

December 2020

Karachi Water & Sewerage Services Improvement Project [KWSSIP]

Project Implementation Unit, Karachi Water & Sewerage Board

Room No. 10, Block-C, 9th Mile KW&SB Office, Shahra-e-Faisal, Karachi

Request for Expression of Interest

For

Feasibility StudY, Design Review & Detailed Engineering Design of Preparatory Works of Group 04 OF SOP - 2 of KWSSIP

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**REQUEST FOR EXPRESSION OF INTEREST**

(CONSULTING SERVICES – FIRMS SELECTION)

**Islamic Republic of Pakistan**

**Karachi Water and Sewerage Services Improvement Project-2 (KWSSIP-2)**

**AIIB Special Fund - Grant Number: S0404A**

**Assignment Title: Feasibility Studies, Design Review & Detailed Engineering Design of Group 04 Sub-Projects for KWSSIP-2**

**Reference No. (As per Procurement Plan): 4**

The Karachi Water and Sewerage Board (KWSB) has applied for financing as Grant in Aid from the Asian Infrastructure Investment Bank (AIIB) toward the cost of the consulting services for the preparation of sub-projects of KWSSIP-2.

The consulting services (“the Services”) for the Group 04 Sub-Projects for KWSSIP-2 consist of (i) Design review of S-III project (Malir Component). (ii) Feasibility and detail design to improve water supply and sewerage in ten (10) additional low-income communities, for second phase (iii) Feasibility and detail design for (1) Priority sewer network rehabilitation & extension and (2) Rehabilitation of wastewater pumping stations identified for phase 2. The Services include level of effort of relevant professionals, with implementation period of 06 months, expected start date of March, 2021, ensuring full consistency with the TOR attached to this REOI.

The detailed Terms of Reference (TOR) for the assignment can be obtained from the address given below during the office hours, i.e. 0900 – 1700 Hours on working days, Monday to Friday or downloaded from KW&SB website.

The KWSB now invites eligible consulting firms (“Consultants”) to indicate their interest in providing the Services. Interested Consultants should provide information demonstrating that they have the required qualifications and relevant experience to perform the Services.

The shortlisting criteria i.e. experience in providing services in the areas of Feasibility Studies and Detailed Engineering Design for three (03) infrastructure development works undertaken during the last ten (10) years, as detailed in the Section 3 (Shortlisting Criteria) of this document. Key Experts will not be evaluated at the shortlisting stage.

The attention of interested Consultants is drawn to Section II, paragraph 4.4, and paragraph 4.9 of the AIIB’s “Procurement Instructions for Recipients” June 2, 2016, setting forth the AIIB’s policy on conflict of interest and eligibility.

Consultants may associate with other firms to enhance their qualifications, but should indicate clearly whether the association is in the form of a joint venture and/or a sub-consultancy. In the case of a joint venture, all the partners in the joint venture shall be jointly and severally liable for the entire contract, if selected.

A Consultant will be selected in accordance with the Quality and Cost Based Selection method set out in the Procurement Instructions for Recipients.

Further information can be obtained at the address below during office hours 0900 – 1700 Hours on working days, Monday to Friday

Expressions of interest must be delivered in a written form to the address below (in person, or by mail) latest by **20th January 2021.**

**The Project Director**

**Project Implementation Unit (PIU)**

**Karachi Water & Sewerage Services Improvement Project (KWSSIP)**

**Karachi Water & Sewerage Board**

**Room No. 10, Block-C, 9th Mile KW&SB Office,**

**Shahra-e-Faisal, Karachi.**

**Tel No. +92-21-99245134**

# Instruction to Consultants

## General Instructions

While expressing the interest, consultants have to consider the following:

1. The Project Implementation Unit (PIU) invites eligible consulting firms/ Joint Venture(s) with specific and proven competence and experience to indicate their interest in providing the services. Eligible firm(s) / JV’s should submit Expression of Interest (EOI) in English language along with the required relevant complete details of the qualification and experience requested in Item 3 – Shortlisting Criteria.
2. Interested consulting firm(s) / Joint Venture(s) must provide information indicating that they are qualified to perform above services (e.g. description of similar assignments, value of previous assignments, experience under similar conditions, availability of appropriate professionals etc.).
3. Association of consultants can either be in the form of joint venture (JV) or a sub-consultancy. Therefore, the consultant submitting their Expression of Interest in association should clearly mention whether the association is a Joint Venture or Sub-consultancy. The experience of all the firms in the JV will be considered for evaluation and each partner must meet the shortlisting criteria as defined under Section 3. In case of Sub consultancy, the experience of the sub-consultant will not be considered in qualification.
4. The maximum numbers of entities allowed in joint venture are three [03].
5. An applicant can express only one interest either as a single entity or in joint venture, however, a sub-consultant can associate with more than one applicant.
6. A firm that applied either as single entity or JV member cannot be a sub-consultant to another entity or JV. In such a case, all the applications in which the firm is involved shall be disqualified and rejected. While selecting a sub-consultant, applicants are advised to check this requirement.
7. A consulting firm / Joint Venture will be shortlisted in accordance with AIIB Procurement Policy, January 2016, and Interim Operational Directive: Procurement Instructions for Recipients, June 2016.
8. The attention of interested Consultants is drawn to Section II, paragraphs, 4.4 and 4.4.2 of the AIIB’s Interim Operational Directives on Procurement Instruction for Recipient (PIR) June 2016, setting forth the AIIB’s policy on conflict of interest that can be seen at <https://www.aiib.org/cms/en/search/index.html?query=procurement%20instructitons%20for%20recipient>
9. it is expected that the interested firm(s)/ joint venture(s) will have expertise in the areas of environmental and social management, all related public and donor-funded development projects / affairs of the city of Karachi in these areas including but not limited to management frameworks of these, dealing with relevant public sector governing authorities and coordination with, roles of civil societies, impacts of new projects, environmental and social safeguards, resettlement action plans, collection of data, field surveys, public campaigning, public hearings, specific problems of urban informal settlements [katchi abadi], land use patterns, village setup and system in rural areas etc.
10. The consultant(s) should ensure that the submitted information is correct. An EOI containing significant omissions / errors shall not be considered. A firm / JV qualifying on the grounds of misrepresentation of facts shall be disqualified at any stage even after the award of contract and the sanctions / penalties may also be imposed on the firm as per AIIB / World Bank’s rules and regulations.
11. The information need to be presented in a clear and comprehensive manner free of ambiguities. The copies of documents attached should be clean and legible.
12. If the EOI consists of more than one volume, the applicant must clearly number the volumes constituting the EOI and include a table of contents for each volume. **All documents should be securely bound**.
13. Consultant selection as a result of this REOI shall be in accordance with the Quality and Cost Based Selection Method. Both, local and international consulting firms can express interest.
14. Once a firm / JV is shortlisted and invited for submission of the Proposal, it is not permissible to transfer the invitation to any other firm, such as Consultant’s parent or sister companies, subsidiaries and affiliates.
15. The procuring agency will reject a Proposal if the Consultant drops a JV member without the Client’s prior consent, which is given only in exceptional circumstances, such as debarment of the JV partner or occurrence of Force Majeure.
16. Submit one original and two copies of EOI in hard format and soft copy of complete EOI on USB device. Documents related to qualification / generated docs have to be either in Word and Excel. Only attachments like certificates, company registration and financial documents are acceptable in scanned / pdf form.

