

## **TERMS OF REFERENCE FOR PIU MECHANICAL ENGINEER**

**Title:** PIU Mechanical Engineer

**Project Name:** Lesotho Lowlands Water Development Phase II

**Project No:** P160672

**Contract No.:** LLWDP II/

### **1. Background**

#### **1.1 Beneficiary Country and Contracting Authority**

The Lesotho Lowlands Water Development Project Phase II is being implemented by the Government of Kingdom of Lesotho, which is the beneficiary country. The official Project Contracting Authority (Owner) is the Ministry of Water (MoW) and the implementing agency (hereinafter also called “Client”) will be the Commissioner of Water.

#### **1.2 Relevant Country Background**

Lesotho is a glorious and mountainous country with a population of about two million people; the country is 30,000 sq. km who’s only neighbour is the Republic of South Africa. Lesotho’s highlands constitute two-thirds of the country’s territory, less than 13% of which is suitable for cultivation.

Lesotho’s economy has undergone many changes over the last two decades, growing at an annual rate of 3% in per capita terms, which compares well with the rest of the SACU region and the African continent. The economy has been able to adapt itself to new realities and has taken advantage of new growth opportunities. The changes have involved shifts from subsistence agriculture and remittances toward mining, water exports, manufacturing exports, and services.

The Lesotho government’s development goals are reflected in its “Vision 2020”, the Strategic Development Goals (SDGs) and the National Strategic Development Plan (NSDP), namely its long-term strategic priorities that Lesotho has a healthy and well-developed human resource base, a strong economy, a well-managed environment and an established technological base. Further strategic goals include to pursue high, shared and employment generating economic growth, develop key infrastructure, enhance the skills base, technology adoption and foundation for innovation, improve health, combat HIV and AIDS and reduce vulnerability, reverse environmental degradation and adapt to climate change.

### **1.3 Ongoing Projects of the Lowlands Water Supply Scheme Unit**

The Lesotho Lowlands Water Supply Scheme (LLWSS) was designed to address the chronic shortage of potable water supply to the Lowlands area of the country and promote socioeconomic development to a design horizon of 2045. The original designs, which focused on bulk infrastructure only, were prepared with assistance from the EU in 2008. Under the LLWSS, the Lowlands area of Lesotho was divided into eight distinct zones covering all clusters of settlements with inhabitants of more than 2,500 persons. Accordingly, it covers urban, peri-urban, and rural areas. The original designs were completed in 2008. The first phase of investments constructed under the scheme comprised the multi-donor funded Metolong Dam and Water Supply Programme (MDWSP), which covered Zones 4 and 5. With funding from WSIP APL2, the GoL, with the assistance of a consultant, has updated the designs of the bulk water infrastructure for the remaining zones of the scheme based on a revised design horizon to year 2045 (from 2035 used in 2008). The updated designs incorporate changes that have taken place in the target areas since 2008. The scope of work for the design update covered only the bulk water infrastructure, including the water intake, treatment plant, transmission pipeline, and associated infrastructure and did not include detailed design and tender documentation for the distribution systems.

Based on the updated designs, implementation of the LLWSS program has been grouped into six packages, with two prioritized for the next phase of the program: Project Package 4 entailing Zones 6 and 7 (Mafeteng and Mohales' Hoek) and Project Package 2 entailing Zones 2 and 3 (Hlotse - Maputsoe). The World Bank, through the current project, will finance investments in Zones 2 and 3, while the European Investment Bank will finance Zones 6&7; both project sites comprising a water intake, water treatment works, transmission mains, pumping stations, reservoirs, and distribution networks. This component is referred to as Lesotho Lowlands Water Development Project-Phase II (LLWDP II).

#### **1.3.1 Multipurpose Dam Projects**

While this component is not part of LLWDP, to meet Lesotho's long-term needs, it will be necessary to augment the existing available water resources. These needs include those designated for potable supplies for domestic and industrial use under the LLWSS but will also include long term agricultural demands, others identified for transboundary projects. Lesotho's natural geography offers further opportunities for associated hydropower projects to be implemented in parallel to dams for water resources and the LLWSS Unit has prepared the Terms of Reference for "Consultancy Services for the Feasibility Studies for Multipurpose Dams Projects" to initiate the process of implementing these projects which includes five dams and deriving maximum benefit from these sources and their multiple purposes which they can be

used for. A dam on the Makhaleng River is the next multipurpose dam to be developed, now at feasibility study, which will serve for both domestic and trans-boundary (Lesotho – Botswana Water Transfer). Zones 6&7 will directly benefit from this project. A similar project is envisaged on Hlotse River, which is at the concept stage. Zones 2&3 will benefit from the dam too.

