Hashemite Kingdom of Jordan

Ministry Of Water and Irrigation

Jordan Valley Authority

Jordan Water Sector Efficiency Program

Loan NO. 9560-JO

Terms of Reference of Consultancy Services
For
King Talal Dam Safety Assessment and Sediment Management
(Firm)

STEP reference number: JO-JVA-**478940**-CS-QCBS

JORDAN – AMMAN

June 2025

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Abbreviations

ACM	Asbestos- Containing Material
AP	Advanced Payment
AFD	Agence Française De Développement
AZE	Alliance For Zero Extinction
Client	Jordan Valley Authority
Consultant	International Consulting Engineering Firm
CVC	Conventional Vibrated Concrete
DMU	Dam Management Unit
DRM	Disaster Risk Management
EPP	Emergency Preparedness Plan
ES	Environment and Social
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
EHSGs	Environmental, Health and Safety Guidelines
ESHS	Environmental, Social, Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
ESS1 – 10	Environmental and Social Standards From 1 – 10
GBV	Gender-Based Violence
GCFF	Global Concessional Financing Facility
GCM	General Circulation Models
IA	Implementing Agency
IBRD	International Bank for Reconstruction and Development
ICOLD	International Commission on Large Dams
IDA	International Development Association
IEE	Initial Environmental Examination
IP	Instrumentation Plan
IUCN	International Union for Conservation of Nature
JO	Jordan
JVA	Jordan Valley Authority
JWSEP	Jordan Water Sector Efficiency Project
LMP	Labor Management Procedures
MCM	Million Cubic Meter
MWI	Ministry Of Water and Irrigation
O&MP	Operation and Maintenance Plan
PBC	Performance Based Conditions
PFMA	Potential Failure Mode Analysis
PMU	Project Management Unit
QAP	Quality Assurance Plan
RCC	Reinforced Cement Concrete
RCM	Regional Climate Models
RF	Resettlement Framework
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
SPD	Standard Procurement Document
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States
WAJ	Water Authority of Jordan
WB	World Bank

A. Project Background

Project Overview

1. The Jordan Valley Authority (JVA) has received funds under the Jordan Water Sector Efficiency Project (JWSEP) to support the Government's efforts to improve the efficiency of water services in Jordan. The JWSEP is financed through a US$200m loan from the International Bank for Reconstruction and Development (IBRD Loan Number 9560-JO) and a US$50m grant from the Global Concessional Financing Facility (GCFF TF Number TF085811) and US$50m from the Agence Française de Développement (AFD). The JWSEP includes five components: (i) Sustainable Non-Revenue Water Reduction (US$209m); (ii) Increased energy efficiency and reduced energy supply costs (US$54m); (iii) Water security measures to underpin efficiency improvements (US$27m); (iv) Institutional strengthening for water sector efficiency (US$10m); and, (v) Contingency Emergency Response provisions to support an immediate response to an Eligible Crisis or Emergency, as needed (US$0m). The Jordan Valley Authority has been allocated US$18,000,000 (including AFD) for implementation of activities under Sub-Component 3.2, including US$7,995,992 from the IBRD loan, US$2,004,008 from the GCFF Grant and US$8m from the AFD loan.

2. The JWSEP includes activities aimed at safeguarding the country's existing storage and efforts to enhance water security under Sub-Component 3.2. This includes supporting the development of tools to assess the safety of dams in Jordan and their vulnerability to climate related risks, as well as advancing the identification, prioritization and readiness of investments aimed at improving water security. This will be achieved through: (i) strengthening the national inventory and database of the country's dams; (ii) development and application of a risk and resilience indexing tool to identify and prioritize rehabilitation needs; (iii) detailed designs and supporting environmental and social assessments for priority rehabilitation projects; (iv) development and implementation of sediment management plans for prioritized dams; (v) investments in priority, no regret investments in improving the safety of dams; (vi) equipment and instrumentation to improve operations, forecasting capabilities and emergency preparedness; and (vii) Technical Assistance to strengthen the capacity for dam safety.

3. The JWSEP includes a number of Performance-Based Conditions (PBCs) that are intended to encourage institutional reforms. Among these is a PBC focused on operationalizing a risk and resilience indexing tool that will characterize dam safety risks in a systematic, qualitative, and relative manner in order to help evaluate and prioritize safety issues for individual dams and the portfolio of dams in Jordan. These potential risks will be quantified as deficiencies in the current physical state or condition of the dam and are weighted by their overall importance to the safety of the dam and the vulnerability and downstream hazard / consequence potential of the dam. Operationalization of the risk and resilience indexing tool will identify and prioritize dam safety measures and remedial actions, identify knowledge gaps (for example, dam records, hydrological data, instrumentation adequacy, among others) and evaluate the effects of risk reduction and dam safety enhancement measures on the overall risk profile.

4. The JWSEP is implemented by the Ministry of Water and Irrigation (MWI) through the Water Authority of Jordan Project Management Unit (PMU). The JVA is mandated with implementing sub-component 3.2 related activities through the Dams Studies Directorate with support from the JWSEP PMU. All activities will be in accordance with the following:

a) The World Bank's Procurement Regulations for Investment Project Financing Borrowers, dated November 2020.
b) The loan agreement between the Hashemite Kingdom of Jordan and the International Bank for Reconstruction and Development dated July 16. 2023 (Loan No. 9560-JO; CFF TF No. TF085811).
c) The procurement plan approved by the World Bank in line with the Jordanian Governmental Procurement Law No. 8 for the year 2022.
d) The Guidelines on Preventing and Combating Fraud and Corruption in projects Financed by IBRD loans and IDA Credits and Loans" dated October 15, 2006, and revised in January 2011 and as of July 1, 2016[1].
e) The Jordanian Laws on preventing fraud and corruption[2].
f) The regulation No. 69 of 2020 Environmental Classification & Licensing Regulation[3].
g) The environmental and social standards ESSs of World Bank[4].
h) Jordan Valley Authority related laws and regulations (Jordan Valley Authority Development law (19) 1988).[5]

JVA and Portfolio Overview

5. The JVA was established in 1977, became part of the MWI in 1988, and is mandated with the integrated development of the Jordan Valley, specifically the following:

a) The development of water resources of the Jordan Valley and their utilization for purposes of irrigated agriculture, domestic and municipal uses, industry, hydropower generation and other beneficial uses. Also, the protection and conservation of these resources, and the implementation of all works related to the development, utilization, protection and conservation thereof, including:

- Conducting studies required for evaluation of water resources including hydrological, hydro geological and geological studies, drilling of explanatory wells and installation of observation wells.
- Planning, design, construction, operation and maintenance of irrigation projects and related structures and works of all types and purposes including dams and

[1] Guidelines on preventing and combating fraud and corruption in projects financed by IBRD loans and IDA credits and grants: https://documents.worldbank.org/en/publication/documents-reports/documentdetail/551241468161367060/guidelines-on-preventing-and-combating-fraud-and-corruption-in-projects-financed-by-ibrd-loans-and-ida-credits-and-grants
[2] Integrity and anti-corruption commission: (https://www.jiacc.gov.jo/Ar/Pages/%D9%82%D8%A7%D9%86%D9%88%D9%86_%D8%A7%D9%84%D9%86%D8%B2%D8%A7%D9%87%D8%A9_%D9%88%D9%85%D9%83%D8%A7%D9%81%D8%AD%D8%A9_%D8%A7%D9%84%D9%81%D8%B3%D8%A7%D8%AF)
[3] Environmental Classification & Licensing Regulation: https://www.moenv.gov.jo/ebv4.0/root_storage/ar/eb_list_page/%D9%86%D8%B8%D8%A7%D9%85_%D8%A7%D9%84%D8%AA%D8%B5%D9%86%D9%8A%D9%81_%D9%88_%D8%A7%D9%84%D8%AA%D8%B1%D8%A7%D8%AE%D9%8A%D8%B5_%D8%B1%D9%82%D9%85_69_%D8%A8%D8%A7%D9%84%D9%84%D8%BA%D8%A9_%D8%A7%D9%84%D8%A7%D9%86%D8%AC%D9%84%D9%8A%D8%B2%D9%8A%D8%A9.pdf
[4] Environmental and Social Standards of World Bank: https://www.worldbank.org/en/projects-operations/environmental-and-social-framework
[5] Jordan Valley Authority Development law (19) 1988: https://www.mwi.gov.jo/Ar/List/%D8%A7%D9%84%D9%82%D9%88%D8%A7%D9%86%D9%8A%D9%86

appurtenant works, pumping stations, reservoirs and water conveyance and distribution networks, surface and subsurface drainage works, flood protection works, and roads and building needs for operation and maintenance.

