

TERMS OF REFERENCE

TECHNICAL & ENGINEERING ASSOCIATE – (ELECTRO-MECHANICAL)

KARACHI WATER & SEWERAGE SERVICES IMPROVEMENT PROJECT

1. Introduction

Karachi is Pakistan's largest city, main seaport and international trade hub. It encounters numerous challenges among which water supply and sewerage are the worst affected services, falling far short of the city's expanding needs. To mitigate this gap, develop these services for Karachi and strengthen the Karachi Water and Sewerage Corporation (KWSC) to become a financially viable and technically well performing water utility that ensures clean, safe drinking water and sewerage services to public, the Government of Sindh GoS / KWSC partnered with the World Bank Group through the Karachi Water and Sewerage Services Improvement Project (KWSSIP). The Karachi Water and Sewerage Services Improvement Project (KWSSIP) encompass a USD 1.6 billion reform-led investment program, to be implemented in four phases over a period of 12 years. Phase 1, with an investment portfolio of USD 100 million, is currently under implementation, and a Project Implementation Unit (PIU) has been established for this purpose. The Project Proposal Form (PC-1) for the Second Phase of KWSSIP amounting to US\$600 Million has been approved by the Executive Committee of the National Economic Council (ECNEC). The project has been approved by the World Bank Board on 12th December 2024. The project is being implemented by the Government of Sindh (GoS) and the Karachi Water and Sewerage Corporation (KWSC) through multiple procurement processes, expected to occur within a short timeframe. The project activities aim to achieve key milestones, including addressing environmental aspects associated with the proposed project components.

The following are the project components:

Component 1 – Operational & Enabling Environment Reform

- a. Institutional Reforms and Capacity Building in Human Resource (HR)
- b. Implementation of Communication Program & Capacity Development of Customer Relations Management (CRM)
- c. Implementation of Gender Action Plan (GAP)
- d. Capacity Building in Asset Management, GIS and Data Collection Strategy
- e. Preparation and Implementation of Water Safety Plans
- f. Outsourcing of Metering & Operation and Maintenance (O&M)
- g. Advance Studies for the adaptation of Trenchless technology of Infrastructure development in Karachi Water and Sewerage Program
- h. Financial Management improvement

Component 2 – Infrastructure Investments

- a. Rehabilitating Water Supply and Sewerage in Selected Low-Income Communities
- b. Priority Sewer Network Rehabilitation and Extension
- c. Priority Water Network Rehabilitation including O&M equipment, meters & District Metered Areas (DMAs) to reduce Non-Revenue Water (NRW)
- d. Priority Works for Reducing Energy Consumption
- e. K-IV Augmentation and Downstream Allied Works
- f. Rehabilitation of Existing Filtration Plants (NEK K-II, 100 MGD, Pipri JBIC 50 MGD)
- g. Viability Gap Funding (VGF) to support Public Private Partnership (PPP) Interventions

Component 3 – Project Management and Studies

- a. Design Review and Construction Supervision of the Proposed Sub-Projects of Phase-2:
- b. Follow-up studies on energy audits:
Preparation of KWSSIP -3, feasibility, E&S study, designing & PC-1, follow up study from the Master Plan Study.

2. Key Duties, Functions and Responsibilities:

The Technical & Engineering Associate (E&M) will support the Technical & Engineering Specialist (E&M) and PIU technical team in technical reviews, coordination, documentation, and monitoring of engineering activities across project components. The role focuses on assisting in implementation, analysis, and reporting, ensuring alignment with project objectives and standards, across all components of KWSSIP-II.

3. Scope of Work:

- Support technical reviews of designs, drawings, specifications, and reports across water supply, sewerage and electro-mechanical systems.
- Assist in review of engineering drawings and calculations for infrastructure works including pipelines, pumping systems, treatment facilities, and associated structures to ensure compliance with standards and design intent.
- Assist in identifying design inconsistencies, constructability issues, and potential technical risks, and report the same for corrective action.
- Assist in monitoring site execution works, ensuring compliance with approved drawings, specifications, and quality standards across all disciplines.
- Provide support in assessment of system conditions, including evaluation of performance, deficiencies, and rehabilitation or improvement requirements.
- Assist in data collection, validation, and technical analysis for existing infrastructure systems including water, sewerage, and electro-mechanical components.
- Provide support in preparation and review of feasibility studies, technical reports, and engineering documentation.
- Assist in the development and review of procurement documents, including technical specifications, BOQs, and TORs.
- Support monitoring of construction activities and project progress, ensuring alignment with design intent and project timelines.
- Assist in identifying technical gaps and coordination issues between disciplines, and facilitate resolution through proper communication.
- Assist in coordination with consultants, contractors, and internal teams for technical inputs and clarifications.
- Support in the review of tender documents, technical proposals, and evaluation processes.
- Assist in reviewing of cost estimation, quantity take-offs, and verification across multiple engineering disciplines.
- Contribute to development of guidelines, checklists, and standard procedures for engineering design, execution, and monitoring.
- Support preparation of progress reports, technical summaries, and presentations.
- Participate in site visits, inspections, and technical meetings as required.
- Maintain proper documentation and records of technical activities.
- Perform any other task assigned by the Technical & Engineering Specialist (E&M).

4. Qualifications and Experience

Bachelor's degree with a major in Mechanical/Electrical or equivalent from The Higher Education Commission (HEC)-recognized university is required. The candidate should have a minimum of 05 years' experience on major civil works. The candidate should have strong technical and engineering skills and experience in assisting planning, design, preparation of specifications and bidding packages and construction supervision. Prior exposure to the technical management practices of the World Bank or other multilateral development partners will be considered a strong advantage. Membership and/or registration with a recognized professional engineering body is a requirement. Good English language communication and writing skills. Knowledge of local language (Urdu) is an added advantage.

5. Reporting Line

The Technical & Engineering Associate will report to the Technical & Engineering Specialist (E&M), KWSSIP-II.

6. Contract Duration

The Technical & Engineering Associate is initially required to work for a period of three (03) years with an annual review on performance which will form the basis of renewal. The Probation Period will be for 3 months during/up to which the contract may be terminated owing to unsatisfactory performance. The contract can be terminated with one month notice period by either party. The position is based in Karachi with travel requirements to the site as and when required.

7. Salary And Benefits and Conditions of Service

Market competitive salary based on qualification and experience will be offered. The salary, benefits will be discussed and agreed with the successful candidate. The contract and conditions of service follow the general conditions of service as stipulated in the Project Operations Manual (POM). These will also be discussed and agreed with the successful candidate.

8. Selection Process

An individual will be selected in accordance with process stipulated in Section VII of "Approved Selection Methods: Consulting Services, Clause 7.34, Approved Selection Methods for Individual Consultants under The World Bank Procurement Regulations for IPF Borrowers (Fifth Edition September 2023) available on <https://thedocs.worldbank.org/en/doc/6c0602876d68949e80820507d90a14ed-0290012023/original/Procurement-Regulations-September-2023.pdf>