approval of Preliminary works and Designs

Support the client to review engineering preliminary works and designs submitted by the contractors, taking into consideration the standardization that is available in Rwanda.

For the transmission lines and substations, the consultant will review the geological investigations and topographical surveys conducted by EPC Contractor:

- To determine the soils capability for foundations and
- To evaluate the talus stability.
- Validate the transmission lines route.
- To gather all geological information related to the location of the planned substations.
- To prepare to scale, substation drawings in terms of single line diagrams; principal diagrams for control/command by SCADA, metering, telecommunication, and telemetering.
- To draw up a line profile and tower spotting charts.

In the assessment reports, The Consultant shall indicate the maximum constraints for the installation of the conductor and build up a staking out list with indication of:

- a) The type of tower, alignment and angle, anchorage etc

-
- b) The geographical position of towers by their GPS coordinates
- c) All needed information for accessing the sites for construction.
- ✚ For implementation of the ESMP and RAP, the consultant should clearly describe in the bidding documents the specific tasks and responsibilities by the contractor for final design and implementation to minimize environmental impacts and avoid resettlement in final distribution routing. In undertaking the details design and technical specifications of equipment, the consultant shall make cognizance of existing equipment in the country to assure proper functioning of communication and telecommunication system between end-to-end substations and the type of telecommunication equipment.
 - ✚ The consultant shall also review detailed technical specifications of the equipment including construction methodology and requirements. Equipment specifications will have to be considered, for management of spare parts and operating facility considerations, existing equipment in the networks.
 - ✚ The consultant will ensure that designs and bills of quantities for plant houses at new substations and extension at the existing substations (if required) are incorporated into civil works in the bid documents.
 - ✚ Specifications Evaluation: Review and evaluate the prepared specifications for substation equipment, identifying any necessary modifications to align with the international industry standards.
 - ✚ Site Surveys and Soil Investigation: Examine the surveys and soil investigation findings for the designated substation sites, considering survey drawings, soil bearing capacity, and equipment loading, and verify their compatibility with the civil works design.
 - ✚ Scope and Cost Review: Review the scope of supply, work breakdown structure, cost estimates, and protection systems specified in the tender, ensuring their completeness and compliance with project requirements.
 - ✚ Communication and Control Systems Assessment: Evaluate the communication and control systems required for monitoring and supervising the substations to ensure their compatibility with existing equipment installed in Rwanda, thereby facilitating seamless integration in operation and maintenance.
 - ✚ Furthermore, the consultant will ensure a bird-safe tower design and bird diverters along the transmission line depending on the risk of bird strikes.
 - ✚ The consultant shall carry out site visits to the existing substation, where the transmission lines will start and or terminate to collect data and ensure the availability of space, interfacing of control, communication, and SCADA systems.
 - ✚ Regarding the transmission lines, the Consultant shall review detailed designs based on available studies, specifications of the equipment, accessories and materials including construction methodology and requirements, as well as use designs already prepared by EDCL and previous consultants.
 - ✚ The Consultant shall be responsible for conducting a review of ground surveys and soil investigations results to determine the tower types and their respective heights, as well as to design the foundations.

-
- ✦ Upon completion of the terrain survey, the Consultant will review the tower-spotted profile, which has been prepared to establish tower specifications, encompassing loading requirements, tower outlines, cross-arm configurations, and insulator details.
 - ✦ All corrections and adjustments made to calculations and analyses during the review process must be included in the final conceptual design and tender document.
 - ✦ The Consultant is required, either through site visits or using the latest GIS maps of the areas, to check and validate the distribution line routes, draw-up the line profiles and pole spotting charts and determine bill of quantities. The Consultant will determine the number and type of pole, characteristics and distribution line accessories and location of transformers. The consultant shall determine the angle points for each distribution line.
 - ✦ The final line surveys that will be conducted by each contractor are critical tools to the objectives of reducing impacts and compensation costs, and the consultant should include this task in each bid document. Once the contractors finalize their ground survey works, the consultant thus may need to prepare the ESMP to consider the final locations in line with the ESMF.

8.3. Review and Approval of Detailed Technical Designs and Drawings

The consultant shall:

- Check whether all the calculation notes and hypotheses are considered, the drawings, diagrams and documents submitted for approval are prepared in agreement with the contract specifications and accepted codes of practice. The staff of EDCL shall participate in the assessment and approval works, and the consultant shall provide them with the general guidelines and widely accepted principles in the approval of detailed design documents.
- Coordinate the civil works detailed designs with the civil works subcontractors' (if any) working methods and equipment, if necessary,
- Coordinate the civil work design considering information provided by the equipment's manufacturer,
- Ensure that the civil works detailed designs are prepared considering the mitigation measures provided in the Environmental and Social Management Plan and the RAP,
- Approve detailed designs, drawings, manufacturing, and assembly documents as well as quality plans of all equipment covered by each contract,
- The consultant shall ensure that all the project systems can be integrated into the existing SCADA system for EDCL and advise on any extensions to such SCADA systems,
- Review and approve the distribution lines and network routes and the identified customers to be connected under the project.

