

**THE HASHEMITE KINGDOM OF JORDAN**  
**MINISTRY OF WATER AND IRRIGATION**  
**WATER AUTHORITY OF JORDAN (WAJ)**

**JORDAN WATER SECTOR EFFICIENCY PROGRAM**

**TERMS OF REFERENCE**  
**CONSULTANCY SERVICES**

Design and Supervision to Improve Energy Efficiency for Selected Water and Wastewater Facilities in  
**JORDAN**

**SEP 2024**

## **ABBREVIATIONS**

<b>ABBREVIATION</b>	<b>DESCRIPTION</b>
BER	Bid Evaluation Report
BoQ	Bill of Quantity
CAD	Computer Aided Design
CV	Curriculum Vitae
DLP	Defects Liability Period
DNP	Defects Notification Period
EE	Energy Efficiency
ESHS	Environment, Social, Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMP	Environment and Social Management Plan
ESS	Environment and Social Standards
FIDIC	Fédération Internationale des Ingénieurs Conseils
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HSE	Health Safety Environment
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
IFC	International Finance Corporation
ILO	International Labor Organization
IPMVP	International Performance Measurement and Verification Protocol
JEA	Jordan Engineers Association
JOD	Jordanian Dinar
JICA	Japanese International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau
LACP	Land Acquisition and Compensation Plans
MEMR	Ministry of Energy and Mineral Resources
MoEnv	Ministry of Environment
MW	Megawatt
MWC	Miyahuna Water Company
MWI	Ministry of Water and Irrigation
M&V	Measurement and Verification
NCB	National Competitive Biddings
NEPCO	National Energy Power Company
NRW	Non-Revenue-Water
OECD	Organization of Economic Cooperation and Development
OHS	Occupational Health and Safety
PDF	File Format
PIA	Project Implementing Agency
PMD	Program Management Directorate

PQ	Pre-Qualification
PS	Pump Station
Q	Flow, discharge
RfP	Request for Proposal
SOP	Standard Operation Procedure
SPD	Standard Procurement Documents
TL	Transmission Line
TOC	Taking Over Certificate
ToR	Terms of Reference
USAID	United States Agency for International Development
VFD	Variable Frequency Drives (or Variable Speed Drives)
WB	World Bank
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

## A. BACKGROUND

The HASHEMITE KINGDOM OF JORDAN has obtained financing from IBRD toward the cost of assist in the financing of the Project, as part of a series of projects aimed to improve efficiency, service delivery and financial sustainability of the water sector.

The World Bank funded project will have the following components:

- **Component 1:** Sustainable Non-Revenue Water (NRW) Reduction
- **Component 2:** Increased energy efficiency (EE) and reduced energy supply costs
- **Component 3:** Water security measures to underpin efficiency improvements.
- **Component 4:** Institutional strengthening for water sector Efficiency
- **Component 5:** Contingency Emergency Response

**Component 2** of the project “Increased energy efficiency (EE) and reduced energy supply costs” aims at Improving energy efficiency and use of renewable energy in the existing water systems by Supporting reduction in electricity use by improving energy efficiency and expanding renewable energy in the water sector through (a) feasibility, design and supervision consultancies; (b) works contracts to implement selected actions on energy efficiency and renewable energy; (c) an energy audit to identify additional energy efficiency actions needed in the water sector; and (d) design studies for infrastructure investments that enable reduction in peak energy demand.

The existing Project Management Unit (PMU) at the Water Authority of Jordan (WAJ) shall be responsible for the management of project activities including the fiduciary operations, contract management and the administration of the projects funds as well as implementation and monitoring of the environmental and social requirements and instruments.

The current Terms of Reference (ToR) are proposed under Component 2 of the project (Energy Efficiency -EE) and will describe the assignment’s requirements and objectives.

## B. PROJECT LOCATION AND DESCRIPTION

The selected EE activities under this project are located in different areas in Jordan- and the related water system facilities are managed by the three water companies (Miyahuna Water Company – MWC, Yarmouk Water Company -YWC and Aqaba Water Company-AWC). The project consists of preliminary design, preparation of 3 lots of tender documents (one for each company), supervision of the 3 lots of the project and as per client instruction the main objective of the project is to improve energy efficiency for the selected water facilities.

### B.1. Project Overview Layout

A detailed list of EE project measures can be found in Annex 1



#### C. OBJECTIVE OF CONSULTANCY SERVICES:

The principal objective of these Consulting Services is to prepare all feasibility, planning and preliminary design documents needed for the implementation of the project activities/measures, and to support the Project Implementing Agency (PIA) in implementing these activities/measures.

#### D. SCOPE OF WORK:

##### General Considerations

The Jordan Water Authority (WAJ) will hire a consulting firm to implement this assignment and it will monitor its progress according to the signed contract and the term of reference. The consulting firm will work on the ground with the project management unit (PMU) at WAJ and with the water companies (Miyahuna (MWC), Yarmouk (YWC) and Aqaba (AWC)). In summary the Consultant supporting the PIA will be responsible for managing the Project in its role as the Engineer.

The Consultant's scope of services to be rendered are split into three separate tasks and individual sub-tasks. The Scope of these Services comprises the following:

##### **Task 1: Inception Phase and the preparation of bidding documents.**

Task 1 includes the following sub-tasks:

- **Sub-task 1.1 Inception Phase:** Information review (data collection), information updates and elaboration of a revised and coordinated workplan

- **Sub-task 1.2 Engineering Design:** Preliminary and functional design and performance specification of new proposed Systems as well as review, verify and update the draft ESMP Checklist.
- **Sub-task 1.3 Preparation of bidding documents** using World Bank Standard Bidding Documents including the functional & performance specifications, key performance indices, bills of quantities and preliminary plans of the various technology. Integrate the ESMP Checklist in the bidding documents for the list of EE project measures (Annex 1).

### **Task 1.1 Inception Phase**

#### **a. Available Data Collection**

Upon commencement of the consulting services a joint Kick-off Meeting among the PIA (WAJ), the related Water Companies, the Consultant, and other stakeholders shall be held. In this respect, the tasks of the Consultant comprise, but are not necessarily limited to the following items:

1. The services of the Consultant shall start with a thorough evaluation of available data, information and planning documents as well as from critical review of existing studies and other reports relevant to the Project measures (see Annex 1), update of their findings and, if needed, update of investments to be implemented in the scope of the Project on hand. The following feasibility studies would provide a clear information about the proposed measures:
  - i. Feasibility Study of Energy Efficiency and Use of Renewable Energy in the Water Sector III-Jordan (Dorsch, 2021) (KfW)
  - ii. Energy audit reports (NERC-RSS, 2020) (GIZ)
  - iii. Energy assessment reports (ECOSOL, 2020) (GIZ)
  - iv. Energy Audit reports (ECOSOL, 2024) (GIZ)
  - v. Energy Audit reports for Karak (Gopa, 2024) (GIZ)
  - vi. Energy Audit reports (Green Tech, 2024-2025) (GIZ)
2. Further investigation and verification shall be conducted for the measures before proceeding in the preliminary design in coordination with the related directorate; WAJ/Water Company will provide the previous energy audit reports for these utilities.
3. Updating of investment measures based on existing studies and own investigation.
4. Updating of basic data, design criteria and other important information relevant for the preparation of the preliminary design.
5. Elaboration of a revised and coordinated work plan.
6. Summarize outcomes of the Inception Phase in the Inception Report (see also Chapter E).
7. Presentation of first results.

#### **Key deliverables:**

- MoM Kick-off Meeting.
- Inception Report.
- Project Management Plan.
- Project Manual/ Manual of Procedures.

## **Sub-task 1.2 Engineering Design: Preliminary and functional design and performance specification of new proposed Systems and Environmental and Social Assessment and Management**

### **1.2.1 Engineering Design: Preliminary/functional design and performance specification of new proposed Systems**

The design shall entail the preparation of preliminary designs including building layouts, structural plan, electrical systems, computational notes, performance specification, functional design, and Schedules of work items for supply, install and commission of the intended systems. The objective is to provide the contractor with requirements and preliminary configurations for each system (project measure) including specifications for the main components to allow him to prepare a detailed design, for the approval of the Engineer and Client prior to work commencement.

It is essential that the Schedules of work items to be comprehensive to allow on one hand accurate representation of needed components, fair competition and minimizing the need and scope for future variation orders after the detailed design is completed and submitted by the contractor and approved by the Engineer and Client.

The Design Documents shall be worked out based on the updated documentation according to the inception phase and Feasibility Studies and include specific Environment, Social, Health and Safety (ESHS) aspects as required for qualified execution and fair Tender Process of Works and Goods. The documents shall be composed of a comprehensive Design Report, supportive annexes and all required design, layout and structural drawings presented in an appropriate scale and to an appropriate degree of detail and a cost estimate per component.

