INDICATIVE TERMS OF REFERENCE
FOR
DESIGN & SUPERVISION CONSULTANTS (DSC)
FOR
SECOND KOLKATA ENVIRONMENTAL IMPROVEMENT PROJECT
(KEIIP)

A Background

The Second Kolkata Environmental Improvement Project (the project) aims at integrating different urban sub-sectors to improve the overall urban environment and quality of life of the citizens of Kolkata. The project is proposed to be financed by a series of loans under an Asian Development Bank’s (ADB’s) multitranche financing facility (MFF). The outcome of the project will be increased quality and sustainability of water supply and sewerage operations. The investment programme will deliver three outputs: (i) inefficient and outdated water supply assets rehabilitated; (ii) sewerage extension to newly developed areas continued; (iii) financial and project management capacity further developed.

B Indicative Scope of Project

2. It is anticipated that ADB will provide a first loan for USD100 million under the facility to finance physical investment to water supply and sewerage infrastructures, and non-physical investment to improving water supply and sewerage operations, and project management implementation. Subject to KMC’s successful implementation of pending reforms and good project implementation performance, it is expected that ADB may provide subsequent loans up to a total value of USD400 million towards accomplishment of KMC’s Kolkata Urban Sector Investment Plan.

2.1) The indicative activities for the project financing are given below:

<table>
<thead>
<tr>
<th>Indicative Works Under Tranche 1</th>
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<tbody>
<tr>
<td>1</td>
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</tbody>
</table>

2.2) The tentative list of activities for the subsequent loans is given below:

<table>
<thead>
<tr>
<th>Indicative Works under Subsequent Tranches</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td>27</td>
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</table>

**C Project Organisational structure**

3. The Kolkata Municipal Corporation has been the executing agency acting through the project management unit (PMU) for Loan-1813 IND: Kolkata Environmental Improvement, and Loan-2293 IND: Kolkata Environmental Improvement Project (Supplementary Loan) and will also be the executing agency for the new project. The PMU already has an organisational structure fully equipped with technical and non-technical personnel and working to the satisfaction of the ADB for implementation of the Kolkata Environmental Improvement Project (KEIP). The PMU has been functioning and will function under the general control of the KMC.

**C1 Contribution of Executing Agency** : Executing Agency will provide furnished Office space with communication facilities. Executing Agency will liaison with third party to get necessary information i.e. maps, drawings etc. They will also provide logistic support as and when needed. Assets provided by the client to the consultant wholly or partly with funds provided by the client shall be the property of the client.

**D Brief Description of the Assignment**

4. Broadly, the tasks of the Design and Supervision Consultants (DSC) include but are not limited to:
(i) Preparation of Subproject Appraisal Reports (SAR), essentially feasibility studies for each subproject to be financed under future projects/tranches, includes technical designs, economic and financial analysis and safeguard documents.

(ii) Preparation of detailed engineering designs, draft standard bid documents for each subproject under Tranche-I as well as the future loans apart from Review, Supervision and verification of targets achieved in a time bound manner (linked with payment) under WLM consultancy cum construction contract.

(iii) Procurement and evaluation of all the subprojects under Tranche-1 and subsequent projects/tranches and completion of procurement process of work / consultancy service contracts under MFF.

(iv) Collection, verification, recording and evaluation of the project performance indicators in ADB's design and monitoring framework and the service benchmark indicators as issued by the Ministry of Urban Development, for the MFF and each of its tranches.

(v) Construction supervision including quality control, measurement, billing, closure and completion of each contract of all subprojects under the Project 1 as well as all future projects/tranches.

(vi) Monitoring the contractors’ and suppliers’ full compliance with the ADB’s safeguard policy statement, resettlement plans, the indigenous peoples action plans, initial environment examinations and Environment Impact Assessment, and recommending remedial measures in case of deviations.

(vii) Assist the PMU with all aspects of contract management throughout construction and commissioning phases for all subprojects.

E Objective

5. The Objective of the Design and Supervision Consultant (DSC) is to provide assistance to the Project Management Unit (PMU) in implementation of the Second Kolkata Environmental Improvement Project (the project), which will be financed by an Asian Development Bank’s (ADB’s) loan. The outcome of the project will be increased quality and sustainability of water supply and sewerage operations. The investment programme will deliver three outputs: (i) inefficient and outdated water supply assets rehabilitated; (ii) sewerage extension to newly developed areas continued; (iii) financial and project management capacity further developed.

