

TERMS OF REFERENCE (TOR)

Project Management and Supervision Consultant under Khulna Sewerage System Development Project

I. PROJECT BACKGROUND

A. Project

1. Khulna, the 3rd largest city, located on southern part of Bangladesh in the catchments of rivers Bhairab and Rupsha consists of 45.65 km² having population around 1.5 million. The city has no organized sewerage system, predominantly depend on pit latrine and septic tank which are, in many cases, connected with surface drain causing disposing of wastewater over the roadside.

2. The Khulna Water Supply and Sewerage Authority (KWASA), executive agency for managing wastewater within Khulna city, took initiative to establish sustainable sewerage and sanitation system in the city. In this regard, KWASA, conducted feasibility study and formulated wastewater management master plan with the financial support from Asian Developing Bank (ADB) under TA-7820 BAN during 2015-16. ADB also provided support to prepare the investment plan validating the feasibility study, for the sewerage system in Khulna city under City Region Development Project (TA 7820-BAN)

3. Based on topography, natural gradient, physical restrictions, existing drainage pattern, and other engineering factors, the current Khulna City Corporation (KCC) area was subdivided into 10 sewerage zones also referred to as sewerage districts (SDs). Each SD covers a designated area containing particular wards.

4. The sewerage system component will have five major infrastructure sub-components, which are, *sewer network, sewage pumping station, sewage pumping and gravity main, sewage treatment plant, sewage equipment*. The main contract packages are identified as Sewer network including pumping station and service connection - two packages, Sewage Treatment Plant and the packages for equipment & supervision vehicle.

5. **Implementation Arrangements:** KWASA as the executing and implementing agency, will implement the project in close consultation with KCC, Khulna Development Authority (KDA) and other stakeholders. KWASA will engage the consultants, to provide technical guidance on implementation of the project components and supervision to ensure the quality of works. An inter-ministry steering committee will oversee and guide the implementation.

B. Consulting Services

6. KWASA will engage Consultants (firm) through international advertisement. The consulting firm will supervise, monitor and will provide technical guidance to obtain the desirable output ensuring quality of work. The consultant will have to go through the design, drawing, specification, BOQ and all related documents. If any correction or addition in document is deemed necessary during implementation, the consultant will correct or add in consultation with KWASA. The consultant will prepare the bid documents for the supply packages including

design, drawing, specification and estimate. The service also includes exclusive monitoring of safeguard requirements.

II. PURPOSE OF THE ASSIGNMENT

7. The main objective of this consultancy services is to support KWASA to implement sewerage system development project for improving sewerage and sanitation service with necessary interventions envisaged to be implemented at Khulna city & Batiaghata Upazila. The services will include construction supervision, technical guidance having gone through the all related documents, correction or addition, if it is deemed necessary during implementation considering the field situation, support to bidding process for supply packages and implementation, monitoring of safeguard requirements as per ADB safeguard policy and other safeguards requirements followed in the intervention areas, and preparation of reports & documents as required.

8. The specific objectives of the consultancy services are to support KWASA in the following:

- a) To supervise the construction of infrastructures and Installation of electro-mechanical equipment under all the subprojects;
- b) To monitor the progress of construction work and guide the contractor to complete the work as per schedule;
- c) To ensure the ADB's safeguard compliance;
- d) To go through the design, drawing and estimate of all the components and sub-components of sewerage system (sewer network, treatment plant, pumping station & others) and to correct the documents, in consultation with KWASA, if requires during implementation;
- e) To prepare the bidding document (for remaining package, such as, sewer cleaning equipment, laboratory equipment, office equipment and operational vehicles etc.); and
- f) To support KWASA to conduct the bidding procedure and award of contract in accordance with the PPR 2008 and ADB's Policy and Regulation, 2017 and as amended time to time, and in resolving contract related issues during implementation;

III. DURATION AND LOCATION OF THE SERVICES

9. The engagement period of the consultancy services is 48 months. Locations are in Khulna city and Batiaghata Upazila.

IV. SCOPE OF SERVICES

A. Overview

10. The consultant will supervise construction work to ensure the quality of work in accordance with design and technical specification. The consultant will also monitor the progress to confirm the work schedule. They will guide the contractor and make

recommendation to KWASA for intervention, if requires. The consultant will certify the work done for payment through taking measurement.

11. The consultant will support KWASA to conduct the procurement of supply packages under the proposed subprojects ensuring economical and efficient manner, consistent with widely accepted engineering standards including climate resilient and best practices for such works, and to the satisfaction of KWASA and ADB.

12. The Consultant will go through the design of sewer network including hydraulic model & pumping stations, sewerage treatment plants and, if requires, correct those in consultation with KWASA. The consultant will also prepare the design, drawing, estimate, bidding documents for supply packages (sewer cleaning equipment, laboratory equipment, office equipment and operational vehicles etc). The consultant will support the contractor in conducting topographical, hydrological survey, waste water characterization, etc., to be agreed by KWASA.

13. The consultant will support the contractors to prepare the O&M manual for sewerage system specified for each subcomponent as required. The consultant will also prepare the necessary reports including PCR (construction part and activities covered by the service period).

