Republic of Uganda

MINISTRY OF WATER AND ENVIRONMENT

IRRIGATION FOR CLIMATE RESILIENCE PROJECT

TERMS OF REFERENCE

FOR

CONSULTANCY SERVICES FOR CONSTRUCTION SUPERVISION OF KABUYANDA IRRIGATION SCHEME INFRASTRUCTURE AND FACILITIES

AUGUST 2020

1. BACKGROUND

1.1 Introduction

The Government through the Ministry of Water and Environment with financial assistance from the World Bank is undertaking implementation of the Irrigation for Climate Resilience Project. The project will establish irrigation and drainage infrastructure in Kabuyanda and Matanda in Isingiro, and Kanungu districts respectively.

The project is designed to assist the Government of Uganda increase the area under irrigated agriculture. This will foster the Government programme of modernizing agriculture that aims at increasing incomes and improving the quality of life of poor farmers and their households. It will further ensure food security and provision of gainful employment through improved agricultural enterprise development and promotion of sustainable land use and management of natural resources.

The proposed scheme is located in the sub-counties of Kabuyanda and Kikagati, in Isingiro District, Western region, near the border with Tanzania. The command area is located in a basin with a plain at 1,300 m elevation, circled by hills reaching 1,400 m. The Mishumba River flows through it from north to south. The Mishumba River drains an area of 90 Km2, partly located in the Rwoho CFR under NFA, and later joins the Kagera River along the Uganda-Tanzania border. Water flow has been estimated at 16 Mm3/yr, with strong variability across years (10 to 24 Mm3/yr) as well as strong variability during the year (0.3 Mm3 in July vs. 2.3 Mm3 in November).

The design consists of a zoned earth fill dam on the Mishumba River, 33 m high, 314 m of maximum crest length, and creating a 8.8 Mm3 reservoir. The dam will feed a piped irrigation network serving a command area of 3,300 ha. The minimum operational level of the dam is at 1,347 m, which allows to feed the system with natural pressure (from few meters up to 45 m across the command area).

1.2 Objective of the Assignment

The overall objective of the assignment is to supervise the construction works to be executed under two different works contracts namely; Construction of Kabuyanda Dam and Auxiliary Facilities and, Construction of Distribution Pipe Network for Kabuyanda Irrigation Scheme up to the farm gate through prudent contracts management, ensure conformity and compliance to design specifications, design modifications, quality control and assurance, and performance monitoring for the infrastructure during defects period.

2. SCOPE OF THE ASSIGNMENT

The scope of the consultancy services, includes but is not limited to:

2.1 Construction supervision

The consultant shall prepare for the commencement of the works; and subsequently supervise the construction Contracts as the "Engineer". The terms and conditions for construction works shall be as stipulated in the latest harmonized version of the FIDIC conditions of contract. Construction supervision will also be in line with the ENVIRONMENTAL AND SOCIAL POLICY in section 10, and the CODE OF CONDUCT in section 11.

Construction supervision will encompass the entire scope of work related to the project. The scope of supervision will also encompass re-instatement works. The consultant shall put in place a quality assurance system, a risk and environmental, health and safety management system to ensure compliance with construction standards.

Construction supervision covers three distinct phases: (i) pre-construction appraisal phase (i.e. 2 calendar months for the dam and 2 calendar months for the pipe network/conveyance); (ii) construction phase (i.e. 30 calendar months for the dam and 24 calendar months for the pipe network/conveyance system) and (iii) defects liability phase (i.e. 12 months for the dam and 12 months for the pipe network/conveyance system). Both works contracts shall be executed concurrently.

2.1.1 Pre-Construction appraisal phase

During pre-construction appraisal, the consultant's tasks shall include, but not be limited to the following:

i. Perform design appraisals and, where appropriate, propose modifications with working drawings in consultation with the Client.

ii. Facilitate Sites Handover for the Works to the Contractors.

iii. Review the Contractors' work programs (in acceptable and compatible software) and method statements while highlighting areas that may pose a risk to works scope, quality and timely completion. Identify the key milestones and the critical path activities. Analyze relevance of activities and consistency with project works programme and provide advice to eliminate unnecessary/redundant activities.

iv. Review Contractors' Environmental and Social Management Plans (C-ESMP), taking into consideration the provisions made in the initial project ESIA, ESIA Certificate Conditions of

Approval by issued by NEMA, and any associated Environmental and Social Assessments undertaken during project planning, implementation and operation. The C-ESMP shall cover all project activities to be undertaken by the Contractors, including the main project linear works, supporting facilities such as Camps, Equipment Storage Yards, Materials sites (gravel, sand, clay, stone aggregates, etc).

v. Review Contractor's proposed resources (labour/staff, equipment and materials), utilization, deployment, productivity and efficiency. Undertake a detailed works analysis and ensure the detailed works project schedule presents realistic resource utilization and deployment and productivity rates (labour & equipment) for each activity to attain the target outputs and is synchronized with the work programme.

vi. Ensure that insurance, performance securities and advance payments guarantees are furnished by the Contractor in time. In liaison with the Employer, should validate these documents and ensure authenticity in order to issue the commencement notice for the construction.

vii. Review and make recommendations to the Contractor's procurement schedule.

viii. Ensure that the Contractor's procurement schedule indicates all materials are from the right source, quality and of sufficient quantities.

ix. Inspection and assessment of proposed works sites, quarry and borrow areas and materials for the project;

x. Carryout Environmental, Social, Health and Safety due diligence during acquisition and operation of all the supporting facilities by the Contractors, including technical supervision of conduct of applicable statutory assessments. The Consultants shall review TORs for all Assessments to ensure technical adequacy of the prepared ESIAs/ ESMPs reports before submission to MWE/MAAIF, NEMA and/or to the Bank for clearance;

xi. Ensure that the Contractor conducts the necessary environmental and social assessments, and obtains the requisite statutory approvals (such as licenses, certificates, permits, etc)for any proposed auxiliary facilities including campsites, equipment yards, borrow pits, quarry sites, dumpsites, before establishments and/or installation of equipment, etc.

