



THE REPUBLIC OF UGANDA

MINISTRY OF WATER AND ENVIRONMENT

URBAN WATER AND SEWERAGE SERVICES DEPARTMENT

TERMS OF REFERENCE

For

**CONSULTANCY SERVICES FOR FEASIBILITY STUDY, DETAILED  
ENGINEERING DESIGN AND CONSTRUCTION SUPERVISION OF  
KYELEGWA-MPARA-RUYONZA WATER SUPPLY AND SANITATION  
PROJECT**

JULY 2019

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# **1 INTRODUCTION**

## **1.1 General**

Uganda is a landlocked country that shares borders with the Democratic Republic of Congo, Rwanda, Tanzania, Kenya, and South Sudan. It lies between 4012' northern and 1029' southern latitudes, and 29034' and 350 eastern longitudes. It has a total area of 241,038 km<sup>2</sup>, of which 20% is covered by lakes and swamps. The current population of Uganda is estimated at 35 million, of which 87% live in rural areas and 13% live in urban areas.

The urban areas of Uganda have undergone rapid population growth during the recent years and is still growing. This has increased demand on infrastructure and in some sectors outrun gains in infrastructure development including the water and sanitation sub-sector. As much as there is an increase in the number of people served every year in the urban water sector, the number of unserved is stagnant or still growing partly due to the rapid population growth but also due to gazetting of additional areas as urban. (MWE, Sector Performance Report 2017).

Higher urban growth rates may be expected in the future as planned by the Vision 2040 which aims at a level of urbanisation of 60% by 2040. This calls for further efforts to increase investments in water supply and sanitation infrastructure to close access gaps and achieve sector goals of 100% coverage.

## **1.2 Institutional Framework for Water Supply and Sanitation Services in Uganda**

The Ministry of Water and Environment (MWE) is the lead agency for provision and management of water supply and sanitation services in Uganda. The Ministry has three directorates:(i) Directorate of Water Resources Management (DWRM) responsible for managing, monitoring and regulation of water resources through issuing water use, abstraction and wastewater discharge permits; (ii) Directorate of Water Development (DWD) responsible for providing overall technical oversight for planning, implementation and supervision of the delivery of urban and rural water and sanitation services across the country, including water for production; (iii) Directorate of Environmental Affairs (DEA) responsible for the management of all environment related affairs.

National Water and Sewerage Corporation (NWSC), is a government parastatal, under oversight of Ministry of Water and Environment. NWSC is mandated to operate and maintain water and sewerage systems in 225 large urban centres across the country as of June 2018. However, in some of the towns under NWSC mandate, Faecal Sludge management is also being carried out. Onsite sanitation, solid waste management and storm water drainage are the responsibility of the local councils.

At district level, local governments (districts, town councils, sub-counties) are empowered by the Local Governments Act (2000) to provide water and sanitation services. They receive funding from the Government of Uganda in form of conditional grants and can also mobilise additional local resources for water and sanitation programmes.

Umbrella Water Authorities as of August 2017, were gazetted as Water Authorities to operate and maintain water supply systems directly or indirectly by contracting and supervising private operators in urban and rural piped water schemes, outside the jurisdiction of NWSC.

A number of other line ministries have important roles in the sector. These include; The Ministry of Health (MoH), responsible for hygiene and sanitation promotion for households; The Ministry of Education and Sports (MoES), responsible for hygiene, education, and provision of sanitation facilities in primary schools; The Ministry of Gender, Labour and Social Development (MGLSD), responsible for gender responsiveness and community development / mobilisation; The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), responsible for agricultural development; and The Ministry of Finance, Planning and Economic Development (MoFPED), which mobilises funds, allocates them to sectors, and coordinates the inputs of various development partners.

The NGOs working in the sector are coordinated at the national level through the Uganda Water and Sanitation NGO Network (UWASNET), a national umbrella organisation for Civil Society Organisations (CSOs), which has been largely funded by sector development partners through the MWE.

### **1.3 The Urban Water Supply and Sanitation Sector (UWSSS) in Uganda**

The Government of Uganda (GoU) initiated reforms in the Urban Water Supply and Sanitation Sector (UWSSS) with the long-term objective of providing sustainable and affordable water supply and sanitation services to all segments of the population living in the various cities and small towns by

- i. Improving the planning and design of projects to match current and future demand.
- ii. Placing the communities within a framework conducive to improving the quality of service and reducing its cost.
- iii. Limiting the role of Government to that of a policy maker, facilitator and regulator in order to increase investment and efficiency within the water sector.

The overall policy objectives of the UWSSS in the context of the reform can be categorised as follows:

- i. **Service coverage:** To expand clean water service coverage to 85% of the urban population by Financial Year 2020/21
- ii. **Sustainability:** To achieve sustainability of service delivery.
- iii. **Affordability:** To ensure that a basic adequate level of service is affordable via low cost service delivery and the implementation of a subsidy and tariff framework which is equitable and beneficial to the poor.

It is in the context of the UWSSS policy objectives that the DWD is planning to undertake the works detailed in this invitation. **Kyegegwa-Mpara-Ruyonza Water Supply and Sanitation System** will be constructed by the Urban Water and Sewerage Services Department under the Directorate of Water Development and will be handed over to either NWSC or Umbrella Authority

– Mid West for operation and maintenance depending on the most suited institution to manage the System at the time of completion.

#### **1.4 Management of the Water Supply and Sewerage Services in NWSC Areas**

The NWSC was established in 1972 as a government parastatal organisation with the role of developing, operating and maintaining water supply and sewerage services in urban areas of Uganda.

NWSC operates under performance contracts (PC) with the Government of Uganda which started in 2000. The Performance Contracts have been renewed five times and the current contract is running over the period 2015-2018. Each of the PC's defines activities, objectives and indicators to be achieved within a three-year contract period.

To meet the GoU performance requirements, NWSC, as part of its restructuring, undertook reforms aimed at improving operational, commercial and financial performance.

Under the reforms, NWSC subsequently entered into performance contracts with each of its operational areas with the aim of giving them more autonomy and accountability. Initially, this involved signing of Internally Delegated Area Management Contracts (IDAMC) and later on Performance, Autonomy and Creativity Enhancement (PACE) contracts with each of the operational areas.

Currently, NWSC is operating under the third PACE contract with all its area management teams after the phasing out of Internally Delegated Area Management Contracts (IDAMC). Each of the respective areas of operation has a specific set of targets which are to be achieved within the next two years.

One of the major successes of the PACE/IDAMC arrangement is the improvement in performance and efficiency of operations in the respective NWSC towns. As the drive for target achievement heightens, with cost optimization playing the central role, the need for cost effective investments is no longer a desirable but a key requirement. In undertaking the assignment, the consultant will be expected to treat this aspect as a central consideration.

#### **1.5 Management of Water Supply and Sanitation Services in the Small Towns**

Regional structures of the Ministry of Water and Environment called Umbrella Organizations were established to support operation and maintenance of piped water supply schemes in small towns and rural growth centres. The first Umbrella was established in 2002 (South-Western – Kabale); today there are 6 Umbrellas (Northern, Eastern, Central, Karamoja and Mid-Western). The Umbrellas were mandated to support all piped water schemes, urban or rural.

This meant that Local government were gazetted as Water Authority and appointed a Water Board and contracted a scheme operator / private operator. The Umbrellas provided back-up O&M support. This model had a number of issues including; Limited capacity within local governments

to supervise the scheme operators, Lack of effective regulation to enforce compliance with contractual obligations (impossible to regulate > 1,000 schemes!), Poor management practices, lack of preventive maintenance, Schemes were often run by inadequately qualified personnel and there were frequent cases of financial mismanagement, unpaid energy bills. These issues translated into; insufficient revenue collection to ensure financial sustainability, no savings made to pay for scheme repairs and expansions, Deterioration of the infrastructure, Poor service quality and reliability and Umbrellas' resources not sufficient to compensate for these shortcomings.

This translated into the Umbrellas working in “firefighting” mode – responding to the most urgent needs (with insufficient funds) but not enough focus on preventive maintenance, uphill struggle against bad management practices, no mandate to take action and Umbrella's operational costs and investments depending on continuous donor and GoU support.

Therefore, due to the above issues, the Umbrellas were gazetted into Water Authorities in August 2017 to carry out direct management of the small towns. Therefore, Umbrellas can now contract and supervise local scheme operators and financial management handled at the regional level, using computerized billing, accounting and revenue collection systems. The Local communities and local government now are represented in the local Water and Sanitation Committee which carries out a monitoring role. Regulation is done by Ministry's Water Utility Regulation Department.

Currently the Umbrella Authorities (UAs) manage 434 systems as of May 2019 which include both Small Towns and Rural Growth Centres. This new model of management has had improvements in operations especially restored functionality in a number of schemes, higher collection efficiency, reduction in non-revenue water and increased number of customers through extensions. Other initiatives have also been done under the management model like Performance data available online through the Utility Performance Monitoring Information System (UPMIS) and Revolving Fund being launched to finance investments. It is foreseen that UAs will be sustainable and able to extend clean and safe water to every village and every household in the Country. Affordable services will also be realised as a result of improved efficiency and also regulated and manageable tariff.

However, the above model is in its second year of operation and has taken on schemes that were already being supported by the UAs as well as new small and medium sized schemes. Therefore, **Kyegegwa-Mpara-Ruyonza Water Supply and Sanitation System** being a new System will either be handed over to NWSC or Umbrella Authority – Mid West depending on the most suited institution to manage the System at the time of completion.

## **1.6 Project Area**

The Project area is generally called **Kyegegwa-Mpara-Ruyonza** but the Project area covers **Kyegegwa Town Council, Mpara RGC, Ruyonza RGC, Kyaka RGC (including Kyaka II Refugee Settlement), Kabogore RGC and other en-route RGCs**. Kyegegwa T/C, Mpara, Ruyonza and Kyaka RGCs are located in Kyegegwa District while Kabogore RGC is located in Kiruhura District.