# Information Needed for EOI

## Basic Information – Part A

1. Name of the Company, Phone, Fax, E-mail address, postal address of the head office and name of Contact Person. In case of JV, provide information of all JV members.
2. Certificate of Registration of the firm as Legal Entity. In case of JV, provide information of all JV members.
3. Firm(s)/ joint venture(s) name, address, copy of the Registration Certificate with relevant professional bodies of the concerned Government, supported by latest/ updated renewal, Country of Operations (if the firm is registered and operating in several countries). Memorandum/ Article of Association/ Partnership Deed or Joint Venture Agreement Or a letter of intent to form a joint venture (as applicable).
4. National Tax Number of the firm/joint venture;
5. List of other works similar to indicated in General and Specific Experience above completed in last ten (10) years or in progress of the firm / joint venture members indicating the following:
6. Name of the Project;
7. Name and address of the Client;
8. Value of the contract in US$.
9. Start and Completion Date
10. Whether worked as Consultant, Sub-consultant or JV Member. In case of JV Member indicate the share in the JV.
11. If worked as sub-consultant or JV member, provide details / component of works performed.
12. Any additional document(s) to support relevant experience of firm(s)/ Joint Venture(s);
13. List of the litigation/arbitration during last ten (10) years, if any, in which the company has been involved and the current status.
14. An Affidavit from firm / all the participating partners of the association / JV confirming that: (a) applicant firm has never been blacklisted by any International, Government / Semi Government Organization and (b) All the information provided by the applicant firm in this EOI is correct.

## Basic Information – Part B

**Expression of Interest (EOI) Consulting Firms**

Table 2.1: EOI for Assignment

|  |  |
| --- | --- |
| Assignment Name |  |
| Project Name |  |
| Project Country |  |

**I. Consulting Firm Information**

Table 2.2: Firm Information

|  |  |
| --- | --- |
| Date: | Country of Incorporation: |
| Consultant Name: | Acronym: |
| EOI Submission Authorized by: | Position |

**Associations (Joint Venture or Sub-consultancy)**

Table 2.3: Information of Association

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Consultant | Acronym | Country of  Incorporation1 | Joint Venture  (JV) or Sub- consultant | EOI  Submission  Authorized By | Position |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**II. Assignment Specific Qualifications and Experience**

**E. Project References**

Please select three (03) post relevant projects completed in last 10 years to demonstrate the firm’s technical qualifications and geographical experience where similar technical studies have been performed preferably on the MDB’s financed projects for water supply and sewerage systems which include bulk transmission, distribution and treatment facilities. The completion date of each project must be within last 10 years and the total construction value of each shall not be less than US$10 million. The services must include technical feasibility studies and detailed engineering designs. . Minor engineer services such as pre-feasibility studies or conceptual designs will not be considered. For each Project, submit a letter from Client about the Performance.

Table 2.5: Most Relevant Projects during Last 10 Years

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SN | Project | Period | Client | Country | Firm |
| 1 |  |  |  |  |  |
| 2 |  |  |  |  |  |
| 3 |  |  |  |  |  |
| 4 |  |  |  |  |  |
| 5 |  |  |  |  |  |

Project Summary

**Project 1 of**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ● Project Name |  | | | | | |
| ● Name of Client |  | | | | | |
| ● Country |  | | | Project location  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) | |
| ● Scheduled date of Completion |  | | | | (dd/mm/yyyy) | |
| ● Actual Date of Completion |  | | | | (dd/mm/yyyy) | |
| ● Continuous / Intermittent |  | | | |  | |
| • 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 with total cost | | | | | | |
|  | | | | | | |
| • Detailed Description of the Actual Services Provided by your Firm | | | | | | |
|  | | | | | | |

(Please insert more tables as necessary)

**III. Comments on Terms of Reference**

|  |
| --- |
|  |

**VI. EOI Attachments**

Table 2.6: Attachments

|  |  |
| --- | --- |
| SN | Description |
| 1 | Certificate of Incorporation of the lead member |
| 2 | Certificate of Incorporation of the JV member (for each member) |
| 3 | Certificate of Incorporation of the Sub-Consultant (for each sub-consultant) |
| 4 | Letter of Association |
| 5 |  |

(Please insert more rows as necessary)

**VI. Eligibility Declaration**

We, the undersigned, certify to the best of our knowledge and belief [Eligibility refers to AIIB’s Procurement Policy, Clause 5.8 and 7.0 on Prohibited Practice and Integrity].