F Scope of Service

6. The assignment requires 1,429 person-months of consultants (18 international and 1,411 national) from 2014 to 2022. In case KMC successfully obtains further loans, the assignment may be extended subject to the financier’s assessment and approval, and an evaluation of the consultants’ satisfactory performance. The consultants will update various studies and project preparation documents, preparation of SARs, 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. The consultants will also supervise and manage the construction with frequent site visits, carry out quality control, testing and reporting, monitor construction activities and certify contractor’s progress claims.
7. The consultants will report to and will work under the overall guidance, control and direction of the Project Director, KEIP. The DSC will also assist in implementing institutional development. The consultants will have its office established in the office of the Project Director, KEIP itself.

7. Without limiting the scope of service, the DSC will be responsible for the following tasks:

**7.1 Survey and Design**

- Undertake necessary surveys and investigations including off-site information;
- Update maps and plans of water supply and sewerage assets;
- Review available secondary data and reports required for analyzing the existing infrastructure facilities before designing the subproject. Collect and update primary sources, as necessary;
- Prepare technical appraisal report including the feasibility of the infrastructure by considering various technical options with recommendation for most appropriate and optimum option, and economic and financial analysis following ADB’s applicable policies, guidelines, handbooks, manuals and technical notes.
- Prepare and update detailed design of agreed technical option, technical specifications, cost estimates, and bid documents for subprojects which should be in accordance with the ADB procurement guidelines and Standard Bid Documents (SBD);
- Carry out baseline surveys, and ensure the contractors’ compliance with Environmental Monitoring Plans (EMPs) and programmes, Environment Impact Assessment (EIA), Initial Environmental Impact Examinations (IEE);
- Prepare ADB compliant environmental safeguard action report including impact assessments, if any, during the design stage in accordance with the ADB’s Safeguard Policy Statement;
- Prepare and implement ADB compliant IEEs, EIAs, EMPs and resettlement plans, if any, in accordance with the ADB's Safeguard Policy Statement;
- Prepare and implement ADB compliant gender action plans and participation and communication plans;
- Assist the PMU with all aspects of procurement including preparation of bid document, bid invitation, evaluation and award of work;
- Providing advice and guidance to the PMU on ADB’s procedures and guidelines for project implementation and management in general;
- Provide inputs including preparation of detailed project reports for subprojects for advance preparations of subproject for subsequent loans.
✓ DSC will ensure that the prepared designs are implementable on ground with the path of least disturbance to other utilities.

✓ Recommended design / technology / process should have simple and least expensive O&M.

✓ Prepare an O&M manual for mechanical assets created by the project in collaboration with respective contractors and public communications and social development consultant.

7.2 Supervision

➢ Contract administration and management of the subprojects.

➢ Interpretation of the technical specifications for each subproject;

➢ Verification of surveyed maps and design vis-à-vis ground situation and make necessary corrections, if required, with approval;

➢ Scrutinize the contractor’s detailed work programme and guide contractor in preparation of supervision schedule / work plan for each package;

➢ Scrutinize construction methods proposed by contractor including environmental; safety, personnel and public issues;

➢ Monitor the construction method by assessing the adequacy of the contractor’s input materials, labour, equipment and construction methods;

➢ Furnish the detailed construction drawings as necessary during continuance of the contract;

➢ Supervise and monitor construction work of each contract package;

➢ Monitor implementation of environmental standards, safeguards and resettlement plans;

➢ Establish quality assurance system including verification of source of material and certification;

➢ Carry out necessary quality control activities and certify that the quality of works conforms to the specifications and drawings;

➢ Supervise the construction of the various contract packages for achieving the expected outputs of the project;

➢ Record the work measurement and certify the contractor's interim and final bill of payment;

➢ Assist third party inspections, if necessary, as decided by Client;

➢ Review and finalise the “as built” drawings submitted by Contractor;
- Assist the Client issuing completion certificates;

- 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 Client;

- Inspect the works at appropriate intervals during defect liability period and certifications issue;

- Prepare monthly project progress reports describing the physical and financial progress of each subproject, highlighting impediments to the quality and progress of the works and remedial actions, for submission to PMU;

- Assist PMU in monitoring the progress as per the Programme Performance Monitoring System (PPMS);

- Assist the PMU in other tasks as assigned to it by the EA;

- To provide all necessary information to PMC (Project Management Consultants) regarding project related issues.

