Terms of Reference for Electromechanical Engineer
Borama Water Supply Project, Ministry of Water Resources Development, Somaliland - P101-045

1. Background

The Somaliland Development Fund (SDF) was established in 2012 to provide a single vehicle through which development partners could support Somaliland's development goals. The first phase of the SDF was implemented in 2013-2017 and supported the Government of Somaliland (GoSL) filling a critical gap through funding projects that are fully aligned to the National Development Plan (NDP) while at the same time recognizing the role of GoSL in the delivery of basic services.

The Somaliland Development Fund – Phase 2 (SDF2) covers the period 2018 – 2024. SDF2 is conceived as an inclusive economic development programme. It supports the GoSL in delivering infrastructure that is relevant for inclusive economic development. It focuses on sustainable investments that spur job creation and fast growth, while at the same time laying the foundation for long-term resilience and development, leading to a more stable and peaceful Somaliland. SDF2's ambitions are fully aligned with the NDP2 and reflect the priorities set out in Somaliland Vision 2030. Like in SDF1, all support will be aligned with government priorities as defined in Somaliland's second National Development Plan (NDP2) 2017-2021. The Fund Manager is responsible for the day-to-day management and administration of the Fund.

The objectives of the SDF2 are threefold:

- Support increased inclusive economic growth through investment in productive, strategic infrastructure to enhance economic growth and revenue generation.
- Strengthen and maintain the capabilities of the government of Somaliland to prioritize and manage the sustainable and equitable development of Somaliland's infrastructure.
- Support strong government ownership of development priorities aligned with the National Development Plan.

2. Background to Project

2.1. Ministry of Water Resource Development

The Ministry of Water Resource Development (MoWRD) is mandated to ensure that Somaliland citizens have easy access to clean; adequate and affordable WASH facilities in a sustainable and environmentally friendly manner. Ministry's strategic purposes are: 1) development of underground and surface water resources, 2) improvement of regulatory framework and oversight of water sector and sustainable management, 3) strengthening capacity of MoWRD and its constituent bodies, 4) coordination and information management of WASH sector in Somaliland, and 5) mitigation of droughts and impacts of climatic and environmental changes to national water resources. MoWRD was allocated funds from SDF2 to implement the Borama Water Supply project in Borama town, Awdal region of Somaliland as a part of the SDF2 transition projects.

2.2. Borama Town – project location

Borama town is the regional capital of Awdal and is located 120 km west of Hargeisa. The population of Borama Town is estimated to be 103,000.[1] Taking an average annual growth rate of 3.2%, the population will be 214,000 persons by 2038. It is 3 km from the north of the Ethiopia-Somaliland borderline with the upper catchment of Durdur watershed between latitude 9° and longitude 23°. A PPP option is in place for the management of the water supply system in Borama Municipality. SHABA, a private operator, took over the water delivery services in October 2003. The first lease tripartite agreement between the MoWRD, SHABA and Borama Municipality of 10 years was ratified effectively transferring service delivery responsibilities to the private operator and making this the first pilot PPP model in Somaliland. In September 2013, the lease agreement was renewed for another 10 years.

2.3. The Project

The Borama water supply depends on ground water supply from three aquifers; current records show that the water table in these aquifers is steadily decreasing and in a period of four to five years, there will not be any water available to supply to the system.[2] Therefore, this project intends to contribute to alleviating a potential water shortage in Borama.

The Borama Master Plan estimated that by 2038, the total daily domestic water demand will be 8,550 cubic meters and the industrial/commercial demand will be 850 cubic meters, totalling 9,400 cubic meters per day. At present, six (three majorly contributing and the other three having a meagre contribution) out of nine wells are functioning, with a total production of 3,000 m^3/day. To meet the present water demand, the boreholes must be pumped continuously with some boreholes working for 23 hours and others for 16 hours. This has two consequences: the continuous pumping of the boreholes does not allow them to recharge and there is no opportunity for the storage tanks that exist in the system to store water. With the limited storage available, in case of any system malfunction such as a transmission main damage or generators malfunction, the town will have no water. These figures are indicative of the potential of the aquifer and to that end; the Master Plan recommends further detailed geophysical surveys.

Responding to these challenges, UNICEF and the MoWRD have committed to carrying out further detailed groundwater surveys, drilling, and equipping the three boreholes in Afraaga area, located in the western part of Borama. However, due to financial constraints, there boreholes were not connected to the town.

Therefore, SDF1 committed to bridge the above-mentioned gap by bringing available water from these sources to the town. A team of engineers in the SDF Secretariat and MoWRD completed the design work, and it is now ready for implementation. Subsequently, SDF2 committed to implementation its design work as immediate measures with the following scope:

- Supply and installation of 3 submersible pumps in 3 boreholes;
- Construction of approximately 5 km pumping main from the 3 boreholes to a sump tank;
- Construction of a 6 km transmission mains from the sump tank to two water distribution reservoirs;
- Construction of a sump tank;
- Construction of a 6 km distribution mains from the new water distribution tanks to the existing water distribution system inside Borama;
- Installation of 2x500M3 distribution reservoirs; and

[1] UN Habitat study (2014) and the population figure was adopted by the Borama Master Plan Study

[2] The population of the town has been estimated at between 100,000 and 120,000. The Consultant will obtain a reasonable estimate on the basis of existing data from the Government and from Shaba, the operator of the system.

- Electromechanical works like SCADA system, installation of generator sets, booster pumps, submersible pumps, transformers, high tension cables from the electric generators to the 3 borehole pumps among others.

