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MINISTRY OF WATER AND ENERGY

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FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

MINISTRY OF WATER AND ENERGY

Terms of Reference

For

The Selection Consulting Services for the Feasibility Study and Detail Design Water Supply and Sanitation Project of Chagni Town, Koreb Rural and Baruda Rural WSSP

September , 2025

ADDIS ABABA, ETHIOPIA

Contents

1. Background Information

Ethiopia has set an ambition of becoming a middle-income country by 2030. In order to achieve this, huge attention has been given for the overall development of all sectors. Promoting drinking water and sanitation, and energy development; are among the key areas for the government's contribution in the achievement of this vision. The Ministry of Water and Energy (MoWE), as a key ministry of the FDRE, will provide the construction and expansion of the necessary infrastructures for the advancement of the daily life of the society. Due to high population and increasing demand for water supply, the Ministry of Water and Energy have been challenging by interruption of water supply services.

As a precondition for human life as well as human health, well-being, and economic development, access to drinking water is a major global concern and a key priority. In 2010, the United Nations recognized access to drinking water as a human right the provision of water supply services has far-reaching significance for all socio-economic and human development. However, a significant portion of the population has yet to access it globally in general or in developing nations in particular. Ethiopia is among the nations far behind in this respect. Likewise, the Amhara region has such low coverage in water supply access that the existing water supply provision is either not in adequate quantity or there is no provision for protected supply.

The consultancy will conduct a packaging feasibility study and detailed engineering designs for water supply and sanitation project in Chagni Town, Koreb Rural, and Baruda Rural. The study will ensure financial sustainability and a strong return on investment, supported by institutional and management assessments, policy and legal reviews, and evaluations of water security and sanitation, climate change resilience, and greenhouse gas (GHG) emissions assessment. The scope also includes engineering detailed design surveys, preparation of tender documents, and the development of optimal institutional and financing models to improve operational efficiency and enable timely procurement of contractors during the main project implementation.

The specific scope and scale of interventions will be defined based on the results of a Pre-Feasibility Study. Following this phase, a stakeholder workshop will be held to inform the final Feasibility Study and the preparation of detailed engineering designs for the water supply and sanitation project. The goal is to address the existing shortage of potable water and sanitation challenges. The program aims to deliver reliable water supply systems and improved sanitation facilities for both urban and rural communities, thereby enhancing living conditions, boosting productivity, and contributing to the country's overall development. The Consulting Firm will prepare all deliverables in alignment with the Terms of Reference (ToRs).

This initiative, led by the Government of Ethiopia through the Ministry of Water and Energy in collaboration with the African Development Bank (AfDB) under the African Water Facility program, aims to improve water supply and sanitation services in both urban and rural communities, contributing to better health and socioeconomic development.

The program will address the Bank's Water Policy (May 2021) and the Bank Water Strategy (2021-2025), which provides for improved access to water services, the African Development Bank Group's Strategy for Addressing Fragility and Building Resilience in Africa (2022-2026) and the Bank Group's Gender Strategy (2021-2025). It is aligned to the Bank Group's Climate Change Policy, which seeks to boost resilience and adaptation to climate change and reduce fragility.

Currently, the country is implementing GTP-2 plan of the water supply sub-sector since 2015/16, which runs up to 2020. The main objective of this plan is to contribute to the realization of the country`s overarching vision to become middle income country by 2025 through provision of access to safe, sustainable, inclusive and climate change resilient water supply, Sanitation and hygiene service to the people. Accordingly, the plan envisages to provide access to safe water overall for 37 million people of which 29.3 million are rural dwellers. The water supply service standard for GTP-2 period is elevated. The water supply service standard for rural water supply is 25 l/c/day within 1 km distance while the urban water supply service standard is formulated based on the population of the towns divided into 5 categories. Accordingly, the urban service standard is 100 l/c/day for category-1 towns/cities, 80 l/c/day for category-2 towns/cities, 60 l/c/day for category-3 towns/cities, 50 l/c/day for category-4 towns/cities, up to the premises and 40 l/c/day for category-5 towns/cities within a distance of 250m with piped system. Based on these water supply service standards the GTP-2 plan envisages to increase overall water supply access coverage to 83% of which 85% for rural and 75% for urban by 2020. In addition to improvement of water supply access, the plan includes various targets to enhancethe efficiency and sustainability of the service.

