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MINISTRY OF WATER AND ENERGY
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URBAN WATER SUPPLY STUDY, DESIGN AND CONSTRUCTION SUPERVISION DESK

Terms of Reference for Selection of Consultant for Study and Design Review of Deyu and Lollotu Town Water Supply and Sanitation Project

November 2025

Addis Ababa

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1. Background

1.1 Introduction

Ethiopia has set an ambitious target of becoming a middle-income country by 2030. Achieving this vision requires focused attention on the comprehensive development of all sectors, with particular emphasis on drinking water, sanitation, and energy. These areas are recognized as critical for improving the living standards of the population and supporting the nation's overall socio-economic growth.

The Ministry of Water and Energy (MoWE), as a key institution of the Federal Democratic Republic of Ethiopia (FDRE), plays a central role in constructing and expanding the necessary infrastructure to improve the daily lives of citizens.

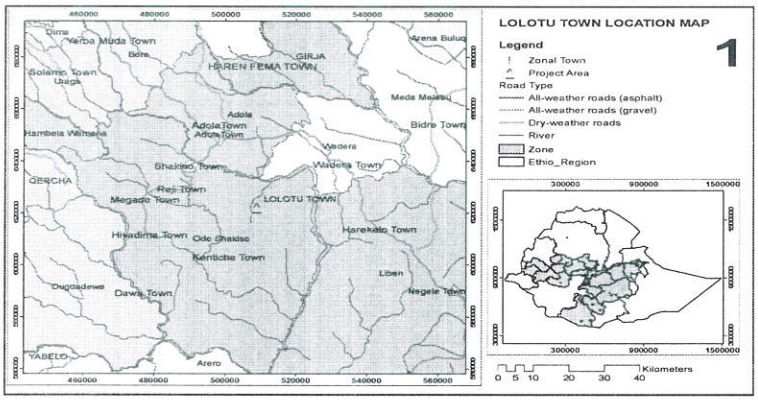
However, rapid population growth and increasing water demand have posed significant challenges to water supply services in many urban areas of the country. The proliferation of towns and the migration of populations from rural to urban areas have intensified these challenges, resulting in inadequate water supply and sanitation services. In response to these issues, the Government of Ethiopia, in collaboration with development partners, has been actively working to address service delivery gaps. For the current fiscal year, the government has allocated a budget from the treasury for the study, design, and drilling of water supply systems in 30 towns, including Lollotu town and Surrounding Village and Deyu Town Water Supply.

1.2. Geographical location the Area

Lolotu Town

The project area, Lolotu Town and surrounding villages, are located in the southern part of Oromia Regional State; Guji zone, Seba Boru Woreda. The town is located at a distance of 550km from Finfinne and at about 100km from zonal zonal town Negele Borena in the Northern direction. Geographical location of the center of Lolotu Town is at UTM508,595 E and 623,480N with an elevation of 1785m a.m.sl. The project area is accessed through Finfine-Hawasa-Shakiso concrete asphalt road and then around 40km all weather gravel road from Shakiso town to Lolotu Town.

The villages are located surrounding the town and can be accessed from Lolotu Town through dry weather road by vehicle. Tembo village, Seba village and Haro bora village are located around 10km from Lolotu Town in the north, north west and north east direction respectively. Sire Buqe, Sebichu, Ode and Utulu Villages are Located in the south west direction whereas didola village is located in east direction of Lolotu Town.



2. Fig.1. Location Map of Lollotu Town and Surrounding Village

2.2. Existing Water Supply System

Existing Water Supply System and Sanitation Facility of Lollotu Town and Surrounding Villages

❖ Existing Water Supply System

With regard to the existing problems of the system, an effort 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 presented as follows:

- ✓ The spring not capped and it exposed to pollution.
- ✓ Water quality, there has not been any treatment mechanism and this could be a treat of water born health problems for the town community.
- ✓ The scarcity of water is a major problem for this town development and sometimes water distributed by shower trunk as a water ration and the surrounding villages have been facing similar potable water scarcity for domestic use as well as for their livestock's.