Based on the available studies and reports (see list of project measures, Annex 1) reviewed / updated by the Consultant, and other relevant complementary information. The Consultant shall prepare the preliminary design for all measures (projects) approved for implementation. The Consultant shall review the initial Environment and Social (ES) risks and impacts that emerge from the design or witnessed during the field visits and update the ES screening and update the ESMP Checklist accordingly

The services of the Consultant shall include all necessary survey work (topographical, geotechnical, if necessary, etc.) to produce a comprehensive preliminary design including correspondingly detailed cost estimation. The preliminary design must, by its form and content, be in line with the valid standards and regulations in Jordan so that necessary approvals, permits and licenses can be acquired based on the design.

Preliminary design of the investment measures shall be prepared and elaborated considering that they will be tendered according to the World Bank Procurement Procedures,

The tasks and elements to be developed of the Implementation Consultant for this step shall include:

1. Carry out field visits and facilitate discussions with relevant authorities on the subproject scope, with the Water Company's PIU, WAJ PMU.
2. Carry out a detailed review of the feasibility studies, recommendations, including other existing supplementary reports.

3. Topographic and water demand survey as required for an adequate preliminary design of reservoirs and pump stations, pump-sets, replacement pumps and implementation of Variable Frequency Drives (VFDs) and preparation of a report that includes either updated or newly developed documentation of the existing project related relevant water supply infrastructure.  
**The Consultant shall consider a provisional sum of 50.000 USD for the topographical and water demand investigations; and this item will be remunerated at actual cost.**
4. Hydraulic calculation for all related works for pumps / pump sets / pumping stations and reservoirs
5. Elaborate preliminary engineering designs, reports, drawings, and specifications, in accordance with relevant design guidelines and standards, incorporating climate resilient design considerations, and in accordance with the environmental and social instruments, covering the preparation of architectural, structural and electro-mechanical etc. design for civil works and equipment, including:
  - 5.1. Define requirements and specifications for the main systems components, appropriate for the permanent and long lasting effective and efficient operation and the maintenance of the directly project related pump-set(s):
    - Required new or replacement pumps.
    - Required replacement of impellers.
    - Required VFDs.
    - Required new or replacement any type of valves for correct operation and easy maintenance works.
    - Required safety and protection devices to mitigate or avoid mechanical or electrical stress to the equipment (vibration, water hammer, electrical overload, etc.) or danger to operational staff.
    - Required additional or replacement of non-functional hydraulic and electrical measurement equipment (pressure sensors, flow meters, power meters, etc.) for monitoring and operational control.
    - Additional or replacement of non-functional operational control equipment that allows automation and remote control in accordance with the WSC existing systems.
  - 5.2. Define requirements and specifications for the main system components, appropriate for the permanent and long lasting effective and efficient operation and the maintenance of the directly project related Water Supply and Water Treatment Plants (WTPs) equipment.
  - 5.3. Preparation of drawings of civil works in different sections and scales (1:50 and/or 1:25) as needed:
    - Reinforcement drawings.
    - Formwork drawings.
    - Layout plans.
    - longitudinal sections for pipelines
6. Elaboration of a preliminary operational control and maintenance concept and a related training concept to be developed and conducted during the implementation phase to enable operational staff to execute a permanent and long lasting effective and efficient operation and maintenance of the directly project related installations.



7. Elaboration and definition of appropriate lots for supplies and construction works (contract packaging).
8. Preliminary specification of all machines, equipment and tools additionally required for operation and maintenance of the new facilities/equipment.
9. Preparation of a preliminary list of spare parts.
10. Preparation of preliminary bills of quantities (BoQ).
11. Support to the PIA for his preparation of the required documents for obtaining (as far as needed) the required permits such as:
  - Construction permit.
  - Water rights.
  - Environmental permits if needed.
12. Preparation of a preliminary confidential engineer's cost estimates for the proposed works, cost estimate per component including a descriptive part presenting the assumptions taken and assessments made for calculating the unit rates.
13. Elaboration of a preliminary procurement concept taking into consideration local/ regional/ international construction capacities and interest; proposals for contract packaging, support to PIA in updating PIA's overall Procurement Plan.
14. Elaboration of a suitable preliminary implementation concept.
15. Elaboration of a suitable preliminary time schedule.
16. Preparation of a preliminary Design Report.

**M&V tasks:**

Elaborate M&V plans and baselines for all energy efficiency projects individually according to the International Performance Measurement and Verification Protocol (IPMVP).

- a. Preparation of M&V plans according to the IPMVP under consideration of the under chapter 2 proposed M&V activities.
- b. Identify and specify eventually required additional measurement equipment for the establishment of energy baselines and post-implementation measurements for the verification of savings during the reporting period according to the prepared M&V plan.
- c. Consider the required measurement equipment (location of equipment, space and safe access) for the elaboration of the final design documents (Equipment to be provided within the construction contract).
- d. Coordinate together with the PIA whether the procurement of eventually required additional measurement equipment will be included within the duties of the contractor or will be conducted by the PIA.
- e. Supervision of Procurement and installation of additionally required measurement equipment.
- f. Coordinate data acquisition from existing and/or additionally installed measurement equipment during the baseline period.
- g. Elaborate baselines based on the acquired baseline period data.

Tasks may be carried out during stage 3 (supervision of construction works and suppliers) in those cases, where additional measurement equipment will be procured by the contractor and the construction phase allows to collect representative data that reflect the energy consumption behavior of the project scope prior project commissioning.

The result of this work shall be a comprehensive Preliminary Design Report showing all calculations, dimensioning, specifications, etc.

### **1.2.2. Environmental and Social Assessment and Management**

The consultant Environment and Social (ES) team shall familiarize themselves with the Project and consider the Environmental and Social Instruments as the main guiding reference for their assignment; the Environmental and Social Management Framework (ESMF), the Labor Management Procedures (LMP), the Stakeholder Engagement Plan (SEP), the Resettlement Framework (RF), and the Environmental and Social Commitment Plan (ESCP).

The consultant shall review the ES Screening Report prepared for the sub-project covering the identified sites and equipment's installation/replacement, and shall, following the design and the field visit, identify any emerging risks or changes in the risk rating and the contractor ES requirements. The Consultant will submit the updated screening report to the Environment and Social Standard Department (ESSD) at PMD-WAJ for review before submitting it for the World Bank review.

The consultant shall review the ESMP Checklist and update it in case of any changes to the original scope of work in accordance with the Environmental and Social Framework (ESF) and the relevant Environmental and Social Standards (ESSs) and the national requirements. The updated ESMP checklist will be publicly consulted on (final version to include a summary of consultations and feedback received from the stakeholders) and submitted for the Bank clearance and disclosure.

#### **Key deliverables:**

- Drawings
- Design criteria
- Procurement concept
- Confidential cost estimate
- Preliminary Design Report including cost estimation, time schedule.
- M&V Plans, energy baselines according to IPMVP, where NO additional measurement equipment is required.
- M&V Plans, energy baselines according to IPMVP where additional measurement equipment is required.
- Update Environmental & Social instrument reports (such as: updated screening report, Updated ESMP Checklist.

### **Task 1.3 Preparation of Bidding Documents.**

The tender will be separated into three lots: One lot for each of the three Water companies. Each lot shall contain those projects corresponding to one Water Company (AWC, MWC, YWC). Thus, three sets of bidding documents shall be prepared (one set for each lot).

In preparation of the documents the Consultant has to consider that the investment measures will be tendered following the World Bank procurement procedures using the Standard Procurement Document: Request for Bids Small Works (One-Envelope Bidding Process), March 2021.

The Bidding Documents shall be compiled in accordance with the latest version of WB Procurement Guidelines and the respective valid version of WBs Standard Bidding Document (SBD) dated March 2021 for Procurement of Works, including the standard ESHS requirements.

The Tender Documents for the planned construction works shall be compiled in accordance with WB's latest Standard Bidding Documents "Procurement of Small Works", dated March 2021 (<https://www.worldbank.org/en/projects-operations/products-and-services/brief/procurement-policies-and-guidance#Guidelines>).

## **The Client will provide pertinent customized templates**

### **a- Final Engineering Report**

The Consultant shall prepare a final engineering report including a description of the project, results of the reconnaissance study and all other studies, together with the design criteria adopted in the design of the various assignments' components. A clear description and details of the recommended design shall also be included. This report shall include all the tasks performed under task 1.2 leading to the intended system(s).

### **b- Confidential Fair Price Estimate**

Fair price estimate shall be prepared and presented in a separate confidential document. In the preparation of the fair price estimate, the Consultant shall conduct a study of current unit prices of various work items from the contracts currently under construction and current market prices of materials and labor. The breakdown of the unit prices shall be presented on MS Excel spreadsheets.