Kyegegwa and Kiruhura Districts are located in Western Uganda. Kyegegwa District is bordered by Kibaale District to the north, Mubende District to the east, Kiruhura District to the south, Kamwenge District to the southwest and Kyenjojo District to the northwest. Kyegegwa District Headquarters is located approximately 110km by road, east of Fort Portal Municipality, the largest town in the sub-region and 192km from Kampala. The coordinates of the district are: 00 29N, 31 03E.

The Project towns are served mainly by murrum roads and have access to mobile telecommunication network.

Table 1-1 below shows the population of the Project towns as of 2018 as per the Uganda Bureau of Statistics (UBOS).

**Table 1-1: The Population of the Project Towns as of 2018**

No.	Project Town	District	Population
1	Kyegegwa TC	Kyegegwa	7,266
2	Mpara RGC	Kyegegwa	2,217
3	Ruyonza RGC	Kyegegwa	3,037
4	Kyaka RGC	Kyegegwa	75,000
5	Kabogore RGC	Kiruhura	23,969
<b>Total</b>			<b>111,489</b>

Kyaka RGC covers Kyaka II refugee settlement which was established in 1984 by the Government of Uganda and is hosting refugees from DRC Congo, Rwanda and Burundi. The Current population is estimated at 75,000 refugees although the number keeps on increasing on a weekly basis. The settlement is estimated to have a holding capacity of 100,000 refugees and is expected to reach maximum capacity by end of 2019 depending on the current rate of inflows. The settlement has nine zones with four well established semi-urban centers (Bukere, Byabakora, Mukondo and Sweswe centre). It has over 14 primary schools, one (1) secondary school and one vocational training institute and 30 Early Childhood Development (ECD) centres, two (2) health centres, nine (9) health outposts and one Specialized hospital (still under construction).

Figure 1-1 below is a map of Kyegegwa District showing the location of the Project towns of Kyegegwa T/C, Mpara and Ruyonza RGCs. Kyaka II refugee settlement is located in Kabweza and Mpara Sub-counties.

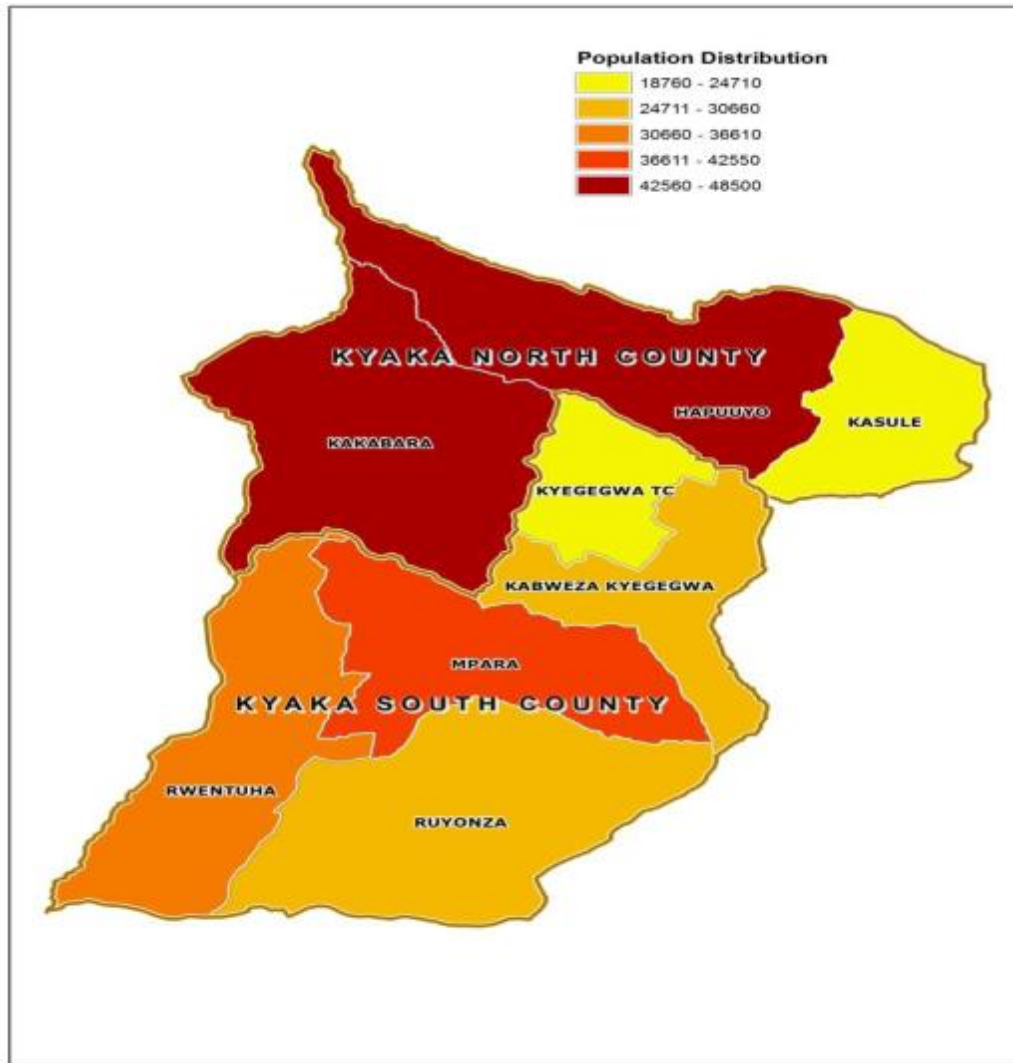


Figure 1-1: Map of Kyegewa District showing the location of the Project towns

Kabogore town is located in Burunga Sub-county, Kazo County, Kiruhura District at the extreme border with Ruyonza Sub-county of Kyegegwa District. Kabogore town was included in the Project scope because it is located about 500m from River Katonga one of the proposed sources of water for the Project and is located in a water stressed area of Kazo County with no piped water supply system.

Figure 1-2 below is a map of Kiruhura District showing the location of Burunga Sub-county where Kabogore RGC is located.

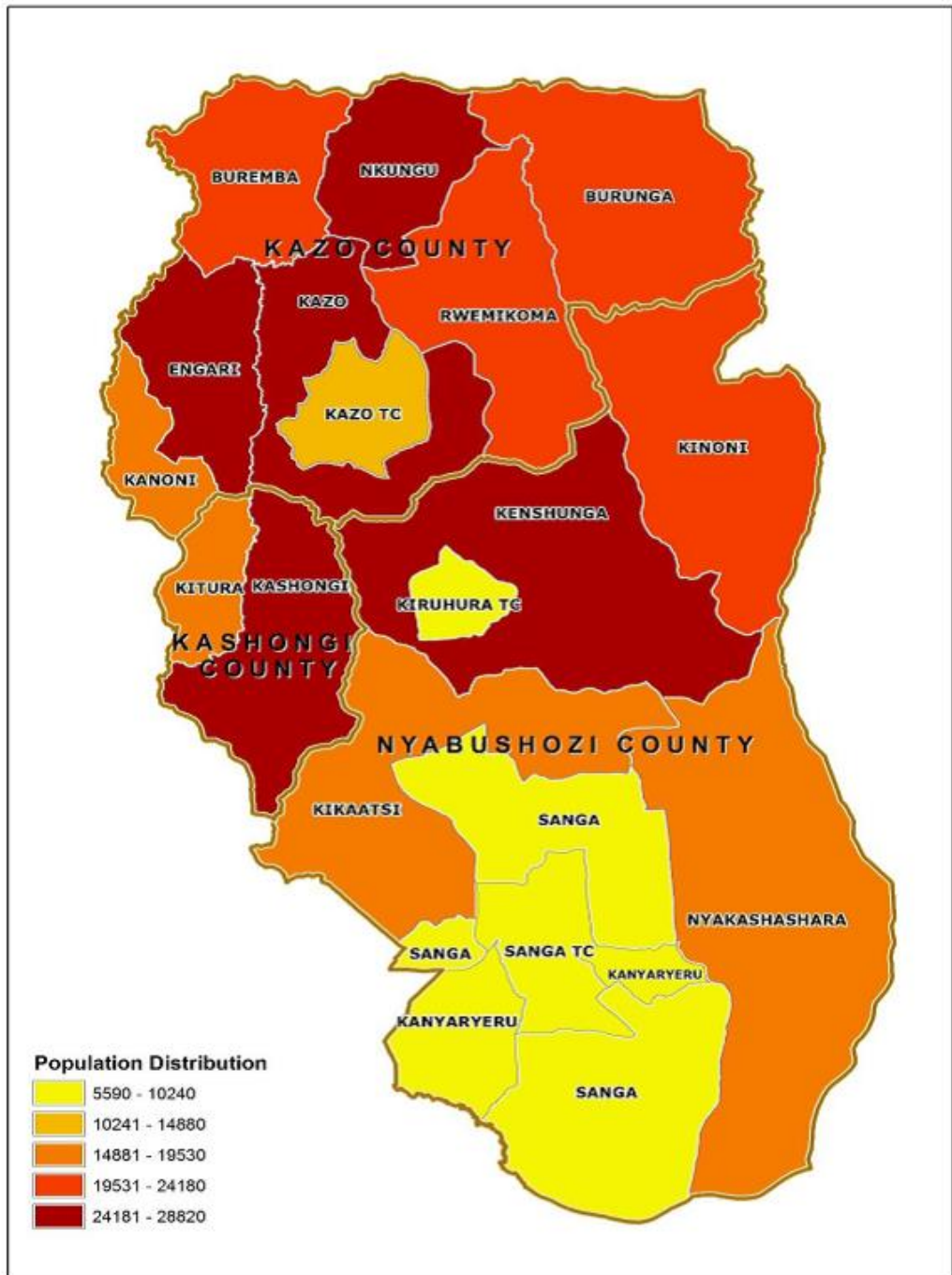


Figure 1-2: Map of Kiruhura District showing the location of Burunga Sub-county where Kabogole RGC is located

### 1.7 Existing Water Supply Situation in the Project Towns

There are no existing piped water supply systems in Kyegegwa Town Council, Mpara, Ruyonza and Kabogole RGCs. The main sources of water are Rivers, boreholes, dams and shallow wells. Some households and hotels in Kyegegwa Town Council have dug their own shallow wells and installed them with submersible pumps to meet their household and commercial water needs. These are self-supply mini-schemes managed by the owners.