B. Activities

14. Main activities of the consultants are described below. The description may not be exhaustive, and the activities shall not necessarily be limited to those described.

Activity 1: Mobilization and Inception Report

15. The Team Leader will initially mobilize with key members of the project team to set up of project office including furnishing and then will mobilize further manpower, equipment and peripherals.

16. The Consultants will, after initial interactions with the KWASA and KCC, go through the all the project documents to have the clear understanding of the project to define the milestone steps in work plan. Under this task, the consultant is required to do the following:

- To go through existing documents related to the project components and government's Development Project Proposal (DPP);
- Preliminary Field visit;
- Prepare approach and methodology in line with the existing field conditions;
- Prepare action plan for carrying out the tasks; and
- Draft inception report

Activity 2: Construction Supervision/implementation of contract package

17. The consultants will assist KWASA in construction supervision/implementation of all contract packages as per the signed contracts and other contract documentations, which will lead to the successful, smooth and timely implementation of the contract packages. The Consultant will ensure quality of work as per the contract document, Government and ADB's procedure. The consultant will also certify the work done for payment.

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Activity 3: Safeguards requirement and Gender Action Plan implementation and reporting.

18. The consultants will review and update all necessary safeguard documentation as required by ADB SPS 2009 and national laws, regulations, policies and guidelines for the proposed infrastructure facilities under the investment loan. This will include:

A. Environment

- (i) Update/Finalize the Initial Environmental Examination (IEE) report including environmental management plans (EMPs) based on final detailed design of the project and in accordance with ADB SPS and national laws, regulations, policies and guidelines;
- (ii) Conduct due diligence of associated facilities and/or audit of existing facilities, if any, during the detailed design phase, as defined in ADB SPS;
- (iii) Assist KWSA in the conduct of meaningful consultations and ensure issues/concerns/suggestions raised are incorporated in the design and updated/final IEE report;
- (iv) Ensure relevant provisions from the updated/final IEE report and EMPs are incorporated in the bid and contract documents;
- (v) Assist KWSA to establish grievance redressal mechanism and ensure members of the grievance committee have the necessary capacity to resolve project-related issues/concerns;
- (vi) Together with the social safeguards experts, conduct safeguards capacity building to ensure KWSA has the capacity to implement, monitor, and report on implementation of EMPs, resettlement plans and indigenous peoples plans (if any);
- (vii) Assist KWSA on a day to day basis in monitoring implementation of EMPs at all work sites, including all potential safeguard issues identified in the safeguard documentation mentioned above; and
- (viii) Monitor any unanticipated environmental risks or impacts that arise during construction, implementation or operation of the project. that were not considered in the IEE report and EMPs. Prepare corrective action plans and ensure that these are implemented by the contractor and reported accordingly in environmental monitoring reports to ADB.

B. Involuntary Resettlement and Indigenous People Plan

- (i) Update Resettlement Plans (RPs), including due diligence reports (DDR) and Indigenous Peoples Plans (IPP), if any, as required for implementation of the packages and in accordance with ADB SPS;
- (ii) Ensure all conditions in the RPs are implemented and/or complied with prior to execution of works in any of the packages;
- (iii) Assist KWSA in the implementation of the grievance redress mechanism (GRM);
- (iv) Assist KWSA in the conduct of meaningful consultations and ensure that resettlement issues raised are considered in the updating of RPs;
- (v) Together with the environmental safeguards experts, conduct safeguards capacity building to ensure KWSA has the capacity to implement, monitor, and report on implementation of EMPs, RPs and indigenous peoples plans (if any); and

- (vi) Undertake all other tasks as may be required in order to ensure social safeguard issues encountered during the implementation phase are resolved consistent with the requirements of ADB SPS.

C. Gender

- (i) Prepare, monitor and report on Gender Action Plan (GAP);
- (ii) Provide support to KWASA in achieving indicators and compliance to GAP as per ADB requirement; and
- (iii) Assist KWASA in implementing GAP.

Activity 4: Procurement Support

19. The consultant will support KWASA for procurement activities including preparation of bidding documents (for supply packages), conduct bidding, contract award and contract management for the implementation of the contract packages. The consultant will also assist KWASA as regard to contract related issue during implementation.

- (i) The consultants will prepare of all necessary procurement documents in compliance with ADB's Procurement Guidelines for all contract packages mentioned above and for also other consultancy service (Institutional Development), if requires.;
- (ii) The Consultant will update procurement plan, and implementation plan as and when necessary;
- (iii) The Consultant will support KWASA in procurement process as per the ADB Policy and Regulation, 2017 as amended time to time, and PPR 2008; and
- (iv) The consultant will support contractors in developing required manual for O&M of sewerage system and necessary reports including PCR (construction part and activities covered by the service period).

Activity 5: Detail going through the Engineering Design

20. The Consultant will support contractors to conduct survey/investigation related to all the major infrastructure sub-components, such as, sewer network, sewerage pumping stations, sewerage treatment plant, household sewer connection, if requires, during implementation.