### **c- Bidding Documents**

The Consultant shall prepare tender and contract-documents for each lot. The documents shall include the following:

#### **Volume 1: Conditions of contract (as per WB Standard bidding document)**

This document shall include, invitations to bid, instructions to bidders, forms of bid, forms of bid bond and performance bond, form of advance payment guarantee, form of contract, general and special conditions of contract, main E&S instruments identified and prepared (ESMP, ESMP Checklist, or others), Environmental, Social, Health and Safety(ESHS) guidelines, traffic management plans typical details and layout using international standards, OHS plans, and other plans identified per the ESSs.

The Conditions of Contract shall be based on World Bank Standard Bidding Document. At such time, the Consultant shall coordinate with the Client in order to finalize the conditions of contract.

#### **Volume 2: Performance specifications**

The Consultant shall prepare all specifications required as requested by the Employer, All technical specifications shall be fully descriptive and provide at least the following information:

- Standards of materials and workmanship required.
- Specifications and requirements as per preliminary design of all construction activities anticipated.
- Specifications and requirements as per preliminary design of mechanical and electrical equipment to be procured.
- Details of commissioning of the works to be performed by the Contractor prior to their acceptance.
- Details of all warranties required and liquidated damages to be applied in the event that such warranties are not met.

**Volume 3: Schedule of Work Items**

1. Schedule of Work Items
2. Schedule of Day Work Rates
3. Schedule of Basic Rates

**Volume 4: Contract Drawings**

All drawing and details that were prepared under Task 1.2.

**Volume 5: Environmental & Social Instruments**

All E&S instruments that were prepared for each sub-project (or lot) identified, prepared, reviewed and cleared as per task 1.2.2.

**Key deliverables:**

- 3 sets of Bidding Documents (one set for each Water Company (AWC, MWC, YWC))
- 3 Bid Evaluation matrices (One matrix for each Bidding Process)

The tender documents shall be submitted as hardcopy (one original & one copy) and in addition as softcopy in pdf-format for further printing.

**Task 2: Pre-Construction Services /Technical Advice during Tendering Process**

The tender will be separated into three different lots: One lot for each of the three Water companies (AWC, MWC, YWC). Each lot contains those project measures corresponding to one Water Company as indicated in Annex 1. The following applies for each of the three lots.

**Task 2.1 Assistance during preparation of procurement notice and during the Bidding stage.**

With regard to Tendering and Contracting of works and goods, the Consultant shall assist the PIA in finalizing the final Bidding Documents ready for publishing, and in organizing the whole bidding process for construction and supply including the preparation of pre-bid meetings if necessary.

**Tasks:**

1. Prepare advertisements or invitations for qualified Bidders to prepare a bid.
2. Ensure that the notification is given in sufficient time to enable prospective Bidders to prepare and submit their Bids.
3. Support the PIA in preparing and conducting the pre-bid meeting(s).
4. Attend the pre-bid meeting to witness the discussion and be ready to prepare related responses to questions that may have remained unanswered during the pre-bid meeting, and to prepare amendment to the Bidding Documents, if necessary.
5. Assist the PIA between issuance of procurement notice and submission date (usually 6 weeks) in answering queries received from the bidders by drafting the responses during two business days after receiving the queries from the PIA.
6. Ensure that ESHS specific issues are emphasized and inform that upon contract award, the successful Bidder must comply with the agreed Code of Conduct.

**Key deliverables:**

- Drafts of Bid-Advertisements/Invitations.
- MoM on pre-bid meetings.

- Drafts of answers to the queries of the bidders.

## **Task 2.2 Bid Evaluation Process, Pre-Award Negotiations and Award**

The Consultant shall provide technical, financial and ESHS advice to the PIA during the bid opening, evaluation, negotiation, award process and reporting (approximately 4-5weeks) as follows:

Tasks:

1. Attend the Bid opening to witness the procedures and be ready to provide assistance during bid evaluations according to the WB's Procurement Guidelines.
2. Support the PIA's evaluation committees in providing technical advice for evaluating the bids according to the pre-defined criteria, allowing the committee to identify whether the bidder is substantially responsive (i.e. without deviation, reservation or omission) as per the bidding documents requirements.
3. Support the PIA in preparing an Evaluation Report in accordance with the result of PIA evaluation committee and support the PIA to fulfil the relevant reporting requirements of WB without taking any decision. Ensure that the report is transparent and sufficiently informative and complies with WB's format requirements.
4. Assist the PIA in preparing the agenda for pre-award negotiations and assistance to the PIA during pre-award negotiations and preparation of minutes of negotiations.
5. Assist the PIA in preparing contract documents including all annexes.
6. Assist the PIA drafting required communications letters for informing the unsuccessful Bidders.

The Bid Evaluation Report (BER) shall be prepared using the World Bank standard bid evaluation report template and it will include information and documentation established for RBD/PMT satisfaction that the results of the assessment are consistent with the procurement arrangements and evaluation and qualification criteria and procedures outlined in the bidding document. The bid evaluation report will include the following information, however the outline of contents will be discussed and agreed with the consultant in due time:

1. Basic data sheet and summary of the procurement.
2. A photocopy of the Invitation for Bids advertised in an English/local language in the local newspaper of wide circulation.
3. The Record of Bid Opening including the attendance sheet with signatures of the representatives of bidders.
4. Table of Bid Prices including arithmetic error corrections and discounts offered as submitted.
5. Table of Substantial Responsiveness to major commercial terms and conditions, and corresponding Table of Salient Features, if utilized.
6. Table of Substantial Responsiveness to key provisions of the technical requirements and specifications, and corresponding Table of Salient Features, if utilized.
7. Table of Bid Price Adjustments, if applicable.
8. Table of Evaluation of Bidder's Qualifications.
9. Table of Bid Price Comparison.
10. Copies of correspondence with bidders relating to clarifications of their bids.

The consultant shall assist the Client in addressing any comments from the World Bank on the BER. Additionally, the consultant shall be continuously present in all internal meetings with the PMU to align on the evaluation criteria, discuss progress and any important considerations which may need to be highlighted within received bids, present the recommendations, and align the outcome in the best interest of subject project.

#### **ESHS related tasks**

Determine whether the Bidder is substantially responsive (i.e. without substantial deviation, reservation or omission) to WB's ESHS requirements as specified in the valid version of WB's SPD for the Procurement of Works and has provided suitable references.

This includes the assessment of the Bidder's proposed ESHS Methodology, Management Strategies and Implementation Plans, the suitability of the Code of Conduct as well as the availability of suitably qualified ESHS experts among their key personnel and their references, required to manage the key ESHS risks of the Project;

#### **Key deliverables:**

- Bid-Evaluation Report.
- Letters to unsuccessful or disqualified tenderers.
- Publication of Bidding results.
- Contract Documents.

#### **Task 3: Supervision of Construction Works, Supplies and Services during Defects Liability Period (DLP).**

The services to be provided by the Consultant during Task 3 shall include, but shall not be limited to:

1. Coordination and liaison with the PIA, Contractor(s) and other relevant institutions including:
  - a. Organization of at least bi-monthly progress meetings with the Contractor(s), the PIA's representatives and other key-stakeholders concerned.
  - b. Preparation and circulation of minutes of meetings.
2. Take over the role of the Engineer (PIA) and carry out all tasks of the Engineer including among others:
  - a. Prepare initial site-handing over certificate in accordance with contract provisions.
  - b. Clearance of all the ES requirements identified per the MSIP
  - c. Supervision of daily activities and construction works.
  - d. Contract and claim management in consultation with the employer.
  - e. Control of the validity of the Contractor's documents such as insurance policies, bank guarantees, transport documents, etc.
  - f. Quality and quantity control for all works and supplies via day-to-day inspection of the Contractor's work.
  - g. Support to the PEA in the reception of equipment, tools and material and control of compliance with specifications, required quality and quantity.
  - h. Testing and approval of material and equipment.
  - i. Elaboration of daily construction records.
  - j. Provide guidance to the Contractor to conform to the specifications.

