

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF LGRD & CO-OPERATIVES
LOCAL GOVERNMENT DIVISION
DEPARTMENT OF PUBLIC HEALTH ENGINEERING (DPHE)

TERMS OF REFERENCE

For

Consultancy Services

On

“Consultancy Service for Design of Surface Water Treatment Plant, Booster Pump House with pump, transformer & retaining wall, Pipe Network and Solid Waste Management System at Sajek of Rangamati District”

Expansion & Improvement Project for water supply and sanitation system in rocky areas of different upazila at Rangamati district including Sajek tourist zone
(GOB)

Department of Public Health Engineering

Terms of Reference (ToR)

1. Introduction and Background

Rangamati is a district in South-Eastern Bangladesh. It is one of the three hill districts of Bangladesh and a part of the Chittagong Hill Tracts. It is bounded by Chittagong district, Rangamati and India. The number of population is 5,95,979 (Census 2011). About 57.60% of the population is indigenous.

The hilly geography of Rangamati necessitates use of technologies different from those used in the lowlands of Bangladesh. This consultancy will identify, test, adjust and disseminate a broad range of appropriate and cost-effective technical options for provision of water supply and environmental sanitation in Rangamati. The unique cultural heritage and political history of the tribal populations in Rangamati make it necessary to identify and test institutional options for management of water supply and environmental sanitation. Improved water supply and environmental sanitation facilities will be provided based on identified needs and expressed demands.

2. Objectives of the consultancy service

- To design potential water sources, water treatment plant, pump, pump houses, electromechanical structures, protective & retaining wall etc.,
- To design pipe network for transmission and distribution of raw and treated water
- To provide detail outline of solid waste management system with necessary design of the structures of service chain and
- To assess the viability of investments in terms of technical, financial and social aspect of the development activities at Sajek of Rangamati District.

3. Implementation Period

The consultancy service will be conducted over 18 (Eighteen) month from the date of contract signing.

4. Implementation Modality

- (a) Methodology of Conducting the Survey
- (b) Financing Arrangement

GOB is financing the project and part of the proceeds will be used for this consultancy service

5. Scope of Services

The scope of consulting services will specifically include, but not be limited to:

I. Detail Assessment:

Assessment of Sajek at Baghaichari Upazila of Rangamati District for designing water source, water treatment plant, booster pump, pump house with pump, electromechanical structures, protective & retaining wall, Pipe line and Solid Waste Management System including the viability of investments in terms of technical, financial and social aspect. This will include engineering survey & investigations including hydro-geological, cost estimates, financial and economic analyses.

II. Detail Engineering Design:

It includes the detailed engineering designs, drawings, specification, schedule of rates and contract packaging for system expansion based on the assessment, design criteria, information from the field, laboratory/field tests data. Specifically, the job would consist of the following activities but not limited to:

Design, monitoring and report based on following factor:

- i. Potential source of water, extractable water, elevation difference between the potential source, water storage and treatment plant;
- ii. Water quality, requirement of treatment and treatment process;
- iii. Water consumption with 20 years' demand projection;
- iv. Design criteria for major facilities;
- v. Optimum design period for the required capacity of major facilities;
- vi. Sustainable yield of all the proposed sources taking into account existing and potential uses over the design period.
- vii. O& M of the installations

Consultant shall have to submit the design calculation and report of every component in the form of soft and hard copy

III. Preparation of Final Design Report:

- i. Prepare draft design report for presenting the results of all the design tasks described above;
- ii. Prepare final design report for presenting the results of all the design tasks delineated above incorporating the views/recommendation of PMU/workshop.

IV Preparation of BID Documents:

1. Prepare BoQ and cost estimates. Analysis of the rate shall have to be submitted in the form of hard copy and soft copy.
2. Prepare bid documents for each contract package including general specifications and detailed technical specifications for materials, equipment, instruments, methods of construction of civil works and methods of installation and fabrication for mechanical and electrical works.

Based on standard documents and followed by PPR 2008 consultant will prepare specific bid documents

6. Deliverables

The consultant shall submit the following deliverables under the contract.

- Project inception report
- Monthly progress reports
- Assessment report, Design and Necessary reports, detail design and design report of water supply infrastructures, pipeline transmission and distribution, Waste management structures etc.
- Detail estimates, bid documents of all the structures within 03 months from signing of contract;
- Project output sharing workshop, O&M of Water supply and waste management under the assignment (10 copies of each);
- Environmental, socio economic analysis, financial analysis etc;
- Final reports of all components and project completion report need to be submitted as government prescribed form.

DPHE will be owner of all the design, reports, documents and Software's prepared under the project.