- Soil surveys and classification, and the identification and reclamation of lands for use in irrigated agriculture, and dividing them into farm units.
- Settlement of disputes arising from the use of water resources.
- Organize and direct the construction of private and public wells in coordination with the Water Authority of Jordan.
- Develop and improve the environment and the living conditions in the Jordan Valley, and implement the related works including:
  - Setting rules and regulations for areas of land on which construction of buildings is permitted, setback lines, rights of way, etc., outside towns and villages borders.
  - Development of lands planned for use as residential, industrial, agricultural and other zones.

b) Planning, design and construction of farm roads.

c) Development of tourism in the Jordan Valley including construction of touristic and recreational facilities.

d) Social development of the Valley inhabitants including the establishment of private institutions in order to help them contribute to the development of the Valley and to the achievement of the development objectives.

e) Additional development activities as requested from the Cabinet.

6. The JVA manages seventeen large dams in Jordan under the management of three different administrative directorates. These include: (i) the Northern Dams Directorate, which is responsible for operation, maintenance and surveillance of dams in the north of Jordan; (ii) the Southern Dams Directorate, which is responsible for operation, maintenance and surveillance of dams in the south of Jordan; and, (iii) the Dams Studies Directorate, which is responsible for studies, construction and management of dam projects[6] (Figure 1: Dams' Directorates structure in JVA). Within each of these Directorates there are a number of departments (Table 1: Departments are managed under the directorates).

Figure 1: Dams' Directorates structure in JVA

[6] JVA organizational structure:
https://www.mwi.gov.jo/AR/List/%D8%A7%D9%84%D9%87%D9%8A%D9%83%D9%84__%D8%A7%D9%84%D8%AA%D9%86%D8%B8%D9%8A%D9%85%D9%8A

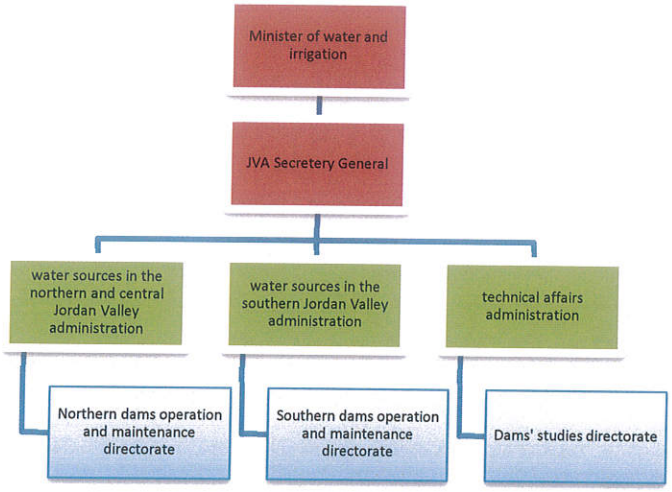


Table 2: Departments are managed under the directorates

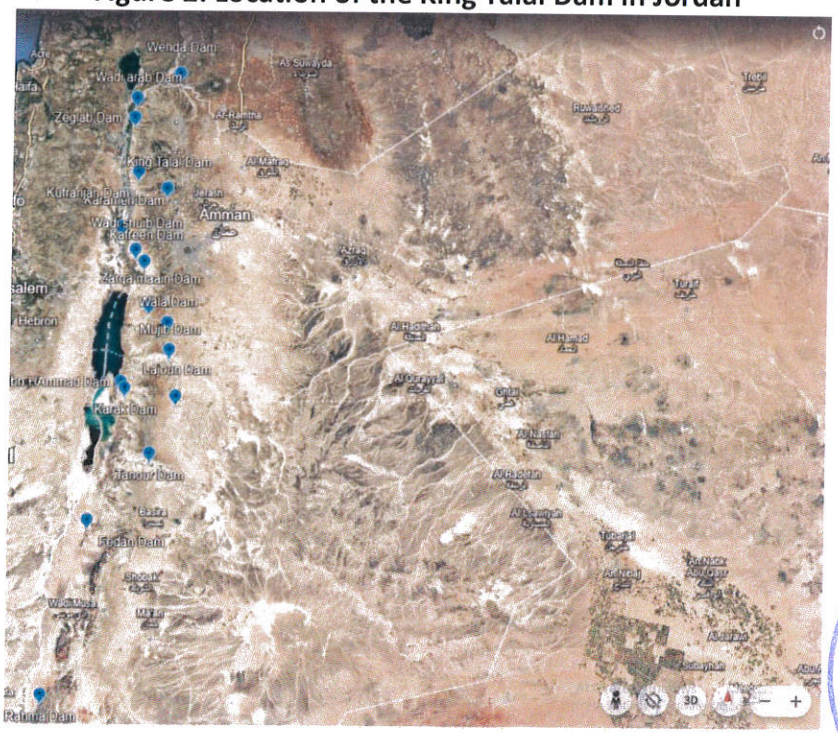
Directorate	Departments
Northern dams operation and maintenance directorate	karamah king Talal Kufranjeh Kufreen Wadi_Arab Wadi_shuib Wehdeh Zeglab Maintenance Dam safety and surveillance
Southern dams operation and maintenance directorate	Fedan Ibn Hammad Karak Lujoun Mujib Rahma Tunour Wala Zarqa_maain Maintenance Dam safety and surveillance
Dams' studies directorate	Studies of dams Supervision and construction of dams Follow-up of dams

B. Project Location and Description

7. The King Talal Dam (KTD) is located on the Zarqa River (Latitude: 32.1898979; Longitude: 35.8012736) and one of the largest dams in Jordan. Completed in 1979 and later raised in 1987, the dam's storage capacity increased from 56 million cubic meters (Mm^3) to 86 Mm^3, with a dead storage of about 8 Mm^3. The 105 m high rockfill dam, with a crest length of 350 m, drains a catchment area at roughly 33.75 km^2 with an estimated Mean Annual Runoff of 186 Mm^3 and sustainable yield estimated at 180 Mm^3 provides water for irrigation and electricity generation. The resulting reservoir is about 7.6 km long, with a maximum width of 450 m, and plays a crucial role in water storage with an increasing proportion of its water coming from treated wastewater. The water quality of KTD has been adversely affected by discharge of effluent and other industrial wastewater through the Zarqa River, containing relatively high concentrations of heavy metals, phosphorus and ammonia. It is estimated that the KTD receives an annual average sediment load of 0.625 MCM, containing plant debris, heavy metals and other toxic and chemical pollutants.