Table 2.7: Eligibility Declarations

|  |  |  | Indicate  Yes / No |
| --- | --- | --- | --- |
| We have read the advertisement, including the terms of reference (TOR), for this assignment. | | |  |
| Neither the consulting firm nor its JV member or sub-consultant or any of its experts prepared the TOR for this activity. | | |  |
| We confirm that the project references submitted as part of this EOI accurately reflect the experience of the specified firm/consortium. | | |  |
| We further confirm that, if any of our experts is engaged to prepare the TOR for any ensuing assignment resulting from our work product under this assignment, our firm, JV member or sub-consultant, and the expert(s) will be disqualified from short-listing and participation in the assignment. | | |  |
| All consulting entities and experts proposed in this EOI are eligible to participate in AIIB-funded, supported and administered activities. | | |  |
| The lead entity and JV member or sub-consultant are NOT currently sanctioned by AIIB or other MDBs. Neither the consulting firm nor the JV member or sub- consultant has ever been convicted of an integrity-related offense or crime related to theft, corruption, fraud, collusion or coercion. | | |  |
| We understand that it is our obligation to notify AIIB should any member of the consortium become ineligible to work with AIIB or other MDBs or be convicted of an integrity-related offense or crime as described above. | | |  |
| JV member or sub-consultant, including all proposed experts named in this EOI, confirmed their interest in this activity in writing. | | |  |
| JV member or sub-consultant, including all proposed experts named in this EOI, authorized us in writing to represent them in expressing interest in this activity. | | |  |
| None of the proposed consortiums are subsidiaries of and/or dependent on the Executing Agency or the Implementing Agency or individuals related to them. | | |  |
| We understand that any misrepresentations that knowingly or recklessly mislead or attempt to mislead may lead to the automatic rejection of the proposal or cancellation of the contract, if awarded, and may result in further remedial action, in accordance with AIIB’s Prohibited Practice. | | |  |

# Shortlisting Criteria

## Shortlisting Criteria

The shortlisting criteria are as under:

Table 3.1: Shortlisting Criteria

|  |  |
| --- | --- |
| **No.** | **Criterion** |
|  | **General Experience** of providing services in the areas of Feasibility Studies and Detailed Engineering Design for three (03) infrastructure development works undertaken during the last ten (10) years.  List the project name, name of the Client, location and type of facility / development for that works were performed.  Single Entity: Must Meet.  Joint Venture:  The Lead Member: must have done two [02] projects  Other Members: must have done minimum one [01] project of above nature |
|  | **Specific Experience of Water Supply and Sewerage system and Sewage Treatment Plants:**   1. Experience of at least three (03) consultancy assignment(s) completed in last 10 years for Feasibility Studies, engineering design and design review of major sewerage infrastructure project(s) including sewage conveyance works & treatment works having contract value of US$ 0.25 million, are required. 2. Experience of at least two (02) consultancy assignments for detail design of water infrastructure development works, having contract value of US$ 0.10 million each. 3. All above consultancy assignment should have been for the projects having construction value of US$ 10 million, are required.   Single Entity / Firm: Must Meet  Joint Venture:   1. The lead member must have done at least one [01] sewerage infrastructure project and one [01] wastewater treatment plant project of value as defined above.   Other members: must have done either one [01] sewerage infrastructure project or one [01] Sewage Treatment Plant project.  The projects listed here and in Item 2 above:   * must be a completed project with a completion certificate issued by the Client. Attach the Completion Certificate and letter of award indicating the contract value for each reference project. * If the work(s) have been performed in a joint venture, indicate share in the JV to work out the number of projects required for the qualification of this assignment. |
|  | Overall **Managerial Capacity** (Core Managerial and Technical Staff) |

Appendices

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| [Appendix A. Terms Of Reference -------------------------------------13](#_Toc56524253) |

**Appendix - A**

# **Terms of Reference for Feasibility Studies, Design Review & Detailed Engineering Design of Group-04 Sub-Projects for KWSSIP-2**

**1. Background:**

Karachi, like all megacities, has grown so quickly that it struggles to deliver basic infrastructure services, including potable water and wastewater collection and treatment. Karachi Water and Sewerage Board (KW&SB), is no longer equipped or empowered to deal with the challenging reality on the ground. There is a huge unmet demand for water (550 MGD current capacity versus an estimated demand of 1200 MGD); and a high non-revenue water percentage (50-60 percent); There is currently no sewage treatment, as the city’s sewage treatment facilities are dilapidated and not working, resulting in an estimated 475 MG of sewage/day being discharged into the Arabian Sea. The utility has not had significant capital investment for more than a decade and most of its infrastructure is worn out and operating far below its rated capacity.