7. Technology Transfer and Training

Transfer of technology is very important for smooth monitoring and Water Supply & Sanitation O&M in future. The transfer of technology to the persons to be involved can best be achieved through a comprehensive training program. The training program will comprise of following components:

- On-job training on water source, transmission, storage, treatment, distribution and waste management service chain etc.;
- Periodical interaction meeting / briefing sessions comprising presentations and discussions on project planning monitoring and implementation etc.;
- Training module & manuals for each type of trainings;
- During preparation of documents and necessary software for this project DPHE will be intensively consulted and trained in order to prepare the concerned manpower of DPHE to run the programs.

8. Counterpart facilities

DPHE will provide space for the consultant office in the District level as required. In case of local works, the consultant will be required to rent office for their necessary works. The consultant will work full time for the project under the direct supervision of Project Director & Executive Engineer, DPHE, Rangamati District.

9. Progress Monitoring & Evaluation

The Project Director, Expansion & Improvement Project for water supply and sanitation system in rocky areas of different upazila at Rangamati district including Sajek tourist zone will coordinate the overall implementation of the Consultancy activities. The Consultancy firm will coordinate with the Project's Technical Support Units at the national and regional levels, as well as with the relevant DPHE Executive Engineers' offices.

Project's Technical Support Units will

- Guide the project for proper implementation.
- Review and report the progress.
- Monitor the activities of the consultants.
- Sit every month or as and when required.

10. Responsibility

A. DPHE's Responsibilities

DPHE will ensure the consultants with the following support services which are felt essential for carrying out the project successfully within the stipulated period. These support services includes following:

- Communicating with the relevant stakeholders and beneficiaries for necessary data & information;
- Arrange past data and information preserved in DPHE and relevant for conducting the service;
- Deputing DPHE personnel who would work in close support with the consultant team so as to own the project on completion of the project.
- Deputing DPHE personnel to undertake short training program that may be undertaken by the consultants in connection with technology transfer

The consultants shall have regular meetings with the DPHE professional staff to discuss technical and project management issues. Any unresolved technical or otherwise should be taken up with Project Director of the project and shall provide the available data, as per its own system.

B. Consultant's Responsibility

The consultants shall carry out the services as detailed in "Scope of Works" Consultants shall work under the Project Director and responsible to the executing agency (DPHE)

Make necessary arrangements for site investigation and necessary data collection as needed for the study. Computers, printers, plotters, or other major equipment & data, if purchased under the contract and used by the Consultants shall be delivered to the office of the Project Director, DPHE after completing the tasks.

The consulting firm will be liable if any fault in project period. Arbitrator will determine the amount of liabilities based on consequence of the fault and the responsibility of the firm.

11. Ownership of Documents

- DPHE shall be the owner of all the software, design, reports, documents prepared and equipment procured under the project.
- After completion of the project all documents/results/tools & equipment and all necessary software should be handed over to DPHE. These documents/results/tools & equipment should have one year free servicing and updating provisions.
- The consulting firm shall accommodate the latest version of all the computer software/ programs and shall provide the latest version while transferring database/tools/ software to DPHE.

12. Indicative timelines and Level of Effort

About 14 person-months of national consultants are required over a period of 14 (fourteen) month consisting of professionals with expertise in feasibility Study, Preparation of detailed engineering design and bid documents.

Table below shows the stipulated Consulting Person-months while requirements for individual persons on the team are given in the following section.

Key staff:				
Personnel	Number	Person-month	Total Person-month	Type of Position
Project Team Leader Cum Water supply Engineer	1	4	4	Full time
Environmental Engineer	1	2	2	Intermittent
Structural Engineer	1	2	2	Intermittent
Electro Mechanical Engineer	1	2	2	Intermittent
Hydrogeologist	1	2	2	Full time
CAAD cum Computer Operator	1	2	2	Full time

One person should be mention from the firm who will correspond with project director as coordinator.

Details of Consultancy on feasibility study Design of Water Treatment plan, Booster Station,Pump House,Pipe line and solid waste management system (In Lakh Taka)