Besides the national plan, there are also international goals set for nations to mainstream in their national plans. In this regard, MDG was the international plan for the period of 1990 to 2015. Ethiopia has met the MDG target for 2015 in water supply. Currently, Sustainable Development Goal (SDG) for the period of 2016-2030 is the leading International Plan. Regarding water supply, this plan has set goal to achieve universal and equitable access to safe and affordable drinking water for all by 2030 (SDG 6.1). The service level for safe water supply under the SDG emphasizes on accessibility of water to the premises, availability of water when needed and safety on quality.

Hence, to deal with this problem potable water supply The Ministry of Water and Energy in collaboration with Amhara National Regional State and Benishangul Gumuz Region Water and Energy bureaus and has done the feasibility study and detailed engineering Design of the urban and rural Water Supply and Sanitation project was conducted.

1.1. Geographical location

1.1.1 Geographical location for Chagni town

Chagni town, one of the towns in the northwest of Ethiopia, is found in Guangwa Woreda, in the Awi Administrative Zone of the Amhara National Regional State. The historical foundations of the town show that it was established in 1950. The town has a longitude and latitude of 10°57′N, 36°30′E, and an elevation of 1583 meters above sea level. It is the administrative center of Guangwa Woreda. Changi town is at a distance of about 185 km from Bahir Dar, 60 km from Injibara, the zone capital, and 510km from Addis Ababa through an asphalt road.