To transform KW&SB into a financially sustainable and technically sound water utility and to improve the service delivery level Government of Sindh (GOS) and the KW&SB with the assistance of World Bank (WB) and Asian Infrastructure Investment Bank (AIIB) has conceived Karachi Water and Sewerage Services Improvement Program (KWSSIP) to provide clean, safe drinking water and proficient sewerage services to the general public. Phase –I of KWSSIP has been approved in 2019, with planned Series of Projects (SOP-I) consists of 4 different projects, for which each AIIB and WB will provide a loan of USD 40 million to support critical water and sanitation infrastructure and operational reforms. The proposed Phase-2 of this program (KWSSIP-2 or SOP-II) will deepen the reforms undertaken under the Phase-1 project and significantly scale-up the infrastructure investments to improve water supply and sewerage services in Karachi. The investments in the rehabilitation of existing and the construction of new infrastructure will enhance the development impacts by reaching more beneficiaries, at the same time, building support for continued mainstreaming of the operational reforms. Proposed activities are grouped into three components:

1. Reforms of KWSB: This component will continue to build capacity and improve the operational performance of Karachi Water and Sewerage Board (KWSB) by supporting institutional reforms; revenue management, customer care and communication; non-revenue water reduction; preparation and implementation of water safety plans; water wastage reduction program and water audits.
2. Securing Sustainable Water Supply and Sewerage Services: This component will invest in key water and sewerage infrastructure to address three interlinked structural problems in Karachi’s water and sanitation system – the overall supply shortfall; the low water quality; and the lack of sewage treatment capacity. Proposed sub-projects include:

* Additional bulk water supply investments
* Malir basin wastewater interceptors and treatment plant (S-III) Phase 2
* Water supply and sewerage investments in additional low income communities (Katchi Abadis.
* Priority sewer network rehabilitation & extension and rehabilitation of wastewater pumping stations
* Priority water network rehabilitation and extension including District Metering Areas (DMAs) to reduce NRW
* Reducing energy consumption
* K-IV augmentation
* Rehabilitation of existing and construction of new filtration plants

1. Project Management: This component will support project management, implementation supervision and institutional strengthening of KWSB.

**AIIB is committed to provide approximately US$ 4.136 million to GOS / KW&SB as Project Preparation Special Fund Grant (the Grant) to finance technical and environmental & social consulting services for preparation of the different sub-components of the KWSSIP-2.**

1. **Objectives of the Assignment**

The objectives of this assignment are to carry out technical assessments including feasibility studies, design review and detailed engineering designs for the selected investment sub-projects mentioned under the Component-2 above. The ToRs have been framed to assist KWSB in carrying out designs and preparation of bidding documents for the following three sub-projects:

1. Malir basin wastewater interceptors and treatment plant (STP-IV) under (S-III).
2. Water supply and sewerage investments in additional low-income communities (Katchi Abadis).
3. Priority sewer network rehabilitation & extension and rehabilitation of wastewater pumping stations

**3. Scope of Services, Tasks and Expected Deliverables**

The Scope of Services consists of three assignments which are detailed below:

1. **DESIGN REVIEW OF MALIR BASIN WASTEWATER INTERCEPTORS AND SEWAGE TREATMENT PLANT (STP-IV) UNDER S-III PROJECT**

**Background:**

Greater Karachi Sewerage Project (S-III) is aimed towards improving environmental & sanitation conditions of Karachi through a well-integrated system of collection, treatment and disposal of sewage. The existing sewage disposal system lacks treatment facilities and requires proper sewage conveyance network to intercept and divert the sewage flows to the treatment plants prior being disposed of into the sea. The KW&SB is being implementing the S-III Project with the assistance of GOS and GOP on co-sharing basis and is planned to treat all the municipal wastewater being generated in Karachi city.

Presently the entire sewerage is being discharged untreated to sea through the two rivers Lyari and Malir. The Constructional activities including construction of RCC interceptors from Surjani upstream of Lyari river to STP-III have been under progress with rehabilitation / upgradation / development of new treatment plant at STP-III site to treat 180 MGD sewage water at the site of STP-III is also in implementation stage and as reported substantial conveyance and treatment works have been completed.

However, due to financial constraints, cash flow impediments and significant rise in the project cost due to several reasons the work on the Malir Basin component, located in the Eastern part of the Karachi could not be implemented This sub-component of KWSSIP would complement the ongoing S-III Phase 1 investments, enhancing of the capacity of KWSB to collect and treat wastewater in the Malir basin of Karachi. Malir Basin components, have already been designed by Messer Techno-Consult International in association with Atkins including RCC interceptors, preliminary / conceptual design of STP-IV at Korangi along with the allied works. The designer had carried out the quantification of flows, topographic surveys, identification of collector drains etc and the detailed design is available with the project team of S-III, KW&SB.

The proposed sub project will be undertaken under SOP-II of KWSSIP and is planned to treat 180 MGD municipal wastewater up to secondary level before disposing it to the sea.