Figures 1-5 below shows a photograph of one of the boreholes in Kyegegwa Town Council. The boreholes are managed by the community water user committees.



**Figure 1-3: Hand pump borehole in Kyegegwa town**

Walking distances to water sources range between 0.5km and 1.5km. There are also water vendors who fetch water from the sources and sell it to households. A 20-litre jerrycan costs between UGX 50 and UGX 1,000 where the cost is lowest in rainy season and highest in dry season. Point water sources are managed by water user committees who charge UGX 2,000 per household per month.

In Kyaka II refugee settlement there is one spring-fed piped water supply system being managed by Danish Refugee Council (DRC) with support from UNHCR. The water supply system mainly serves staff offices and accommodation within the base camp, Bujubuli Health Centre III and Bujubuli Secondary School. However, there is an ongoing construction of two additional piped water supply systems that are intended to serve six (out of the nine) Zones within the settlement. One of the water supply systems is fed by the Sweswe valley dam within the settlement which is also the current main source of water for emergency water trucking operations in Kyaka II settlement; and the second water supply system will be fed from a spring source, which has been found to have significant seasonal variations. After the completion of the on-going construction works of the piped water supply systems, UNHCR intends to work with the Mid Western Umbrella Authority for Water and Sanitation of the Ministry of Water and Environment to manage the water supply system with minimum external support as the beneficiary communities/refugees will be paying for the water used. The external minimal support would include support for expansion and extension of the distribution network and subsidizing the water bills for refugees who have not yet built capacity to support themselves.



These mini-piped water supply systems under construction are interim solutions for water supply for Kyaka II refugee settlement and the neighboring communities as they wait for the implementation of the long term Project of Kyegewa-Mpara-Ruyonza Water Supply System.

In Kyaka II refugee settlement, each water point is managed by a 9-member Water User Committee which collects monthly user fees of UGX 1,000 per household. However, the new arrivals are exempted from this collection for the first three months as they are considered extremely vulnerable during this period of time and therefore unable to pay water user fees.

The settlement also has an emergency water treatment plant treating water from the sweswe valley dam. The water is supplied to the settlement through water trucking and about 350m<sup>3</sup> of water per day is supplied and delivered to various locations where plastic water tanks have been installed temporarily as community water collection points.

Figures 1-6 and 1-7 below show photographs of some of the surface water sources in the project area.



Figure 1-4: River Muzizi in Kyegewa Town Council



Figure 1-5: River Katonga at the border between Kiruhura and Kyegegwa Districts

Table 1-2 below summarises the water supply situation in the Project towns.

**Table 1-2: Water Supply Situation in the Project Towns**

No.	Project Town	Water Sources														
		Protected springs			Shallow Wells			Boreholes			Rain Water Harvesting			Tap Stands		
		F	NF	T	F	NF	T	F	NF	T	F	NF	T	F	NF	T
1	Kyegegwa	8	0	8	23	11	34	15	7	22	10	4	14	0	0	0
2	Mpara	15	0	15	23	9	32	17	26	43	24	3	27	0	0	0
3	Kyaka	6	1	7	53	7	60	12	10	22	18	8	26	5	0	5
4	Ruyonza	0	0	0	0	0	0	9	0	9	-	-	-	0	0	0
5	Kabogore	0	0	0	1	5	6	13	5	18	104	12	116	0	0	0
Key:		F = Functional,			NF = Non-functional,			T =Total								

### 1.8 Existing Sanitation Situation in the Project Towns

There are no conventional sewerage systems in the Project towns. The population depends mainly on onsite sanitation facilities that comprise of pit latrines. The general practice followed by the

households and institutions is that when pit latrines get filled up, the latrines are abandoned or backfilled and new ones built adjacent.

2 no. public toilets exist in Kyegegwa Town Council; at the Main Market and taxi park. Institutional toilet facilities also exist in schools, Health Centres and public offices but they are in poor condition.

Organised garbage collection and disposal is practiced only in Kyegegwa Town Council. In other Project areas solid waste is managed at household level where it is either disposed of in gardens or burnt.

### **1.9 The Proposed Integrated Water Management and Development Project (IWMDP)**

The IDA has approved a loan to finance the Integrated Water Management and Development Project (IWMDP) as a successor Project to the ongoing WMDP. Under the IWMDP, funds have been earmarked for feasibility study, detailed design and construction supervision under consultancy services, construction works as well as the implementation of full scale source protection measures.

Kyegegwa-Mpara-Ruyonza and en-route RGCs of Kyaka II refugee settlement and Kabogore are some of the towns to be implemented under the IWMDP. Kyegegwa water supply system was first designed by a Consultant called Kombi Technical Services Ltd. contracted by the Kyegegwa Local Government in 2008. The Consultant designed the Kyegegwa WSS as an RGC based on groundwater but groundwater was later found not to be sufficient after test drilling the boreholes. The Water and Sanitation Development Facility –South West (WSDF-SW) of the Ministry of Water and Environment (MWE) did a follow up feasibility study and preliminary design in 2014 for Kyegegwa T/C also including Mpara and Ruyonza RGCs and proposed a water supply system based on surface water from River Katonga. Under this assignment, a fresh feasibility study will be conducted and the scope increased to cover Kyaka II refugee settlement in Kyegegwa District and Kabogore RGC in Kiruhura District. The existing feasibility study and preliminary design report shall be referred to for guidance purposes and to facilitate development of better scenarios and designs. Detailed engineering design of the preferred feasible option shall be done and the Consultant shall proceed to supervise the construction works upon procurement of the Contractor.

The Consultant to undertake Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) for all IWMDP towns has already been procured and is already executing the assignment for the towns with ready designs. For Kyegegwa-Mpara-Ruyonza Project the Consultant did preliminary work on ESIA and RAP based on the existing preliminary designs. The ESIA and RAP reports shall be updated by the Consultant upon completion of the designs under this consultancy. The design and implementation of source protection measures will be undertaken under this consultancy together with the contractor who will be procured to implement the project.

The IWMDP development objective is to improve access to water supply and sanitation services, improve capacity for integrated water resources management and the operational performance of

service providers in the Project areas. The project will also contribute to the achievement of National Development Plan II objectives, Vision 2040 and Sustainable Development Goals.

## **1.10 Existing Feasibility Study and Preliminary Design**

The existing feasibility study and preliminary design was undertaken by the Water and Sanitation Development Facility –South West (WSDF-SW) of the Ministry of Water and Environment (MWE) in 2014 for Kyegegwa T/C including Mpara and Ruyonza RGCs and proposed a water supply system based on surface water from River Katonga. The design horizon for the Project was from 2016 to 2036 with a design period of 20 years. The proposed interventions towards meeting the water and sanitation needs for the ultimate year 2036 are as detailed below.

### **1.10.1 Proposed Water Supply System**

The proposed water supply system under the preliminary design was based on maximum day demand of 1,237m<sup>3</sup>/d in the intermediate year 2026 and 1,934m<sup>3</sup>/d in the ultimate 2036. The design period was 20 years with 2016 as the initial year and 2036 as the ultimate year. The project was designed to serve a population of 39,474 in the initial year 2016 and 79,010 in the ultimate year of 2036. The estimated Project Cost was about UGX 13 billion.

The proposed source of water is River Katonga which passes through Mpara and Ruyonza Sub-counties and is located about 45km away from Kyegegwa T/C. Raw water is proposed to be treated at a water treatment plant located about 200m away from the intake and comprising of the processes of aeration, flocculation, sedimentation, rapid sand filtration and chlorination. Treated water is then pumped to a reservoir at Iziina hill from where it is gravitated to a ground tank at Kabani Primary School and Ruyonza RGC distribution area. Treated water from Kabani ground tank is then pumped to a reservoir at Mwikya hill from where it is gravitated to Kyegegwa T/C and Mpara RGC storage tanks and then to the respective distribution areas.

The components of the proposed water supply and sanitation system as per the preliminary design are as listed below:

1. A raw water intake at River Katonga.
2. A water treatment plant of capacity 1,934m<sup>3</sup>/d located 200m away from the intake comprising of aeration, flocculation, sedimentation, filtration and chlorination.
3. A transmission main of total length 45km consisting of OD140 HDPE and OD200 HDPE pipes.
4. A reinforced concrete tank of 300 m<sup>3</sup> capacity at Iziina hill.
5. A reinforced concrete tank of 60 m<sup>3</sup> capacity at Kabani Primary School.
6. A reinforced concrete tank of 200 m<sup>3</sup> capacity at Mwikya hill.
7. A reinforced concrete tank of 150 m<sup>3</sup> capacity at Mailo Musanju.
8. A reinforced concrete tank of 250 m<sup>3</sup> capacity at Kyegegwa hill.
9. A cold pressed steel reservoir of 60 m<sup>3</sup> on a 10m elevated steel tower for Kabogore RGC.
10. A distribution pipe network of total length 145km of HDPE and uPVC pipes ranging in size from OD40-160 mm.



11. 30 Public stand posts.
12. 1,000 consumer connections.
13. Water offices- 2 No.
14. Public Toilets – 2 No.
15. Household Ecosan Toilets- 10 No.

### **1.10.2 Environmental and Social Impact Assessment and Resettlement Action Plan**

The Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) for this Project are being done under a separate Consultancy Contract. For Kyegegwa-Mpara-Ruyonza Project the Consultant did preliminary work on ESIA and RAP based on the existing preliminary designs. The ESIA and RAP reports will be updated upon completion of the designs under this consultancy by another Consultant who shall be procured separately.