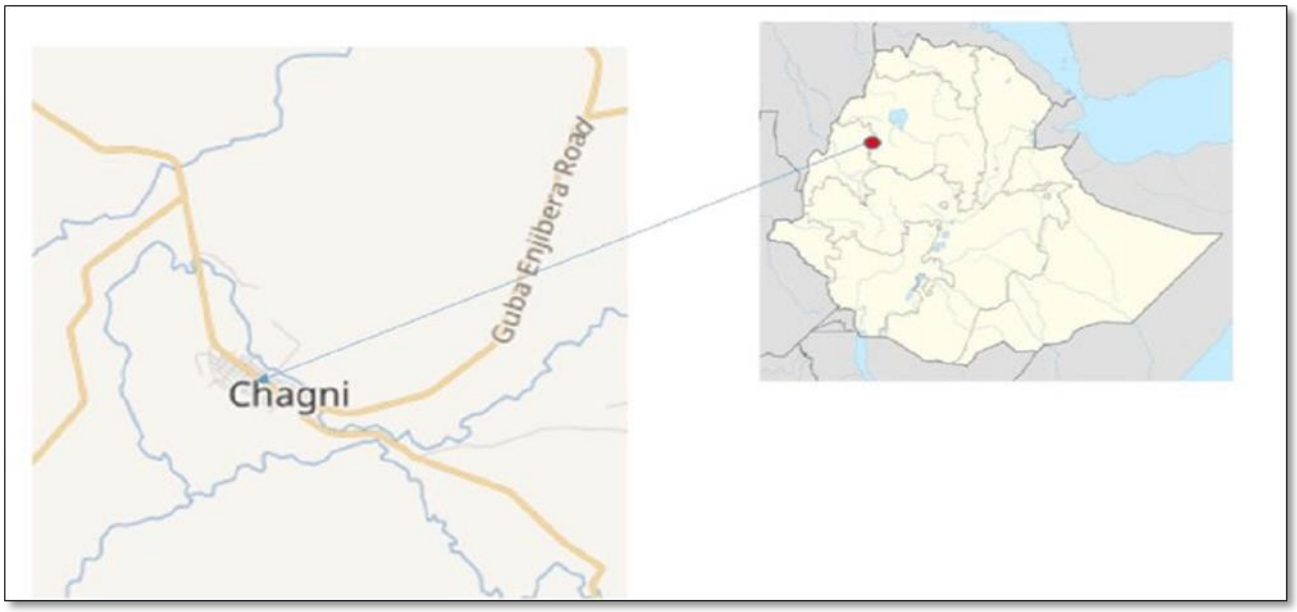


Fig.1. Location map of Chagni town

1.1.2 Geographical location for Korebe rural

Koreb woreda, found in the South Wollo Zone of Amhara National Regional State, at a distance of 200km far from the south wollo zone capital town of Dessie and about 600 km from Addis Ababa (capital city of Ethiopia) and it can be accessed by well align asphalt and Gravel Road. As per the information from the town administration office the total area of the town covers is about 296 ha and the geographical location is at 1247556 m N Latitude and 479733 m E Longitude and with an average elevation of 2,640 m.a.s.l.

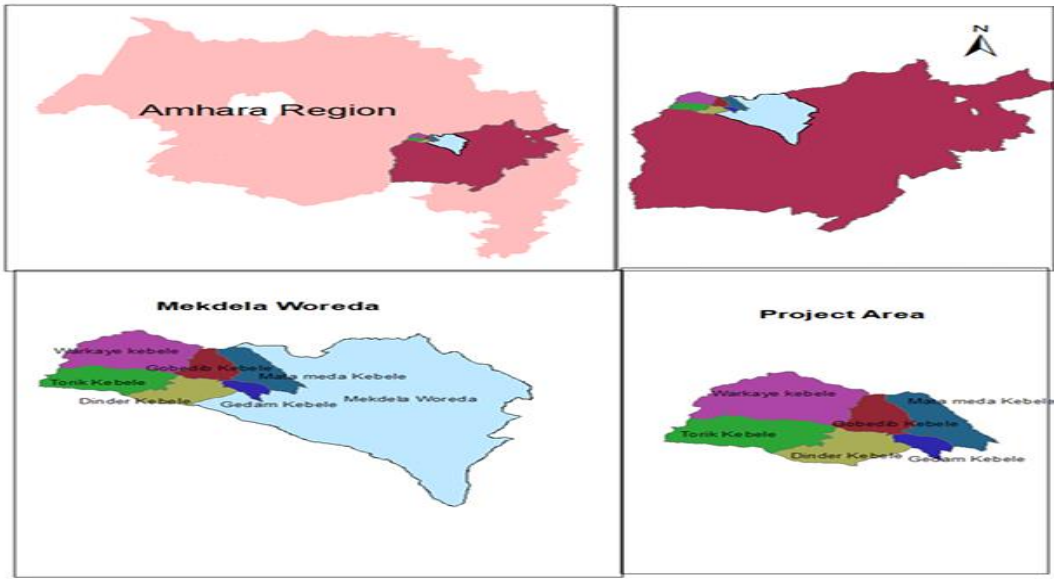
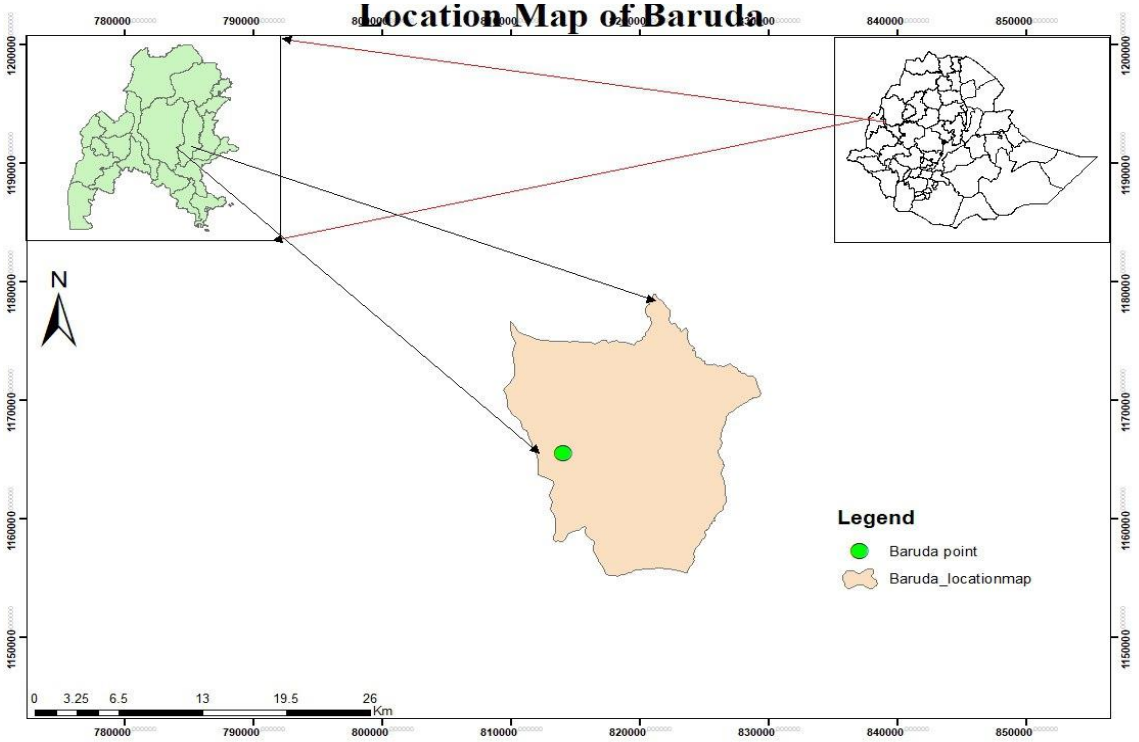