xii. Prepare a risk management plan for the construction project. Carry out risk identification for potential delays, disruptions, disputes arising from compensation events, reliability of materials sources and delivery and unforeseen ground conditions and environmental hazards and their potential impacts on construction methods. Undertake analysis/assessment of

potential risk identified and evaluate effects (qualitatively and quantitatively) and ranking of occurrence and classify and major, moderate or minor. Draw-up risk response to circumstances to include possibilities for risk avoidance, transfer or controllable/minimization.

xiii. Advise the Employer on contractual obligations and establish early warning systems to minimize occurrence from potential compensation events and subsequent claims for time extension and/or costs.

xiv. Ensure that the Contractor conforms with the legal, health and safety standards and all safe guards' requirements.

xv. Ensure that the Contractor works within the environmental and social frameworks as detailed in the project's Environmental and Social Impact assessment (ESIA)/Environmental and Social Management Plan (ESMP) and the Resettlement Action Plan (RAP), and compliance with the relevant National policies and legal Framework, and with the environment and social safeguard policies of the Bank.

xvi. Review the Environmental and Social Monitoring Plan (ESMP), outline and disseminate the mitigating/enhancing, monitoring, consultative and institutional measures required to prevent, minimize, mitigate or compensate for adverse environmental and social impacts or enhance the beneficial impacts.

xvii. Ensure adequacy of implementation of the mitigation measures and strengthening of compliance to environmental and social safeguards procedures (ESAP).

xviii. Prepare minimum safety standards for workers. Ensure tools and guidelines for safeguard procedures specifying minimum safety procedures are available and accessible to all sites staff for consultants, contractors and workers.

xix. Ensure range and nature of safety measures at works sites and their supervision are in place and implemented.

xx. Develop and establish construction management systems and procedures for correspondences and notices between Employer/Consultant/Contractor, site management documentation, reporting, duties and responsibilities of key consultant's staff, site approvals etc.

xxi. Develop and establish a Quality Control and Quality Assurance System and review and approve the Project Quality Plan for the works execution.

2.1.2 Construction Supervision phase

The Consultant shall represent the client on site and shall deploy a full-time supervision team on site. The team shall be responsible for supervising the entire construction process of the dam and the pipe network system for Kabuyanda Irrigation Scheme. Two separate contractors will undertake these works.

During the entire construction process, the Consultant shall work in close cooperation with the Employer's project team.

During the construction period, the Consultant's tasks shall include, but not be limited to the following:

i. Supervise the Contractors' actual work progress versus the planned work programme and ensure that delays are kept to a minimum and, that the Contractor at their cost takes measures to make up for time lost and pull the project back to planned schedule. In addition, the Consultant is required to keep a monthly updated work program in liaison with Contractor.

ii. Timely issue to the Contractors all the necessary correspondences related to information, instructions, clarifications and suggestions to ensure consistency in quality, positive progress and planned costs.

iii. Inspect, determine and approve the part of works before, during and after construction of part and, or whole of the works to ensure all time compliance with the specifications and standards.

iv. Supervise the Contractors' procurements, ensuring that all materials are from the right source, quality and of sufficient quantities.

v. Review Contractors' proposed resources (labor/staff, equipment and materials), utilization, deployment, productivity and efficiency. Ensure the detailed works activities schedule presents the resource utilization and deployment for the target outputs and is synchronized with the work programme, and updated on a monthly basis.

vi. Supervise the Contractors' construction activities, ensuring that all construction is undertaken as designed, or in accordance with client-approved variations to the original design, and that all quality standards are met.

vii. Undertake and prepare revised designs, improvements or modifications as necessary during construction.

viii. If necessary, approve any amendments to designs from the Contractor.

ix. Ensure that the Contractor has issued insurance of all personnel for accidents liabilities during construction.

x. Inspect and certify all completed works. Certify payment certificates for payments of completed works or parts thereof. Ad measure and certify all quantities invoiced by the Contractor. Prepare the contractor's payment statement including final certificate in accordance with General Conditions of Contract and Conditions of Particular application.

xi. Ensure that the Contractors perform tests and provide reports from approved laboratories according to approved and agreed upon quality standards to the client and approves the materials procured by the contractor for the works to ensure that they comply with standards and specifications.

xii. Periodically review the status of the Contractors' real versus required staffing, equipment, insurance, status of performance securities, advance payment guarantees and recommend appropriate actions to the client. In addition, the Consultant will check the status of expiry of the performance bond and advance payment guarantee and recommend appropriate actions (if applicable) to the Employer.

xiii. State all methods and procedures that are intended to ensure robust quality control, execute all procedures accordingly, and report on all quality control undertakings and their results to the client.

xiv. In addition to continuous construction supervision, schedule and organize a weekly formal inspection of activities with the Contractors' representatives and agree with the Contractors on progress made.

xv. Undertake regular delay surveys to facilitate acquisition of specific site production and productivity of the works (labor and equipment) or materials availability for the Contractor. Monitor and document Contractor inefficiencies, disruptions and delays and determine problems and advise on solutions to improve works progress rates.

xvi. Develop and maintain a project progress reporting format that is both, concise and in accordance with the Employer's requirements.

xvii. Prepare Monthly progress reporting to the client, and immediate reporting should any issues be identified that could affect the project completion schedule.

xviii. Monthly progress reporting to the client, and immediate reporting should any issues be identified that could affect the project completion schedule. This should include arrangement for site meetings as and when they may be required.

xix. Monitor the value of works executed against payments made to the Contractor and report to the Employer monthly consistency against programme of expenditure and works giving reasons and recommendations.

xx. In consultation with the client, and if necessary, prepare variation orders.

xxi. Schedule and organize witness-testing events, including contractual tests for the completed works.

xxii. Maintain daily site records on prevailing weather conditions, labour productivity, availability and operational condition of key plant, plant productivity, daily activity outputs, and disputes between employers and staff as well as between contractor and local residents, and all other observations that may be of importance in case of any arbitration or legal disputes.

xxiii. Ensure that the contractor meets Environment, Social, Health and Safety requirements (ESHS) as indicated in Annexes 1 and 2, and in the project ESIA/ESMP.