- To accompany client in meetings with KMC and Engineers of other Departments, Police, local representatives, utility service providers etc. as and when necessary.
**Expertise and Inputs**

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>Key Person (Tranche-1,2,3)</th>
<th>Type</th>
<th>Indicative Persons Months</th>
</tr>
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<tr>
<td></td>
<td></td>
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<td>Tranche-1</td>
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<tr>
<td>1</td>
<td>Team Leader</td>
<td>National</td>
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<tr>
<td>2</td>
<td>Deputy Team Leader cum Water Supply Specialist</td>
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<td>Water Supply Network Specialist (1 no.)</td>
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<td>6</td>
<td>Micro-Tunneling Specialist</td>
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<td>8</td>
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<td>9</td>
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<td>13</td>
<td>(E/M) Engineer</td>
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<td>Socio- Economic Expert- (for feasibility Study)</td>
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<td>22</td>
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<td>30</td>
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### Support Staff

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<tr>
<th>Sl No.</th>
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<th>Type</th>
<th>Indicative Persons Months</th>
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<td>Construction Supervisor (50 nos.)</td>
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<td>2</td>
<td>Construction Supervisor(E/M)</td>
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<td>Junior Engineer (civil)</td>
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<td>Junior Engineer (E/M)</td>
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<td>Quantity Surveyor</td>
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<td>Auto CAD Draftsman</td>
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<td>9</td>
<td>Computer Operator (10 nos.)</td>
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<td>Office Assistant (10 nos.)</td>
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<td>Secretary</td>
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<td>12</td>
<td>Contingency</td>
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</table>

### Specific Tasks with Preferred Qualifications and Experiences

#### 8. Team Leader

**8.1 Qualification and Experience:**

The Team leader Cum Project Management Specialist should be Civil Engineering graduate, Preferably Masters degree in Public Health Engineering or Project Management or other related discipline, with around 20-year experience in designing, construction management, and supervision of large integrated Water supply and Sewerage projects. The Specialist should have experience of externally funded projects (ADB, World Bank etc) in capacity of Team Leader/Deputy Team leader of at least 2 projects.

**8.2 Tasks and Responsibilities:**

(a) The TL shall be overall responsible for ensuring satisfactory performance of DSC as per the prescribed “Scope of Work”.

(b) The TL should ensure overall compliance of all consultancy agreement 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.

#### 9. Deputy Team Leader cum Water Supply Specialist

**9.1 Qualification and Experience:**

The Deputy Team Leader cum Water Supply specialist should be Civil Engineering graduate, preferably with a Masters degree in Public Health Engineering or Project Management or other related discipline, with around 15-year experience in designing, construction management, supervision of large integrated water supply projects, such
as pipe lines, water treatment plants, waste water treatment plants, river intake structures, pumping stations etc. Experience of at least 2 Externally funded projects (ADB, World Bank etc) would be preferred.

9.2 **Tasks and Responsibilities:**
   The Deputy TL shall be overall responsible for ensuring satisfactory performance of DSC as per the prescribed "Scope of Work" under the guidance of TL DSC.

10. **Water Supply Network Specialist**

10.1 **Qualification and Experience:**
   The Water Supply Network specialist should preferably be post graduate in Water supply/Public health engineering with 15 year experience in designing, construction management, supervision of large integrated water supply projects, pipe lines, water treatment plants, river intake structures, pumping stations etc. Experience of working at least one externally funded projects (ADB, World Bank etc) is necessary.

10.2 **Tasks and Responsibilities:**
   i) The priority task of the WS specialist shall be to finalize detail design report, BOO and bid document of water supply subproject.
   ii) The WS specialist shall be responsible for survey and investigations, detail designing, technical specifications, cost estimates, BOO, and bid documents for water supply subprojects for the next and future loans.
   iii) 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 ensure compliance of activities in Survey and Design clauses of the TOR.

11. **Drainage Network Specialist**

11.1 **Qualification and Experience:**
   The Drainage Network Specialist should preferably be a post graduate in Waste Water/Public health Engineering with minimum 10 year experience in designing, construction management, supervision of large integrated waste water projects, Sewer lines, Waste Water treatment plants, Sewer pumping stations etc. Experience of at least one externally funded projects (ADB, World Bank etc) would be preferred.

