

**JORDAN**

**AL GHABAWI SEPTIC TANK FACILITY PROJECT –  
Decommissioning of Ain Ghazal Septic Tank Facility and Expansion and Rehabilitation of  
the Existing Pre-treatment Facility  
– FEASIBILITY STUDY & TECHNICAL TENDER SUPPORT**

**TERMS OF REFERENCE**

**1. BACKGROUND**

The Ministry of Water and Irrigation (“MWI”) and the Water Authority Jordan (“WAJ”) have approached the European Bank for Reconstruction and Development (the “EBRD” or the “Bank”) to support the preparation and financing of the construction of a new septic tank facility to serve Amman and the surrounding area.

The existing septic tank facility is located in a residential area in Ain Ghazal, which creates odour, local noise pollution and increased traffic problems. Solving these issues is even more critical given the unprecedented influx of Syrian refugees to Jordan and impact of climate change on scarce water resources, placing significant additional demand onto Amman’s already fragile municipal infrastructure. In addition, the outflows from the current facility do not meet the quality standards required to be passed forward to the As-Samra Wastewater Treatment Plant.

In this context, WAJ has been investigating different alternatives to solve these issues in the most efficient and sustainable way possible. In 2009, WAJ contracted Engicon, in association with Abdulhadi Engineering Consultancy, to carry out an options study, which concluded that it would be optimal to construct a new facility at an alternative site. This was corroborated in a study carried out in 2017 by Fichtner. It was suggested in both studies that the best alternative site would be at Al Ghabawi.

In line with the Government of Jordan’s initiative, new projects in the infrastructure sector should consider private sector participation (“PSP”) where relevant. To that end, EBRD engaged a consultant to assess the potential for PSP in this project. The study recommended that the capex be procured conventionally in line with EBRD public procurement policies and financed by a sovereign loan blended with a capex grant. The study also suggested that the Operations and Maintenance (“O&M”) could be outsourced to the private sector.

The EBRD engaged Ankura to carry out the Feasibility Study of the project, including further exploration of the option of outsourcing the O&M and the assessment of options to further promote resilience of water infrastructure to climate change impacts. The Feasibility Study is ongoing and EBRD now requires a consultant (the “Consultant”) to assess the least cost option for expansion and rehabilitation of the existing wastewater pre-treatment facility at Ain Ghazal including decommissioning and remediation of the former septic waste facility on the same site under a separate Feasibility Study (the “Additional FS”).

## 2. OBJECTIVES

The overall objective of the Assignment is to prepare the Additional FS that the Bank can use to appraise the decommissioning options of Ain Ghazal Septic Tanks Facility and rehabilitation and expansion of the Ain Ghazal Pre-treatment Facility (the “Project”) and take a decision on the prospective financing.

Specific objectives of the assignment shall include, *inter alia*:

- Technical and financial feasibility assessment of the proposed investments, including whether it is the most effective, least-cost and sustainable investment programme.
- Update the Feasibility Study prepared by Fichtner and perform Technical analysis of existing capacity and processes at the pre-treatment facility and any required upgrades and expansions to minimise environmental and social harm whilst providing effective service provision. Assess and cost options for decommissioning the septic waste reception facility effectively.
- Financial analysis of the Project and preparation of financial projections. The projections shall be fully consistent with the proposed Project and the strategic development plan and be based on prudent assumptions on the Project’s revenues and expenditures, including sensitivities to capex, tariffs and costs. The Consultant will prepare the financial forecasts and the Project financial model (using Microsoft Excel) that will cover a period of 25 years.
- Determination of an efficient implementation strategy for the Project.
- Calculation of the Bank’s standard measuring indicators, including the economic internal rate of return (“EIRR”) and the IRR and resource efficiency indicators (Annex 3).
- Carry out an Environmental and Social (“E&S”) Assessment of the proposed Project to identify its environmental and social risks, impacts and benefits and to structure the Project to comply with the Bank’s ESP and PRs. Note that the EBRD has categorised the Project as B. The E&S Assessment will draw on the existing E&S assessment conducted for the pre-treatment facility and second conveyor to As Samra WWTP.
- To the extent possible, the FS should:
  - take into account the potential impacts of climate change on the project in order to build in resilience to climate change related risks; and
  - assess the resource efficiency opportunities (including energy and water efficiency and waste minimisation potential and the impact on greenhouse gas (“GHG”) emissions) on the project.

The FS will provide an overview of the water and wastewater sector, review the technical, operational, environmental, social, and financial aspects of the Project, and should form the basis for agreeing on the Project-related objectives in the loan document. It should be noted that a number of studies have already been carried out for this project and the Consultant should take these into account in the analysis and recommendations as described below in Section 3. Existing studies include but are not limited to Engicon 2009, Fichtner 2017 and Navigant 2018, all of which will be shared with the Consultant by EBRD.

## 3. SCOPE OF WORK

In order to meet the objectives above, the Consultant shall undertake the following tasks:

## **PHASE I**

- 3.1: Baseline Study;
- 3.2: Technical Assessment;
- 3.3: Long Term investment strategy
- 3.4: Project Assessment
- 3.5: Financial Analysis;
- 3.6: Environmental and Social Assessment (“ESA”);
- 3.7: Resource Efficiency Assessment;
- 3.8: Technical and Functional Specifications for tender documents.

## **PHASE II**

- 3.9: Evaluation Support

### **3.1 Baseline Study**

This task involves the review of the water and wastewater services in Jordan so as to identify and assess any risks that are associated with the Project and the existing operations. This review shall allow the Bank to better understand the present situation in institutional, legal and financial, as well as technical and environmental and social terms.

The Consultant should provide the Bank with an inception report, 4 weeks after mobilisation, which describes information that is already in existing studies and where the remaining gaps are, an updated schedule of work etc.

The following shall, *inter alia*, be addressed:

#### **3.1.1. Socio-Economic Data**

Based on 3-5 years of historical data and information readily available (data generated by the Client and other relevant sources) the Consultant shall compile and present socio-economic data of interest for, and relevant to, water and wastewater operations, *inter alia*:

- Present analysis on population, including historical development (the number of people, general spatial distribution, in-and-out migration, minority and vulnerable groups, etc.), trends, growth rates, and review of proposed municipal development plans to obtain basis for population projections.
- Establish a methodology for affordability analysis with the EBRD’s Country Sector and Economics Department (“EPG”) prior to commencing this analysis. The affordability analysis will be based on desk top research and available data.
- Analyse and present health information with regard to any adverse health effects related to the lack of or insufficient quality of wastewater services disaggregated by sex and other relevant socio-economic and demographic variables.

#### **3.1.2. Resilience to climate change**

Where appropriate and deemed necessary by EBRD following its standard screening procedure to identify projects that are sensitive to the impacts of climate change, the Baseline Study should take

account of the current climatic conditions and projected climate change in so far as they have the potential to affect water supply and waste-water discharges. In particular, the Consultant shall assess the implications of climate change that are relevant to water and/or wastewater services and infrastructure, which may include, but not be limited to, the following:

- Rising temperatures leading to the melting of glaciers and consequent impact of river systems and flows;
- Adequacy of and changes in water supply (both surface water and groundwater);
- Drinking water quality;
- Power supply, energy availability and energy costs;
- Asset protection and maintenance; and
- Water demand and changes in demand (e.g. increased demand due to more extreme heat days).

In conducting this analysis and other climate resilience tasks set out elsewhere in these Terms of Reference, the Consultant shall use as a methodological guide the Technical Note entitled “*Integrating Climate Change Information and Adaptation in Project Development*”, which has been developed by EBRD and other financing institutions belonging to the European Financing Institutions Working Group on Adaptation to Climate Change (EUFIWACC). The EUFIWACC Technical Note can be found using this [link](#). The guidance topics of this Note that are especially relevant to the Baseline Study are *Assessment Scoping* and *Climate Information and Impacts*. The Consultant shall also follow the guidance on climate change adaptation metrics included in the EBRD GET Handbook (Annex 4).

The Consultant shall work closely with the EBRD in applying this technical guidance in the analysis. In case there are any affordability concerns, the Consultant shall suggest possible mitigation measures. Please also note that the time period for assessing climate change impacts is to be the lifetime of the project and not just the lifetime of the loan.