8. Bathymetric surveys of the King Talal Reservoir indicate that approximately 22.9 million cubic meters (Mm^3) of sediment have accumulated, representing around 26.6% of the reservoir's total storage capacity (86 Mm^3). Notably, more than 3.5 meters of sediment have built up above the intake invert, sloping inward behind the trash rack. Sediment elevations near the intake vary significantly—up to 127 meters above sea level within a 10-meter radius—posing a serious risk to plant operation reliability. This accumulation increases the likelihood of intake clogging, especially after plant shutdowns, and highlights the urgent need for mitigation measures such as dredging or implementing a multilevel intake system.

Figure 2: Location of the King Talal Dam in Jordan



C. Objectives of Consultancy Services

9. The objectives of this assignment are to:

a. Assess the safety condition of King Talal Dam and associated structures, the operational status and procedures, and performance history, in accordance with the national standards, good international industry practices and World Bank requirements and guidelines;

b. Prepare a dam safety assessment report, including any safety issues, potential risks, and recommendations of remedial works and safety improvement measures, covering both structural and nonstructural elements along with their detailed design and preliminary cost estimates;

c. Assess and analyze sedimentation in King Talal Dam, including understanding sedimentation characteristics, quantifying sedimentation accumulation rates, evaluating the impact of sedimentation on the dam's storage capacity and operational lifespan and providing actionable recommendations for sediment management to ensure the long term sustainability of the dam;

d. Evaluate the condition of the water intake structure below the sediment level which is at risk of closure and propose solution/s to ensure the long term safe operation and functionality of the intake structure;

e. Establish a baseline of the current environmental and social conditions and practices associated with operation and maintenance of the dam; assess any E&S risks associated with the proposed activities; and, provide an action plan to address any operational gaps in the environmental, social, health and safety measures in accordance with the World Bank Environmental and Social Framework (ESF) and the relevant Environmental and Social Standards (ESSs).

f. Prepare the scope of work and bidding documents for the implementation of priority rehabilitation and remedial measures, including any equipment and instrumentation based on the recommendations of the assessments.

D. Scope of the Assignment

10. The Services under these Terms of Reference are proposed to be carried out following the tasks as indicated below.

- Task 1: Dam Safety Assessment.
  - Task 1.1: Dam Safety Assessment.
- Task 2: Sediment Management and Intake Adaptation.
  - Task 2.1: Data Collection and Analysis
  - Task 2.2: Sediment Transport and Management Recommendations
  - Task 2.3: Adaptation of KTD Water Intake
- Task 3: Environmental and Social Assessment/s.

- Task 4: Detailed Design and Tender Documents

Task1 Dam Safety Assessment

Task 1.1 Dam Safety Assessment

11. The Consultant will carry out a detailed dam safety assessment for KTD, including, but not limited to, the following:

a. Meet with the representatives and technical staff of the dam operators to discuss the safety condition and the operation and maintenance (O&M) status or plan, including surveillance, monitoring, and contingency procedures.

b. Review and assess the dam safety inspection and periodic safety review reports, if any, and check the quality of the reports based on the Consultant's own site visit and field inspection.

c. Review and assess available design reports, as-built drawings, and construction records, including geological reports, foundation investigations, materials testing, materials strength parameters, and stability analysis.

d. Review and assess the state of instrumentation for the dam, including the current instrumentation, their condition, the parameters monitored, and determination if these are sufficient to monitor and evaluate the safe performance of the dam and associated facilities throughout their operational life. The instrumentation assessment shall identify new equipment requirements, any rehabilitation or replacement, and estimates of the regular O&M requirements, including definition of the type, number, and specification of required monitoring instruments with due consideration to the particular condition of the dam, adequate coverage of phenomena linked to dam behavior, the required parameters to monitor, the capacity and measuring range of instrumentation, the required degree of precision and level of reliability, installation arrangements, among other considerations.

e. Review and assess O&M records and instrumentation monitoring records, such as reservoir level, inflow and outflow volume, spillway discharge volume, seepage volume, settlement, and so on.

f. Review and assess available data and records of surveillance and monitoring instruments and analytical results of monitoring data, if any, and check their quality, trends, and anomalies.

g. Review and assess the seismic hazard of the dam area, including any seismic records during operation, any damages or repair works during operation, and adequacy of loading criteria and conditions used for design of the dam and its seismic stability if the dam is located in a high-seismic area.

h. Review and assess the catchment and reservoir rim conditions with regard to potential landslides, provide opinions on potential effects on the safety of each dam and downstream communities, and required measures for instrumentation and monitoring, as well as physical interventions, if any.

i. Review the available hydrological data and studies for the dam and evaluate the hydrological safety of the dam against the following: (i) safety check flood (often Probable Maximum Flood) at which the structure is on the verge of failure but exhibits marginally safe performance characteristics during flood; and (ii) design flood which represents the required flood discharge under normal conditions with a safety margin provided by freeboard.

j. Review the potential implications of projected increases in the inflow of treated wastewater and a range of climate change projections on hydrological conditions and evaluate the implications for the dam. Given the large degree of uncertainty embedded in climate projections, at least three locally credible GCM or RCM-based climate projections (optimistic, central, and pessimistic) should be evaluated to review the adequacy of design standards utilized, including those related to flood probability, spillway design criteria, and flood warning systems.

k. Review and assess the criteria, methodology, and determination of the design flood, flood routing studies, and spillway sizing; check the spillway operation records; and evaluate the adequacy of the spillway capacity considering current and future conditions.

l. Undertake flood hydrology assessment, adding inflow and outflow data during the operational period and assessing the adequacy of the design, and check flood and spillway capacity considering the current and future conditions of the catchment and reservoir silting.

m. Review and assess the stability analysis of the dam and associated structures under various loading conditions based on the specific site condition, national regulations, and/or international standards and practices. If necessary, perform independent stability analysis.

n. Review and assess the safety condition of the dam foundation and abutments, as well as the effectiveness of foundation treatment works for seepage control and slope stabilization based on monitoring records and seepage analysis. Additional survey or investigation may be requested if needed.

o. Conduct field inspection of the dam and associated structures and assess the conditions of the intake and outlet works, spillway, and gates or valves; saddle dams, including the capacity for emergency reservoir drawdown, and any damages or design issues.

p. Review and assess the silting level of the reservoir and sedimentation trends, intakes, bottom outlets, including sediment flushing and sluicing facilities, if any, along with suitable sediment management measures.

q. Assess the condition and any damages (such as scouring and cavitation) in the spillway weir or chute, energy dissipating arrangements, and downstream river conditions, as well as any design issues.

r. Assess the design and condition of electromechanical facilities and equipment, including spillway gates, hoisting mechanism, backup generators, and so on, and their quality and sufficiency—with due consideration to potential failure scenarios (severe flood, loss of power, loss of communications, and so on).

s. Apply checklists to appraise the safety condition of the dam and associated structures, categorizing the condition according to one of the following: satisfactory, fair, poor, or unsatisfactory. Additional explanations should be provided for categories that are poor or unsatisfactory, including general recommendations of required remedial and upgrading measures with preliminary cost estimates.

t. Incorporate the assessment of the current operational procedures and conditions, including the Operation and Maintenance Plan, Instrumentation Plan (number, types, and functionality of monitoring equipment and needs for replacement and upgrading, including data acquisition, storage system, and procedures) and Emergency Preparedness Plan, if available.

u. Assess the capacity of the dam operators in terms of organizational structure, staffing, skills, budget, equipment, and facilities needed to operate and maintain the dam in a safe and sustainable manner.

v. Propose a method to be approved by client's representative and undertake potential failure mode analysis, including potential failure mode analysis as per the methodology under the World Bank's Technical Note for Potential Failure Mode Analysis (PFMA) or other methods as appropriate.

w. Provide key findings of the overall dam safety conditions and recommendations of required structural and nonstructural remedial measures based on these examination results and the potential risk of the dam.