21. The consultant will go through the design criteria for all the components, and propose its correction, if it is deemed necessary.

22. The consultant will go through the engineering design of sewer network including hydraulic model, engineering design of sewerage treatment plants also engineering design of other sub-components; will make correction in consultation with KWASA, if it requires during implementation.

23. The Consultant will go through the engineering drawing, technical specification, bill of quantities (BOQs) for all sub-component of the sewerage system, and will make correction in consultation with KWASA, if it requires during implementation. The consultant will prepare the engineering design, drawing, technical specification, bill of quantities (BOQs), estimate for the supply packages.

24. The Consultant will consider climate change and disaster impact in the proposed urban infrastructure design so that the infrastructures become climate and disaster resilient with multi-hazard approach.

25. Update GIS database incorporating all the existing and in-built facilities.

V. DETAIL OUTPUT OF THE ASSIGNMENT

a. Team Composition

26. A total of 569 person months including 95 person-months of the international key experts, 474 person-months for the key national experts would be required. The estimated staffing and expertise person-months requirements are summarized below:

Table 1: Summary of Consulting Services Requirements

SL. No.	Position of Professional	Number	Man Month
A	International Consultants		
A 1	Sewage Treatment Plant Specialist/Team Leader	1	36
A 2	Co-treatment Plant Specialist	1	9
A 3	Process Specialist	1	20
A 4	Sewer Network Specialist	1	30
	Sub Total (A):	5	95
B	National Consultants		
B 1	Deputy Team Leader/Sewer Network Specialist	1	48
B 2	Sewer Network Specialist	1	36
B 3	Sewage Treatment Plant Specialist	1	30
B 4	Procurement Specialist	1	30
B 5	Electrical Engineering Specialist	1	30
B 6	Mechanical Engineering Specialist	1	30
B 7	Environmental Safeguards Specialist	1	24
B 8	Social Safeguards Specialist	1	24
B 9	Gender Specialist	1	24
B 10	GIS Specialist /Analyst	1	42
B 11	Structural Design Specialist	1	24
B 12	Financial Management Specialist	1	6
B 13	Supervising Engineer in Civil	1	42
B 14	Supervising Engineer in Mechanical	1	42
B 15	Supervising Engineer in Electrical	1	42
	Sub Total (B):	15	474
	Total (A+B)	20	569

b. Terms of Reference

A. International Experts

(A1) Sewage Treatment Plant Specialist/Team Leader

Tasks and Responsibilities:

27. The Team Leader cum Sewage Treatment Plant Specialist will be responsible for (but not limited to) the following:

As a Team Leader:

- i. Prepare an appropriate implementation plan for the project;
- ii. Construction supervision of all facilities including procurement of goods, installation of equipment, testing and commissioning. Go through the design, drawing and specification;
- iii. To go through and assess existing studies, documents, and other information available relevant to the sewage management;
- iv. Support KWASA to coordinate with KCC, ADB and other stakeholders and develop coordination mechanism following government's rules and regulations to ensure full wastewater management coverage of the sewerage districts through sewerage system and/or fecal sludge management (FSM) as appropriate;
- v. Provide support in updating procurement plan along with contract packaging for goods and works;
- vi. Prepare high quality report, and documentation, as acceptable to KWASA and ADB;
- vii. To go through the engineering design and specification for all contract packages and, if requires, make necessary correction during implementation in consultation with KWASA. Prepare bidding documents for supply packages including design, specification, cost estimate and assist KWASA in bidding process including bid evaluation and contract award;
- viii. Supervise other engineers and other staffs; and
- ix. Prepare the Project Completion Report (construction part and activities covered by the service period).

As Sewage Treatment Specialist:

- i. Supervise the construction works of sewage treatment plants to ensure its quality for achieving the desired service level;
- ii. To go through the documents related to sewerage components;
- iii. To go through the detailed design of sewage treatment plant and other subcomponents considering climate resilience aspect in design, and make necessary correction during implementation, in consultation with KWASA, if it is deemed necessary;
- iv. Support in updating resettlement, environmental; and all safeguard documentations;
- v. Testing materials to assess their tolerant as per standards tests applicable especially for the construction works of sewerage treatment plant;
- vi. Check and certify contractor's payment certificates. Also check periodically quantities in BOQ and actual works performed; and
- vii. Guide and support to the contractor for preparation of O&M manual for the sewerage system.

Qualifications and Experiences:

28. Team leader/sewage treatment specialist will be a civil engineering graduate with masters in sanitation/environmental/engineering and relevant disciplines with working experience of more than 20 years. She/he will have about 10 years of international experience in the field of design and supervision of sewerage projects, preferably with at least 5 years

proven work experience and skill in similar position in Bangladesh and/or in developing countries. She/he will have working experience as team leader (TL) in minimum 1 similar Project. Work experiences in the project funded by international development partner including ADB would be preferable. She/he should have good communication skills, be familiar with participatory approaches to project design and implementation and be able to assist in the capacity building and training program.