### 3.2 Technical Assessment

The Consultant shall describe and assess the key attributes of the current service and the service development over the last 3 years, including *inter alia*:

**Wastewater Services:** Taking into consideration previous studies (by the Client and others, not limited to those listed above) and other information available, the Consultant shall compile, present and interpret information, covering the past three years, on service characteristics, including:

- Service area: physical and administrative delineation;
- Connections: number of wastewater connections by user category, i.e. domestic (number of people served by the wastewater network), domestic (number of people served by septic tanks), industrial, commercial, official, public, etc;
- Wastewater flows and its characteristics taking account of the new septic waste facility establish total, average and peak flows, solids and organic content and other important features of the incoming sewage. If significant, distinguish between industrial and other wastewater sources, determination of relationships between dry weather and wet weather flows for combined systems, frequency and magnitude of storm water overflows and water

bodies to which they flow, and infiltration of wastewater flows into the water supply network;

- Industrial wastewater (if any to this site): wastewater flows from the main industrial sources in terms of flow volumes and chemical/physical characteristics with special emphasis on toxic or hazardous materials discharged into the municipal wastewater collection system if information is available;<sup>1</sup>
- Description of monitoring of wastewater flows and quality;
- Description of standards and practices used, laboratory capacity;
- Description and analysis of any pre-treatment facilities, their existing capacity, operational regime and other relevant information that could affect the implementation and operation of the proposed Project;
- Taking into consideration the effects of implementing any water demand management programme and the potential for technological upgrade of wastewater treatment, provide justifiable technical opinions on whether capacity expansion of wastewater pre-treatment and treatment facilities is needed in the medium term;
- Describe the current situation of wastewater services including service use patterns (household income, household sizes, poverty status), etc and analyse this data to ensure that the technical solution being proposed is optimal;
- Based on the historical consumption data and demographic trends, develop wastewater collection and treatment services demand forecast for the next 25 years; estimate the change in incoming sewage flow and loads as a consequence;
- Develop an understanding of the current and future (next 10 years) wastewater sector developmental and capital investment plans, including that relating to residential areas, industrial zones, informal settlements, refugee camps, etc. (as appropriate)
- Identify the physical factors that are likely to constrain the achievement of the developmental plan;
- Identify any issues with regard to nuisance such as traffic movements, noise and/or odour
- Climate change vulnerability of services, e.g. disruption due to climatic events and effects on service provision and risk (building on analysis carried out under section 3.1.3).
- Describe the extent of wastewater services coverage by the Client and other service providers (residential, commercial, industrial, others), house connection rates;
- Review the results of similar feasibility and environmental studies;
- Review on-going or planned investment programmes, including those under preparation, that are financed by various institutions or donors, including those in the target area; and
- Develop an understanding of the awareness of the population, in particular poor households, concerning the importance of household hygiene; and campaigns organised by WAJ, non-governmental organisations (“NGOs”), or others in order to improve the awareness of the population.

---

<sup>1</sup> The description will be based on available data; the time schedule and budget do not allow survey or production of new data.

**Wastewater Collection Systems:** Taking into consideration the information available, the Consultant shall describe and assess the present wastewater collection system, including:

- An overview of existing systems and facilities, including area served, length, diameter and type of main sewers, whether separate or combined, pump stations, discharge points and storm water overflows, location of major wastewater contributors (industry), septic tanks unloading and transport to pre-treatment facility, pre-treatment facility for wastewater from septic tanks, etc. Present schematic map (please note that a detailed map might not be available to the Consultant due to current security regulations in Jordan), and discuss possible implications for groundwater in areas not connected to wastewater collection;
- An assessment of the main system components: capacity, performance (including total and unitary energy consumption kWh/m<sup>3</sup>), state of repair, reliability, adequacy, maintenance practices, age and quality of materials and equipment (pipes, valves, pumps, etc.), and infiltration/inflow; and
- An opinion on the operation of the wastewater collection network, based on site visits and interviews with the operating personnel.

**Wastewater Treatment, Sludge Management and Disposal:** Taking into consideration information available and the ownership structure of the Client, the Consultant shall describe and assess the present wastewater treatment facilities, including:

- An overview of existing wastewater treatment facilities, including pre-treatment facilities, sludge handling and disposal: type of process, capacity, flow, technological appropriateness, treatment effectiveness, instrumentation, condition, reliability and state of repair, maintenance practices, suitability, bottlenecks and quality of materials and equipment.
- Technical opinion on whether capacity expansion and or modernisation of wastewater pre-treatment facility is needed in the medium term, taking into consideration the effect of water consumed and returned to sewers on the demand for wastewater services both now and in the future.
- Assess the current wastewater pre-treatment facilities, their efficiency, current and future capacity requirements and recommend any further actions required for successful delivery and operation of the proposed project, including refurbishment and/or expansion of the septic tanks acceptance facility and/or relocation to a new site.
- Pre-treatment of industrial wastewater: describe and assess the necessity, capacity, effectiveness and adequacy of industrial pre-treatment facilities and the impact of industrial wastewater on municipal wastewater treatment plant operation.
- Describe monitoring of wastewater quality; standards and practices, process control, describe and assess present effects (environmental impact) of treated and untreated wastewater discharges on receiving waters in light of existing regulations.
- Describe applicable laws and regulations concerning wastewater treatment and sludge disposal: institutional responsibilities and interdependencies (local and regional governments), and fees and fines levied on wastewater discharges;
- Analyse and assess the impact of treated and untreated wastewater disposal and storm water overflows on downstream water quality with special emphasis on industrial hazardous and toxic waste products and analyse compliance with applicable ambient water quality standards, effluent standards and applicable regulations.
- Assess alternative solutions for management and disposal of sludge if appropriate.

- Assess conditions of the effluent receiving water body particularly with regards to efficiency of the currently operated wastewater treatment plants.
- Assess whether the recovery of nutrients in sludge is technically and economically viable and applicable in Jordan.
- Analyse the utilisation of reclaimed wastewater for irrigation, taking into consideration projected climate change impacts on the water resources availability in the country, and other likely purposes in terms of technical and economic aspects and associated environmental and social risks with it. Present regulatory status for the utilisation of reclaimed waste water.
  - (i) Assess the anaerobic stabilisation of sludge and utilisation of waste methane for the generation of heat or electricity and utilisation of bio-solids as fertiliser.

The consultant will prepare options for both enhancing the existing pre-treatment facility and the decommissioning of the existing septic waste reception facility.

The Consultant will identify opportunities for improvements in technical efficiency using alternative technologies (including energy and water efficiency solutions) and/or infrastructure solutions.

**Site Visits:** The Consultant shall conduct a comprehensive survey including an asset condition assessment and site investigations of the following:

- The impact of water demand (domestic & industrial) on the wastewater services;
- General understanding of how the wastewater operations are conducted to understand and utilise the information into a hydraulic analysis;
- The sizing and location of the existing transmission, primary, secondary and tertiary systems and balancing facilities as appropriate;

**Estimation of Project Costs:** For use in the analysis, the Consultant will estimate the capital costs for the Project in constant values, using the start of the calendar quarter closest to the time of data collection as a reference point. The Consultant will estimate separately physical contingencies and price escalation for each measure. Similarly, the Consultant will estimate operation and maintenance costs associated with the Project.

Capital costs should be detailed and segmented by preliminaries and general, civil works, materials, plant and machinery, project management and supervision and contingencies. Cost estimates should be divided into foreign sourced costs and local sourced costs, and should use appropriate escalation factors. An anticipated disbursement schedule for construction should be developed.

The Consultant will also indicate extent to which expected wastewater tariffs will cover the total incremental costs introduced under the proposed investment.

### 3.3 Long-Term Investment Strategy

One of the primary objectives of this FS is to ensure that the proposed immediate investments do not steer system improvements and expansions into directions contrary to the long-term development needs of the system. The objective of this task is, therefore, to outline a longer-term

investment strategy, which would lead to least cost improvement of water and wastewater services within existing financial constraints, taking into account the anticipated impacts of climate change (Section 3.1.3). This shall notably include:

### **3.3.1. Service Objectives, Standards and Policies**

The Consultant shall prepare a short review and, if necessary, revision of proposals for the present service objectives and policies.

### **3.3.2. Long-Term Investment Strategy**

The Consultant will:

- (i) broadly outline different potential investment strategies or options (and prepare tentative cost estimates) including at least:
  - a minimum cost facilities rehabilitation strategy (to maintain the increased level of service/repair established by the Project); and
  - an outline of strategic development plans including improvement, rehabilitation and expansion over the next 25 years.
- (ii) highlight available options on the basis of both financial and technical criteria and indicate the preferred one which could be further developed into the long-term investment programme;
- (iii) summarise in appropriate maps the location, capacity, and staging of major infrastructure components, and explain and justify the proposed course of action, paying particular attention to:
  - Existing facilities and studies and projects already prepared;
  - Alternative solutions within the context of existing system configuration and capacities;
  - The rehabilitation, repair and upgrading of existing facilities and operational improvements;
  - Least cost staging/phasing of system expansions;
  - Maintenance and operation implications, specifically the effect of expected increases in the cost of electricity;
  - Effects of conservation (demand management) and loss reductions on future system capacity requirements;
  - The Consultant shall present the resulting annual cost savings (by cost category: power, water, CO<sub>2</sub> emissions savings, etc.);
  - Anticipated climate change impacts on water supplies and wastewater treatment.

