

## ANNEX 1: OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

### INDICATIVE OUTLINE TERMS OF REFERENCE FOR DESIGN AND SUPERVISION CONSULTANTS

<p><b>1. Background</b></p>	<p>By a framework financing agreement dated 08th August, 2013 between India acting by its President (“Borrower”) and Asian Development Bank (ADB), ADB has agreed to provide a multitranche financing to the Borrower for the purposes of financing projects under the Kolkata Environmental Improvement Investment Program (KEIIP). The objective of the Project is to have improved and climate resilient water supply, sewerage and drainage service and operational sustainability in selected service areas of KMC.</p> <p>Tranche 2 of KEIIP, amounting to \$200 million, and a technical assistance (TA) grant from Urban Climate Change Resilience Trust Fund in the amount of \$1 million to strengthen Kolkata’s climate resilience through improved planning and disaster risk management. The Tranche 2, supported by the Tranche 2 of the MFF and attached TA, will continue rehabilitation of water supply facilities, and improve the coverage, climate resilience, and operational sustainability of KMC’s S&amp;D and water supply services.</p> <p>The support to project Kolkata Environmental Improvement Investment Program is to achieve the following Project outputs:</p> <ul style="list-style-type: none"> <li>• Output 1: Rehabilitation of inefficient and outdated water supply assets to minimize cost of operation, restoration and enhancement of production capacities, and reduction of water loss in distribution;</li> <li>• Output 2: Construction of sewer network to newly developed areas; and</li> <li>• Output 3: Further development of financial management and project implementation capacity;</li> </ul>
<p><b>2. Objective of the Assignment</b></p>	<p>The objective of the Design and Supervision Consultants is to provide assistance to the program and project management unit (PMU) in management of Tranche-2 of the Kolkata Environmental Improvement Investment Program which is financed by the Asian Development Bank’s (ADB’s) loans under the Multitranche Financing Facility. The investment program will aim to increase service quality and operational sustainability in water supply and sewerage in the Kolkata Municipal Corporation (KMC) area. The investment program will deliver three outputs: (i) inefficient and outdated water supply assets rehabilitated; (ii) continue sewerage and drainage extension to peripheral areas; and (iii) further develop financial and project management capacity.</p>
<p><b>3. Scope of Services, Tasks and Expected Deliverables</b></p>	
<p><b>3.1 Scope of Services, Tasks and Deliverables</b></p>	<p>The consultants will supervise and manage the construction with regular site visits, carry out quality control, testing and reporting, monitor construction activities and certify contractor’s progress claims. The consultants will act as Engineer on behalf of the Employer.</p> <p>The consultants will also update various studies and project preparation documents, carry out contract planning and detailed engineering designs, prepare schedule of quantities and specifications, review drawings prepared by the contractors, support the PMU in preparation of procurement packages, bid documents, invitations, receipt and evaluation of bids as and when needed.</p> <p>The selected Consultant shall be required to cover the following activities include, but not limited to:</p>

**Survey and Design**

- (i) Prepare and update the detailed designs of the agreed technical options, technical specifications, cost estimates, and bid documents for subprojects which should be in accordance with the ADB procurement guidelines and standard bidding document.
- (ii) Carry out baseline surveys, and ensure the contractors comply with environmental management plans, and initial environmental examination.
- (iii) Assist the PMU officer/staff to update draft resettlement plans, due diligence reports and prepare any new safeguard documents as required
- (iv) Assist the PMU in the implementation of final resettlement plans
- (v) Assist the PMU officer/staff to conduct public consultations and GAP implementation.
- (vi) Carry out safeguard orientation and project GRM for PMU staff and contractor as required
- (vii) Assist PMU to carry out baseline surveys, and ensure the contractors comply with resettlement plan.
- (viii) Assist the PMU with all aspects of procurement including preparation of bid document, bid invitation, evaluation and award of work.
- (ix) Assist the PMU to ensure the complete payment/ RP implementation **prior to** the starts of civil work activities for packages with identified IR impacts
- (x) Ensure compliance of contractors with ADB's procedures and guidelines for project implementation and management.
- (xi) Provide inputs including preparation of detailed project reports for advance preparations of subproject for subsequent loans, if any.
- (xii) Ensure designs are implementable on ground with the path of least disturbance to other utilities.
- (xiii) Recommended design, technology, and process having the simplest and least expensive for operation and maintenance.
- (xiv) Prepare the operation and maintenance manual of the mechanical assets created by the project in collaboration with the respective contractors and the public communication and social development consultant.
- (xv) Undertake necessary surveys and investigations on the project sites and its surroundings.
- (xvi) Update maps and plans of the water supply and sewerage project sites.
- (xvii) Review available secondary data, and update the data with primary sources.
- (xviii) Report analysis of the existing assets before designing.