Task 2: Sediment Management and Intake Adaptation

12. The Consultant will carry out a detailed assessment of the sediment dynamics of KTD, including, but not limited to, the following:

Task2.1: Data Collection and Analysis

13. Meet with the JVA representatives and technical staff responsible for the operation and maintenance of the KTD to discuss dam safety and sedimentation issues, and identify all existing data and information, including surveillance, monitoring, and contingency procedures. The Consultant will also meet with officials from the Ministry of Environment and the Ministry of Local Administration to discuss any requirements in line with national regulations on solid and hazardous waste management.

14. Review and assess all existing hydrological data, including but not limited to, water inflow and outflow, sediment loads, and flow rates, identify any gaps and provide recommendations for strengthening the monitoring system.

15. Review the existing geological data and analyze the geological characteristics of the catchment area to identify areas of high erosive potential within the catchment, understand the sources of sediment and sedimentation rates.

16. The Consultant will review the results from bathymetric surveys carried out in September 2023; confirm the current storage capacity, sediment distribution and spatial variations within the reservoir, based on which the Consultant shall prepare a Standard Operating Procedure to guide future sediment sampling campaigns.

17. Conduct site investigations and field surveys, including the collection of sediment samples from at least four locations in the dam reservoir and at least two additional sites from the inflow source, and conduct laboratory analyses of sediment samples to determine grain size distribution, mineral composition, organic content, and chemical characteristics, including heavy metals and other potential contaminants.

18. The Consultant shall determine whether any portion of the sediment qualifies as hazardous under applicable Jordanian regulations and the World Bank Group EHS Guidelines, identify and evaluate the environmental, health, and safety risks associated with the proposed sediment control and removal options, propose appropriate mitigation measures for managing any hazardous or contaminated sediments, including occupational and community health and safety controls, and integrate all relevant procedures, roles and responsibilities, monitoring requirements, and compliance mechanisms into the sedimentation management plan and the ES instruments.

Task 2.2: Sediment Transport Model and Management Recommendations

19. Apply a numerical model to simulate sediment inflow, deposition, and distribution in the reservoir, and predict how sediments will accumulate in the KTD over the long term under different scenarios, including the implications of climate change on the intensity and frequency of precipitation.

20. Evaluate the impact of sedimentation on the KTD's storage capacity, water quality, and operational efficiency, identifying critical sedimentation areas, estimating the remaining lifespan of the dam under current and projected sedimentation rates.

21. Review and evaluate global best practices in sediment management applicable to ensuring the safety of the KTD and sustainable management of the reservoir, and provide a prioritized ranking of recommendations, along with an assessment of their respective pr's and con's related to application within the Jordanian context and that of King Talal Dam.

22. Identify and assess the feasibility and cost-benefit of sediment control and removal options, including, but not necessarily limited to, catchment management interventions to reduce the inflow of sediments, dredging (mechanical vs. hydraulic), sluicing and flushing techniques for sediment removal, sediment bypass systems for continuous flow of sediments, sediment traps and settling basins for upstream management, reservoir desilting methodologies to restore capacity

23. Develop strategies and propose an optimal sediment management plan, including cost, feasibility, and implementation timeline to minimize the impacts of sedimentation on the KTD and reservoir.

24. The Consultant shall assess the potential for water contamination resulting from sediment disturbance associated with any of the strategies proposed in the sediment management plan,

particularly the mobilization of heavy metals, nutrients, and other pollutants that could affect irrigation water quality, soil health, crop safety, and downstream users.

Task 2.3 Adaptation of KTD Water Intake

25. Review all existing data and documentation related to the KTD based on discussions with the JVA representatives and technical staff responsible for the operation and maintenance of the KTD to understand the priority

26. Evaluate the current condition of the intake structure for the KTD and its vulnerability to sedimentation, including the risk of intake blockage.

27. Investigate potential engineering solutions to maintain intake functionality and present a comparative analysis of alternatives solutions, such as extension or relocation of the intake to a higher elevation, based on technical feasibility, cost effectiveness, construction complexity and long-term sustainability.

28. Develop preliminary and detailed engineering drawings for the recommended intake modification for the best engineering solution approved by the Client, including structural and hydraulic design calculations, technical specifications for construction, and a budgeted Implementation Plan.

Task 3 Environmental and Social Assessment/s

29. For the detailed assessment of the KTD and proposed rehabilitation works, the Consultant will be required to implement the tasks in accordance with the ESS's and to complete the following tasks:

30. Familiarize themselves with the Environmental and Social Instruments for the Jordan Water Sector Efficiency Project as the main guiding reference for the assignment. These include 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).

31. Collect environmental and social baseline information for the KTD site through document reviews, field surveys and field measurements, as needed. This will include conducting field visits and collecting information from the technical team at JVA and the JWSEP PMU, as necessary. The Consultant should use the E&S Screening Form from the ESMF for data collection, guidance, and documentation, including screening against the project exclusion list and verify any data collected through the earlier Site Visit/s. The Consultant should conduct consultations with professional specialists in E&S fields and others, as necessary, including local experts, NGOs/ CBOs and potentially affected communities in coordination with JVA.

32. Establish a baseline of the current environmental and social conditions and practices associated with operation and maintenance of the dam and provide an action plan to address any operational gaps in the environmental, social, health and safety measures in accordance with the World Bank Environmental and Social Framework (ESF) and the relevant Environmental and Social Standards (ESSs)

33. The Consultant shall screen the planned activities proposed for the KTD using the environmental and social screening template in the JWESP ESMF (see

34. Annex 1: Environmental and Social Screening Form). The screening will identify the associated E&S risks and impacts, the relevant national requirements (including environmental permitting), and the environmental and social instruments required in accordance with the Environmental and Social Standards (ESS) in the World Bank Environmental and Social Framework (ESF). This should focus on ESS3, ESS4 and ESS10 (see below link) and include but not be limited to those under ESS1 (to draft an ESIA/ESMP or preliminary ESIA/ESMP, or detailed ESMP), and identify the relevant measures or instruments for the other relevant ESS's (ESS2, ESS5, ESS6, and ESS8).[7]

35. The Consultant shall prepare an environmental and social assessment, along with any required instruments identified in the screening report, as outlined in the JWSEP ESMF, SEP, LMP, RF, and ESCP, and in accordance with national regulations. The Consultant must engage stakeholders throughout the project lifecycle, starting as early as possible and based on the needs and context of the assignment to enable meaningful consultations on design. If additional assessments, studies, surveys, or environmental and social measures are needed to address E&S risks, the Consultant shall define these requirements before implementing the planned measures.

36. Specifically, the Consultant will identify stakeholders downstream of and around the dam early in the process, review existing mechanisms for engaging stakeholders, particularly those downstream water users who may be affected by disruptions in service provided by the King Talal Dam. The Consultant will prepare a Stakeholder Engagement Plan (SEP) that informs the design and implementation of proposed options, ensuring that stakeholders receive timely, relevant, understandable, and accessible information.

37. The Consultant is responsible for supporting JVA in obtaining no objections from the World Bank and clearance from national authorities for the respective instruments. The engagement process must be free of undue influence and include a grievance mechanism to address and resolve stakeholder concerns in a timely manner.

Task 4 Detailed Designs and Tender Documentation

Task 4.1 Tender Documentation

38. The Consultant shall prepare tender and contract-documents, including detailed design of the required rehabilitation works and measures that the Consultant find necessary to be done based on the findings of Task 1 and Task 2 to ensure the safe, durable and sustainable operation of the KTD.

39. The Consultant shall integrate ESF requirements and instruments based on the screening report in the bidding documents, including but not limited to drafting the ESF sections of the Standard Procurement Documents and embedding ESF requirements into the identified contracts under the Management and Supervision of Infrastructure Projects (MSIP).

