Terms of Reference

Owner's Engineer services for the Supply, Installation and Connection of 6 Small Scale Wind Turbines with total capacity of 21 kW.

Type of Contract: Institutional Contract (National)
Languages: English
Duration: Approximately 6 months
Location: South Africa

Background

The Eastern Cape (EC) Province of South Africa (SA) and the Lower Saxony State of Germany have been engaged in a longstanding twinning partnership. As part of this twinning arrangement, a mini-grid pilot project was initiated in order to electrify the small village of Upper Blinkwater (UB) in the Raymond Mhlaba Local Municipality. The village is comprised of approximately 70 households, a school and a church surrounded by mountains (-32°34'34.88"S, 26°33'7.08"E). The. The project represents a model for supplying high quality energy to deep rural villages which are not due to be connected to the national electricity grid in the foreseeable future, providing improved living conditions and economic opportunities for inhabitants. It seeks to demonstrate that even in the absence of a comprehensive power grid, communities can be provided with electricity by relying predominantly on renewable energies. This represents a first of its kind technical and institutional model for rural electrification which, if successful, can be implemented in other rural villages in the region. This holistic village development concept aims to provide much needed socio-economic development opportunities for inhabitants, slowing down rural-urban migration.

With careful attention to the demand requirements of the village, the mini-grid power system was developed and includes a 75 kWp photovoltaic (PV) system, 370 kWh battery storage, and a 20 kW backup diesel generator (400 l diesel storage) – all with an integrated vending system, smart meters and demand side management interface. Currently, the UB mini-grid project does not include any wind power. The EC Government, through the Department of Economic Development, Environmental Affairs and Tourism, expressed an interest in collaborating with South Africa Wind Energy Project (SAWEP) Phase 2 to add the wind component into the UB mini-grid project. SAWEP is supported by the United Nations Development Programme (UNDP) with resources from the Global Environment Facility (GEF), and implemented by the Department of Minerals Resources and Energy (DMRE) and the South African National Energy Development Institute (SANEDI) with a variety of partners: https://sawep.co.za/

The PV and diesel genset components of the UB project is already at an advanced stage which makes it a win-win situation for SAWEP and the UB project. The addition of preferred locally manufactured small scale wind turbines in a cost-effective and robust manner in support of local industries will complement this project, with small-scale wind turbines that operate at lower heights than large turbines and where

wind speed is not optimal, since the area is mountainous.

Description of Project

The Project includes the design, planning, engineering, procurement (manufacturing/supply according to specifications), construction/erection, connection to the PV, genset system, testing and commissioning of 6 x small scale wind turbines with total capacity 21 kW including one year of operation, maintenance and capacity building services to the UB community. The work will be procured through a separate contract (see EPC ITB document attached) that include specifications for: Wind Generator, Wind Generator Mast, Distribution Panel, Wind Generator Inverter, Connecting Cables, AC and DC connections, Voltage limiter, Charge Controller and Spares.

The local community will be included in the implementation and the operation of the system from day one. Community involvement will be shared with the already appointed Social Facilitator.

Based on the background above, the UNDP intends to hire a Local Consulting Firm as its Owner's Engineer for support in: (i) reviewing the designs and specifications; (ii) contract management, and (iii)construction supervision, commissioning, and acceptance tests. The implementation period for this service contract is expected to be about 6 months in total.

Organisational setup

- SAWEP is a UNDP-supported Project.
- UNDP is considered the 'Employer' and 'Client', and is responsible for issuing of this contract, its administration and making payments. The contract for the Engineer Procurement & Construction & Operation & Maintenance Contractor (separate bid) will also be held by UNDP.
- CSIR will manage, provide quality assurance and approval to UNDP to make payments to the Owner's Engineer and the EPC Contactor.
- The Owner's Engineer will supervise and manage the EPC Contractor, and manage commissioning and acceptance tests, etc.
- EPC and O&M Contractor (separate bid): the role is to implement and connect 6 Small Scale Wind Turbines with one year Operation, Maintenance and Capacity building services).

