

# 3AAMCHOWK RURAL MUNICIPALITY

Bhojpur, Province no. 1

## Terms of Reference

For  
Preparation of Detailed Project Report for

## RURAL MUNICIPAL WATER SUPPLY SYSTEM

### 1. BACKGROUND

**Aamchok** (Nepali:- आमचोक) is a rural municipality (गाउँपालिका) out of seven rural municipality of Bhojpur District of Province No. 1 of Nepal. There are a total of 9 municipalities in Bhojpur in which 2 are urban and 7 are rural.

According to MoFALD, Aamchok has an area of 184.89 square kilometres (71.39 sq mi) and the total population of the municipality is 20380 as of Census of Nepal 2011. Wasingtharpu, Yoo, Dummana, Thidingkha, Pawala, Dewantar, Balankha and Pangcha VDCs were merged to form AAAMCHOWK RURAL MUNICIPALITY. Balankha is the Headquarter of this newly formed municipality.

Project Location:

**Aamchowk Gaunpalika**

आमचोक गाउँपालिका

**Rural Municipality**

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Balankha (center of Aamchok)



## Aamchok Gaunpalika

Location in Province No. 1

Coordinates:  26°59'24"N 86°58'48"E Coordinates:  26°59'24"N

86°58'48"E

**Province** Province No. 1

**District** Bhojpur

**Wards** 10

**Established** 10 March 2017

**Government**

- **Type** Gaunpalika
- **Chairperson** Mr. Ashok Rai (NCP)
- **Vice-chairperson** Mrs. Sita Rai (NCP)

**Area**

- **Total** 184.89 km<sup>2</sup> (71.39 sq mi)

**Population (2011)**

- **Total** 20380
- **Density** 100/km<sup>2</sup> (260/sq mi)
- **Time zone** UTC+5:45 (Nepal Standard Time)
- **Postal Code** 57000
- **Headquarter** Balankha

## 2. OBJECTIVES :

The overall objective of the assignment is to prepare a DPR for the AAMCHOWK RURAL MUNICIPALITY, which the municipality can use to appraise the Project and take a decision on the prospective financing. AAMCHOWK RURAL MUNICIPALITY will use it in its process of approving capital grant allocation in accordance with the budget legislation and rules of the Programme. AAMCHOWK RURAL MUNICIPALITY will share the report with the regulator with the purpose of approval of long-term tariffs.

Specific objectives of the assignment shall include, inter alia:

- identify and assess a detailed Priority Investment Programme (“PIP”) to be implemented over the next 3 years including technical feasibility assessment and justification of high priorities in terms of economic and financial internal rates of return (“EIRR” and “FIRR”) and identify key cost reduction elements;
- Financial analysis of the budget of the City and preparation of its financial projections;
- Prepare affordability analysis for various consumer groups in accordance with the national methodologies, including data collection, tariffs affordability calculation and calculation of the increase in potential payments to those groups which would be affected, according to national social support methodology.
- determine an efficient procurement and implementation strategy for the PIP;
- Identify, assess and elaborate local requirements necessary for obtaining the approvals from the Expertise.
- Identify source for the drinking water supply of the AAMCHOWK RURAL MUNICIPALITY.
- Design the infrastructures required for the improvement of drinking water supply distribution status of the AAMCHOWK RURAL MUNICIPALITY.
- Identify and provide complete detail designs for the filtration of the drinking supply of AAMCHOWK RURAL MUNICIPALITY.

## 3. SCOPE OF WORK

In order to meet the objectives above, the Consultant shall undertake the following tasks:

- 3.1: Baseline Study
- 3.2: Technical Assessment
- 3.3: Long term investment strategy
- 3.4: Priority Investment Programme (“PIP”)
- 3.5: Financial analysis
- 3.6: Environmental and social assessment (“ESA”)
- 3.7: Complete Detail design Drawing and Estimate of all related structures.

### **3.1 Baseline Study**

This task involves the review of the present management practices of the AAMCHOWK RURAL MUNICIPALITY and status of the water and wastewater services in the place so as to identify and assess any risks that are associated with the AAMCHOWK RURAL MUNICIPALITY and their existing operations. This review shall allow the AAMCHOWK RURAL MUNICIPALITY to better understand the present situation in institutional, legal and financial, as well as technical and environmental and social terms. The Study shall also identify respective needs and concerns of different disadvantaged groups and/or those with less voice, such as women, to be addressed in the design, implementation, and monitoring and evaluation of the project.