- k. Ensure that the Contractor is only using permanent and temporary construction material in compliance with the technical specifications and works requirements.
  - l. Time and expenditure control by preparing, monitoring and maintaining cost estimates and planning schedules.
  - m. Financial supervision including continuous control of cost schedules including cash flow forecast.
  - n. Measurement of the works done.
  - o. Review and approval of the Contractor's invoices and issuance of the corresponding "Payment Certificates" to the PIA.
  - p. Supervise work activities (daily) to ensure compliance with E&S requirements outlined in the ESMP Checklist (and/ other instruments), with reference to the ESMF, LMP, and SEP).
  - q. Conduct monthly on-site audits covering environmental, social, health and safety requirements as per the sub-project ESMP checklist and ensure conformity and compliance with the ES requirements during the subproject implementation. At instances of noncompliance, the consultant ES specialists shall provide proper correction actions the contractors/suppliers shall implement to minimize the impact and report on the applied measures and contractors' compliance.
  - r. Supervise the contractor's daily performance regarding labor and working conditions including occupational health and safety requirements.
  - s. Immediate reporting of incidents to the WCs and the ESSD as per the requirements of the project's ESCP, and review and advise on all the contractors/suppliers incident reports.
  - t. Reporting on project progress and risks in accordance with the reporting requirements of the World Bank (including compliance with Social and Environmental requirements as indicated under the ESMP Checklists) and reporting of level of compliance, deviations and corrective measures).
  - u. Supervise the preparation of any additional designs, plans and drawings, which are necessary for the execution of the works.
  - v. Assistance to the PIA in dealing with any variation orders to the Works Contract.
  - w. Ensuring visibility according to donors' requirements.
  - x. Review of the Contractor's reports, shop drawings; as-built drawings, operation manuals, maintenance plans, etc.
  - y. Supervise the Contractor's testing and commissioning of the constructed works and Contractor's supply.
  - z. Preparation of a snag list and assistance to the PIA in the preparation of provisional acceptance.
  - aa. Participation in the provisional acceptance and hand over of the completed works.
  - bb. Certify final completion certificate in accordance with contract provisions.
3. Examine whether the arrangements applicable to the disbursement procedure agreed between the PIA and the World Bank, which are to be submitted to the Consultant, are fulfilled.

**M&V activities:**

During the beginning of construction works for those projects, where additional measurement equipment will be procured by the contractor.

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| <ul style="list-style-type: none"><li>a. Supervision of Procurement and installation of additionally required measurement equipment.</li><li>b. Coordinate data acquisition from existing and/or additionally installed measurement equipment during the baseline period.</li><li>c. Elaborate baselines based on the acquired baseline period data.</li></ul> |
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**Key deliverables:**

- Monthly and Quarterly Progress Reports, including updated project time schedule.
  - Project Completion Report.
  - Site instructions.
  - Input in the Progress Reports regarding, ESMP Checklist and Contractor ESHS compliance and reporting.
4. Planning and coordination. Under the planning and coordination, the consultant shall do the following main tasks:
- a. Review of Contractor's submitted Detailed Program for all lots. The Consultant shall review the contractor's submitted detailed work plan, including his methodology for ensuring the quality of the works, and computerized program (and software, e.g. primavera or similar) of all activities and resources for the execution of the work included in his contract.
  - b. Review and approval of detailed designs. The consultant shall review the detailed designs submitted by the contractor in alignment with the contract requirements and provide comments as necessary.
  - c. Progress Monitoring-During Construction. In order to fulfill the above objectives, the Consultant shall for all contracts, inter alia: At all times take necessary measures and provide appropriate advice to the Client to enable the construction contract to be completed in a timely and cost-effective manner, in conformity with contract conditions and specifications. The Consultant shall monitor the Contractor's works to determine progress on a monthly basis and ensure that the construction program is maintained, and costs minimized by means of, but not limited to, the following activities:
    - i. Review and, if in agreement, consent to the Contractor's proposed program of work to meet key dates established in the various tasks.
    - ii. Prepare and maintain progress programs for use in monitoring and reporting progress.
    - iii. Prepare consolidated monthly reports on physical and financial status, site meetings and contractual matters with particular reference to variation orders and contractors claims. The monthly reports shall deal specifically with monitoring and follow-up of agreed environmental and social mitigation measures and with the contractor's adherence to safety, health standards and anti-corruption measures as applicable under contract. Each monthly report should include recommendations if any, for action by the Client and the Contractor.



- iv. Prepare control charts of the main activities and a project master schedule, indicating both past performance and forecasts for completion including time involved in each case.
  - v. Analyze the variations of construction progress from the Contractor's program; and advise client in a timely manner.
  - vi. If and when progress falls behind program, develop in consultation with the Contractor, appropriate modifications to programs and/or work methods to recover the original program. The Employer shall be informed of such changes and recovery activities.
  - vii. Ensure that the Contractor's reporting requirements identified in the management procedures developed by the Consultant are fulfilled.
- d. Co-ordination. The Consultant shall organize co-ordination and site meetings with the Contractor on a regular basis and as necessary. The Consultant shall conduct these meetings on behalf of the Client, take minutes and report to all concerned parties.
- e. Identify and Protect Antiquities. The Consultant shall examine the "Archaeological and Historical Sites Survey" report prepared during the design phase to ascertain the probable location of antiquities which may be disturbed by construction of the works. If any antiquities are revealed during investigations of construction works, he shall instruct the Contractor to take necessary measures to protect the antiquities and shall notify the Employer without delay.
- f. Monitoring of Environmental and Social Management Plan, Occupational Health and Safety plan and Traffic Management plan. Prior to construction stage, the Consultant shall review the Contractor's Environmental and Social Management Plans (C-ESMP) based on the ESMP checklist, Occupational Health and Safety plan, and the Contractor's Traffic Management Plan (TMP), and all other identified instruments under the Environmental and Social Management Framework and make any necessary recommendations for approval. During construction, the Consultant shall:
- i. Perform monitoring of E&S specific indicators with reference to the project ESMF, and the ES metrics specified in the supplies/works bidding documents.
  - ii. Conduct weekly site visits to monitor and evaluate the contractor's adherence to E&S mitigation measures as outlined in the E&S instruments with reference to the ESMF, LMP, and SEP. Upon identifying non-compliance, assess the associated risks and recommend corrective measures. report on the applied measures along with their implementation and contractors' compliance. Follow up to ensure the implementation of corrective measures and report compliance.
  - iii. Report on incidents as they occur with a brief report to be submitted within 24hours and support the investigation and the root cause analysis.
  - iv. Ensure that the grievance mechanism of the project is implemented properly. This will be done through documenting all received complaints with all relevant details: number of complaints received, who submitted the complaint, to whom it was submitted, how it was handled and resolved, timeframe for resolution, etc. . This is to be reflected in the monthly reports submitted to the employer. Recurrent

complaints should be also notified to the project owner and solutions should be proposed.

- v. Assess any new impacts that emerge during the construction stage and propose mitigation measures based on the mitigation hierarchy and in accordance with the ESSs. Provide feasible measures for their elimination, and if elimination is not feasible, propose mitigation measures to minimize risks and impacts, which should be agreed by the project owner and implemented by the contractor.
- vi. The consultant shall monitor Occupational health and safety measures and training as well as Traffic management plans measures implemented by the Contractor, and advise where additional measures shall be enhanced, workers training be conducted and ensure compliance recorded.
- vii. Report in the Monthly progress report on implementation of the ES requirements, level of compliance, deviations, corrective measure considered and its effectiveness, and GM and incidents.

#### 5. Cost Control.

- a. Monitoring Contract Costs. The Consultant shall be responsible for monitoring of contract costs relative to budget. The consultant shall utilize a computerized Budget and Cost Forecast (BCF) system and shall prepare, with the Contractor, an estimate of the cost of the various contract items, and incorporate updated quantities, variation orders, day works, potential costs of claims, and projected expenditure from provisional sums. The estimated cash flow up to completion of the contracts shall be prepared, updated based on the revised contract costs, and submitted each month in line with the management procedures.
- b. Claims Management and Variation Orders. The Consultant shall anticipate potential claims and shall take steps to mitigate their effect. The Consultant shall assess the need for variations to the Contract and any claims submitted by the Contractor, review their merit and, where appropriate, prepare variation approval requests and submit them to the Employer for approval prior to preparing variation orders and issuing them to the Contractor.
- c. Certify Contractors' Monthly Statements. The Consultant shall process in a timely manner and, as appropriate, certify for payment the Contractor's monthly interim statements to ensure that such statements reflect work completed. The statements shall be based on measurements on site. The measurements on site shall be made jointly by the Contractor and the Consultant. The consultant shall prepare and submit to the Client the final cost for the measured completed works.

#### 6. Record Keeping.

- a. Preparation of Reports. The Consultant shall prepare all necessary reports for progress and record purposes. The preparation of these reports shall include, but not be limited to, the following activities:
  - i. Prepare and agree with the Employer appropriate formats and review and approval of these formats, if required, as work proceeds.