8.4. Supervision of Site Activities

The consultant shall:

- Review and approve contractor's works schedule for each contract and then prepare a coordinated work schedule covering all the contracts. In addition, in consultation and collaboration with the Client's Engineer, prepare the coordinated work schedule for the whole project (transmission lines, associated substations, and network reinforcement).
- Define the management methods and budget monitoring as well as the schedules for

defining any corrective measures that may need to be taken sufficiently well in advance, ensure coordination and supervision of all the works, materials and equipment delivery and storage, construction procedures in compliance with the relevant Standards (including environmental and social standards) and Codes of practice,

- Ensure interfacing and compatibility between equipment supplied by the substation contractor and transmission line contractor. In addition, ensure the interfacing and compatibility of the new equipment and system with the existing substations control, communication, protection, and SCADA system.
- Check the conformity of the drawings with contractual arrangements on site.
- Interpret and evaluate additional work carried out by contactors, considering the construction methods used; if necessary, adapt the drawings and working design documents to actual site conditions; approve Contractors' construction methods.
- Check all final layouts of structures built by the Contractors, based on the layout drawings they provide.
- Settle as far as possible any conflict arising between contractors, subcontractors and EDCL,
- Perform acceptance procedures for all the structures and equipment (transmission lines, substations and MV LV and service connections and issue the corresponding completion certificates in accordance with the relevant conditions of contract with prior consent of EDCL.
- Assist the EDCL regarding all questions relating to the contract, in particular compliance with performance bonds, advance payment guarantees, insurance and time extensions and claims, etc.
- Supervise all construction and installation activities of the transmission lines, associated substations, distribution network reinforcement and customers connections, including contractor's construction and customers connection procedures and schedules,
- Supervise the performance of all tests required to ensure the good quality of all materials used in construction, in particular soils, rocks, aggregates, cement, etc. and analyze test results to ensure good-quality construction; Check the quality control, environmental, health and safety procedures proposed by Contractors, paying special attention to the following tasks.
 - (i) Checking of preliminary tests prior to the works on the concrete formulas and doses proposed by the Contractor.
 - (ii) Acceptance of excavations (areas to be backfilled, foundations for towers and base blocks) including environmental aspects (erosion, river crossings)
 - (iii) Checking of reinforcement drawings and assembly drawings.
 - (iv) Checking of the thickness of the various sections before assembling towers
- Perform the necessary checks to assess the progress of works and conformity with the corresponding regulations and standards (including environmental regulations and standard), approve the equipment acceptance procedures to be followed on site by Contactors, issue payment certificates based on record of payments made by the Executing Agency to contractors.
- Check the quantities of work carried out and certify invoices issued by Contractors.

-
- Chair site meetings, draw up minutes of meetings, prepare periodic site monitoring reports and acceptance reports; check the quality insurance system applied by all the Contractors during the works.
 - Recommend any additional modification judged to be necessary in relation to the provisions set forth in the contract, after consultation with Project EDCL, draw up monthly progress reports according to PEAs format, quarterly progress reports according to Financiers' format, record all site activities,
 - Assist the PEAs with all contractual aspects relating to Contractors (guarantees, test certificates, insurance, claims, Environmental and Social Management Plans, etc)
 - Check and supervise the measures needed to ensure health, safety, and environment protection in accordance with REMA's approved report to ensure that all arrangement required by the environmental and social management plan (ESMP) have been made by the Contractors' staff responsible for carrying out the works,
 - Monitor project-related impacts to environment, project affected people, cultural heritage, propose management of these impacts and design additional contingency/mitigation measures in accordance with the ESMP, if deemed necessary
 - Witness and approve the contractor's on-site tests and commissioning for each equipment, materials, and system (protection, communication, control, etc.) covered by the Project.
 - Be flexible to render technical services to the owner e.g. negotiating similar assignments.
 - Supervise the preparation of as-built drawings, issue completion report and pre-commissioning certificates for the equipment.

8.5. Environmental, Social, Gender and Health & Safety Mitigation Measures and Reporting

The consultant must ensure that all the environmental and social impact mitigation and monitoring measures in the Project's Environmental and Social Management Plan (ESMP) and Environmental and Social Impact Assessment (ESIA) are appropriately executed by the contractors.

The consultant shall perform environmental, social, gender and health & safety monitoring during all stages of the Project. The consultant shall perform, among others, the following activities during the construction phase of the Project.