### **1.10.3 Water Source Protection Plan, Sub-Catchment Management Plan and Design for Implementation**

The goal of water source protection is to ensure sustainable supply of clean and adequate water for supporting livelihoods. To achieve this goal it requires that the quality and quantity of water at the abstraction point is maintained or sustained through a series of land and water based management interventions that reduce the risk of pollution, declining water quantities and conflict over water use among the various stakeholders. This goal seeks to ensure low costs of water purification and maintenance of supply infrastructure.

The design and implementation of source protection measures will be undertaken under this consultancy together with the contractor who will be procured to implement the project.

## **2 PROJECT OBJECTIVES**

The aim of the Kyegegwa-Mpara-Ruyonza Water Supply and Sanitation Project is to improve water supply and sanitation services in the Project towns.

### **2.1 Specific Project Objectives**

The specific objectives of the Project include:

1. To ensure adequate and sustainable provision of water for Kyegegwa-Mpara-Ruyonza and en-route RGCs of Kyaka II Refugee Settlement and Kabogore for a design period of 20 years through development of new infrastructure.

2. To implement appropriate source protection measures that are sustainable, within socially acceptable cost, and in accordance with the catchment protection guidelines under preparation by the DWRM (Framework and Guidelines for Water Source Protection).
3. Improve sanitation at public places and selected institutions in the Project towns and faecal sludge management by provision of Faecal Sludge Treatment Plants (FSTPs) and public and institutional toilets and supporting the required processes to ensure proper functionality of the FSTPs.

## **2.2 Objectives of the Consultancy Services**

The consultancy services are aimed at the following;

1. Conduct a fresh feasibility study for the Project area, prepare Detailed Engineering Designs and tender documents ensuring the Project meets its objective of providing adequate water supply and improved sanitation for a design period of 25 years. Reference should be made to the existing feasibility study and preliminary design report for guidance purposes and to facilitate development of better scenarios and designs.
2. Review and update the existing Environmental and Social Impact Assessment (ESIA) report and the Resettlement Action Plan (RAP) prepared under a separate consultancy contract based on the preliminary design of the water supply and sanitation system for the project area. The ESIA and RAP reports should be updated based on the new studies conducted and the final detailed design prepared under this consultancy.
3. Based on the Catchment Planning and Water Source Protection Guidelines developed by the Ministry of Water and Environment, the Consultant shall undertake Water Source Protection Plan, Sub- Catchment Management Plan and Design for Implementation.
4. Provide engineering consulting services complete in all respects in undertaking supervision of construction works under the contract.

## **3 SCOPE OF CONSULTANCY SERVICES**

The consultancy is divided into two discrete parts: (i) design of infrastructure measures; and (ii) tendering and construction supervision. Sections 3.1 to 3.2 below outline the specific scope of works in detail.

### **3.1 Design Consultancy**

The design consultancy part of this work consists of (i) feasibility study; (ii) detailed engineering design for water supply, sanitation and water source protection, (iii) preparation of Water Source Protection Plan, Sub-Catchment Management Plan and Design for Implementation (iv) preparation of tender documents and (v) review and update of the existing Environmental and Social Impact Assessment (ESIA) report and the Resettlement Action Plan (RAP).

### 3.1.1 Feasibility Study

The work under this section will include but not limited to the scope detailed below. Reference should be made to the existing feasibility study and preliminary design report for guidance purposes and to facilitate development of appropriate/ better and optimum design solutions

1. Collect and analyse socio-economic data and any other relevant information. This should include ability and willingness to pay for water and sanitation services and gender related issues to promote gender equality and enhance the Project's development effectiveness. The analysis will also highlight key socio-economic issues related to refugee and host communities in Kyaka II refugee settlement for consideration by the Client.
2. Based on the collected information, project population and water demand trends for a design period of 20 years from the initial year. The projection, disaggregated by sub-project area should be presented in 5-year steps. The projections must consider the physical expansion of the water service areas over time including considerations in the available physical development plans. The Consultant is also expected to compile a simple profile (population and mapping) of anticipated project beneficiaries by village and anticipated population for the refugee settlements. Population data should be disaggregated by gender and residency status. For refugee communities, the consultant will determine the planning horizon depending on the available data.
3. Detailed hydrological and hydrogeological investigation to determine potential raw water sources. The investigation must include all potential surface and groundwater sources in the area including a water resources reliability assessment to meet a design period of 20 years. The investigations shall at the minimum include the following;

**(a) Surface water**

- i. Detailed water quality analysis;
- ii. Determination and mapping of water intake locations and the alignment to the raw water pump station;
- iii. Determination of raw water transmission routes;
- iv. Determination of the most appropriate water treatment location;
- v. Preliminary geotechnical and topographic surveys at locations proposed for water intake and treatment locations;
- vi. Determination of treatment volumes, technology and processes required;
- vii. The treatment technology options analysis should include current best practices in process technology to achieve cost effective, environmentally friendly and efficient systems;
- viii. Determination of sludge management mechanisms.

**(b) Groundwater:**

- i. Carry out a detailed reconnaissance survey and groundwater resources assessment for the project area as described in section 1.6.
- ii. Carry out detailed Hydrogeological investigations leading to the site selection including:

- a) Study and analysis of existing data,
- b) Mapping of sources in the vicinity of the proposed location, study and analysis of the geology and the geological structures of the selected area,
- c) Study and analysis of the aerial photographs and or satellite images of the selected locations,
- d) Conducting a detailed Hydrogeological and Geophysical investigation at the selected locations including the generation of 2-D resistivity plots of the selected area.
- e) Determination of treatment volumes, technology and processes required. The treatment technology options analysis should include current best practices to achieve cost effective, efficient, user and environmentally friendly systems

Geophysical surveys shall be carried out employing methods including but not limited to Magnetic, Electromagnetic and Resistivity. A combination of Traverse and Vertical Electrical Sounding methods is recommended. The consultant shall be required to use appropriate methods/techniques and sounding equipment to carry out work in the field. All the surveys shall be carried out with an objective of determining the site(s) with the highest potential for water productivity.

- i. Determination of recharge capacity and mapping of recharge area of aquifer(s)/ identified;
  - ii. Determination and mapping of locations suitable for drilling of ground water production wells (considering technical, socio-economic, and socio-cultural factors);
  - iii. Drilling of test boreholes (assume 6 boreholes distributed in the entire project area each with depths up to 150 metres in weathered crystalline ground), including completion with appropriately sized casing. This shall be done using correct drilling methods, tools and equipment according to standard drilling practice.
  - iv. Determination of safe yields through pump tests, as well as distance required between wells, number of wells, well depths, etc. (all raw data obtained shall be recorded and shown in a report);
  - v. Determination of water quality in each of the trial boreholes (assume one sample each).
4. Based on projected water demand figures, hydrological and hydrogeological investigations, undertake an options/alternatives analysis for both groundwater and surface water combinations to provide reliable and energy efficient raw water source(s) for the project area. As part of alternatives analysis, the Consultant shall carry out and report on the financial, environmental, social, health and safety impact assessment of each option. An optimum combination of ground and surface water sources should be considered to mitigate climate change and water source risks.

5. Based on population distribution and demand forecasts, determine the required transmission, storage and distribution capacity including configuration that will ensure energy efficiency and cost optimization as necessary. This should include but not limited to the following:
  - 5.1 Determination and mapping of transmission and distribution routes, and storage locations;
  - 5.2 Preliminary geotechnical and topographic surveys at locations proposed for transmission routes and storage locations;
  - 5.3 Preliminary determination of properties of transmission and bulk distribution pipeline (e.g. sizes, PN rating, material, etc.) and storage facilities (e.g. volume, type of tank, elevation, etc.). The choice of pipe materials should include analysis of current best practices in water transport to achieve cost effective, environmentally friendly and efficient systems.
  - 5.4 Determination and mapping of consumer connection points to the distribution network.
6. Investigate the feasibility of centralised or decentralised water supply to Kyegegwa T/C, Mpara, Ruyonza, Kyaka II and Kabogore RGCs and any other areas as may be determined under the feasibility study. This should include assessment of Operation and Maintenance options and recommendations for sustainable management, taking into consideration the proposed options in the draft Government of Uganda O&M framework of water supplies in refugee communities, the recommendations from the 2019 study on assessment of Water Service Delivery in Uganda Districts Hosting Refugees and options for water supply system management under the Urban Water and Sewerage Services Department of the Ministry of Water and Environment.
7. Undertake a preliminary design of the treatment processes and units. The Consultant shall include results of this design in the options analysis for the water supply system.
8. Undertake an assessment and options analysis potential energy source(s) to power the water supply system components. Green and energy efficient/smart systems should be ensured
9. Carry out a sanitation needs assessment at public places and institutions in urban areas and rural growth centres and develop sustainable, practical and user friendly proposals for sanitation provision. A town sanitation plan including beneficiary populations for all proposed infrastructure shall be developed
10. Assess the functionality of faecal sludge and on-site public sanitation management chain including regulation, collection, containment, transport, treatment and disposal and recommend cost effective and sustainable management mechanisms. This should also include stakeholder engagement requirements, operation and maintenance plans, the required transportation and regulation arrangements, identification and evaluation of different options for faecal sludge treatment in terms of location, clustering and treatment technologies.
11. Carry out a preliminary design of a Faecal Sludge Treatment Facility (FSTF) that meets the current and future faecal sludge services demand requirements.
12. Clearly outline well costed new build and rehabilitation requirements for both the water

supply system and fecal sludge treatment facility.

13. Provide preliminary cost/benefit analysis for all measures proposed.

14. Undertake an options analysis for implementation strategies/packaging of the proposed works including estimated construction period and recommend the most appropriate approach to delivery of the assignment.