Fig.2. Location map project area

1.1.3 Geographical location for Baruda rural

Baruda Keble is located in Beneshangul-Gumuz Regional state, Metekel Zone, Bullen woreda, at a distance of 619 km from Addis Ababa and 520 km from the regional capital, Asosa. The general elevation of the surroundings of the rural town is in the range of 1360-1465 m.a.s.l.



1.2. Population

1.2.1. Population of Changi town

Based on the figure from central statics agency in 2023 G.C Changi town has estimated total population of 55,561 of whom 27,098 are men 28463 are women. Changi town administrative says total population of over 90,000 living in the town excluding over IDPs hosting the community socio economic development of the area is growing faster and faster so that the flow of the people to the town from any direction very high.

1.2.2. Population of Korebe rural

Base population of Koreb Multi Village in the year 2021 which is projected from Socio economic data is 65,821. Population projection has been made using Exponential increase method because of the fast increase of population of the town; accordingly, the total projected population at the end of the design period is calculated to be 82,255.

1.2.3. Population of Baruda rural

Population related studies are usually conducted for implementation of various projects in the country. Population is counted periodically by Kebele and Municipality. However, the central statistical Agency (CSA) is the recognized Ethiopian Authority to determine the official population figures and growth rates that should be taken for any development activity throughout the country. But in this design the population figure recorded by town municipality and health office is going to be used. This water supply and sanitation design project comprises of baruda town. Accordingly, the data of woreda water office, and Keble administration offices the total initial population size of the project area in the year 2017 E.C is 6521.