- Check whether all environmental and social issues are considered, including compliance with local laws, and compliance with the World Bank environmental and social safeguard requirements.
- The required permits are available on time to the contractors and that the EDCL is fully involved in the monitoring process.
- The ESMP implementation reports are duly delivered to the National Environmental Agency on an agreed periodicity and the comments provided are taken into consideration by the contractor.
- Environmental Agency is facilitated in its work of conducting environmental monitoring audits of the project.
- Checking availability of adequately equipped first aids kits and training and appointment of first aiders by each contractor.
- Checking health and safety awareness of the workers regarding the relevant hazards of

their work,

- Ensuring full participation of affected people in the planning and implementation processes.
- Ensure that during the commissioning and operation phase the contractor has undertaken the final cleanup operation.
- Ensure that all construction contractors include a general environmental, social, health and safety management plan (ESHS-MP) in their bid proposal, based on the ESMP for the Project.
- Ensure that all construction contractors prepare an acceptable, detailed ESHS-MP and an HIV/AIDS Awareness and Prevention Plan prior to commencement of site preparation and construction activities and adhere to sound construction management guidelines.
- Prepare a baseline for monitoring the socio-economic changes that will occur to communities due to the project regarding economic status, employment, and income levels by gender (where feasible), knowledge, attitudes, and practices (k.a.p.) about communicable diseases such as HIV/AIDS, etc.
- Get an update on the project affected peoples (PAPs) socio-economic status regarding their livelihood even those who have moved out of the area to assess if the project has made them worse off or better.
- Conduct a labor audit in terms of bonded labor or employment of children under-age.
- Keep records of and report on industrial accidents and incidents including tracking the LTIFR (Lost Time Injury Frequency Rates) and incidence trends; The consultant shall carry out the necessary environmental monitoring activities together with EDCL.

In addition, the consultant shall:

- Include in his monthly and quarterly progress reports, activities performed concerning environmental mitigation measures.
- Ensure that EDCL has conducted clear public notifications and involvement of local authorities; including ensuring that the grievance reporting, and redress mechanisms are known to the affected persons and communities.
- Prepare Terms of Reference (TOR) for EDCL for the recruitment of local consultants (where required) to update the existing RAP and organize payments to project affected peoples (PAPs) and) on implementation of the RAP. The RAP will be based on the line widths as well as the right-of-way required under national laws.

8.6. Inspection, Testing and Acceptance During Manufacturing

The work includes inspection and factory test witnessing of equipment and material for the project. The equipment 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 all contracts.

The consultant shall:

- Ensure contractor's compliance with deadlines for manufacturing, testing, shipping, and supplying equipment on site.
- Ensure that equipment and materials conform with contract specifications and standards.
- Examine any modification in relation to the contract specifications that the contractor

may wish to make. Any modification leading to additional costs must be submitted to EDCL for approval.

- 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.
- Acceptance procedures for all High Voltage (HV, MV, LV equipment is to be carried out in the manufacturer's site. For the rest of the works, EDCL shall hand the Consultant a list of the main materials for which the Consultant is to carry out acceptance procedures at the manufacturer's site.
- Ensure that all equipment and materials have been subjected to type tests already and certified and all additional tests described in the tender documents must be performed accordingly.
- Participate in factory tests and others for main items of equipment at contractor/suppliers' factories in collaboration with the executing agencies. The consultant price proposal for factory test witnessing shall include all consultant personnel expenses, travel, hotel, and allowance expense.
- Written reports shall be provided by the consultant on each factory inspection and testing.

8.6.1. Inspection of Material and Equipment Deliveries

- Ensure that materials delivered on site are in conformity with stipulated specifications and work schedules.
- Inspect and monitor damages, defects and the corresponding replacement of damaged equipment and materials.
- Issue acceptance certificates of goods.
- Checking proper storage of materials and equipment as per the manufacturer's storage procedure and recommendation.
- Check the quantities of equipment/materials supplied and certify contractor's invoices.

8.7. Works Completion and Site Tests and Commissioning

At the end of the construction works the consultant shall:

- Perform acceptance procedures for all the structures and equipment (transmission lines, substations and MV LV and service connections and issue the corresponding completion certificates in accordance with the relevant conditions of contract with prior consent of EDCL.
- Review and approve contractor's as-built Documentation are as per the Contract: drawings, maps, BoQs, Stacking tables operation and maintenance manuals, etc.
- Site inspection, tests and commissioning of transmission lines, substations and distribution shall be the responsibility of the contractors. However, the consultant shall:
- Review and approve the commissioning test procedure proposed by the contractors.

This shall set out:

- (i) The roles and responsibilities of each party involved.
 - (ii) Coordination of tests on the various lots/contracts.
 - (iii) A detailed program of commissioning tests for functional sub-assemblies or parts of works, in accordance with the Contractor's works schedule.
 - (iv) Protection system coordination and settings calculations.
 - (v) Commissioning test and inspection formats prepared by the contractors,
 - (vi) Define commissioning conditions such as the state and availability of the power network, interference with other structures in progress, safety procedures, etc.
- Coordinate all the tests to be performed by contractors.
 - Witness and approve the site inspection, commissioning test and final functions operation with the participation of EDCL staffs.