Deyu town

Deyu Town is situated in the southwestern part of Oromia Regional State, in Bale Zone,Mena Woreda at geographical coordinate of UTM/Adindan 606563E Longitude and 0716988N latitude with elevation above sea level 1280m, at a distance of 570 km from Finfinne, 120 km from Robe Town, the zone capital and 18km from Mena Town, the woreda capital. The town lies on the foot hills of Sanate Plateau and Harena Forest by the river bank of Deyu

River.

Fig.1. Location Map Deyu Town and surrounding villages

3. Objectives

2.1. General Objective

The primary objective of this assignment is to assess the Water Supply, Sanitation, and Hygiene (WASH) conditions in communities and institutions for Lollotu and Deyu town and surrounding villages. The consultancy will focus on reviewing existing design documents, ensuring they are technically sound and ready for implementation.

3.2. Specific Objective:

The specific objectives of the project to achieve the above general objective are the following;

- Assess the existing water supply and sanitation situation, the review the design of the previous design report and identify gaps.
- Preparation of cost effective design review report of the project.
- Prepare BOQs, Design drawings, Specifications for each component, bidding documents as appropriate as it can be process for procurement contractors and suppliers.
- Build the capacity of utilities and board at town level to enhance their overall capacity to assist in establishing sustainable services to maximum satisfaction of the users.

4. Scope of the Consulting Firms Services

The scope of this consultancy services by the consultant are the following but not limited to:

- Conduct initial and further consultation with the local stakeholders related to the objectives of the study, and the roles of each stakeholder looking at changes undergone from study output.
- To study the existing water supply, sanitation and hygiene, and managerial situations at town level and preparation of detail baseline, and capacity building need assessment reports related to the service.
- Preparation of a review report for appraisal of feasibility study report for water supply system, sanitation & hygiene facilities for community and institutions in the town by conducting socio-economic study, based on the existing situation, determination of water demand, conducting geophysical and/or study for sufficient water sources, conducting

financial and economic study for different alternative schemes to select (if any) the most feasible system related satisfying the demand at affordable level of the users.

- Conduct a detail water source investigation, identify potential sources and propose type of source to be considered.
- If the consultant propose surface water source; he will conduct appropriate hydrological study and analysis for the proposed source.
- Study a detail water sources investigation and proposed appropriate water source abstraction and treatment facilities.
- Based on the hydrological study and analysis, proposed appropriate intake structure and location, treatment plant facilities and conduct detail structural analysis and design for all components.
- Conduct detail geotechnical investigations for all the structural components of the water supply and sanitation facilities.
- Preparation of detail design review report and tender documents for source confirmation that is for the surface sources using economic intake structure
- Conduct review on environmental studies
- Preparation of business plan of the town water supply and sanitation project.
- Conduct a review on the capacity building training documents and conduct training.
- Prepare town water supply management set up or structures for the proper management of the system.
- Preparation of and facilitation of performance-based contract agreement between TWB and TWU and, capacity building,

5. Main Tasks

Task-I: Draft and Detail Design Review of the Water Supply and Sanitation System

✓ **Data Collection and Analysis:** The Consultant's proposals shall be required to improve the list as required to complete the assignment and to provide a clear indication of all necessary personnel, mapping and resources required. The assignment shall address and include

- **Review Existing Reports / secondary data analysis/:** A comprehensive review of relevant reports regarding hydrology, geotechnical, environmental flows estimation, environmental and social impacts in the project area etc.

- **Mapping of the Project Area:** The Consultant shall conduct topographic and aerial mapping of the project area with suitable scales as indicated below. The main tasks shall include but not limited to the following;

✓ **Establishment of control points:** The Consultant shall review the previous reports and liaise with relevant Authorities to locate National grid points or secondary permanent and reliable established points to act as a start point. Using GPS the Consultant shall use previous established permanent control network within the project area for further referencing of future surveys. The WGS-84 coordinates must be transformed to the national grid system and control points map produced at 1:1000 scales. At least three permanent control points must be referenced to Mean Sea Level.