- ii. Collect and check daily and shift reports from the Contractor for labor (disaggregated by type of job, gender, location and nationality of worker) and equipment in anticipation of preparing weekly and monthly summary reports.
  - iii. Keep records of all measurements and agreements and incorporate measurement data in monthly progress reports and cost monitoring systems.
  - iv. Undertake the correct and timely distribution of all reports.
  - v. Minutes of site and co-ordination meetings shall be distributed within the three days following the meeting.
  - vi. Monthly progress reports will be standardized as per the developed management procedure. The Consultant shall follow these standardized formats.
  - vii. The Consultant shall prepare and/or supervise the preparation of cost reports, progress reports, construction schedules, estimates of monthly cash requirements, Contractor's estimates for payments, and such other reports and data as may be desirable or as may be directed by the Employer. Monthly construction progress reporting will use the "Earned Value" technique requiring the provision of an activity completion report for each contract with an "S" curve, and a tabular cash flow report.
- b. As-Built Drawings and Completion Report. The Consultant shall be responsible for ensuring that the Contractor maintains at the site a complete set of "as-built" drawings for the Contract as the work proceeds. To this end the Contractor shall:
  - i. On a set of working drawings maintain a continuous reproducible "as-built" record of the actual alignments, levels, dimensions etc. to which the works have been constructed.
  - ii. On completion of the construction of each structure/section, transfer all recorded changes to a CAD file (original CAD files to be supplied by designer), or prepare new CAD drawings as required.
  - iii. Prepare completion reports for all major structures or elements of the contract works, incorporating as-built records and drawings, within 60 days of issue of any taking over certificate. Completion reports shall also include details of construction methodology, test results, O&M recommendations etc.
  - iv. The Consultant shall audit on a monthly basis, and maintain audit records for review by the Client, the Contractor's performance in producing as-built details and completion reports.
- c. Operating and Maintenance Manuals. The Consultant shall review detailed Operation and Maintenance Manuals prepared by the Contractor, finalize as appropriate and submit to the Employer. The O&M manual shall include at least:
  - i. Reference to all relevant design and other reports, specifications etc. in order to provide a complete bibliography on the structures and plant such that the operation and maintenance staff can understand the basis of their functions.
  - ii. Details of any problems encountered during construction which may have a bearing on the future safe operation and decommissioning of the facilities.

- iii. Full operating instructions for all systems; drawings, diagrams, charts, notices etc. to facilitate understanding of safe operation and maintenance.
- iv. A maintenance schedule and consumables required to give reliable operation of the facilities.

7. Supervision of Contract Works.

- a. Project Manager Function. The Conditions of Contract for the construction contracts are based on WB Conditions of Contract and special conditions. The Consultant will be required to obtain specific approval of the Employer before taking certain actions.
- b. Construction Works and Materials Inspections and Approvals. The Consultant shall supervise and inspect the construction works including, but not limited to, the following activities:
  - i. Supervising and inspecting the works of the contractors and suppliers for completion of the contracts in accordance with plans and specifications.
  - ii. Monitoring environmental, social, and health and safety requirements, whether specified or not, and ensuring that requirements are fulfilled.
  - iii. Taking photographs during construction and installation and keeping a daily diary of construction activities.
  - iv. Supervising and approve all tests to be carried out by the Contractor and suppliers.
  - v. Supervising and approve final evaluation of all measurements made by the Contractor including the provision of all necessary measurement instruments.
  - vi. Supervising the assembly, installation, preliminary tests, initial operation and preparation for commissioning of all machinery and equipment on site.
  - vii. Supervising through qualified inspectors jointly with the Employer the execution of the acceptance tests prior to convening the taking over committee and issuing the Taking Over Certificate.
  - viii. Preparing and submitting to the Employer inspection and test reports and certificates of acceptance.
  - ix. Supervising the commissioning of all structures and plant. The Consultant shall assist in the involvement of concerned operating staff, co-ordinate testing and commissioning programs and prepare taking over certificates.
  - x. Administer day works as required.
  - xi. Follow up on the manufacturing of all equipment to ensure compliance with the specifications, including monitoring of certificates of origin, and supervise their delivery to ensure compliance with contractual time schedules.
  - xii. Follow up on packing, transportation and delivery, as well as temporary storage, and supervise the storage at site of all equipment, materials and supplies, together with ensuring that Letters of Credit are opened by the Contractor where appropriate.
  - xiii. Promote a good working environment and monitor labor relations, living and community relations to be able to identify potential problems and solve them promptly as set forth in the various contracts.

- xiv. Enforce the maintenance and protection of traffic procedures and schemes as detailed in the drawings.
- xv. Enforce the contract's Safety, Health and Environmental Regulations.
- xvi. Ensure that the Contractor complies with the contract in respect of insurance.

#### 8. Defects Liability Period.

Services during Defects Liability Period (DLP) including verification of obtained energy cost savings and Project Closure.

Please consider that Investment measures, which according to the list of project measures (see Annex 1) don't count with a feasibility study and thus with no final implementation decision, will be optionally implemented only, i.e. the Consultant shall offer related Consulting Services for Task 3 as an option as specified in Annex 2.

The assistance during the DLP and Closure of Project, after the issuance of the provisory Taking Over Certificate, shall address all post-construction activities up to the final acceptance of works through the Performance Certificate. The Consultant shall carry out regular inspections during the DLP depending on the need in order to ensure the execution of all remedial works by the Contractor.

Furthermore, he shall measure the impacts of the investments and monitor and verify the reduction of energy consumption and costs. Prior to Program end the Consultant shall check that also all ESH related tasks of the Contractor are completed, and the areas of activities have been reinstated by the Contractor.

On expiry of the DLP the Consultant shall assist the PIA in issuing a Certificate confirming that the constructions/installations were completed successfully in accordance with the specified performance level (Performance Certificate).

For purposes of carrying out these services the Consultant shall assign his Resident Engineer to make two annually visits to each of the project measure sites to carry out the following;

- a. Inspections of Outstanding works and Remedying Defects.
- b. Prepare and issue Defects Liability Certificate.
- c. Review and certify Final Payment Certificate.
- d. Prepare Final Completion Report

During the DLP the consultant will be furthermore responsible for:

- a. Training of the staff responsible for operation and according to Standard Operation Procedures (SOP).
- b. Preparation of a preventive maintenance plan for related works, taking into consideration the readiness of spare parts and consumables.
- c. Preparation of a logbooks for documentation of all relevant operational parameters and routine inspections to monitor and ensure operation according to SOP as intended for an efficient and gentle system operation during and after Defects Notification Period (DNP).
- d. Monitoring and reporting of obtained energy savings and comparison to targeted production / savings (see also Attachment 2).

- e. Monitoring and reporting of maintenance activities.
- f. Monitoring contractors for defects remedy and accounting for any liquidated damages

**M&V activities:**

Conduct the verification and reporting of achieved energy savings from EE-projects during the DNP:

- a. Coordinate or conduct acquisition of data from measurement equipment, that are required for the verification of the obtained energy savings against established baselines.
- b. Calculate obtained energy savings against established baselines.
- c. Elaborate M&V reports according to the in the M&V plans established frequency.
- d. Initiate and coordinate with the PIA any required action in case of deviations of the obtained savings from the targeted savings

During closure of the Project the Consultant shall prepare Final Project Report for each lot.

**Key deliverables:**

- Progress Reports for each lot.
- Inspection Reports for each project measure to be implemented and updated SNAG List(s).
- Final DLP Completion Reports for each lot (covering all implemented project measures and developed materials for training and operational control purposes).
- Release of maintenance guarantees.
- Exit strategy and project handover package for each lot.
- M&V Reports using M&V templates available at WAJ for each project measure.

## **E. REPORTING REQUIREMENTS FOR DELIVERABLES**

The Consultant shall carry out all required inspections and studies for the successful implementation of the project and shall therefore submit a complete package of documents (i.e. Reports, Plans, Specifications and Estimates (PS&E), etc.) to the Employer in English Language submitted in both hard and electronic (digital e.g. Word, Excel, AutoCAD) format. Time for comments and approval shall be up to four weeks after submission. Final reports shall be submitted 2 weeks after receiving comments on the draft. Each report shall contain a concise executive summary with key findings and recommendations. The Consultant shall submit to WAJ, all raw data collected during the assignment, including through fieldwork, and supporting calculations for each proposed measure.

### **Regular / Recurring Reporting Requirements**

The Consultant shall prepare monthly progress report (in a format agreed with the PIA) summaries for the duration of the contract to maintain the PIA, Water Companies and WB informed about useful information regarding the implementation of the whole project and identify potential issues and bottlenecks in advance to ensure a smooth progress of the project.

In addition, Minutes of Meetings (MoM) of all regularly recurring meetings (i.e. Project Management Meeting) shall be elaborated and distributed to the participants by the consultant.

Furthermore, the consultant is expected to hold at relevant intervals stakeholder workshops and regular meetings to present project status, findings and key recommendations for feedback and endorsement. A

final workshop shall be held upon completion of the assignment to present to a broader audience the results of the assessments to demonstrate the process and potential impacts associated with targeted institutional and infrastructure energy efficiency investments. These workshops and other relevant activities/recommendations shall be documented in the Completion Report.