11.2 **Tasks and Responsibilities:**
   i) The Drainage Network specialist shall be responsible for survey and investigations, detail designing, technical specifications, cost estimates, BOQ, and bid documents for S&D subproject for the next and future loans.
   ii) The Drainage Network specialist shall be responsible for construction supervision of wastewater and S&D related projects of the next and future loans in association with Construction Manager, as prescribed under the overall responsibility of DSC.

12. **Structural Engineering Specialist**
12.1 **Qualification and Experience:**

The Structural Engineering Specialist should preferably be post graduate in Structural Engineering with 15 year experience in designing, construction management, supervision of large Water supply or Sewerage projects based on latest technologies and design concepts. Experience of at least one externally funded projects (ADB, World Bank etc) would be preferred.

12.2 **Tasks and Responsibilities:**

i) The priority task of the Structural Engineering specialist shall be to finalize detail design report, BOQ and bid document related to Water Supply/Drainage subproject which shall require the detail designing of all structures related to River Intake, Channel, Service Reservoirs, WTP, Pumping Station Sewerage Treatment Plant and Main Transmission lines.

ii) The Structural Engineering specialist shall be responsible for survey and investigations, structural designing, technical specifications, cost estimates, BOO, for structures of second and subsequent subprojects related to sewerage, drainage, water supply and related building works.

iii) The Structural Engineering specialist shall provide necessary inputs for construction supervision of structures of all subprojects in association with Construction Manager, as prescribed under the overall responsibility of DSC.

13. **Micro-tunneling Expert**

13.1 **Qualification and Experience:**

The Micro-tunneling Specialist should be Civil Engineering Graduate with 10 years (for international specialist) and 5 years (for national specialist) experience in Micro- tunneling works related to water supply, sewerage and drainage projects under urban areas; by using latest technologies and equipments. The work experience should include at least one job of 1500mm dia or above RCC pipe with total drive length of at least 300 meters in one stretch.

13.2 **Tasks and Responsibilities:**

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 Micro-tunneling methodology suitable as per ground condition, prepare feasibility report, technical specification and BOQ for related tender documents and also assist in evaluation of bids.

14. **Water Treatment Specialist**

14.1 **Qualification and Experience:**

The WTP specialist should be Civil engineering graduate with postgraduate in Public health/Environment engineering and 10 years experience in designing, construction, management, supervision of large Water Treatment Plants and systems based on latest technologies. Experience of externally funded projects (ADB, World Bank etc) would be preferred.

14.2 **Tasks and Responsibilities:**

i) The priority task of the WTP specialist and in association with WS specialist shall be to 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.

ii) The WTP specialist shall be responsible for issuance of construction drawings related to Water Treatment Process system of water supply subproject.

15. **River Water Intake Specialist (RWI)**

15.1 **Qualification and Experience:**
The RWI specialist should be Civil engineering graduate with 10 year experience in designing, construction, management and supervision of large river water intake systems based on latest technologies. Experience of at least one externally funded projects (ADB, World Bank etc) would be preferred.

15.2 **Tasks and Responsibilities:**
   i) The priority task of the RWI specialist is to design suitable River water intake method and structures in association with water supply specialist. He will finalize detail design report, BOQ and bid document related to water supply subproject.
   ii) The RWI specialist shall be responsible for issuance of construction drawings related to RWI system of water supply subproject.

16. **Environmental Specialist (ES)**

16.1 **Qualification and Experience:**
The ES specialist should be post graduate in Planning or Environment or Ecology with minimum 10 years experience in designing environment related safeguards for donor aided projects, preferably with ADB and in oversight of their implementation/compliance. He should be conversant with relevant national and state environmental laws, and ADB procedures.

16.2 **Tasks and Responsibilities:**
   i) To carry out baseline environmental surveys, and prepare Initial Environmental Examinations (IEE) or Environment Impact Assessment (EIA) as required.
   ii) To prepare Environmental Management Plan and Environmental mitigation measures.
   iii) Preparation of ADB procedure compliant environmental safeguard actions including impact assessments if any during the design stage
   iv) To ensure implementation of environmental standards and safeguards as part of project implementation
   v) Preparation of performance monitoring reports

17. **Survey Specialist**

17.1 **Qualification and Experience:**
The Survey Specialist should be Civil Engineering Graduate with 10-year or diploma holder with 15-year experience in survey works related to water supply, sewerage, road, drainage projects under urban areas; by using latest technologies and equipments like Total Station, GPS etc. The work experience of externally funded projects (ADB, World Bank etc) would be preferred.