1.1. Competencies

The appointed Owners Engineer shall display the following competencies:

- Cultural, gender, religion, race, nationality and age sensitivity and adaptability;
- Ability to lead strategic planning, results-based management and reporting;
- Builds strong relationships with clients, focuses on impact and result for the client and responds positively to feedback;
- Consistently approaches work with energy and a positive, constructive attitude;
- Demonstrates good oral and written (English) communication skills;
- Demonstrates ability to manage complexities and work under pressure, as well as conflict resolution skills and sound labour relations;
- Overall Professionalism, Integrity, Enthusiasm and Commitment; and

- Good problem-solving skills; ability to apply good judgment in the context of assignments given.

1.2. Scope of Work

The objectives of the consulting services shall be to ensure that the Project is implemented with a high standard of workmanship and quality, on strict schedule, and within the budget, in accordance with the specifications and drawings of the Contract, to acceptable environmental and social standards and in accordance with prudent engineering practice.

The objectives of the services will be achieved through the following major activities:

1. Designs and Documents Review;
2. Supporting Contract Management; and
3. Construction Supervision, Commissioning, and Acceptance Testing Services.

The appointed Owners Engineer is expected to:

- Include cost for all travel and accommodation and meetings;
- If necessary provide more than one qualified person to carry out the Scope of Work;
- Be on site at least twice a month to monitor the progress made in relation to the implementation of and its full adherence with the Project program, the quality of construction, installation of mechanical engineering and electrical systems;
- Constantly discuss solutions with CSIR when an action is not progressing according to the Project program;
- Contact CSIR (by email, Skype or other means) if the EPC Contractor deviates from the Project program;
- Regularly brief the CSIR on the status and progress made;
- Perform other reasonable tasks CSIR may request in relation to the construction of the wind component.

During the project implementation stage, the service provider shall act as the Owner's Engineer for the Construction and Equipment Contracts. The service provider will carry out duties and responsibilities and assume necessary powers, as stipulated in the agreement for consulting services from the Owner's Engineer. Such agreement may include but not limited to:

1. Review and confirm quality assurance program of the EPC Contractor.
2. Review and confirm the delivery of material to the site.
3. Review and clear construction drawings, schedules and process proposed by the EPC Contractor.
4. Review and confirm quantity and quality of works completed, which would serve as a basis for payment to the EPC Contractor according to the Contract terms.
5. Hold regular meetings with the EPC Contractor r to review project progress, technical issues, and measures to achieve the targeted cost, quality and schedule control.
6. Manage safety, social, and environmental related issues during the construction.

7. Review and confirm the acceptance test proposals made by the EPC Contractor and support the EPC Contractor in completing the acceptance test.
8. Review and confirm the O&M Manual, including training programs for RMLM engineers on O&M, prepared by the EPC Contractor.
9. Providing additional technical support to the Employer as needed for successful implementation of the Contract.

1.2.1. Generation system component

The service provider shall perform the duties of the Engineer as defined in the Owner's Engineer's contract for the above works and specifically carry out the following duties for the Generation system component:

- Review designs and drawings submitted by the EPC Contractor, on the equipment and approve or amend the same in consultation with the CSIR.
- Monitor and supervise on site testing of the major equipment to ensure that they meet the requirements and specification under the contract in consultation with the CSIR in presence of the CSIR personnel.
- Inspect the manufacture of equipment at the EPC Contractor 's workshops, carry out the required tests (if any required), and certify its adequacy and quality before items are packed and shipped to the sites of works, jointly with the CSIR.
- The list of equipment to be inspected will be supplied on appointing of EPC Contractor.
- Supervise the installation of the electrical and mechanical equipment in a satisfactory and safe manner in accordance with the specifications and contract requirements.
- Prepare a "Completion Report" for the works under the contract, including a summary of final costs.