**Key Deliverables for regular reporting:**

- Monthly Progress Summary.
- MoM Management Meetings.
- MoM Stakeholder Workshops.

**Task-Specific Reporting Requirements**

The Task-specific reporting requirements for the consultant include but are not limited to the following:

**For Task 1: Inception Phase and additional Feasibility Studies.**

**Sub-task 1.1 Inception Phase shall include the following deliverables:**

- MoM Kick-off Meeting.
- Inception Report.
- Project Manual / Manual of Procedures.
- Updated Project List.

**Sub-task 1.2: Engineering & Design Phase.**

Preliminary Design shall include the following deliverable:

- Three Preliminary Design Reports (one for each lot), including at least for all project measures (e.g. design criteria, specifications, drawings, procurement concept, confidential cost estimate, time schedule).
- M&V Plans, including energy baselines according to IPMVP for each project measure, where NO additional measurement equipment is required.
- M&V Plans, including energy baseline approaches according to IPMVP for each project measure, where additional measurement equipment is required.
- Cleared updated Environmental & Social Management Plan Checklist.
- Stakeholder Engagement Report.
- Other E&S instruments identified in the final E&S screening as per each ESS.

**Subtask 1.3: Preparation of Bidding Documents shall include the following deliverables:**

- 3 sets of Bidding Documents (one set for each lot, corresponding to project measures within the boundaries of the Water Companies (AWC, MWC, YWC), including at least: Final Engineering Report (4 copies), Design Calculation Notes, Quantities Calculation Notes, Confidential Fair Price Estimate,
- Final Tender Documents (10 copies): using the World Bank Standard Procurement Document, Volume 1: Conditions of Contract, Volume 2: Functional Specifications, Volume 3: Schedule of Work items, Volume 4: Contract Drawings, Volume 5: All E&S instrument reports as defined under Task 1 (approved by the Client and cleared by the World Bank);
- 3 sets of Bid Evaluation matrices (one for each lot).

The Client shall first review and approve draft final documents submitted. Once these documents are approved, the Consultant shall submit the required number of copies of together with two soft copies on computer CD-ROM. The drawings shall be in AutoCAD version 2017 format or later and all text reports in MS Word and excel. Tender documents shall be submitted in editable format and in Adobe Acrobat PDF format.

## **For Task 2: Pre-Construction Services /Technical Advice during Tendering Process**

### **Subtask 2.1 Tender Process**

#### **Key deliverables:**

- Drafts of Bid-Advertisements/Invitations.
- MoM on pre-bid meetings.
- Drafts of answers to the queries of the bidders.

### **Subtask 2.2 Bid Evaluation Process**

After completion of the bid opening, the consultant shall prepare his bid evaluation reports (one for each lot) following the outline stated in the bidding document with sufficient details to determine the responsiveness of the bids and to evaluate and compare the financial bids of the responsive bids and provide price analysis of the lowest responsive bid. The consultant bid evaluation report shall be submitted in non-editable format and two (2) hard copies to the client.

#### **Key deliverables:**

- MoM on pre-bid meetings.
- Drafts of answers to the queries of the bidders.
- Bid-Evaluation Report.
- Draft-Letters to unsuccessful or disqualified tenderers.
- Draft- Publication of Bidding results.
- Contract Documents.

## **For Task 3: Supervision of Construction Works, Supplies and Services during DLP.**

### **Reporting for Construction Period Services**

Reporting on Supervision of works will have to be carried out for each lot/contract individually, as involved parties and implementation periods will be different for each contract.

#### **Inception Reports**

The Consultant shall submit the Inception Report within four weeks of commencement of each works contract. This report shall include results of the review of the contractor's work program, any modifications thereto, status of the contractor's mobilization, advance payment, Bank guarantees and any matter requiring the Employer's attention and action. This report shall be also being submitted in 5 copies.



### **Monthly Progress Reports**

The Consultant shall prepare monthly progress reports for the duration of each construction works contract. These are to be submitted in 5 hard copies and 1 electronic editable version by email and should reach the Client not later than 10 days after the end of the month being reported on.

The monthly progress report shall be in a format agreed with the PIA, summaries for the duration of the contract to maintain the PIA, Water Companies informed about useful information regarding the implementation of the whole project and identify potential issues and bottlenecks in advance to ensure a smooth progress of the project.

The reporting shall inform about the monitoring of E&S requirements, which include, but are not limited to, assessment of the degree of compliance of the contractor to all E&S instruments including the Contractors' Environmental and Social Monitoring Plan (C-ESMP), Occupational Health and Safety (OHS), Traffic Management Plans (TMP), requirements of the archeological & Historical chance find procedure, and others as required. The reporting shall cover implementation status of mitigation measures, results of environmental and social monitoring, compliance with Health and Safety measures, any construction and/or traffic related accidents. corrective actions implemented, records of any archeological & Historical artifacts found during construction, etc.

### **Quarterly Progress Report**

The Consultant shall prepare quarterly progress reports for the duration of the construction works contracts following the same format of the monthly progress report and summarizing the past 3 monthly progress reports. These are to be submitted in 5 hard copies and 1 electronic editable version by email and should reach the Client not later than 10 days after the end of the period being reported on.

### **Construction Contract Completion Report**

The Contract Completion Reports in five (5) hard copies and 1 electronic editable version by email and should reach the Client no later than one month after the substantial completion of construction works related to each corresponding contract/lot. The reports should enable the Client to know the type, quality and quantity of materials used and all information which together with the as-built drawings (original and 6 copies and 1 CD containing the as-built in electronic editable and non-editable format) and specifications will help in the maintenance of the works.

The reports shall also include a summary of the principal difficulties encountered during construction and the means employed to overcome them, changes (if any) made in the original designs, modifications to specifications and conditions of contract, all variation orders, assessment of claims by the contractor, utilization of provisional and price variation and physical contingency sums, cumulative monthly payments to the Contractor, by date and number of payment certificate and break down into foreign and local currencies and including a similar payment schedule for supervision services. The details of the overall project costs (construction and supervision) with justification for any significant differences with the original shall be given in the final report.

### **Key deliverables:**

- Monthly and Quarterly Progress Reports, including updated project time schedule.
- Construction Contract Completion Reports.
- Site instructions.
- Input in the Progress Reports regarding, ESMP and ESHS.

#### **Reporting for Services during Defects Liability Period (DLP).**

Reporting on services during DLP will have to be carried out for each lot individually, as involved parties and DLPs will be different for each lot.

##### **Six Monthly Progress Reports:**

The Consultant shall prepare 6 monthly progress reports for the duration of the DLP summarizing all activities issues and actions taken in relation to the provided services. These are to be submitted in 1 electronic editable version by email and should reach the Client not later than 10 days after the end of the period being reported on.

The monthly progress reports shall cover the monitoring of E&S requirements , which include, but are not limited to, assessment of the degree of compliance of the contractor with the requirements stipulated in all E&S instruments, including the Contractors' Environmental and Social Monitoring Plan (C-ESMP) Checklist, Occupational Health and Safety (OHS) measures, and Traffic Management Plans (TMP), and/or others as identified in the final E&S screening as per each ESS. The reporting shall also cover the implementation status of mitigation measures, environmental and social monitoring results, compliance with Environmental, Social, Health, and Safety (ESHS) measures, any incidents occurred in relation to works and construction, traffic-related accidents, Sexual Exploitation and Abuse (SEA)/ Sexual Harassment (SH), or other reportable incidents; corrective actions implemented, records of any archeological & Historical artifacts found during construction, etc.

##### **Final DLP Completion Reports:**

Upon issuance of the defect's liability and the final payment certificates, the Consultant shall prepare within 30 days the Project Final Completion Report in five (5) hard copies and 1 electronic editable version by email and should reach the Client no later than one month after the end of Defect Liability Period. The report shall include a separate section on proposed future maintenance activities and related arrangements for the road sections supervised.

##### **Key deliverables:**

- Progress Reports for each lot.
- Inspection Reports for each project measure to be implemented and updated SNAG List(s).
- Final DLP Completion Reports for each lot (covering all implemented project measures and developed materials for training and operational control purposes).
- Release of maintenance guarantees.
- Exit strategy and project handover package for each lot.
- M&V Reports using M&V templates available at WAJ for each project measure.

#### **F. Team Composition & Qualification Requirements for the Key Experts**

The Consulting firm selected for this assignment shall be duly qualified, with a track record of experience in the relevant field. The Consultant shall provide information on each position related to his relevant education, experience, knowledge, etc. The Consultant shall employ such staff as may be necessary to fulfill his obligations under the agreement. However, the Consultant shall make his own assessment of the staff necessary to fulfill his obligations. All such staff are to be fluent in the written and spoken use of the English Language (with Arabic Language is a preference) and shall also be fully computer literate.