Sl No.	Position	Nos	Month	Man-Month	Minimum qualification	Experiences	Task
1.	Project Team Leader Cum Water supply Engineer	1	4	4	Minimum Masters or equivalent degree in Engineering (Civil/ Water Resource)	S/he should have at least 15 years' overall experience in water resources/urban water supply planning management. Previous experience in water supply project development, management and implementation. S/he should have experience in at least 2 similar projects in the position of TL or DTL. Minimum 10 years' experience in the use of network modeling and hydraulics, particularly experience in design of water distribution systems using standard software like EPANET or Water Gems or InfoWater. Shall have 5 years of specific experience in planning, design and implementation of water supply projects especially in hill tracts areas.	<ul style="list-style-type: none"> ▪ Full responsibility for performing feasibility study and planning, design, drawing, specification, schedule of rates of all engineering items. ▪ Ensure close cooperation and assistance to the PD for effective and efficient implementation of the project. ▪ Provide advice and direction to the technical groups and specially lead the review modeling and design study team. • Review and prepare project plan schedules and time frame work for the publications of reports. • Conduct regular field visit to the project area to maintain close supervision of the rest of the team. Maximum age limit 60 yrs. • Fully responsible for all aspects of design, planning, liaison and reporting; • Identify the most suitable location for the water treatment plant and intake; • Plan and assist in designing treatment plant, it's components, raw water and clean water transmission line; • Prepare present and future water demand projection, analyze the data using computer-based program, prepare the outline hydraulic design of pipe network; • Guide in preparing the drawing, specification and estimates of pipe network, treatment plant and other water infrastructure; • Prepare project planning, schedules and time frame for work and the publications of reports; • Attend meetings as and when required; • Responsible for quality control of output of the study; Contribute and review the reports and give suggestions for improvement.
2.	Environmental Engineer	1	2	2	Bachelor degree in Civil engineering preferable a masters in Environmental engineering.	S/he should have at least 10 years' experience in water resources management, EIA studies, Environmental Management. Previous hands on experience in coordinating IEE, EIA issues for a large water resources assessment and management studies will be treated as added advantage.	<ul style="list-style-type: none"> • Conduct environmental study and prepare IEE; • Analyze and identify significant adverse environmental effects and mitigation measures to reduce or eliminate these adverse effects linked with the intended project; • Provide recommendations on the proposed project sites in terms of water resource allocation, probable waste generation/management complying the existing act, regulation, policies and guidelines for it's future implementation. • Will prepare necessary files & documents for DOE clearance for the proposed infrastructures.

3.	Structural Engineer	1	2	2	Minimum of Master's degree in Civil Engineering with major in structure or equivalent	S/he should have at least 15 years of overall professional experiences with minimum 10 years working experience in designing hydraulic structures including WS infrastructure.	Work in close conjunction with the team leader to <ul style="list-style-type: none"> • Perform structural design of treatment plant, water reservoir, pipe network and project related structures. ▪ Maximum age limit 60 yrs.
4.	ElectroMechanical Engineer	1	2	2	Minimum of B.Sc in Engineering in the related disciplines (Electrical/Mechanical). Master's degree in the related field will be preferred.	Minimum 10 years experiences in the design, selection and installation of mechanical/electro mechanical devices of which at least 5 years' experience in water supply and waste management projects.	<ul style="list-style-type: none"> ▪ Consult with the design team and performed electro-mechanical design of all water supply and waste management infrastructure linked with related project structures.
5.	Socio- Economic Expert	1	2	2	Minimum of Master's degree in social sciences or equivalent	S/he should have at least 10 years' working experience in the relevant discipline. Higher degree and experience in the relevant field will be an added advantage.	<ul style="list-style-type: none"> • Design and plan the requirement for SIA surveys of communities in the project area; • Identify future probable social impacts of the project; • Arrange interaction meeting with different stakeholders; • Reporting the SIA; • Collect all related information for carrying out economical and financial analyses; • Carry out economical and financial analyses for the proposed investment; <p>Conduct necessary socio-economic survey;</p>
6.	CAAD cum Computer Operator	1	2	2	Bachelor Degree	Minimum 5 years of relevant working experience	Collect data from field as per direction of Team leader.

Any officer working at DPHE at present or retired recently (within last one year) will not be allowed to work as consultant under this project.

The consultant may include additional experts in their proposal which is subjected to the approval by the client linked with the intended scope & outcomes.

13. The intended consulting firm shall be a national engineering consulting firm having wide experience in conducting detailed engineering design on water supply, water treatment and other related activities. The firm should have at least 10 years experiences in professional services linked with water supply, Sanitation, Waste management infrastructure development with an overall 15 years business experiences

14. Mode of Payment:

• Upon submission and acceptance of Inception Report	- 20%
• Upon submission and acceptance of Midterm Report including draft design of proposed infrastructure of water supply and waste management.	- 20%
• Upon submission and acceptance of the estimates of potential infrastructure of Water and Waste management components including detailed mapping modeling report and bid document.	- 30%
• Upon submission and acceptance of Final Reports, PCR	- 30%

Necessary Income tax (IT) and VAT will be deducted at source from the payment as per the rules of the Government of Bangladesh.

15. Consultant Selection Process:

To select Consultant, Service procurement process according to PPR-2008 will be used. Project will invite Expression of Interest (EIO) requesting basic information of the interested Engineering Consulting Firms, regarding qualification and experiences for undertaking the assignment. After evaluating the shortlisted, firms will be requested to submit their technical and financial proposal for the assignment. The proposal will be evaluated in accordance with the procuring guideline using quality and cost based selection (QCBS) method.