17.2 **Tasks and Responsibilities:**
   i) The survey specialist shall collect and review all available surveys and
investigations.

ii) 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.

iii) The specialist should be responsible for supervising, monitoring and quality of the survey work.

iv) The survey specialist would assist in finalizing the mobilization schedule of key experts according to the survey need and expected completion time of surveys.

18. Construction Manager

18.1 Qualification and Experience:

The Construction Manager (CM) should be a Civil Engineering graduate with minimum 15-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, World Bank etc) would be preferred.

18.2 Tasks and Responsibilities:

i) The CM shall be responsible for construction supervision of all subprojects, that is as per the DSC TOR.

ii) The CM shall ensure preparation of all construction drawings related to various subprojects by the respective sector specialists.

iii) 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.

iv) The CM shall ensure all technical and administrative clearances required by the constructing agencies which otherwise could result in delaying the sub projects.

v) The CM should establish proper quality assurance systems as per the best practices of successful ADB projects and procedures.

vi) 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.

19. Electro-Mechanical Engineer

19.1 Qualification and Experience:

Electro-Mechanical Specialist should be Graduate Engineer (Mechanical/Electrical) with at least 15-year experience in designing, construction management, supervision and quality assurance of Mechanical/Electrical equipments and systems in large integrated water supply and Sewerage and Drainage projects, pipe lines, water treatment plants, river intake structures, pumping stations, sewerage treatment plants, sewage pumping stations etc. shall be preferred. Experience of externally funded projects (ADB, World Bank etc) would be advantageous.

19.2 Tasks and Responsibilities:

(i) The priority task of the specialist under guidance of TL, DSC and in association with WS and S&D specialist shall be to assist in preparation of BOQ and bid document of water supply and S&D subproject.

(ii) The specialist shall be responsible for reviewing of mechanical / Electrical 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.

(iii) The specialist shall be responsible for construction supervision of mechanical/Electrical equipment and systems of all subprojects in association with Construction Manager (Civil), as prescribed under the overall responsibility of DSC.

(iv) The specialist shall be responsible for designing and implementing a suitable maintenance system for all mechanical/Electrical systems and equipments under the project.

20. Procurement Specialist (PS)

20.1 Qualification and Experience:

The PS should be Civil Engineering graduate with 15-year experience in procurement of large-scale projects related to water supply, sewerage, road and drainage sectors. Experience of at least one externally funded projects (ADB, World Bank etc) is essential. Thorough knowledge of procurement guidelines of ADB is essential.

20.2 Tasks and Responsibilities:

i) The priority task of the PS shall be to finalize BOQ, invitation of Bids and Bid document evaluation related to water supply and S&D subproject.

ii) The PS shall be responsible for Procurement of all proposed contracts with strict compliance of ADB guidelines.

21. Waste Water Treatment (WW) Specialist

21.1 Qualification and Experience:

The WWT Specialist should be post graduate in Waste Water/Public health Engineering with minimum 15 year experience in designing, construction management, supervision of large integrated waste water projects, Sewer lines, Waste Water treatment plants, Sewer pumping stations etc. Experience of at least one externally funded projects (ADB, World Bank etc) would be preferred.

21.2 Tasks and Responsibilities:

i) The WWT specialist shall be responsible for survey and investigations, detail designing, technical specifications, cost estimates, DBO, and bid documents for waste water treatment subprojects under the future loans.

ii) Subject to new loans being made available, the WW specialist shall be responsible for construction supervision of wastewater treatment related projects in association with Construction Manager (Civil, Electro-Mechanical) as prescribed under the overall responsibility of DSC.

22. Safety Specialist

22.1 Qualification and Experience:

The Safety Specialist should be Civil Engineering Graduate with 10-year experience in works related to water supply, sewerage, drainage projects etc. under urban areas with degree/diploma in Safety. Work experience of externally funded projects (ADB or World Bank) would be preferred.

22.2 Tasks and Responsibilities:

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 as per FIDIC contract documents.
concerning related works.

23. **Soil Expert**

23.1 **Qualification and Experience:**
Soil Expert should be Civil Engineering graduate with post-graduation in Geotechnical Engineering having 15 yrs experience in geotechnical works in large urban areas project such as sewerage and Drainage, water supply, buildings, roads etc.

23.2 **Tasks and Responsibilities:**
The task of geotechnical 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.