9. Payment Certification

Check the quantities of work carried out and equipment/materials supplied and certify contractor's invoices. Each contractor shall submit to the respective consultant's Resident Project Manager/Engineer,¹ statement showing costs of the work executed up to the end of the month. The form of the statement shall be in accordance with standard format agreed by EDCL and the consultant. All relevant measurement sheets and quality schedules shall be submitted together with the statement. The Resident Project Manager/Engineer of the consultant shall compare the statement with his own records and solve issues of differences with the contractor's representative. The updated master copies of progress charts shall be submitted to EDCL along with the monthly statement, the timetable progress charts (with planned and actual progress), the works diary, the monthly site financial statement, etc.

10. Site Meetings

The consultant shall:

- Consultant's Resident Project Manager/Engineer shall hold site meetings regularly as required with the contractors' site representatives and EDCL staff.
- Chair site meetings and draw up minutes of meetings,
- The meeting shall deal with (i) approval or rejection of executed work elements; contractor's work schedule, contractor's work method, temporary works, and additional works (if any), etc.

Minutes of the meeting shall be prepared and signed by the participating parties. Copies of the minutes shall be given to the participants. Other members of the Resident Project Manager's/Engineer's field staff should also attend the meeting.

10.2.1. Liaison Meeting

The Resident Project Manager, based in Kigali, shall hold quarterly meetings with all contractors' site managers and EDCL. The objectives of the meetings are:

- To thoroughly review and discuss the work progress of contractors.
- To resolve problems (if any),

-
- To review financial matters.

The consultant's Resident Project Manager, assisted by PIU coordinator of EDCL, shall be responsible for the preparation of the minutes of such a meeting.

The Resident Project Manager is responsible for ensuring the transmission lines, associated substations, MV distribution line, LV networks and customers connections are completed within the contractually agreed timeframe.

10.2.2. Site Diary

A one page, one-day duplicate diary shall be maintained on site by the consultant site supervisors. The site diary shall include:

- The weather conditions,
- Major works completed, accepted, or rejected.
- Written instructions given to the contractors.
- Problems encountered; and
- Site meetings and other events, which have bearing on the project implementation.

10.2.3. Reports

The Executing Agency (EDCL) and financier (the World Bank and Asia Infrastructure Investment Bank) of the Project consider of utmost importance the timely elaboration and submission of pertinent reports during the Project. All reports shall be submitted to EDCL according to the discussed and agreed formats with EDCL. After incorporating any requested modifications, the edited reports shall be submitted in final form to EDCL and the Financiers within one month after approval of the draft report. Quarterly Progress Reports (QPRs) and quarterly Environmental and Social Monitoring forms shall be submitted by the Consultant to the executing agency. The reports shall cover all aspects of Project implementation, including the status of progress against agreed implementation and disbursement schedules for all lots including implementation of environmental and social mitigation measures. The QPRs shall also highlight issues affecting Project implementation and proper corrective actions.

All documents and reports submitted including the contract documents must be in English.

10.2.4. All reports shall be submitted in 3 copies. Inception report

The Consultant shall submit inception reports to EDCL. The inception report shall be submitted within one month of the commencement of the consultancy contract. It will outline the Consultant's work plan, define the review and implementation schedule by task, specify submission dates for each one of the required reports in draft form, and assign the personnel by name and date period to each task. The proposed Project schedule shall be broken down by tasks and sub-tasks and presented in chart form in an acceptable form using Microsoft Project.

10.2.5. Progress Reports

The consultant shall prepare and submit a coordinated monthly and quarterly progress report to EDCL. The Consultant shall submit a monthly report each month including the state of progress of the works including financial aspect and the minutes of site meetings. The quarterly progress reports shall be prepared covering the technical and financial aspects of

works in accordance with the Bank's guidelines. The reports by contracts shall at least include.

Written description of the progress of the works and expenditure to-date, Progress of the works during the month, Future planned works and expenditure, Summary of the prevailing weather conditions at site during the reporting period, Technical problems, if any, Delays of any kind if any, List of consultant's and contractor's personnel, List of machinery and equipment scheduled and made available of the works by the contractors; and Any other issues, which could facilitate or affect the progress of the work. Tabulated summary of work progress, Graphical presentation of the Physical progress planned/actual, Cash flow planned/actual, Expected future progress and expenditure, and Labor force size.