## **3.4 Project Assessment**

Working from the draft outline strategic long-term investment programme identified above and other information available, the Consultant shall present, justify, review and develop any required information for the proposed Project in detail to ensure the technical, financial, economical, institutional, environmental and social, etc. viability of the Project.

The assessment should also take into account the projected impacts of climate change if appropriate and justified. The [EUFIWACC Note](#) should again be used as a technical guide, especially the sections on *Project, Planning and Design* and *Analysing and Explaining Risks, Costs and Benefits*. This may include investments for adaptation measures to address the risks of climate change, e.g. deeper drilling of boreholes or diversification of water supply to ensure long-term security of water supply, or the installation of back-up generating capacity to improve the security of the energy supply. The Project components assessed will be explained concerning whether and how each of the proposed activities could contribute towards the climate resilience of water supplies in the city covered by the project. It will also identify activities that have an identifiable and positive impact on the climate resilience of water supplies.

### **3.4.1. Detailed Programme Description and Cost Estimates**

For each of the Project sub-components, the Consultant shall assess a reasonable estimate of quantities and costs based on applicable previous bidding experience in Jordan if available, or prepare such estimates if not provided. Potential cost savings upon implementation of the Project shall be identified and estimated. An operational costs review shall be prepared and costs specified as either fixed or variable for each sub-component. Sub-components shall, when possible, be designed to minimise foreign currency requirements in operation and maintenance costs - however, this should not be at the expense of quality and reliability of services.

It is important that due care is shown in preparation of these cost estimates. Taxes, duties, technical and financial contingencies are to be considered and specified. Financial contingencies are to be calculated based on an investment schedule.

On the basis of its cost model the Consultant shall develop and outline the tariff structure(s) which would better fit into the frame of the project investment. [Foreign currency and debt service components shall be specifically identified in the proposed tariff structure].

### **3.4.2. Procurement and Implementation Strategy**

The Consultant will:

- (i) Prepare a Procurement and Implementation Strategy, taking into consideration the Bank's Procurement Policies and Rules ("PP&R"), which will be made available to the Consultant;
- (ii) Assess which Procurement and Implementation Strategy would best fit the scenario, outlining pros and cons for each alternative.
- (iii) Draft a preliminary procurement plan in a format acceptable to the Bank, including detailed descriptions of all project components grouped into categories by sub-sector and expected contracting packages.
- (iv) Develop an implementation schedule for each project component, describing the manner in which the construction or implementation activities will proceed, providing assumptions about procurement, delivery and execution times.

In the preliminary procurement plan the project components will be broken down into actual contracts with the aim of keeping the number to a minimum. The Consultant will:

- (i) take into account the services (tender documents and project management), supplies and works needed to implement the required contracts;
- (ii) consider which procurement approach (e.g. based on different supply and works contracts) would be the best way of implementing each investment component.
- (iii) cover the following aspects with regard to the Project implementation:
  - *Project risk matrix* - a risk matrix outlining the key challenges and risks associated with the Project and the measures proposed to deal with them;
  - A proposal on how to address the key shortcomings identified in the institutional framework, including appropriate incentive structures, and any contractual agreements required. Consideration shall be given to effective regulation and monitoring of the sector.

### **3.5 Financial Analysis**

#### **3.5.1. Financial Analysis of the Client**

The Client's financial viability shall be demonstrated by means of financial projections for 25 years. The projections shall be fully consistent with the strategic development plan and be based on prudent assumptions of the Client's revenues and expenditures. Financial projections shall include annual balance sheets, income and cash flow statements. The model shall account for fixed and variable costs.

The Consultant shall conduct its own financial analysis to obtain new data or verify the existing data, whenever necessary.

#### **3.5.2. Financial Model and Economic Analysis for the Project and WAJ**

The Consultant will:

- (i) prepare a financial and economic model (using Microsoft Excel) that will be in line with the proposed long-term investment strategy (see Sec. 3.3) and the proposed Project (see Sec. 3.4), covering a period of 25 years, and taking into account the following:
  - the financial and economic model must be prepared in nominal EUR, USD and local currency, considering the impact of macro-economic scenarios provided by EBRD, together with a financial summary, and including key ratios, translated into the currency of the financing to be provided
  - the model must be prepared in line with the Bank's financial modelling standards (see **Annex 2**).
- (ii) Take into account the EBRD's environmental, technical and procurement policies and procedures, to identify those investments that best fit within the scope of the Project and within the estimated project budget.
- (iii) Prepare a report with justified recommendations for consideration by the Bank.
- (iv) Set out the financial and economic rationales and justifications for the proposed Project components and long-term investment plan.
- (v) Recommend the most economic financial structure for the Project, considering the technical and contractual structure proposed.

- (vi) Study and confirm the financial and economic viability of new and innovative technology, specifically in economic savings, to be achieved in the Project.
- (vii) Calculate and discuss sensitivity to changes in key income and expenditure variables, including fx and interest rates, and assess the risks for the Project.
- (viii) Estimate a 25-year outlook of the potential water, energy and – separately – maintenance cost reduction that can be achieved through the Project.
- (ix) Prepare a Cost Table, giving estimates of the costs of project preparation including preparation of detailed design documentation, construction/implementation, works supervision costs, based on currently available information. Cost estimates should be presented separately for each segment, based on local or other relevant construction markets.
- (x) Assess the financial impact of the Project by comparing the incremental costs (capital and recurrent) of the Project with the incremental revenues or savings it will generate and estimating the financial internal rate of return (“IRR”) and the EIRR.

### **3.6 Environmental and Social Assessment (“ESA”)**

The Consultant will conduct an ESA of the Project drawing on the ESA already conducted for the pre-treatment facility and second conveyor from Ain Ghazal to As Samra. The Bank has categorised the project as B.

#### **3.6.1. Applicable Requirements**

The E&S Assessment is to be carried out in accordance with:

- Applicable local, national and regional requirements, including those related with ESIA's / EIAs and associated public disclosure and consultation requirements;
- The EBRD's 2019 ESP (and the incorporated PRs), and relevant EU requirements (including, but not limited to, the EU EIA Directive (as amended), , EU Urban Waste Water Treatment Directive (91/271/EEC), EU Water Framework Directive, Sewage Sludge Directive (86/278/EEC), IE Directive, where relevant);
- Relevant international conventions and protocols relating to environmental and social issues, as transposed into national legislation.

#### **3.6.2. Objectives of the ESA**

The objective of the ESA is to identify and assess the potentially significant existing and future adverse environmental and social impacts associated with current operations at Ain Ghazal and the proposed Project, assess compliance with applicable laws, determine what permits are required, assess compliance with the EBRD ESP and PRs, determine the measures needed to prevent or minimise and mitigate the adverse impacts, and identify potential environmental and social opportunities, including those that would improve the environmental and social sustainability of the Project and/or the associated current operations.

The assessment process will be commensurate with, and proportional to, the potential impacts and issues of the Project and the WAJ's existing operations. The assessment will cover, in an integrated way, all relevant direct and indirect environmental and social impacts and issues of the WAJ's

operations, the Project and the relevant stages of the project cycle (e.g. pre-construction, construction, operation, and decommissioning or closure and reinstatement).

The ESA (as defined in Section 3.6.4) will also determine whether further studies are required, focusing on specific risks and impacts, such as climate change, human rights and / or gender.

The Environmental and Social Audit (as defined in Section 3.6.5) is required to assess the WAJ's current operations (the existing facility) in terms of compliance with national legislation, national or local permitting requirements, the relevant provisions of the EBRD ESP and PRs (2014) and pertinent EU environmental standards. Further, the audit must review possible historical environmental and social issues, such as potential contamination of soil and/or groundwater or land acquisition disputes.

Specifically, the Consultant will:

- (i) Identify existing and Project-related environmental and social impacts and risks;
- (ii) Describe and characterise a relevant environmental and social baseline commensurate with the risks posed by the current site operations and the Project;
- (iii) Assess potential gender aspects and priorities among nearby communities to understand women's and men's concerns (e.g. determine women's current activity schedules/ water use practices, attitudes towards public health etc.);
- (iv) Carry out E&S Assessment and Audit and develop a draft E&S Assessment report in accordance with the Bank's requirements as defined in the ESP, including a Compliance Summary table with the Bank's PRs;
- (v) Prepare a draft Stakeholder Engagement Plan (SEP), draft Environmental and Social Action Plan (ESAP) and draft Non-Technical Summary (NTS);
- (vi) Identify if any additional studies will be required to cover relevant aspects in greater detail (e.g. biodiversity, resettlement, retrenchment, etc.). (Any such work will be commissioned under separate Terms of Reference); and
- (vii) Finalise all documentation further to the EBRD and WAJ's comments.