(A 2) Co-treatment Plant Specialist:

Tasks and Responsibilities

29. The Co- treatment plant specialist will be responsible for (but not limited to) the following:
- i. Supervise the construction of wetland and sewage treatment plant to ensure its quality for achieving the desired service level;
 - ii. Support team leader to prepare different reports as required by KWASA;
 - iii. Support to defining O&M of sewerage system and support to contractor to prepare the manual on sewerage treatment plant;
 - iv. Conduct/Review the wastewater characterization and analysis it;
 - v. Support to make necessary correction or adjustment, (if requires) on the design of wetland and sewage treatment plants including relevant works, climate resilience aspect in design; and
 - vi. T go through and support to make correction of the design the co-treatment facility (comprising sewage and sludge) during implementation, in consultation with KWASA, if it deems necessary.

Qualifications and Experiences

30. The Co-treatment Plant Specialist will be a Graduate in civil engineering with masters in sanitation/environmental/public health engineering disciplines with 20 years' experience. She/he will have 10 years international experience in design/supervision of relevant wastewater treatment plant process and infrastructure, preferably with at least 5 years proven work experience and skill in similar position in Bangladesh and/or elsewhere in developing countries. Work experiences in the project funded by international development partner including ADB would be preferable. She/he should have good communication skills, be familiar with participatory approaches to project design and implementation and be able to assist in the capacity building and training program.

(A 3) Process Specialist:

Tasks and Responsibilities

31. The duties and task of the Process Specialist includes, but not limited to:
- i. Supervise during construction of sewage treatment plant (STP) to confirm the design to ensure its performance at desired level;
 - ii. Support to prepare O& M manual and required documents; and
 - iii. Support Team leader along with Co-treatment plant specialist to correct or adjust the design of STP, engineering drawing, including co-treatment facility (comprising sewage and sludge) as required.

Qualification and Experiences

32. The process Specialist will be a Master's degree in civil/sanitation/environmental/chemical engineering or related field with 15 years of working experience in the process design/supervision of STP/FSM preferably with at least 5 years working experience in similar field in Bangladesh and/or elsewhere in the developing countries. Work experiences in the project funded by Development Partner including ADB would be preferable. She/he should have good communication skills, project implementation and be able to assist in the capacity building and training program.

(A 4) Sewer Network Specialist:

Tasks and Responsibilities

33. Sewer Network Specialist will assist and be responsible for carrying out the following principal tasks in association with the other team members:

- i. Supervise the construction works of sewer network and pumping stations to confirm the design to ensure its performance at desired level;
- ii. Testing materials to assess their tolerant as per standards tests applicable especially for the construction works of sewer network and pumping stations;
- iii. To go through the sewer network design including pumping stations considering hydraulic model, and make correction in consultation with KWSA, if requires during implementation;
- iv. Conduct survey and investigation, as per requirements;
- v. To consider the climate resilience aspect in sewer network;
- vi. To go through the specification, and correct it, if there is found any error or omission during implementation, and support to GIS mapping;
- vii. Check and certify the contractor's payment certificate; and
- viii. Support to contractor in preparing the O&M manuals.

Qualification and Experience

34. The Sewer Network Specialist will be a Master's degree in sanitation, public health engineering, civil engineering or relevant with 20 years' experience in designing, construction supervision of sewerage network preferably with at least 5 years proven work experience and skill in similar position in Bangladesh and/or elsewhere in developing countries. She/he should have good communication skills, and be able to assist in the capacity building and training program. Experience of working with ADB or other Development Partner funded projects will be advantageous.

B. Terms of Reference for Key Experts (National)

1. Introduction

35. This outlines Terms of Reference for the consultants (TOR) cover the proposed roles of the Key Experts (National) has been given in table-2.

2. General

- (i) The key experts will carryout the exclusive supervision of the construction work to ensure the designed quality and assist to complete the work in timely manner;
- (ii) The key experts will have to go through design, specification, drawing, BOQ and safeguard documents. They will also assist make correction of the documents, if it is deemed necessary; and
- (iii) They will assist in monitoring the progress of works and preparation of the reports and documents.

Table 2: Summary of TOR and qualification requirement

Sl. No and Position of the Specialist	Qualification Requirement	Summary TOR
<u>(B 1) Deputy Team Leader/Sewer network specialist:</u>	Graduate in civil engineering or similar / relevant discipline with a minimum of 20 years' relevant working experience, including at least 5 years' experience in design/supervision of similar project. Post-graduate/master degree in sanitation/water supply or relevant is preferable. Experience of working with ADB or other development partner funded projects will be advantageous. She/he should have good communication skills, and be able to assist in the capacity building and training program.	<ul style="list-style-type: none"> a. Supervise the construction works of sewer network and pumping stations to confirm the design to ensure its performance at desired level; b. Supervise the construction of civil, mechanical and electrical works of all the sub components to ensure its desired level. c. Testing materials to assess their tolerant as per standards tests applicable especially for the construction works of sewer network and pumping stations; d. Along with the international sewer network specialist, to go through the engineering design of all the component of sewer networks system incorporating climate resilience aspect (if required); e. Conduct survey and investigation sewerage system such as sewer network, transmission main, etc., as per requirement; f. Along with the international sewer network specialist, make correction of bill of quantities, drawings and design in consultation with KWASA, if requires during implementation. g. Check and certify the contractor's payment certificate; and h. Support to contractors to prepare the O&M manual and will also to support other required documents including PCR.
<u>(B2) Sewer Network Specialist</u>	Graduate in civil engineering or similar/relevant discipline with a minimum of 15 years' working experience water supply and sanitation projects, including at least 10 years' experience in design/supervision of pipe network.	<ul style="list-style-type: none"> a. Supervise the construction of sewer network and pumping station as per drawing & design; b. Support to team leader and deputy team leader to check periodically quantities in BOQ and actual works performed;