10.2.6. Project Closure Report (PCR)

Upon completion of the project construction activities, the consultant shall prepare a provisional Project Closure Report (PCR) within a period not exceeding two (2) months. The PCR will form a comprehensive record of the design, construction and erection works accomplished including:

- i) A description of changes or modifications to the design.
- ii) Problems encountered and solutions adopted; and
- iii) Overall construction volume, quantities, and costs
- iv) Lesson learnt on Project design and implementation,

The procedure for preparing this report is as follows:

- (i) The Consultant shall submit the table of contents to the Owner for approval before starting to write the report.
- (ii) After receiving approval of the table of contents, the Consultant shall draw up a provisional report in three (3) copies. This will be submitted to the Owner, who will then have a period of thirty (30) days to make any observations.
- (iii) Based on the Owner's observations, the Consultant shall print two (2) copies of the provisional completion report.

10.2.7. Final Completion Report

At the end of the guarantee period and after final acceptance, provisional completion report drawn up after the provisional acceptance of the works shall be updated to form the final completion report for the works. This will be submitted in soft and two (2) hard copies.

11. Knowledge Transfer and Training of the Employer's Staff

EDCL consider this consultant services contract as an opportunity for knowledge transfer to several of their staff through in country on the job training working with the consultant and contractors. Such training and knowledge transfer shall be conducted during both the stages of review & approval of the contractor's detailed design, as well as during the construction stages of the Project.

During execution of the consultant's service contract, the consultant shall:

- Pay special attention to training and involving EDCL staff,
- Organize training on the job for the Executing Authority's engineers responsible for the works and those responsible for the operation and maintenance of the equipment by integrating them into his works supervision team,

-
- Monitor the training courses provided by Contractors in the framework of their contracts,
 - Organize/supervise and monitor training to increase awareness of occupational health and safety issues to minimize health risks according to ESMP,
 - Organize/supervise and monitor training in the executing agencies to increase awareness of environmental and social issues according to ESMP.

12. Assistance During the Defects Liability Period.

The consultant shall:

Ensure that all defects and remarks are properly cleared/removed by the contractors as per the contract and submit quarterly reports to EDCL.

Ensure that all operation and maintenance manuals and all types of as-built drawings are submitted and handed over to EDCL as per the requirement and quantity specified in the contracts.

During the guarantee period, the Consultant shall answer questions sent to him by fax or email from his present location.

At the end of the liability period, the consultant's Resident Project Manager shall perform a one-week assignment in Rwanda to prepare final acceptance certificate and prepare a final report on this basis.

12.2. Assistance to the Owner with Operation Maintenance

- The Consultant shall draw up a general operation and maintenance manual giving references to the operation and maintenance manuals for the key equipment supplied and installed by Contractors.
- The Consultant shall assist the Owner in classifying and archiving all the operation and maintenance manuals received.

13. CONSULTANT'S TEAM, QUALIFICATION REQUIREMENTS AND MAN-MONTH ALLOCATION

The Consultant shall finalise his organisation chart in accordance with the needs of the project. All positions shall be assigned to highly qualified staff, in view of the works implementation schedule, the Consultant shall draw up a table showing the man-months required for all staff assigned to the tasks described above.

13.1 General Information

The consultant must be highly qualified for design, supervision, and implementation of the Project, and for that purpose should submit evidence of firm's previous experience in works associated with design, supervision, and construction management of similar nature (experience in transmission lines, substations, distribution systems projects).

The consultant's technical proposal shall propose an organization chart in accordance with the needs of the Project, with a detailed description and list of key personnel with their Curriculum Vitae (CV). All positions shall be assigned to highly qualified staff. The technical proposal shall also, include a table draw up showing the man-months required for all staff

assigned to the tasks described above.

The consultant shall assign a Resident Project Manager or Resident Engineer to be based in Kigali. The consultant's Site Supervision Staff should be available full time during the construction activity of each lot of the Project.

The consultant shall assign the following site supervisors during the progress of various activities as required.

- (i) Transmission line design engineers with civil works monitoring proven experience in transmission lines. Each lot will have its own independent site supervisor.
- (ii) The transmission line erection engineer could be civil or electrical engineers.
- (iii) Substation electromechanical engineers with proven experience on substation site erection supervision
- (iv) Distribution lines and network design engineers with proven experience in distribution system. Each lot will have its own independent site supervisor.
- (v) The Distribution lines and network erection engineers shall be electrical engineers.
- (vi) Substation civil works construction engineers with proven experience on civil works construction supervision
- (vii) Protection, control and SCADA test and commissioning engineers with proven experience on protection settings calculation, testing and configuration of SCADA system.
- (viii) Communication test and commissioning engineers with proven experience on optic fibre communication system
- (ix) Environmental Specialist and Social Specialist

All site supervision staff should have adequate experience, as in this Project area.

13.2. Staff at Head Office for All Lots

The consultant shall set up a support group at his head office comprising specialists in all the relevant fields, in particular specialists in designs of substations and high-voltage transmission lines, optical ground wire telecommunications, occupational and community health and safety, social issues (particularly resettlement) and the environment. This team at head office shall provide permanent support to the staff on site and shall be managed by the consultant's Project Director or Manager. In collaboration with the site engineers, this team shall take part in the technical inspection of the working design studies.