These Terms of Reference for the E&S Assessment refer to various E&S guidance documents (e.g. E&S Guidance 1). These are available as a separate package of E&S guidance documents.

### **3.6.3. Review of Available Data and Site Visit**

- a) WAJ will provide all available studies for the Consultant's review, including the previous feasibility study from 2016 and associated E&S assessment conducted by EcoConsult.

Data and documentation are in English and Arabic. This list is not exhaustive and the Consultant must be prepared to review, and also request, further documentation that does not appear above.

Following the review of available data, the Consultant will visit the Project site and existing facility, to obtain any supplementary information needed to complete the ESA (Sec. 3.6.4) and carry out the on-site activities necessary to fulfil the E&S Audit reporting requirements (Sec. 3.6.5).

The data review process will include a simple media search to determine whether any relevant issues regarding the Project or WAJ have been reported through the media and to determine the importance of these through additional verification during the due diligence work. If no relevant issues are identified through this process the Consultant will include a statement to this effect in its report.

Following completion of the data review and site visit the Consultant will deliver a summary of key findings.

### **3.6.4. Environmental and Social Assessment**

*Please note that that the environmental and social assessment should be commensurate with the Project and its associated risks and impacts. It should be a high-level assessment focusing on key risks and impacts. A comprehensive ESIA of the Project is not required.*

**Project Description & Identification of Relevant Associated Activities & Operations:** The Consultant will prepare a description of the Project including details of any alternatives<sup>2</sup> considered for the project and information on neighbouring operations and activities. In accordance with EBRD PR1, paragraph 9 and 10, the Consultant will identify:

- Any potentially significant environmental and social issues or risks associated with relevant other activities or facilities, which are not part of the Project but which may be directly or indirectly influenced by the Project, exist solely because of the Project or could present a risk to the Project;
- Cumulative impacts of the Project in combination with impacts from other relevant past, present and reasonably foreseeable developments;
- Unplanned but predictable activities enabled by the Project that may occur later or at a different location; and
- Environmental and social risks associated with the primary supply chains central to the Project's core operational functions.

**Analysis of Legal Requirements:** The Consultant will identify applicable local, regional and national environmental and social laws and regulatory requirements of the jurisdictions in which the Project operates, including those laws implementing host country obligations under international law. The Consultant will analyse local/national assessment and permitting requirements and the EBRD environmental and social requirements and compare them within a gap analysis in tabular format.

As required, the Consultant will identify any issues that require legal interpretations for the Bank to raise with its legal advisors. The Consultant is not required to provide legal opinions.

The Consultant will identify, review and take into consideration any relevant strategic level assessment documentation.

---

<sup>2</sup> Project alternatives to include: Zero ("no project") alternative, siting and routing alternatives, infrastructure and traffic connection alternatives, design alternatives

**Baseline Conditions:** The ESA will include a review of the aspects of the physical, biological and socio-economic environment likely to be affected by the proposed Project, including the need for land acquisition. The Study shall also identify respective needs and concerns of different disadvantaged groups and/or those with less voice, such as women, to be addressed in the design, implementation, and monitoring and evaluation of the project. Indicative guidance on the contents of the overall assessment is provided in E&S Guidance 1 of the E&S guidance pack and in Annex 1b below.

The baseline assessment will include consideration of the inter-relationship between the relevant factors, as well as the exposure, vulnerability and resilience of these factors to natural and manmade disaster risks.

**Project Assessment:** In accordance with the Bank's ESP (2019), the Consultant will analyse the potential environmental and social impacts and risks of the Project, as well as opportunities that the Project may provide, including infrastructure development (e.g. water, wastewater, a heat and electricity distribution networks, transportation access) and other associated facilities, for which the EBRD financing is being sought.

The ESA will include a review of the likely effects of the proposed Project on the physical, biological and socio-economic environment to provide an identification and characterisation of potential E&S impacts, including beneficial (as well as adverse) impacts.

This review will be structured to include all relevant stages of the Project's life, eg. construction, operation and maintenance, closure and decommissioning, and residual E&S impacts. The level of analysis and reporting will be commensurate with the risk magnitude of the identified issues. Indicative guidance on the contents of the overall assessment is provided in E&S Guidance 1 of the E&S guidance pack and Annex 1b attached to this document.

As part of the Project Assessment, the Consultant will also:

- Confirm whether (and if relevant):
  - the capacity of the treatment plant will exceed 150,000 population equivalent;
  - the Project complies with the Urban Wastewater Treatment Directive (91/271/EEC), including treatment standards, the Water Framework Directive if relevant and Sewage Sludge Directive (86/278/EEC). The Consultant should also confirm the relevance of other EU substantive environmental standards.
- Quantify the environmental benefits of the proposed investments, focusing on quantifying the pollution reductions and cross-border environmental benefits resultant from the Project.
- Assess the extent to which relevant national and EU environmental, social, health and safety laws, regulations and standards will be met within the framework of the proposed investment programme.
- Assess the occupational health and safety issues by the Company and its contractors undertaking the Project-related works, including employees and workers exposure to noise, dust, electricity, physical and other risks during modernization and refurbishment works.
- Assess public safety and security issues and the impacts on stakeholders. This should include an assessment of potential gender-specific health and security issues and impacts (i.e. impacts during construction and maintenance phase of the service, temporary or permanent disruption

of the service, timetable of the provision of water, safety concerns of accessing the water supply depending on the water supply system/location and any other security aspects (for example, an increase of male workers in the area, which may lead to an increase in the risk of harassment and assaults).

- Assess community health, safety and security risks and benefits, including traffic management and potential nuisance to local community during both construction and operation of the Project.

Consider potential worker and community influx into the area and future residential development and consider the need for buffer zones, etc.

- Assess whether or not women would be disproportionately affected by the proposed investment programme and identify any opportunities to specifically address their needs and concerns so as to enable them to benefit to an even greater extent from project activities.
- If relevant, assess the extent of land acquisition associated with the Project in line with PR5, including the nature of impacts to housing, structures, community infrastructure and any/all livelihood activities. A clear recommendation is required on whether a Resettlement Action Plan and/or Livelihood Restoration Plan must be prepared, including a description of the scope for this task;
- Consider transport related risks associated with the Project
- Verify and confirm to the Bank whether the Project’s “B” categorisation is correct.

The Bank has previously identified high rates of worker accidents on water and waste water projects which are associated with excavations, working in confined spaces and the movement of vehicles and mobile plant. Therefore the Consultant shall pay particular attention while conducting the ESA to the capacity and competency of the company to manage risks associated with these hazards, comparing them against good internal practice.

In addition to mentioned above the Consultant is required to perform the Energy Saving Analysis to estimate the savings in energy consumption and GHG emissions reduction resulting from establishing the Project and the implications for GHG emissions (positive and/or negative) of any changes in the way waste water and sewage sludge are treated. EBRD’s methodology for the quantification of GHGs is recommended for use (see the EBRD’s website for details).

**Management of Impacts and Issues:** For each identified adverse future impact, issue and/or risk, the Consultant will propose measures to avoid, minimise, mitigate or compensate for them.

**EBRD PR Compliance Assessment:** Based on the results of the ESA, the Consultant shall evaluate the compliance status of the Project with the EBRD PRs using the format provided in **E&S Guidance 2** of the E&S guidance pack. Note that the compliance assessment should also take into consideration the findings of the E&S Audit (Sec. 3.6.5)

### 3.6.5. Environmental and Social Audit

The E&S Audit is required to review the current and, to a limited extent, past operational performance of activities at the Ain Ghazal site in terms of their compliance with relevant national environmental laws and regulations and EBRD PRs, including relevant EU environmental

standards and guidelines. Consultant should provide cross-reference with other sections of the Feasibility Study, in particular the section 3.2, in case of any overlap.