Sl. No and Position of the Specialist	Qualification Requirement	Summary TOR
	Post-graduate/master degree in sanitation/water supply or relevant and working with ADB or other Development Partner funded projects will be advantageous. She/he should have good communication skills.	<ul style="list-style-type: none"> c. Support to contractors to prepare of the O&M manuals; d. Review climate resilience aspect in sewer network; e. Along with the international sewer network specialist and deputy team leader, go through sewer network including pumping stations, if requires, support to make correction; and f. Assist contractors in conducting survey and investigation, as per requirement.
<u>(B3) Sewage Treatment Plant Specialist</u>	Graduate in civil engineering or similar/relevant discipline with a minimum of 15 years' working experience water supply and sanitation project, including at least 10 years' experience in design/supervision of water and wastewater/sewerage treatment plant. Post-graduate/master degree in sanitation/water supply and/or relevant is preferable. Experience of working with ADB or other Development Partner funded projects will be advantageous. She/he should have good communication skills.	<ul style="list-style-type: none"> a. Supervise the construction of sewage treatment plant to ensure its quality for achieving the desired service level; b. Support to team leader and deputy team leader to check periodically quantities in BOQ and actual works performed; c. Support to team leader and deputy team leader to prepare different reports as required by KWSA; d. Along with the team leader (TL), go through the engineering design of all the component of sewerage treatment plant incorporating climate resilience aspect (if required); e. Support to update the design the co-treatment facility (comprising sewage and sludge) as required; f. Along with the international TL, go through sewerage treatment plant drawing & design, if requires, support to make correction; and g. Support to contractor in defining O&M of sewerage system and prepare the manual on sewerage treatment plant; and h. Check and certify the contractor's payment certificate.
<u>(B4) Procurement Specialist</u>	Graduate in Civil Engineering, similar/relevant discipline with at least 15 years of relevant experience, preparation of procurement plan and procurement documents of development partner including ADB, with significant experience in procurement services in urban infrastructure or related projects (water supply/ sewerage system). Experience of working with ADB or other Development Partner funded projects will be advantageous. She/he should have good	<ul style="list-style-type: none"> a. Update procurement plan of the project agreed upon between the ADB and GoB, (including procurement thresholds and procurement methods) and approval requirements (prior or post) in connection with procurement of goods and works under the project, and advise KWSA accordingly; b. Keep liaison with other team members, in the procurement of equipment and vehicles including preparation of specification and bid documents; c. Prepare/update bidding documents for procurement of goods and works for

Sl. No and Position of the Specialist	Qualification Requirement	Summary TOR
	communication skills.	<p>required contract packages following ADB Procurement Guidelines and Public Procurement Rules, 2008 of GoB as applicable;</p> <p>d. Review bill of quantities, cost estimates, specifications and bid documents for required contract packages;</p> <p>e. Assist KWSA in bidding process including bid evaluation contract award, and in resolving contract related issues during implementation; and</p> <p>f. Provide timely and constructive assistance in dealing with any obstacles to procurement activities.</p>
<u>(B5) Electrical Engineering Specialist</u>	<p>Graduate degree in Electrical Engineering or relevant with working experience about 15 years in designing of relevant electrical components of such infrastructure (STP/water treatment plants, etc.). She/he will be experienced in designing of electrical component in treatment plants. Work experiences in the project funded by Development Partner including ADB would be preferable. She/he should have good communication skills, and be able to assist in the capacity building and training program</p>	<p>a. Supervise the implementation work at milestone stages;</p> <p>b. Support to team leader and deputy team leader to check periodically related quantities in BOQ and actual works performed;</p> <p>c. To go through all electrical drawing & design works that includes under sewerage system (if required);</p> <p>d. Support and Collect relevant data, information related to electrical design of components;</p> <p>e. Correct design of sub-station, as required for sewerage system (if required); and</p> <p>f. Check and certify the contractor's payment certificate.</p>
<u>(B6) Mechanical Specialist</u>	<p>Graduate in Mechanical Engineering, similar / relevant discipline with at least 15 years of relevant working experience mechanical design, with significant experience in water/sewage treatment plants or related projects. Experience of working with ADB or other Development Partner funded projects will be advantageous. She/he should have good communication skills, and be able to assist in the capacity building and training program.</p>	<p>a. Supervise the implementation work at milestone stages;</p> <p>b. To go through and correct (if required) the mechanical/ electro-mechanical design works that includes under pumping stations and sewage treatment plants;</p> <p>c. Support and collect relevant data and information related to mechanical design of schemes included in the above;</p> <p>d. Check and certify the contractor's payment certificate.</p> <p>e. Supervise implementation work at milestone stages; and</p> <p>f. Support to team leader and deputy team leader to check periodically related quantities in BOQ and actual works performed.</p>
<u>(B7)</u>	Graduate in civil engineering,	a. Assist in updating the IEE report and