The following shall, *inter alia*, be addressed:

#### 3.1.1. Socio-Economic

- Data Based on 3-5 years of historical data and information readily available (data generated by the AAMCHOWK RURAL MUNICIPALITY, and other relevant sources) the Consultant shall compile and present socio-economic data of interest for and relevant to water and wastewater operations, *inter alia*: Present analysis on population, including historical development (the number of people, general spatial distribution, in and out migration, minority and vulnerable groups, etc.), trends, growth rates, and review of proposed municipal development plans to obtain basis for population projections.

- Compile and present sex disaggregated data on household incomes and expenditures, including income and expenditures per decile, household sizes, number of breadwinners, average expenditures for essential goods, profile and geographic distribution of poverty, percentage of single-headed households, people living with disabilities, war veterans, and any other circumstances, etc.
- Establish a methodology for affordability analysis with the EBRD's Office of Chief Economist prior to commencing this analysis. The affordability analysis will be based on desk top research and available data.
- Present an overview of consumption behaviour of the City, particularly water consumption and level of awareness on efficient water use.
- Analyse and present health information with regard to any adverse health effects related to the lack of or insufficient quality of water and wastewater services disaggregated by sex and other relevant socio-economic and demographic variables.

3.1.2. Present an overview of consumption behaviour of the rural municipality, particularly water consumption and level of awareness on efficient water use.

Organizational and Institutional Review Taking into account available information, the Consultant shall describe the organization and management systems, its relationship with its owner and in general terms the legal framework in which it is operating. The following shall, inter alia, be carried out/addressed:

- Describe the legal and institutional framework governing the status and operations (legislation, statutes, service agreement etc.) and define, if any changes needed.
- Describe the influence from applicable legislation on the operations, particularly any price regulation mechanisms (e.g. tariff regulation), and identify legal requirements influencing the implementation of the investment programme.
- Describe organization, number of personnel, number and percentage of women and men in total staff count as well as across all levels/categories, etc.
- Identify any potential employment opportunities for women as part of the new services to be offered, if applicable.
- Describe the ownership of the Company and the Company assets, and identify to what extent the ownership will affect the implementation of the Project.
- Describe the relationship with the owner, and in particular how the owner governs the Company.
- Describe the efficiency of the existing organizational structure and identify what changes are needed.
- Identify any legal requirements for the implementation of the Project.

- Identify shortcomings of the current organizational/institutional framework and make recommendations how to enhance them.
- Identify shortcoming of the current governance structure, and propose feasible improvements in the medium term.
- Identify which stakeholders (non-governmental organizations, academic community, donors, local experts, the media, users' groups, etc.) are working on issues related to water supply broadly and more specifically, on sustainable water supply, gender equality goals and access-related questions.
- Identify potential linkages that could be developed with stakeholders, such as with women's groups, in order to incorporate their concerns into the Project, so as to improve communication, information and services and to better reach out to women or other user groups.
- Describe any interactions between the management and representatives of consumer groups and other stakeholders.

### 3.1.3. Key Performance Indicators

The rural municipality wishes to improve its contractual relations and perform regular assessment of its activity based on the KPIs. These will also be used by the organization in its information disclosure practices to the end-users of services. The tasks included should be as a minimum, but not limited to, the activities below:

- Identify calculation methodologies for the KPIs;
- Provide to the organization and the place examples of KPI introduction and its effect in other countries/municipalities;
- Present a set of KPIs and their desired levels separately during the investment implementation period and after investment completion.

### 3.1.4. Affordability

The Consultant shall establish at which levels tariffs would be affordable to users of water and wastewater services without causing a socially or politically unacceptable financial strain to the households. It is recognized that the tariff adjustments required for the realisation of the Project can only be determined in detail at a later stage of project preparation, but the Consultant should gain a clear understanding of the limits of affordability as early as possible.

For example, if the data is available, the Consultant shall examine differences in the affordability to pay for the services by different socio-demographic groups at both individual and household level (i.e. females and males; single-headed households, elderly; people living with disabilities, ethnic minorities and vulnerable groups in the community) and reflect them in the affordability analysis and the assessment. The Consultant should follow EBRD methodology on affordability analysis and assess and comment on the current social safety nets covering minimum water consumption of vulnerable households and households with specific needs.

