



# Samriddha Kanchenjunga Project (SKP)

## Terms of Reference (ToR)

Consulting Services for preparation of Detailed Project Report (DPR) of  
Community Drinking Water Project on the way to south trekking route of  
Kanchenjunga Base camp

Three water supply projects

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## Table of Contents

<b>1 Background</b> .....	1
1.1 Introduction of Samriddha Pahad.....	1
1.2 Samriddha Kanchenjunga Project .....	1
<b>2 The Proposal</b> .....	2
2.1 Introduction.....	2
2.2 Geographical area for study.....	2
2.3 Objective of assignment .....	4
2.4 Scope of works.....	4
2.5 Approach/Methodology.....	4
2.6 Detailed Engineering Study Design Report.....	5
2.7 Reporting.....	6
2.8 Time Schedule .....	6
2.9 Defect Liability.....	6
2.10 Copy right .....	6
<b>3 The Services</b> .....	8
3.1 Documents to be submitted .....	8
3.2 Key requirement and qualification of consulting firm .....	8
3.3 Payment Schedule .....	9
3.4 Expenses/logistics .....	9
Annexes:.....	10
Annex-1: Details of Detailed Engineering Study Design Report.....	11

# 1 Background

## 1.1 Introduction of Samriddha Pahad

"Samriddha Pahad" is a social non-profit organization owned by well-known Nepali promoters and team that has been registered in Nepal in the year 2015 with the aim of raising the standard of living for those who live in the mountains and hills through sustainable economic activities.

In 2009, The Blueberry Hill Charitable Trust UK's Chairman and Board of Trustees, Sir Graham Wrigley, launched "Samriddha Pahad" to Nepal. The goal of Samriddha Pahad is to raise the level of living for those who reside in the hills and mountains. Samriddha Pahad achieved its three main objectives in 2016: (1) to give 25,000 people access to finance in remote areas of Nepal where they previously lacked such access; (2) to demonstrate the viability of the "Mountain Finance" model so that other banks and financial institutions will feel confident in providing services in mountain areas. (3) make SP a Nepali-owned and -run organization. (<https://www.spnepal.org/>)

## 1.2 Samriddha Kanchenjunga Project

Samriddha Kanchenjunga Project (SKP Phase I) is a two-year pilot project funded by "The Blueberry Hill Charitable Trust UK," starting from January 2022 to December 2023. Samriddha Kanchenjunga Project Phase II will begin in 2024, following the completion of SKP Phase I.

The third-highest peak in the world, Kanchenjunga (8,586 meters), is located in Nepal's Eastern region. Compared to Everest (50,000 tourists) and Annapurna (150,000 tourists), this region sees an annual average of less than 1,000 trekking tourists. The project intends to raise the number of visitors to the Kanchenjunga region to 3,000-5,000 by 2026 by collaborating with local communities, private businesses, and the Government of Nepal. The major thematic areas in the project are tourism development, livelihood, and access to finance, which include the following interventions:

- Sustainable tourism infrastructure
- Environment conservation
- Community capacity building & economic development
- Smart technologies
- High-end tourism destination

The project is being implemented in Kanchenjunga conservation area in Taplejung.

## 2 The Proposal

### 2.1 Introduction

Nepal, being home to eight of the top ten highest mountains in the world, has so much opportunity in the field of tourism. Yearly, thousands of domestic and international tourists visit Everest Base Camp (EBC) and Annapurna Base Camp (ABC). But, with Kanchenjunga being the third-highest mountain in the world, the number of tourists visiting is very low as compared to Everest and Annapurna. According to various study reports, one of the main reasons for the region's lack of tourists is the region's lack of infrastructure. Thus, Samriddha Pahad (SP) aims to develop a model tourism community village, particularly in Torengden, Cheram, and Ramjer, which are on the way to the south trekking route of Kanchenjunga Base Camp.