24. **Leak Assessment Expert**

24.1 **Qualification and Experience:**
Leak Assessment Expert should be civil engineering graduate with 10 yrs experience in construction and maintenance of water supply network and additional 5 yrs experience for identification and redressal of leaks in complex water supply network through latest technology.

24.2 **Tasks and Responsibilities:**
The task of Leak assessment expert is to prepare comprehensive report regarding leak detection and redressal of water supply network concerning Kolkata and its adjoining areas. He should suggest latest available technology, prepare tender documents, technical specification, BOQ for procurement of leak detection equipments if necessary. He should also examine, supervise related works and evaluate/guide the contractor.

25. **Quantity Surveyor Specialist (QS)**

25.1 **Qualification and Experience:**
The QS should be Civil Engineering graduate with minimum 7-year experience/Diploma in civil engineering with 10 year experience in estimation, preparation of BOQ and normal procurement procedures. Experience of externally funded projects (ADB, World Bank etc) would be preferred.

25.2 **Tasks and Responsibilities:**
i) 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&D subproject.
ii) The QS specialist shall be responsible for quantity calculations, cost estimates of Schedule and Non Schedule items BOQ, bid document, procurement, bill verifications, variations etc for all the subprojects.

26. **Socio-Economic Expert**

26.1 **Qualification and Experience:**
Socio-Economic Expert should be Post graduation in Sociology/ Economics with
10 yrs Experience in Socio-Economic Study of large Water supply and Sewerage and Drainage project. The work experience of externally funded projects (ADB, World Bank etc.) would be preferred.

### 26.2 Tasks and Responsibilities:
The Task and responsibility of Socio-Economic Expert is to prepare a yearly Socio-Economic report of Projects and Sub Projects following ADB guidelines along with socio-economic survey baseline for all subprojects.

#### 27. Economic Analysis Expert

**27.1 Qualification and Experience:**
Economic Analysis Expert should be Post Graduate in Economics with at least 10 years 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.) is essential.

**27.2 Tasks and Responsibilities:**
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.

#### 28. Hydro-Modeling Experts (Water Supply)

**28.1 Qualification and Experience:**
The Hydro-Modeling Expert (Water Supply) should be a graduate in Civil Engineering with minimum 10 year experience (for international expert) and 5 years experience (for national expert) in designing water supply network of large integrated water supply projects by using latest water CAD soft wares. Experience of Externally funded projects (ADB or World Bank) would be preferred.

**28.2 Tasks and Responsibilities:**
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. International Expert will frame the model, check the boundary conditions and check the analysis of the network output through modeling. National expert will work under guidance of International expert. He will also do model runs and analysis independently as per need.

#### 29. Hydro-Modeling Expert (Drainage)

**29.1 Qualification and Experience:**
The Hydro-Modeling Expert (Drainage) should be a Civil engineering graduate with minimum 10 year experience (for international expert) and 5 years experience (for national expert) in designing, construction management, supervision of large waste water treatment/processing plants and systems based on latest CAD Software. Experience of externally funded projects (ADB or World Bank) would be preferred.

**29.2 Tasks and Responsibilities:**
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. International Expert will frame the model, check the boundary conditions and check the analysis of the network output through modeling. National expert will work under guidance of International expert. He will also do model runs and analysis independently as per need.

30. Social Safeguard Specialist (SS)

30.1 Qualification and Experience:
   The SS should be post graduate in Planning/Social Science with at least 10 years experience in designing of resettlement plans and framework and experience in implementing resettlement conforming to the laws relating to land matters as prevailing in the State as part of donor supported projects, preferably with the ADB. He/she should be conversant with laws relating to land acquisition, state procedures in implementation of resettlement packages and ADB procedures.

30.2 Tasks and Responsibilities:
   i) Prepare and implement ADB compliant resettlement plans if any based on the approved framework, for subprojects under present and future tranches.
   ii) Organize workshops, Focused Group Discussions (FGDs) and community consultation during design and implementation phase.
   iii) Carryout all required baseline surveys.
   iv) Prepare performance-monitoring reports.

31. GIS Expert

31.1 Qualification and Experience:
   GIS Specialist should be Graduate in Engineering/Science with Post Graduate Degree/Diploma in Remote Sensing/GIS Application. He should have 10 years of post qualification relevant experience in GIS application in at least two cities/towns. Experience of externally funded projects (ADB or World Bank) would be preferred.

31.2 Tasks and Responsibilities:
   He should closely monitor the contracts of GIS mapping of water supply and S&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 WS & SD of the city.