xxiv. Ensure that the contractor works within the environmental and social frameworks as detailed in the project's environmental social impact assessment (ESIA) and environmental and social management plan (ESMP) and the Resettlement Action Plan (RAP). Document and verify any complaints and grievances from project affected persons/workers. Ensure adherence to the NEMA Certificate of Approval Conditions.

xxv. Ensure that there is timely and coordinated response to environmental and social issues – a functional system of reporting safeguard issues in place and issues of concern by different stakeholders regularly discussed and responded to.

xxvi. Develop and maintain an Environmental and Social Compliance management "Tracker" to document implementation C-ESMP and instructions issued during project implementation by the Contractors;

xxvii. Develop and maintain an Accident Log during project implementation and undertake to report serious and severe accidents to the Employer within 24 hours of occurrence.

xxviii. Document the responses to environmental and social issues of concern raised by different stakeholders.

xxix. Ensure preparation of quality and timely environmental and social reports on regular monthly basis.

xxx. The Consultant shall guide the Contractors on compiling Operation and Maintenance Manual and shall forward three (3) copies of the Manual to the Client as shall be provided for in the Works Contract.

xxxi. Commission and approve completed systems and facilitate hand over to Employer.

xxxii. Prepare snag lists after substantial completion of works.

xxxiii. Prepare environmental and social audits and certification with regulatory authority.

xxxiv. Prepare the 'substantial completion report' prior to technical handover.

xxxv. Facilitate technical commissioning.

2.1.3 Defects Liability Phase

The Consultant shall ensure and maintain low intensity supervision and monitoring during the defects liability period. During the entire period, the consultant shall work in close cooperation with relevant operational staff, as nominated by the local authorities, communities and Employer. During the defects liability period, the consultant's task shall include, but not be limited to the following:

i. Supervise and update the Contractor's snag list, as agreed and contained in the substantial completion report.

ii. Monitor the performance of all hydraulic works and equipment, notify both the contractor and the client on defects identified, and recommend remedial actions.

iii. Supervise and certify the remedying of any defects that become apparent during the defects liability phase.

iv. Review and supervise the agreed upon 'on the job' training programme of operational staff by the Contractors.

v. Ensure that the Contractors supply complete sets of all works manuals, drawings, models, warranties, and other relevant documentation to the Employer. The supervision Consultant should point out all items missing and recommend actions to be taken to the Employer.

vi. Review, approve, and certify 'As-Built' drawings.

vii. Compile and document the schemes Asset Register in GIS

viii. Review and certify the Final Statement of Accounts.

ix. Develop and maintain a Defects Liability reporting format that is both, concise and in accordance with the Employer's requirements.

x. Hold regular scheduled meetings with the Contractors and Employer where all defects identified are recorded and a time schedule for remedying these shall be agreed.

xi. Prepare monthly progress reporting to the Employer on the operational status of scheme.

xii. Prepare Final Completion Report, including the design modifications (detailed analysis).

xiii. Assist the Employer in the final handover and acceptance process, including all associated administrative work, such as the discharge certificate (Defects Liability Certificate) for the Contractor.

xiv. Update Asset Register.

2.2 Design of Distribution Network within each block and up to the farm gate

The Consultant shall also carry out a detailed design of the piped distribution network from each block (about 20 ha each) up to each farmer's farm gate. The Consultant is expected to carry out this assignment within a duration of six (6) months. The Consultant shall:

i. carry out detailed topographical survey to aid design and layout of distribution network within each block and up to the farm gate for the 3,300 ha

ii. In consultation with the farmers carry out detailed design and layout of the distribution network within each block and up to the farm gate and the associated hydraulic structures considering the total demand, economy and base flow availability. The designs will be compatible with the local management system conditions and/or capability and should include night storage reservoirs (if any), a distribution pipe network, drainages and road alignments, sprinklers/driplines spacing and lengths, locations of structures, and water profiles along canals and drains at specified reaches, which is most economical, easily manageable and aligned with topographic features and geological investigations;

iii. Undertake Environmental and Social Assessments related to the proposed civil works

iv. establish flood protection requirements for the command area and design the respective drainage system accordingly;

v. prepare general plans and drawings for each block distribution network up to the farm gate;

vi. Design of access roads, which will give easy access to all the irrigation blocks. The Consultant shall for any prominent access roads to be submerged by the reservoir impoundment, propose

and prepare detailed designs of alternative access roads. The designs will be presented to the Client and other stakeholders, for discussion and approval;

vii. Prepare specifications and priced bill of quantities and construction schedules accordingly. The work items and construction schedules will be presented to the Client and other stakeholders, for discussion and approval;

viii. Prepare bidding documents for the works for construction of distribution network within each block and scheme access road;

ix. Prepare operating and maintenance manual (including rule curves) for irrigation release outlet structures (gates).

The consultant shall take into consideration intensive labour engagement and use of local construction capability and materials during the design as necessary. Monthly and annual diversion and farm requirements of water should be estimated, on the basis of crop water requirements. The Consultant shall prepare the layouts and drawings of the different project components using AutoCAD software. The Consultant shall also prepare a schedule of quantities in line with the latest Civil Engineering Standard Methods of Measurement (CESMM), for use in cost estimates

The consultant's tasks for execution of this assignment have been outlined and detailed as thoroughly as possible. However, the consultant shall bear in mind that the list of tasks and activities can by no means be considered as a complete description of the consultant's duties. It is to be understood that the consultant shall perform all duties of the Engineer as outlined in FIDIC Red book, Environmental and Social Policy and Code of Conduct.

The Consultant is expected to provide in his proposal a work breakdown and schedule, which will enable him to accomplish the above among other requirements of the assignment.

3. ORGANISATION OF THE ASSIGNMENT

3.1 Contractual Arrangement

The scope of work shall be time based for the Part 1- Construction Supervision and lump sum for Part 2 – Design of On-farm Distribution Network.

3.2 Liaison with Client

MWE shall nominate members to constitute a contract management team headed by a Contract Management Team leader. The Contract management team shall carry out all contract management

oversight activities, supervisory roles and review, sign-off and approval of consultant's reports. It will be the consultant's duty to maintain close contact with the Contract Management Team leader on all aspects of work. As a matter of principle, all formal communications relating to the work will be directed to the attention of the Contract Management Team leader.