[7] Environmental and Social Framework: https://thedocs.worldbank.org/en/doc/837721522762050108-0290022018/original/ESFFramework.pdf#page=59&zoom=80

40. All design calculation notes and quantities calculation notes of the various trades of the Project shall be compiled in a specific volume.

41. A 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. The breakdown of the unit prices shall be presented on MS Excel spreadsheets.

42. These documents shall be according to the World Bank's Standard Bidding Document.

43. The Consultant shall screen the planned proposed measures of the above assessments and prepare the environmental and social assessment and the ES instruments as required.

44. The Consultant shall prepare tender and contract documents integrating with the ES instruments based on this screening report for the required equipment and instruments and related works.

E. Reporting Requirements for Deliverables

45. The Consultant's will submit all reports, in English hardcopy and softcopy editable version, to JVA for review and onward transmittal to the World Bank for review and guidance. The reporting requirements shall include and within their durations[8], but not be limited to, the following:

46. **Inception Report**. The Consultant shall submit the inception report within one month from the contract signing date. The inception report shall include but not limited to the initial understanding of the project, the approach to be taken, and the plan for delivering the required outcomes, project background, Methodology work plan and timeline and communication plan.

47. **Monthly Reports.** The Consultant shall submit monthly reports for the duration of the contract. These are to be submitted in 5 hard copies and 1 softcopy editable version by email and should reach the JVA not later than 10 days after the end of the month being reported on. The format shall be agreed with the Client and will include, but not necessarily be limited to, information regarding the progress (work program) against the baseline for each of the tasks, the financial status, monitoring of E&S requirements, next step on the task or next task to do, identification of any problems in implementation and suggestions for resolution of any issues, and attached to the evidence documents like; copy of reports have been done, and inserting, if exist, photos of the accrued tasks.

48. **Dam Safety Risk Assessment Reports.** The Consultant shall prepare and submit the reports summarizing key findings and recommendations, including any safety issues, potential risks, and recommendations of remedial works and safety improvement measures for the dam. These should cover both structural and nonstructural elements along with their design and preliminary cost estimates.

49. The reports shall include the instrumentation assessment and investment plan that details the type, number, and specification of required monitoring instruments. In addition, the report shall include assessment of the hydrological conditions of the dam and identifying a set of potential set

[8] Look at the Duration Matrix for durations of the tasks' completion and reports submission.

of adaptation and resilience measures that would enhance the safety of the dam and the downstream communities. This should include a costed range of structural and non-structural measures.

50. The Client will review the report and provide their initial comments and observations to the Consultant. The Consultant will then be required to address the Client's comments and submit the final report within two weeks of receiving the Client's comments, or as otherwise agreed.

51. The Client shall issue his approval to the Consultant report to allow the Consultant to proceed with the preparation the tender and contract document which shall be submitted within 2 months of the Client's approval. The tender and contract documents will include the rehabilitation works required to ensure the safe, durable and sustainable operation of the dam based on the assessment findings and includes the E&S assessment instruments as identified in the screening for the assessment measures in the tender and contract documents.

52. **Sediment Management Report** the Consultant shall prepare the sediment management report that includes but not limited to the result of data collective and analysis, the output of the sediment transport module, the prediction of the sediment future impact on the reservoir and optimal sediment management plan, including cost, feasibility, detailed design and implementation timeline.

53. The Client will review the report and provide their initial comments and observations to the Consultant. The Consultant will then be required to address the Client's comments and submit the final report within two weeks of receiving the Client's comments, or as otherwise agreed.

54. The Client shall issue his approval to the Consultant's report to allow the Consultant to proceed with the preparing the tender and contract document which shall be submitted within 2 months of the Client's approval. The tender and contract documents will include the rehabilitation works required to ensure the safe, durable and sustainable operation of the dams based on the Consultant's assessment, and includes the E&S assessment instruments as identified in the screening for the assessment measures in the tender and contract documents.

55. **Adaptation of KTD Water Intake Report** the Consultant shall prepare a detailed technical design for the best intake modification to maintain the intake long time functionality. The report shall include the evaluation of the current situation and the potential risk and engineering design of the proposed solution which shall include detailed engineering drawings, structural and hydraulic design calculations, technical specifications for construction, timeline and budget estimation

56. The Client will review the report and provide their initial comments and observations to the Consultant. The Consultant will then be required to address the Client's comments and submit the final report within two weeks of receiving the Client's comments, or as otherwise agreed.

57. The Client shall issue his approval to the Consultant's report to allow the Consultant to proceed with the preparing the tender and contract document which shall be submitted within 2 months of the Client's approval. The tender and contract documents will include the rehabilitation works required to ensure the safe, durable and sustainable operation of the dams based on the Consultant's assessment, and includes the E&S assessment instruments as identified in the screening for the assessment measures in the tender and contract documents.

58. **Tender Documents.**[9] The Consultant shall prepare all tender and contract-documents for each assessment and within their durations including detailed design of the required rehabilitation works and the required equipment & instruments according to the World Bank's Standard Bidding Document to JVA for review prior to submitting for the World Bank review and guidance, and before finalizing the documents shall include (i) Conditions of contract; (ii) all specifications; (iii) Bill of Quantities; and, (iv) Contract Drawings, (v) Environmental and Social Instruments.

F. Team Composition and Qualification Requirements for the Key Experts

59. The Consultant should possess sound knowledge in the fields of dam engineering and dam safety, with proven capacity of dam safety inspection and review, extensive experience in dam design, construction, operation, and safety management, and familiarity with internationally accepted dam safety guidelines, such as the International Commission on Large Dams (ICOLD) among others.

60. The Consultant shall employ such staff as may be necessary to fulfill his obligations under the agreement. An assessment of the minimum staff required is set out here below. However, the Consultant shall make his own assessment of the staff necessary to fulfill his obligations. All such staff members are to be fluent in the written and spoken use of the English Language and shall also be fully computer literate.

61. The CVs of all the positions mentioned above shall be submitted for conformity with qualifications. The Consultant's key personnel proposed shall include but not necessarily limited to:

Table 3: The Consultant's key personnel proposed.

Position	Qualifications	Level of Effort
Team Leader and Dam specialist	Demonstrated experience and at least 20 years of experience with concrete gravity, embankment rock fill, or other relevant types of dams, including the design and construction, quality control and/or other type of structures in terms of the structural design of the dam. Languages: English, with Arabic an advantage.	
Deputy Team Leader and Dam specialist	Demonstrated experience and at least 15 years of experience with concrete gravity, embankment rockfill, or other relevant types of dams, including the design and construction, quality control and/or other type of structures in terms of the structural design of the dam.	

[9] Any measures related to the instrumentation or hydrological during the Dam Safety Assessment task, these measures should be excluded from Tender Documentation in Task 1, and should be included in the investment plan for the Instrumentation and Hydrological Assessments in Task 2.