✓ **Topographic Mapping of Upstream Area (Reservoir Area):** This area includes; A Reservoir area of provisional capacity of not less than 340 MCM storage volumes, expected sediments delta and a 500 m buffer zone. The topographical control points will be 500 m intervals and should be visible from adjacent points. Grid system of 100 m intervals will be used depending on the terrain. Map scale of 1:10000 and contour interval of 2 meters.

✓ **Topographic Intake Site Mapping:** The Consultant shall survey and prepare a Intake site map with and without intake layout with a grid system of 50 meters interval at scale of 1:1000 and contour interval of 0.5 meters.

✓ **Topographic Mapping of the Potential Construction Areas:** Topographical Maps shall be prepared of potential access roads, site camp, and permanent housing area and construction facilities with a scale of 1:2000 and contour interval of 1 meter.

✓ **Topographical Mapping of Downstream Area:** This is a river corridor immediately downstream of the intake axis, covering at least 3 km. The Consultant shall survey and prepare downstream map with a grid of 100 meters intervals at 1: 10000 scale and contour intervals of 2 meters plus river cross sections at 4 points.

Using mapping results, the Consultant shall determine a suitable intake site at a suitable scale.

- Determine location of associated infrastructures, access road, telecommunication, electricity,
- Determine communities' settlement areas (if any)

- ✓ **Hydrological Analysis:** Assess historical records of rainfall and runoff flow regime of the river and weather stations to check the present and future water availability and prepare a rainfall-runoff model.
    - Propose and conduct any supplementary hydrological monitoring (rainfall, flow volume, sediment loads, etc.)
    - Review and Conduct flood analysis including frequency analysis and calculation of PMF (Probable Maximum Flood) to determine the dam design flood and spillway capacity.
    - Review sediment load; propose scour and flushing arrangements if required.
    - Assess possible impacts of climate change on the hydrological characteristics using some scenarios (without climate change, low climate change and high climate change) drawing from existing literature.
- ✓ **Geological, Geotechnical and seismological Investigation:** The Consultant shall conduct geological/geotechnical investigation. This could be sub-contracted to a specialized firm(s) under the Consultant's supervision. The cost of these site investigations shall be covered by a provisional sum, as per the Data Sheet. This will cover the following items but not limited to:-
    - Assessment of the geological condition of the intake foundation.
    - Drill sufficient number of boreholes required for the feasibility study to identify if there are any liquefiable materials and leaking structures, conduct borehole logging and prepare lithological profile. The consultant shall propose the optimum number of core drilling on upstream, intake axis, downstream, intake, according updated revised versions of international intake design guidelines and standards (refer the spacing, number, depth and well sites).The number and depth of the well to be drilled must later be approved by the client. The consultant shall submit the **Geotechnical** drilling schedule for timely completion of the assignment.
    - Conduct a series of geological investigations/tests, such as seismic refractions, bore-holing/logging, trial pits, in-situ and laboratory tests for measuring soil/rock type classification, shear stress, permeability, grouting procedures, etc.
    - Conduct seismology assessment of the intake site and surrounding areas for determining seismic loads for intake design

- Feasibility level analyses of Electro-mechanical, Structural, Hydraulic, and intake also be conducted and reported.

✓ **Socio-Economical and financial analysis:** The consultant shall conduct the socio-economic and financial analysis covering the following aspects:

- Assess outstanding social, cultural, resettlement and traditional impacts of the intake, rising main, reservoir/tank (before, during and after construction) and shall consider it in the design and final site selection.
- Conduct cost benefit analysis of the final scheme in the economic and financial terms. Presented indicators will include NPV (Net Present Value), B/C (benefit cost analysis), and economic/financial IRR (Internal Rate of Return if required).
- While cost estimates are tabulated with unit costs and estimated quantities for project components as well as physical and financial contingencies, benefits should cover direct ones from drinking water and other water supply uses. Non quantifiable benefits are to be explained separately.
- Prepare project cost budget tables on an annual basis covering local and foreign components. The duration of the analysis should cover the construction phase and operational phase.
- The costs of the environmental management/mitigation measures and resettlement costs should be included as a cost to the project. The cost of additional adaptation measures to Climate Change (altered intake design and operations and other measures) should be defined.