**Objectives**

1. The Sub Project focuses to improve the overall environmental and sanitation conditions of Karachi by well-integrated system of collection, treatment and disposal of municipal sewage presently flowing through Malir river and disposed of directly to sea untreated. The sewage will be treated to meet the International / NEQS, improving environmental & hygienic Conditions of the coastal belt which will supplement the harbour operational activities to be performed more efficiently. The improved environment will also support the development of recreational and tourism activities. The implementation of the project will have far reaching positive impact to maintain and sustain the ecological marine life and will subsequently results increasing exports of sea foods & etc.
2. The Sub Project shall provide ample ground to explore the possibility to opt for water reuse of the treated effluent through Public Private Partnership intervention with potential revenue streams to utilize the wastewater after tertiary treatment from STP-IV to nearby located twin industrial areas of Landhi & Korangi,

**SCOPE OF WORK**

**Design Review and Detailed Design:**

The Consultant is required to carry out the services outlines herein after with due care and proactive approach but not limited to the following:

1. Collect all available data, information, reports, detailed design of Malir component of S-III with the coordination of KWSSIP team and Project Director S-III Project.
2. Review all the available record pertains to Concept Design & Detail Design in respect of Conveyance System and works related to develop treatment plant STP-IV at Korangi.
3. Carry out all the surveys, if required, to verify the given data, quantification of sewage from various streams, land acquisition issues, resettlement issues, lines and levels, contours etc.
4. Study and analyze the hydrology assessment carried out by other Consultant.
5. Critically examine the EIA report and perform any or all tasks to revalidate the EIA.
6. Perform Socio-Environmental Assessment
7. Confirm whether or not the Financial and Economical assessment is carried out earlier. In case it’s not performed undertake the assessment.
8. Re-examine the criteria and preliminary design of the STP-IV and the treatment proposed to treat the sewage.
9. Prepare the Design Review Report identifying the shortcomings, missing elements, modifications, if required, to make the design technically and financially viable and sound.
10. Undertake Detailed Designing incorporating all the missing information. Surveys, Technical reports including topographic survey, geotechnical survey etc.
11. The survey shall be tied up with True Bench Mark obtained from Survey of Pakistan.
12. Using precise GIS Mapping system, the entire scheme should be marked and Ground Control Points with GPS (Global Positioning System) shall be established through the alignment of the conveyance system.
13. The interceptors should properly be designed to collect water from different streams which shall perform effectively during monsoon.
14. All the technical, social, environmental, hydrological parameters shall be addressed in designing of the treatment plant with proper flood protection system.
15. The processes shall be well established to treat the sewage water to the specified standards.
16. Experienced process expert shall be engaged to develop most appropriate and sustainable treatment process.
17. The cost estimation shall be done precisely to avoid major deviations during implementation. The rate analysis to be carried out with due diligence and precision. Value engineering shall be performed for the treatment plant works.
18. Using latest project management tools, realistic timelines shall be determined with critical path clearly mentioned.
19. The drawings shall be reviewed and any or all the modifications shall be incorporated in the tender drawings
20. Prepare Bidding documents, drawings and other technical data to be provided to the bidders. Bill of quantities shall be prepared covering all aspects with preamble.
21. Standards, Specifications and Methodologies shall be provided for understanding of the project.
22. List out all necessary Approvals / NOC’s/ Permissions, etc required during the currency of Proposed Project from Government / all Regulatory Bodies or any relevant Authority.
23. The Consultant shall be responsible for the design work carried out by them during the currency of the implementation of the works and shall provide design assistance on as and when required basis.
24. Consultant shall perform any other assignment which in its opinion is essential for precise design assignment.

**Deliverables:**

By way of illustrations, and not limitation, the reports to be submitted by the Consultants to KWSSIP as part of deliverables under consultancy services will include the following:

| **Description** |
| --- |
| Common Inception Report of Group 4 Works (Part A, B & C) |
| **Design Review Report**  Report of Raw Sewage Quantification & Flow Pattern at Different Points of Upstream & Down Stream in Malir River & intake of Proposed Sewage Treatment Plant. |
| Review report of Raw Sewage Quality at Different Points of Upstream & Down Stream in Malir River & intake of Proposed Sewage Treatment Plant |
| Report on Reviews & proposal for Revision of all necessary Drawings & documentation in respect of Conveyance System. |
| Review Report on Detail Design in respect of Conveyance Systems of interceptors on both bank of Malir River. |
| Submit all necessary & required Survey reports for Proposed Treatment Plant including Seismic, Geotechnical, and Topographic Surveys & Investigations. |
| Propose most modern, Efficient Suitable Treatment Process on the basis of Decision Matrix. |
| Submit Detailed Design Report of Civil E&M and Allied Works for Sewage Treatment Plant (TP-IV). |
| Submit all necessary Drawings & documentation in respect of Proposed Project (Sewerage Treatment Plant). |
| Submit Review Report & any Propose modification in the Cost Estimates, B.O.Q with Rationale of prices for the best optimal & efficient Design & Bidding Documents for the proposed project. |
| **“Design Report Review” (Draft)** |
| **“Design Report Review” (Final)** |
| **Final Report** |
| **Any other allied Details / Documents.** |

1. **Improvement of Water Supply and Sewerage in Ten Additional Low Income Communities, for Phase - II**

**Background**

Karachi enjoys a unique position in the region when dovetailed with mushroom growth of commercial interventions and continuous increase in its population. Despite of the distinctive status the water and wastewater services are falling far short of the expanding city’s needs. Karachi Water and Sewerage Board (KW&SB) is the sole authority responsible for providing water and sewerage services within the municipal limits of the city besides other agencies (Cantonment Boards, DHA, PHED and others) that have their own specified area of command where they maintain the internal water and sewerage systems.

Karachi faces water shortage and run-down sewerage network which affects the inhabitants of the overall city in general but the Katchi Abadis (KA-Informal settlements) are most affected in absence of proper and effective water and sewerage infrastructure in approximately more than 500 such informal settlements in Karachi, since 1985. At present the government is in process to regularize approximately 400 Katchi Abadis. This will have far reaching effect with significant increase in demand of the regular water and proper sewerage system. Proactively, comprehensive survey and econometric door to door exercise of low-income communities is inevitable to quantify and ascertain the future requirements to provide quality services to the residents in these areas.