15. The Consultant shall identify and provide cost estimates for appropriate source protection measures for the water sources that shall be identified and approved for development. These measures will provide input for the development of a comprehensive ESIA (see section 1.10.2) and source protection plans (see section 1.10.3), whose physical implementation is foreseen during or at the tail end of the construction works. The source protection measures shall be aligned with the appropriate catchment management planning regime for which the consultant shall liaise with Albert WMZ.

### **3.1.2 Detailed Design of Infrastructure**

The Consultant shall, based on the feasibility study produce detailed designs for system requirements, to meet demand for a design period of 20 years. In particular, the services will have to include the following as a minimum for each of surface and ground water sources as determined in the feasibility study;

#### **(a) Surface Water Sources Development**

The infrastructure components to be designed under surface water sources include the following as a minimum; raw water intake, raw water transmission, water treatment plant, clear water transmission, reservoirs, primary and secondary distribution lines, and boosters (where applicable) including all electrical and mechanical equipment. The activities listed below will be carried out on each of the components as a minimum;

- 1) Carryout detailed topographical surveys on sites selected for major infrastructure installations (intake, water treatment plant, reservoirs) and routes for transmission and distribution lines.
- 2) Carry out detailed geotechnical investigation at sites selected for major infrastructure installations (intake, water treatment plant, boosters, reservoirs) and at least 2 spots per km on routes for transmission and primary distribution lines to ascertain the nature of ground conditions. The number of testing points should be sufficient to allow design of intakes, water treatment plants, reservoirs and routes of transmission and distribution lines. The consultant is expected to advise, based on investigations, on the suitability of different sites in view of structural, cost and construction management requirements.
- 3) Carry out process designs including methods and calculations, system schematics and functions, formulation of design scenarios/configurations based on water treatment alternatives/methods together with their respective estimated Capital and Operation and

Maintenance (O&M) cost estimates.

- 4) Carry out hydraulic design of systems to optimise Capital and O&M costs.
- 5) Carry out water hammer and surge analysis of the system.
- 6) Design of transmission lines, reservoirs and distribution lines.
- 7) Carry out structural designs of all structures and foundations.
- 8) Identify problem areas along the transmission and distribution lines for special consideration (e.g. road and river crossings) and prepare appropriate design details.

### **(b) Groundwater Production Well Fields Development**

The infrastructure components to be designed based on groundwater sources include well field development, raw water transmission, raw water collection sumps, pump houses and water treatment plant as determined, including clear water transmission, including all electrical and mechanical equipment. The activities listed below will be carried out on each of the components here as a minimum;

1. Design of well fields and determination of the number of wells necessary for contributing sufficient raw water as defined in the water balance.
2. Design of groundwater monitoring systems for boreholes to be developed.
3. Detailed topographical survey and mapping of selected sites and alignments of transmission and distribution pipes.
4. Carry out detailed geotechnical surveys at sites selected for major infrastructure installations including pump houses and sumps.
5. Preparation of detailed standard well design (layout of well and pump house, sections, location of pump, hydraulic and electrical equipment).
6. Carry out process designs including methods and calculations, system schematics and functions, formulation of design scenarios/configurations based on water treatment alternatives/methods together with their respective estimated Capital and O&M cost estimates.
7. Carry out hydraulic design of systems to optimise capital and operation costs taking into consideration water hammer and surge analysis.
8. Design of transmission lines, reservoirs and distribution lines.
9. Carry out structural designs of civil structures and foundations.
10. Carry out design of electrical, mechanical and telemetry installations.

**For all groundwater and surface water sources, the detailed design should include the following;**

- 1 design of system electrical and mechanical installations. Emphasis should be put on green and smart systems to achieve energy efficiency.
2. design of appropriate monitoring and control systems including but not limited to Supervisory Control and Data Acquisition (SCADA) or any other approved remote control system to manage the entire water system operation. The control system should, among others, be capable of carrying out real time water quality monitoring and automatic adjustment of chemical doses to achieve pre-set water quality standards. It should further allow for manual, semi-automatic and full automatic modes.
3. Design of appropriate water office structures conveniently located for the management of the Water Supply System.

**For sanitation provision and management in the project area, the consultant is expected to carry out the following;**

1. Design sustainable and user friendly sanitation infrastructure for public places and institutions in urban and rural growth centres after identifying and evaluation of possible options with the Client and recommending appropriate O&M and management options to ensure sustainable service provision.
2. Design 1no. faecal sludge treatment facility of faecal sludge management solution to serve beneficiaries project area.
3. Develop a cost effective and sustainable faecal sludge and public sanitation management chain including regulation, collection, containment, transport, treatment and disposal.

**For both water supply and sanitation,**

1. Undertake full analysis of the economic and financial viability of the project. The following should be included as a minimum:
  - a. Assessment of CAPEX and OPEX of the facilities proposed.
  - b. Assessment of dynamic prime costs and specific investment costs related to population served.
  - c. Assessment of the proposed tariff system and extent of coverage by costs (e.g. operational cost coverage, operational and basic maintenance; full cost coverage including depreciation over 25 years and capital for future network expansion). This should clearly specify the recommended options for the water supply to refugee settlements
  - d. Assessment of key financial performance indicators/ ratios such as operating cash flow CAPEX cover, operating cash flow debt service cover, NPV, FIRR, DSCR, ROE, ROA, debt to equity, and the EIRR.
  - e. Statement of all assumptions the economic and financial tests were based on (e.g. inflation, billing efficiency, etc.).



2. Prepare a detailed project risk register. The register should list and quantify the possible monetary impact of each risk, propose parties responsible for each risk, and propose mitigation measures.
4. The consultant will be expected to prepare detailed engineering designs for each facility (detailed scheme layout, topographic and profile surveys, hydraulic profiles, detailed calculations (process, structural, hydraulic), engineering and structural drawings, overview plans, descriptions in text, etc.)
5. Identify and peg all the required pieces of land for the installation project structures. All the affected land owners, forms of ownership and the ease/difficulty of land acquisition should be identified and documented. This will ease the process of land acquisition and enable the local authorities to start the process early enough.

### **3.1.3 Preparation of Water Source Protection Plan, Sub-Catchment Management Plan and Design for Implementation**

The goal of water source protection is to ensure sustainable supply of clean and adequate water for supporting livelihoods. To achieve this goal it requires that the quality and quantity of water at the abstraction point is maintained or sustained through a series of land and water based management interventions that reduce the risk of pollution, declining water quantities and conflict over water use among the various stakeholders. This goal seeks to ensure low costs of water purification and maintenance of supply infrastructure.

Based on Catchment Planning and Water Source Protection Guidelines developed by the Ministry of Water and Environment, the Consultant will assist the Client in undertaking a number of activities related to catchment management and water source protection that will result in a Catchment Management (CM)/Water Source Protection Plan (WSPP). The Consultant will refer to the existing ESIA report to benefit from any recommendations made on water source protection requirements. The activities will include but not limited to the following:

- i) Identify the problems to be addressed, set the objectives for the water source protection and identify the conditions needed to make water source protection successful.
- ii) Design an awareness raising and sensitisation plan for the stakeholders with the objective of involving and informing them about the water source protection and making them appreciate the importance of source protection.
- iii) Undertake detailed catchment problem analysis to fully understand the water and land use challenges and how they relate to the functionality of the water source.
- iv) Undertake a detailed catchment stakeholder analysis to fully understand the people and organisations that have an influence on, or are influenced by, the proposed water source protection plan, and to work out the most likely ways of aligning stakeholder interests to the need of the WSPP.

- v) Establish what monitoring and regulation is relevant and useful to successfully establishing and maintaining protection of the water source and set targets for success that can be easily and regularly measured.
- vi) Identify Catchment Control Measures in form of physical, legal, educational or social actions that can be undertaken to improve the protection and performance of the water source.
- vii) Prepare a Catchment Management/Water Source Protection Plan that contains realistic actions supported with an overall estimate of time and cost.
- viii) Prepare an implementation, review and monitoring plan for the WSPP for consideration during the construction phase to achieve the agreed aims and objectives to protect the Water Source and to periodically review progress and update the plan to keep it relevant, useful and used by all partners.
- ix) Based on the Catchment Management/Water Source Protection Plan, the consultant shall produce designs for the required structural and management/protection measures.
- x) Collaborate Catchment Management/Water Source Protection Plan with Environmental and Social Impact Assessment (ESIA) to provide inputs into the environmental management plan as may be required.

### **3.1.4 Preparation of Tender Documents for Construction Works**

The consultant shall prepare tender documents for all infrastructure components designed. In particular, the consultant shall carry out the following as a minimum:

- 1) Prepare a complete set of tender documents for construction contracts according to FIDIC Conditions of Contract.

Tender documents shall conform to the prevailing guidelines for procurement of works under IBRD loans and IDA credits as issued from time to time by the World Bank.

The tender documents shall be packaged in accordance with World Bank Procurement Regulations for IPF Borrowers, Procurement in investment Project Financing; Goods, Works, Non-Consulting and Consulting Services, July 2016. The Consultant shall use the SBD-Procurement of Works & Users Guide dated April 2015 and updated January and October 2017 and ensure incorporation of Environmental, Social, Health and Safety (ESHS) aspects to enhance ESHS performance. In addition, the Contractors and supervision Consultants to be procured shall be required to develop and implement Construction Environmental and Social Management Plans (CESMP), including hiring qualified Environmental Specialists, Health & Safety Specialist and Social specialists on their project teams.

### **3.1.5 Review and Update of the existing Environmental and Social Impact Assessment (ESIA) Report and the Resettlement Action Plan (RAP)**

#### **3.1.5.1 Update of Environmental and Social Impact Assessment (ESIA)**

The Ministry of Water and Environment hired a Consultant, M/S ESL Ecoserv Ltd. to prepare the ESIA report for the Kyegegwa-Mpara-Ruyonza Water Supply and Sanitation Project in October 2018. The Consultant produced a preliminary ESIA report based on the existing feasibility study and preliminary design.