1.3. Existing Water Supply System

1.3.1. Existing Water Supply System of Chagni Town

According to the data obtained from the Chagni water utility currently, the town has a very large difference between supply and consumption demand. Actual water supply coverage is below 20%, and we supply water intermittently during a 2- or 3-week shift. The town source of water supply, which is currently functional, is from a 5-deep borehole source that yields about 28 l/s. The water from the borehole is pumped through the pressure line to the service reservoir. The pressure line covers a total length of 5 deep wells or around 15km. The town distribution water supply system has two circular reinforced concrete reservoirs with a capacity of 1000 m3 and 300 m^3 respectively. The distribution line consists of a branching and loop system for supplying water through the public fountain and yard connections by gravity to the community. As per information

obtained from the water service office, the existing distribution pipelines are DCI, GI, and HDPE pipe types with a total length of approximately 35000 m.

The current water supply encounters multiple problems, as stipulated hereafter.

Rapidly increasing water demand: Chagni Town is developing at an exceedingly faster rate with population inflows exerting pressure on the already stressed public water supply infrastructure. Right now, the coverage rate of commercial, and domestic properties in town, is about 20%. This means that a significant part of the population as well as commercial and activities did not have any water connection.

Insufficiency current water supply system: The current water supply was designed over many years ago for a very small population There are limited numbers of wells with inadequate potential yield and became a banded /either during drilling or after some years of service Depends on a limited ground water source only. Furthermore, there is frequent interruption of the sources, which reduced the actual production to be less than the expected amount. Also, not only water source shortage but also the electric power source is one of the serious issues to pump even the existing limited potential. This light of discouraged the attractive hotel tourism and investment to the town.

Lack of sufficient storage facilities: The current water system does not have sufficient storage capacities as per current population requirement.

Relatively old distribution system and frequent pipe bursts: Chagni town water supply network was reported to be approximately 35Km long. The majority of the pipes in the network are GI, UPVC pipes. The Chagni town network is relatively old and experiences frequent pipe bursts.

Unfair distribution of Water: The rate of meter connection and the spatial distribution of community attitude pipes or water points do not meet the demands of the community. The supply system covers mostly a small area of the town.

Limits to water consumption: Several physical and socio-economic influences limited water consumption by households in Chagni town. To mention some of them: inadequate supply and poor quality, the distance of housing from water point, unreliable supply due to weak pressure and frequent interruption etc. Between these influences, which limit the amount of water consumption, interruption of water service is a more serious problem. During unexpected water service interruption households meeting were multidimensional problems as stated in the previous units. The development of the town in terms of community household size and income has its own influence too upon the water consumption by households.

Loss by Leakage: water loss has further reduced the amount of water source that can reach the

customers. This challenge is aggravated by choice of unsuitable technologies that cannot meet appropriate standards. Actions to enhance sustainability of town water service systems must emphasize on high-quality of technology and development of supply chains in relation to technology that makes access to fittings easier and cost effective.

Revenue generation and financial sustainability: The key challenge to sustainably operate the water supply system is availability of water to supply to customers. Currently, the water supply capacity to supply water is too limited to meet the demand and thus cannot achieve economies of scale and generate sufficient revenues to meet the full cost that includes the investment cost.

1.3.2. Existing Water Supply Problems Koreb rural

With regard to the existing problems of the system, an effort was made to find out the major drawbacks of the water supply system and found that the main problems observed in the existing water supply systems. Based on the collected information some of the major water supply system problems are presented as follows:

Severe water shortage that can't cover the water demand of the town

Poor quality water, from spring and hand dug well the society used without disinfection

There is no piping system in the kebele and villages.

1.3.3. Existing Water Supply System Problems Beruda rural

The source of their day to day domestic consumption is from different inadequate and unsafe sources like hand dug wells SW and surface source of water like Shar River. The water service office serves the community by the three major modes of services namely public tap, yard connection and house connection. However, for Baruda Town the two modes of services (public water point, yard connection) selected based on the actual practice of users at present. In the study area there are traditional source users who have got water from river sources, hand dug wells and shallow well.