### **3.2 Technical Assessment**

#### **3.2.1. Technical Assessment - Water Supply, Treatment and Distribution**

The Consultant shall describe and assess the key attributes of the current service and the service development over the last 3 years, including inter alia:

##### **Water services:**

- Service area: physical, administrative and political delineation.
- Consumers and connections: number of water connections by user category, i.e. domestic (also number of people served), industrial, commercial, official, public, etc.
- Quality of service provided: biological, physical and chemical quality of water provided specifically in terms of their compliance with relevant national environmental laws and regulations and World Health Organisation (“WHO”) guidelines; water availability to customers (pressure, reliability).
- Water quality monitoring: practices and standards.
- Present an overview of environmental conditions in the municipality, particularly water quality in water courses relevant to water intake and wastewater discharge.
- Water consumption: by major user category - domestic, commercial, public, industrial, including survey of major water users, particularly industry, in total volume and per capita water consumption for domestic use.
- Consumption metering: number of water customers with metered connections, by category of customer, the size, manufacturer and type of meters, evaluate the problem of the large number of buildings which have a single meter yet contain multiple apartment units, and standards and practices regarding the selection of meter sizes and repair, calibration, periodic removal and replacement of meters.



- For unmetered households (or other consumers), identify technical or financial difficulties if full coverage is not immediately possible.
- Type/quality of house connections and in house plumbing: review the size, type of material and general condition of a selection of service connections and household plumbing fixtures, with special emphasis on water losses.

#### Water supply system:

- Provide an inventory of systems and facilities: transmission, pumping, storage, distribution, main valves, hydrants, flow control and measurement devices, and present a schematic map
- Provide an inventory of existing water sources: chemical and biological quality of water, seasonal fluctuations in water quality and monitoring of water quality policies and practices.
- Comment on feasibility of usage of alternative water sources.
- Assess the main components of the system in terms of capacity, resource efficiency (energy, water and materials), technical and environmental performance, state of repair, maintenance practices, age (treatment plants, pipes, valves, pumps, etc.), adequacy, bottlenecks, etc. and outline and assess leak record and detection/repair policy.

#### Water treatment system:

- Provide an inventory of existing water treatment facilities, including water source works and disinfection facilities: type of process, capacity, flow, technological appropriateness, handling and storage of disinfectants, if available sludge handling and disposal, treatment effectiveness in terms of compliance with national, EU and WHO standards, instrumentation, condition, energy efficiency, water use efficiency, reliability and state of repair, maintenance practices, suitability, bottlenecks and quality and availability of materials and equipment.
- Taking into consideration potential for technological upgrade of water treatment facilities provide an opinion on whether capacity expansion of water treatment facilities is needed in the medium term.
- Provide a justifiable opinion on the choice of water treatment technology based on least cost approach (both, capital as well as operation and maintenance costs), which would achieve acceptable quality of treated water.
- Describe and assess necessity, capacity, effectiveness, health and safety risks, adequacy of sludge handling procedures.

- Assess the existing procedures for monitoring of water quality; standards and practices, process control.
- Assess whether the water treatment sludge management arrangements are environmentally sound and safe without risk to workers of the public and capable of meeting the applicable national and Equable environmental standards.
- Assess whether the reuse or recycling water of treatment sludge is technologically and economically viable and applicable in the place.

#### Water Distribution System:

- Provide an inventory of systems and facilities: transmission, pumping, storage, distribution, main valves, hydrants, flow control and measurement devices, and present a schematic map
- Assess the main components of the system in terms of capacity, resource efficiency (energy, water and materials), technical and environmental performance, state of repair, maintenance practices, age, quality of materials and equipment (treatment plants, pipes, valves, pumps, etc.), adequacy, bottlenecks, etc. and outline and assess leak record and detection/repair policy.
- Analyse operation of water network.
- Determine the potential for water consumption reduction by sectors if an acceptable demand management programme (including metering and leakage reduction) is implemented and provide an opinion on whether capacity expansion of water system is needed in the medium term.

### **3.3 Long term investment strategy**

One of the primary objectives of this DPR is to ensure that the proposed immediate investments do not steer system improvements and expansions into directions contrary to the long-term development needs of the system. The objective of this task is, therefore, to outline a longer-term investment strategy, which would lead to least cost improvement of water and wastewater services within existing financial constraints. This shall notably include:

#### 3.3.1. Service objectives, standards and policies

The Consultant shall prepare a short review and, if necessary, revision of proposals for the present service objectives and policies.

### 3.3.2. Long-term Investment Strategy

Different potential investment strategies or options shall be broadly outlined (and tentative cost estimates prepared) including at least: (i) a minimum cost facilities rehabilitation strategy (to maintain the increased level of service/repair established by the project); and (ii) outline of strategic development plans including improvement, rehabilitation and expansion over the next 15-20 years.