The main objective of this assignment therefore is to update the Environmental and Social Impact Assessment (ESIA) report for Kyegegwa-Mpara-Ruyonza Water Supply and Sanitation Project in line with the final detailed design produced under this assignment and clearly identify the potential impacts of the project on the environment and their mitigation measures.

#### **(a) Work Done by the Consultant on Environmental and Social Impact Assessment (ESIA)**

- Public consultations were held with all the villages affected by the proposed Kyegegwa-Mpara-Ruyonza Water Supply and Sanitation Project. National agencies and District Local Governments were also consulted. Stakeholders were engaged during the ESIA process to create awareness about the Project and obtain their perceived positive and negative social and environmental impacts.
- The Consultant assessed biophysical and socio-economic environmental parameters within the project area e.g. Baseline noise condition, Biodiversity inventories, Mapping and Photography to record empirical evidence on the status quo so as to facilitate future monitoring of project activities on the environment.
- Assessed direct and indirect; immediate and long term; permanent and temporary impacts of the project. This was done based on various criteria including severity of impacts, duration, geographical scope, and the existence of readily identifiable cost-effective mitigations.
- Alternatives were also analyzed to maximize environmental safety.

#### **(b) Guiding Principles in Updating the ESIA Report**

The updated ESIA report should be carried out in line with the requirements of the legal, policy and regulatory framework of Uganda as well as the World Bank Policies, Environmental, Health and Safety Guidelines, specifically; World Bank policy OP4.01: "Environmental Assessment," and other World Bank safeguard and information disclosure policies. Items where World Bank policy requirements are more comprehensive must be addressed over and above the requirements of the regulatory framework of Uganda.

#### **(c) Specific Objectives for the ESIA**

1. To establish the Project's potential environmental and social impacts and propose measures to mitigate them.

2. To assess the impacts of alternatives and advise the designing process accordingly.
3. To determine the actions required by MWE and other stakeholders to satisfactorily address the impacts.

#### **(d) Scope of Services under Update of ESIA**

The Consultant shall prepare an updated ESIA statement for the proposed water supply and sanitation sub-projects of Kyegegwa-Mpara-Ruyonza in accordance with the scope of services that will include but not be limited to the following; (i) policy and legal frameworks, (ii) description of potentially affected areas, (iii) Project's potential impacts, (iv) analysis of the Potential Impacts of the Project (v) analysis of alternatives, (vi) public consultation and disclosure (vii) development of an Environmental and Social Management Plan (ESMP), (viii) Inter-Agency Coordination, (ix) a Chance finds procedure and (x) Overall project level Grievance Redress Mechanism.

The Consultant shall refer to the preliminary ESIA report prepared by M/S ESL Ecoserv Ltd. and ensure that all the above mentioned sections are updated according to the new detailed design for Kyegegwa-Mpara-Ruyonza WSS Project.

#### **3.1.5.2 Update of the Resettlement Action Plan (RAP)**

The Ministry of Water and Environment hired a Consultant, M/S JBN Consults Ltd. to prepare the RAP for Kyegegwa-Mpara-Ruyonza Water Supply and Sanitation Project in October 2018. The preliminary RAP report was prepared based on the existing feasibility study and preliminary design.

The main objective of this assignment therefore is to update the Resettlement Action Plan (RAP) for Kyegegwa-Mpara-Ruyonza Water Supply and Sanitation Project in line with the final detailed design produced under this assignment and determine anticipated resettlement impacts associated with the construction of the water supply and sanitation system as well as putting in place measures to mitigate such impacts.

#### **(a) Work Done on Resettlement Action Plan (RAP)**

- M/S JBN Consults Ltd. conducted census to cover all persons who will be potentially affected by the land take for the proposed water supply system (water intake and treatment plant, transmission lines, distribution lines and reservoirs). A census was conducted for each infrastructure in order to establish their number, types, size and quality of affected assets. A breakdown of a number of affected households by infrastructure in their respective villages (cells) was developed.

- The Consultant determined the size of land to be acquired/affected by the Project i.e. for transmission pipelines (22.5018 acres), water treatment plant (2.471 acres), distribution lines (11.4006 acres), reservoirs (0.7826 acres) giving a total of 37.1560 acres.
- Determined crops/trees to be affected and described them by; crop/tree type, description and total numbers. The types include; acacia, aloe vera, avocado, banana, bottle brush, busitani, cactus, cedurella, chillies, cloton, coffee, cypress, eucalyptus, first class timber tree, bush tree, mangoes, among others.
- The Consultant also carried out consultations with Project Affected Persons (PAPs) in the project affected areas of Kyegegwa Town Council, Kyegegwa Sub-county, Mpara Sub-county as well as Ruyonza. During this period, the project planning schedule was disclosed, cut-off for eligibility was explained and rights of PAPs, compensation process on who is eligible and grievance procedures were outlined. Key stakeholder views/concerns were also obtained.
- The budget for resettlement compensation and livelihood restoration was determined. The total compensation value for RAP was estimated at UGX 882,844,535 and total livelihood restoration value was estimated at UGX 435,541,000.
- M/S JBN Consults Ltd. designed monitoring and evaluation procedure for the RAP, to readily identify problems and successes as early as possible.

#### **(b) Guiding Principles in Updating the RAP Report**

The updated RAP report should be carried out in line with the requirements of the legal, policy and regulatory framework of Uganda as well as the World Bank Policies, specifically; World Bank policy on Involuntary Resettlement (OP 4.12) and other World Bank safeguard and information disclosure policies. Items where World Bank policy requirements are more comprehensive must be addressed over and above the requirements of the regulatory framework of Uganda.

#### **(c) Specific Objectives for the RAP**

1. To determine the scope and magnitude of social impacts resulting in the permanent or temporary acquisition of land and displacement of people.
2. To avoid or minimize adverse social impacts.
3. To provide people with opportunities to participate in the design and implementation of the resettlement program.
4. To assist displaced people in their efforts to improve their livelihood and standards of living or at least to restore them.

#### **(d) Scope of Services under Update of RAP**

Under the RAP assignment the Consultant will establish the project social and economic impacts resulting from the damage of crops and property and acquisition of land for the project on individuals or groups of people and also try to minimize land acquisition and its impacts. The Consultant will also determine the extent of involuntary resettlement impacts associated with the project and put in place measures to mitigate those impacts. The impacts are mainly related to the interruption of livelihoods of people affected by the project due to damage of crops and property, land acquisition, taking or changing the use of the affected land related to the proposed surface water intake, water treatment works, construction of storage reservoirs, laying of transmission and distribution pipelines, construction of faecal sludge treatment plant and solid waste disposal site and public and institutional toilets. The Consultant will work with the office of the Chief Government Valuer to update the existing budget for resettlement compensation and livelihood restoration based on PAPs being affected or no longer affected in accordance with the new detailed designs and the applicable Government of Uganda rates and World Bank O.P.4.12 guidelines.

In addition, the Consultant will carry out consultations with relevant stakeholders, including potentially affected persons and members of vulnerable groups, to obtain their views and suggestions regarding the social impacts of the proposed project and agree on the measures to cover the losses. The Consultant should address the concerns and issues brought forward by the PAPs within the same timeline for Grievance Redress Mechanism (GRM) envisaged under the original RAP. The outcome of the consultations will be reflected in the RAP report and incorporated into the project design as appropriate.

The Consultant shall refer to the preliminary RAP report prepared by M/S JBN Consults Ltd. and ensure that all the above mentioned RAP aspects are updated according to the new detailed design for Kyegegwa-Mpara-Ruyonza WS&S Project.

## **3.2 Tendering for Works Contract and Construction Supervision**

### **3.2.1 Tendering for Works Contract**

The Consultant shall participate in the entire tender process. In particular, the tasks will include but not limited to the following:

- 1) Participate in pre-tender site visit and meeting.
- 2) Respond to queries raised by bidders.
- 3) Participate in tender evaluation. This will include review of the tenderers' technical and financial capacity, experience in projects of similar nature and complexity and availability of staff suitable for the project.
- 4) Review of the tenderers' proposed construction methodologies.
- 5) Review of tenderers' proposed programme of work.

- 6) Analysis of costs cited by the tenderers.
- 7) Preparation of tender analysis report for the Client and the World Bank.
- 8) Assist the Client during negotiations with the successful tenderer.

### **3.2.2 Construction Supervision**

The Consultant shall prepare for the commencement of the works; and subsequently supervise the construction Contract as the “Engineer”. The terms and conditions for construction works shall be as stipulated in the latest harmonised version of the FIDIC conditions of contract. Construction supervision will also be in line with the ENVIRONMENTAL AND SOCIAL POLICY in section 12, and the CODE OF CONDUCT in section 13.

Construction supervision will encompass the entire scope of work related to the project. The scope of supervision will also encompass re-instatement works and, if necessary, structures for source protection. The Consultant shall put in place a quality assurance system, risk and environmental management systems to ensure compliance with construction standards.

Construction supervision covers four areas: (i) Pre-construction and mobilisation phase; (ii) construction phase (iii) defects liability phase and (iv) compliance with legal, health, safety and environmental requirements.

#### **3.2.2.1 Pre-Construction and Mobilisation Phase**

During the pre-construction and mobilisation phase, the Consultant shall undertake all preparations for commencement of works like site handover to Contractors. The tasks shall include but not limited to;

1. Review the contractor’s work programme and method statements and highlight areas that may pose a risk to timely and in-budget project completion.
2. Review the contractor’s proposed staffing, equipment, and insurance, performance securities, advance payment guarantees, and recommend appropriate actions to the client.
3. Review and make recommendations on the Contractor’s procurement schedule.
4. Review and approve the Contractor’s ESMP, including Labour Influx Management Plan and Workers’ Camp & Accommodation Management Plans, Environmental, Social, Health and Safety (ESHS) provisions, and Grievance Redress Mechanisms.
5. Carryout due diligence on and approve Contractor’s proposals for construction materials acquisition sources.
6. Carryout and/or supervise any pre-construction sensitization activities associated with environmental and social issues towards potentially affected communities and Contractor/sub-contractor staff.