MWE shall nominate an engineer who shall be the Clients Resident Supervisor, responsible for the day-to-day coordination and monitoring of the project activities. As such, the engineer shall closely work with the consultant during the supervision stages as well as the design stage to ensure that all the technical requirements of the project are fully met. In particular, the engineer, under the guidance of the Contract Management Team leader, shall review and provide the Client's input, comments and guidance on the work plans, methodologies and reports prepared by the consultant for quality assurance and achievement of set objectives. The MWE shall also assign a resident sociologist and environment safeguard specialist responsible for supervision of EHS and social aspects on the project.

3.3 Firm Qualifications, Logistical Setup and Staffing

The consultant should demonstrate experience in carrying out at least two (2) similar assignments in the last 10 years. Similar assignments defined as those for undertaking construction supervision for water storage dams and bulk conveyance systems and design of on-farm distribution networks of a value of at least US$ 5 million.

Within the technical proposal, the consultant shall elaborate on the envisaged logistical setup and deployment of appropriate skills for execution of the assignment. The consultant shall present the staffing schedule in a manner that clearly shows the stage and duration where each of the proposed team members is planned to be involved in the project.

An organogram reflecting the responsibilities of each staff member and line management setup of the proposed team shall be part of the proposal. It is recommended that the consultant integrates local expertise into the project execution team.

In the course of implementation of the assignment, all the proposed personnel must be available for this assignment. Staff changes shall not be accepted, except in exceptional circumstances (and at the discretion of the Client).

Table 1 shows the required personnel and the estimated time inputs. As a minimum, the key personnel shall be required to undertake this assignment within the stipulated timeframe. The consultant is free

to propose additional staff beyond the minimum stipulated and also propose additional time, provided a clear justification is provided in the technical proposal.

Table1: List of Required Personnel with Minimum Time Inputs

Expert	General experience (years)	Specific experience (years)	Professional Time Input (Man-month)
A) Key Staff			
Project Manager/Team Leader	15	10	35
Resident Engineer	15	10	42
Geotechnical Engineer	10	5	12
Hydraulic Engineer	10	5	12
Irrigation and Drainage	10	5	12
Electro-mechanical Engineer	10	5	12
Land Surveyor	10	5	30
Environmental Specialist (2No.)	10	5	60
Social development specialist	10	5	30
B) Mandatory Non- Key Staff			
Assistant Resident Engineer – Dam and auxiliary works	7	5	32
Assistant Resident Engineer – Pipe Network	7	5	32
Clerk of Works – Dam (2No.)	5	3	60
Clerk of Works – Pipe Network (2No.)	5	3	48
Total			**417**

Table 2: Minimum qualifications and experience of key personnel

No.	Position	Minimum qualifications and experience
1	Project Manager/Team Leader.	**Education**: Bachelor's degree in Civil / Hydraulic Engineering or other relevant discipline and Masters' in Construction Management or Project Management. **General experience**: Minimum of 15 years working experience **Specific experience**: a. 10 years' experience in planning and implementation (design and construction supervision) of water for production infrastructure projects; irrigation schemes and earth dams

No.	Position	Minimum qualifications and experience
		b. Experience as Project Manager or Team Leader on not less than 3 previous projects similar in scale and content to this one. c. Experience in implementation of projects in Sub-Saharan Africa d. Must be a Registered Engineer in Uganda or any other recognized engineering body.
2	Hydraulic Engineer	**Education:** Bachelor's degree in civil/hydraulic engineering or other relevant discipline and Masters' degree in Hydraulic Engineering. **General experience**: Minimum of 10 years working experience **Specific experience**: a. 5 years' experience in the field of hydraulic engineering b. Experience as Hydraulic Engineer on not less than 3 previous projects involving similar works and infrastructure c. Must be a Registered Engineer in Uganda or any other recognized engineering body
3	Irrigation and Drainage Engineer	**Education:** Bachelor's degree in Civil Engineering or other relevant discipline and Master's degree in Irrigation Engineering. **General experience**: Minimum of 10 years working experience **Specific experience**: a. 5 years' experience in the field of Irrigation and drainage engineering b. Experience as Irrigation and Drainage Engineer on not less than 3 previous projects involving similar works. c. Must be a Registered Engineer in Uganda or any other recognized engineering body.
4	Geotechnical/Structural Engineer	**Education:** Bachelor's degree in Civil Engineering or other relevant discipline and Master's degree in Geotechnical Engineering. **General experience**: Minimum of 10 years working experience **Specific experience**: a. 5 years' experience in the field of Geotechnical Engineering b. Experience as Geotechnical Engineer on not less than 3 previous projects involving similar infrastructure.

No.	Position	Minimum qualifications and experience
		c. Must be a Registered Engineer in Uganda or any other recognized Engineering body.
5	Electro-mechanical Engineer	**Education:** Bachelor's degree in Mechanical Engineering or other relevant discipline and Master's degree in Electro-mechanical Engineering. **General experience:** Minimum of 10 years working experience **Specific experience:** a. 5 years' experience in the field of Electro-mechanical Engineering b. Experience as Electro-mechanical Engineer on not less than 3 previous projects involving similar infrastructure. c. Must be a Registered Engineer in Uganda or any other recognized Engineering body.
6	Social development specialist	**Education:** Master's degree in Sociology, Development Studies or related fields. **General experience:** Minimum of 10 years working experience covering a range of socio-economic and gender issues **Specific experience:** a. 5 years' experience as a Social Development Expert b. Experience as Social Development Expert on not less than 2 previous projects involving similar infrastructure. c. Previous experience working on World Bank funded projects will be an added advantage
7	Environmental Specialist (2 No.)	**Education:** Bachelor's degree in Environmental Sciences/ Engineering or equivalent **General experience**: Minimum of 10 years working experience. Experience with World Bank environmental policies is an added advantage. **Specific experience**: a. 5 years' relevant experience in assessment and mitigation of environmental impacts on infrastructure projects b. Experience in delivering good international industry practice with respect to Environment, Social, Health and Safety (ESHS). c. Experience in supervision of at least 2 infrastructure projects, managing associated Environment, Social, Health and Safety aspects d. Must be a NEMA-accredited environmental practitioner

