

TERMS OF REFERENCE

1. About Bremen Overseas Research and Development Association (BORDA)

BORDA e.V. (Bremen Overseas Research & Development Association) is an multinational NGO specialized in full-cycle decentralized sanitation. Spread across 5 continents BORDA works specializes in low-cost urban water and sanitation solutions. The current phase of BORDA is targeted as solving crises growing out of rapid, unplanned urbanization.

BORDA – SA (South Asia) is the regional unit of BORDA, working in 4 South Asian countries – India, Nepal, Bangladesh and Bhutan. It is headquartered in Bangalore, India.

For more information you can visit <https://www.borda.org/>

2. Project Title

Assist and support partner in reviewing and preparing detailed technical design and costing for 24*7 decentralized water supply and wastewater management in 1 ward of Leh, Ladakh

3. Nature of Assignment

BORDA – Liaison Office, India invites interest/quotations/ proposals from independent consultants, engineering firms and other like agencies for the aforementioned project.

4. Background

Leh is a mountain town, in the Union Territory of Ladakh, in Northern India. Located at an altitude of 10,500 feet it is one of the coldest habitations in the world, with winter temperatures reaching – 30°C, due to which it is isolated for 3 months of the year. The Ladakh region is also very dry, a cold desert, with under 300 mm of precipitation every year, and over 300 days of bright sunshine.

a. Water Supply Situation

A recent study by BORDA – LO, India found out that Leh, rather than facing a water shortage crisis, is looking at a water management problem. The town has infrastructure to supply close to 8 MLD, while peak water demand is 5 MLD but due to some gaps supply is only 2.1 MLD.

The water supplied also varies in volume and duration across different town wards. While the major tourist hotels get a supply upwards of 100 LPCD, the poorer sections of the town see supply go down to 25-35 LPCD.

b. **Water Losses**

According to the same study, as much as 25% of the water supplied by Public Health Engineering Department may be lost due to pipeline leaks and overflowing storage.

c. **Water Pricing**

Currently the town charges a fixed tariff per household or commercial customer. The entire supply networked is unmetered.

The existing infrastructure and management lead to a situation where the town is effectively supplied water only for a period of 5-6 months (April – October; not equitably across the town). The same supply is intermittent, and at the same time a huge proportion of the population is dependent on supply by public tankers, public standposts or borewells. The remaining 5-7 months, the water supply is frozen shut, with water consumption going down as to as much as 40 LPCD and dependent on tankers and standposts.

5. Objectives

The objective of the project is to provide a base/ design/ model for the first 24*7 decentralized water and sanitation supply system for a hill town in India. The project will serve as a pilot, the learnings from which can be used to gauge the effectiveness of 24X7 water supply systems; which can be used as a framework for designing water networks of Leh and other small/ mountain towns and cities.

A ward is approximately 250 households.

The specific objectives are:

- a. Design support for cost effective 24*7 decentralized water and sanitation supply system

The design principles would be:

- a. Cost-effective design
- b. Easy operation and maintenance
- c. All weather design

6. Eligibility Criteria

The consultant / agency should meet the following minimum criteria:

- a. The applicant should be a registered reputed Firm / Agency / Individual

- b. The Firm / Agency / Individual should have demonstrated experience in preparation of DPR and Project Monitoring Consultancy in water and sanitation sector and implementation of decentralized wastewater systems, grey water solutions etc.
- c. The firm or any of its constituents, should not have been disqualified any time by Central Govt. and/or any State Govt

7. Scope of Work

The section deals with the details of assignment.

- a. Collection of necessary data
 - Existing infrastructure
 - Supply and demand
 - Operation and maintenance
 - Finances
 - Governance and management
 - Tariffs, revenue billing and collection level etc.
- b. Analysis and processing of data
 - Collate the data
 - Assess water demand of the blocks. Design parameters shall be as described in CPHEEO manual or as mutually decided
 - Calculate demand based on the availability of source
 - Develop current model of management, governance and operation and maintenance
- c. Survey & Investigation
 - Prepare base map with total station other tools
 - The DGPA/ Total Station survey shall be carried out for project area.
 - The topographical survey shall be carried out from source to Project area.
 - The base map with proposed 250 households (pilot for 250) with 1m contour plan shall be submitted.
 - The water quality analysis shall be carried out to finalize the treatment process
 - The representative trial pits are carried out for identification of Strata of soil
 - Test water quality, identify the type of contamination and provide solutions/technology for meeting the potable water quality standards as per prescribed BIS norms
 - The technology and approach should aim to minimize the cost of operation and maintenance