	Languages: English and Arabic.
Geologist or geotechnical specialist	Demonstrated experience and at least 15 years of experience in the geotechnical aspects of dam planning, design and construction plan, including the type of geological conditions of the foundation of the dam site, associated structures, and reservoir, with comprehensive experience in geotechnical engineering related to dam foundations, abutment, tunneling, rock slope stabilization, among other relevant areas. Languages: English, with Arabic an advantage.
Hydrologist	Demonstrated expertise and at least 15 years of experience in hydrological monitoring, assessment, simulation (safe yield, maximum flood discharge, etc.), modeling, and optimized reservoir operation. With experience in hydrological and sedimentation assessments sedimentation management plans and climate change. Languages: English, with Arabic an advantage.
Hydraulic engineer	Demonstrated experience and at least 10 years in flood routing, design of spillway and energy dissipation structures, optimization of flow through intakes and outlets, physical hydraulic model testing, among other relevant experience. Languages: English, with Arabic an advantage.
Sediment Expert	Demonstrated experience and at least 10 years of experience on the sedimentology, hydrology, and sediment transport processes and have experience in sediment analysis, modeling, management and developing strategies for sediment management in water bodies. Languages: English, with Arabic an advantage.
Seismologist	Demonstrated experience with at least 10 years of seismic hazard assessments, including deterministic and probabilistic approaches and potential ground rupture at the dam site, if any. Languages: English, with Arabic an advantage.
Electromechanical expert	Demonstrated experience and at least 8 years of experience on the design and installation of the equipment, including outlet gates and hoisting system, control system and operation, and so on. Languages: English, with Arabic an advantage.
Environmental Specialist	Advanced degree in Engineering or Environmental Science, with minimum experience of at least 10 years in preparation

	of environmental and social instruments, in similar sectors and complexities, and experience in environmental and social management, and monitoring for relevant projects in the water sector with experience in dam projects an advantage. Familiarity with environmental and social standards of international financial institutions is a must while previous experience with preparing instruments according to World Bank ESF an advantage. And experienced in biodiversity assessment. Languages: English, with Arabic an advantage.
Social Specialist	Advanced degree in social sciences, anthropology, sociology, or a related field, with minimum experience of at least 10 years in conducting social assessments, preferably in the context of water projects. Knowledge of and experience with the social and cultural context under the project area. Ability to identify and address risks and impacts on disadvantaged or vulnerable individuals or groups. Familiarity with environmental and social standards of international financial institutions is a must while previous experience with preparing safeguard instruments according to World Bank safeguard policies is an advantage. Strong analytical skills to understand complex social issues and to develop appropriate mitigation measures. Experience in preparing and reviewing social impact assessments, social management plans, and resettlement action and or livelihood restoration plans. Excellent communication and stakeholder engagement skills to work effectively with a wide range of stakeholders, including local communities, government officials, and non-governmental organizations. Languages: English, with Arabic an advantage.
Occupational Health and Safety Expert	Master's degree in in the respective field of expertise with minimum 7 years' relevant experience; General professional experience: At least 5 years of relevant experience in similar assignments; experience in working in teams composed of international and national experts; Specific project related experience: Knowledge and project pertinent experience, preferably in similar fields, work experience in Jordan on comparable aspects will be an added-value; Availability for on-site presence during the implementation of the construction and rehabilitation works. Languages: English and Arabic.

Experts as needed in accordance with the ESSs	Experts in (Cultural Heritage, Biodiversity Conservation, stakeholder engagement, resettlement and land acquisition, etc.), Advanced degree in the required field. At least 7 years of demonstrated professional expertise in their field, work experience in Jordan on comparable aspects will be an added value.

G. Assignment of Seconded Staff to the Consultant

62. The Employer may place at disposal of the Consultant a number of their staff alongside certain positions in the personnel chart. The staff placed at disposal of the Consultant by the Employer shall be on the payroll of the Employer and will be seconded with the Consultant's consent to their organization. The seconded staff will be placed under the direction and administrative control of the consultant who shall determine the duties of these personnel.in the field and shall be wholly responsible for their work

H. Payment Schedule

63. Payments shall be made according to the following schedule:

Table 4: Payment schedule

Submittals	Payment Schedule
Inception Report	Ten **(10)** percent of the Contract Price paid upon acceptance of the **Inception Report** Accordance with what is required in the TOR's, acceptable to the Client.
1.1 Dam Safety Assessment	Thirty **(30)** percent of the Contract Price paid upon acceptance of the **Dam Safety Assessment Reports**, and
1.2 Instrumentation assessment	Accordance with what is required in the TOR's, acceptable to the client.
1.3 Hydrology assessment	
1.4 Environmental and Social	

Assessment instruments	
1.5 Tender Designs	Twenty **(20)** percent of the Contract Price paid upon acceptance of the tender documents including ES assessment and final screening report and instruments. Accordance with what is required in the TOR's, acceptable to the client.
2.2 Sediment Management Report and Tender Designs	Fifteen **(15)** percent of the Contract Price paid upon acceptance of the **Sediment Management Report** Accordance with what is required in the TOR's, acceptable to the client. Ten **(10)** percent of the Contract Price paid upon acceptance of the tender documents, including ES assessment and final screening report and instruments. Accordance with what is required in the TOR's, acceptable to the client.
2.3 Adaptation of KTD water intake Report	Ten **(10)** percent of the Contract Price paid upon acceptance of the **Adaptation of KTD Water Intake Report.** Accordance with what is required in the TOR's, acceptable to the client.
KTD water intake Tender Designs	**Five** (5) **percent of the Contract Price paid upon acceptance of the tender documents including ES assessment and final screening report and instruments.** **Accordance with what is required in the TOR's, acceptable to the client.**

Duration Schedule

64. Estimated duration of the services is fifteen (15) months:

Table 5: Duration & Submittals Schedule

- **Task 1**

SUB-TASK	SUBMITTAL	DEADLINE FOR SUBMISSION
0.1	Inception Report-initial	ND+1
	Client Review	+0.5
	Inception Report-final report	+0.5
1.1	Dam Safety Assessment Report-initial report	ND+6
	Client Review	+0.5
	Dam Safety Assessment Report-final report	+0.5

- **Task 2 Sediment Management and intake adaptation**

SUB-TASK	SUBMITTAL	DEADLINE FOR SUBMISSION

2.1	Data Collection and Intake Adaptation – initial Report	ND+6
	Client Review	+0.5
	Data Collection and Intake Adaptation - final report	+0.5
2.2	Sediment Transport and Management Recommendation - initial report	ND+8
	Client Review	+0.5
	Sediment Transport and Management Recommendation -final report	+0.5
2.3	Adaptation of KTD Water Intake -initial report	ND+10
	Client Review	+0.5
	Adaptation of KTD Water Intake -final report	+0.5

- **Task 3 Environmental and Social Assessment/s**

SUB-TASK	SUBMITTAL	DEADLINE FOR SUBMISSION
3.1	Environmental and Social Assessment/s -initial report	ND+12
	Client Review	+1.5
	Environmental and Social Assessment/s -final report	+0.5

- **Task 4 Detailed Design and Tender Documents**

SUB-TASK	SUBMITTAL	DEADLINE FOR SUBMISSION
4.1	Detailed Design and Tender Documents -initial report	ND+14
	Client Review	+1.5
	Detailed Design and Tender Documents -final report	+0.5

Annex 1: Environmental and Social Screening Form

SECTION 1: ACTIVITY OUTLINE

Component	
Sub-Project Name	
Location Governorate/City	
Implementing Agency	
Activities by the Sub-Project	
Expected Start Date and Expected Duration of Sub-Project Implementation Phase	
Environmental / Social Specialist:	

SECTION 2: SCREENING PROCESS

Objective of the Screening Process	
ESMF Risk Classification and Sub-Project Applicable ESSs per the ESMF	
Date and Day of Screening	
Description of Screened Site Location	
Coordinates of Site Location/s	"INSERT MAP IN ANNEX"