The pre-feasibility study on interventions of tourism infrastructure had been completed in May 2023 to assess their pre-feasibility. Preliminary design of proposed infrastructure of three villages were prepared adopting national guidelines, thumb rule, standards and data collected from the field visit. The data were processed to design the proposed interventions within the scope of the assignment. The quantity and preliminary cost estimates were calculated following the typical drawings developed for the projects and district rates of local labour and materials, equipment hiring rates, unit prices of imported materials and fittings.

SP has priority to support for implementing safe drinking water projects. It is expected that these interventions will play vital role to promote tourism activities along the route. For detailed feasibility study and preparation of detailed project report (DPR), the interventions are three water supply projects.

### 2.2 Geographical area for study

The proposed geographical area for study is the Kanchanjunga South Base Camp Region, which lies in Phaktanglung Rural Municipality of Taplejung district of Koshi Province of Nepal. The area comprises wards No. 4, 5, and 6 of Phaktanglung Rural Municipality. Also, Phungling is the district headquarters of Taplejung district, which is about 630 km from Kathmandu, the capital city of the country. A brief description of three project location is as below;

**Torengden** lies at an altitude of 3,000 m on Simbua river basin within a height of about 30 metres from the river level. The geology of the point is located on hard rock. The top soil in the area is moist which is covered by small grassy land and stones. The contours are mild rising from south to north with step. The area is well suited to accommodate the infrastructure to support the lodging facilities for 150 – 200 population. The area is surrounded by forest on north, south and west while Simbua river on the east. The location is surrounded by high hills on the south.

**Cheram** is located at an altitude of 3,840 m. The distance from Torengden to Cheram is 12.7 kilometres and takes about 5 to 6 hours of walk (about 3 to 4 hours walk from Andaphedi). The terrain of the area is less steep than Torengden. Cheram currently accommodate 3 hotels/lodge, open ground and Helipad. Just above it there are porter houses, kitchens for tent areas, lodges, tea houses and a small greenhouse farming at the top which is not in use at the moment. The areas are covered by forest on the north, south and west with small hills and river on east. The pathway on the north leads towards Yalungtar and Ramjer and pathway on the south leads towards Torengden.

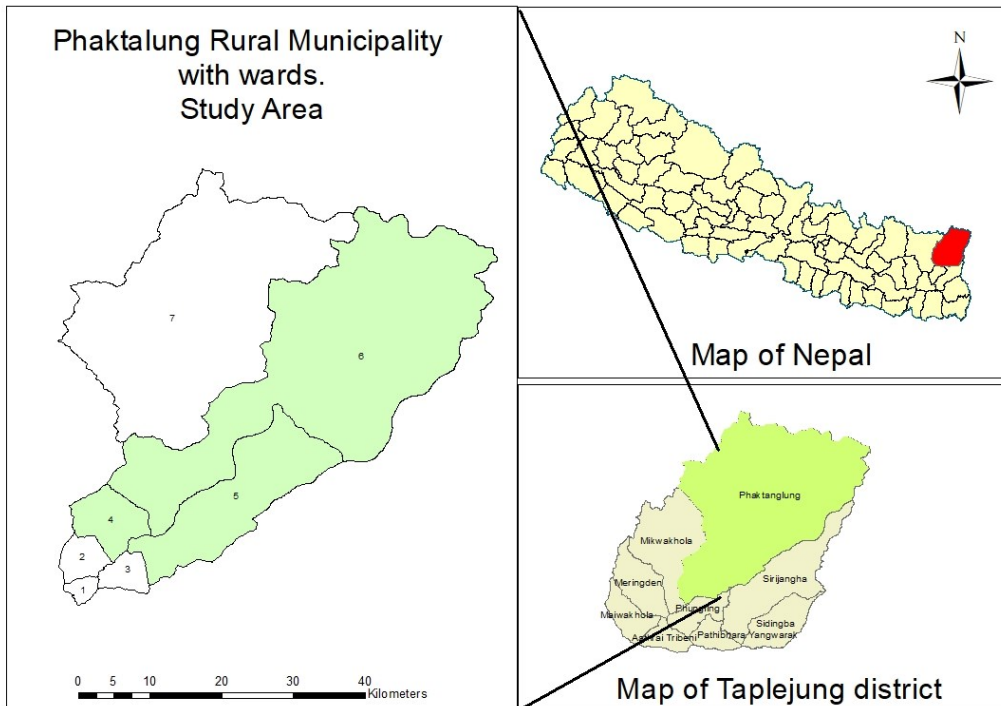
**Ramjer** lies at an altitude of 4,450 m lies in between two small mountains which is about at a walking distance of 3 to 4 hours from Cheram. The terrain of the area is flat with stones and pebbles on the top surface covered with soil and snow with no forest or bushes. On the north there are a snowy footpath leading towards Oktang and two days walk to South Base camp;