The existence of such type of users is due to no piped water supply system. However, after the implementation of the new project, other than affordability, all the hindrance to use proper water supply system will be solved. After the implementation of the project it is assumed that traditional source users will have the chance to use yard and public tap connections.

2. General Objective

To assess the WASH situation and prepare feasibility studies and detail engineering designs for stainable water supply and sanitation systems in Chagni, Koreb, and Baruda considering the national design criteria.

3. Specific Objective

- Asses and review the existing water supply and sanitation system
- Conduct source identification, technical, socio-economic, financial, institutional, and environmental assessments
- Prepare detailed designs, specifications, BOQs (both priced and unprized) and tender documents.
- Develop Climate Resilient Water Safety Plan (CR-WSP).
- Prepare ESIA, ESMP and RAP in line with AfDB safeguards.
- Develop business and financial plans to ensure cost recovery and sustainability.
- Strengthen local institutional and technical capacity.

4. Methodology

The assignment will adopt a participatory and integrated approach. It will include community engagement, technical surveys, stakeholder workshops, gender-sensitive planning, climate-resilient design, and alignment with AfDB procurement and safeguard policies.

5. Scope of the Consulting Firms Services

The Consultant shall provide comprehensive services covering feasibility, design, environmental and social safeguards, institutional strengthening, and business planning for **Chagni Town, Koreb Rural, and Baruda Rural Water Supply and Sanitation Projects**. The scope of services shall include, but not be limited to, the following:

1. Inception phase

- Upon the start of the assignment, the consultant shall familiarize itself with available the situation on the ground and relevant stakeholders in the project areas. The consultant will update and refine the methodology and work planning elaborated in the Terms of Reference. Upon completion of the Inception Phase the consultant is expected to submit an "Inception Report". This report will be presented and discussed with the client.

2. Feasibility Study

- Conduct baseline studies (technical, socio-economic, institutional, and environmental).
- Assess existing water supply and sanitation systems, service coverage, demand, and gaps.
- Analyze water source options (surface and groundwater) through hydrogeological and hydrological investigations.
- Undertake technical assessments of treatment, transmission, storage, and distribution systems.
- Identify and evaluate sanitation options (on-site and off-site solutions).

- Perform financial and economic analyses (cost-benefit, affordability, willingness-to-pay, and tariffs).
- Carry out institutional and management capacity assessments.
- Conduct gender and social inclusion analysis.
- Prepare preliminary design alternatives and recommend feasible options.
- Facilitate stakeholder consultations and validation workshops.

3.Detailed Engineering Design

- Conduct detailed topographic, geotechnical, hydrogeological surveys and energy source.
- Prepare detailed hydraulic, civil/structural, and electromechanical designs for:
  - Water sources (wells, intakes, spring development).
  - Transmission mains, pumping stations, treatment facilities, storage reservoirs.
  - Distribution networks (including public taps, yard connections).
  - Sanitation facilities (decentralized/off-site and on-site).
- Develop detailed drawings and specifications in accordance with national standards and AfDB requirements.
- Prepare Bills of Quantities (BOQs) and cost estimates.
- Develop an Operation & Maintenance (O&M) plan, manual and asset management framework.

4.Tender Document Preparation

- Prepare technical specifications, BOQs, and bidding documents in accordance with Ethiopian procurement law and AfDB standard bidding documents.
- Provide confidential cost estimates.
- Support the client during procurement (clarifications, addenda, evaluation assistance etc…).

5.Environmental and Social Safeguards

- Conduct Environmental and Social Impact Assessment (ESIA) in line with Ethiopian law and AfDB's Integrated Safeguards System.
- Prepare Environmental and Social Management Plan (ESMP).
- Develop Resettlement Action Plan (RAP).
- Prepare Occupational Health & Safety Plan and Emergency Preparedness & Response Plan.
- Integrate gender mainstreaming strategies and prepare a Gender Action Plan.