No.	Position	Minimum qualifications and experience
		e. Hold a Certificate in Health and Safety Management from a recognized Training Institution, such as NEBOSH, OSHA, etc.
8	Resident Engineer	**Education:** Bachelor's degree in Civil/Hydraulic Engineering or other relevant discipline. Postgraduate degree in Construction Management added advantage. **General experience**: Minimum of 15 years working experience **Specific experience**: a. 10 years' experience in construction supervision of water for production infrastructure projects, irrigation schemes and earth dams b. Experience as Resident Engineer on not less than three previous projects (similar in scale and content to this one) with at least one in Sub-Saharan Africa c. Shall be a Registered Engineer in Uganda or any other recognized engineering society
9	Assistant Resident Engineer - Dam	**Education:** Bachelor's degree in Civil/Hydraulic Engineering or other relevant discipline. Postgraduate degree in Construction Management added advantage **General experience**: Minimum of 7 years working experience **Specific experience**: a. 5years' experience in construction supervision of water for production infrastructure projects; irrigation schemes and earth dams b. Experience as Resident Engineer/Assistant Resident Engineer on at least one previous project (similar in scale and content to this one) in the East Africa region
10	Assistant Resident Engineer – Pipe network	**Education:** Bachelor's degree in Civil/Hydraulic Engineering or other relevant discipline. Postgraduate degree in Construction Management added advantage **General experience**: Minimum of 7 years working experience **Specific experience**: a. 5years' experience in construction supervision of Water Supply Infrastructure including similar pipe networks

No.	Position	Minimum qualifications and experience
		b. Experience as Resident Engineer/ Assistant Resident Engineer on at least one previous project (similar in scale and content to this one) in the East Africa region
11	Land Surveyor	**Education:** Bachelor's degree in Surveying. **General experience**: Minimum of 10 years working experience in cadastral and topographic surveying among others. **Specific experience**: a. 5 years' experience in land cadastral and topographical surveying b. Experience in surveying works on at least two previous Water for Production Infrastructure projects; irrigation schemes and earth dams in Uganda.
12	Clerk of Works – Dam (2No.)	**Education:** Higher diploma in Civil Engineering or related field. Bachelor's degree in relevant field is added advantage. **General experience**: Minimum of 5 years working experience **Specific experience**: a. 3 years' experience in construction supervision b. Experience in construction supervision of water for production infrastructure projects; irrigation schemes and earth dams
13	Clerks of Works – Pipe Network (2No.)	**Education:** Higher diploma in Civil Engineering or related field. Bachelor's degree in relevant field is added advantage. **General experience**: Minimum of 5 years working experience **Specific experience**: a. 3 years' experience in construction supervision b. Experience in construction supervision of Water Supply Infrastructure including similar pipe networks

Note:

- Key Staff must obtain a score of at least 75% upon Evaluation. Key Staff who obtain a score of less than 75% shall be replaced if the Consultancy firm progresses to negotiation stage.
- Mandatory non-Key staff who are established not to meet fully the minimum requirements shall be replaced if Consultant proceeds to contracting stage

3.4 Site Visit

To familiarise consultants with the services to be provided under this consultancy, a pre-bid meeting will be held in Isingiro district and it will include a tour to the project sites. It is at the consultant's discretion to make additional visits to the project area; in case they feel there is need to gather more information. It should be understood, that any cost incurred to the consultant in this regard shall not be reimbursed.

4. DURATION OF THE ASSIGNMENT

The duration of the consultancy services is expected to last 50 calendar months i.e. 2 months for pre-construction appraisal, 30 months for construction supervision, 6 months for design of the distribution network to the farm gate, 12 months for Defects Liability Period covering the entire scope of assignment. Dam, pipe network conveyance and design of on farm distribution network.

The above stated durations are to be understood as guidance and it is the responsibility of the consultant to establish a detailed work program within the above time estimates. The estimated staff time inputs should be provided in accordance with the consultant's professional judgment and knowledge of the local conditions and needs.

5. REPORTING AND MEETING REQUIREMENTS

5.1 The Consultant Should Report to the Following

The Project Coordinator – Irrigation for Climate Resilience Project

Attn: Eng. Henry Kizito
Ministry of Water and Environment
Plot 3-7, Kabalega Crescent, Luzira, Kampala, Uganda
E-mail: henry.kizito@mwe.go.ug, kizitohl@yahoo.co.uk,

As indicated in **Table 4**, the consultant will be required to produce and submit the following principal reports and documents in the quantities and timing indicated. At each reporting stage, the consultant shall also be required to submit to the Client an electronic copy, using the software specified in **Table 4.**

Table 4: Summary of reporting requirements

Description	Timeline for submission	No. of hard copies	Electronic copies to MWE contact
Construction Supervision			
Pre-Construction Appraisal Report	By the end of month 2	4	Word; Excel (all tables), MS Project (time schedules)
Monthly construction progress reports	Monthly from commencement of works	4	Word; Excel (all tables), MS Project (time schedules)
Substantial construction works completion report, including the following; i. Operations Manuals ii. Assets register iii. Hydraulic Models iv. As-built drawings	By End of month 30	4	Word; Excel (all tables); Epanet (Hydraulic models); CAD (all drawings); ArcView GIS (location of all new & rehabilitated assets)
Defects Liability Monitoring report (quarterly)	Quarterly starting from commencement of Defects Liability period	4	Word; Excel (all tables)
Final completion report and completion of training report	Quarterly starting from commencement of Defects Liability period	4	Word; Excel (all tables)
Design of Distribution Network within each block up to the farm gates			
Inception Report	2 weeks after issuance of commencement instructions	4	Word; Excel (all tables)
Draft Design Report (DDR)	4 months after commencement of designs	4	Word; Excel (all tables); Epanet (Hydraulic models); CAD (all drawings); ArcViewGIS (location of all new & rehabilitated assets)
Final Design Report (FDR)	6 calendar months after commencement of designs	4	Word; Excel (all tables); Epanet (Hydraulic models); CAD (all drawings); ArcViewGIS (location of all new & rehabilitated assets)
Bidding Documents	6 calendar months after commencement of designs	4	Word; Excel (all tables)

5.2 Reporting Requirements – General

The consultant shall hand over all data collected during the course of the assignment to the client in formats approved by the client. Furthermore, all calculation sheets must be made available to the client at the end of the project and, on request, at any stage of the project.