**Supervision**

- (i) Administer and manage the works and supply contracts of Tranche-2.
- (ii) Provide most reasonable interpretation of technical specifications in consultation with the PMU.
- (iii) Verify the surveyed maps and design in the light of the ground situation and make necessary modifications, if required, with approval by the PMU.
- (iv) Scrutinize and improve the contractors' detailed work program and guide contractors for each contract.
- (v) Scrutinize the construction methods proposed by contractor including environmental; safety, personnel and public issues.
- (vi) Monitor the construction method by assessing the adequacy of the contractor's input materials, labor, equipment, and construction methods.
- (vii) Review and modify the detailed construction drawings as necessary for the works contract in Tranche-2.
- (viii) Supervise and monitor construction work of each contract.
- (ix) Assist PMU/SMU in coordinating with contractor's schedule for civil works for safeguard monitoring
- (x) Conduct regular field visits to project sites during civil works activities and conduct

- independent assessment on safeguard compliance and provide recommendation to contractors/ SMU officer as necessary
- (xi) Monitor contractors' implementation of environmental standards, environmental and social safeguards, and gender action plans, and provide contractors with mitigation measures in case of failures.
  - (xii) Assist SMU for any unanticipated impacts on involuntary resettlement during construction, prepare corrective action plan, inform and submit the plan to ADB
  - (xiii) Assist, monitor and assess the GRM implementation and records keeping by the contractors and SMU staff, provide recommendation as required.
  - (xiv) Establish quality assurance system including verification of source of material and certification.
  - (xv) Carry out necessary quality control activities and certify that the quality of works conforms to the specifications and drawings.
  - (xvi) Supervise the construction of the various contract packages for achieving the expected outputs of the project.
  - (xvii) Record the work measurement and certify the contractors' interim and final bill of payment.
  - (xviii) Assist third party inspections, if necessary, as decided by the employer.
  - (xix) Review and finalize the "as built" drawings submitted by Contractor.
  - (xx) Assist the employer in issue of completion certificates.
  - (xxi) Assist for resolution of all contractual issues including examining the contractor's claims for variations/extensions, or additional compensations, etc., and prepare recommendations for approval by the employer.
  - (xxii) Inspect the works at appropriate intervals during defect liability period and issue certifications.
  - (xxiii) Prepare monthly project progress reports in accordance with the facility administration manual,
  - (xxiv) Assist the PMU in collecting the baseline data from primary sources, and monitoring the progress as per the project performance monitoring system as well as the service level benchmarks defined by the Ministry of Urban Development,
  - (xxv) Assist the PMU in other tasks as assigned by the PMU,
  - (xxvi) Provide all necessary information to the PMC regarding project related issues and prepare solutions for recommendations to the Project Director,
  - (xxvii) Accompany client in meetings with KMC and state government officials, police, local representatives, utility service providers as and when necessary.

#### **DELIVERABLES**

The desired outputs & deliverables under this contract are as shown below :

- (i) Preparation of Inception report, progress reports.
- (ii) Preparation and submission of Detailed project reports and detailed engineering designs for Projects /Subprojects
- (iii) Preparation and submission of the semiannual safeguard monitoring report in line with the requirement of ADB for disclosure.
- (iv) Preparation of Bidding documents for the packages of works, goods etc.
- (v) Supervision of all contract packages for smooth completion of packages within the stipulated time of completion and within the contract value
- (vi) Supervision of Third party inspection for Third Party Inspection Agency and Third Party Quality and Safety Audit
- (vii) Project performance monitoring system updates,
- (viii) Briefing notes to the Project Director on project related issues,
- (ix) Draft final report and final report

**4.Team  
Composition  
& Qualification  
Requirements for  
the Key Experts**

**Estimated Input Requirements (Tranche 2)**

<b>Sl. No.</b>	<b>KEY EXPERTS</b>	<b>Type</b>	<b>Inputs</b>
1	Team Leader cum Drainage Expert	National	30
2	Deputy Team Leader cum Water Supply Specialist	National	30
3	Water Supply Network Specialist	National	18
4	Drainage Network Specialist (2 nos.)	National	20
5	Structural Engineering Specialist	National	10
6	Micro-Tunneling Specialist	National	2
7	Water Treatment Specialist	National	1
8	Environmental Specialist (ES)	National	11
9	Survey Specialist	National	8
10	Construction Manager (Civil) (10 nos.)	National	300
11	Construction Manager (Electrical)	National	12
12	Construction Manager (Mechanical)	National	12
13	Procurement Specialist	National	14
14	Project and Procurement Specialist (Finance)	National	20
15	Waste Water Treatment Specialist	National	3
16	Safety Specialist	National	4
17	Soil Expert	National	2
18	Non Revenue Water Management Specialist	National	6
19	Quantity Surveyor Expert	National	6
20	Economic Analysis Expert	National	2
21	Hydro-Modeling Expert ( for Water supply)	National	4
22	Hydro-Modeling Expert ( for Drainage)	National	4
23	Social Safeguard Specialist (SS)	National	28
24	GIS Expert	National	15
25	Legal Expert		10
	<b>Sub Total (A)</b>		<b>572</b>

