

## DETAILED TERMS OF REFERENCE

### 1.0 Terms Of Reference:

I.1 The scope of services of a consultant shall include the following categories:

1. To study existing SWM practice and Drainage system in the city. To carry out social audit for the purpose by making house to house survey for 500 nos. samples covering all sections of the Diu Population.
2. To collect all' kinds essential data from DMC official, Govt. officials, Non Govt Organization etc., to prepare Detail Project Report for SWM and Drainage.
3. To carry out the detailed engineering survey, market survey social survey, IEC impact survey, economical survey etc. to prepare SWM DPR.
4. To carry out Topographical Survey, Contour Survey, HFL Data, Ground Level Data and other required Survey for Preparation of detailed project report on waste water collection, conveyance, treatment and its disposal
5. The consultant shall suggest DMC for modification in existing system of adjacent area to accommodate drainage system of new area, if any and advising regarding cost variation.
6. To prepare DPR as per CPHEEO guidelines and manuals.
7. To prepare the preliminary design and preliminary working drawing, to suggest right type of equipment/ machinery/ method for better Solid Waste Management and drainage system of the city.
8. To collect quotation of each suggested items/machinery/equipment /component. along with detail specification, need justification, project report, cost estimate and financial and economic analysis and draft tender.
9. To organize Public Consultation Meeting as well as stakeholders meeting for getting approving methods, activities. strategies, component collecting views, suggestions, modification

10.To work as representative of DMC at various levels for seeking appraisal and approvals from GOG / GOI &. From nodal agency and as per the process prescribed under JNNURM / UIDSSMT guidelines,

11. O & M Cost Estimates

## **1.2 Study:**

This shall consist of preparation of a detailed Project Report containing:

- a) Technical feasibility;
- b) Detailed designs and Cost estimation:
- c) Financial projections for Project Finance, phasing, of costs and Financing Plan for Financial Feasibility:
- d) Cost benefit analysis structuring self sustained user charge and other such option
- e) Economic analysis: Social impact, Environmental analysis
- f) Operational costs projection and analysis;
- g) Cost recovery analyses the capital cost partially.

## **1.3 Detailed Project Report:**

This consists of services to establish design parameters/equipment/machineries as per the CPHEEO norms.

Report shall also include waste water generation rate, projected population and land requirement for sewage pumping station and sewage treatment plant for entire area. Details of collection, conveyance and disposal system shall be proposed Town Planning scheme wise

### **a) Analysis of several alternatives.**

The alternatives should be complete in all respects including owning and operating costs and financial implications. Such analysis shall also include--

various structures with its advantages, disadvantages and suitability for the project, and consultant's recommendations for selection of suitable structure / process / methods etc.

**b)** Project report preliminary plans and estimates and project implementation schedules.

#### **1.4 Design Norms:**

This category includes: Decide basic norms of design to define the technical parameters, which shall form the basis of detailed design and engineering.

#### **1.5 Detailed design Services:**

This category includes the preparation of conceptual and detailed design and drawings including the following:

- a. Designing and documenting the works based on the guidelines contained in the Manual of SWM and MSW Rules. 2000 published by Government of India and relevant BIS for specifications, and normal design engineering practices:
- b. Designing and documenting the works based on the guidelines contained in the CPHEEO manual
- c. Preparation of conceptual drawings based on detailed designs;
  - i. The design should include waste water collection and conveyance, location of disposal facility, Sewer design parameter, water consumption, waste water generation, design of Sewer, its appurtenances, design of manholes / scraper manholes / ventilating column etc, observations, past, present and future data analysis and projections, material of constructions (MOC), waste water loading rate , which includes determinations of diameter of pipes, quality of pipes. etc.
  - ii. The complete design and detail engineering drawing for the drainage network shall be submitted including indication of ground levels, invert levels of pipes, diameter of pipes, flow directions,

locations of Sewer appurtenances, Longitudinal Sections including showing the underground infrastructure if any comes across or along the route of the drainage line, structural details of general components and critical components with all the design calculations should be submitted.

iii. Consultant shall collect details of invert level of outlet of existing society and Plotting invert level, location and diameter on the proposed Sewage Network Map with out any extra cost.

d. Conveyance of the collected Sewage through rising main.

i. The design should include diameter of pipe, MOC of pipeline and other appurtenances required including mode and system of conveyance of the collected Sewage.

ii. The complete design and detailed engineering drawing for these components shall be submitted showing the size of the pipes, most economical cross section of pipe, invert level of pipes, route, flow direction and other required details deem fit to be included

iii. At least two options for transmission line to be suggested and submitted with proper evaluation and suggestions on most technically as well as financially viable option.

e. Sewage Pumping Stations (SPS)

i. Site selection for Sewage Pumping Stations ( main and auxiliary ) shall be done by the consultant with respect to the technically, physically and financially viable options.

ii. Land requirement as per capacity of SPS and also accommodating/ fulfilling all the statutory requirements.

iii. Detailed design of pumping station shall include the configuration and detail structural design of the pumping station including the various civil, electrical and mechanical components in accordance with the Govt. approved manuals (CPHEE Manuals) .

iv. Proposed Civil, Mechanical and Electrical design should be

economical and should meet the criteria of prescribed design manuals. General arrangement drawings, pumps, motors, electrical panels layouts, power requirement calculations, Phase wise implementation schedule for installing the pumps motors etc. shall be submitted. The design shall include the component of atomization of the operation of the pumping stations and connecting and transfer the data facility with the STP.