32. NRW Specialist

32.1 Qualification and Experience:
   NRW Specialist should be civil engineering graduate with minimum 10-year experience (for International) and 7-year experience (for National) in Non Revenue
water (NRW) management with the water utility operators, preferably in the developing counties, with sufficient knowledge and experience in district metered zone management, leak assessment and preparing and negotiating the performance-based contract for NRW management. The Specialist should have experience of at least one externally funded project (ADB, World Bank etc.).

32.2 Tasks and Responsibilities:
The specialist will:
(i) Identify a suitable project area for subsequent ADB financing for Water Loss Management contract;
(ii) 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;
(iii) 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;
(iv) 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.
(v) The specialist will be required to design modules of operation, SOPs for the network generated and ensure that O&M of such generated system is understood by the Employer.
(vi) 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.

I Output and Reporting Requirements

33. General

33.1 Main Reports. The Consultant will prepare an inception report, monthly progress reports (Physical), quarterly reports, contract completion report and project completion reports. Two hard copy and one electronic copy of each report will be submitted to executing agency.

33.2 Inception Report. To be submitted three weeks after commencing the services. The report will be based on work and staffing schedules agreed upon during contract negotiations, will contain refined study design (approach, methodology and work plan), contain outline table of contents of the final report, highlight problems encountered and anticipated, and will recommend solutions.

33.3 Monthly Progress Reports. Brief reports with photographs will be submitted monthly, based on the inception report implementation and staffing schedules, and identify matters that require the attention of the client.
33.4 Quarterly Progress Reports: DSC to submit a self-assessment Quarterly Progress Report on physical, financial performance (with selected financial criterias/ratios as to be provided in a performa by the Employer) as well as Social Impact Assessment (on parameters to be provided by the Employers and in compliance with ADB norms). Apart from these, other items of reporting as per ADB norms i.e. Technical, Procurement, Safeguards, Gender etc. shall also be reported upon.

33.5 Contract Completion Report: DSC to submit a report after financial completion of each contract with gist of informations of the contract (to be decided in consultation with Executing Agency) along with a few relevant drawings and photographs.

33.6 Draft Final Report. This report, to be submitted at the end of assignment, will present all DSC outputs, including all results contained in the additional reports outlined below. The report will summarize the support extended to the implementation of the recommendations provided in the course of the assignment, specific results achieved, lessons learned, and further actions and support required. Matrix outlining issues identified, recommendations provided, implementation status and further actions will be provided as one of the report appendices. The report will contain a concise Executive Summary.

33.7 Project Completion Report. This report will be submitted at the end of assignment, and will incorporate comments on the draft final report from the PMU.

34. Survey and Design

34.1 Subproject Appraisal Report (SAR) of both Water Supply and S&D subprojects under future loans to be submitted in a phased manner and to be completed not later than 8 (eight) months from the date of submission of inception report. Similarly SAR for future loans is to be completed within 8 (eight) months from the date the project authority instructs to proceed. – Drafts + 2 months for final.

34.2 Draft Detail Design Depot (DDR) – Including survey plans, topographic maps, base maps, detailed design, drawings, estimates and implementation plan for each subproject (5 hard copies and five soft copies) in a manner acceptable to ADB.

34.3 Final Detail Design Report – Including survey plans, topographic maps, base maps, detailed design, drawings, estimates and implementation plan for each subproject after incorporating comments on DDR (5 hard copies and five soft copies),

34.4 Draft Bid Documents – Based on above design, drawing and estimates (5 hard copies and five soft copies) following ADB’s procurement guidelines.

34.5 Final Bid Documents – After incorporating comments on draft bid documents (5 hard copies and five soft copies) final bid documents for S&D works for the next new loan to be made ready within 5 months from inception report. Final bid document of water supply works to be made ready within 6 six months. Similarly, final bid documents for works under the future loans are to be made ready within 6 (six) months from the date the project authority instructs to proceed.

35. Working Arrangements
35.1 The main office of the DSC will be in the office of the KEIP. The Consultant will work along with KEIP project officials and have frequent interactions with PMU and PMC for carrying out their duties.

35.2 The Client will help the DSC to have all relevant and available reports, documents, maps, photographs etc. The Client will provide furnished office space and necessary equipments for setting up and maintenance of the office.