<b>Sl. No.</b>	<b>NON-KEY EXPERTS</b>	<b>Type</b>	<b>Inputs</b>
1	Construction Supervisor (28 nos)	National	1120
2	Construction Supervisor (Electrical)	National	14
3	Construction Supervisor (Mechanical)	National	14
4	GIS Consultant	National	10
5	Engineer (Civil) (8 nos.)	National	218
6	Engineer (Electrical)	National	14
7	Engineer (Mechanical)	National	14
8	Engineer (Structural)	National	24
9	Engineer (Environment)	National	20
10	Quantity Surveyor (1 no.)	National	45
11	Auto CAD Draftsman (3 nos.)	National	80
12	System Manager	National	40
13	Office Manager	National	40
14	Computer Operator (11 nos)	National	256
15	Office Assistant (10 nos)	National	386
16	Secretary	National	40
	<b>Sub Total (B)</b>		<b>2335</b>
	<b>TOTAL (A+B)</b>		<b>2907</b>

**Specific Tasks with Preferred Qualifications and Experiences of Key Persons of DSC FOR KEIP TRANCHE-2**

**Position Qualification, Experience, Tasks and Responsibilities**

Position	Qualification & Experience	Tasks and Responsibilities
<ul style="list-style-type: none"> <li><b>Team Leader cum Drainage Expert</b></li> </ul>	<p>The Team leader (TL) Cum Drainage expert will be Civil Engineering graduate, Master degree in Public Health Engineering or Project Management or other related discipline, with around 15-year experience in designing, construction management, and supervision of similar integrated urban water supply/sewerage and drainage projects. The preferred experience of externally funded projects (ADB or World Bank etc.) in the capacity of Team Leader/Deputy Team leader in preferably 2 or more projects, for 1 year or more will be an advantage.</p> <p>Age - within 65 years is preferred.</p>	<p>(a) <b>The Team Leader</b> shall be overall responsible for ensuring satisfactory performance of DSC as per the prescribed "Scope of Work".</p> <p>(b) The Team Leader should ensure overall compliance of all contract agreements implemented under Project 2 in letter and spirit by observing strict vigilance to avoid any possibility of time and budget overrun. In the event of any such possibility he shall issue "Vigilance Note on the Time/Budget overrun", to the Employer for further action.</p> <p><b>Tasks and Responsibilities as Drainage Expert:</b></p> <p>(a) The Team Leader should ensure overall compliance of all drainage related contracts agreements implemented under Tranche 2.</p> <p>(b) The Drainage expert shall be overall responsible for finalizing all detail designs and ensure smooth implementation and compliance of all drainage related works.</p>
<ul style="list-style-type: none"> <li>Deputy Team Leader cum Water Supply Specialist</li> </ul>	<p>The Deputy Team Leader cum Water Supply specialist will be Civil Engineering graduate, with 10-year experience in designing, construction management, supervision of similar urban water supply projects, planning city water supply network, water treatment plants, pumping stations etc. Experience of 2 or more externally funded projects (ADB or World Bank etc.) for 1</p>	<ul style="list-style-type: none"> <li>The Deputy TL cum Water Supply Specialist shall be overall responsible for ensuring satisfactory performance of DSC as per the prescribed "Scope of Work" under the guidance of TL DSC.</li> <li>The Deputy Team Leader shall be overall responsible for finalizing all detail designs and ensure smooth implementation and compliance of all water supply related works.</li> </ul>

		<p>or more years will be an advantage.</p> <p>Age - within 65 years is preferred.</p>	<ul style="list-style-type: none"> <li>• The Deputy TL cum Water Supply Specialist shall function as TL-DSC in absence of TL and shall be responsible for timely submission of all mandatory deliverables as required for the project in absence of TL.</li> <li>• Construction supervision of all the subprojects</li> <li>• Progress monitoring of all the sub-projects</li> </ul> <p><b>Tasks and Responsibilities as Water Supply Specialist :</b></p> <ul style="list-style-type: none"> <li>• The priority task as Water Supply Specialist shall be to assist in finalizing detail design report, BOQ and bid document of water supply subprojects.</li> <li>• To finalize survey and investigations, detail designing, technical specifications, cost estimates, BOQ and bid documents for second and subsequent tranches water supply subprojects.</li> <li>• Construction supervision of water supply subprojects</li> <li>• Progress monitoring of water supply subprojects</li> <li>• Any other relevant task assigned by TL</li> </ul>
	<ul style="list-style-type: none"> <li>• Water Supply Network Specialist</li> </ul>	<p>The Water Supply Network specialist will be post graduate in the civil engineering/public health engineering with 10 year experience in designing, construction management, supervision of similar integrated urban water supply projects, pipe lines, water treatment plants, river intake structures, pumping stations etc. Experience of 1 or more externally funded projects (ADB or World Bank etc.) for 1 or more years will be an advantage.</p>	<ul style="list-style-type: none"> <li>• The priority task of the WS specialist is to prepare the detail design report for the water supply subproject, to be finalized by Deputy Team Leader.</li> <li>• The WS specialist shall be responsible for survey and investigations, detail designing, technical specifications, cost estimates, BOQ, and bid documents for water supply subprojects for the next and future loans.</li> <li>• The WS specialist shall render all support and assistance for construction supervision of water supply related projects of all subprojects in association with Construction Manager, as prescribed under the overall responsibility of DSC. He will</li> </ul>