- f. Sewage Treatment Plant (STP)
  - i. To treat the Sewage up to the limit prescribed by the relevant Govt. authority.
  - ii. The treatment process option shall be selected by the consultant with respect to the feasibility report prepared by the consultant.
  - iii. The consultant shall prepare the requirement of land and prepare a layout incorporating the complete unit requires for the treatment process and to comply the norms prescribed by the CPCB and GPCB.
  - iv. The consultant shall determine the quantity and quality of the Sewage to be received at STP. Consultant shall suggest the process of STP, in such a way that the Sewage Parameters discharged after treatment shall comply the GPCB, CPCB norms. Consultant shall consider all the expected shock loads entering from the industries, if any.
  - v. Consultant shall also give phase wise planning /capacity for first fifteen years and second fifteen years with land requirement.
  
- g. Treated Sewage disposal line
  - i. The consultant shall determine the location of the disposal point with different alternatives in accordance with the provisions made by GPCB, CPCB etc.
  
  - ii. The design should include diameter of pipe, MOC of pipeline, and other appurtenances required including mode and system of conveyance of the collected Sewage.
  
  - iii. The complete design and detailed engineering drawing for these components shall be submitted showing the ground levels, size of the pipes, invert level of pipes, route, flow direction and other required details deem fit to be included

## **1.6 Procurement Services:**

These shall include:

- a) Recommending the most suitable materials and equipment and suggesting its product and engineering specifications.
- b) Preparation of preliminary drawings.

## **1.7 Hi-tech Engineering Services:**

The Hi-tech engineering services to be provided by the consultants shall include the following:

- a. Various method of solid waste management for different categories.
- b. Most suitable sewage conveyance and method of sewage treatment.
- c. The consultants shall study and recommend the most favourable and cost effective hi-tech solutions in the above areas.

## **1.8 Designing I-E-C Activities:**

### **2.0 The study shall demonstrate and establish the social, economical, technical and financial, environmental feasibility of the Project. It shall include the following:**

#### **2.1 Technical Feasibility:**

1. Study and analysis of suitable and feasible cost effective equipment/ machineries/ tools for SWM and sewage system;
2. Review of existing situation and its impact;
3. Study and analysis of various options relating to selection types of solid waste management practice for primary, secondary and tertiary treatment pros and cons and recommending the suitable device;
4. Project cost estimation and financing plan.

#### **2.2 Financial and economic feasibility:**

- a. Project finance studies with sensitivity analysis based on different debt/equity ratio, Operation and maintenance of systems including sensitivity analysis;
- b. Recommended approach and methodology relating to cost recovery.
- c. Project cost benefit analysis including social cost benefit analysis social cost benefit and sensitivity analysis.
- d. Cost estimation of each component with detailed specifications, and item shall be done according to latest GWS and SB schedule of rates/rate analysis based on current market prices.

### **2.3 Project implementation schedule including PERT CHAR'I'S:**

The Consultants shall also formulate Bar charts to plan out and monitor all important project activities.

- 2.4** The consultants shall plan out the implementation schedule, list out various project related activities, determine critical activities and formulate a detailed chart based on Programme Evaluation Review Technique (PERT) and mark the Critical Path using the latest available and appropriate Project Management software.
- 2.5** Project appraisal and the investment decision are based on the report. This means that the study must advance all planning (including Preliminary engineering designs for various components of the project) to the point that implementation can begin as soon as funding is provided.
- 2.6** The project report should be presented clearly in one or two volumes with additional information and data provided in supplementary documentations as appendices to the main volume. It is particularly important to record all new data collected during (and at the expense of) the study as well as its analysis. However, the report itself should concentrate on the results and not on data collection and methods of analysis.
- 2.7** The study shall also provide an environmental impact analysis relating to the project.

- 2.8** The study shall also cover integration of the Project with existing and future systems in the project area,
- 2.9** Project related issues and risks shall be identified and discussed along with recommended solutions.
- 2.10** Reports shall be presented within a time period of **Six months** from the date of consultant's appointment as detailed below:

a)	Conceptual Project Report with soft copy in CD ROM (In three copies)	Within ½ months from the date of work order.
b)	Draft Project Report with soft copy in CD ROM (In three copies)	Within 2 ½ months from the date of approval of Conceptual Project Report
c)	Final Detailed Project Report with soft copy in CD ROM (In Five copies)	Within 5 ½ months from the date of approval of Draft Project Report.
d)	Draft tender documents only in two hard copies and with soft copy in CD ROM	Within 6.0 months or on execution of project from the date of approval of Draft Project Report.