small hills on right side with glacier on the east; south also consist of the dry area with snowy tracks, swaps and lakes downwards toward Cheram and; west is covered with mild hill of stone and mud with small bushes.

Please see below maps for a visualization of the geographical area for study under this assignment.



**Figure 1: Geographical area (KBC South Base Camp Route) for study under the project (source: google earth)**



**Figure 2: Geographical area for study under the project**

## 2.3 Objective of assignment

The objective of this assignment is to carry out the detailed feasibility study and prepare a detailed project report (DPR) of three water supply projects in Torengden, Cheram and Ramjer.

## 2.4 Scope of works

For the assigned consulting service, the following activities and scope (but not limited to this) are expected to be accomplished by the consultant:

- Carry out socio economic survey in order to collect socio-economic data of the project area. The survey will determine existing level of services and coverage, income and other poverty indicators, socially vulnerable groups (including indigenous people) and willingness to pay;
- Carry out detail survey of three projects in presence of representative of Kanchenjunga Conservation Area Management Council (KCAMC), Water Users and Sanitation Committee (WUSC) and Samriddha Pahad to identify water source, transmission route, different structures & their locations, service area and other design parameters;
- Ensure the technical aspects (Water and sanitation infrastructure) along with social dynamics, livelihood patterns, gender, social inclusion and protection issues are discussed during the survey;
- Prepare detailed design of the schemes using appropriate design software;
- Prepare GIS or GPX Location Layout including the details of the project distribution and transmission network;
- Prepare detailed Layout Plan and Flow Diagram along with Rural Municipality boundary, name of remarkable places, major civil components etc;
- Prepare working drawings of proposed civil components and its detail layout plan according to site condition.
- Prepare detailed cost estimate of the schemes as per the rate of palika, KCAMC or Taplejung district rates of FY 2080-81
- Prepare a detailed project report for each water supply project

## 2.5 Approach/Methodology

The methodology adopted for conducting detailed field study and survey for preparing a detailed engineering design report should be based on wide community participatory approach. The detailed field assessment and consultation meeting shall be carried out in consultation with local users, KCAMC and WUSC personnel. The detailed study report should strictly follow the departmental design guidelines and Government of Nepal (GON) directives. The consultant should adopt appropriate methodology to achieve the set objectives. Therefore, the approach and procedures should confirm with the provisions of the above-mentioned documents.

### 2.5.1 Inception Meeting

The consultant should attend an inception meeting with Samriddha Pahad team at SP office in Kathmandu once the contract is signed for the assignment. This meeting will provide the work order to the consultant for further proceeding.