✓ **The Environmental Assessment:** After completion of the analysis of intake alternatives and on selection of the final design, the consultant shall complete and finalize EA based on the final choice of dams design.

a) Fully describe and illustrate using schematic engineering layouts the entire project design on relevant and well referenced maps ensuring all intake and treatment structures are clearly illustrated in their correct location, including identified areas for temporary construction sites/use, access roads and power lines. Then present a corresponding description of all the parts of the project infrastructure making references to the maps, include the relevant features and parameters of the various components of the dam infrastructure such as the intake and treatment plant, outlet for riparian release, and all other components of the project.

b) Show the entire project area and project impacted areas. Ensure full capture of the environmental issues, with the entire project area divided into project impact zones. Update and complete surveys and all other relevant data using detailed and clearly referenced maps with acceptable scales and charts and tables as appropriate

c) Describe and present the applicability of relevant national, regional and international policy (including World Bank safeguard policies), Legal and Administrative Framework governing the Water and Environment Sector in Ethiopia.

d) Discuss and present a detailed summary of Analysis of Alternatives section already fully presented in the preliminary study report including the rationale for arriving at the selected intake design.

Task-II: Staff capacity building and transfer of knowledge

a) The utility wishes to promote skills development, lesson learning and knowledge sharing across the consulting and contracting community. As such, it is considered that Transfer of Knowledge to be about supporting utility. To improve and increase the knowledge base and performance.

b) The utility shall require the Consultant to submit a training plan to be embedded in the proposal and clearly articulating how nominated trainees from the utility shall be trained by the Consultant. The training should cover technical and management and follow up procedures,

Task-III:-Reporting & Documentation

- Prepare and submit the following reports:
    - Inception Report.
    - Socioeconomic Report
    - Draft and Final Feasibility Study.
    - Water Source Investigation and Study Report
    - Draft and Final Detailed Engineering Design Reports.
    - Environmental and Social Impact Assessment Study Report
    - Town Water Supply and Sanitation Institutional Setup Study Report
    - Town Water Supply and Sanitation Business Plan
    - Tender Documents.

6. Expected deliverables

S/N	Report/Document	Time in weeks	No. Copy (soft and hard)	Ending Activity Month
1	Final Review reports (as stated under task II)	**Draft**	5HC + 2SC	4
		Appraisal	5 HC + 2SC	0.5
		Final	5 HC + 2SC	0.5
Total months				5

The consulting firm expected to prepare and submit separate report for the project under the assignment at each milestone.

7. Payment modalities

Payment Modalities with respect to deliverables

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

Sr. No.	Payment Phases	Deliverable	Payment modality
1	First payment	✓ Final and approved Inception Report ✓ Reconnaissance level Source identification report. ✓ Pre-feasibility Study Report	20% of total agreed cost
2	Second Payment	✓ Approved Feasibility studies and design on selected source system with all required system Components	30% of total agreed cost
3	Final Payment	✓ Approved final detail design reports with drawings, BOQs and etc. ✓ Tender Documents with employer requirements, required manpower, equipment and specification ✓ Final ESIA report ✓ Final Town Business Plan ✓ Final town water utility management setup report ✓ Final Water Sources Study and Source Identification Report. ✓ Final Electro-mechanical Design Report ✓ Final Geotechnical Investigation Report	50% of total agreed cost

8. 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

Table 1 Consulting Firm Team Composition

S/No.	Position	No of person	Qualification and Experience	Office	Field	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. ✓ 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	4	2	6
2	Water supply Engineer I	2	✓ MSc/BSc or above in hydraulic, water supply and environmental engineering. ✓ 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	2	4	6