In each of the above case the consultant shall make available computer compact disk in two copies. All drawing must be provided in Auto CAD format and all reports/details in MS Office format.

**3.0 Design Services:** The consultants shall carry out the conceptual and detailed engineering design, prepare engineering drawings and cost estimates for all project components.

**4.0** The consultants shall submit the following as the outcome of their services:

1. Conceptual Project Report.
2. Draft Project Report
3. Final Detailed Project Report (DPR).
4. Draft tender document.

#### **4.0 Project Reports should include the following:**

- 4.1** Establishing the need with Alternatives for proper solid waste management and the cost of the project. The report should include information such as:
- a. Identification of project area and its physical environment
  - b. All Sewerage scheme are to be design for future development with projection of population till the year **2039**.
  - c. Importance of the project area commercially, Industrially, Culturally etc.
  - d. Preparation of detailed project report on waste water collection, conveyance, treatment and its disposal
  - e. Present Solid Waste Management practice and arrangement of SWM for future period of 20 years 'considering appropriate population projection and waste generation
  - f. Establish I-E-C modules
  - g. Bring out how project would fit in with National / State planning.
  - h. Identification of project components
  - i. Detailed design and drawing of components viii) Cost estimates
  - j. Cost of O & M
  - k. Financing capital cost
- 4.2** The Project Report should in detail examine the feasibility – technically, financially, economically, socially, legally, environmentally and institutionally.
- 4.3** Enough additional data / information may have to be collected besides procurement of materials and equipment.
- 4.4** The executive summary of project indicate objectives, service coverage, service standards considered and selected for long term planning affordability, quantification of future demand, cost of implementation, capital as well as O & M - with debt services for repayment of loan. The DPR must be prepared as per JNNURM / UIDSSMT Toolkit for DPR and guidelines provided by CPHHEO for preparation of SWM DPR.

**4.5 The Detail Project Report should be based on extensive analysis and Preliminary Engineering designs of components of the project.**

**5.0 General Information**

**5.1** The time period of consultancy service for the Detailed Project Report, preliminary engineering design shall be six months. The time shall start running from the date of acceptance order from the client.

**5.2** All design and drawing drafting shall be carried out by computer aided design and drafting systems, including optimization and least cost analysis adopting latest and appropriate technology options.

**5.3** Detailed item rate estimates based on market rate analysis shall be prepared for each of the work. Estimate shall be framed for material and labour separately for each component of the project.

**5.4** All designs, project reports and other reports as may be required shall have to be prepared and processed on computer using Microsoft Word 2000 and Microsoft Excel and AutoCAD.

**5.5** All stationary, drawing stationary, design facilities, reprographic facilities etc, shall be provided by the consultant at his own cost..

## **APPENDIX-I**

### **COMPANY DETAIL:**

1. Name of the Consultant
2. Address
3. Telephone Nos.
4. Fax Nos.
5. E-mail
6. Status (Attach documentation) (tick mark and initial)
  - (a) Individual
  - (b) Partnership firm
  - (c) Private Limited Company
  - (d) Limited Company
7. Date of Company's Incorporation
8. Date of starting consultancy profession/business
9. Registrations and empanelling:
  - i.
  - ii.
  - iii.
  - iv.
10. Fields of professional expertise (tick mark or cross for positive or negative answer and initial).
  - i. Water supply and sanitary engineering:
  - ii. Civil Engineering:
  - iii. Mechanical Engineering:
  - iv. Electrical Engineering:

- v. Computer Applications:
- vi. Project Design & Formulation  
Including project feasibility:
- vii. Project costing & Analysis
- viii. Solid Waste Management

# PRICE BID

WORK : TENDER FOR SELECTION/APPOINTMENT OF CONSULTANT FOR PREPARATION OF DPRs AND OTHER NECESSARY DOCUMENTS FOR URBAN DEVELOPMENT PROJECTS TO BE TAKEN UP UNDER UIDSSMT SCHEME OF GOVT. OF INDIA IN U.T OF DAMAN AND DIU.

1. SEWERAGE SYSTEM WITH TREATMENT PLANT.
2. SOLID WASTE MANAGEMENT PROJECT IN DIU.

I/We \_\_\_\_\_ the undersigned hereby quote for providing consultancy services for the work described in the schedule below subject to conditions of the tender documents.

Sr. No.	Work Description	Fees payable as % of total estimated project cost presented in the Sewerage System DPR	Fees payable as % of total estimated project cost presented in the Solid Waste Management DPR
1	Preparation of feasibility report		
2	Preparation of final project report (including all documents as per the requirement of IHSDP scheme)		
3	Preparation of tender documents for sanctioned project		
4	Preparation of tender evaluation report		
5	Preparation of working drawings		
6	Supervision of the project with final certification		

Signature of consultant

Signature of client :

Date:

CHIEF OFFICER  
DIU MUNICIPAL COUNCIL, DIU