7. Review and approve the Contractor's proposed procurements during mobilisation, ensuring that all materials are from the right source, are of right quality and are in sufficient quantities.
8. Monthly progress reporting to the client, and immediate reporting should any issues be identified that could impact on the project completion schedule.
9. Development and confirmation of training plan with the MWE.

### **3.2.2.2 Construction Phase**

The Consultant shall represent the Client on site and supervise the entire construction process in close cooperation with the Client's Project Manager. During the construction period, the Consultant's task shall specifically attend to the following;

1. Supervise the Contractor's work progress vs. the planned project time schedule and ensure that delays are being kept to a minimum and, wherever possible, the Contractor takes measures to make up for the time lost and put the Project back on the planned schedule.
2. Timely issuance to the Contractor all necessary correspondences related to information, instructions, clarifications and suggestions so as to ensure consistency in quality, positive progress and planned costs.
3. 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.
4. Supervise the Contractor's procurements, ensuring that all materials are from the right source, are of right quality and are of sufficient quantities. In addition, the Consultant shall prepare/modify and approve specifications for equipment to be procured for the Project as necessary.
5. Supervise the Contractor's construction activities, ensuring that all construction is undertaken as designed, or in accordance with the Client's approved variations to the original design, and that all quality standards are met.
6. If necessary, make amendments to the design with approval from the Client.
7. Admeasure and certify all quantities invoiced by the Contractor. Certify payment certificates for payments of completed works or parts thereof. Prepare the Contractor's payment statement including certificates in accordance with the General Conditions of Contract and Particular Conditions.
8. Inspect and certify all completed works.
9. Prepare snag lists after substantial completion of works.
10. Advise the Client on contractual obligations and establish early warning systems to minimise financial impacts from compensation events and subsequent claims.



11. Ensure that the contractor meets Environment, Social, Health and Safety (ESHS) as indicated in Annex 1 & 2 and in the project ESIA.
12. 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.
13. Periodically review the status of the Contractor's real vs. required staffing, equipment, insurance, performance securities, advance payment guarantees and recommend appropriate actions to the Client.
14. 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. This will include performance of tests from approved laboratories on selected materials to ensure they comply with standards and specifications.
15. In addition to continuous construction supervision, schedule and organise a weekly formal visitation of activities with the Contractor's representative and agree with the Contractor on progress made as compared to the previous week.
16. Develop and maintain a project progress reporting format that is both, concise and in accordance with the Client's and the Development Partner's requirements.
17. Monthly progress reporting to the Client, and immediate reporting should any issues be identified that could impact on the project completion schedule.
18. In consultation with the Client, prepare the necessary variation orders.
19. Schedule and organise witness testing events, including contractual tests for the completed works.
20. Maintain daily site records on prevailing weather conditions, labour, availability and operational condition of key plant, 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.
21. Mentor and transfer knowledge to trainees attached to the Project including endorsement of monthly training reports to be submitted to MWE.

### **3.2.2.3 Defects Liability Phase**

During the defects liability period, the Consultant's tasks which will be performed in close cooperation with the staff of the operator of the Water Supply System (NWSC or Umbrella Authority of Water and Sanitation – Mid West) as nominated by the Client shall include, but not be limited to the following;

1. Supervise and certify the addressing of the entire snag list by the Contractor, as agreed at substantial completion.
2. Monitor the performance of all plant, notify both the Contractor and the Client on defects identified, and recommend remedial actions.

3. Supervise and certify the remedying of any defects that become apparent during the defects liability phase.
4. Review and supervise the agreed upon 'on the job' training programme of staff of the operators of the Water Supply System (NWSC or Umbrella Authority of Water and Sanitation – Mid West) by the Contractor.
5. Ensure that the Contractor supplies complete sets of all works manuals, drawings, models, warranties, and other relevant plant documentation to the Client. The supervision Consultant should point out all items missing and recommend actions to be taken by the Client.
6. Review, approve, and certify 'as built' drawings.
7. Review and certify the final statement of accounts.
8. Develop and maintain a defects liability reporting format that is both, concise and in accordance with the Client's and the Development Partner's requirements.
9. Conduct quarterly site meetings with the Contractor where all defects identified are recorded and a time schedule for remedying the defects is agreed.
10. Prepare monthly progress reporting to the Client on the operation status of the plant.
11. Prepare final completion report.
12. Update asset register.
13. Assist the Client in the final handover and acceptance process, including all associated administrative work, such as the discharge certificate for the contractor.

#### **3.2.2.4 Works Commissioning**

During this phase, the Contractor will continue to operate/ oversee operation of the scheme to ensure it is fully optimised and functioning to the satisfaction of the Client. The Consultant will implement works commissioning including:

1. Preparing the completion report for the works, which will be based on the record maintained during construction and defects liability supervision phases. It will include the environmental completion report which will be submitted to NEMA and the World Bank for compliance with initial recommendations for environmental mitigation measures. The Consultant will be expected to include a project outputs delivery report on areas agreed with the Project Manager (Client) as a key component in the completion report. The outputs report will form the project operational baseline data summary report for operation improvement tracking purposes.
2. The Consultant will ensure the preparation of 'as-built drawings' by the Contractor during construction of works. On completion of the Project, the Consultant will check, approve and submit to the Project Manager for the Client's retention, 2 complete sets of all detailed drawings and 2 electronic CD-ROM copy and computations in accordance with revisions made during the construction.

3. Based on the information and booklets received from the Contractors, Manufacturers, Suppliers and his own experience, the Consultant will ensure preparation and submission of the Operation and Maintenance Manuals by the Contractor. The Consultant will ensure the manuals are complete with the O&M recommendations identified during construction and that all relevant technical booklets of scheme components are provided in English.

### **3.2.2.5 Compliance with Legal, Health, Safety and Environment Requirements**

During the pre-construction and mobilisation, construction and defects liability phases of the project, the Consultant will ensure that the Contractor adheres to legal, health, safety and environment requirements as follows;

- 1) Review the Contractor's proposed staffing capacity to address legal, health, safety and environment requirements.
- 2) Ensure that the Contractor continuously meets legal, occupational health and safety standards including compliance with labour laws.
- 3) Ensure that the Contractor continuously meets social and environmental safeguard requirements according to World Bank guidelines and as defined in the Environmental and Social Management Plan (ESMP).
- 4) Maintain daily site records on disputes between employers and staff as well as between Contractor and local residents, and all other observations as necessary

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.

## **4 ORGANIZATION OF THE ASSIGNMENT**

### **4.1 Contractual Arrangements**

The contractual arrangements for this project shall be:

- 1) Design phase and tendering for works' contract shall be lump sum.
- 2) Construction supervision and defects liability phase shall be time based.

The Consultant shall show the costs of his proposed services in accordance with these contractual arrangements.

Note that continuation from the design phase to tendering and construction supervision phase shall be subject to successful completion of the design phase. This will be measured in terms of deployment of right skills and timely delivery of project outputs.

## **4.2 Liaison with the Client**

MWE shall nominate members to constitute a contract management team. The team will comprise of Project Manager and Engineer. The Project Manager shall carry out all project 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 Project Manager 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 Project Manager.

MWE shall nominate an Engineer as part of the contract management team, 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 design review and supervision stages to ensure that all the technical requirements of the Project are fully met. In particular, the Engineer, under the guidance of the Project Manager, 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 social and environment safeguard specialists responsible for supervision of EHS and social aspects of the Project.

## **4.3 Logistical Setup and Staffing**

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 member 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).**

The minimum number of key experts and mandatory non-key experts including the minimum time input and minimum qualifications of each are indicated in sections 4.3.1 and 4.3.2.

The Consultant is free to propose additional skills as are deemed necessary to execute the assignment within their stated methodology.

### **4.3.1 Experts-Design Phase**

Key experts for the design phase are indicated in Table 4-1 below.

**Table 4-1: Key Experts-Design Phase**

<b>Expert</b>	<b>Minimum Relevant Experience (Years)</b>	<b>Minimum Staff Input (Months)</b>
Team Leader-Design	10	06
Water Treatment Process Expert	07	03
Hydro-geologist	07	03
Hydrologist	07	03
Water/Natural Resources Management Expert	07	03
Water Supply/Hydraulic expert	07	03
Electro-mechanical expert	07	02
Structural Engineer	07	03
Financial/Economic Expert	07	02
Sanitation Expert	07	03
Environmental Safeguards Expert	07	02
Sociologist/ Social Safeguards expert	07	03
<b>Sub –Total 1</b>		<b>36</b>

Mandatory Non-key Experts for the design phase are indicated in Table 4-2 below.

**Table 4-2: Mandatory Non-key Experts- Design Phase**

<b>Expert</b>	<b>Minimum relevant experience (years)</b>	<b>Minimum staff input (month)</b>
Geotechnical Engineer	07	01
Surveyor	07	04
Valuer	05	02
Computer Aided Design (CAD) Technician	05	02
<b>Sub-Total 2</b>		<b>09</b>
<b>Overall Total – Design</b>		<b>45</b>

#### 4.3.2 Experts- Tendering and Construction Supervision Phase

Key experts for the Tendering and Construction Supervision Phase are indicated in Table 4-3 below.

**Table 4-3: Key Experts-Tendering and Construction Supervision**

<b>Expert</b>	<b>Minimum Relevant Experience (Years)</b>	<b>Minimum Staff Input (Months)</b>
Team Leader-Construction Supervision	10	8
Resident Engineer	10	20
Social Safeguards Expert	07	18
Electro-mechanical Expert	07	04
Environmental Safeguards Expert	07	18
Water Treatment Process Expert	07	03
Hydro-geologist	07	03
Water supply/hydraulic expert	07	02
Structural Engineer	07	03
Sanitation Expert	07	03
<b>Sub-Total 1</b>		<b>82</b>

The mandatory Non-Key experts for Tendering and Construction Supervision are indicated in Table 4-4 below.

