



Terms of Reference

Consultancy Services for the construction's project engineering, for the implementation of new physical-chemical treatment in Ghr magele WTP, modifying the current rectangular clarification to new lamellar sedimentation

GGU

Georgia Global Utilities

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1. Terms of Reference (ToR)

Consultancy Services for the construction project engineering, for the implementation of new physical-chemical treatment in Ghrmagele WTP, modifying the current rectangular clarification to new lamellar sedimentation process.

Locations:

- Ghrmagel WTP

2. Background

The Ghrmaghele DWTP is an existing facility for drinking water supply to Tbilisi city, and it's located nearby Tbilisi Sea (Tiflis – Georgia).

Raw water is treated with a conventional Physical-Chemical process, including the following

stages:

- Dual raw water intake:

- Jinvali dam feeding channel
- Tbilisi Sea raw water pumping station
 - Static Settling
- Line 1: 10 tanks
- Line 2: 12 tanks
 - Sand media gravity filtration
- Line 1: 10 filters
- Line 2: 16 tanks

- 4 Treated water storage tanks, 10.000 m³ each.

- 2 Treated water storage tanks for filters backwashing, 4.000 m³ each.

- Poly-aluminum Chloride (PAC) – Storage and dosage facilities.

- Chlorination facilities:

- Pre-Oxidation.
- Treated water disinfection.

During heavy rain seasons, the current settling facilities cannot face high turbidity ranges in raw water. Therefore, the sand filter batteries must cope with these high turbidity levels in the raw water, and consequently in settled water, shortening their filtration runs and requiring more frequent backwashing operations even change to the water supply from Tbilisi Sea, by pumping, increasing the energy consuption dramatically.

3. Objectives

The main objectives of the assignment are:

1. Upgrade Ghrmagele WTP, water treatment capacity giving to it more power of treatment in the physico-chemical process and giving to it more water treatment capacity.
2. Face with more reliability the dirty water episodes, avoiding or minimizing the collection of water, by pumps, from Tbilisi sea.
3. Reduce the energy consumption in the high-water turbidity episodes, avoiding pumping and reducing the water backwashing operations in the filtration process.
4. Refurbishments, modification and treatment of the concrete structure in sedimentation tanks and reinforce the zones where the lamellas are going to be installed.

4. Scope of Services

The Consultant shall undertake the following tasks:

4.1 Task 1: Data Collection and Review

- Visit the installation and evaluation of the concrete structure status.
- Review preliminary project and evaluate all the process to follow for developing of the construction's project.
- Review all the topographical data available and take on site topographical data to assure dimensions and levels. It's available the 3D Liar scan but, the exactly topographical points for the correct design must be taken on site.

4.2 Task 2: Detail construction design Project

- Develop the construction project taking in consideration two important steps, that can be done or one by one or at the same time. Modify adapting to the new concept and repair and reinforce the concrete's sedimentation tanks structure for adapt them to the new mix and flocculation cameras and lamellar sedimentation installation.
- Prepare all the layouts for the constructive steps.
- Prepare the necessary BOQs technical specifications, and employer's requirements for procurement, following SINP's prices.
- Prepare detailed design drawings, hydraulic calculations, material specifications.
- Provide operation and maintenance guidelines.

5. Deliverables

1. **Inception Report** (work plan).
2. **Draft Final Report** (recommended solutions with preliminary design).
3. **Detailed Design Package:**
 - a. Hydraulic design report
 - b. Drawings (general arrangement, P&ID, integration details)
 - c. Technical specifications and BoQ
 - d. Cost estimates

6. Timeline

- Expected duration: **3 months** from signing the contract.
- Key milestones: Inception (Month 1), Draft Final (Month 2), Detailed Design & Tender Docs (Month 3).

7. Team Composition & Qualifications

The Consultant shall provide a multidisciplinary team with at least:

- **Team Leader / Senior Hydraulic Engineer** (15+ yrs, proven experience in water treatment plants design).
- **Mechanical Engineer** (design of surge vessels, valves, tanks, pressure-rated equipment).
- **Civil/Structural Engineer** (design of tanks, foundations, concrete structure works and reparation, integration works).
- **Instrumentation/Control Specialist** (SCADA integration, valve actuation).
- **Cost Estimator / Procurement Specialist** (BoQ, tender docs).

8. Documents & Information to be Provided by Client

The Client shall provide the following information (where available):

1. Preliminary project for the GHRMAGELE DWTP-SETTELING STAGE UPGRADING.
2. Drone-based survey and 3D mapping of the clarifiers/settling tanks are available under bidder request.
3. Ghirmaghel DWTP- Civil work technical report.

9. Reporting and Communication

- The Consultant shall report to the **Project Manager**
- Monthly progress meetings will be held (in person or online).

- All deliverables shall be provided in **English and Georgian**, in both hard copy and editable electronic formats (Word, Excel, AutoCAD, PDF).

10. Contact person for tendering details

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11. Annex

- Preliminary project for the GHRMAGELE DWTP-SETTELING STAGE UPGRADING.
- Ghrmagele.dwg file.
- Ghrmaghel DWTP- Civil work technical report.