			<p>ensure compliance of activities in Survey and Design clauses of the TOR.</p>
<ul style="list-style-type: none"> <li>• Drainage Network Specialist(2 Nos)</li> </ul>	<p>The Drainage Network Specialist will be a post graduate in civil engineering/public Health Engineering with 10 year experience in designing, construction management, supervision of similar integrated waste water projects, Sewer lines, Waste Water treatment plants, Sewer pumping stations etc. Experience of 1 or more externally funded projects (ADB or World Bank etc.) for 1 or more years will be an advantage.</p>	<ul style="list-style-type: none"> <li>• The priority task of the Drainage Network specialist is to prepare the detail design report for the drainage subproject, to be finalized by Team Leader..</li> <li>• The Drainage Network Specialist shall be responsible for survey and investigations, detail designing, technical specifications, cost estimates, BOQ, and bid documents for water supply subprojects for the next and future loans.</li> <li>• The Drainage Network Specialist shall render all support and assistance for construction supervision of water supply related projects of all subprojects in association with Construction Manager, as prescribed under the overall responsibility of DSC. He will ensure compliance of activities in Survey and Design clauses of the TOR.</li> </ul>	
<ul style="list-style-type: none"> <li>• Structural Engineering Specialist</li> </ul>	<p>The Structural Engineering Specialist will be graduate in Civil Engineering and post graduate in Structural Engineering with 10 year experience in designing of similar infrastructure projects based on latest technologies and design concepts.</p>	<ul style="list-style-type: none"> <li>• The task of the Structural Engineering specialist shall be to design and finalize detail design report and shall require the detail designing of all structures related to Service Reservoirs, WTP, Pumping Stations, Sewerage Treatment Plant and Transmission lines.</li> <li>• The Structural Engineering specialist shall be responsible for structural designing, technical specifications for structures of related to sewerage, drainage, water supply and related building works.</li> <li>• The Structural Engineering Specialist shall provide necessary inputs for construction supervision of structures of all related contract with Construction Manager, as prescribed under the overall responsibility of DSC.</li> </ul>	

	<ul style="list-style-type: none"> <li>• Micro-tunneling Specialist</li> </ul>	<p>The Micro-tunneling Specialist shall be an Engineering Graduate with 5 years' experience in Micro-tunneling works related to water supply, sewerage and drainage projects under urban areas regarding latest technologies and equipment. The preferred experience of one job of water supply or sewerage &amp; drainage of 1500mm dia or above with total drive length of 300 meters or higher in one stretch will be an advantage.</p>	<ul style="list-style-type: none"> <li>• The Micro-tunneling Specialist should guide and advise concerned construction manager related to Micro-tunneling job as per approved alignment and gradient. He should suggest different trenchless technology suitable as per ground condition, (soil and surrounding structures), prepare feasibility report, technical specification and BOQ for related tender documents and also assist in evaluation of bids.</li> </ul>
	<ul style="list-style-type: none"> <li>• Water Treatment Specialist</li> </ul>	<p>The WTP specialist will be civil engineering graduate in relevant field with 10 years' experience in designing, construction, management, supervision of Water Treatment Plants and systems based on latest technologies.</p>	<ul style="list-style-type: none"> <li>• The priority task of the WTP specialist and in association with WS specialist shall be to design and finalize detail design report, BOQ and bid document related to water supply subproject. WTP specialist shall be responsible for Design and implementation of New Water Treatment Plant with Modern Latest Technology matching with ground condition.</li> <li>• The WTP specialist shall be responsible for issuance of construction drawings related to Water Treatment Process system of water supply subproject.</li> </ul>
	<ul style="list-style-type: none"> <li>• Environmental Specialist (ES)</li> </ul>	<p>The Environment Specialist will be post graduate in Environment Science/ Engineering or Ecology with preferably 10 years' experience in designing environment related safeguards for donor aided projects, preferably with ADB/World Bank and in oversight of their implementation/compliance. Preferably, conversant with relevant national and state environmental laws with 2-years' experience with ADB/World Bank procedures.</p>	<ul style="list-style-type: none"> <li>• To carry out baseline environmental surveys, and prepare Initial Environmental Examinations (IEE) or Environment Impact Assessment (EIA) as required.</li> <li>• To prepare Environmental Management Plan and Environmental mitigation measures.</li> <li>• Preparation of ADB procedure compliant environmental safeguard actions including impact assessments if any during the design stage</li> <li>• To ensure implementation of environmental standards and safeguards as part of project implementation</li> <li>• Preparation of performance monitoring reports</li> <li>•</li> </ul>