## **1.5 Background on the Lesotho Lowlands Water Development Project Phase II**

The Development Objectives of the Lesotho lowlands Water Development Project (LLWDP) Phase II are to:

- (i) Increase water availability in the prioritized areas of Zones 2 & 3 (25MI/d) and 6&7 (57MI/d)
- (ii) Construct pipelines of estimated 849km; Zones 2&3 (267), and Zones 6&7 (583)
- (iii) Improve access to reliable water supply services to 190 000 people; Zones 2&3 (72 000), and 6&7 (119 000);
- (iv) Strengthen institutional capacity to manage the LLWSS to the following entities; Department of Rural Water Supply, Water and Sewerage Company, Department of Water Affairs, Lesotho Electricity and Water Authority, and Government Planning Sector. And
- (v) Enable the Government of Lesotho to respond promptly and effectively to any eligible emergency.

The Project will construct bulk water infrastructure (intake structure, pump stations, raw water main, and water treatment plant, service reservoirs, transmission lines and booster pumps) in the prioritized areas; accompanied by improvements to the distribution systems and implementation of low-scale sanitation and hygiene measures to improve service delivery. It will also build capacity of service providers to reduce non-revenue water (NRW), improve billing and revenue collection, and strengthen overall planning and monitoring. In addition, it will provide technical assistance to support a long-term technical solution to ensure water security for domestic and industrial uses and supply for irrigation as well as water export opportunities to Botswana and South Africa. Furthermore, this Project will support activities to strengthen water sector institutions' ability to promote and operate LLWSS Programme in an efficient and effective manner.

This Project is in its preparatory stage where the engagement of the PIU staff is being finalized. The PIU will soon engage a consultancy for design and supervision of distribution networks to be connected to the bulk water system. The PIU is also engaged in the process of ensuring that social and environmental safeguards approach with clear responsibilities and adequate budget are incorporated in the Project's design and also citizen engagement activities and a clearly articulated communication strategy are integrated in the Project's design to ensure transparency and long-term sustainability.

The Government of Lesotho has secured funding from the World Bank which will finance the Project components in Zones 2 & 3, European Investment Bank and European Union Delegation which will finance the Project components in Zones 6 & 7. The Government of Lesotho will also provide counterpart financing on annual basis for the duration of the Project.

## **1.6 Project Implementation Arrangements**

The PIU established under the Commissioner of Water (CoW), will lead project implementation and project management. The PIU will therefore be responsible for daily management, operations, coordination, implementation, providing assurance on environmental and social issues, and monitoring and evaluating project performance. The PIU core staff will include experts in the following fields but not limited to: Civil Engineering, Mechanical Engineering, Procurement, Monitoring & Evaluation, Financial Management, GIS and Remote Sensing, Water Resources Management, and Environmental and Social Safeguards Specialists headed by Project Manager. The PIU's primary function would be to spearhead implementation and management of the project, as well as coordinate inputs from other implementing and cooperating entities like Department of Rural Water Supply (DRWS), Department of Water Affairs (DWA), Water and Sewerage Company (WASCO), Department of environment, Department of Roads and others.

The PIU will be supported by Project Management Consultant (PMC) that will be hired for project management and management of complex activities of the project related to works. The two will work closely however the primary responsibility of project implementation will rest with the PIU. The PIU will on day to day be reporting to Commissioner of Water, however, there will be an established Project Steering Committee (PSC) that will provide oversight of the project, in turn reporting to Ministry of Water (PS). The World Bank (WB), European Union (EU) and National Authorising Office (NAO) will be observers/advisors members in the PSC.

The financiers of the project are the WB, European Investment Bank (EIB), EU and GoL. The project will therefore be implemented according to World Bank, EIB and GoL procedures.

The Government of Lesotho (GoL) is in the process of establishing the Bulk Water Authority which will be responsible for the future implementation, management, operation and maintenance of the bulk water infrastructure to be built by the LLWSS Programme.

## **2. PROJECT OBJECTIVE**

The main objective of the project is to construct bulk water infrastructure (intake structure, pump stations, raw water main, water treatment plant, service reservoirs, transmission lines and booster pumps) in the prioritized areas. The Civil/Water Engineer with experience in design, construction and supervision of bulk water infrastructure is required to confirm the siting and access to the proposed facilities. Prior to construction, this will require site visits, liaison with service providers and stakeholders to ensure that the proposed solution remains viable. S/He will also prepare baseline information required for long term land access and easement to the sites. During construction the Civil/Water Engineer will ensure that the Supervising Consultant adheres to his Contract obligations.

The GoL now requires a suitably qualified Civil/Water Engineer to form part of the PIU for a period up to five (5), broken into chunks of 2 and 3 years renewable depending on performance and work exigencies. The Civil/Water Engineer should have experience in design, construction and supervision of bulk water (abstraction, treatment and conveyance) and distribution infrastructure for both rural and urban settings especially in Southern Africa.