Sl. No and Position of the Specialist	Qualification Requirement	Summary TOR
<u>Environmental Safeguards Specialist</u>	environmental engineering, similar/relevant discipline with at least 15 years of relevant working experience in environmental field including at least 10 years' experience in sewerage or urban or relevant project. Experience of working with ADB or other Development Partner funded projects will be advantageous	<p>EMPs for any change in scope, design, location, or unanticipated impacts that are not reported in the draft IEE report;</p> <p>b. Interact with the sector specialists and integrate environmentally sound practices into the detailed design of project components;</p> <p>c. Ensure updated IEE report and EMPs are included in contract documents;</p> <p>d. Ensure compliance of the project with all relevant national environmental laws, rules and regulations;</p> <p>e. Assist in environmental training programs and workshops for the staff of KWASA and contractors and in accordance to the Capacity Building Program;</p> <p>f. Prepare activity plans as identified in IEE report (e.g. site management plans, waste management plans, sludge management and disposal plans, occupational safety plans, etc.);</p> <p>g. Review contractors' site-specific EMPs (SEMPs) to ensure consistency with the IEE/EMP. Review any changes in the contractors' design and support KWASA in ensuring environmental assessment, impacts avoidance and mitigation measures are reflected in the SEMP and updated IEE report;</p> <p>h. Monitor the implementation of the SEMP by the contractors;</p> <p>i. Assist in providing occupational health and safety training for contractors' personnel before commencement of civil works for all sub-projects;</p> <p>j. Assist KWASA environmental officer in preparing environmental monitoring and implementation progress reports to ADB;</p> <p>k. Establish dialogue with the affected communities and ensure that the environmental concerns and suggestions are incorporated and implemented in the project;</p> <p>l. Facilitate in responding to any public grievances; and</p> <p>m. Assist in any other related tasks assigned by or Team Leader for effective project implementation.</p>
<u>(B8) Social Safeguards Specialist:</u>	The Social Safeguards Specialist will be a Graduate in social sciences/community mobilization or	a. Review and update Resettlement Plans (RPs) and/or Due Diligence Reports (DDRs) based on final detailed

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	<p>equivalent with at least 15 years of experience. She/he should have experience in designing relevant customer interaction programs for water supply and sanitation service delivery. Work experience in the project funded by Development Partner including ADB safeguards experience is preferable</p>	<p>designs and in accordance with ADB SPS;</p> <ul style="list-style-type: none"> b. Undertake necessary census and/or socioeconomic surveys and data collection, conduct meaningful consultations with project-affected people for finalizing the social safeguard documents; c. Assist KWASA in preparing the project's item-wise detailed budget and total cost estimates of implementing the RPs, consistent with the requirements of ADB SPS; d. Coordinate all tasks related to resolution of involuntary resettlement issues and ensure that the project comply with requirements of ADB SPS and Government of Bangladesh; e. Submit all final RPs to ADB for review and clearance before contract award; f. Prepare/update project information documents for disclosure to stakeholders and affected people; g. Hold consultation during preparation/updating of the social safeguard documents and ensure that comments/issues raised are communicated to KWASA, and measures to address such issues/concerns are addressed early on in the project design; h. Work closely with the KWASA resettlement officer to implement the RPs. (for RP implementation, the consultant will be specifically responsible for implementation of proposed compensation, rehabilitation, and income restoration measures, consultations with affected persons (APs) during rehabilitation activities, and assisting in grievance redress); i. Coordinate valuation of land by the valuation committees with close consultation with APs at Local Land Registry Office level to finalize the compensation packages; j. Guide KWASA resettlement officer in providing ID cards to APs; k. Ensure all compensations are paid in accordance with the entitlements in the approved final RPs; l. Facilitate in responding to any public grievances and keep the record of all