S/No.	Position	No of person	Qualification and Experience	Office	Field	Person Month
4	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 ✓ 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 ✓ Skill on AutoCAD and Water CAD is also a credit. ✓ Renewed Professional License	2	1	3
5	Structural/Civil Engineer	1	✓ M.Sc. / BSc. degree in structural or Civil related fields and ✓ Experience 8 and 10 (and above) respectively, in Civil and structural design Buildings and Water of water supply projects with similar scope and complexity. ✓ Proven capacity to work with structural design soft wares (SAP, ETABS and etc) ✓ Renewed Professional License	1	1	2

S/No.	Position	No of person	Qualification and Experience	Office	Field	Person Month
6	Geotechnical Engineer	1	✓ BSc and 11 years, MSc and 9 years or PHD and 7 years/ respectively, in Civil and structural design Buildings and Water of water supply projects with similar scope and complexity. ✓ Renewed Professional License	0.5	1.5	2
7	Hydro geologist	1	✓ M.Sc. / BSc. degree in Hydrogeology/ Geology or related fields and a ✓ Experience 8 and 10 (and above), respectively, in reconnaissance and feasibility study of subsurface water Supply project management with similar scope and complexity.	1	1	2
9	Hydrologist/Water Resources Engineer/	2	✓ MSc/ BSc in hydrology/ hydraulic engineering/civil engineering/ Irrigation Engineering/ Water 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. ✓ Proficiency in hydrological modeling software (e.g. HEC-HMS, SWAT, MODFLOW and etc.) ✓ GIS and remote sensing expertise for spatial analysis and mapping. ✓ Date analysis and statistical	1	2	3

S/No.	Position	No of person	Qualification and Experience	Office	Field	Person Month
			skill using statistical tools ✓ Renewed Professional License			
10	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	2.5	1.5	4
11	Socio-economist	1	✓ MSc or above in sociology and/or economics ✓ Experience minimum of 6 years' experience in socioeconomic assessment ✓ study of infrastructure projects with accredit for water supply projects	2	2	4
12	Environmentalist	1	✓ 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. ✓ Renewed Professional License.	2	1	3

S/No.	Position	No of person	Qualification and Experience	Office	Field	Person Month
13	Surveyor	2	✓ Minimum diploma in surveying technology ✓ Experience of minimum 8 years in water supply system. ✓ Skill in AutoCAD · Skill on use profile and layout preparation · ✓ Renewed Professional License.	1	2	3
14	Water Quality Expert	1	· MSc or above in Applied chemistry or related fields with · Experience of minimum of 10 years' in Experience minimum of 8 years' experience in water quality	2	1	3

Table2. Consultant's Non Key Expert

S/No.	Expertise name	No of person	Qualification and Experience	Person Month
2	AutoCAD(draftsman)	1	✓ A certificate or diploma in drafting ✓ Experience of minimum 4(four) years in infrastructure projects. ✓ Proven skill in AutoCAD	2
3	GIS Expert	1	✓ A certificate or diploma in GIS training ✓ Minimum of 2(two) years of experience (compile and integrate new water supply system data, draw	0.5

S/No.	Expertise name	No of person	Qualification and Experience	Person Month
			maps using design software, and manage the data that is entered into the GIS database.)	

9. Firms Responsibility

- **Provide all necessary logistics, equipment, and qualified professional personnel required for the assignment.**
- **Carry out all relevant assessments, surveys, and stakeholder consultations in accordance with the approved methodology.**
- **Submit all reports and deliverables in line with the agreed schedule and quality standards.**
- **Ensure effective coordination and communication with the Ministry of Water and Energy (MoWE), Regional Water Bureaus, Town Water Utility (TWU), and other key stakeholders throughout the assignment.**

10. Client's Support and Responsibilities

- **The Ministry of Water and Energy (MoWE)** will provide all available background documents, previous studies, and design reports relevant to the assignment. MoWE will also facilitate access to necessary data, ensure coordination among stakeholders, and provide technical guidance during the review process.
- **The Regional Water Bureau** and **Town Water Utility (TWU)** will support the consultant in organizing field visits, data collection, and community consultations. They will also assist in facilitating meetings with local authorities and beneficiaries.
- **The Client** will review and provide timely feedback on reports and deliverables submitted by the consultant.

Ministry of Water & Energy