SECTION 3: PROJECT & ACTIVITY DESCRIPTION

Sub-Project Brief	
Activity Description	

SECTION 4: SUBPROJECT ELEGIBILITY SCREENING

Exclusion List	Yes	No
a. Sub-projects that with high ES risk classification as per the World Bank ESF:		
b. The Sub-project is likely to generate a wide range of significant adverse risks and impacts on human populations or the environment. This could be because of the complex nature of the Project, the scale (large to very large) or the sensitivity of the location(s) of the Project. This would take into account whether the potential risks and impacts associated with the Project have the majority or all of the following characteristics: (i) long term, permanent and/or irreversible (e.g., loss of major natural habitat or conversion of wetland), and impossible to avoid entirely due to the nature of the Project; (ii) high in magnitude and/or in spatial extent (the geographical area or size of the population likely to be affected is large to very large); (iii) significant adverse cumulative impacts; (iv) significant adverse transboundary impacts; and (v) a high probability of serious adverse effects to human health and/or the environment (e.g., due to accidents, toxic waste disposal, etc.);		
c. The area likely to be affected is of high value and sensitivity, for example sensitive and valuable ecosystems and habitats (legally protected and internationally recognized areas of high biodiversity value), lands or rights of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities and other vulnerable minorities, intensive or complex involuntary resettlement or land acquisition, impacts on cultural heritage or densely populated urban areas.		
d. Some of the significant adverse ES risk and impacts of the Project cannot be mitigated or specific mitigation measures require complex and/or unproven mitigation, compensatory measures or technology, or sophisticated social analysis and implementation.		

e. There are significant concerns that the adverse social impacts of the Project, and the associated mitigation measures, may give rise to significant social conflict or harm or significant risks to human security. Sub- projects with excavation activities at areas known with water networks containing ACM pipes f. Sub-projects include activities within or affecting protected areas this includes (a) sites of the Alliance for Zero Extinction (AZE), (b) natural and mixed sites on the UNESCO World Heritage List and (c) legally protected areas (IUCN categories) and, (ii) Any operation leading to an adverse and irreversible residual impact on a critical habitat; (iii) Any forest project or agricultural project with broad coverage (>100 ha) that does not implement a methodology ensuring zero-deforestation. g. Sub-projects that will cause adverse significant degradation or pollution of the water resources. h. Sub-projects that have a high probability of serious adverse effects to human health and/or the environment (e.g., due to accidents, toxic waste disposal, etc.) i. Sub-projects that include any removal or impact on archaeological remains or cultural heritage sites		

Recommendations:

If the answer to any of the questions above is yes, the subproject should be excluded from financing.

If all the answers are no, proceed with the subproject Environmental and Social Screening below and list the appropriate E&S mitigation measures/ instruments.

SECTION 5: RATING CRITERIA TO ASSESS RISKS OF SUBPROJECT

Parameter	Evaluation Description	Rating
Spatial Influence	Within the project site	**Low (1)**
	Impact beyond site boundary; Local	**Medium (2)**
	Widespread impact beyond site boundary; Local	**Substantial (3)**
	Impact widespread far beyond site boundary; Regional/national	**High (4)**
Duration	Quickly reversible, less than project life, short term (0- 2 years)	**Low (1)**
	Reversible overtime; medium term to life of project (2-4years)	**Medium (2)**
	Of difficult reversibility overtime; medium term to life of project (4-6years)	**Substantial (3)**
	Beyond closure; permanent; irreplaceable or irretrievable commitment of resources	**High (4)**
Intensity	Minor deterioration, nuisance or irritation, minor change in species/habitat/diversity or resource or very little quality deterioration; very little improvement	**Low (1)**
	Moderate deterioration, discomfort. Partial loss of habitat biodiversity/resource or slight or alternation, moderate improvement.	**Medium (2)**
	Alteration or disturbance is significant	**Substantial (3)**
	Habitat/diversity or resource, severe alteration or disturbance important processes; severe improvement	**High (4)**

Probability	Unlikely, low likelihood, No known risk or vulnerability to natural or induced hazards. Unlikely, low likelihood, Seldom, No known risk or vulnerability to natural or induced hazards.	**Low (1)**
	Possible, distinct possibility, frequent Low to medium risk or vulnerability to natural or induced hazards.	**Medium (2)**
	Possible, distinct possibility, frequent substantial risk or vulnerability to natural or induced hazards.	**Substantial (3)**
	Definite (regardless of prevention measures), highly likely, continuous high risk or vulnerability to natural or induced hazards.	**High (4)**
Significance	Deduced from the summation of the ratings with the range defined as follows: Below 4 **low Risk**, (Risk is acceptable and can be managed easily by the IA & Contractor) 4-7 **Low to moderate**, (Risk can be managed, but need mitigation based on ESMP checklist) 7-9 **Moderate Risk**, (Risk can be managed, but need further management (mitigation measures and monitoring plan and other ESHS plans proportionate to the risk) 10-12 **Substantial Risk**, (risk can be managed, but need further detailed and comprehensive management of proposed mitigation measures, monitoring plans and other ESHS plans. 13-16 **High Risk,** (screened of high, irreversible risk as identified in the Project exclusion criteria, and will be excluded at the pre-screening stage)	

Below is a guidance to determine what action would be taken before proceeding to the next step based on the risks classification results?

Low Risk	These types of subprojects would be labeled as '**activities of low environmental and social risk.** Those activities will require no further action needed to proceed with the sub-project implementation.
Low to Moderate Risk	These types of subprojects would be labeled as '**activities of low to moderate environmental and social risk.** In this case, incorporate potential mitigation measures into the design of the subprojects would be integrated and Environmental and Social Checklist would be prepared based on the ESMP checklists at annex 5.
Moderate Risk	These types of subprojects would be labeled as '**activities of moderate environmental and social risk.** In this case, incorporate potential mitigation measures into the

	design of the subprojects would be integrated and site-specific ESMP would be prepared based on the ESMP samples provided at ESMF.
Substantial Risk	These types of subprojects would be labeled as '**activities of substantial environmental and social risk.** In this case, site-specific ESMP/ESIA would be prepared.
High Risk (Exclusion)	The activities screened to fall under the exclusion criteria will be excluded.

SECTION 6: ENVIRONMENTAL AND SOCIAL SCREENING

Recreate the table below for both (i) construction (ii) operation phases.

POTENTIAL ENVIRONMENTAL / SOCIAL RISKS	Yes	No		Recommended Mitigation Measures
ESS1: Assessment and Management of Environmental and Social Risks and Impacts				
Does the subproject involve civil works including new construction, expansion, upgrading or rehabilitation environmental risks and impacts they are mostly temporary, predictable and/or reversible?				
Are there any anticipated potential impacts and risks to the physical environment, including water resources, natural habitat, atmospheric emissions, noise, solid waste, or ecological degradation?				
Is there likelihood that the activities would have inequitable or discriminatory adverse impacts on affected communities? Or to exclude individuals or groups? Including vulnerable and marginalized groups?				
Does the subproject management have the institutional environmental and social capacity to manage and implement the E&S risks and mitigation measures?				
ESS2: Labor Rights and Working Conditions				
Does the subproject involve recruitment of workers including direct, contracted, primary supply, and/or community workers?				
Does the subproject have potential GBV/SEA/SH risks? Are the financed activities expected to be sensitive to such risks?				
Is there a risk that any employment resulting from the execution of subproject activities will be biased towards marginalized and vulnerable groups (e.g., women, people with disability)				

POTENTIAL ENVIRONMENTAL / SOCIAL RISKS	Yes	No		Recommended Mitigation Measures
Is there a risk of unfair recruitment process if subproject activities will require recruitment activities?				
ESS3: Resource Efficiency and Pollution Prevention and Management				
Will the subproject result in the release of pollutants to air during construction and operation (including nuisances)?				
Will the subproject result in the release of pollutants (solid and/or liquid) construction and operation to land and environment and natural resources?				
Is the subproject expected to be associated with generation of Hazardous waste during construction and operation?				
Is the subproject expected to be associated with generation of substantial quantities of construction/demolition waste?				
Is the subproject expected to generate dust/noise/excessive exhaust emissions?				
Will the project will result in increasing the use or depletion of resources?				
Will the project result in increasing the use the shared water resources?				
ESS4: Community Health and Safety				
Is the design of subproject may potential risks during construction and operation on closest sensitive receptors or nearby communities				
Does the sub-project include structural elements? If yes, do they incorporate ESHGs and other good international industry practice? Do they take into account climate change considerations as appropriate?				
Is implementation of subproject would impact other utilities services provide for the community i.e. electricity and communication.				

