

Terms of Reference: Integrated Hydrogeological and Geophysical investigation for locating suitable points, drilling adequate boreholes, installation of submersible pumps and piping for meeting additional 60m³/hr of ground water for Gihitasi pumping station.

1. Introduction and background to the assignment;

As per the design, 15MW Gishoma power plant needs 110m³/hr of raw water for its full load operations. This raw water is presently being met by pumping water from a nearby water stream named Gihitasi river, which is an over flow of water from the adjacent peat bog. It is noticed that during dry season that there is a shortfall of 60m³/ hr of water for the power plant.

2. Objective:

To carry out an integrated hydrogeological and geophysical investigation to locate suitable points for drilling boreholes near Gihitasi river and drill adequate boreholes that will support Gishoma power plant with additional 60m³/hour. The survey should be targeted within 500 Sq meters area near Gihitasi pumping station and should identify/confirm main aquifers that are independent to the surface water of Gihitasi river and the adjacent bog. Post drilling and testing of water flow rate, Installation of suitable electrical submersible pumps and piping up to Gihitasi pumping station.

3. Scope of work;

The objective of the contractor is to conduct an integrated hydrogeological investigation to located suitable points for drilling boreholes with an area of 500m² near Gihitasi pumping station that is near 15MW Gishoma power plant.

4. Duration of Assignment;

- Mobilization, Survey and reporting to be completed within 10 days
- Approval from EUCL within 7 working days
- Drilling operation within 20 days
- Supply, installation and commissioning of suitable electrical pumps, valves and piping after approval from EUCL within 30 days.

5. Methodology to be used to carry out the assignment

The bidder will describe in his proposal the methodology that he intend to use in order to carry out and complete the assignment.

6. Duties and responsibilities;

- The survey report should identify/ confirm a separate aquifer independent of surface water of Gihitasi river and confirm the location of boreholes within 500m² area nearest to the Gihitasi pumping station. Produce a hydrogeological map and a groundwater potentiality
- Survey agency should recommend number of boreholes, size of boreholes, and depth of boreholes that will be as nearest as possible to Gihitasi pumping station and will at least yield 40m³.hr of ground water.
- Identify/confirm main aquifers and understand their hydrodynamic behavior, potentiality and recharge. Spacing of 150m to be maintained between two boreholes to avoid sharing of same resource.
- Conduct drilling operation as per the recommendations and after approval from EUCL.
- After approval of BOQ and test procedures from EUCL, supply and Install suitable electrical submersible pumps and piping till Gihitasi pumping station.

7. Detail outputs (key deliverables to be accomplished)

i. Inception report

This includes the methodology and techniques to be used and work timeframe. The inception report is provided within one week from the date of contract signature.

ii. Progress report

This progress report is given every week and commented by the management team of EUCL.

iii. Final report

This report will consider all the comments provided by EUCL team. The preliminary outline table of contents of the final report will be as follows:

- Executive Summary
- Introduction, review of previous studies and environmental background
- Geology and hydrogeology in relation to overall water resources
- Main aquifer characteristics including recharge mechanisms and water balances
- Estimates of productivity of the aquifer and borehole standard designs
- Results of the detailed studies
- Proposed priority sites for water supply using groundwater to meet the demand
- Recommendations of sizing of electrical pumps, piping and fittings.

- Conclusions and recommendations
- Operational system conformed by reception reports

8. General experience of the firm and important aspects of the project to be focused

It is suggested that this assignment be undertaken by a firm rather than an individual. The assigned team should ideally be comprised of established individuals within their field of specialization.

Team members should have a strong background in hydrogeological assessments, drilling of boreholes and installation of submersible pumps preferably in Eastern Africa.

The firm should have a proven experience with at least two good completion certificates in similar assignment.

9. Competencies and qualification of the key staff to be provided for each area of expertise identified;

The team leader should have:

- University degree in geology, hydrology, engineering geology, physical, or earth science, or in any related field and having good experience of working in this sector.
- Minimum 10 years of experience out of which 5 years as hydro-geologist leading the program of ground water prospecting, hydro geological and geophysical surveys, ground water quality and yield monitoring and all, relevant areas as required to undertake the key functions listed above.
- Experience in integrating groundwater information into IWRM plans.
- Fluency in English both oral and written
- Competence in relevant report writing

The team should at least be composed of:

- One geology, hydrology, engineering geology, physical, or earth science, or in any related field engineer/technician
- One civil engineer
- One electrical, mechanical or related field engineer.

The team members should have at least Bachelor's degree in the field of specialization and have good experience in:

- Use geophysics and water quality testing equipment
- Bore Drilling and pump installation and testing

10. Set the time periods for the key deliverables identified;

- Mobilization, Survey and reporting to be completed within 10 days
- Approval from EUCL within 7 working days
- Drilling operation within 20 days
- Supply, installation and commissioning of suitable electrical pumps, valves and piping after approval from EUCL within 30 days.

11. List any services and surveys necessary to carry out the assignments;

All the materials, tools and tackles that are required for hydrogeological and geophysical investigations to be arranged by the surveying and drilling agency. For pumping tests, it is necessary to mobilize equipment (pump, flowmeters, compressor, generators, electric probe ... etc).

12. Detail the services, facilities and counterpart staff to be provided by EUCL;

N/A

13. Reporting arrangement and overall coordination

The contractor is required to consult existing sources of information, reports, assessments and where necessary clarify or update these pre-existing documents.

The contractor is required to report to the managing director of EUCL. The contractor will work under supervision of the director of generation. The supervisor will have frequent interactions with the contractor at various stages to brief the contractor on the situation/assignment; agree on the process and clarify the deliverables; provide feedback and comments on intermediary products; and track the progress made by the contractor. The supervisor will evaluate the contractor's work and certify delivery of work.

14. Specify detailed requirements when transfer of knowledge or training is part of the assignment

N/A

15. Reporting arrangement and overall coordination

The successful bidder will report to the managing director of EUCL.



16. Application

Interested candidates are required to submit their technical and financial offer at the following address:

Managing Director of EUCL

KN82ST3, Nyarugenge District, Kigali City

P.O Box 5634 Kigali-Rwanda

Established by:

TWAJAMAHORO J. Providence

Ag. Chief Eng. Power Plant Performance