	<ul style="list-style-type: none"> <li>Survey Specialist</li> </ul>	<p>The Survey Specialist will be Civil Engineering Graduate preferably with 7-year of experience in survey works related to water supply, sewerage, road, drainage projects under urban areas; by using latest technologies and equipment like total station, global positioning system (GPS) etc.</p>	<ul style="list-style-type: none"> <li>The survey specialist shall collect and review all available surveys and investigations.</li> <li>The Survey specialist shall be responsible for assessing the need for survey and investigation of all subprojects and shall plan the survey through external professional agencies in such a manner, so that all necessary survey data are available to key experts for designing.</li> <li>The specialist should be responsible for supervising, monitoring and quality of the survey work.</li> <li>The survey specialist would assist in finalizing the mobilization schedule of key experts according to the survey need and expected completion time of surveys.</li> </ul>
	<ul style="list-style-type: none"> <li>Construction Manager (Civil-10 nos)</li> </ul>	<p>The Construction Manager (CM) will be a Civil Engineering graduate with preferably 10 year experience in Construction Management, Supervision and Quality control of projects related to water supply, sewerage, road and building works. Experience in Externally funded projects (ADB or World Bank etc) for duration of 6 months and above is preferred.</p> <p>Age - within 65 years is preferred.</p>	<ul style="list-style-type: none"> <li>The CM shall be responsible for construction supervision of all subprojects, that is as per the DSC ToR.</li> <li>The CM shall ensure preparation of all construction drawings related to various subprojects by the respective sector specialists.</li> <li>The CM should ensure that the construction drawings issued are adaptable to the site. In case of any discrepancy, resulting in requiring for revised construction drawing by the sector specialists, it shall be the duty of the CM to get the revised drawing issued to the constructing agency in shortest possible time.</li> <li>The CM shall ensure all technical and administrative clearances required by the constructing agencies which otherwise could result in delaying the sub projects.</li> <li>The CM should establish proper quality assurance systems as per the best practices of successful ADB projects and procedures.</li> <li>The CM shall ensure compliance of the contract agreement in letter and spirit by observing strict vigilance to avoid any possibility of time and budget overrun.</li> </ul>

	<ul style="list-style-type: none"> <li>• Construction Manager (Electrical)</li> </ul>	<p>The Construction Manager (CM) will be a Electrical Engineering graduate with preferably 10 year experience in the related field, Supervision and Quality control of projects related to water supply, sewerage, road and building works. Experience in Externally funded projects (ADB or World Bank etc) for duration of 6 months and above is preferred.</p> <p>Age - within 65 years is preferred.</p>	<ul style="list-style-type: none"> <li>• The CM shall be responsible for supervision of related subprojects that is as per the DSC ToR.</li> <li>• The CM shall ensure preparation of all construction drawings related to various subprojects by the respective sector specialists.</li> <li>• The CM should ensure that the construction drawings issued are adaptable to the site. In case of any discrepancy, resulting in requiring for revised construction drawing by the sector specialists, it shall be the duty of the CM to get the revised drawing issued to the constructing agency in shortest possible time.</li> <li>• The CM shall ensure all technical and administrative clearances required by the constructing agencies which otherwise could result in delaying the sub projects.</li> <li>• The CM should establish proper quality assurance systems as per the best practices of successful ADB projects and procedures.</li> <li>• The CM shall ensure compliance of the contract agreement in letter and spirit by observing strict vigilance to avoid any possibility of time and budget overrun.</li> </ul>
	<ul style="list-style-type: none"> <li>• Construction Manager (Mechanical)</li> </ul>	<p>The Construction Manager (CM) will be Mechanical Engineering graduate with 10-year experience in designing, construction management, supervision and quality assurance of Mechanical equipments and systems in large integrated water supply and Sewerage and Drainage projects, pipe lines, water treatment plants, pumping stations, sewerage treatment plants, sewage pumping stations etc. Experience in Externally funded projects (ADB or World Bank etc) for duration of 6 months and above is preferred.</p>	<ul style="list-style-type: none"> <li>• The task of the CM under guidance of TL, DSC and in association with WS and S&amp;D specialist shall be to assist in preparation of BOQ and bid document of water supply and S&amp;D subproject.</li> <li>• The CM shall be responsible for reviewing of mechanical equipment and systems of other subprojects and finalizing designing, technical specifications, cost estimates and BOQ of mechanical/Electrical equipment and systems for subprojects for the future loans.</li> <li>• The CM shall be responsible for periodic construction supervision of mechanical equipment and systems of all subprojects in association with Construction Manager (Civil), as prescribed</li> </ul>

			<p>under the overall responsibility of DSC.</p> <ul style="list-style-type: none"> <li>The CM shall be responsible for designing and implementing a suitable maintenance system for all mechanical systems and equipment under the project.</li> </ul>
<ul style="list-style-type: none"> <li>Procurement Specialist (PS)</li> </ul>	<p>The Specialist will be an engineering graduate with 10-year experience in procurement of large-scale projects related to water supply, sewerage, road and drainage sectors. Preferable experience of one externally funded projects (ADB, World Bank etc) for duration of 2 years or more is preferred. Thorough knowledge of procurement guidelines of ADB/World Bank will be an advantage.</p>		<ul style="list-style-type: none"> <li>The priority task of the PS shall be to finalize BOQ, invitation of Bids and Bid document/qualifying criteria, evaluation related to water supply and S&amp;D subproject.</li> <li>The PS shall be responsible for Procurement of all proposed contracts with strict compliance of ADB guidelines.</li> </ul>
<ul style="list-style-type: none"> <li>Project and Procurement Specialist (Finance)</li> </ul>	<p>The Project and Procurement Specialist will be a graduate in Commerce and MBA in Finance/CA/CMA, or related discipline, with 10-year or more experience of project financial management with project financial analysis. Experience of externally funded projects (ADB or World Bank etc.) for more than 3 year will be an advantage.</p>		<p>The specialist will</p> <ul style="list-style-type: none"> <li>Develop the project financial model considering the funding pattern of the project.</li> <li>Develop the model regarding forecasting of disbursement target considering gross bill concept.</li> <li>Develop the variance analysis model regarding identification of variances.</li> <li>Balance sheet analysis as well as financial resource analysis for the purpose of fulfillment of qualification criteria regarding financial matters as per bidding document.</li> <li>Develop bidding documents and evaluate bids with procurement specialist.</li> <li>To review and keep an overall control of physical and financial progress of the project including compliance of loan agreement.</li> <li>To prepare different reports for ADB, GoI and GoWB.</li> <li>Preparation of all related reports as per ToR of DSC mainly in financial areas.</li> </ul>
<ul style="list-style-type: none"> <li>Waste Water Treatment Specialist</li> </ul>	<p>Waste Water Treatment Expert will be civil engineering graduate preferably with 10-year</p>		<p>The specialist will:</p> <ul style="list-style-type: none"> <li>Carry out Comparative Analysis of all the feasible Waste Water</li> </ul>

