

MINISTRY OF SANITATION AND WATER RESOURCES

COMMUNITY WATER AND SANITATION AGENCY

Terms of Reference

PROVISION OF CONSULTANCY SERVICES FOR DESIGN AND CONSTRUCTION SUPERVISION OF WATER FACILITIES IN THE NORTHERN REGION

A. BACKGROUND

1. In its desire to improve water and sanitation services for the people living in rural communities and small towns in a sustainable manner, the Government of Ghana (GoG) adopted a Sector Policy for Community Water and Sanitation delivery and launched a National Community Water and Sanitation Program (NCWSP) which has been coordinated and facilitated by the Community Water and Sanitation Agency (CWSA) a parastatal Agency set up by an Act of Parliament, Act 564, in 1998 under the then Ministry of Water Resources, Works and Housing (MWRWH).
2. In support of the continued implementation of the NCWSP the GoG has secured an Additional Financing (AF) from the IDA (World Bank) for the works under the Sustainable Rural Water and Sanitation Project which is aimed at providing safe water, improved sanitation and hygiene services to rural communities and small towns in six regions of Ghana.
3. The Additional Financing Sustainable Rural Water and Sanitation Project (AF-SRWSP) is part of GoG's investment programme to increase access to water supply from the current level of about 76% to 79% by 2019.
4. The AF would finance the costs of completing the remaining contracts for works and services under SRWSP which could not be executed as a result of cost-overruns and some scale-up.
5. This ToR covers the Community Sub-Projects component of the Project under which, the Designs of 9No. piped water supply systems (6No.Rehabilitation and Expansion, 1No. New and 2No. Limited pipe schemes) are to be reviewed and Construction supervision carried out

B. OBJECTIVES OF ASSIGNMENT

The objective of the assignment is to provide Technical Assistance for the supervision of Rehabilitation, Expansion and New Constructions of piped water systems in accordance with CWSA standards and guidelines towards sustainable water supply to beneficiary towns in the Northern Region of Ghana

C. SCOPE OF WORK

The Consultancy Services will cover a quick **review of the existing designs** (confirming sources adequacy, pipe sizes, specifications of the key system components, review of Bill of Quantities for the civil works) and supervision of the **construction of 9no. Piped Water Supply Systems (Rehabilitation, Expansion and New Systems)**.

The Consultancy services is in two (2) main parts as follows;

- i. Part 1: Review of designs
- ii. Part 2: Supervision of Construction of 9No. Piped Water Supply Systems

The details is as follows:

1. Quick Review of design (Part 1);

The services to be provided are;

- i. Confirm pipe sizes, specification of key components of the water supply system
- ii. Review distribution layout and make appropriate recommendation.
- iii. Review concrete storage facilities, size, height and foundation and make appropriate input.
- iv. Map out and capture GPS location of boreholes to be mechanised
- v. Supervise test pumping of existing boreholes and make and recommendation additional drilling where necessary.
- vi. Supervise water quality (bacteriological and physico-chemical water quality analysis).
- vii. Check and confirm adequacy of electro-mechanical components specifications.

The review of the designs is mainly for the consultant to familiarise themselves with the works and provide early warning if any for redress.

2. Supervision of rehabilitation/expansion of 4No. Piped Water Supply Systems (Part 2)

The services to be provided are;

- i. Supervise construction of piped water supply systems
- ii. Manage and administer construction contract.

- iii. Lead in the measurement and certification of Works for payment
- iv. Lead in the final inspection and testing of completed water supply system
- v. Prepare “As-Built” drawings
- vi. Prepare O&M manual
- vii. Supervise Defects Liability obligations
- viii. Ensure the implementation ESMP:
 - o Compliance
 - o Performance tracking
 - o Document environmental and social safeguard issues of each site
 - o Report on ESMP
- ix. Ensure compliance and adherence to health and safety plan.
- x. Develop water safety plan (WSP)

Formats for the implementation of the ESHS management is attached as annex to the ToR.
(Safeguards Templates for Water Consultants' Bid)

The detail works involved are provided in the table below:

Table 2: the 9No. Small Towns and the works required are summarized below:

No .	District	Community	No. of Boreholes	Projected Population (2018)	Key Components
1	West Mamprusi	Walewale	5	22,770	Transmission – 6,000m Distribution – 63,000m Concrete Tank 250 m ³ ,100m ³ ,45m ³ Tank height 12m Standpipe.....27No.Rehab,25No.New Pump House..... 5No Mech Pumps..... 5No Electricity connection..... 4000m Management Office..... 1No
2	East Mamprusi	Nalerigu	4	17,966	Transmission – 2,700m Distribution – 42,000m Concrete Tank 250m ,45m ³ Tank height 12m Standpipe.....12No.Rehab,30No.New Pump House..... 5No Mech Pumps..... 5No

					Electricity connection..... 2500m Management Office..... 1No
3	East Mamprusi	Gambaga	3	11,769	Transmission – 12,000m Distribution – 25,000m Concrete Tank 250 m ³ ,45m ³ Tank height 12m Standpipe.....16No.Rehab,25No.New Pump House..... 4No Mech Pumps..... 4No Electricity connection..... 13,000m Management Office..... 1No
4	Gushiegu	Gushiegu	4	29,432	Transmission – 6,000m Distribution – 41,000m Concrete Tank 150m ³ ,45m ³ Tank height 12m Standpipe.....17No.Rehab,24No.New Pump House..... 5No Mech Pumps..... 5No Electricity connection..... 5000m Management Office..... 1No
5	Chereponi	Chereponi	3	4,854	Transmission – 12,000m Distribution – 25,000m Concrete Tank 250 m ³ ,45m ³ Tank height 12m Standpipe.....16No.Rehab,25No.New Pump House..... 4No Mech Pumps..... 4No Electricity connection..... 13,000m Flouride removal plant... ..

					.2No. Management Office..... 1No
6	Saboba	Saboba	0	6,358	Surface water system Transmission – 4,000m Distribution – 40,000m Concrete Tank 250m ³ ,45m ³ Tank height 12m Standpipe.....12No.Rehab,20No.New Treatment Plant..... 1No. Intake Pumps..... 1No Electricity connection..... 4000m Management Office..... 1No
7	East Mamprusi	Yapei	0	8,519	Pipe extension from Ffulso Water Supply System Transmission – 12,000m Distribution – 25,000m Concrete Tank 250 m ³ ,45m ³ Tank height 12m Standpipe..... 25No.New Management Office..... 1No
8	Sagni	Tamale Metro(Rural)	1	920	Transmission – 300m Distribution – - Poly Tank 2No. 20m ³ Tank height 4m Standpipe..... 2No.New Pump House..... 5No Mech Pumps..... 1No Electricity connection..... 300m Management Office..... 1No
9	Singa	Kumbungu	2	1,871	Transmission – 2,000m Distribution – 6,000m Poly Tank 2No. 20m ³ Tank height 6m

					Standpipe... .. 8No.New Pump House..... 5No Mech Pumps..... 5No Electricity connection 8.88KVA Solar Powered Pump Management Office..... 1No
	TOTAL		22	104,459	

D. ACTIVITIES

The following activities among others are to be performed under the consultancy services;

- i. Review available designs to confirm pipe sizes, specifications as described in Bill of Quantities available.
- ii. Confirm concrete storage tanks recommended and make appropriate inputs in the Bill of Quantities for tendering.
- iii. Ensure Contractors adhere to terms and conditions of contracts with the District Assembly, particularly in regard to specifications and standards.
- iv. Geophysical investigations will be carried out according to the prevailing local hydro-geological conditions. Ensure Contractors adhere to terms of sub-project contract with the District Assembly, particularly in regard to specifications for test pumping of successful boreholes and issues of safeguards properly detailed and resolved and properly documented.
- v. Undertake supervision of test pumping and drilling of additional boreholes if required
- vi. Ensure that the information obtained from the test pumping activities are confirmed with existing borehole data which are to be used as sources for the systems
- vii. Ensure quality control of the bacteriological and physico-chemical analysis of water samples from all boreholes to be used as sources for the systems.
- viii. Provide technical assistance in the coordination of construction and contract management for the pipe systems.
- ix. In collaboration with DAs (DWDs/DWSTs) prepare environmental management plans for subprojects and ensure successful implementation and documentation.
- x. Ensure that all environmental and social safeguards, health and safety issues are identified, planned, addressed, properly documented and reported on.
- xi. Ensure Water Safety issues are planned, properly documented and reported on.
- xii. Ensure a smooth communication among all parties involved in the project activities
- xiii. Ensure the contractor keeps proper site records.
- xiv. Ensure that monthly site meetings are organized, records documented and circulated as agreed.
- xv. Lead a team of stakeholders in joint measurements of all works to be invoiced.
- xvi. Ensure that variations and provisional sums are committed upon prior approval of CWSA.
- xvii. Ensure that practical and final completion certificates are duly endorsed by the relevant stakeholders.