The Consultant will highlight available options on the basis of both financial and technical criteria and indicate the preferred one which could be further developed into the long-term investment programme. For this programme, the Consultant shall summaries in appropriate maps the location, capacity, and staging of major infrastructure components and to explain and justify the proposed course of action.

Particular attention shall be given to:

- Existing facilities and studies and projects already prepared.
- Examining alternative solutions within the context of existing system configuration and capacities.
- The rehabilitation, repair and upgrading of existing facilities and operational improvements.
- Least cost staging/phasing of system expansions.
- Maintenance and operation implications, specifically the effect of expected increases in the cost of electricity.
- Effects of conservation (demand management) and loss reductions on future system capacity requirements.
- The Consultant shall present the resulting annual cost savings.

### **3.4 Priority Investment Programme (“PIP”)**

Working from a draft outline strategic long-term investment programme identified above and other information available, the Consultant shall present, justify and develop in more technical detail the PIP for the period of 3 years.

### 3.4.1. Present and justify the PIP

The PIP shall be oriented towards revenue generating investments and maximization of operational cost savings and improved operational efficiency of the Company, improving and sustaining an improved service standard. The selection of all project components shall be clearly explained and justified within the context of the outlined strategic long-term investment programme and the budget proposed, as well as priority resource efficiency measures and environmental and social considerations.

The Consultant shall also develop a staging/phasing approach to deal with the issue of possible further budget constraints due to decreased affordability. Project components shall be shown to be part of least cost solutions (in terms of capital as well as operation and maintenance costs) in conjunction with acceptable technical standards (in terms of quality and reliability). Given limited capital grant availability and possible affordability constraints, the Consultant may present a few possible scenarios for discussion.

### 3.4.2. Detailed programme description and cost estimates

For each of the sub-components selected, reasonable estimates of quantities and costs based on applicable previous bidding experience in the country shall be prepared. Potential cost savings upon implementation of the Project shall be identified and estimated. An operational costs review shall be prepared and costs specified as either fixed or variable for each sub-component (sub-components shall be designed in a way to minimize foreign currency requirements in operation and maintenance costs - however, this should not happen at the expense of quality and reliability of services).

It is important that due care is shown in preparation of these cost estimates. Taxes, technical and financial contingencies are to be considered and specified. Financial contingencies are to be calculated based on an investment schedule.

## **3.5 Financial analysis**

### 3.5.1. Financial analysis of the Company

The financial viability of the Company and the Project shall be demonstrated by means of financial projection. The projections shall be fully consistent with the strategic development plan and be based on prudent assumptions on the revenues and expenditures.

### 3.5.2. Financial Analysis of Aamchowk

The purpose of this task is to assess the current financial capacities of Aamchowk to fully support operations and to finance the Project (and the minimum long-term investments). This analysis should notably include

- Assessment of the financial viability of the rural municipality via analysis of its (approved) annual budget
- Analysis and assessment of the debt profile of the rural municipality for the same period.

### 3.5.3. Financial model and economic analysis for the Project and the municipality

The Consultant will prepare a financial and economic model (using Microsoft Excel) that will be in line with the proposed long-term investment strategy (see Sec. 3.3) and PIP (see Sec. 3.4), covering a period of 10 years. The Consultant shall, taking into account the EBRD's environmental, technical and procurement policies and procedures identify those investments that best fit within the scope of the Project and within the estimated project budget. The Consultant shall prepare a report with justified recommendations for consideration.

The Consultant will have to carry out the following specific tasks:

- Set out the financial and economic rationales and justifications for the proposed Project components and proposed PIP and long term investment plan.
- Recommend the most economic financial structure for the Project, considering the technical and contractual structure proposed.

- Study and confirm the financial and economic viability of new and innovative technology, specifically in economic savings, to be achieved in the Project.
- Calculate and discuss sensitivity to changes in key income and expenditure variables, including fix and interest rates, and assess the risks for the Project.
- Estimate a 10-year outlook of the potential water, energy and – separately – maintenance cost reduction that can be achieved through the Project.
- Prepare a Cost Table, giving best estimates of the costs of project preparation including preparation of detailed design documentation, construction/implementation, works supervision costs, based on currently available information. Cost estimates should be presented separately for each segment, based on local or other relevant construction markets.
- Assess the financial impact of the Project by comparing the incremental costs (capital and recurrent) of the Project with the incremental revenues or savings it will generate and estimating the financial internal rate of return (“IRR”) and the economic rate of return on the investment (“EIRR”).
- Calculate all the financial ratios required to assess the financial feasibility of the Project from the organization's point of view.