### 2.5.2 Desk Study

The desk study shall be started immediately after the inception meeting and shall consist of, but not limited to, the following activities:

- The consultant shall collect and review all previous study reports and maps prepared by SP and other concerned office that are made available and relevant.
- A work plan shall be prepared to carry out field work/detailed feasibility survey for preparing the detailed project report of the proposed three water supply schemes;
- The consultant shall prepare the survey forms/templates as required before departure to field works;

### **2.5.3 Field Assessment**

In consultation and thorough participation of the users, WUSC, ward committee and KCAMC personnel, the consultant shall conduct the field assessment works followed by desk study, focusing on the following activities:

- Assessment of the beneficiary service area (project area);
- Joint field verification in presence of representative of KCAMC and Water Users and Sanitation Committee (WUSC) to identify water source, transmission route, different structures & their locations, service area and other design parameters;
- Carry out the detail engineering survey;
- General geological and environmental study of the service area;

### **2.5.4 Detailed analysis, designing and report preparation**

Based on the documents review and field assessment, the following works have to be carried out by the consultant:

- Detailed design of all structural components of the project;
- Water demand and supply analysis including operation and maintenance cost;
- GIS or GPX Location Layout including the details of the project distribution and transmission network.
- Detailed Layout Plan and Flow Diagram along with Rural Municipality boundary, name of remarkable places, major civil components etc.
- Working drawings of proposed civil components and its detail layout plan according to site condition.
- Detailed cost estimate of the schemes as per the latest rate of palika or Taplejung district rates for fiscal year 2080-81.

## **2.6 Detailed Engineering Study Design Report**

The detailed study report will highlight all the listed issues and shall include the site map marked on a district map for each water supply project. The report shall comprise five volumes as described below:

Volume I: Project Summary, Socio-Economic Report, Hydraulic, Structural Designs

Volume II: Abstract of Costs and Quantities, Rate analysis, Annexes / Appendices

Volume III: Drawings and Maps

Volume IV: BOQ and Specifications of items (if not covered by Standard Specifications)

Volume V: Standard Bidding Documents in PPMO's Format

The further details of these five volumes have been presented in **Annex-1**.



## 2.7 Reporting

The consultant has to prepare and submit the reports as follows within the time frame specified below:

- **Two** hard copies and a soft copy of the inception report will be submitted to SP within **7 days** from the date of work order issued. Comments and suggestions on the inception report will be provided to the consultant within **one week** from the date of reports received;
- **Two hard** copies and a soft copy of draft report will be submitted to the SP within **45 days** from the date of work order issued. The draft report will be on 5 Volumes as: Volume I- Project Summary, Socio-Economic Report, Hydraulic, Structural Designs, Volume II - Abstract of Costs and Quantities, Rate analysis, Annexes / Appendices, Volume III – Drawings and Maps, Volume IV- BOQ and Specifications of items, Volume V- Standard bidding documents.
- **Four copies** of Final Detailed Project Report along with necessary amendments to incorporate comments and suggestions on the draft report presentation and comments by SP will be submitted within **60 days** from the date of work order. Final Report will also be on five Volumes as Volume I- Project Summary, Socio-Economic Report, Hydraulic, Structural, Process (unit operations) Designs, Volume II - Abstract of Costs and Quantities, Rate analysis, Annexes / Appendices, Volume III – Drawings and Maps, Volume IV- BOQ and Specifications of items and Volume V- Standard Bidding Documents.
- Detailed Project Report (DPR)s shall be computer printed on A4 size photocopy paper or other appropriately sized photocopy paper and photocopied with standard covers and binding. The cover sheet will include the name of KCAMC, SP, name of the project, Rural Municipality /Municipality with covered ward nos., name and address of consultancy firm and month and year of report submission.
- The DPR report should be prepared for each water supply project separately.

Note: Draft Reports should be presented to concerned stakeholders including SP team and comments received must be incorporated in final report. The final presentation of DPR will be held at SP office in Kathmandu before finalizing the Detail Project Report. The presenter of the presentation must be team leader or water supply designer engineer whom is proposed on Request for Proposal (RfP) by consulting firm.

## 2.8 Time Schedule

The consultant shall commence the work from the date of signing of the agreement and should complete within the period mentioned in the agreement. The duration of the assignment shall be maximum of **2 months** from work order date.

## 2.9 Defect Liability

The consultant shall be responsible for the correctness of the data and calculations presented. If any discrepancy is found in the field data and calculations even after the submission and acceptance of the final report, the consultant shall review the data, repeat the field verification work if necessary and furnish the proponent with the revised data at no extra cost.