13.3. Key Personnel

The consultant should be assured that the proposed key personnel for this consultancy service agreement should be available for the duration of the contract. Therefore, after contract award, the consultant cannot issue a request for replacement of any key personnel, unless it is beyond the consultant's reasonable control such as retirement, death, and medical incapacity that shall be justified with sufficient evidence. The consultant, when nominating the key personnel on his technical proposal, should carefully check the medical fitness and the age of the key personnel to avoid unnecessary dispute with the Client for replacement of the key personnel after contract award. This issue has become of prime importance from recent experience and has become intolerable for the client.

13.3.1. Resident Project Manager

The consultant shall assign one Resident Project Manager. The consultant's Resident Project Manager must be an electrical engineer, with at least fifteen (15) years of experience in the field of engineering and construction of transmission lines, substations and construction of MV/LV lines, and should have an extensive experience in management of power system projects. He/she must have managed assignments like the present services and should be proficient in English language. Must be at least a graduate with Master of science in electrical engineering.

Adequacy for the assignment

Must have minimum of fifteen (15) years of experience in the field of substations, high-voltage transmission lines and distribution projects and should have an extensive experience in management of power system projects, ten (10) years of which must be in project management and construction supervision.

Must have a minimum experience of working on five (5) similarly complex projects (power transmission projects of 110kV level or above, substations and MV distribution lines) as Project Manager.

13.3.2. Resident Engineers (x3)

The Resident Engineers should be available full-time starting from the Supervision Service Contract commencement date. They are responsible for day-to-day communication with contractors and executing agency.

The Resident Engineers must each have at least ten (10) years of experience in the field of substations, high-voltage transmission, and MV/LV distribution lines projects and should have an extensive experience in engineering works management preferably power system projects, He/she must have supervised assignments similar in complexity to the present services, should be proficient in English language and must be at least a graduate on Master of science in electrical engineering.

Adequacy for the assignment

Must have minimum of ten (10) years of experience in the field of substations, high-voltage transmission and distribution lines projects and should have an extensive experience in management of power system projects, seven (7) years of which as project management and construction supervision. Must have a minimum experience of working on three (3) similar projects (power transmission projects of 110kV level or above and distribution system projects) as Resident Engineer.

13.3.3. The transmission line design engineer (1)

He/she shall be at least a graduate with B.Sc. in electrical engineering with at least seven (7) years of experience in the field of high-voltage transmission lines designs. S/he must have

carried out five (5) assignments like the present Project for 110kV or above. S/he shall provide expertise in the designs of 110kV or above transmission lines.

13.3.4. The transmission line construction supervisors (Engineers) (x2)

H/she shall be at least graduates on B.Sc. in electrical or Mechanical engineering with at least seven (7) years of experience in the field of high-voltage transmission lines construction, preferably with experience of local conditions. They must have carried out five (5) assignments like the present Project for 110 kV or above.

13.3.5. Transmission line test and commissioning engineer (1)

S/he shall be at least a graduate with B.Sc. in electrical or Mechanical engineering with at least seven (7) years of experience in the field of high-voltage transmission lines construction, preferably with experience of local conditions. They must have carried out five (5) assignments like the present Project for 110kV or above. The Transmission Lines test and Commissioning Engineer should be proficient in English.

13.3.6. Substation electromechanical design engineer (1)

S/he must hold at least a Bachelor of Science (BSc) in electrical or electromechanical engineering from a recognized university and shall be specialized in HV AC substations design. S/he must have designed at least five (5) substation assignments like the present project for 110kV or above. He/she must have seven (7) years of experience at least in the field of substations construction and design, preferably with technical know-how in power system protection/control.

13.3.7. The substation electromechanical erection supervisors (engineers) (x4)

They must be at least graduates with B.Sc. in electrical, mechanical, or electromechanical engineering from a recognized university and shall be specialized in HV AC substations construction and equipment installations and must have carried out at least five (5) assignments like the present Project for of 110 kV or above. They must have seven (7) years of experience at least in the field of substations construction and design, preferably with technical know-how in power system control and protection. The Substations electromechanical erection engineers should be proficient in English.

13.3.8. Civil works design engineer (1)

S/he must be at least a graduate with B.Sc. in Civil Engineering from a recognized University, must have a minimum experience of seven (7) years in substation and transmission lines civil works design. they should be able to use planning systems and tools. He/she Must have for (3 years) in substation or transmission lines projects of 110kV level or above as civil works design engineer.