6.Climate Resilience and Risk Management

- Conduct Climate Risk Assessment (CRA).
- Prepare a Climate Resilient Water Safety Plan (CR-WSP), including risk identification, hazard mitigation, emergency planning, and monitoring.

7.Business Plan & Financial Sustainability

- Conduct financial and tariff studies (affordability, cost-recovery, subsidies if applicable).
- Prepare a business plan for the water utilities, including:
  - Revenue projections, O&M cost recovery strategies.
  - Institutional and governance arrangements.
  - Investment and financing plan for short-, medium-, and long-term.
- Propose models for Public-Private Partnerships (PPPs) or community-based management where applicable.

8.Capacity Building & Knowledge Transfer

- Train staff from MoWE, regional bureaus, and local utilities in:
  - O&M of water supply and sanitation systems.
  - Financial and tariff management.
  - Gender mainstreaming and community engagement.
  - Climate resilience and CR-WSP implementation.
- Organize workshops and experience-sharing sessions with stakeholders.

9.Reporting & Documentation

- Prepare and submit the following reports:
  - Inception Report.
  - Draft and Final Feasibility Study.
  - Draft and Final Detailed Engineering Design Reports.
  - Draft and Final ESIA, ESMP and RAP Reports.
  - CR-WSP Report and Business Plan.
  - Tender Documents.
- Ensure separate reports are submitted for each project area (Chagni, Koreb, Baruda).

6. Expected deliverables

S/N	Report/Document	Time in weeks	No. Copy (soft and hard)	Remark
1	Final Inception Report	6	12HC + 12SC	Before final inception report submit draft report for review
2	Final Feasibility study	18	12 HC + 12SC (separately for each site)	Before final feasibility submit draft feasibility report for review (3 Doc. For draft and 3 for final)
3	Final and acceptable Detailed Engineering Design, ESIA, ESMP and RAP, CR-WSP Report and Business Plan Reports	20	36 HC + 36 SC (separately for each site)	Before final detailed Engineering Design, ESIA, ESMP and RAP, CR-WSP Report and Business Plan Reports submit draft report for review (18 Doc. For draft and 18 for final)
4	Final Tender Documents and capacity building	4	9 HC + 9 SC	Before final Tender Documents 3 Doc. Draft report submit for review

7. Consulting Firms Team Expert Composition

The Consulting firm shall be legally established firm and committed to put together a team of the required qualification with direct experience and excellent understanding of technical, economic, financial and environmental and social issues related to water Supply, Sanitation and hygiene.

Resumes of the qualifications and experience of the key members of the team will be the key criteria used to evaluate proposals.

Composition of the consultant's staff Table Consulting Firms Team Expert Composition

S/No.	Position	No of person	Qualification and Experience	Person Month
1	Project manager	1	MSc or above in Hydraulic, Water Resource, Civil and Environmental Engineering or related field of study MSc 13 years or PHD and 11 years and above/ minimum years' experience in the water supply sub-sector	12
			Experience as design team leader for more than one a high credit to experiences in study & design and construction supervision of water supply projects.	
			Projects Skill on AutoCAD and Water CAD is also a credit.	
			Renewed professional license	
2	Water supply Engineer	2	MSc/BSc or above in hydraulic, water supply and environmental engineering	12
			Experience 8 and 10 (and above) years respectively in the water supply sub-sector	
			High credit to experiences in study & design and construction supervision of water supply projects.	
			Skill on CAD and · Water CAD is also a credit.	
			Renewed Professional license	
3	Water Treatment expert	1	MSc or above in Hydraulic, Water Resource, Civil and Environmental Engineering or related field of study with MSc and 10 years or PHD and 8 years and above/ minimum years' experience in the water supply sub-sector	4
			High credit to experiences in study & design and construction supervision of water supply projects.	
			Experience as design water treatments planet for town more than one projects	