- xviii. Prepare operation and maintenance manuals for all the major components of the systems.
- xix. Supervise the defects liability obligations of the contractor
- xx. Supervise the operation of the systems by the operators during the Contractor's liability period
- xxi. Provide hands on training to CWSA Engineers and DAs (DWSTs/DWDs) for the operation of special system components.
- xxii. The Consultant will discuss and agree with each Contractor on the working drawings provided for the construction of the systems and provide for each system in his final report.
- xxiii. All the engineering designs and drawings shall receive approval from the client.
- xxiv. Advice and seek approval from the Client for any modification of a component of the systems.

D1. Additional Information

a) Review of Designs

The consultants is expected to carry out a quick review of available designs before commencement of construction. The expected activities include confirming pipe sizes and general distribution network, the specification of key system components as described in the Bill of Quantities, Confirming the adequacy and quality of sources, pump sizes and specification. Review the capacity and specification of concrete storage facilities recommended

The source of water to Yapei s from an existing surface water supply system at a nearby community Ntereso. The transmission line is expected to cross a 250m long bridge. The specification of crossing and method of crossing are to be reviewed by the consultant and accepted by him.

The source at Chereponi has high concentration of Fluoride above unacceptable drinking level. The consultants will be expected to review and recommend appropriate Fluoride Treatment method to address high fluoride levels in the source

Saboba water supply system is a surface water supply system. The consultants will be expected to review recommendation for rehabilitation of the headworks before commencement of construction.

b) Community Development and Training

- i. The Consultant will assist relevant stakeholders at the community level to develop their capacity and skills to implement and sustain their water system
- ii. The Consultant will be responsible for building the capacity of community in understanding their roles and responsibilities as far as the project implementation is concerned in accordance to the specifications and terms and conditions of the contract.

c) *Environmental Management /Health and Safety Plan*

- i. The Consultant will collaborate with relevant stakeholders to prepare environmental management plan as well as health and Safety for all subprojects.
- ii. He will also draw-up an Environmental and Social Safeguard Framework based on the ESMF and RPF documents produced for the project.
- iii. Ensure the implementation ESMP:
 - a. Compliance
 - b. Performance tracking
 - c. Document environmental and social safeguard issues of each site
 - d. Report on ESMP
- iv. Ensure compliance and adherence to health and safety plan.
- v. Develop water safety plan (WSP)

d) *Construction Supervision*

Contract Management and Administration

- i. Manage the construction of the facilities in accordance with the terms of each of the Contracts
- ii. Follow all the rules of administration in the contract including certifying Interim Payment Certificates, correspondence, meetings, progress reports etc.
- iii. Issue appropriate site instructions to contractor (clearly stated in a site diary) and follow up on compliance by the contractor.
- iv. Ensure that all safeguards requirements are being implemented by contractor on site.
- v. Advise Client on matters of contractual nature.
- vi. Organize and preside over site meetings. These meeting will be organized at least once in a month and will bring together the representatives of contractors, DA, RCC, RWST and other relevant stakeholders as may be identified. The meeting will rotate among the project districts.
- vii. Advice and seek approval from the Client for any modification of a component of the systems.
- viii. Ensure a smooth communication among all parties involved in the project activities

Measurement and Certification of Works

- i. Lead the Team of Stakeholders in joint measurements of all works to be invoiced
- ii. Ensure that variations and provisional sums are committed upon prior approval of CWSA.
- iii. Ensure that monthly site meetings are organized, records documented and circulated as agreed.
- iv. Ensure that variations and provisional sums are committed upon prior approval of CWSA.

- v. Ensure that practical and final completion certificates are duly endorsed by the relevant stakeholders.