Key issues to be covered under the E&S Audit may include, but not be limited to:

- A review of the WAJ's existing environmental and social management systems, policies and practices;
- Organisational capacity and resources, including description of the number of personnel; number and percentage of women and men in total staff count as well as across all levels/categories;
- Human Resources and employment (e.g. child labour, forced labour, and non-discrimination, workers' organisations, contractor management, retrenchment and employment) policies;
- A review of equal opportunities policies and practices at WAJ; assessment of potential employment opportunities for under-represented groups in the workplace (i.e. women or men, people with the disabilities, different age groups, ethnic groups, etc.) and recommendations on what measures need to be made or what policies need to be revised to ensure equality of opportunity at the Company;
- Occupational health and safety (local and national requirements, applicable EU/ international requirement and standards, key health and safety issues, control and major accident hazards, current health and safety monitoring programme, summary of regulatory compliance status, summary of health and safety expenditures, emergency response etc.);
- Pollution prevention measures available at both facilities and overall regulatory compliance with national requirements and pertinent EU standards including applicable Best Available Techniques and Best Available Techniques Reference Documents. In addition, this assessment will need to review compliance with best international practice as a benchmark against current operations and planned plant upgrades;
- Industrial hygiene (including worker exposure, and rates of industrial diseases) and worker health and safety;
- Use and management of hazardous substances (including chlorine and other chemicals handling);
- Community health, safety and security as it relates to WAJ's existing operations;
- Major hazards assessment and management; environmental management plans in the event of an incident, accident or spill both on land and water;
- Current policy and practice in relation to avoidance of third party intrusion into potentially hazardous areas (fences, security, personnel, others);
- Management of potentially hazardous works (including excavation works, work in confined places, etc.);
- Traffic management;
- Contractor management and oversight;
- Waste management and waste minimisation;
- Sludge management practices;
- Noise and vibrations both during construction and operation of WAJ's facilities;
- Other construction related impacts (aerosol emission, dust, temporary severance to traffic, water cuts, others);

- Overview of current policy and procedures regarding land acquisition (compensation policy, consultation activities related to land acquisition including grievance management, if applicable);
- Review the corporate procedures for assessing projects with potential biodiversity impact;
- Identification of potential past environmental liabilities which may affect the Bank (e.g. soil and ground water contamination as a consequence of past and present operations);
- Overview of WAJ's supply chain (e.g. suppliers of main materials and resources including energy; presence of women-owned businesses), if relevant, and identification of relevant environmental, social, labour and/or reputation issues; and
- Public interaction, including historical responsiveness to public comments, complaints and questions. The audit should also identify WAJ's main stakeholder groups and current stakeholder engagement activities in line with PR10; and
- Monitoring practices and results.

The Consultant will be guided by the relevant requirements of the Bank's E&S Performance Requirements. The findings of the E&S Audit should also be considered in the completion of the PR compliance assessment.

### 3.6.6. Reporting (E&S only)

The Consultant shall prepare the following reports of the assessment findings.

**Inception Report (Summary of Key Findings):** On completion of the data review and site visit, and following the identification of the Project proposal, the Consultant will deliver an inception report. This report will include a summary of key environmental and social findings, a description of the Project proposal, an indication of the project categorisation and will highlight the need for any additional studies, e.g. in relation to resettlement, livelihood, retrenchment, biodiversity, etc.

**E&S Audit and Assessment Report:** The Consultant will provide a concise but comprehensive report of the overall E&S Audit and Assessment. The guidance for the report content provided in **E&S Guidance 1** of the E&S guidance pack and **Annex 1b** below may be used to structure the report but the Consultant is expected to use their professional experience to determine the final contents. The report must contain a properly and fully completed PR Compliance Assessment table as per **E&S Guidance 2** of the E&S guidance pack.

Additionally, as part of this task, the Consultant will provide the following representations to the Bank regarding Policy and PR compliance issues:

- Confirm whether this Project, including existing and future components, will be able to meet the relevant EU standards on wastewater treatment and sludge disposal/management, and whether a derogation from the EBRD's 2019 E&S Policy will be required;
- If the derogation would be required, then:
  - confirm to what extent the drinking water quality and effluent quality standards will be improved/reached, and provide a quantitative risk-based assessment of associated health and environmental impacts;
  - confirm how much further investment is needed to bring Client's (Company's) operations into full compliance with EBRD PRs.

**Environmental and Social Action Plan (“ESAP”):** The Consultant shall develop a comprehensive ESAP to address issues identified during the E&S Appraisal and the E&S Audit. The ESAP will focus on those issues that are required to bring the operations into compliance with the EBRD’s requirements and will be presented and sequenced by PRs. Actions identified must be numbered, clearly defined, indicate a time frame for completion (with specific reference to those actions that must be completed before financial close if appropriate) and a responsible party specified. Further, each item must contain a description of the factors that will be used to determine when the identified action is closed/completed. The Consultant will also inform WAJ about any material budget implications of ESAP items (although this information may not be required in the public domain).

The ESAP will be compact and, if needed, details will be included in sub-plans referenced in the main ESAP. The required format the ESAP is given in **E&S Guidance 3** of the E&S guidance pack.

**Stakeholder Engagement Plan (SEP):** The Consultant shall prepare a draft SEP in compliance with PR10. The scope and level of detail of the SEP will be scaled to fit the needs of the Project and the objectives of PR10. Following review of the Project operations, the Consultant will propose a format best suited for the specific Project needs. Guidance for the contents of an SEP is provided in **E&S Guidance 4** of the E&S guidance pack.

The Consultant will prepare the SEP in English and once approved by the EBRD, translate the SEP into Arabic.

**Non-Technical Summary (NTS):** The Consultant will prepare, in consultation with the Client, a concise, over-arching, standalone NTS. The NTS will be written in non-technical language and the Consultant will ensure that the NTS can be used to demonstrate compliance with the EBRD requirements, and provide confirmation that the documents are ready for public disclosure.

An indicative list of issues for the NTS is given in **E&S Guidance 5** of the E&S guidance pack.

The Consultant will prepare the NTS in English and once approved by the EBRD, translate the NTS into Arabic.

### **3.7 Resource Efficiency Assessment**

The Consultant will identify and analyse energy and production optimisation opportunities as follows, if applicable:

#### **3.7.1. Energy Efficiency**

- Electricity distribution system, including installation of new transformers, switchgears and power factor correction systems;
- Air Compressor and Cooling Systems;

- Reconstruction and modernisation of the heat supply systems, including steam / hot water generation and distribution systems for the process units and condensate recycling systems;
- Renewable Energy opportunities: solar options can be investigated either as PV (photovoltaic) or solar thermal systems, utilisation of biogas from anaerobic operations can be investigated;
  - Waste Heat Recovery: analyse opportunities for on-site power generation through utilisation of the waste heat gases as per standard design parameters;
  - Co-generation options, taking into account the available fuels and the impact of the possible production capacity increase on the energy demand.

### **3.7.2. Waste Minimisation**

- Analyse opportunities focused on projects that will lead to reduction in residues and sludge amounts compared to current performance on waste discharge, including internal recycling / re-use;
- Assess whether the recovery of nutrients in waste water sludge is technologically and economically viable and applicable in Jordan; and
- Assess whether the reuse or recycling water of treatment sludge is technologically and economically viable and applicable in Jordan

### **3.7.3. Resources Measurement and Monitoring Management System (“RMMS”)**

- Specify quantities and costs of the main components aggregated in the following categories: (i) controllers, meters, sensors, actuators, electronics; (ii) control panels, electrical power connection and cabling; (iii) data loggers, data connection systems; (iv) computing and software; (v) installation and commissioning; and (vi) management system development.

## **3.8 Preparation of Technical and Functional Specifications**

The Consultant will prepare technical requirements and functional specifications in satisfactory to the Bank format and acceptable for the use in open international tender.

The Consultant, inter alia, shall:

- (a) establish appropriate qualification criteria and technical requirements;
- (b) prepare technical part of the tender documents, clarifications/explanations and other relevant information to facilitate preparation of the tender documents;
- (c) prepare draft technical specifications.

### **Phase II of the Assignment will commence only after written authorisation of the Bank.**

## **3.9 Technical Support during Tender Evaluation for the new Septic tank Facility at Al Ghabawi**

The Consultant will be responsible for preparing the tenders document of the project and provide support to the Client throughout the procurement process. To this end, the Consultant will carry out the following activities:

- Advise to the Company on any amendments to the technical requirements in the tender documents;
- Provide technical advice to the Company during any pre-tender meetings, if needed, and record name;

The Consultant will take the lead in organising and managing the evaluation of technical proposals. To this end, the Consultant will, *inter alia*:

- Give guidance on the composition of the Evaluation Committee and to the Evaluation Committee as required;
- Prepare clarifications and amendments to the technical part of the tender documents;
- Provide draft detailed technical evaluation report for the consideration of the Evaluation Committee. Compile the Evaluation Report in the required format, including all technical and financial analyses, records of consultation with external parties by the Evaluation Committee and clarifications requested and received;
- Arrange for meetings of the Evaluation Committee, attend as an advisor and record these meetings, presenting the minutes for approval by the Company;
- Prepare revisions or additional information to the technical part of the Evaluation Report that may be requested by the Bank;
- Provide technical advice to the Committee regarding any queries and complaints;

The Consultant may be required by the Bank to provide confirmation of the Evaluation Committee's recommendations.