		<p>experience in the relevant field, in the developing countries in Asia, with sufficient knowledge and experience. Post graduate degree in the field of expertise will be an advantage.</p>	<p>Treatment Systems and identify the most appropriate systems amongst them.</p> <ul style="list-style-type: none"> <li>• Carry out preliminary design and planning for Waste Water Treatment Systems for the schemes as proposed under the Externally Aided Project</li> <li>• Carry out detailed design of the sanctioned Waste Water Treatment Plants Schemes and subsequently prepare the DPRs for the schemes.</li> <li>• Provide necessary inputs in preparation of Bid documents of the Waste Water Treatment Plants</li> <li>• Guide the Construction Team during construction of the Waste Water Treatment Plants.</li> </ul>
	<ul style="list-style-type: none"> <li>• Safety Specialist</li> </ul>	<p>The Safety Specialist will be Graduate with 7-year experience as Safety Specialist in works related to water supply, sewerage, drainage projects etc. under urban areas. A degree/diploma in Safety with 1-year or more work experience of externally funded projects (ADB or World Bank) is preferred.</p>	<p>The task of Safety Specialist is to guide and advice concerned Construction Managers related to safety issues. He shall be responsible for preparing guidelines related to Safety and Environmental issues regarding strict compliance of ADB/ World Bank projects and regular monitoring and periodic report to Executing Agency concerning related works.</p>
	<ul style="list-style-type: none"> <li>• Soil Expert</li> </ul>	<p>Soil Expert will be Civil Engineering graduate with post-graduation in Geotechnical Engineering with 7 yrs experience in geotechnical works in large urban areas project such as sewerage and Drainage, water supply, buildings, roads etc.</p>	<p>The task of Soil expert is to advice and guide the concerned Construction Manager related to soil mechanics and geotechnical engineering, prepare feasibility report, design and soil investigation reports, if necessary, suggest construction methodology related to geotechnical engineering.</p>
	<ul style="list-style-type: none"> <li>• Non Revenue Water Management Specialist</li> </ul>	<p>NRW Specialist will be an engineering graduate in Civil Engineering in the relevant field with 7-year or more experience (in Non Revenue water (NRW/UFW) management with the water utility operators, in the developing countries, with sufficient knowledge and experience in district metered zone management, leak assessment and preparing and negotiating the performance-</p>	<p>The specialist will:</p> <ul style="list-style-type: none"> <li>• Identify a suitable project area for subsequent ADB financing for Water Loss Management contract;</li> <li>• In the identified area, collect all necessary information required to determine the (a) daily volume of NRW, (b) average supply time (in case of intermittent supply), (c) average pressure, and (d) number of service connections and the (e) length of mains;</li> </ul>

		<p>based contract for NRW management. The Specialist with experience of above 6 months in one externally funded project (ADB or World Bank etc.) is preferred.</p>	<ul style="list-style-type: none"> <li>• Determine the size of the final project area in accordance with the available budget for the project. Prepare a cost estimate for a comprehensive turnkey performance-based NRW management contract acceptable to ADB, following the ADB's standard bidding contract for international competitive bidding. This will include the cost for the establishment of DMAs, leak detection and repair, pressure management, customer meter installation, selective infrastructure replacement and all other works and activities required to reduce NRW;</li> <li>• Based on the performance-based NRW management contract used under the project, prepare draft versions of the following documents: (a) procurement notice, (b) request for prequalification and prequalification criteria; (c) request for proposals, (d) main contract document acceptable to ADB.</li> <li>• The specialist will be required to design modules of operation, SOPs for the network generated and ensure that O&amp;M of such generated system is understood by the Employer.</li> <li>• The specialist would also be required to familiarize the work force of the Employer, through Training sessions about SCADA and its operational aspects. The arrangements if any required will be made by the Employer and the training material would be the responsibility of the Team Leader.</li> </ul>
	<ul style="list-style-type: none"> <li>• Quantity Surveyor Expert (QS)</li> </ul>	<p>The QS will be Civil Engineering graduate with 7-year or more experience/ Diploma in civil engineering with 10 year experience in estimation, preparation of BOQ and normal procurement procedures will be an advantage.</p>	<ul style="list-style-type: none"> <li>• The priority task of the QS specialist and in association with WS and Waste Water specialist and procurement specialist shall be to finalize BOQ and bid document related to water supply and S&amp;D subproject.</li> <li>• The QS specialist shall be responsible for quantity</li> </ul>