Most of the pipes, fittings, and electromechanical equipment have been supplied while some are meant to be supplied by the implementing contractors. The SDF Fund Manager and the MoWRD are therefore seeking the services of a qualified Electromechanical Engineer to review and modify Borama water supply electromechanical designs, electromechanical drawings, electromechanical BOQs and to check electromechanical equipment (like generators, transformers, pumps, etc..) that was supplied by the client. The expert is also expected to monitor implementation of the electromechanical works at critical stages.

3. Scope of Work

3.1. Objective of Assignment

The overall objective of the assignment is to provide Borama Water Supply System electromechanical design review, design modifications and to monitor implementation of electromechanical works at intervals as the work progresses.

3.2. Key Tasks/ Activities and Sub-Tasks

The tasks to be performed by the Electromechanical Engineer shall include the following:

- Review Borama electromechanical designs, BOQs, drawings, and electromechanical equipment that were supplied by the Client/SDF and alert the Client/SDF on any discrepancies or design modifications required and/or materials to be ordered;
- Depending on findings and needs, the expert shall modify the electromechanical designs, BOQs, drawings, and prepare additional list of electromechanical equipment that the contractor/Client/SDF should procure;
- Review and modify the SCADA system and prepare revised drawings, BOQs, specifications;
- There is a plan to use solar panels for pumping and lighting, which was not part of the original design. The Electromechanical Engineer is expected to liaise with the organization that is planning to provide these and prepare the drawings, BOQs, specifications;
- Prepare detailed working drawings (in AutoCAD) for additional activities or the ones that need to be modified.
- Prepare cost estimates of the revised BOQs and share (confidentially) to the SDF Team Leader only (without copying anyone);
- Monitor/supervise implementation of the electromechanical works by making agreed upon field trips to the project site;
- Prepare regular reports on the field visits and work progress of the electromechanical works; and
- Support the contractors to develop monthly financial forecast and detailed workplan for the electromechanical works.

4. Reporting

- The Electromechanical Engineer shall work under the overall supervision of Borama Resident Engineer (RE), MoWRD Project Manager and SDF Fund Manager or his designate.

5. Deliverables

- Site mission reports
- Drawings for the new/modified electromechanical works

- BOQs for the new/modified electromechanical works
- Engineering cost estimates for the new/modified electromechanical works
- End of assignment report.
- All soft copies should be presented in the original software used for its production. PDF alone will not be accepted.

6. Required Skills, Experience, and Qualifications

Qualifications and skills

- A B. Sc. degree in Electrical Engineering;
- Experience of electrical works of water supply systems;
- Should be registered with the professional bodies in the home country;
- Demonstrated excellent command of spoken and written English; and
- Excellent interpersonal and diplomatic skills.

General professional experience

- A minimum of 10 years of experience in design of Electrical/Electromechanical works;
- Experience working within East and Horn of Africa;
- Proficiency in use basic computer software such as MS Access, Excel, Word, Power point, AutoCAD, and electrical modelling software.

Specific professional experience

- A minimum of 8 years of experience in design of water supply electromechanical works;
- A minimum of 5 years of experience in supervision of water supply electromechanical works;
- He/she should have designed at least 3 SCADA systems for a rural and or urban water supply systems;
- Registered with a recognised Engineering body; and
- Proficiency in use of AutoCAD and electrical modelling software.

7. Duration of Assignment

The inputs of the electromechanical expert will be 42 days (spread within a year) from the first day commencement of the contract as per the below breakdown. The location of the position is in Borama town.

Trips	**Approx. # of days**	**Activities/Deliverables**
1st trip	14 days	• Review of electrical drawings, BOQs, specifications, etc and prepare additional drawings, BOQs, specifications, etc… • Conduct assessments of the procured electromechanical equipment and submit a report on the findings. If need be preparing additional BOQs/list of electrical material and cost estimates for the missing or required items; • Prepare a trip report and on findings of the mission.
2nd trip	6 days	• Inspect additional electrical items that are procured by either the Client/SDF or the contractor after they arrive at site.
3rd trip	6 days	• Monitor implementation of the electromechanical equipment during installation or after installation as requested by SDF/MoWRD.
4th trip	6 days	• Monitor implementation of the electromechanical equipment during installation or after installation as requested by SDF/MoWRD.

Last trip	10 days	• Monitor implementation of the electromechanical equipment during commissioning and handover. • Conduct a 3-4 days training to SHABA/MoWRD staff on O&M of the electromechanical works. • Prepare final report on the project.
TOTAL = 42 days		

Note: The number of days during each trip and frequency of the trips will be agreed upon with the expert during his/her first visit.

8. Payment

- All fees will be paid after every mission after the approval of the Project Manager and RE and the Fund Manager endorses; and
- The SDF2 Secretariat will organize and pay for Expert accommodation and DSA as per SDF2 guidelines.

9. Duty of Care

- The TA will work under the overall SDF2 Secretariat Health, Safety and Security protocols; and
- The TA will be expected to provide own insurance for health care, accidents, and other risks associated to the assignment. The SDF2 Fund Manager shall be free from any liabilities arising from the same.

10. Other provisions

- The Project Management Team staff and other relevant technical staff at MoWRD will be available to work closely with the electromechanical expert;
- MoWRD/SDF will provide relevant available documents relevant for completion of the assignment;
- Duty post: The work is to be performed in Borama, Awdal region, Somaliland.
- Personal Computers: The electromechanical expert shall be responsible for the provision of his/her own computer;
- The SDF shall facilitate the electromechanical expert's transport for all his official work in Borama;
- The SDF shall provide transportation by air or road of the electromechanical expert from his or her home to Hargeisa and to Borama and shall arrange for accommodation and security in the country.