During the course of the assignment, the consultant shall submit reports as stated in Table 4. The reports shall, as a minimum, meet the following requirements:

5.2.1 Reporting Requirements – Pre-Construction Appraisal

i. Pre-Construction Appraisal Report

This report shall present:

i) ***Work Program Analysis*** – include the adequacy of the detailed work program to ensure consistent, realistic and timely completion of the defined scope and desired quality through Critical Path Analysis.

ii) ***Resource Assessment*** – include resource procurement scheduling, utilisation and reliability, optimisation of productivity and efficiency to achieve target outputs and milestones of detailed works program.

iii) ***Construction Risk Management Plan*** – this shall elaborate the identification, analysis/assessment, response and mitigation/minimization of potential risks to the construction project works including unforeseen conditions and environmental hazards.

iv) ***Construction Management System*** – elaborate the construction management protocols, obligations, responsibilities, procedures for notices, communications, site documentation, reporting and approvals (on-site and off-site).

v) ***Safeguards Review*** – including status of compliance with legal, health, safety and all safeguards and a review of the ESMP and Contraction ESMPs/ ESAP stipulating procedures, tools and methods to be followed for the construction works.

vi) ***Quality Control and Quality Assurance System*** – shall elaborate the specific quality control mechanism and quality assurance system to be established

5.2.2 Reporting Requirements – Construction Supervision phase

i. Monthly construction progress reports: The monthly progress reports shall state the status of project implementation (i.e. actual vs. planned physical progress; actual vs. planned expenditures), financial information, all agreed and all new variation and compensation events, all issues requiring client attention, environmental and social safeguards, health and safety information,, and other information that may have an impact on project progress. The report shall include the Engineer's opinion of the current physical progress, quality of works and future prospects on timely completion and costs. The report shall include a Gantt chart, a detailed works schedule with resources inputs, productivity rates and outputs for each works activity. It shall also include photographic evidence of progress. In addition, the report should project cash flows and work progress over the next three months.

ii. Substantial works completion report: The substantial completion report shall state the project scope, principal activities by the consultant and the contractor (including deployment of resources during project implementation), the contractor's performance, all project relevant observations of the consultant, major issues that were encountered during project implementation and how these were solved, the project schedule citing all delays if any, and financial information. Most important, the substantial completion report shall include a list with all snags to be addressed during the defects liability period, if any, and propose a time schedule for addressing the issues that have been identified.

iii Operational manuals: The consultant shall ensure that suppliers / manufacturers / the contractor submit all operational manuals to the client in the formats and numbers of copies specified agreed at substantial completion. In addition, all equipment supplied including those from abroad should be accompanied by warranties and guarantees for at least ten (10) years.

iv. ***As-built drawings:*** The supervision consultant shall submit all 'as built drawings' to the client in the format and numbers of copies specified at substantial completion.

v. ***Asset register update:*** The supervision consultant shall collect data on all rehabilitated and new assets for updating the client's asset register for each of the schemes. The software used for this purpose shall be agreed with the client. Data on the location of all civil structures shall be handed to the client as in ArcView GIS, or a format agreeable to the client.

vi. ***Hydraulic models and associated design modification reports:*** If found necessary and if agreed by the Client, the Consultant shall build a hydraulic model of the irrigation scheme infrastructure.

A model shall be built as part of the project, the Consultant shall submit a 'model build and verification report', all calculations sheets, and all hydraulic models (verified model, needs model, and options models). The hydraulic models shall be in software that is to be agreed with the client.

vii. ***Safeguards Reports:*** Shall state the periodic compliance to all legal, health, safety and all safeguards requirements. The evaluation of the ESMP shall be presented indicating the potential impacts and measures undertaken to mitigate or minimise their effects on a monthly basis and for the entire construction period.

viii. ***Incident Reports:*** The consultant shall be required to be part of the reporting of incidents to the client as per the classification guidance provided in Annex 4

5.2.3 Reporting Requirements – Defects Liability Phase

During the defects liability phase, the consultant shall submit reports as stated in Table 4. The reports shall, as a minimum, meet the following requirements:

i. Quarterly Monitoring Reports

The interim progress report shall state progress of the contractor on addressing items on the snag list, all observations on the performance of the project installations, system weaknesses and defects, and warranty issues. In addition, the report shall report the consultant's and / or the contractor's progress on the undertaking of staff training. The reports shall also include progress on safeguard management including on provisions in abstraction and discharge permits and grievance management.

ii. Completion of Training Report

The completion of training report shall state the training obligations of the consultant and the contractor, as agreed with the client, the type and duration of training activities undertaken, the number of participants in each training and their professional background, training outputs and achievements, as well as recommendations for further / continued training if any.

iii. Final Completion Report

The final completion report shall include the same type of information as outlined for the 'substantial completion report'. In addition, it shall show the status of all outstanding actions that were to be completed during the defects liability period.

5.2.4 Reporting Requirements – Design of On Farm Distribution Network

i. ***Draft Design Report (DDR):*** The report will include the following:

i) Details of the topographical and other field investigation design criteria and standards for the different elements of the works, conceptual designs and preliminary cost estimates for viable alternatives

ii) The detailed design of the components to be constructed/installed on the sites, including the basis for determining the dimensions and structural characteristics of the different elements of the works.

iii) Drawings of all the elements of the works in such detail as to enable their construction/installation upon the site.

iv) Bills of quantities and preliminary estimates.

v) Specifications for workmanship and materials equipment, which are to be incorporated into the works.

ii. ***Final Design Report (FDR):*** After review of the Draft Design Report by the Client, the Consultant will prepare a Final Design Report incorporating the comments from the Client. The FDR will be submitted within two (2) weeks from the date of communication of the Clients' comments to the Consultant.

iii. ***Bidding documents:*** After approval of the Final Design Report by the Client, the Consultant shall prepare bidding documents for the works in accordance with the appropriate World Bank Standard Procurement Document to be advised by the Project Procurement Specialist

5.3 Stakeholders engagement and Involvement

For ensuring organisational and stakeholder wide appreciation and ownership of the project outputs, the consultant shall be required to organise meetings for presentation of reports and review of progress of works.