#### **4. IMPLEMENTATION ARRANGEMENTS AND DELIVERABLES**

The duration of the first phase of the Assignment is expected to be 16 weeks. The Consultant shall report to the EBRD whilst liaising with representatives of the Client.

The Client will designate senior officials to be the primary contact persons with specific responsibility for assisting the Consultant and co-ordinating activities. The point of contact is the Secretary General of the Water Authority of Jordan Eng.Ali Subah

The Client will make available all of their records, plans, reports, designs and other documents as appropriate, but it will be the responsibility of the Consultant to translate these documents, if necessary.

The Client will provide access to all of their facilities and employees for questioning or assistance relative to an understanding of the functioning of system facilities.

The Consultant shall be responsible for paying for all international telephone connections, office supplies and external printing. The Consultant shall pay for all local transportation required by the Consultant's staff throughout the duration of the assignment.

The Consultant shall be responsible for providing suitably qualified interpreters/translators to work with their staff.

The Consultant shall produce in the course of the Assignment the following reports:

<b>PHASE I DELIVERABLES</b>	
<b>Inception Report:</b> Following the site visit, initial data review and initial opinion as to a project proposal; presenting the initial findings, with an emphasis on findings having an impact on the time schedule and factors affecting these Terms of Reference.	Within 4 weeks of Consultant mobilisation.
<b>Draft Financial Analysis Report and draft Financial Model:</b> outlining the development of all tasks, key findings and any steps and tasks to be further developed before submission of Final report. The structure of the final report will include information regarding at least the following tasks: (i) an assessment of the existing situation and facilities; (ii) an outline of a long term investment strategy; (iii) assessment of the components and any necessary recommendations to the proposed Project with initial cost estimates. The Consultant shall distribute the draft Preliminary Feasibility Report in Arabic and English to the Bank and the Client for comments and shall organise a joint meeting to discuss the Report (“Presentation”) with all parties in the WAJ within two weeks after distribution of the Report.	Within 8 weeks of Consultant mobilisation.
<b>Draft Preliminary Feasibility Report:</b> draft Preliminary Feasibility Report, outlining the development of all tasks, key findings and any steps and tasks to be further developed before submission of Final report. The structure of the final report will include information regarding at least the following tasks: (i) an assessment of the existing situation and facilities; (ii) /an outline of a long term investment strategy; (iii) assessment of the components and any necessary recommendations to the proposed Project with initial cost estimates. The Consultant shall distribute the draft Preliminary Feasibility Report in Arabic and English to the Bank and the Client for comments and shall organise a joint meeting to discuss the Report (“Presentation”) with all parties in the WAJ within two weeks after distribution of the Report.	Within 14 weeks of Consultant mobilisation.
<b>Draft E&amp;S Assessment Report:</b> The Consultant shall submit to the Bank the following: <ul style="list-style-type: none"> <li>○ Draft Environmental and Social Audit and Assessment Report, which includes a PR compliance table (see E&amp;S Guidance 1 &amp; 2 of the E&amp;S guidance pack and Annex 1b below) – within 10 weeks of the Assignment Start Date;</li> <li>○ Draft Environmental and Social Action Plan (ESAP) (see E&amp;S Guidance 3 of the E&amp;S guidance pack) - within 10 weeks of the Assignment Start Date;</li> <li>○ Draft Stakeholder Engagement Plan (SEP) (see E&amp;S Guidance 4 of the E&amp;S guidance pack) – within 10 weeks of the Assignment Start Date;</li> <li>○ Draft Non-Technical Summary (NTS) for disclosure to the public (see E&amp;S Guidance 5 of the E&amp;S guidance pack) – within 10 weeks of the Assignment Start Date; and</li> </ul>	Within 16 weeks of Consultant mobilisation.

<ul style="list-style-type: none"> <li>○ Final documentation - within 2 weeks of receiving the Bank’s comments on the draft versions. The final versions of the SEP and NTS will be translated into Arabic.</li> </ul>	
<p><b>Draft Final Feasibility Report:</b> this shall include full details for: (i) an assessment of the existing situation and facilities; (ii) an outline of a long term investment strategy; (iii) assessment of the components and any necessary recommendations to the proposed Project with cost estimates; (iv) an overview of cost savings to be achieved after implementation of the Project, by component; (v) financial model of the Client; (vi) a procurement strategy and procurement plan; (vii) the scope of work for the project implementation team. The Consultant shall distribute the draft Final Report in Arabic and English to the Bank and the Client for comments and shall organise a joint meeting to present the Final Report (“Presentation”) with all parties in the WAJ within two weeks after distribution of the Report. (viii) a resource efficiency assessment report and a preliminary Project assessment in table format for resource efficiency measures. The preliminary assessment shall provide a very short description and the preliminary order of magnitude of the capital expenditure of each proposed resource efficiency measure;</p>	<p>Within 16 weeks of Consultant mobilisation.</p>
<p><b>Specifications:</b> Technical and Functional specifications for both the new site and the rehabilitation of the Ain Ghazal Facility</p>	<p>Within 16 weeks of Consultant mobilisation.</p>
<p><b>Final Report</b> elaborating and reflecting all comments addressed during the Presentation, and including summary information on the Project.</p>	<p>To be submitted within two weeks after the Presentation</p>
<p><b>PHASE II DELIVERABLES</b></p> <p><b>Phase II shall not be undertaken by the Consultant prior to EBRD written confirmation to proceed. At that time, a delivery schedule shall be agreed. The below timings are indicative only at this stage.</b></p>	
<p><b>Technical Tender Support:</b> Draft Tender Documents should be submitted to the Bank for approval.</p>	<p>tbc</p>

One copy of each report in English is required; all versions shall also be provided in electronic-readable format, in both Word and PDF. Executive summaries of each report should be provided in Arabic. Supporting data in the Arabic language in the appendices need not be translated for English versions of the documents.

**Covid-19 Considerations and Site Visits and Meetings**

Site visits and meetings with stakeholders are core requirements of the Assignment but EBRD appreciates that international restrictions on travel and movement in response to the Covid-19 pandemic may make them challenging to carry out. In circumstances where the Consultant’s staff from its home or regional offices are unable to travel to the site and/or Gaziantep, *inter alia*, the following may be possible:

- site visits could be conducted by staff from its local office (if applicable) of the Consultant under remote supervision (if necessary) of experts located in the Consultant's home/regional office(s);
- the Consultant could partner with or subcontract a local consultant or firm of consultants which could undertake the site visit under the remote supervision of the Consultant (this arrangement should be clearly explained in your proposal);
- attendance at meetings could be via the use of video-conferencing facilities.

The proposal methodology should clearly explain the Consultant's approach towards carrying out site visits and meetings for the Assignment, how any uncertainties due to the inability of the Consultant's key staff to carry out site visits and/or meetings would be addressed, and any impacts on activities and the timing and content of the deliverables.

## 5. CONSULTANT'S PROFILE

The Consultant should ensure that appropriately qualified experts are available, as required, for each of the different tasks outlined above. It is expected that the Assignment will be led by an appropriately qualified team leader/water and wastewater engineer, accompanied by both key and supporting experts. Based on the fields of expertise and the tasks mentioned above, it is proposed that the team of the Consultant should consist at least of the following expatriate and local experts:

- **Project Manager/Team Leader** with a university degree in civil engineering or equivalent qualification with preferably 15 years professional experience in the field of water supply and wastewater management, with comprehensive experience of similar assignments in Jordan/SEMED, as well as in institutional and commercial management of water/wastewater Company. He/she should demonstrate management and administration experience, including experience with procedures of international financing agencies (preferably EBRD procedures). The large number of different tasks and the complexity of administrative procedures require a permanent presence of the Project Manager in the Country during the project period of intensive work on preparation of the FS.
- **Procurement Expert:** with a university degree in civil engineering or equivalent qualification with preferably 10 years professional experience in the field of water supply and wastewater management, with comprehensive experience of similar assignments in Jordan/SEMED, as well as long experience with preparation of tender documents for similar projects.
- **Financial Expert / Economist** with knowledge of public financing and modelling.
- **Wastewater Engineers** (material engineers, electro-mechanical engineers, hydraulic engineers, processes engineer etc.)
- **Decommissioning Expert** with practical knowledge of safely and effectively taking wastewater systems out of service
- **Environmental and Social Expert(s)** with experience in ESIA's and E&S due diligence, health & safety, stakeholder engagement, public consultation and disclosure in the local context, gender and inclusion expertise, and/or resettlement expertise, in water/wastewater sector and decommissioning projects with experience of similar assignments and with recent track record in the region.
- **Climate change expert** with experience in evaluation in climate change.
- **Institutional expert** with experience of similar assignments.