			calculations, cost estimates of Schedule and Non Schedule items BOQ, bid document, procurement, bill verifications, variations etc for all the subprojects.
	<ul style="list-style-type: none"> <li>Economic Analysis Expert</li> </ul>	Economic Analysis Expert will be Post Graduate in Economics with 10 years or more experience in Urban Water Supply and S&D project. The work experience in the sector of Economic analysis, Demand analysis and Willingness to pay assessment under externally funded projects (ADB or Work Bank etc.) for 2-years will be an advantage.	<ul style="list-style-type: none"> <li>The Task of Economic Analysis Expert is to prepare the economic and financial analysis and financial management assessment for subprojects under future tranches and other supporting analysis as may be required by ADB from time to time and as per their existing guidelines.</li> </ul>
	<ul style="list-style-type: none"> <li>Hydro-Modeling Experts (Water Supply)</li> </ul>	The Hydro-Modeling Expert (Water Supply) will be a graduate in Civil Engineering with 5 years' or more experience in designing water supply network of large integrated water supply projects by using latest water CAD (Mike/Mouse/Water Gem etc.) software.	<ul style="list-style-type: none"> <li>The Hydro-Modeling Expert (Water Supply) under guidance of TL, DSC and in association of WS specialist shall be responsible for survey and detail network designing of water supply project using latest computer software. The Expert will frame the model, check the boundary conditions and check the analysis of the network output through modeling. He will also do model runs and analysis independently as per need.</li> </ul>
	<ul style="list-style-type: none"> <li>Hydro-Modeling Expert (Sewerage and Drainage)</li> </ul>	The Hydro-Modeling Expert (Drainage) will be a Civil engineering graduate with 5 years' experience in designing, construction management, supervision of large waste water treatment/processing plants and systems based on latest CAD (Mike/Mouse/Sewer Gem etc) Software.	<ul style="list-style-type: none"> <li>The Hydro-Modeling Expert (Drainage) under guidance of TL, DSC and in association of Drainage specialist shall be responsible for survey and detail network designing of Drainage Network project using latest computer software. The Expert will frame the model, check the boundary conditions and check the analysis of the network output through modeling. He will also do model runs and analysis independently as per need.</li> </ul>
	<ul style="list-style-type: none"> <li>Social Safeguard Specialist</li> </ul>	The Social Safeguard Specialist will be post graduate in Planning/ Social Sciences with 10 years' or more experience in designing of resettlement	<ul style="list-style-type: none"> <li>Prepare and implement ADB compliant resettlement plans if any based on the approved framework, for subprojects under present and future tranches.</li> <li>Assist the SDU officer/staff to</li> </ul>

		<p>plans and framework and experience in implementing resettlement plan conforming to the laws relating to land matters as prevailing in the State as part of donor supported projects, preferably with the ADB and conversant with laws relating to land acquisition, state procedures in implementation of resettlement packages and ADB procedures. Experience of externally funded projects (ADB or World Bank etc.) for more than 3 years will be an advantage..</p>	<p>update draft resettlement plans, due diligence reports and prepare any new safeguard documents as required</p> <ul style="list-style-type: none"> <li>• Assist the SDU in the implementation of final resettlement plans and assist PMU/SDU in coordinating with contractor's schedule for civil works for safeguard monitoring</li> <li>• Assist the SDU officer/staff to conduct public consultations and GAP implementation.</li> <li>• Carry out safeguard orientation and project GRM for PMU staff and contractor as required</li> <li>• Assist, monitor and assess the GRM implementation and records keeping by the contractors and SDU staff, provide recommendation as required.</li> <li>• Organize workshops, Focused Group Discussions (FGDs) and community consultation during design and implementation phase.</li> <li>• Carryout all required baseline surveys.</li> <li>• Prepare performance-monitoring reports.</li> </ul>
	<ul style="list-style-type: none"> <li>• GIS Expert</li> </ul>	<p>GIS Specialist will have Post Graduate Degree in Remote Sensing/GIS Application with preferably 5 years of post qualification relevant experience in GIS application in two or more cities/towns.</p>	<ul style="list-style-type: none"> <li>• He should closely monitor the contracts of GIS mapping of water supply and S&amp;D of the city. Understanding the complex network, soil characteristics, available documents and satellite maps and manage the contracts in an acceptable manner which will enable the client to take up future works/projects. He will also keep provision for refinement of the work on betterment in future with more sophistication. He shall conduct focused group discussions (FGDs) with ground level functionaries for identifying utilities/networks, on the basis of database collected by the contractors engaged for the purpose, for structuring the monitoring of GIS mapping of Water Supply &amp; Sewerage and Drainage System of the city.</li> </ul>