### **3. SCOPE OF SERVICES AND TASKS**

The Mechanical Engineer will serve as a primary liaison among specialized sectors on all mechanical and electro-mechanical engineering activities and facilitate the smooth interplay between and among stakeholders involved. Working in conjunction with the Project Management Consulting firm that will be engaged to support PIU, S/He will inspect, analyse and/or prepare specifications for proposed designs, assist in tender documentation and tendering, assist in supervision of installation and commissioning of all mechanical and electro-mechanical components or systems (bulk water infrastructure including dams) and ensure that they comply with accepted international standards and regulations as well as pertinent laws and regulations. S/He will visit the proposed sites to ensure that these are acceptable and fits the sites and vice versa.

S/He will inspect and validate all procurement documents including engineer's estimates produced by the consultant. S/He will also ensure that accepted procedures are being followed in the preparation and implementation of the project and also check on safety features of the project.

In this role his/her responsibilities will include but not limited to the following:

- (i) Preparation of TORs, Specifications, Bid documents for supervising consultant and contractors;
- (ii) Assist in the evaluation of bids for consultancy, works and goods packages;
- (iii) Review of deliverables and reports from consultants/contractors and other service providers under the project;
- (iv) Supervision of development, installations and testing of mechanical/electro- mechanical components/systems and processes including ensuring adherence to specifications, quality and time;
- (v) Supervision and management of consultants;
- (vi) Site visits and attendance of site and other meeting where technical advice/inputs are required;
- (vii) Preparation of monthly, quarterly and other progress reports to be submitted to the Project Manager;
- (viii) Preparation and review of Variation Orders as needed;
- (ix) Review of payment certificates;
- (x) Assistance in contract management issues; and

Perform any other engineering works delegated to her/him from time to time.

### **4. REPORTING OBLIGATIONS**

The Mechanical Engineer will report to and work under the supervision of the Project Manager. S/He will also work in close collaboration with the Project Management Consultants to ensure that all relevant information is collated and included in the project progress reports. S/He will deliver monthly progress report which includes works carried out during the month planned activities for the next month. The format of this report will be discussed and agreed at the inception.

## **5. CLIENT'S CONTRIBUTION**

The Mechanical Engineer will be based and work at LLWDP II offices in Maseru, Lesotho. The Client will provide office space and furniture required to perform the tasks assigned as well as access to network resources where necessary. The Engineer will be provided transport and equipment such as computers for official use only. The Client will also assist the Engineer to obtain residence and work permits.

## **6. MECHANICAL ENGINEER'S CONTRIBUTION**

The engineer will be responsible for arrangement of his/her own accommodation, transportation and insurance. He/She will also be responsible for any registration, permits acquisition /certification as per the laws of Lesotho.

## **7. QUALIFICATIONS AND EXPERIENCE**

The applicant should **strictly** have a BSc in Mechanical Engineering plus an MSc/MEng in Water or Sanitary Engineering or Mechanical or Project/Contract/Construction Management from a recognized and reputable university and at least ten years' **relevant** experience after graduation. Candidates not having an MSc should have a postgraduate diploma in a field of Water or Mechanical or Project/Contract Management with at least fifteen years of experience in: the planning, design, construction and supervision of bulk water and distribution infrastructure in rural and urban settings including abstraction systems, pump stations, water treatment works, reservoirs and pipelines and reticulation networks including rural systems incorporating stand pipes. Experience in dams and O&M of water supply infrastructure and sanitation (including master planning for sanitation) will be added advantages. Experience in working in a project implementation unit or project team is vital. In addition, the applicant should have the following:

- i) Possess good analytical skills to interpret diagrams, drawings, maps, reports, and other information in the Mechanical engineering field;
- ii) Experience with similar projects in SADC region is an advantage;
- iii) Possess good communication skills to communicate effectively with all stakeholders involved;
- iv) Familiarity implementation procedures for at least two Donor Institutions including the World Bank, African Development Bank or EU is a requirement
- v) Demonstrated ability to work collaboratively with domestic and international stakeholders and counterparts;
- vi) Oral and written fluency in English;

- vii) Superior organizational and time management skills;
- viii) Strong computer skills with Microsoft Applications including Auto Cad, Microsoft Project and other software including water design software (EPANET or other).
- ix) Must be a member of a recognized and acceptable professional institution/body.

## **8. TERMS OF THE ASSIGNMENT AND DURATION**

The Mechanical Engineer shall be engaged on a full-time basis for an initial period of twenty four (24) months, renewable by further thirty six (36) months based on acceptable performance certified by Project Manager and endorsed by Financiers. The remuneration will be paid on a monthly basis.

## **9. PAYMENT**

The Mechanical engineer shall be paid monthly in arrears at an agreed rate that includes professional fees, living expenses, local travel and other costs including insurances. The consultant shall submit a monthly invoice accompanied by a monthly report referred to in section 4 plus any other deliverables and reports due during the month in question.

## **10. REFERENCES**

Provide verifiable references from three organizations worked for in the past 10 or 15 years and evidence of membership in recognized engineering or related institute.