- **Resource Efficiency Expert** with experience in water and wastewater management and treatment.
- **Local experts** with good communication skills and evidenced technical knowledge of water supply and wastewater.

The Consultant should integrate local professional skills/cooperate with local consulting companies, in order to provide national experience. The Consultant shall engage Arabic-speaking staff on their team or arrange for translation/interpreting when necessary. All experts must be independent and free from conflicts of interest in the responsibilities accorded to them.

## Annex 1. Environmental baseline conditions for water and wastewater projects

### 1. Potable Water Supply and Distribution

The Consultant will collect and evaluate relevant data related to the nature and integrity of water sources, potable water treatment processes and distribution networks, quality of the distributed supply as well any information on the nature of demand (industrial and domestic) as compared to the extent of supply. The Consultant will draw primarily on existing sources of information though reasonable effort should be made to verify the validity of this. The Consultant should aim to collect sufficient information on the environmental baseline of the project so as to allow for subsequent monitoring and evaluation of the Client's environmental performance and the environmental impact of the project using the key E&S impact and performance parameters. The following information is required at a minimum (the majority of this information has to be already analysed as part of the baseline study task).

#### (i) Water Sources

- The nature of catchment (watershed) area management, in particular, the level of protection offered to the quality and quantity of source waters (e.g. from uncontrolled/untreated discharges, run-off from agricultural land, groundwater contamination, over-abstraction, etc.).
- Description of water sources (amounts, seasonal variations, and water quality *vis a vis* current national and EU standards).
- Based on available information on the impacts of the predicted climate change on water resources in Jordan such as Jordan's National Communication to the UNFCCC, assess the vulnerability to climate change impacts of the Client's water resources and water supply infrastructure in medium-to-long-term, as well as where relevant, make recommendations for improving the project's and the Client's operations' resilience to climate change risk;
- Main industrial users and polluters in the catchment area.
- Current water quality monitoring of source waters: standards, nature and frequency.
- Measures required or being considered to enhance the quality and quantity of water sources in the catchment area.

#### (ii) Consumer Demand

- Estimation of existing and future demand for water supplies by sector (domestic, commercial, public, industrial, including survey of major water users, particularly industry); conflicting demands (present and future).
- Domestic water consumption (per capita); comparison with consumption levels in Western Europe.

#### (iii) Water Treatment and Distribution Network

- Type and quantity of chemicals used for drinking water treatment; chemicals handling, storage, use and final disposal, contingency planning and emergency response;

- Quality of service provided: biological, physical and chemical quality of potable water provided in comparison with national and EU environmental standards;
- Effectiveness and adequacy of water treatment technology used and a general assessment of whether the existing technology meets existing international best practice for water treatment;
- Identify and assess the risks of potential environmental liabilities associated with past and current operations;
- Any environmental or worker and public health and safety issues associated with current operations;
- Anticipated environmental and worker and public health and safety benefits which are likely to arise from project implementation;
- Any actions required to meet applicable national and EU standards. Benchmark the current drinking water against national normative requirements and EU standards for drinking water quality. Provide an estimate of the investment costs needed to bring the facilities and operations in compliance with (i) national and (ii) EU standards;
- Any areas for immediate improvement including, for example, efficiency improvements, emission reductions.

(iv) Hot Water Distribution Network (if applicable)

- Assess any environmental or health and safety issues associated with hot water distribution and identify any potential mitigating measures.

## **2. Wastewater Collection, Treatment and Discharge**

The Consultant will collect and evaluate the available data related to the volumes of wastewater and storm-water generated in the catchment area, methods of effluent treatment and quality and quantity of wastewater released (with or without treatment) to the environment. The adequacy of the current wastewater treatment and sewerage systems and their management with respect to existing and predicted future demand needs also to be considered. The Consultant should aim to use sufficient information on the environmental baseline of the Project to allow for subsequent monitoring and evaluation of the Client's environmental performance and the environmental impact of the Project. The following information is required at a minimum, the majority of this information has to be already analysed as part of the baseline study:

(i) Wastewater Sources

- the number of people served by wastewater network, the number of households/persons served by septic tanks;
- other industrial, commercial, official and public generators of wastewater, to the extent allowed by available information;
- wastewater flows and characteristics: total and per capita flows, organic loads or other important characteristics of wastewater; if applicable, distinguish between industrial and other wastewater sources; frequency and magnitude of storm-water overflows and water bodies to which they flow, and infiltration of wastewater flows into the water supply network. A discussion of the possible implications for

groundwater pollution of areas not connected to wastewater collection (if applicable);

- industrial wastewater flows from the main industrial sources in terms of flow volumes and chemical/physical characteristics with special emphasis on toxic/hazardous pollutants discharged into the municipal wastewater collection system to the extent allowed by available information;
- an analysis of the adequacy of pre-treatment of industrial wastewaters *vis a vis* the efficiency of wastewater treatment: a description of the effectiveness and adequacy of industrial pre-treatment facilities, the impact of industrial wastewater on municipal wastewater treatment plant operation;
- a description of the monitoring of wastewater and effluent flows and quality: a description of the standards and practices used, laboratory capacity.

(ii) Wastewater Collection Network

- a description of existing wastewater collection system, including sewage pumping stations and sewerage network;
- an estimate of the condition and effectiveness of the system;
- a review of any potential environmental and/or health issues associated with the system.

(iii) Wastewater Treatment Processes, Sludge Management and Disposal

- a description of current wastewater treatment processes, including sludge management (treatment and/or disposal) commenting on process efficiency at various stages *vis a vis* industry norms and outline possible causes of under-efficiency. If applicable, an analysis of the impacts of industrial wastewater on municipal wastewater treatment plant operation, highlighting the adverse effects of any industrial effluents (if data on industrial effluents is available), which may impact microbial processes;
- benchmark the current wastewater discharges against national normative requirements and EU standards for urban wastewater discharges. Provide an estimate of the investment costs needed to bring the facilities and operations in compliance with (i) national and (ii) EU standards;
- a description and analysis of sludge management (temporary storage, handling, collection, treatment and final disposal): condition, maintenance practices; assess whether their efficiency and whether they currently meet national requirements; compare with EU requirements, highlighting adverse effects of any industrial effluents on the sludge quality which may cause the sludge to be classified as hazardous waste and set specific requirements for the disposal and treatment of the sludge;
- assess ability to utilize sludge in agriculture (refer to relevant national requirements and EU Directive), to recycle the sludge for other type of utilisation and to produce methane for heat production;
- quality of effluent discharge consistency over a three year period and comparison with current national and EU standards;

- worker and public health and safety issues associated with current operations, safety equipment and practices (inoculations, health checks, protective wear, toxic/explosive gases);
- an analysis and assessment of the impact of effluent and untreated wastewater discharges (if applicable) and storm water overflows on receiving water body quality with special emphasis on impacts of industrial hazardous and toxic pollutants, analysing compliance with applicable effluent standards and applicable regulations;
- a description of monitoring of wastewater and effluent quality; a description of standards and practices, an outline of emergency and contingency plans in relation to process breakdown, storm water overflow, etc.

**ANNEX 2: GUIDELINES FOR FINANCIAL MODELLING AND SUMMARY OF FINANCIAL INFORMATION**

The Consultant must ensure that the financial model and analysis is accurate, structured, flexible and transparent, and in line with the specific requirements laid out in the Terms of Reference. The use of the FAST financial modelling standard (<http://www.fast-standard.org>) is preferred, however not obligatory.

The Consultant is expected to present a financial model for the Project that fulfils the following non-exhaustive conditions:

<b>Accuracy</b>	
Terms	The model accurately matches all financial and operational assumptions presented in the available DD information. The model accurately matches all terms proposed to date in the Term Sheet, including, but not limited to: - Facility size, tenor, grace, interest, tranching, currency; - Financial covenants as contractually defined.
Historical	The model includes the last 3 years of (audited) historical financial statements (not applicable if a green field).
Projections	Projections for the running year are in accordance with latest available estimates / interim results.
Currency	Summary table is in the loan currency or as agreed. Impact of forex variations over time on Financial Statements has been modelled correctly.
Balance Sheet	The model Balance Sheet is balanced under any variation of inputs.
Accounting Standards	Financial Statements is modelled correctly as per IFRS (or local GAAP if agreed).
Summary Sheet	The first output sheet of the model is the Summary Sheet set up in line with the below instructions.
Check sheet	The model includes a separate check sheet, where all model calculation checks are summarised and presented on an aggregate basis.
<b>Structure and Flexibility</b>	
Columns/ time ruler	All sheets maintain a consistent column structure and time ruler throughout the model.
Sheet order	Sheets are arranged so that calculation order flows from left to right.
Inputs	All inputs are separated in a specifically denominated sheet, with no inputs (hard coded) outside them. The input sheet links through the model, enabling a fully integrated, flexible model. The source of each particular input shall be clearly stated in a comment (e.g. Feasibility Study, EBRD information, etc.).