## 2.10 Copy right

The study report and raw data submitted to the proponent would be its sole property. The consultant will have no right to copy, reproduce, reprint and present any part of the raw data and the report in any form (Digital or analogue) without the prior permission of proponent.



## 3 The Services

### 3.1 Documents to be submitted

Interested consulting firms are requested to submit the following documents;

- Technical and financial proposal (double enveloped, hard copies or electronically) detailing the approaches/methodology, work schedule, human resources etc.;
- Experiences of the firm;
- Team composition together with their CVs;
- Firm registration with renewal;
- Tax clearance certificate of previous three FYs;
- Two relevant sample DPR reports of rural water supply project;

Document shall be submitted at following address;

**Address:**

Samriddha Pahad  
Sanepa-2, Lalitpur Nepal  
+977 01-5904990, 5904991  
info@spnepal.org

### 3.2 Key requirement and qualification of consulting firm

The following are the major competencies of the consulting firm;

- Demonstrable expertise on detailed feasibility study and DPR preparation of engineering projects; water supply, buildings, waste management, drainage management and also conducting socio-economic surveys/studies in rural parts of Nepal;
- Experience in managing and coordinating consulting assignments;
- Ability to write high quality, clear, concise reports in English

The qualification and experience required for key consultant personnel are given in the table below.

S. No.	Specialist	Inputs	Qualifications and Experiences required	Level of expertise
1	Water Supply and Sanitation Design Specialist/Team Leader	Field works plus desk-based inputs	Graduate/post graduate Civil Engineer with at least 7 years of relevant experience in survey, design of rural/ semi-urban water supply systems, preferably with experience as a WSS Engineer in at least 3 medium sized WS projects.	Senior-level
2	Civil Engineer	Field works plus desk-	Bachelor in Civil Engineering with at least 5 years of relevant experience for cost estimate, bill of quantity of rural/ semi-	Mid-level

S. No.	Specialist	Inputs	Qualifications and Experiences required	Level of expertise
		based inputs	urban water supply systems, preferably with experience as a WSS Engineer in at least 3 mediums sized WS projects.	
3	GIS Expert	Desk-based inputs	A Graduate Civil Engineer/other discipline with GIS training and 5 years of experience on GIS and satellite imagery in various civil Engineering projects	Mid-level

The above proposed human resources who are assigned for field works should have an experience of working at high altitude as the project areas ranges from 3,000 m to 4,500 m of altitude.

### 3.3 Payment Schedule

If not mentioned otherwise in the contract documents, the mode of payment for the assigned task will be as per the following schedule:

- First installment, 20% of the total amount (Excluding reimbursable costs and taxes) upon submission and acceptance of Inception report.
- Second installment, 25% of the total amount (Excluding reimbursable costs and taxes) upon completion and submission of document for field works;
- Third installment, 25% of the total amount (Excluding reimbursable costs and taxes) upon submission and acceptance of draft report of DPR;
- Final or remaining 30% of the total amount (Excluding reimbursable costs and taxes) upon submission and acceptance of final DPR report.

### 3.4 Expenses/logistics

The SP office shall provide daily subsistence allowances (DSA) and accommodation as per SP's policy to the survey team. Other logistics arrangement shall be made in mutual understanding as and when required.

# Annexes:

## Annex-1: Details of Detailed Engineering Study Design Report

### **VOLUME I**

#### **A) Project Summary**

##### a) Salient features:

- Salient Features of Project

##### b) Project Costs:

- Summary of Project Costs
- Operation and maintenance costs: sustainability analysis if required
- Economic Internal Rate of Return (EIRR), Financial Internal Rate of Return (FIRR), cash flow, cost recovery (min. 30%) analysis with best option