POTENTIAL ENVIRONMENTAL / SOCIAL RISKS	Yes	No		Recommended Mitigation Measures
Is subproject implementation potential traffic and road safety risks to affected communities and road users throughout the project life cycle				
Are the construction and operational equipment and machineries would affect public roads and other public services.				
Are subprojects activities during construction and operation affect ecosystem service that may result with health and safety impacts on affected communities.				
Does implementation of subproject would expose community to health risks with water-born, water related, communicable and non-communicable diseases during construction and operation, particularly for vulnerable groups				
Is subproject implementation will expose community to hazardous materials that would be released during construction and operation				
Would subproject implementation generate emergency events i.e. Fire, spills, etc. that could impact health and safety of the public.				
Are subproject activities expected to include measures to facilitate the access of vulnerable or disadvantaged persons to the benefits of the project				
Do subproject activities carry any high or substantial risks of causing incidents to the population and neighboring communities? Is there a risk of increasing the probability				
creating GBV potential impacts due to the execution of financed activities:				
• Will the sub-project result in labor influx				

POTENTIAL ENVIRONMENTAL / SOCIAL RISKS	Yes	No		Recommended Mitigation Measures
• Is the sub-project being implemented in rural, peri-urban, or urban areas?				
• Will the sub-project be in hard to supervise areas				
• Will the sub-project construction near school route or other pedestrian access that women and girls use for their daily activities				
Does the subproject have the potential to upset community dynamics? (Impacts on community culture, and values)				
Will subproject activities present hazards to community members on the sub-project site? Also consider risks and accessibility for people with disabilities applying the principle of universal access where technically and financially feasible				
Will the subproject activities pose traffic and road safety hazards?				
Will the technical assistance studies (Feasibility studies/design) include rehabilitation of dams?				
ESS5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement				
Will the Project require land acquisition, resettlement?				
Will the project require physical displacement (relocation, loss of residential land or loss of shelter)				
Will the project cause impacts on livelihood that cause loss of income of the affected persons (including commercial tenants, or assets temporarily or permanently loss of crops, fruits, trees ...etc.),				

POTENTIAL ENVIRONMENTAL / SOCIAL RISKS	Yes	No		Recommended Mitigation Measures
Will the subproject implementation affects assets or access to assets such as access of individuals to their houses and owners / customers to business shops or access to natural or community resources (e.g. pasture, fishing locations, forests, water sources, places of worship, or public spaces)				
Are there any squatters or encroachers on the site?				
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources				
Is the project located within or nearby an area that is legally protected, designated for protection, or regionally or internationally recognized as an area of high biodiversity value?				
Will subproject activities have adverse impact on sensitive or protected areas?				
Will project activities have any adverse impacts or risks to any category of habitats defined under the standard: - Modified habitat - Natural Habitat - Critical Habitat				
ESS8: Cultural Heritage				
Will the subproject be located or close to a site of cultural value or social heritage of local communities?				
ESS10: Stakeholder Engagement and Information Disclosure				
Does the sub-project have a plan to incorporate measures to allow meaningful, effective and informed consultation of stakeholders, such as community engagement activities; particularly in a way that informs project design and identification of environmental and social mitigation measures?				
Does the sub-project have a plan to coordinate with government agencies and municipalities and utilities about the design, construction and operation as relevant?				

POTENTIAL ENVIRONMENTAL / SOCIAL RISKS	Yes	No		Recommended Mitigation Measures
Has there been previous cases of exclusion of persons with disabilities or other marginalized related to the project's implementation? Groups (women, children, ethnic minorities, elderly) in the area?				
Does the sub-project have a plan to disclose and disseminate information to stakeholders in an accessible, understandable and culturally appropriate format				
Does the sub-project have a plan to consult with omen and women's groups to ensure they can anticipate in decision- making processes regarding the activity and to understand safety and security risks including SEA/SH?				
Is there a risk that exclusion of beneficiaries will lead to grievances?				
Does the subproject have a GM in place, to which community and stakeholders have access, designed to respond quickly and effectively and transparently?				

SECTION 7: SUMMARY OF THE SCREENING PROCESS

	E&S Screening	Results and Recommendations		
	Relevant ESSs for this subproject	List ESSs		
Phase (Construction/Operations)	Summary of Critical Risks and Impacts identified	Risk / Impact	Individual Risk/ Impact Rating (low, moderate, substantial, High)	Summary of Mitigation Measures
	1.			
	2.			
	3.			
	4.			
	5.			

Additional Assessment Requirements	
Screening Result	Summary of Screening Result Justification
1. No further E&S assessment required	e.g. "Low risk sub-project"
2. No further E&S assessment required but could require E&S mitigation measures clauses and ESMP checklist, or a simple ESMP depending on technical recommendation	e.g. "Low to Moderate risk sub-project"
3. Detailed ESMP	e.g. "Moderate risk sub-project.
4. Detailed ESMP	e.g., "substantial risk sub-projects.
5. ESIA required. Conducted by a third party	e.g. "Substantial risk sub-project"
Is this activity excluded under the Project	Yes / No

SECTION 7: E&S CLAUSES AND CHECKLIST FOR INCLUSION IN BIDDING DOCUMENTS

List of management plans and E&S instruments: _____

E&S Specialist Conducted the Screening: _____

Signature: _____ Date: ____/____/_____

Subproject Manager: _____

Signature: _____ Date: ____/____/_____

Annex 2: Maturity Matrices

Figure 2: Maturity Matrices for dams in Jordan

Component 1: Governance	1-A. Policies and Regulations	1-B. Roles & Responsibilities	1-C. Internal & External Communication	1-D. Resourcing
Component 2: Information Management	2-A. National Standards, Regulations, Policies, Plans and Procedures	2-B. Physical Assets	2-C. Operational Information	2-D. Studies, Reviews and Reports (incl. compliance)
Component 3: Dam Safety Training and Education	3-A. Dam Safety Training	3-B. Spillway and Outlet Equipment	3-D. Incident and Emergency Preparedness Training and Education	
Component 4: Surveillance	4-A. Surveillance Program	4-B. Inspections	4-C. Instrumentation and Data Management (includes Lake Levels and Surveys) - applies to whole dam portfolio	4-D. Dam Safety Assessment
Component 5: Spillway and Outlet Equipment	5-A. Spillway and Outlet Equipment Program	5-B. Inspections and Maintenance	5-C. Equipment Testing	5-D. System Performance Assessment
Component 6: Reservoir Operations	6-A. Operation Rules and Responsibilities	6-B. Relationships with Communities	6-C. Debris Management	
Component 6: Reservoir Operations	6-A. Operation Rules and Responsibilities	6-B. Relationships with Communities	6-C. Debris Management	
Component 7: Dam and Spillway Maintenance	7-A. Dam, Reservoir and Access Maintenance	7-B. Spillway Maintenance		
Component 8: Emergency Preparedness	8-A. Threat and Consequence Identification	8-B. DMU Emergency Action Plans	8-C. Relationships with Community and External Agencies (including DRM and Emergency services, along with Police and Civil Defense)	8-D. Tests and Exercises
Component 9: Managing Dam Safety Problems	9-A. Dam Safety Problem Management System	9-B. Managing Program Non-Conformances	9-C. Managing Dam Safety Infrastructure Problems	9-D. Managing Dam Safety Deficiencies
Component 10: Audits and Reviews	10-A. Dam Safety Program Audits	10-B. Dam Safety Program Reviews	10-C. Dam Safety Reviews	10-D. Spillway and Outlet Equipment Reviews