13.3.9. Civil works construction supervisors (x4)

They must be at least graduates with B.Sc. in Civil Engineering from a recognized University, must have a minimum experience of seven (7) years in substation and transmission lines civil works construction supervision. They Must have supervised at least three (3) substation or transmission lines projects of 110kV level or above as civil works supervisor.

The civil engineers should be proficient in English.

13.3.10. Distribution line design engineer (1)

S/he shall be at least a graduate with B.Sc. in electrical engineering with at least seven (7) years of experience in the field of medium and low voltage distribution lines designs. S/he must have designed at least five (5) assignments similar in complexity to the present Project. They shall provide expertise in the designs of low and medium voltage distribution lines in the project.

13.3.11. Distribution line construction supervisors (Engineers) (x3)

They shall at least be graduates with B.Sc. in electrical or Mechanical engineering with at least seven (7) years of experience in the field of medium and low voltage distribution lines construction, preferably with experience with local conditions. They must have carried out five (5) assignments like the present Project. The Distribution Lines Experts should be proficient in English.

13.3.12. Telecommunications Expert (1)

S/he must be at least a graduate with B.Sc. in telecommunications or electrical engineering from a recognized university and must have seven (7) years of experience on fiber optic communication equipment design, installation, testing and configuration. The engineer should be proficient in English. S/he must have worked on a minimum of three (3) similar projects in terms of complexity.

13.3.13. Substation Protection, Control and SCADA Expert (1)

S/he must be at least a graduate with B.Sc. in electrical engineering from a recognized University with ten (10) years of experience on designing, installing, and commissioning of HV substation equipment control, protection, monitoring, and remote management. S/he shall perform coordination of the protection system, settings of protection relays and should be conversant with SCADA systems. S/he should be proficient in English and have a minimum of experience of working on three (3) similar projects.

13.3.14. Substation Protection, Control and SCADA Commissioning Engineer (1)

S/he must be at least a graduate with B.Sc. in electrical engineering from a recognized University and must have ten (10) years of experience on designing, installing, and commissioning of HV substation equipment control, protection, monitoring, and remote management. S/he shall perform coordination of the protection system, settings of protection relays and should be conversant with SCADA systems. S/he should be proficient in English and must have a minimum of experience of working on three (3) similar projects.

13.3.15. Environmental Specialist (2)

S/he must be at least a graduate with B.Sc. in Environmental, Social, or related studies. This specialist should have ten (10) years of experience in environmental and social analysis of large infrastructure projects including transmission and distribution lines, substations, and service connections. They must have participated in the implementation of environmental

and social management plans and resettlement action plans on the ground for at least four (4) similar projects. The experts must be fluent in English.

13.3.16. Social Specialist (2)

S/he must have a BA in Social Science or Social Work and Administration or related studies. The specialist should have five (5) years of experience in environmental and social analysis of infrastructure projects including transmission lines and distribution networks. S/he must have participated in the implementation of environmental and social management plans and resettlement action plans on the ground for at least four (4) similar projects. social and Health experts should be fluent in kinyarwanda since they will be directly engaging with the communities.

13.3.17. GIS Specialist

General experience: She/he must be at least a B.Sc. degree holder in geography or GIS and other related field. Specific experience: GIS specialist shall have five (5) years of experience in geographical data collection and analysis, Mapping of distribution and access project. S/he must have experience in the use of GIS tools and software (ArcGIS, etc). These experts must be fluent in English.

13.3.18. Health and safety Specialist (2)

They must have a bachelor's in environmental health sciences or health and safety. They should have five (5) years of experience in environmental, health and safety within infrastructure projects preferably transmission lines and distribution networks projects. They must have participated in the implementation of environmental and social management plans and resettlement action plans on the ground for at least four (4) similar projects. They must be fluent in English and Kinyarwanda.

13.4. Person-Month Allocation

For proper administration and disbursement of the service contracts. Consultant shall indicate and allocate in his proposal man-months for proper execution of the project. Considering the technical and financial evaluation, contract shall be awarded to a consulting firm whose entire result reflects the combined (technical and financial) evaluation criteria. The Consultant should assume that all contractors and suppliers should be mobilizing at the same time to all Project sites. To achieve this, the consultant is responsible for the Review of all designs, specifications and plan of each contract and issuing operational certificate to all contractors.

10.5. PHASE OF PROJECT IMPLEMENTATION

All phases of the project shall be executed in the period of forty-eight (48) months and 12 months for reliability period, the contract will be effective from the date of signing the contract.

10.5.1. Preliminary works and design stage

This phase starts with contract signing date up to approval of the detailed design of each EPC contract.

Key deliverables under this phase are:

- Review and approval of preliminary designs and works including topographic surveys, soil investigations and preliminary designs of transmission lines, substations and MV line, other works to be performed before installation works
- Review and approval of Details for compensation of all projects affected people (PAPs), and other related works, other works to be performed before installation works

10.5.2. Construction Phase project by project

This period starts from the construction contract signing date up to operational date of the last construction contract and submission of Project Completion Report to the client as per detailed scope of work.