##### c) Introduction/Background Information/Brief Description:

- Project area: location, accessibility
- Physical features: topography, climate, vegetation etc.
- Socio-economic conditions: ethnic composition, gender distribution, occupation, educational and health services, socio-economic activities etc.
- Existing water supply situation: quantity, general quality, hardship, service level.
- Existing sanitary environment: general practices and conditions regarding personal, household and community hygiene and sanitation

##### d) Project Features/Details:

- Proposed scheme/s: number and name of scheme/s, type of system
- Proposed water source/s: yield, location, protection and conservation measures, water right guarantee
- Water quality: physical, chemical and microbiological qualities, remedies for quality improvement as per expected service level.
- Technology adopted: discuss with justification, alternatives
- Design criteria: give justifications if necessary
- Population coverage
- Water Demand
- Components of the project
- Sanitation: methods to be adopted for sanitation promotion
- Distances for transportation of local materials, nearest market and road head and distances involved for importation of materials
- Remarks and conclusion

##### e) Methodology

- Standard design guidelines should be followed as far as practicable;
- Population projections will normally take into account the Rural Municipality /Municipality growth rate. Population forecast should be based on technical background. The population growth rate should be justified and relevant.

## **B) Socio-Economic Report, Hydraulic, Structural Designs**

- a) Design Parameters
  - Demand, Discharge, Growth Rate, Peak Flow, Population forecasting etc. adopted.
  - Characteristics and type of materials adopted with its justification.
  - Loads (EQ, wind load, Dead and Live load etc.) considered with justification.
  - Design Period.
  - Factor of Safety adopted for relevant structures.
  - Assumptions (if any) with its justifications.
- b) Introduction and necessity of standard code of conducts adopted for design.
- c) Design Calculations.
- d) Justification and comments on codes, design procedure, method & result adopted & Limitations.
- e) Social report on project with description of social issues, Demographic features, social analysis and all necessary data and analysis report as per described under approach and procedure topic.
- f) Financial and Economic data with complete analysis as described in approach and procedure topic.

## **VOLUME II**

### **Abstract of Costs and Quantities, Rate analysis, Annexes / Appendices**

#### **a) Abstract of Costs and Quantities shall consist of**

- Cost estimate
- Quantity estimate
- Rate analysis: basis for calculations

#### **b) Methodology**

- Rates of locally available construction materials such as stone, sand, aggregates and timber are worked out summing up the cost of collection of materials and transportation cost (manual or vehicular);
- Rates of labour and non-local construction materials are adopted from palika/district approved rate adding the transportation cost (manual or vehicular);

- Unit rates of relevant work items are developed according to the GON and departmental norms adding 15% contractor's overhead in the total cost of materials and labors;
- Quantities of items for each component are calculated from corresponding drawings;
- Detail quantity and cost of local/non-local material, skilled/unskilled Labour has to be calculated from quantity of items for each component.
- Fittings with required size and quantity for each component are estimated separately;
- The costs of proposed components are estimated using worked out unit rates separately for each component with an addition of 13 percent value added tax (VAT) in total cost;
- The cost of other required trainings and observation trips for capacity building as well as knowledge transfer to WUSC and consumers has to be included as per demand of mass meeting and community interaction.
- Scheme costs are worked out summing up the costs of components included in the scheme; and the project costs, summing up the costs of the schemes;
- Grand total of the project cost should be worked out adding up 5 % as contingencies for miscellaneous minor expenses, 10 % price adjustment and 10 % physical contingencies on the total project costs or as applicable;
- The cost to be borne by SP, KCAMC and the community in each scheme and project in total should be summarized in a separate sheet listing the item of works and estimated costs for community contribution.

**c) Appendices:**

Appendices shall contain the following documents:

- Name of user's association members, VMWs, Sanitation motivators, etc.;
- No source dispute guarantee from Rural Municipality/KCAMC;
- Assurance letter from Rural Municipality/KCAMC/WUSC for land provision for construction;
- Community contribution guarantee letter from WUSC;
- Guarantee letter from WUSC for undertaking the responsibility of project operation and maintenance upon commissioning, cost sharing & cost recovery of at least consumer's part (20 %);
- Approved district/palika rates of materials and labours.