The Sub Project will include all resources to support KWSB in cooperation with assistance of local NGOs and community-based entrepreneurs, particularly women’s organizations to work hands in hands to convince the inhabitants to become integral & active participants for this Project of KWSSIP and will built willingness to pay for the improved level of services for longer sustainability.

**Objectives:**

The sub project will assist PIU - KWSSIP to implement Component 2 SOP - 2 (Rehabilitation of water supply and sewerage system in ten (10) Additional low income communities of Karachi) to achieve the following:

* Develop and or improve the Water Utility Services & Sewerage facilities in identified Project Areas to provide better hygienic & environmentally friendly atmosphere for the residents of regular Katchi Abadies / Low income areas for improved socio-economic growth of the inhabitants.
* Proper map and integrate the Katchi Abadis water and sewerage network with the centralised KWSB Geographic Information System (GIS) system.
* Strengthen the climate resilience of Katchi Abadi’s residents, during heat waves and flooding scenarios by providing effective water and sewerage infrastructures in place for better performance levels.

**Feasibility Studies**

To begin with the assignment, a list of low-income communities (KAs) covering all areas of Karachi will be provided by the KW&SB to the Consultant. The Consultant will be required to select ten low income communities from identified areas of Karachi. The identification of the locations will be firmed up through a pre-feasibility survey by the same Consultants.

The Consultant shall perform but not limited to the following tasks in the specified project area and with due diligence shall

* Develop selection criteria for investment on the need-based approach and economic viability.
* Identify the KAs complying with the selection criteria indicating the population, type of existing construction, classification of the water and sewerage system proposed, identification of the socio-political behaviour etc.

* Perform EIA for the project area addressing the land acquisition plan, if required, with complete information of land, resettlement issues etc.
* Coordinate with active NGOs, Community based entrepreneurs specially women’s organization to conclude the socio-economic issues with mitigation plan.
* Assess current water demand and subsequent sewage generation in the selected KAs to meet the overall demand of the population residing in the area.
* Review, assess & analyse the capacity, performance of the existing water supply and sewerage network by means of studying all available surveys, investigations & data.
* Using GIS system shall propose the most economical solution to utilize the existing system dovetailed with the new proposal to provide a wholesome and holistic resolution.
* Earmark the water lines from where the metered water connection to be provided to KA with assessment of water availability. Likewise, the existing Sewerage network where the sewers from KA to be connected shall be indicated with physical verification of the condition and capacity etc. to transmit the sewage flows smoothly with affecting the present flows.
* Carry out detailed Survey as follows:

Soil Investigation and Geo-tech survey

Reconnaissance Survey,

Topographic Survey.

Any other allied survey required for quality product.

* Determine the economic and financial viability of the proposed project in accordance with the WB guidelines by calculating financial internal rate of return (FIRR), and other related Parameters (like Capital Cost, O&M Cost etc) to determine the financial feasibility of the project.
* Prepare layout plans of the proposals clearly mentioning the required size of metered water connection to KA and the details of the receiving body of the sewerage system
* Propose metering system to household which best suits the ground conditions.
* Develop the Conceptual / Preliminary Design based on the outcome of the above tasks for the best practical option with rough cost estimation.
* Any / all the tasks required to prepare a comprehensive proposal in coordination with PIU – KWSSIP, KAC and the other stakeholders.

**Detailed Design**

For the Ten (10) selected low-income communities as a sub-project, besides fine-tuning all the tasks carried out under the feasibility studies, the consultant will carry out the following but not limited to:

1. The Consultant will develop Detail Design for improvement / up gradation of Water Supply and Sewerage Networks considering the different options; Conceptual & Preliminary Design recommended in Feasibility and propose the best optimal & efficient Design for the selected project.
   1. The design of water supply shall consider transforming the selected community into a District Metering Area (DMA) so that an exercise of NRW reduction shall be taken up by the Katchi Abadi Cell in close cooperation with the NRW Cell, KW&SB.
   2. The Design of Sewerage System will be taken up as such that the entire disposal of the selected community is directed towards mainstream Sewerage Network of KW&SB permanently diverting it from Nallahs / Strom Water Drains and connect it to a functioning WWTP.
   3. Estimate the Operation & Maintenance (O&M) Cost estimates for selected Low-Income Communities / Katchi Abadi.
2. The Consultant will prepare Cost Estimates including resettlement cost with Rational of prices for the best optimal & efficient Design for the proposed project.
3. The Consultant will prepare & propose the Timelines and best Methodology with its rationales to carry out the proposed Project.
4. The Consultant will develop all necessary Drawings & documentation for the Proposed Project.
5. The consultant will prepare all required Documents / Reports related to the proposed Project including B.O.Qs & Tender Documents. The entire Tender Documents will be prepared in the light of World Bank Procurement Guidelines.
6. All the recommendation of the ESMP and RAP will be made a part of the Construction Contract for the contractor to comply during the execution.
7. For Pumping Stations, if required, the consultants may propose any method like, EPC, Turn-key, or works Contract etc. that leads to high pump efficiency and is most suitable and in the long-term in interest of KW&SB.
8. Assist KWSSIP PIU in the process of Pre-qualification of Civil and E/M Contractors and preparation of shortlist thereof.
9. Any change in design which leads to change the social/resettlement and environmental aspects will be informed to the client and the change in environmental and social (E&S) safeguard documents will also be made.
10. The consultant will be bound to resubmit the revised version of E&S safeguard documents i.e. IEE/EIA, ARAPs/RAPs.
11. With the help of the investment and calculated operation cost of the project the consultant will provide KW&SB the breakdown cost to assist the other team of the Project working on the rationalization of Tariff for the city in general and the area in question in particular.
12. Detailed Design for installation of Water ATM’s, stand pipes, house connections, hand washing stations (COVID Response) or any other new technologies to reduce Non-Revenue Water (NRW), if required.
13. Detailed capital cost and Operation & Maintenance (O&M) cost estimate of proposed Rehabilitation Plans for water supply & sewerage system for selected low-income communities (Katchi Abadi)