### **3.6 Environmental and social assessment (“ESA”)**

Prior to undertaking the environmental and social assessment, the Consultant is required to confirm the scope of PIP and screen the Project proposal.

For the study, the Consultant should consider the following task:.

#### 3.6.1. Applicable requirements:

The E&S Assessment is to be carried out in accordance with:

- Applicable local, national and regional requirements, including those related with ESIA's / EIA's and associated public disclosure and consultation requirements.
- Relevant international conventions and protocols relating to environmental and social issues, as transposed into national legislation.

#### 3.6.2. Objectives of the E&S Assessment

The objective of the E&S Assessment is to identify and assess the potentially significant existing and future adverse environmental and social impacts associated with the Client's current

operations and the proposed Project, assess compliance with applicable laws determine the measures needed to prevent or minimize and mitigate the adverse impacts, and identify potential environmental and social opportunities, including those that would improve the environmental and social sustainability of the Project and/or the associated current operations.

The assessment process will be commensurate with, and proportional to, the potential impacts and issues of the Project and the Client's existing operations. The assessment will cover, in an integrated way, all relevant direct and indirect environmental and social impacts and issues of the Client's operations, the Project and the relevant stages of the project cycle (e.g. pre-construction, construction, operation, and decommissioning or closure and reinstatement).

The Environmental and Social Assessment (as defined in Section 3.6.4) will also determine whether further studies are required, focusing on specific risks and impacts, such as human rights and / or gender.

Specifically, the Consultant will:

- Identify existing and Project-related environmental and social impacts and risks.
- Describe and characterize a relevant environmental and social baseline commensurate with the risks posed by the current site operations and the Project.
- Assess potential gender aspects and priorities among nearby communities to understand women's and men's concerns (e.g. determine women's current activity schedules/ water use practices, attitudes towards public health etc.).
- Identify if any additional studies will be required to cover relevant aspects in greater detail (eg. biodiversity, resettlement, retrenchment, etc.). (Any such work will be commissioned under separate Terms of Reference).

## 4. Composition of Study Team :

The team of the consultant should consist of the following key personnel with adequate support staff.

1. Masters in architect ÷ sociology ÷ structure ÷ development studies ( Team Leader )
2. Civil Engineer : 2
3. Mechanical Engineer: 1
4. Business Analyst : 1
5. GPS Technician : 1
6. Surveyor : 3

7. Draftsman: 1

## 5. REPORTS :

The total work period for this project will be of 2 months after issuance of the work order. The consultant seeks to undertake the studies as per the work plan presented below:

### **5.1 Inception Report**

The purpose of inception report is preliminary to sketch out the final report. This report includes field activities, detail methodology, collection of secondary information, work plan and activities. The report includes data collection formats/datasheet and checklist which are necessary to prepare DPR. The formats and questionnaires will be used to collect required information.

The consultant has to submit THREE copies of inception report as per agreement made between us.

### **5.2 Draft Report**

The Draft Report contains both maps and reports. Detailed reports including process of preparation of DPR, detail findings. All the maps will be multi-colour .

The consultant will conduct one interactive one day workshop for acquiring comments/suggestions by involving related stakeholders. The consultant will submit THREE copies of the draft report after 45 days from the date of signing the contract.

### **5.3 Final Report**

The consultant is expected to prepare and submit the Final Report prepared in English. The draft Final Report should be duly presented before the client officials. Comments should be obtained on the draft design from client and stakeholders wherever applicable or necessary for its finalization. The consultant is expected to submit three set of final report in the text and one digital copy. The submission plan of the reports shall be as below:

All relevant data, drawings/maps, cost estimate should be duly included in the appendix. Up-to-date bibliography should also be included revealing the list of literatures, reports and other publications reviewed and referred. Name of the participants involved in report preparation, meetings and workshops should be duly acknowledged. Similarly, name of the officials and agencies met or interviewed should be duly compiled.



Summary of report submission and timeline has been shown in the following table:

S.No.	Reports	Period	Remarks
1	Inception report	After 2 weeks of signing the contract	3 copies
2	Draft Report	After 45 days of signing the contract	3copies
3	Final report	Within 2 months of signing the contract	3 copies

## 6. MODE OF PAYMENT

This is a lump sum contract for delivery of a defined set of outputs. Payments are made at percentages of the total contract value on the basis of the Consultant satisfactorily achieving the key milestones stated below.

SN	%	item
1	30	Upon Submission of Desk Study/Inception report
2	40	Upon Submission of Draft Report
3	30	Upon Submission of Final Report