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		<p>grievances;</p> <p>m. Assist KWASA in preparing social safeguards monitoring reports to ADB; and</p> <p>n. Assist in any other related tasks assigned by the Team Leader/Deputy Team Leader to ensure effective project implementation.</p>
(B 9) Gender Specialist	The Gender Specialist will be a Graduate in social sciences/community mobilization or equivalent with at least 15 years of experience. She/he should have experience in designing in Gender Action Plan and other gender related activities. Work experience in the project funded by Development Partner including ADB safeguards experience is preferable	<p>a. Ensure that both women and girl children are focused on in project initiatives;</p> <p>b. Ensure that a gender sensitive approach is integrated in all field level planning, implementation and monitoring activities;</p> <p>c. Prepare and update the Gender Action plan for the Project;</p> <p>d. Develop monitoring and evaluation tools for the subprojects under the project including establishing measurable gender related targets and indicators for subprojects; and</p> <p>e. Monitor and prepare the report on gender issues.</p>
(B10) GIS Specialist	Graduate in engineering, urban planning and/or geography or similar/relevant discipline with at least 15 years of relevant working experience in designing and operating GIS systems in the urban water/sanitation or related sector. She/he should have good communication skills, and be able to assist in the capacity building and training program.	<p>a. Prepare/update GIS based maps required for sub-components of the sewerage system;</p> <p>b. Assist the consultant team in preparing and analysing the GIS database and maps;</p> <p>c. Provide GIS material for presentation purposes;</p> <p>d. Develop and deliver on the job training to KWASA staff; and</p> <p>e. Assist in any other task assigned by the supervising consultants as per requirement.</p>
(B11) Structural Design Specialist	Graduate degree in civil/structural engineering with at least 15 years' experience in designing sewerage/water supply or other infrastructure or relevant projects. She/he will be experienced in designing of water/wastewater treatment plant structures. Work experiences in the project funded by Development Partner including ADB would be preferable. She/he should have good communication skills and be able to assist in the capacity building and training program	<p>a. Supervise the construction works at milestone stages;</p> <p>b. To go through the design criteria and propose for correction, if it deems require ;</p> <p>c. Make correction in structural design of civil construction works of sewerage system, if requires.; and</p> <p>d. To go through the specification and bill of quantities; propose for correction, if requires;</p>
(B12) Financial Management	Graduate degree in Financial Management/Business administration	<p>a. Establish a sound accounting practice and systems to manage resources</p>

Sl. No and Position of the Specialist	Qualification Requirement	Summary TOR
Specialist	or related field with at least 15 years' professional experience in relevant field. She/he will have experience in design and development of accounting and budgeting systems for public enterprises. Work experiences in the project funded by Development Partner including ADB would be preferable. She/he should have good communication skills, and be able to assist in the capacity building and training program	available at the investment program; b. Develop budgetary control process, design budget procedures and budget formats; and c. Guide to conduct disbursement of fund following ADB's loan handbook, 2017 as amended from time to time.
(B13) Supervision Engineer (Civil)	Graduate degree in civil/structural engineering with at least 12 years' experience in supervising water supply/sewerage or other urban infrastructure or relevant projects. Work experiences in the project funded by Development Partner including ADB would be preferable. She/he should have good communication skills, and be able to assist in the capacity building and training program.	a. Supervise the construction works and assist KWASA to ensure quality of works; b. Supervise and guide the contractor regarding contractor's preparation, to ensure that these conform to the agreed contract documents; c. Examine and provide guidance on the contractor's working methods including examining occupational health and safety procedures; d. Assess the adequacy of materials, equipment and labour provided by the contractors, the contractor's methods of work, and rate of progress and (where required) recommend appropriate action to expedite progress; e. Supervise the civil work and guide on the contractor's plans defining the location of the different construction equipment and its capability; f. Ensure field instructions to the contractor, and examine and quality control the work to ensure that these are carried out according to the contract documents; and g. Assist KWASA to take the measurements of work done and certify the quantity.
(B14) Supervision Engineer (Mechanical)	Graduate degree in mechanical engineering with at least 12 years' experience in electrical works supervising water supply/sewerage or other urban infrastructure or relevant projects. Work experiences in the project funded by Development Partner including ADB would be preferable. She/he should have good communication skills, and be able	a. Supervise the mechanical work and guide on the contractor's plans defining the location of the different mechanical equipment and its capability; b. To go the specification of mechanical equipment and assist KWASA to ensure quality of works; c. Supervise and guide the contractor regarding contractor's preparation, to ensure that these conform to the

Sl. No and Position of the Specialist	Qualification Requirement	Summary TOR
		<p>agreed contract documents;</p> <p>d. Regarding mechanical works, examine and provide guidance on the contractor's work methods including examining occupational health and safety procedures;</p> <p>e. Monitor the rate of progress and, where requires, recommend appropriate action to expedite progress;</p> <p>f. Ensure field instructions to the contractor, and examine and control the work to ensure that these are carried out according to the contract documents; and</p> <p>g. Assist KWASA to take the measurements of work done and certify the quantity</p>
(B 15) Supervision Engineer (Electrical)	Graduate degree in electrical engineering with at least 12 years' experience in electrical works supervising water supply/sewerage or other urban infrastructure or relevant projects. Work experiences in the project funded by Development Partner including ADB would be preferable. She/he should have good communication skills, and be able to assist in the capacity building and training program	<p>a. To go through the specification of electrical equipment and assist KWASA to ensure quality of works;</p> <p>b. Supervise and guide the contractor regarding contractor's preparation, to ensure that these conform to the agreed contract documents;</p> <p>c. Regarding electrical works, examine and provide guidance on the contractor's work methods including examining occupational health and safety procedures;</p> <p>d. Monitor the rate of progress and, where requires, recommend appropriate action to expedite progress;</p> <p>e. Ensure field instructions to the contractor, and examine and control the work to ensure that these are carried out according to the contract documents; and</p> <p>f. Assist KWASA to take the measurements of work done and certify the quantity.</p>