S/No.	Position	No of person	Qualification and Experience	Person Month
			Skill on AutoCAD and Water CAD is also a credit.	
			Renewed professional license	
4	Structural/ Civil	1	M.Sc. / BSc. degree in structural or Civil related fields and	4
			Experience 8 and 10 (and above) respectively, in Civil and structural design Buildings and Water of water supply projects with similar scope and complexity.	
			Renewed Professional license	
5	Geotechnical Engineer	1	BSc and 11 years, MSc and 9 years or PHD and 7 years/	4
			Respectively, in Civil and structural design Buildings and Water of water supply projects with similar scope and complexity.	
6	Hydro geologist	2	M.Sc. / BSc. degree in Hydrogeology/ Geology or related fields and a	4
			Experience 8 and 10 (and above), respectively, in reconnaissance and feasibility study of subsurface water Supply project management with similar scope and complexity.	
			Renewed Professional license	
7	Geophysics	1	M.Sc./BSc. Degree in Geophysics/Hydrogeology/ Geology or related fields and a	4
			Experience minimum of 8 and 10 years' respectively, in reconnaissance and	
			Feasibility geophysical study of subsurface water supply project with similar scope and complexity.	
			Renewed Professional license	
8	Hydrologist /Water Resources Engineer/	1	resources engineering/water resources management field and · Experience minimum of 8 and 10 years' respectively, on water resources	
			assessment, analysis & management, geotechnical investigations for the water supply system in similar scope and complexity	4
			Renewed Professional license	
9	Electro-Mechanical	2	MSC/BSC degree in Electrical/ mechanical/electro mechanical engineering filed and	
			Experience minimum of 8 and 10 years 'respectively, in study & design of electromechanical equipment (pumps, generators or other renewable energy sources) for water supply system	4
			Renewed Professional license	

S/No.	Position	No of person	Qualification and Experience	Person Month
10	Socio-economist	2	MSc or above in sociology and/or economics	4
			Experience minimum of 6 years' experience in socioeconomic assessment	
			study of infrastructure projects with accredit for water supply projects	
11	Environmentalist	2	MSc or above in environmental science or related fields with · Experience of minimum of 6 years' in	
			Environmental impact assessment studies of infrastructure projects with a high credit to water supply and sanitation sub-sector.	4
			Renewed Professional license	
12	Surveyor	2	Minimum diploma in surveying technology	4
			Experience of minimum 8 years in water supply system.	
			Skill in AutoCAD · Skill on use profile and layout preparation · Renewed Professional license	
13	Water Quality Expert	1	· MSc or above in Applied chemistry or related fields with · Experience of minimum of 10 years' in	3
			Experience minimum of 8 years' experience in water quality	

8. Consulting Firms Responsibility

- Provide all logistics, equipment, and professional staff.
- Ensure compliance with AfDB and Ethiopian standards.
- Conduct all assessments, surveys, and consultations.
- Submit deliverables according to schedule.
- Maintain coordination with MoWE, regional bureaus, and stakeholders.

9. Clients and Donors Input

- MoWE will provide existing studies, facilitate access to data, and ensure coordination among stakeholders.
- MoWE will provide guidance on safeguard policies, procurement standards, and review deliverables.
- Regional water bureaus and local utilities will support fieldwork and consultations.

10. Payment modality

The contract for the consultant should be lump-sum and the Payment is effected as per the following modality:

- On Submission of final accepted Inception Report: 10% of the contract fee
- On Submission of Final accepted Feasibility Study Reports 20%of the contract fee
- On submission of Draft accepted Detail Design Engineering Design, ESIA, ESMP and RAP, CR-WSP Report and Business Plan Reports Report 20%of the contract fee
- On submission of final accepted Detail Design Engineering Design, ESIA, ESMP and RAP, CR-WSP Report and Business Plan Reports Report 30%of the contract fee
- On Submission of Final accepted Tender Documents Report and capacity building 20% of the contract