1.2.2. Civil and electrical works component

The service provider shall perform the duties of the Engineer as defined in the Owner's Engineer's contract for the above works and specifically carry out the following duties for the civil and electrical works component:

- Review the design of the civil and electrical works.
- Review the construction drawings for the civil and electrical works of the contracts. The construction drawings shall clearly impart the final design of the works, and shall be revised and supplemented to meet field conditions as the works progress.
- Assume full responsibility for the contract management and construction supervision of the civil works. The Owner's Engineer shall also perform all the duties and functions required of him/her as the Owner's Engineer under the conditions of Contract for the civil works.
- Check surveys and bench marks established by the EPC Contractor at each site of work and ensure accuracy of surveys and bench marks connecting various sites.
- Supervise interconnection and synchronization of wind turbines to the mini grid in safe manner.
- Prepare a Completion Report for the works under the contract, including a summary of final costs.

1.2.3. Project management component

The service provider shall perform the duties of the Engineer as defined in the Owner's Engineer's contract for the above works and specifically carry out the following duties for the project management component:

- Formulate and establish procedures for the proper management, administration and quality assurance of all contracts for the construction of the Project as well as the Owner's Engineer's own services, and shall effect monitoring and control of these procedures.
- Check and approve the relevant reports, which shall be in a format agreed with the Employer and which shall be submitted in number of copies to be agreed with the Employer.
- Supervising the commissioning of all structures and plant on the Project.
- Review and finalize the detailed O&M manuals for the complete plant and all subsystems provided by the EPC Contractor under the construction and equipment contracts.
- The service provider shall liaise with the CSIR and the EPC Contractor to ensure that uniform, complete, high quality O&M manuals are prepared for the Project.
- Measurement and verification of work quantities and certification of EPC Contractor's invoices for approval and release of payments.
- Monitor the manufacturing and delivery of equipment to ensure smooth and timely completion of the whole Project.
- Make recommendations to the CSIR regarding settlement of claims by the EPC Contractor.
- Prepare items of work to be completed by the EPC Contractor during Maintenance/Defects Liability Period.
- Payment will be approved and effected by UNDP within 30 days following endorsement of Reports by CSIR

1.2.3.1 Project Program

Within 20 days of awarding the Owners Engineer Contract, him/her shall prepare, and submit to the CSIR for consent, a detailed Project Program of all of the activities related to the execution of the Project. The program shall be based on the reviewed and accepted program of the EPC contractor and shall include all activities that interface or otherwise relate to the work being done by the EPC Contractor r.

Submission of program data shall include as a minimum:
1) Tabular listings giving;
   - early starts and finishes
   - late starts and finishes
2) Free and total floats;
3) Computer generated bar charts;
4) Information on assumed shutdown periods; and
5) Vacation days, and other non-working time periods.

When this program has been approved by the CSIR, it shall become the new base-line program for monitoring the execution of the Project (the progress monitoring with milestones) and shall not be modified or revised by the Owner's Engineer without the prior consent of the CSIR.

If updating of the Project program is required, a revised program shall be prepared by the EPC Contractor and reviewed by the Owner's Engineer, and resubmitted to the CSIR for its consent. When approved, this program will become the new baseline program for all future work. During the performance of the work, the Owner's Engineer shall monitor his program and shall provide update reports on a monthly basis together with his monthly report on progress of the works. The monthly updates of the Owner's Engineer's program shall be monitored against the approved program and all variations shall be noted. The future impact of major variations shall be determined and analyzed. Necessary corrective measures or re-planning of the EPC Contractor's work shall be established by the Owner's Engineer. The CSIR shall be notified of corrective measures. When approved, this program will become the new baseline program for the project.

1.2.4. Municipal handover and support component

Once the works have been completed and commissioned, they will be handed over to the Raymond Mhlaba Local Municipality as an asset for operation and maintenance. As such, the service provider will be required to develop and manage the hand-over process to the municipality, including all technical, statutory, oversight and intergovernmental requirements and the supervision of resolution of possible defects found during the acceptance tests.

1.2.5. Reporting and working arrangements

The service provider shall check and approve the EPC Contractor reports, which shall be in a format agreed with the CSIR and which shall be submitted in number of copies to be agreed with the CSIR.

a. The service provider's monthly report shall be coordinated with the requirements set forth in "Project Program" to include submission of the following:
   - Cumulative expenditure record and estimated cost at completion of each item, Variation Order and claim for the Contracts on construction, equipment, and consulting services;
   - Record of Variation Orders issued and being prepared; and
   - Claims received, under consideration and settled.
   - Technical reports on instrumentation monitoring or similar construction performance.
   - Provide any special reports as requested by the Employer.

b. Quarterly project progress monitoring and quarterly financial monitoring reports.