Final inspection, testing and acceptance

- i. Conduct inspection and testing as specified in the construction contract with the full participation of stakeholders.
- ii. Consultant will conduct inspection and testing of the systems under the lot and recommend for their acceptance by client
- iii. The consultant in consultation with the RWST/RCC shall design acceptance form which will have to be endorsed by the WSDBs of each system, the DA and RWST/RCC before acceptance certificate is issued.
- iv. Prepare all certificates including the final certificate and submit for payment to the contractor.
- v. Supervise the defects liability obligations of the contractor

Preparation of “As-built” Drawings

- i. Prepare and produce “as-built” drawings (originals and copies) of all the facilities.
- ii. Enclose copies of the ‘as-built’ drawings in the final reports and operational manuals prepared for the systems
- iii. Display copies of the ‘as-Built’ drawings of the layout of the systems in the office of the WSMOs.

Training and Preparation of O&M Manuals

The Consultant will:

- i. Prepare operation and maintenance manuals for all the major components of the systems.
- ii. In conjunction with the Contractor train the WATSANs & WSDBs and facility’s operators to gain the appropriate insight into the operation and maintenance of all the components of the facility.
- iii. Supervise the defects liability obligations of the contractor
- iv. Supervise the operation of the systems by the operators during the Contractor’s liability period
- v. Provide on- the- job training to CWSA Engineers and DAs (DWSTs/DWDs) to improve their capacity in project management.

Preparation of Final Report

- Prepare final completion reports (original and 5 copies) on each system. The report will include:
 - ✓ the ‘as-built’ drawings and other relevant documentations.
 - ✓ safeguards issues and monitoring by DAs and communities
 - ✓ lesson learnt and recommendations for future projects

Supervision of contractor’s Defects Liability obligations

- Consultant will supervise the defects liability of the contractor for the period and ensure that defects detected are rectified.

E. EXPERTISE REQUIRED FOR THE CONSULTANCY ASSIGNMENT

The consultant will be required to field a team of personnel with the following qualification and experience;

Water Supply Engineer/Project Manager

The Project Manager will be the Team Leader for the assignment. A professional Civil Engineer with a minimum of BSc. or its equivalent in Engineering with at least 15 years relevant experience in design and implementation of town or urban water supply schemes and at least 10 years of Project Management. Should have demonstrated experience in engineering design of piped water supply systems based on both groundwater and surface water sources. Specific experience must be in rural/small towns water supply and sanitation sector and should be familiar with the concept and practice of community participation.

Civil/Construction Engineer

A professional Civil Engineer with a minimum of B.Sc. or its equivalent in Civil Engineering with at least 10 years' experience in civil works construction supervision with particular emphasis on urban/town water supply systems. The personnel should have demonstrated experience in supervising multiple construction sites. Should also have experience in the design and construction of simple piped water supply schemes for rural communities and small towns. He/she will be expected to lead in the planning, documentation and reporting on Water Safety issues.

Quantity Surveyor (Short Term)

A professional Quantity Surveyor with a minimum of B. Sc. or its equivalent in Building Technology specializing in quantity surveying with at least 10 years general experience with strong emphasis in the water supply and sanitation sector and shall be expected to make useful input in the Bill of quantities and its description

Community Development Expert

Community Development Expert with degree in social sciences/social work or equivalent and relevant training in community development and at least 10 years post qualification relevant experience in community mobilization for rural water and sanitation schemes in developing countries, skills in the use of participatory planning techniques and must have demonstrated ability to train, especially beneficiary communities in tariff setting and operation and maintenance, .CLTS, social marketing, He will be expected to support the key officers responsible for Health, Safety Environmental and Social Safeguard as well as the Water Safety issues carry out implementation and documentation of all issues for each site.

Environmental and Social Safeguards Officer

An Expert in Environmental and Social Safeguards issues with minimum of First Degree in Social Sciences, Environmental Science, Engineering or other related fields and at least 3 years relevant experience in environmental, social, health and safety.

Health, and Safety, Officer

An Expert in Health and Safety issues with minimum of First Degree in related fields and at least 3 years relevant experience.

Other fields of expertise Required during the construction phase

Hydro-geological expert(Short-Term)

A professional Hydro-geologist with a minimum of BSc. Geological Engineering/Geology and with minimum of 10 years post qualification experience in borehole siting, drilling and development supervision. His input will be required for confirming data of the borehole sources

Electro-Mechanical Engineer (Short-Term)

A professional electrical or mechanical engineer with a minimum of B.Sc. or its equivalent in electrical or Mechanical engineering with at least 10 years experience in the design, installation and maintenance of submersible pumps for mechanized boreholes and electro-mechanical plants for surface water schemes.