**d) Annexes:**

For annexes consultants should follow the standard formats developed by DWSS/PMO. In case, if there is no format for any annex, consultant can provide data in easily comprehensible format.



Annex-1	General information
Annex-2	Existing situation of water supply & sanitation in the project area & Rural Municipality
Annex-3	Proposed water sources
Annex-4	Household and population survey
Annex-5	Existing public institutions in the project area
Annex-6	Household and population projection
Annex-7	Total water demand and water flow calculation
Annex-8	Storage tank sizing
Annex-9	Hydraulic design of pipeline
Annex-10	Layout plan
Annex-11	Schematic flow diagram
Annex-12	Water sample analysis report
Annex-13	Financial Analysis and affordability
Annex-14	Name and persons contacted during survey
Annex-15	Tracking of main structures and pipe line alignment in GPS
Annex-16	Social map
Annex-17	GIS data
Annex-18	Hydro-geological (Secondary/Reference) Report, if applicable
Annex -19	Soil test report, if applicable

### **VOL III**

#### **Drawings and Maps**

The following drawings, complete and clear, shall be submitted in the report:

##### **a) Location Map**

- District map shall be used for the location map. The main structures shall be located in contour map.

##### **b) Layout Plan**

The plan shall be drawn free of scale in separate sheet for each scheme and should give the following information:

- Name, type and safe yield of source;
- Location of Intake, Reservoir and Public Tap Stand Posts;
- Pipe lengths and relative elevation difference between the structures provided, such as Intake, Sedimentation Tank, Break Pressure Tank, Reservoir, Distribution Chambers, Crossings, etc.;
- Name of village/community, Ward no.;

- Prominent community buildings and institutions;
- Natural water bodies such as river, stream, lakes and ponds, if any;
- Major Roads, Highways.
- Layout Plan must be in GIS format or GPS format.

**c) Water Flow Diagram**

The diagram should contain the following information:

- Pipe lengths and size, type and class of pipe used in each segment as per design;
- Water flow direction in each segment from intake to last point of distribution;

**d) L-Section of pipeline**

Longitudinal profile should be plotted for complete pumping, transmission and distribution pipelines with detail topographic elevations in a vertical scale of 1:1000 to 1:2000 and horizontal scale 1:5000 to 1:10000. It shall show the following:

- Static hydraulic line and hydraulic gradient line;
- Intake, Reservoir, Sedimentation Tank, Break Pressure and Distribution Chambers, air valves, washouts and taps;
- Elevation, total length, partial length, type of soil, discharge and size, type and class of pipe.

**e) Structural Drawings**

Structural and working drawings of relevant civil structures in a scale as specified in Standard Drawings.

- Details of all junctions and chambers with pipe size and fitting lists with drawing should be provided.

**f) GIS map**

GIS map in a scale of relevant project with all necessary details regarding schemes and project area.

**g) Social map**

Social maps of the project area in a standard format showing all necessary social and community features

**h) GPS Location**

GPS location of all major structures and transmission lines at interval of 200 m (extra position should be provided if change in direction) should be provided.

**i) Contour maps**

Contour maps of the area where major structures are constructed should be provided.

**VOL IV**

### **BOQ and Specifications of items (if not covered by Standard Specifications)**

This part should contain;

- BOQ/Price Schedule
- Specification (General Specification of items not covered by Standard Specification document of PPMO)
- Annexes.

### **VOL V**

This Part Should Contain:

- Standard Bidding Documents in PPMO's Format
- Compilation of Technical specification and drawing
- Item wise Bill of Quantity
- Work Schedule in excel Format
- Calculation of Bidding Parameter in Excel format.

(Note: - All documents should be in PDF format and need to be in upload able size and format. Size of compiled drawing should not be more than 5 MB. Bill of Quantity should be PPMO's Excel format and should not be more than 1 MB in size. Abbreviation should be in word format and not more than 1 MB in size.)