During Construction Phase, monthly site meetings will be conducted. The site meetings will be held at the consultant's project site office. Relevant stakeholders invited to the site meetings will include Isingiro District representatives, community leaders, and the Client's representative. The meetings will entail field visits to the project construction sites conducted and coordinated by the consultant and a sit-down discussion session chaired by the client. The consultant will be responsible for arranging meeting venues.

6. DATA TO BE PROVIDED BY THE CLIENT

To the extent possible, the client will provide free of charge all existing information, data, reports and maps in the custody of the client and will assist the consultant in obtaining other relevant information and materials from governmental institutions and state authorities as far as possible. The data shall include;

i. Engineering studies, feasibility study and detailed design reports and tender documents prepared by M/s AARVEE Associates, Engineers and Planners
ii. ESIA & RAP prepared by M/s Newplan.
iii. NEMA Approval Certificate for Construction of Kabuyanda Irrigation Scheme
iv. ICRP Environmental and Social Management Framework

The information, data, reports, etc., will be available for the consultant's unlimited use during execution of the proposed services.

7. CAPACITY BUILDING

For purposes of capacity building and ensuring adequate direct involvement of the client in delivering the final project objectives, the client will assign staff that shall be agreed upon with the consultant prior to commencement of the consultancy services.

The Consultant shall work with and train designated staff with the aim of developing capacity and knowledge transfer. Training will include key areas related to the assignment such as field investigations, training in software and tools used in project management, training in application of FIDIC contracts for construction projects and operation and management of farm irrigation systems etc. The training measures are aimed at improving the performance of the designated technical staff. The Consultant should propose training topics in the technical proposal which will be further defined during consultative meetings with respective entities. For tendering purposes, the tentative number of individuals to be trained is 8No. Engineers.

The proposal shall include the proposed approach and methodology for the knowledge transfer throughout the assignment, the proposed training obligations of the consultant, the type and duration of training activities to be undertaken, the optimum number of participants in each training, methodology for monitoring and evaluation of trainees, and any post training support and resources.

The consultant in consultation with the Client will organise site visits, inspections and witness testing.

8. SERVICES AND FACILITIES TO BE PROVIDED BY THE CONTRACTOR

Upon commencement of the works contract, the Contractor will provide the following services to the supervision consultant:

i. A fully furnished site office.
ii. Survey equipment.
iii. 3 Transportation vehicles as specified for official work of the consultant.

9. ACTIONS REQUIRING CLIENT CLEARANCE DURING CONSTRUCTION SUPERVISION

The consultant shall note that taking any action under a civil works contract designating the consultant as "Engineer" for which action pursuant to such civil works contract to the written approval of the client as "Employer" is required for the following actions:

i. Use of provisional sums
ii. Variations to works that result in a cost greater than 0%
iii. Location/ siting of Workers' Campsites and Stone Quarries
iv. Construction ESMPs developed by the Contractors

10. ENVIRONMENTAL AND SOCIAL POLICY

The client has an Environmental and Social Policy that will be adhered to during the implementation of the project. The policy is provided in Annex 2.

11. CODE OF CONDUCT

The code of conduct in Annex 3 has been set out to take into account considerations of Environment, Social and Health issues, Occupation Health and Safety of experts, client's and contractor's personnel and the community.

The Code of Conduct should be signed by each Expert to indicate that they have:

i. received a copy of the code;
ii. had the code explained to them;
iii. acknowledged that adherence to this Code of Conduct is a condition of employment; and

Understood that violations of the Code can result in serious consequences, up to and including dismissal, or referral to legal authorities.

The consultant is required at develop a code of conduct for their staff to adhere to. The code of conduct should be acceptable to the client.

ANNEX 1: ENVIRONMENT, SOCIAL, HEALTH AND SAFETY (ESHS)

The Consultant will ensure the Contractor's ESHS performance is in accordance with good international industry practice and delivers the Contractor's ESHS obligations. This includes

1. recruitment of qualified personnel in the positions of Environmental Specialist/Officer, Health and Safety Specialist/Officer, Social Development Officer;
2. review and approve the C-ESMP, including all updates and revisions (not less than once every 6 monthly);
3. review and approve ESHS provisions of method statements plans, proposals, schedules and all relevant Contractor's documents;
4. review and advise the relevant person on the ESHS risks and impacts of any design change proposals and the implications for compliance with ESIA, ESMP, consent/permits and other relevant project requirements;
5. undertake audits, supervisions and/or inspections of any sites where the Contractor is undertaking activities related to the Works, to verify the Contractor's compliance with ESHS requirements, with and without contractor and/or client relevant representatives, as necessary, but not less than once per month;
6. undertake audits and inspections of Contractor's accident logs, community liaison records, monitoring findings and other ESHS related documentation, as necessary, to confirm the Contractor's compliance with ESHS requirements;
7. agree remedial action/s and their timeframe for implementation in the event of a noncompliance with the Contractor's ESHS obligations;
8. attend meetings including site meetings, progress meetings to discuss and agree appropriate actions to ensure compliance with ESHS obligations;
9. check that the Contractor's actual reporting (content and timeliness) is in accordance with the Contractor's contractual obligations;
10. review and critique, in a timely manner, the Contractor's ESHS documentation (including regular reports and incident reports) and to provide advice to ensure the accuracy and efficacy of the documentation;
11. Undertake liaison, from time to time and as necessary, with project stakeholders to identify and discuss any actual or potential ESHS issues.
12. Ensure that contractor develops and implements a Labor Influx Management Plan and Workers' Camp & Accommodation Management Plans as part of C-ESMP. This should

include the following actions: all workers to sign employment contract including Code of Conduct (Annex H in ESIA– example); establish a Grievance Committee for Workers; sensitize workers on community based social behavior and conduct; sensitize workers to not engage in sexual relations with underage girls and married women; establish a Grievance Redress Committee to act as link between community and the project; local leadership should always be sought as a first priority in solving issues. Refer to ESIA and RAP for additional information.