Outputs	Outputs are presented in specifically denominated sheets, with no calculations in them.
Formatting	Use consistent format styles to improve readability of the model. Colour coding for inputs, link imports/exports across sheets, etc. are consistently applied.
Simplicity	Complex calculations are avoided by breaking them down into more basic steps. No use of excel names.
<b>Transparency</b>	
Circularity	The model does not have any circularity.
Macros	The use of macros has to be kept to a minimum. Macros are short, concise and easily traceable.
External links	No links to external worksheets outside the model.
Hiding	The model has no hidden worksheets, rows or columns that include data, whether material or immaterial. Grouping is allowed.
Offset accounts	The model does not have any unexplained "offset" account or entry to offset mismatches.

**Summary Sheet:**

The model includes a clear, consistent one page summary to facilitate the understanding of the financial aspects and drivers of a loan or investment as well as the degree of vulnerability to identified risks.

The Summary Sheet is to be included as the first sheet in the model in the format shown below.

The Summary Sheet shall include:

- 3 years of historic information (none if a green field);
- At least the first five years of projected performance (or until beginning of principal repayment, or the life of the loan if it fits on one page);
- Key assumptions / drivers;
- Related to a particular input can be precisely written;
- Ratios (covenanted and others with standard definitions);
- Breakeven Sensitivities (e.g. DSCR=1 or as agreed);
- Income statement;
- Balance sheet;
- Cash Flow;
- Any additional assumptions, sensitivities, and ratios if considered essential should be included and fitted on the page.

**Summary Sheet for Municipalities:**

	Historic			Budget		
	2012 (A)	2013 (A)	2014 (A)	2015 (F)	...	2019 (F)
<b>Ratings History</b>						
S&P						
Moodys						
Fitch						

	Historic			Budget		
	2012 (A)	2013 (A)	2014 (A)	2015 (F)	...	2019 (F)
<b>Ratio Analysis</b>						
<b>Performance</b>						
Current Surplus / Current Revenues						
Net Surplus(Defecit) / Total Revenues						
Current Revenue Growth						
Current Expenditure Growth						
<b>Debt Ratios</b>						
Total Debt / Current Revenues						
Total Debt / Current Surplus						
Debt Service / Total Revenues						
Current Surplus / Debt Service						
<b>Revenue Ratios</b>						

	Historic			Budget		
	2012 (A)	2013 (A)	2014 (A)	2015 (F)	...	2019 (F)
<b>Financial Summary (€ million)</b>						
Own Revenues						
Share of State Taxes (Legally entitled to)						
Other State Transfers						
Other Revenues						
<b>Current Revenues</b>						
Current Non-discretionary Expenditure						
Current Discretionary Expenditure						
Interest Paid						
<b>Current Surplus(Deficit)</b>						
Capital Revenues						
Capital Expenditures						
<b>Capital Surplus(Deficit)</b>						
<b>Net Surplus(Deficit) before Financing</b>						
New Borrowing						
Debt Repayments						

(Own Revs+Share of State Taxes) / Current Revs Current Revenue / Total Revenue	
<b>Expenditure Ratios</b> Non-discretionary Expenditure / Current Revenues Current Surplus / Capital Expenditure Capital Revenue / Capital Expenditure  New Debt / Capital Expenditure	

<b>Debt Redemption (€ million)</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2019</b>
	<b>(A)</b>	<b>(A)</b>	<b>(A)</b>	<b>(F)</b>	<b>... (F)</b>
Loans					
Bonds					
<b>Debt Redemption</b>					
Interest					
<b>Debt Service</b>					
Guarantees					

<b>Net Debt Increase(Decrease)</b>	
<b>Net Surplus(Deficit)</b>	
	<b>Historic</b>
	<b>Budget</b>
	<b>2012 2013 2014 2015 2019</b>
<b>Debt Stock (€ million)</b>	<b>(A) (A) (A) (F) ... (F)</b>
Short Term Local Currency	
Short Term Foreign Currency	
<b>Total Short Term Debt</b>	
Long Term Local Currency	
Long Term Foreign Currency	
<b>Total Long Term Debt</b>	
<b>Total Debt</b>	
<b>Guarantees</b>	
<b>Payables</b>	
<b>Cash &amp; Liquid Assets</b>	

### Annex 3: Standard measuring indicators and SRI impact indicators

#### Standard measuring indicators:

Sector	Indicator	Data point to be collected	Projected after implementation completion*
Water Supply	Total population benefitting from access to tap water.	Number of persons connected to improved access to tap water.	
	Annual reduction in tonnes of CO <sub>2</sub> equivalent derived from the lowering of water losses system-wide.	Average (for sector) kwh used to produce 1 m <sup>3</sup> of water <i>multiplied with,</i> amount of m <sup>3</sup> of water losses eliminated <i>multiplied with,</i> average tons of CO <sub>2</sub> generated by energy generation in the country.	
	Annual m <sup>3</sup> potable water produced.	Number of persons connected to improved access to tap water multiplied by average consumption of water in m <sup>3</sup> /year.	
Wastewater	Total population benefitting from access to wastewater services.	Number of persons with improved access to wastewater services.	
	Annual m <sup>3</sup> of wastewater treated.	Total m <sup>3</sup> /year of wastewater treated through improved wastewater treatment plant and/or total m <sup>3</sup> /year of wastewater supplied to existing wastewater treatment plant through improved network.	

\* measured two years after projected full loan disbursement

#### SRI impact indicators (as applicable):

SRI impact indicator	Unit	Data point to be collected

Primary energy saved	GJ/yr	Project energy use compared to baseline <sup>3</sup> energy use. Primary energy includes: <ol style="list-style-type: none"> <li>1. Direct use of fossil fuels</li> <li>2. Direct use of biomass.</li> <li>3. Use of electricity, multiplied by a loss factor to take into account country average generation efficiencies and electricity grid losses<sup>4</sup></li> </ol>
CO2 emissions reduced	ton CO2e/yr	Project CO2 emissions compared to baseline CO2 emissions. CO2 emissions include: <ol style="list-style-type: none"> <li>1. Emissions as a result of direct use of fossil fuels</li> <li>2. Indirect emissions as a result of the use of electricity<sup>5</sup></li> <li>3. Emissions of other Greenhouse gases (in particular methane<sup>6</sup>) expressed in CO2 equivalents.</li> </ol>
Water saved	m3/yr	Project water use compared to baseline water use. Water savings must be determined for the following project activities: <ol style="list-style-type: none"> <li>1. Water recycling projects that recover wastewater streams for reuse or alternative use.</li> <li>2. Application of technology or management actions that lead to effluent water quality improvements in regions with water scarcity<sup>7</sup></li> <li>3. Water loss prevention and water demand management</li> </ol>
Material savings	ton/yr	Material use compared to baseline material use. Material savings must be determined for project activities aimed at waste minimisation: <ol style="list-style-type: none"> <li>1. Minimisation of waste streams by integrated measures (i.e. improvement of existing installations, processes or procedures/management)</li> <li>2. Waste recycling projects that reuse waste as inputs into new products or as a resource</li> </ol>

<sup>3</sup> The baseline is defined as the expected conditions without the project two years after full loan disbursement. The baseline is compared to the conditions projected with implemented project two years after full loan disbursement.

<sup>4</sup> For example, with an average electricity generation efficiency of 40% and grid losses of 7%, the primary energy use (MWh) is 2.7 x the direct electricity use (MWh).

<sup>5</sup> The CO2 emissions as a result of the use of electricity are determined by multiplying the use of electricity (MWh) with the country specific grid emission factor (ton CO2/ MWh) in line with the joint MDB list of grid emission factors.

<sup>6</sup> Tons of methane emissions (ton CH4) can be converted to tons of CO2 equivalents (ton CO2e) by applying the a factor of 25 (ton CO2e/ton CH4)

<sup>7</sup> Qualifying for 'water saved': treated waste water with an effluent quality at or exceeding internationally accepted effluent water quality standards.