35.3 The Consultant will provide communication facilities, computers, printing equipments, necessary stationeries.

35.4 The Consultant will be responsible for arranging all transportation and traveling required for the Project.

36. **Instructions for consulting firms**

36.1 The interested firms should submit EoI proposals in the standard format attached with ToR.
Expression of Interest (EOI) Consulting Firms

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Name</th>
<th>Project Country</th>
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</thead>
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I. Eligibility

Declaration

We hereby declare that:

(i) we have read the advertisement, including the terms of reference (TOR), for this assignment;

(ii) we have not been engaged to prepare such TOR as a firm, association, or joint venture; and

(iii) no full-time or part-time or contracted expert employed by our firm, association, or joint venture has been engaged to prepare such TOR.

We further confirm that, if any of one or more of our experts is engaged to prepare TOR for any ensuing assignment as part of our work product under the assignment to which this advertisement relates, our firm and any such expert(s) will be disqualified from short-listing and/or participation in such follow-on assignment.

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<thead>
<tr>
<th>Lead Firm</th>
<th>CMS Registration Number:</th>
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1 This EOI template is applicable for ADB-TA, and serves as a strongly recommended guide for Executing Agencies (EAs) for loan projects. For Consultants’ Qualification Selection (CQS) and Indefinite Delivery Contracts (IDCs), where selection and pre-qualification respectively are based on an evaluation of an EOI, the template may be amplified to reflect any requirement for additional information.

2 EOIs may be submitted by a firm, association, or a joint venture. For short-listing purposes, the combined experience of an association or a joint venture will be evaluated although the qualifications of the lead firm will be given a greater weight. Whereas the firm, association, or joint venture is free to submit additional information, in hard or soft copy, short-listing will be based primarily on an evaluation of information included in the EOI template.

3 CMS registration is not mandatory for the associated firms.

4 Unless otherwise specified, an international firm, as a lead firm, associate or partner can only be nominated in one EOI. A national firm as a lead firm can only be nominated in one EOI. A national firm as an associate or partner can be nominated in more than one EOI. To avoid confusion and possible elimination after short-listing, lead firms of associations or joint ventures are strongly advised to confirm relationships (exclusive or non-exclusive) with selected associates or partners prior to expressing interest.
II. Management Competence (Please answer each question in no more than 10 sentences)

a. Provide the name, qualifications and relevant experience of the lead firm’s director or manager who will assume overall responsibility for the firm’s, association’s or joint venture’s team coordination, management and output.

b. If you are proposing an association or a joint venture, outline the rationale for, and benefits to the assignment of, the arrangement.

c. If you are proposing an association, or a joint venture, outline proposed management coordination of the arrangement, including the role of each firm.

d. Does your firm/association/joint venture have standard policies, procedures or practices in place that promote quality in: the workplace, your interaction with clients, and the outputs you produce? If yes, describe briefly.

e. How will you ensure the quality of your firm’s/association’s/joint venture’s performance over the life of this assignment?

f. How will your firm/association/joint venture deal with any complaints concerning the performance of the staff or the quality of the reports submitted for this consulting assignment? What internal controls are in place to address and resolve complaints?

III. Technical Competence

Narrative Descriptions

With reference to the attached project sheets, and in the context of the assignment’s TORs, summarize the relevant technical qualifications of your firm/association/joint venture (maximum of 2 pages).
IV. **Geographical Competence**

Outline the country/regional experience of the firm/association/joint venture (maximum of one half page).
Appendix 1

**Project Sheets**
Indicate up to 10 reference projects from the past 5 years that the firm/association/joint venture feels are relevant. You may refer to your Consultant Management System (CMS) registration projects sheets for additional information.\(^4\)

**Project 1 of __**

| • Project Name |  |
| • Name of Client |  |
| • Country | Project location within Country |
| • Participation | As lead firm |
| | As associate firm |
| • Value of Services | (US$) |
| • Source of Financing |  |
| • Consultancy Services (i) No. of staff |  |
| (ii) No. of person months |  |
| • Length of Consultancy Assignment |  |
| • Start Date | (dd/mm/yyyy) |
| • Completion Date | (dd/mm/yyyy) |
| • Name of Associate Firms (if any) |  |

| • No. of Person-Months of Professional Staff Provided by Associated Firm(s) |  |
| • Name of Senior Staff (Project Director/Coordinator, Team Leader) Involved and Functions Performed |  |

| • Detailed Narrative Description of the Project |  |
| • Detailed Description of the Actual Services Provided by your Firm |  |

\(^4\) Applicable to TA only.
Appendix 2

Additional Information