**Deliverables:**

By way of illustrations, and not limitation, the reports to be submitted by the Consultants to KWSSIP as part of deliverables under consultancy services will include the following:

|  |
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| **Description** |
| Common Inception Report of Group 4 Works (Part A, B & C) |
| **Feasibility Study**  Report on Katchi Abadies Selection / Low Income Areas. |
| ESIA for KAs included in the Sub Project including E&SS. |
| Social-Economic Study and Assessment (RAP / ESMP) |
| Performance and Capacity Assessment Report of   1. Existing Water Distribution Network up to house level, Sewerage Disposal Network with disposal points in selected Low Income settlement areas.   Existing Water and Sewerage Networks of KW&SB nearby the selected project areas |
| Technical reports including all the surveys including topographic, Geotechnical, GIS mapping, Lines and Levels of the water and sewerage networks. |
| Feasibility Report (Draft)  Feasibility report (Final) |
| Conceptual / Preliminary Design Report |
| **Design Phase** |
| Detailed design of:   1. Water distribution network from KW&SB water main with metered connection to house hold level in selected 10 Low Income Settlements 2. Sewerage collection network from house hold to disposal point connected with KWSB Sewerage system in selected 10 Low income Settlement 3. Size of metered water connection from the existing KW&SB system |
| Prepare drawings, standards & specifications of the Project. |
| Prepare B.O.Q with rationale of prices with preamble, complete detailed cost estimation of the project. |
| Prepare bidding documents, bidding drawings with complete information |
| Assist KWSSIP / Procurement Specialist in evaluating the bids procurement process as per guidelines of WB |
| Respond to the queries related to the Bidding documents raised by the participants. |
| Modify / rectify and changes / omissions in respect of design during the implementation phase of the project. |
| “Design Report Review” (Draft) |
| “Design Report Review” (Final) |
| Final Report |
| Any other allied Details / Documents. |

1. **Priority Sewer Network Rehabilitation & Extension and Rehabilitation of Wastewater Pumping Stations**

**Background**

Karachi city has a decades old sewerage system, most of which, have either outlived the designed life or become undersized due to the population progression and at present is extremely overburdened. The structural stability of sewers has also deteriorated resulting frequent incidents of collapses, sunk downs, of sewage trunk sewers. Likewise, the performance and physical conditions of the waste water pumping stations, collecting and disposing the sewerage has been drastically affected due to poor maintenance because of dwindling financial health of the department. Thus, the inefficiency and ineffectiveness to meet the current situation has increased manifolds in recent times coupled with overstraining load of sewage generation on the system. The complaints of sewage overflow have significantly amplified posing serious health hazards with high level of difficulties to maintain the outlived, undersized system. It has become inevitable to take immediate measures to rehabilitate / improve the system to address the chaotic situation to run the system effectively and to meet the present and future requirement through aggressive consultative and diagnostic analysis to develop best technical remedy and approach to resolve the sewerage issues.

A well-integrated sewerage rehabilitation plan including sewer system and pump houses upgrading and strengthening is the dire need at the moment to address the requirement of the ever growing population with proper quantification of the sewage generation and design sewer system having capacity to transmit the sewage to the outfalls safely KWSSIP has considered the neglected sewerage sector and has planned to invest in the priority sewer network and waste water pumping stations rehabilitation works, to restore the sewers and the lifting facilities to make the system to perform on the engineering guidelines and principles for an overall improved sewage collection and disposal system via sewage lift pumping stations.

The present sewerage network is spread over a large area and it is practically impossible to take up the entire derelict sewerage system in one go. KWSSIP, thus recommends that phase wise rehabilitation may be done by setting the priority works for the most affected areas. The works will be identified and selected in collaboration with the field staff / engineers of KW&SB so as to provide instant relief to the most suffering areas to achieve healthy environment and improve the living conditions more safe.

The sub-project will be scaled up in the identified priority sewerage districts and is aimed to restore network integrity in critical areas, and to reduce sewage contamination and its frequent flooding.

The envisaged rehabilitation works is targeting a sustainable Sewerage Infrastructure for Karachi for the next many decades to come with the investment of WB, AIIB and the GoS.

**Objectives**

* The objective of the Phase –I of “Priority Sewer Network Improvement Plan” is to improve / strengthen the sewerage infrastructure of Karachi both quantitatively and qualitatively, thus paving way for the investment under SOP 2.
* Aims to restore network integrity in critical areas, control sewage overflows, leaks and water contamination problems to provide healthy environment to the residents and reducing water borne diseases.
* The Rehabilitation / Extension works will be carried out with possibility to opt for economically and technically viable solutions e.g. the Trenchless technology.
* To address public hygiene & health issues and improve overall environment of the affected areas.