	<ul style="list-style-type: none"> <li>• Legal Expert</li> </ul>	<p>Legal Expert will be the Law graduate with 10-year experience of practicing in corporate law in District/High Court or any other Higher Court. Knowledge and experience in handling legal issues including arbitration on externally funded projects will be an advantage.</p>	<ul style="list-style-type: none"> <li>• Legal Expert should be responsible for advising the employer regarding contract related issues of all contracts entered by the employer. He will also assist the employer in respect of all legal matters relating to the contracts and in all arbitration process.</li> </ul>	



<p>5. Indicative Reporting Requirements &amp; Time Schedule for Deliverables</p>	<p>The desired outputs &amp; deliverables under this contract are as shown below :</p> <table border="1" data-bbox="430 241 1453 1512"> <thead> <tr> <th>SI. No.</th> <th>Milestones</th> <th>No of Copies and Form</th> <th>Date of Submission</th> <th>Recipient</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Inception report - draft final report and final report</td> <td>Five (5) Hard copies and 1 CD ROM</td> <td>Within 1 month from commencement</td> <td>PMU</td> </tr> <tr> <td>2.</td> <td>Detailed project reports and detailed engineering designs,</td> <td>Five (5) Hard copies and 1 CD ROM</td> <td>As and when required</td> <td>PMU</td> </tr> <tr> <td>3.</td> <td>Monthly progress reports on physical, financial, safeguards and gender action plan compliance,</td> <td>Five (5) Hard copies and 1 CD ROM</td> <td>On every month</td> <td>PMU</td> </tr> <tr> <td>3.</td> <td>Prepare and submit the semiannual safeguard monitoring report for PMU to be submitted to ADB for disclosure.</td> <td>Five (5) Hard copies and 1 CD ROM</td> <td>Every 6 months</td> <td>PMU</td> </tr> <tr> <td>4.</td> <td>Bidding documents for each contracts,</td> <td>Five (5) Hard copies in initial and further copies as and when required 1 CD ROM</td> <td>As per Schedule</td> <td>PMU</td> </tr> <tr> <td>5.</td> <td>Manuals for operations of mechanical assets,</td> <td>Five (5) Hard copies and 1 CD ROM</td> <td>As per Schedule</td> <td>PMU</td> </tr> <tr> <td>6.</td> <td>Draft completion certificates,</td> <td>Five (5) Hard copies and 1 CD ROM</td> <td>After completion of every contract</td> <td>PMU</td> </tr> <tr> <td>8.</td> <td>Project performance monitoring system updates</td> <td>Five (5) Hard copies and 1 CD ROM</td> <td>Every month</td> <td>PMU</td> </tr> <tr> <td>9.</td> <td>Briefing notes to the Project Director on project related issues,</td> <td>As per instruction</td> <td>As and when required</td> <td>PMU</td> </tr> <tr> <td>11.</td> <td>Completion Report - draft final report and final report</td> <td>Five (5) Hard copies and 1 CD ROM</td> <td>Before completion of the assignment</td> <td>PMU</td> </tr> </tbody> </table>	SI. No.	Milestones	No of Copies and Form	Date of Submission	Recipient	1.	Inception report - draft final report and final report	Five (5) Hard copies and 1 CD ROM	Within 1 month from commencement	PMU	2.	Detailed project reports and detailed engineering designs,	Five (5) Hard copies and 1 CD ROM	As and when required	PMU	3.	Monthly progress reports on physical, financial, safeguards and gender action plan compliance,	Five (5) Hard copies and 1 CD ROM	On every month	PMU	3.	Prepare and submit the semiannual safeguard monitoring report for PMU to be submitted to ADB for disclosure.	Five (5) Hard copies and 1 CD ROM	Every 6 months	PMU	4.	Bidding documents for each contracts,	Five (5) Hard copies in initial and further copies as and when required 1 CD ROM	As per Schedule	PMU	5.	Manuals for operations of mechanical assets,	Five (5) Hard copies and 1 CD ROM	As per Schedule	PMU	6.	Draft completion certificates,	Five (5) Hard copies and 1 CD ROM	After completion of every contract	PMU	8.	Project performance monitoring system updates	Five (5) Hard copies and 1 CD ROM	Every month	PMU	9.	Briefing notes to the Project Director on project related issues,	As per instruction	As and when required	PMU	11.	Completion Report - draft final report and final report	Five (5) Hard copies and 1 CD ROM	Before completion of the assignment	PMU
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<p>6. Client's Input and Counterpart Personnel</p>	<p><b>(a)The following Services, Facilities and Property shall be provided by the Client to the Consultant</b></p> <ul style="list-style-type: none"> <li>➤ The Client will provide office space and necessary equipments including desk and chair</li> <li>➤ The client will help DSC to have all relevant and available reports, documents, maps, photographs etc.</li> </ul>																																																							

	<p><b>(b) The following Professional and Support Counterpart Personnel shall be assigned by the Client to the Consultant:</b></p> <ul style="list-style-type: none"> <li>➤ Team for effective coordination with the Consultant</li> </ul>
<p>7. Client will provide the following inputs, project data and reports to facilitate preparation of the Proposals</p>	<p>The Client will provide all the available reports and documents for the study of the consultants. The client will also assist the consultants to obtain requisite available information from any other department/organization. However the responsibility of such collection would lie with the consultants.</p>