However, upon contract start-up the consultant shall seek client's approval on the staff in case of changes since proposal submission. No staff shall be mobilized until the Consultant has received formal written approval from the employer for each member of staff. The Consultant is encouraged to employ local experts to ensure the local conditions and capacities are best considered.

Language and translation requirements shall be carefully considered. The Consultant is expected to provide a complete staffing schedule, including commitment levels of senior staff to this assignment and commit adequate resources for successful completion and submission of all deliverables within the duration of this assignment. The Consultant's key personnel proposed shall include but not necessarily limited to:

**For Tasks 1 and 2: Inception Phase (Feasibility Studies, Engineering & Design) and Pre-Construction Services**

In this stage, the Consultant shall employ key and non-key staff (as may be necessary) as of the below to fulfill his obligations.

#	Position	Position Description
<b>Key Positions</b>		
K-1	Team Leader	The proposed Project Manager/Team Leader shall be a qualified civil or mechanical engineer, shall have a university degree and shall have a minimum of 15 years of increasingly responsible experience, at least five of which in a similar management position on comparable projects, and shall have experience in water supply projects broad knowledge in energy efficiency related to water and wastewater facilities.
K-2	Senior Engineer, Water Supply Expert	Senior civil or electro-mechanical Engineer responsible for the design of various water supply facilities/pumping systems shall be qualified with a university degree and shall have a minimum of 10 years of increasingly responsible experience, at least five of which in a similar position on comparable projects.
K-3	Electro-mechanical/SCADA-Expert	A minimum of B.Sc. degree in Electrical Engineering, Mechanical Engineering, or related field, with at least 12 years of experience in automation and control of water and wastewater systems and networks, and experience in integration of Energy- and parameter data into data-management systems.
K-4	Environmental and Social Specialist	A minimum of B.Sc. degree in Engineering or Environmental and Social studies, with minimum experience of at least 7 years in environmental and social management including preparation of environmental and social instruments (including Environmental and Social Impact Assessment (ESIA)/ Environment and Social Management Plan (ESMP)) and monitoring for relevant projects. Familiarity with the environmental and social standards while previous experience with preparing E&S instruments according to World Bank Environmental and Social Framework is a plus.
K-5	Occupational Health & Safety Expert	A minimum of a graduate degree in related field with minimum proven experience of at least 10 years in monitoring Occupational Health & Safety relevant projects (water/sewer/road projects) including international experience. Experience should include workplace health and safety practices, strong knowledge of OSHA or similar regulations, analysis of potentially dangerous workplace practices/conditions and

		preparation/implementation of recommendations, incidents fact finding and root cause analysis. Certification from an international body in OSHA or similar is a must.
K-6	Procurement and Contract Management Expert	A minimum of B.Sc. degree in civil engineering (contract management): General professional experience: At least 10 years of relevant experience of tender documents preparation and contracts management. Experience in preparing tender documents using FIDICS or other IFI standard bidding documents is a must, knowledge with world Bank Standard Bidding Document is a plus.
<b>The CVs of all the positions mentioned above shall be submitted for conformity with qualifications. Evaluations will be conducted for the CVs of positions of key staff only.</b>		
<b>Non-Key Positions</b>		
NK-1	Local Deputy Team Leader	A minimum of B.Sc. degree in mechanical or electrical engineering (water system design): General professional experience: At least 10 years of relevant experience in project management. Experience in preparing design documents is a must, knowledge with World Bank or other international bodies related to financial cooperation is a plus.
NK-2	Water Supply Engineer	A minimum of B.Sc. degree in mechanical or electrical engineering (water system design): General professional experience: At least 10 years of relevant experience. Experience in preparing design documents is a must,
NK-3	Mechanical Engineer	A minimum of B.Sc. degree in mechanical engineering (Pumping and water system design): General professional experience: At least 10 years of relevant experience. Experience in preparing design documents is a must.
NK-4	Electrical Engineer	A minimum of B.Sc. degree in mechanical engineering (water system design): General professional experience: At least 10 years of relevant experience. Experience in preparing design documents is a must.
NK-5	Structural Engineer	A minimum of B.Sc. degree in civil engineering: At least 10 years of relevant experience with the structural design and static calculations related to water supply and adjacent support-infrastructure/ buildings.
NK-6	Measurement & Verification Expert	A minimum of B.Sc. degree in mechanical or electrical engineering: Certified Measurement & Verification Professional General professional experience: At least 5 years of relevant experience with water supply systems.
NK-7	Environmental & Social Expert	A minimum of B.Sc. degree in environmental or social sciences: At least 5 years of relevant experience with ESIA/SEP related tasks.

### For Task 3 (Supervision of Works and Services during DLP):

An indicative list of Key (K) and Non-Key (NK) staff is presented below:

#	Position	Position Description
<b>Key Positions</b>		
K-1	Resident Engineer (Full Time)	A minimum of B.Sc. degree in Civil Engineering with at least 15 years of experience out of which 10 years of experience as a Resident Engineer in infrastructure construction projects using FIDIC contract. He shall be a Registered Engineer or equivalent membership (for local engineers) with extensive experience in infrastructure and contract administration. Duties include overall responsibility for management of staff. Maintaining contact with Employer and Consultant's head office. Liaison with public authorities and general members of the public. Ensuring adequate supervision of works and maintaining control of programming, claims and variations. Issuing instructions to contractor.
K-2	Senior Engineer,	Senior civil or electro-mechanical Engineer responsible for the design of various

	Water Supply Expert	water supply facilities / pumping systems shall be qualified with a university degree and shall have a minimum of 10 years of increasingly responsible experience, at least five of which in a similar position on comparable projects.
K-3	Sr. Site Engineer Electro-Mechanical/SCADA Expert (Full Time)	A minimum of B.Sc. degree in Electrical or mechanical Engineering with 10 years of experience in similar works. Responsible for Supervision of site works related to automation and control of water and wastewater systems and networks and integration of Energy- and parameter data into data-management systems. Maintaining records of the Contractor's activities, plant, and labor. Maintaining records of complete works.
K-4	Environmental Specialist	A minimum of B.Sc. degree in Engineering or Environmental studies, with minimum experience of at least 7 years in ESMP's preparation of environmental instruments and monitoring for relevant projects. Familiarity with environmental standards of international financial institutions (IFI) is a must while previous experience with preparing E&S instruments according to World Bank Environmental and Social Framework (ESF) is a plus.
K-5	Social Specialist	A minimum of B.Sc. degree in Engineering or Social studies, with minimum experience of at least 7 years in ESMP's preparation of social instruments and monitoring for relevant projects. Familiarity with social standards of international financial institutions (IFI) is a must while previous experience with preparing Social instruments according to World Bank Environmental and Social Framework (ESF) is a plus.
K-6	Occupational Health & Safety Expert (Full Time)	A minimum of a graduate degree in related field with minimum proven experience of at least 10 years in monitoring Occupational Health & Safety relevant projects (water/sewer/road projects) including international experience. Experience should include workplace health and safety practices, strong knowledge of OSHA or similar regulations, analysis of potentially dangerous workplace practices/conditions and preparation/implementation of recommendations, incidents fact finding and root cause analysis. Certification from an international body in OSHA or similar is a must.
K-7	Contract Management Expert	A minimum of B.Sc. degree in civil engineering (contract management): General professional experience: At least 10 years of relevant experience in contracts management. Experience in contracts management and preparing tender documents using FIDICS or other IFI standard bidding documents is a must, knowledge with world Bank Standard Bidding Document is a plus.
<b>Non-Key Positions</b>		
NK-1	Local Deputy Team Leader	A minimum of B.Sc. degree in mechanical or electrical engineering (water system design): General professional experience: At least 10 years of relevant experience in project management. Experience in preparing design documents is a must, knowledge with World Bank or other international bodies related to financial cooperation is a plus.
NK-2	Water Supply Engineer	A minimum of B.Sc. degree in mechanical or electrical engineering (water system design): General professional experience: At least 10 years of relevant experience. Experience in preparing design documents is a must.
NK-3	Mechanical Engineer	A minimum of B.Sc. degree in mechanical engineering (Pumping and water system design): General professional experience: At least 10 years of relevant experience. Experience in preparing design documents is a must.