**Feasibility Study:**

The Consultant shall perform the services stated hereunder but not limited to:

1. Review The E&S study and develop the strategic approach to address the findings and mitigation plan in its detailed design.
2. With the assistance of KWSSIP team shall gather all the available data, information and drawings with field staff.
3. Using latest GIS tools and software shall earmark the project area to identify the catchment, population, underground services, showing the existing sewerage network with sewer size and flow directions, starting and terminal point of the sewers to be rehabilitated, marking of new sewers to be laid and any other allied information necessary for the implementation of the project.
4. Conduct Environmental Impact Assessment for the proposed site.
5. Carry Socio-Environmental assessment and list out resettlement issues, if any, with cost implication.
6. Exhibit the ROW issues, if any, on the alignment of the sewers.

1. Study and verify the information correspond to the site conditions. Identify the priority of works and prepare list of the projects in light of the urgency to determine the precedence.
2. Assess & quantify the sewage generation within the proposed project Areas.
3. Assess & analyze the actual capacity current structural conditions of the sewerage network and the sewage pump station.
4. Perform Performance assessment of plants, machineries and equipment and structural stability analysis of the existing wastewater pumping stations and identify the nature of works to be implemented for improved level of services.
5. Carry out detailed Surveys necessary for Rehabilitation & Extension of sewerage network and pumping stations, not limited to:

* Reconnaissance Survey.
* Topographic Survey.
* Geotechnical Survey

1. Device methodology to detach the sewerage discharge into storm water drains or nullahs and properly connect the system with the nearby sewerage systems.

1. Determine the Economic and Financial viability of the proposed project.
2. Finalize the priority list of the areas to be considered for implementation of the improvement of sewerage networks on need basis.

1. Prepare detailed Feasibility Study incorporating all the environmental, social and economic analysis with mitigation plan and technical viability of the project with anticipated desired goals and targets on carrying out the proposed rehabilitation and extension of sewerage networks.
2. Prepare the Conceptual / Preliminary Design for the propose project.

**Detail Design:**

1. Review the Feasibility report and incorporate any or all the shortcomings identified later on completion of feasibility report during designing.
2. Detailed designing of the rehabilitation and or extension of Sewer Networks and rehabilitation of Waste Water Pumping Stations as recommended in the Conceptual & Preliminary Design
3. Make effective use the modern trenchless technology to minimize public inconvenience, wherever possible and economical
4. Select the piping material with merits and demerits. Design proper pipe sizing, slope calculations to maintain self-cleansing velocities and hydraulics for efficient transmission of the sewerage.
5. Set the internationally accepted standards and specification while selection of plants and machineries for sewage pumping stations considering O&M and after sales service facilities.
6. Flood protection mechanism for the Sewerage Pump house during monsoon shall be devised to keep the pumping station working during rains. 50 years rainfall record shall be referred from Met department in this context.
7. Propose best type of procurement for the Rehabilitation / up gradation of existing sewage pumping stations and accordingly prepare the bidding documents on recommended mode of procurement practically viable for implementation.
8. Setout Ground Control Points (GCP) by using GPS system to mark the center line of the propose alignment with True Bench Mark to be obtained from the Survey of Pakistan
9. Prepare Cost Estimates with rationale.
10. Prepare & recommend the realistic timelines for completion of the project in light of the level of difficulties likely to be encountered during execution phase.
11. Propose best economical Methodologies for smooth and timely implementation of the project.
12. Prepare all necessary bidding documents, drawings, specification on FIDIC in line with WB guidelines.
13. Formulate B.O.Qs with preamble to cover all aspects of the works to be executed with all possible documents and information for transparent and healthy procurement process.
14. List out all necessary Approvals / NOC’s/ Permissions, etc that will be required during the currency of Proposed Project from Government / all Regulatory Bodies or any relevant Authority.
15. Prepare engineering estimate to be used as benchmark for assessment of financial proposals.
16. Assist KWSSIP team / Procurement Specialist during procurement process for technical and financial evaluation of the bids till award of Contract.
17. Respond to all the queries related to the bid documents raised by the interested bidders during procurement.
18. The Contractor shall be solely responsible for its Design during the currency of the project implementation and shall provide assistance to rectify / modify / clarify any design variation.

**Deliverables**

By way of illustrations, and not limitation, the reports to be submitted by the Consultants to KWSSIP as part of deliverables under consultancy services will include the following:

|  |
| --- |
| **Description** |
| Common Inception Report of Group 4 Works (Part A, B & C) |
| **Feasibility Study**  Performance Assessment and Pipe / Structure Stability Report of the Existing Sewers and the Sewerage Pumping Station. |
| Comprehensive GIS Mapping of the project area showing the catchment areas, sewer lines, underground utilities, encroached areas, if any, ROW availability etc. |
| Socio-Environmental Assessment, EIA report |
| Technical Survey Reports including Geotechnical surveys |
| Detailed report to opt trenchless technology with merits and demerits and cost comparison. |
| Qualitative and quantitative analysis of the sewage generation in the area of responsibility. |
| L-Section of the proposed sewer line with lines and levels, NGL, service crossings etc. |
| Feasibility Report (Draft) |
| Feasibility Report (Final) |
| Submit Conceptual / Preliminary Design Report |
| **Detail Designing** |
| Detailed Design calculations categorizing on the basis of rehabilitation or extended works or modification with flow details. |
| “Design Report” (Draft) |
| “Design Report” (Final) |
| Engineering estimates with rationale and detailed preamble. |
| Bidding documents with Bidding drawings complete in all respect |
| Preliminary design covering all the basic information, guidelines, specifications and standards for EPC based Contracts in respect of Pumping stations |
| Report on the outcome / goals achieved on completion of the proposed works. |
| Any other task or assignment necessary for detailed designing. |

**Timeframe for All Three Assignments**

Total duration for Feasibility, Design Review and Detailed Design for Sub-Projects of Group-4 of SOP-II will be Six (06) months.