10.5.3. Defect Liability Period project by project.

Even though the defect liability period is twelve (12) months, the consultant will be required only for short-term periods. The consultant must propose and provide a schedule with breakdown for the various activities called for in the TORs, including the home office and field activities.

10.6. PERSON-MONTH ESTIMATE:

The minimum estimated person-months by the client is 361 person-months. The minimum proposed person-months by the consultant shall not be less than the estimated person-months by the client as presented below for each key personnel and activity. However, the consultant, based on the complexity of each activity and understanding of the required services to be rendered, shall propose above the minimum estimated person-month by the client for any of key personnel and the total person-month with justification of additional time input. The summary of the person -months is provided in Table 1 below.

TRANASMISSION AND DISTRIBUTION ASCENT PROJECTS			
SN	expert position	number of staff	total time input
1	Project Manager	1	18
2	Resident Engineers	3	45
3	Transmission line construction supervisors (engineers)	2	36
4	Transmission line design engineer	1	8
5	Transmission line test and commissioning engineer	1	6
6	Substations electromechanical erection supervisors (engineers)	3	36
7	Substation electromechanical design engineer	2	12
8	Civil works construction supervisors (engineers)	2	16
9	Civil works design engineer	2	12
10	Substation protection, control, and SCADA commissioning engineer	1	6
11	Substation Protection, Control and SCADA Design Engineer	1	6

12	Telecommunications Expert	1	6
13	Environmental Specialist	2	20
14	Social Specialists	2	20
15	GIS Expert	2	16
16	Distribution line design engineers	1	8
17	Distribution Lines Construction Supervisor	3	36
18	Health and safety Specialist	3	36
	Total man months		361

The Financial Proposal (shall clearly show the breakdown of costs for each component {i.e., (i) **Transmission line and associated substations**(ii) **MV Network Reinforcement**}. This contract service will be executed using a lump sum contract.

10.7. CONSULTANT’S FEES AND EXPENSES

The fees and expenses of the consultant should be read in conjunction with the relevant sections of the Request for Proposal (RFP) and shall include:

- i. Office coordination in Kigali & site offices.
- ii. International travel expenses.
- iii. personnel expenses.
- iv. field expenses including working equipment and materials, purchase of five new vehicles and its running cost, house accommodation for experts, etc.
- v. Expenses of the workshop, meetings including, travel expenses, accommodation, meals, international transport, allowances/per diem, travel insurance, cost of venues, etc.
- vi. Project offices costs

The Financial Proposal shall be clear and formal as possible with breakdowns of each subtotal into remuneration, reimbursable, miscellaneous, and grand total. The client during proposal evaluation will take care to consider all items on the same basis and on equal ground for comparison. All items in the Technical Proposal incurring expenses must be supported in the corresponding Financial Proposal.

11. DATA, LOCAL SERVICES AND FACILITIES TO BE PROVIDED

The consultant shall supply all necessary equipment for a high-quality performance of its mandate.

The consultant in his financial proposal should include notably the cost of: (i) vehicles that shall be used by Project team until completion construction), (ii) office equipment such as scanners, plotters, computers; printers, platforms shall be equipped in each office. (iii) surveying instruments such as GPS devices, Total Stations; graphic scanning and other necessary tools for the performance of the consultancy services shall be used for best practice of service.

All communication-related costs made by the consultant (telephone, fax, courier, internet, etc.) shall be covered by the consultant. The consultant shall open a coordinating office in Kigali-Rwanda and all related costs shall be covered by the consultant.

The consultant’s resident engineer shall ensure that all site supervisors are transported in

vehicles of the consultant firm. Such transport vehicles should be available from the deployment of consultant staff at the site. The cost of the vehicles' insurance and maintenance throughout the period of the works shall be borne by the Consultant. The consultant firm should ensure that these transportation requirements are included financial proposal. The vehicles shall be handed over to the Executing Authority in good working condition at the completion of the works under supervision/project.

The coordinating office of consultant shall in addition equipped by the essential tools for best practice like GPS devices with software and accessories for restoring data on microcomputer, PC-type Lap top computers, A4 laser printers coloured printer, A3/A4 ink jet colour printers, black/white photocopying machines, A4 and A3 format, with loader and sorter.

Client/EDCL will provide the following facilities to the consultant:

- a) Access to the project area covered by this Project,
- b) Access relevant design documentation of existing substations to the extent of their availability. If available
- c) All available Feasibility studies, ESIA, ESMP and RAP studies if available
- d) Liaise with the government and facilitate all requirements/supports needed for the consultant or his team to perform their duties in Rwanda.
- e) Counterpart staff to work with consultant's team.
- f) With work permits and visas for Rwanda plus introductory letter for travels in the region related to the project.