NK-4	Electrical Engineer	A minimum of B.Sc. degree in Electrical engineering (water system design): General professional experience: At least 10 years of relevant experience. Experience in preparing design documents is a must.
NK-5	Measurement & Verification Expert	A minimum of B.Sc. degree in mechanical or electrical engineering: Certified Measurement & Verification Professional General professional experience: At least 5 years of relevant experience with water supply systems.
NK-6	Three Site Inspectors / Site Engineers (Part to Full Time	At least seven (7) years of experience works out of which at least five (5) years as Site Inspectors in similar water supply projects.
NK-7	Environmental & OHS-Expert	A minimum of B.Sc. degree in environmental or social sciences: At least 7 years of relevant experience with ESIA/OHS related tasks.
NK-8	Surveyor	At least five (5) years of experience works in similar projects.
NK-9	Quantity Surveyor Engineer	At least five (5) years of experience in similar water supply projects.
<b>The CVs of all the positions mentioned above shall be submitted for conformity with qualifications. Evaluations will be conducted for the CVs of positions of key staff only.</b>		

The above staffing is an indication of the requirements, but the consulting firm has the ultimate responsibility to staff the supervision teams adequately to take full responsibility for quality of the works and timely implementation.

#### **G. Working Hours**

During site construction and installation works the Consultant shall ensure that his staff are always on site when the Contractor is working.

#### **H. Consultant's Facilities**

During design phase Office accommodation of a reasonable standard and of approximately 10 square meters for each expert working on the contract and reasonably accessible by phone, fax and e-mail over the duration of the assignment is to be provided by the Consultant.

In principle, the costs of the facilities should be included in the Consultant's experts fee rates. The Consultant must ensure that experts are adequately supported by e.g. secretarial and interpreting provision and equipped.

During supervision stage all logistics including offices, stationery, in-the-field transportation, and furniture will be provided by the contractor upon consultant requirement and conditions as per special contract specification.

#### **Duration and Payment Schedule**

Duration of this assignment is 40 (Forty) months; as follows: 9 (Nine) months during design phase and Pre-construction services (e.g. bidding stage), 18 (Eighteen) Months for Construction Supervision and 12 (Twelve) months for DLP.

In view of the tasks to be achieved, it is anticipated that staff input will be 132 key & non-key staff-months, as follows:

**For Task 1: Inception Phase, Feasibility Studies, Design, E&S and preparation of bidding Documents.**

The Consultant shall complete the services of Task 1 according to the following timetable and be paid according to the payment schedule:

<b>Sub-tasks Submittal</b>	<b>Time for tasks (months)</b>	<b>Submittal time Duration</b>	<b>Payment schedule</b>
Sub-task 1.1- Inception Phase, Data collection, additional feasibility studies, etc.	1	1 month from notification of Contract.	30% of the total lump sum of the total amount of task 1.
Sub-task 1.2- Engineering Design: Preliminary designs and draft Environmental & Social Framework Instruments, etc.	3	4 months from notification of contract.	40% of the total lump sum of the total amount of task 1.
Sub-task 1.3- Preparation of Tender Documents and final Environmental & Social Framework Instruments, etc.	2	6 months from notification of contract.	30% of the total lump sum of the total amount of task 1.

Intermediate partial submissions of parts of reports and/or plans for the purpose of discussion are not considered official submissions. Review time is included in the time duration of services.

**For Task 2: Pre-construction Services & Technical Advice during Tendering Process**

<b>Sub-task Submittal</b>	<b>Time for tasks (months)</b>	<b>Submittal time Duration</b>	<b>Payment schedule</b>
Sub-tasks 2.1 & 2.2- Assistance during tendering and preparation of bid evaluation Report.	3	9 months from notification of Contract.	100% of the total lump sum of the total amount of task 2 upon approval of bid evaluation report.

### For Task 3: Supervision and Construction & Services during DLP

The Consultant shall quote the cost of his staff, technical, equipment and other costs as he deems to be required. He shall summarize his monthly costs and accompany the same with a schedule (time sheet) showing the involvement of project staff.

#### Staff Remuneration

Staff remuneration covering the monthly remuneration rates for each local and expatriate personnel.

<b>Staffing (Task 3)</b>	<b>Input in staff-months</b>
<b>Key Staff</b>	
Resident Engineer	8 staff-months + 1 staff-month during DLP
Senior Engineer, Water Supply Expert	8 staff-months
Sr. Site Engineer	12 staff-months + 1 staff-month during DLP
Environmental Expert	2 staff-months + 1 staff-month during DLP
Social Expert	2 staff-months + 1 staff-month during DLP
Occupational Health & Safety Expert	12 staff-months + 1 staff-month during DLP
Contract Management Expert	3 staff-months
<b>Total</b>	<b>52 staff-month</b>
<b>Non-Key Staff</b>	
Local Deputy Team Leader	12 staff-months + 1 staff-month during DLP
Water Supply Engineer	6 staff-months + 1 staff-month during DLP
Mechanical Engineer	6 staff-months + 1 staff-month during DLP
Electrical Engineer	6 staff-months + 1 staff-month during DLP
Measurement & Verification Expert	4 staff-months + 6 staff-month during DLP
Three Site Inspectors	21 staff-months+ 1 staff-month during DLP
Environmental & OHS-Expert	8 staff-months + 1 staff-month during DLP
Surveyor	3 staff-months
Quantity Surveyor Engineer	2 staff-months
<b>Total</b>	<b>80 staff-months</b>

The Consultant shall allocate his staff during the project implementation as needed considering the peak of construction to ensure the adequacy of staffing levels during such period. Depending on the works currently in progress, details of staffing levels will be agreed through the course of the assignment with the Client. It should be noted that the Consultant shall work according to the contractor's work schedule, which may include work during 7 (seven) days a week.



## Annex 1 List of Energy Efficiency Sub Projects

JWSEP- Energy Efficiency Sub projects					
#	project name	Company	Location	Feasibility Study Availability? (Yes/NO)	in progress under GIZ Consultant
1	Old Basateen Pump Stations and Booster 11	MWC	Zarqa	Yes	No
2	Dabouq Booster/ Khaldia Pumps	MWC	Amman	Yes	No
3	Ain Ghazal Pump Stations	MWC	Amman	Yes 2024	No
4	Old-Muntazah Pump Stations	MWC	Amman	Yes	No
5	Taj / Qala'a Pump Stations	MWC	Amman	Yes	No
6	Dabouq Booster/ Swilieh Pump Stations	MWC	Amman	Yes 2024	No
7	Musatibah -South Amman Pump Stations	MWC	Amman	Yes	No
8	Rusayfa WTP	MWC	Amman	Yes	No
9	Al Tafeh Pump Stations	MWC	Zarqa	Yes	No
10	Petrawi Pump Stations	MWC	Zarqa	Yes	No
11	Al Damkhi	MWC	Amman	Yes 2024	No
12	Oyoun Al-Hamam	YWC	Irbid	Yes 2024	No
13	Juhfia	YWC	Irbid	Yes 2024	No
14	Al-Qairawan	YWC	Jerash	Yes 2024	No
15	New Zatory	YWC	Mafraq	Yes 2024	No
16	Um-Lulu	YWC	Mafraq	Yes 2024	No
17	Wadi Arab Old PS2	YWC	Irbid	Yes 2020	No
18	Wadi Arab Old PS3	YWC	Irbid	Yes 2020	No
19	Wadi Arab Wells Collector	YWC	Irbid	No	Yes
20	Zatory Old PS	YWC	Mafraq	No	Yes
21	Swailmeh PS	YWC	Mafraq	No	Yes
22	Jdaittah booster	YWC	Irbid	No	Yes
23	Abu Al Basal PS	YWC	Irbid	No	Yes
24	Al Bwaidah PS	YWC	Mafraq	Yes 2024	No
25	Tabget Fahel PS	YWC	Irbid	Yes 2024	No
26	Khaldeiah PS	YWC	Mafraq	No	Yes
27	Samad old PS	YWC	Irbid	Yes 2020	No
28	Kufr Asad 1 PS	YWC	Irbid	Yes 2023	No
29	Rawdah Ameera Basma PS)	YWC	Mafraq	No	Yes
30	Zuqaiq PS1	YWC	Ajloun	Yes 2024	No
31	Zuqaiq PS2	YWC	Ajloun	Yes 2024	No
32	Zuqaiq PS3	YWC	Ajloun	Yes 2024	No
33	Zuqaiq PS4	YWC	Ajloun	Yes 2024	No
34	DISI WELL FIELD - Disi Well pump replacement	AWC	Aqaba	No	Yes
35	Al Mujib Pumping Station (PS) - Pumps replacement, SCADA and LED lighting	AWC	Karak	Yes 2024	No
36	Ghuwair Pumping Stations	AWC	Karak	Yes	No
37	Lajoun Pumping Stations	AWC	Karak	Yes	No
38	Jitteh	AWC	Maan	No	Yes
39	Ayl	AWC	Maan	No	Yes
40	Al Qaa	AWC	Maan	No	Yes
41	Husenieh	AWC	Maan	No	Yes
42	Sultani Pumping Station	AWC	KARAK	Yes	No
43	Hasa	AWC	Al-Tafilah	Yes	No
44	Al-Tahouneh	AWC	Maan	No	Yes