1.3. Qualifications

The appointed Owner's Engineer shall have the following minimum qualifications and competencies:

- A suitably Degreed Engineer/s , preferably Civil, Mechanical and Electrical;
- Professional Engineering Certification with the Engineering Council of South Africa, and adequate professional liability insurance;
- Minimum of 10 years experience in engineering design and monitoring/supervisory responsibility within the infrastructure and engineering field;
- Knowledge of International and local standards related to Structural and Civil Engineering of Small Wind Farms in particular IEC 61400-2;

- Fluency in English;
- Previous relevant working experience with a municipality, the UN or other international organizations are an asset;
- Must have experience in small scale wind;
- Must have experience as owner's engineer in renewable energy projects; and
- Must have experience in working with EPC contracts.

1.4. Duration

It is estimated that the EPC design/source, procurement, installation, connection, testing and commissioning of the wind component will take max 5 months. The Owner's Engineer will be required on a part time basis throughout the period and will be required on site for major hold points, commissioning and compliance testing. Maximum contract period is estimated as 6 months.

3.6 Remuneration and Payment

Payment shall be made as approved by the CSIR as per the Project Program (see 1.2.3.1) confirmed with the appointed EPC Contractor.

The Owner's Engineer is requested to quote based on the above for:

- 370 hours of owners engineering and related services; and
- 12 Visits to site.

CRITERIA FOR SELECTION

Applicants will be evaluated based on the lowest priced technically qualified methodology. When using this method, the award of the contract should be made to the service provider whose offer has been evaluated and determined as responsive/ compliant and having received the minimum score of 70% out of 100 % of the technical score. Selection criteria will be based on functionality, educational background, skills and experience. The selection of the successful service provider will be aimed at maximizing the overall qualities in required areas of competence.

Out of the maximum score of 100 points, the score for technical criteria will be 70% - 70 points, and for financial criteria 30% - maximum 30 points.

Technical Criteria - 70% of total evaluation (70/100) – max. 100 points:

- Suitably Degreed Engineer/s , preferably Civil, mechanical and Electrical (15);
- Professional Engineering Certification with the Engineering Council of South Africa and adequate professional liability insurance (15);
- Minimum of 10 years' experience in engineering design and monitoring/supervisory responsibility within the infrastructure and engineering field (10);
- Knowledge of International and local standards related to Structural and Civil Engineering of Small Wind Farms in particular IEC 61400-2 (20);

- Fluency in English (5);
- Previous relevant working experience with UN or other international organization is an asset (5);
- Must have experience in small scale wind (10);
- Must have experience as owner's engineer in renewable energy projects (10);
- Must have experience in working with EPC contracts (10);

3.7 Reference Standards

All works should be in compliance with IEC 61400 and in particular, **IEC 61400-2:2013** which outlines safety philosophy, quality assurance, and engineering integrity and specifies requirements for the safety of small wind turbines (SWTs) including design, installation, maintenance and operation under specified external conditions.

All construction for this project must be completed in accordance with the Occupational Health and Safety Act 85 of 1993, South Africa. All equipment and services supplied shall comply with the standards listed in the EPC ITB document attached.

6. Application procedures

Qualified candidates are requested to apply online and submit their proposals on bid.pretoria@undp.org by 17th January 2020.

The application should contain:

- **Cover letter** explaining why you are the most suitable candidate for the advertised position; and
- **Brief methodological note** on how the work will be undertaken.
- CV demonstrating qualification and competencies, and three references
- Reference standards (see 3.7)

Financial Proposal* - should be kept as a separate document and should specify a total lump sum amount for the tasks specified in this advertisement. The financial proposal must include a breakdown of this lump sum amount (number of anticipated working days and any other possible costs). **Please note that the **financial proposal is all-inclusive** and shall take into account various expenses incurred by the Owner's Engineer during the contract period*