Land Surveyor Short-Term)

Surveyor – graduate/diploma or certificate in relevant discipline with at least 5 years experience in water supply network profiling.

Clerk of Works/Technician engineers(Construction Period)

Clerk of works, one for each town with at least 5years experience in construction of water system

Other Experts inputs required as and when needed include:

- Water treatment processes and quality analysis
- Structural engineering for water retaining structures

F. Time Frame

The duration of the assignment is estimated to be ten (10) calendar months and 12 calendar months for the maintenance liability period for the completed facilities

The consultancy is expected to be awarded **by 30th April 2018,**

The estimated number of professional staff-months required for the assignment.

Personnel	No. Required	Man month Each	Man month Required
KEY STAFF			
Water Supply Engineer/Project Manager	1		
Civil/Construction Engineer	1		
Structural Engineer	1		
Quantity Surveyor	1		
Community Development Officer	1		

Environmental and Social Safeguard Officer*	1		
Health and Safety Officer*	1		
TOTAL			45
SUPPORT STAFF			
Hydrogeologist	1		
Electro-Mechanical Engineer	1		
Land Surveyor	1		
Clerk of Works (Piped system)	8		
AutoCAD Technician	2		
TOTAL			95

G. Reporting

The Consultant will report to the **Chief Executive of CWSA**, or his representative for all activities and consultations.

- a) Monthly Progress Reports (3copies hardcopies and softcopies to relevant stakeholders) - Reports will contain progress since last report, schedule and budget reviews, and constraints to progress, if any, and recommendations to overcome such constraints. A separate monthly report should be prepared on environmental, social, health and safety issues.
- b) Draft Final Report (3copies hardcopies and softcopies to relevant stakeholders) - On completion of the assignment, the consultant will present a detailed Draft Final Report covering (I) each of the Towns, (ii) all activities in the scope of work, (iii) all procedures adopted with as built drawings, final capital costs, variations (if any). A separate draft final report should be prepared on environmental, social, health and safety issues.
- c) Final Report (4copies hardcopies and softcopies to relevant stakeholders) - Following review and comments of the Draft Final Report by the Client and the World Bank, the Final Report will be submitted within one month after receipt of all comments. A separate final report should be prepared on environmental, social, health and safety issues.

The report will include:

- the 'as-built' drawings and other relevant documentations.
- lesson learnt and recommendations for future projects

All reports will be submitted in English. The Draft Final and Final Reports will contain an Executive Summary. All reports will also be provided in softcopies (*not in pdf*).

H. Outputs

The following outputs are expected;

- (i) Community members with improved their knowledge on environmental , Social and water Safety issues;
- (ii) Implementable Water Safety Plan
- (iii) File or folder with Documented environmental and social safeguard issues including evidence of access to undisputed land of each site including
- (iv) The draft Facility Management Plan is produced, including the proposed tariff structure (including rules for house connections) and a list of houses that have requested house connections
- (v) 9no Piped Water Supply Systems completed and operational
- (vi) A training program for the Water Supply Operators
- (vii) A simple file or folder containing the following documents related to the subproject is available in each community.
 - Baseline information
 - Technology and service level options and costs
 - Training materials used for Water Supply Operators (administration, operation and maintenance)
 - Procedures for house connections
- (viii) Water Supply Operators have the capacity to manage their water supply facility.
- (ix) Trained operators and adequate tariff has been put into effect
- (x) Sets of As-built drawing for all systems
- (xi) Operation and maintenance manuals for the piped water supply systems
- (xii) Record of all visits conducted by the TA and minutes of all meeting
- (xiii) Consultant's report outlining the lessons learnt and recommendations

I. Provision of Equipment and Services:

For the proper execution of the assignment, the Consultant will be expected to set up office at locations deemed strategic enough to facilitate consultations and coordination at each level. The logistics to be provided by the Consultant shall include,

- a) Computing capability as required;
- b) Vehicles for the execution of the assignment
- c) Facilities for day-to-day running, periodic maintenance services for these vehicles and
- d) All office facilities, accommodation and subsistence necessary for the Staff on the assignment.

J. Input from Client

- a) Working Drawing
- b) Borehole sources data
- c) Bill of Quantities

- d) CWSA Small Towns design guidelines
- e) Design Report

K. Provision of Equipment and Services:

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