36. **Non-Key Expert:** In addition to professional inputs shown above, support from Non-Key Expert staffs such as Junior Engineer, Surveyors, CAD Operators, Office Manager, Accountant and Office Assistant are anticipated to be required as given in Table 3:

Table 3: Summary of Non-Key Expert

Expert Code	Title of Expert	Require Qualification	No. of Expert (National)	Total Person-Month
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01	Junior Supervision Engineer (Civil, Mechanical and Electrical)	<ul style="list-style-type: none"> B.Sc. Engineering in relevant subject with 5 years' experience 	03	108
01	Surveyors	<ul style="list-style-type: none"> B.Sc. in civil engineering with 2 years experience or Diploma in Civil Engineering with 5 years of professional experience 	01	18
02	CAD Operator	<ul style="list-style-type: none"> Diploma in civil Engineering 5 years as CAD technician 	02	84
03	Office Manager	<ul style="list-style-type: none"> Bachelor's degree in any discipline 5 years as project office management 	01	48
04	Accountant	<ul style="list-style-type: none"> Bachelor's degree in accounting or related subject 6 years of professional experience In accounting under engineering consulting/construction firm 	01	42
05	Office Assistant	<ul style="list-style-type: none"> SSC pass. 	02	96
Sub-Total=			10	396

VI. REPORTING REQUIREMENTS, TIME SCHEDULE AND DELIVERABLES

37. KWASA has the extensive experience completing the large Khulna Water Supply Project co-financed by ADB and JICA. The Government of Bangladesh will provide qualified staff, office accommodation and office equipment through the project.

38. The consultant input is for four years (48 months). The consultant team will focus its effort on supervision, progress monitoring, reporting and preparation of documents. The team will have to go through the engineering design, specification, drawing, BOQ, safeguard documents to have the clear understanding about those documents to ensure the quality supervision, proper guidance to contractor and assist Khulna WASA effectively to achieve the objectives of the project. The consultant will also correct those documents in consultation with KWASA, if any error or omission is found during implementation.

39. The consultant will provide inception report, monthly report, and quarterly report, safeguard monitoring report, draft final report, final report and project completion report (construction part and activities covered by the service period).

40. The estimated total duration of consulting services will be 48 months. The list of deliverables, which the Consultant is expected to producing and corresponding time schedule is outlined in the table below.

Table 4: Schedule of Deliverables (for each component)

Sl. no.	Deliverable	Month of Delivery	Summary of Contents	Number of Copies
(i)	Inception	Within 30 days of	Initial findings, detailed approach	5 hard

Sl. no.	Deliverable	Month of Delivery	Summary of Contents	Number of Copies
	Report	mobilization.	and methodology, detailed work plan.	Copies and soft copy
(ii)	Monthly Report	Every month	Describe briefly and concisely all activities and progress for the previous month by the 7 th day of each month. Problems encountered or anticipated will be clearly stated, together with actions to be taken or recommendations on remedial measures for correction. Also indicates the work to be performed during the coming month;	5 hard Copies and soft copy
(iii)	Quarterly Report	Every quarter	Comparative statement of target vs. achievement, examination of major problems and issues, achievement of development objectives and recommended actions including updated design as required.	5 hard Copies and soft copy
(iv)	Semi-Annual Safeguard Monitoring Reports (Environment and Social)	Every 6 months from the date of commencement of service.	Based on the template provided in the IEE (for environment) and RP (for social).	2 hard copies and soft copy.
(v)	Bid documents	Within 8 months	Bid documents (4 nos. supply packages)	15 hard Copies for each and soft copy package
(vi)	Draft Final Report	Within 45 months	Comprehensive analysis of work done, physical and financial progress of all contracts, operational aspects, qualitative aspects, financial analysis,	10 hard Copies and soft copy
(vii)	Final Report	Within 47 month	Incorporating comments from KWASA and ADB	15 hard Copies and soft copy.
(viii)	Project completion report (construction and activities covered by the service period)	Within 48 month	Performance of completed works, safeguards management, lesson learnt, recommendation etc.	5 hard Copies and soft copy.

VII. CLIENT'S INPUT AND COUNTERPART PERSONNEL

A. Services, facilities and property

41. KWASA will provide the office space in the KWASA building, but the consultant will be responsible for the cost of utilities (electricity, gas, water, etc.). Necessary office equipment, such as

computers; computer peripheral equipment, furniture, etc. should be procured under the consulting services budget.

42. KWASA will provide to the Consultant assistance which include making available all relevant documents, and assistance for obtaining work permit, visa and other similar documents as well as exemption and privileges, if any.

B. Professional and support counterpart personnel

43. KWASA will provide all necessary facilities and information. Counterpart support on a no-cost basis to the consultant's team.

44. KWASA will provide the following inputs, project data and reports to facilitate preparation of the Proposals;

- i. Feasibility Study and Formulation of Wastewater Management Master Plan for Khulna City;
- ii. Design/outline design, drawing and estimate of sewer network and sewerage treatment plant; and
- iii. Any other related document available in KWASA.