d. Planning and Design

- The planning and design shall ensure supply of adequate and equal pressure of cold and hot water in each individual house.
- The water storage tank capacity shall be adequate to ensure availability of water for 2 days
- Adaptive measures to reduce the freezing of pipelines during the winter season could suggest both gravity and pump based circular system
- Adapting design using natural system/methods to prevent implementation of cost intensive varied technologies.
- Water conservation using low flow fixtures and energy saving techniques and materials
- The network shall be planned to cover 250 households in project area to get connections with minimum length of house service connections pipes
- The storage shall be provided to ensure water 24x7 and Prepare a service improvement plan for delivering continuous pressurized water services in the pilot area
- The hydraulic model shall be prepared using WaterGEM or any other equivalent software.
- The hydraulic model shall be prepared for distribution network till consumer end to get house service connections and to identify any NRW /leakages
- Undertaking flow and pressure measurement to assess the current hydraulic performance.
- The selection of pipe material and grade shall be as per design and environmental requirement / standards
- The Distribution network map shall be prepared for construction
- Prepare current water model and future growth model for the year 2030
- Identify network deficiencies and strengthening measures duly optimizing the performance of existing assets

e. Specifications & Cost Estimate

- Provide detailed design specification for end-to-end engineering design including civil, plumbing, electrical work, underground storage system, specification of all the fixtures, pumps, water meters etc.
- Based on the above specifications, the consultant should provide partner with estimated budget for the project implementation
- For preparation of cost estimates, Schedule Rate (SR) of PWD/CPWD in force may be referred for guidance. The Consultant should review SR for relevant items and should prepare rate analysis with respect to current market rates.
- Rate analysis shall be furnished for items, which are not covered under the DSR including extra leads and lifts.
- Detailed Estimate - After the survey is carried out, sizes and other details of various units are decided, the consultant should estimate the quantum of work involved. Having finalized such quantum of work, the consultants should proceed with the preparation of detailed estimates of the various components of the work.
- The detailed estimates are required to be prepared with full details and adequate care.

- Quantity sheets should be enclosed with estimate of each of the sub work and it shall form integral part of the estimates. On each of the quantity sheets, there should be a mention of the drawings, which is to be referred to.
- Contingencies: Even though estimates are prepared with sufficient accuracy and in detail, in order to cover the gap between the cost as per estimates, and as per actual execution of unforeseen circumstances which should be very few 5% for contingencies and 2% for work charged establishment should be provided for every estimate except for lump sum estimates such as working survey, land acquisition

f. Detailed Project Report and Cost Estimates for the improvement proposals

- The detailed project report should contain complete data, information, proposal, cost estimation, least cost solution required as per the guidelines of Govt. of India / CPHEEO etc. The DPR shall be presented to Govt. approval body as per requirement.
- O&M financial model – costing, HR, overheads

8. Key Deliverables

- a. Phase 1: – Status of water supply, infrastructure, service delivery mechanism. The report should also include methodology to design network (final methodology and assumptions to be mutually decided by client and consultant)
- b. Phase-2: Detailed Engineering Design – including technology options
- c. Phase-3: Good to tender detailed costing of the phase-2

9. Timelines

Important dates regarding the projects are as follows:

Serial	Deliverables	Timeline
1	EoI invitation	9 March 2020
2	Last dates for EoI/Proposals receipt	21 March 2020
3	Awarding of contract	31 March 2020

The project timelines are as follows:

Weeks	1	2	3	4	5	6	7	8
<i>Finalisation of design assumptions</i>								
<i>Secondary Data Collection</i>								
<i>Field Visit and Primary Data Collection</i>								
<i>Phase-1 Report</i>								
<i>Phase-2 Report</i>								
<i>Phase-3 Report</i>								

The project is thus schedule to begin 1st week of April and be completed in the 4th week of May.

The payment schedule will be as follows:

Serial	Deliverables	Schedule (INR)
1	Signing of contract	20%
2	Phase 1 Report	20%
3	Phase- 2 Report	20%
4	Phase-3 Report	40%

10. Evaluation Mechanism

BORDA is committed to a fair and equal opportunity of all interested agencies irrespective of religion, gender and region. The eligible proposals received will be scrutinized on the following basis:

Serial	Parameter	Description	Weightage
1	Experience	The interested parties should have a minimum verifiable experience of 5 years of working in the water supply execution/ design sector	15%
2	Team Strength	The project team should have a Civil Engg (15 years), Network Engg (15 years), Draftsman (10 years)	10%
3	Project Execution	The parties should have executed a minimum of 3 24*7 design or implementation projects	30%
4	Financial Turnover	The interested parties should have a minimum average turnover of INR 2 crores in the last two financial years	20%

5	Bid Price	Price quoted by the agency	25%
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All the eligible agencies will be marked on the above criteria. The one with the highest marks will be awarded the contract. All interested agencies should send their proposal/ EoI in the attached formats with all the supporting documents.

11. Instruction to Bidders

All parties should present all relevant data in the appended formats. The price quotations are to be mentioned in a lumpsum amount in INR. Detailed break-up should also be attached as annexure. The quote should include all cost associated with above scope of work.

All information provided should be verifiable; the information provided shall be countersigned as verifiable by the organization's authorized signatory.