ANNEX 2: ENVIRONMENTAL AND SOCIAL POLICY

The Works' policy goal is to integrate environmental protection, occupational and community health and safety, gender, equality, child protection, vulnerable people (including those with disabilities), gender-based violence (GBV), HIV/AIDS awareness and prevention, wide stakeholder engagement, land acquisition and compensation of project affected persons in the planning processes, programs, and activities of the parties involved in the execution of the Works.

The Environment and Social Management Plan for the Project and the Contractor's Site-Specific Environment and Social Management Plan will be used for monitoring, continuously improving processes and activities and for reporting on the compliance with the policy.

The policy is derived from different international and/or national policies within legal frameworks some of which are highlighted below. It is expected that during the supervision of the works, the consultant will commit to;

1. apply good international industry practice to protect and conserve the natural environment and to minimize unavoidable impacts (National Environment Act 2019);
2. provide and maintain a healthy and safe work environment and safe systems of work as stipulated in the draft National Occupational Safety and Health Policy in the framework of the Occupational Safety and Health Act 2006;
3. protect the health and safety of local communities and users, with particular concern for those who are disabled, elderly, or otherwise vulnerable;
4. ensure that terms of employment and working conditions of all workers engaged in the Works meet the requirements of the ILO labour conventions to which the host country is a signatory (Employment Act 2006 and Occupational Safety and Health Act 2006);
5. be intolerant of and enforce disciplinary measures for illegal activities. To be intolerant of, and enforce disciplinary measures for GBV, child sacrifice, child defilement, and sexual harassment (Employment Act 2006) ;
6. incorporate a gender perspective and provide an enabling environment where women and men have equal opportunity to participate in, and benefit from, planning and development of the Works (The Uganda National Employment Policy 2011, The National Equal Opportunities Policy 2006, Uganda Gender Policy);

7. work co-operatively, including with end users of the Works, relevant authorities, contractors and local communities;
8. engage with and listen to affected persons and organisations and be responsive to their concerns, with special regard for vulnerable, disabled, and elderly people;
9. provide an environment that fosters the exchange of information, views, and ideas that is free of any fear of retaliation;
10. minimize the risk of HIV transmission and to mitigate the effects of HIV/AIDS associated with the execution of the Works (The National HIV/AIDS and The World of Work Policy 2007);
11. Acquisition or restriction of land to mitigate unavoidable adverse social and economic impacts through incorporate compensation of project affected persons and community engagement throughout the works implementation.

ANNEX 3: CODE OF CONDUCT

This code of conduct is to be followed by all Consultant's Experts. It should be read together with the Environment and Social Policy, the World Bank Group Environment Health and Safety Guidelines. The experts are expected to;

1. Be Compliant with applicable laws, rules, and regulations of the Republic of Uganda.
2. Be Compliant with applicable health and safety requirements to protect the local community (including vulnerable and disadvantaged groups), the Consultant's Experts, the Client's personnel, and the Contractor's personnel, including sub-contractors and day workers (including wearing prescribed personal protective equipment, preventing avoidable accidents and a duty to report conditions or practices that pose a safety hazard or threaten the environment)
3. Not use of illegal substances
4. Be non-discriminatory in dealing with the local community (including vulnerable and disadvantaged groups), the Consultant's Experts, the Client's personnel, and the Contractor's personnel, including sub-contractors and day workers (for example, on the basis of family status, ethnicity, race, gender, religion, language, marital status, age, disability (physical and mental), sexual orientation, gender identity, political conviction or social, civic, or health status)
5. Have acceptable and appropriate interactions with the local community(ies), members of the local community (ies), and any affected person(s) (for example to convey an attitude of respect, including to their culture and traditions)
6. Avoid unethical and unbecoming behavior such as use of rude, abusive and obscene language, indecent dressing, hard supervision and sexual suggestive gestures which constitute sexual harassment (for example to prohibit use of language or behavior, in particular towards women and/or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate). A child / children means any person(s) under the age of 18 years.
7. Avoid violence, including sexual and/or gender-based violence (for example acts that inflict physical, mental or sexual harm or suffering, threats of such acts, coercion, and deprivation of liberty

8. Avoid exploitation including sexual exploitation and abuse (for example the prohibition of the exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading behavior, exploitative behavior or abuse of power)
9. Promote protection of children (including prohibitions against sexual activity or abuse, or otherwise unacceptable behavior towards children, limiting interactions with children, and ensuring their safety in project areas)
10. Ensure sanitation requirements are provided like toilets are acceptable and approved and are gender sensitive (for example, to ensure workers use specified sanitary facilities provided by their employer and not open areas)
11. Avoid conflicts of interest (such that benefits, contracts, or employment, or any sort of preferential treatment or favors, are not provided to any person with whom there is a financial, family, or personal connection)
12. Respect reasonable work instructions (including regarding environmental and social norms)
13. Protect and use any project property properly (for example, to prohibit theft, carelessness or waste)
14. Report any violations of this Code
15. Ensure that there is non-retaliation against personnel who report violations of the Code, if that report is made in good faith

ANNEX 4: INCIDENT CLASSIFICATION GUIDANCE

Box 1: Incident Classification Guide

Indicative

- Relatively minor and small-scale localized incident that negatively impacts a samll geographical areas or small number of people
- Does not result in significant or irreparable harm
- Failure to implement agreed E&S measures with limited immediate impacts

Serious

- An incident that caused or may potentially cause significant harm to the environment, workers, communities, or natural or cultural resources
- Failure to implement E&S measures with significant impacts or repeated non-compliance with E&S policies incidents
- Failure to remedy Indicative non-compliance that may potentially cause significant impacts
- Is complex and/or costly to reverse
- May result in some level of lasting damage or injury
- Requires an urgent response
- Could pose a significant reputational risk for the Bank.

Severe

- Any fatality
- Incidents that caused or may cause great harm to to the environment, workers, communities, or natural or cultural resources
- Failure to remedy serious non-compliance that may potentially cause significant impacts that cannot be reversed
- Failure to remedy Serious non-compliance that may potentially cause severe impactsIs complex and/or costly to reverse
- May result in high levels of lasting damage or injury
- Requires an urgent and immediate response
- Poses a significant reputational risk to the Bank.