**Table 4-4: Mandatory Non-Key Experts-Tendering**

<b>Expert</b>	<b>Minimum relevant experience (years)</b>	<b>Minimum staff input (month)</b>
Surveyor	07	04
Valuer	05	03
Geotechnical Engineer	07	01
Clerk of Works-Civil Works	05	20
Clerk of Works -Electromechanical Works	05	05
<b>Sub-Total 2</b>		<b>33</b>
<b>Overall Total - Construction Supervision</b>		<b>115</b>

### 4.3.3 Qualifications of Experts

**Table 4-5: Minimum Qualifications and Experience of Key Personnel**

Position	Minimum Qualifications and Experience
Team Leader - Design	<p><b>Education:</b> Minimum of Master’s degree in Civil/Environmental/Hydraulic Engineering or other relevant discipline.</p> <p><b>General experience:</b> Minimum of 15 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 10 years’ experience in design of water supply and sanitation infrastructure.</li> <li>• Experience as Project Manager or Team Leader on not less than 3 previous projects similar in scale and content to this one.</li> <li>• Experience in implementation of projects in Sub-Saharan Africa</li> <li>• Shall be a Registered Engineer in Uganda or any other recognized engineering society.</li> </ul>
Water Treatment Process Expert	<p><b>Education:</b> Minimum of Master’s degree in Water/Environmental/Process Engineering or other relevant discipline.</p> <p><b>General experience:</b> Minimum of 15 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years’ experience in water treatment process design.</li> <li>• Experience as Water Treatment Process Engineer on not less than 3 previous projects similar in scale and content to this one.</li> </ul>
Hydrogeologist	<p><b>Education:</b> Bachelor’s degree in Civil/Water Resources Engineering/Geological Sciences or equivalent and a post graduate degree in Hydrogeology.</p> <p><b>General experience:</b> Minimum of 10 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years’ specialist experience in ground water investigations, exploration and development.</li> <li>• Experience in implementation of projects in Sub-Saharan Africa.</li> </ul>
Hydrologist	<p><b>Education:</b> Minimum of Master’s degree in water resources/hydrology or other relevant discipline.</p> <p><b>General experience:</b> Minimum of 10 years working experience</p>

Position	Minimum Qualifications and Experience
	<p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years’ specialist experience in surface water investigations, exploration and development.</li> <li>• Experience as Water Resources expert on not less than 3 previous projects similar in scale and content to this one. Particularly in hydrological assessments.</li> <li>• Experience in implementation of projects in Sub-Saharan Africa.</li> </ul>
Water/Natural Resources Expert	<p><b>Education:</b> Minimum of a Master’s degree in Water/Natural Resources Management or related field.</p> <p><b>General experience:</b> Minimum of 10 years working experience</p> <p><b>Specific experience:</b> 7 years’ specialist experience in natural/water resources management with specific focus on catchment based integrated water resources management. Must have experience in implementing catchment management and water source protection measures and stakeholder analysis and sensitisation in catchment management.</p>
Water Supply/ Hydraulic Expert	<p><b>Education:</b> Bachelor’s degree in Civil/Environmental/Hydraulic Engineering or other relevant discipline.</p> <p><b>General experience:</b> Minimum of 10 years working experience</p> <p><b>Specific experience:</b> 7 years’ experience in in design of water supply networks and or hydraulic/surge analysis.</p>
Electromechanical Engineer	<p><b>Education:</b> Masters’ degree in Electrical/Mechanical/Instrumentation Engineering or other relevant discipline.</p> <p><b>General experience:</b> Minimum of 10 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years’ specialist experience in design/installation of electromechanical equipment for water supply projects. The position holder should have prior experience in design/installation of SCADA systems.</li> <li>• Shall be a Registered Engineer in Uganda or any other recognized engineering society.</li> </ul>
Structural Engineer	<p><b>Education:</b> Masters’ degree in Civil/Structural Engineering or other relevant discipline.</p> <p><b>General experience:</b></p>



<b>Position</b>	<b>Minimum Qualifications and Experience</b>
	<p>Minimum of 10 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years' specialist experience in design of foundations and structures.</li> <li>• Experience as Structural Engineer on not less than 3 previous projects similar in scale and content to this one.</li> <li>• Shall be a Registered Engineer in Uganda or any other recognized engineering society.</li> </ul>
Financial/Economic Expert	<p><b>Education:</b></p> <p>Minimum of Master's degree in Engineering Sciences with a bias in Engineering Economics or Economics with a bias in Financial and Economic analysis of investment projects or any closely related field.</p> <p><b>General experience:</b></p> <p>Minimum of 10 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years' specialist experience in conducting Financial and Economic analysis of Water Supply Projects. Must have experience in assessment of key financial performance indicators/ratios such as operating cash flow CAPEX cover, operating cash flow debt service cover, NPV, FIRR, DSCR, ROE, ROA, debt to equity, and the EIRR of water supply projects.</li> </ul>
Sanitation Expert	<p><b>Education:</b></p> <p>Minimum of a Bachelor's degree in Civil/Environmental/Sanitary Engineering or an equivalent.</p> <p><b>General experience:</b></p> <p>Minimum of 10 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years' specialist experience in design of sanitation systems including faecal sludge and solid waste treatment plants, public and institutional toilets etc.</li> </ul>
Environmental Safeguards Expert	<p><b>Education:</b></p> <p>Minimum of a Bachelor's degree in Environmental Engineering, Environmental Sciences, or equivalent.</p> <p><b>General experience:</b></p> <p>Minimum of 10 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years' specialist experience in assessing environmental compliance of infrastructure projects including Environmental Social Impact Assessments (ESIA).</li> <li>• The person shall be a NEMA- accredited environmental practitioner, have familiarity with World Bank's environmental safeguards policies.</li> <li>• Experience in delivering good international industry practice with respect</li> </ul>

Position	Minimum Qualifications and Experience
	to Environment, Social, Health and Safety (ESHS)
Sociologist/Social Safeguards Expert	<p><b>Education:</b> Minimum of Master’s degree in Social Sciences, Sociology, or any closely related field.</p> <p><b>General experience:</b> Minimum of 10 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years’ experience in conducting socio-economic assessments for feasibility studies of water and sanitation projects specifically, baseline studies for water and sanitation and assessment of ability and willingness to pay for water and sanitation services.</li> <li>• Experience in conducting socio-economic studies for projects in Sub-Saharan Africa.</li> <li>• Experience in enforcing social safeguards compliance of infrastructure projects in sub-Saharan Africa. The person shall have familiarity with World Bank’s social safeguards policies.</li> <li>• Experience in managing project associated social risks and specifically implementing Resettlement Action Plans (RAP)</li> </ul>
Geotechnical Engineer	<p><b>Education:</b> Masters’ degree in Civil/Structural/Geotechnical Engineering or other relevant discipline.</p> <p><b>General experience:</b> Minimum of 10 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years’ specialist experience in the field of geotechnical engineering and shall have worked as Geotechnical Engineer on not less than 3 previous projects involving water supply infrastructure.</li> <li>• Shall be a Registered Engineer in Uganda or any other recognized engineering body.</li> </ul>
Surveyor	<p><b>Education:</b> Bachelor’s degree in Surveying or other relevant discipline.</p> <p><b>General experience:</b> Minimum of 10 years working experience.</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years’ specialist experience in cadastral, topographic and route surveying.</li> <li>• Must be registered with relevant professional body.</li> <li>• Experience in surveying works on at least two previous water supply or sewerage projects in Uganda.</li> </ul>
Valuer	<p><b>Education:</b> Bachelor degree in Land and/or Development Economics or an equivalent</p> <p><b>General experience:</b> Minimum of 10 years working experience.</p>

Position	Minimum Qualifications and Experience
	<p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years' specialist experience in valuation of properties and preparation of strip maps for compensation on water infrastructure projects in Uganda.</li> <li>• Must be registered with relevant professional body.</li> </ul>
<p>Computer Aided Design (CAD) Technician</p>	<p><b>Education:</b> Minimum of a Diploma in Civil Engineering/Surveying or an equivalent</p> <p><b>General experience:</b> Minimum of 7 years working experience.</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 5 years' relevant experience in use of CAD software like Auto CAD in preparation of design drawings for water supply projects.</li> </ul>
<p>Team Leader – Construction Supervision</p>	<p><b>Education:</b> Minimum of Master's degree in Civil/Environmental/Hydraulic Engineering or other relevant discipline.</p> <p><b>General experience:</b> Minimum of 15 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 10 years' experience in planning and implementation (design and construction supervision) of water supply and on-site sanitation infrastructure projects.</li> <li>• Experience as Project Manager or Team Leader on not less than 3 previous projects similar in scale and content to this one.</li> <li>• Experience in implementation of at least 2 projects in Sub-Saharan Africa</li> <li>• Shall be a Registered Engineer in Uganda or any other recognized engineering society.</li> </ul>
<p>Resident Engineer</p>	<p><b>Education:</b> Bachelor's degree in Civil/Environmental/Hydraulic Engineering or other relevant discipline. Master's degree in a relevant discipline will be added advantage.</p> <p><b>General experience:</b> Minimum of 10 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years' experience in construction supervision of water supply infrastructure including similar conventional water treatment plants and pipe networks</li> <li>• 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</li> <li>• Experience in construction supervision of sanitation infrastructure including waterless and waterborne systems</li> <li>• Shall be a Registered Engineer in Uganda or any other recognized</li> </ul>

Position	Minimum Qualifications and Experience
	engineering society.
Clerks of Works – Civil	<p><b>Education:</b> Higher diploma in Civil Engineering or related field. Bachelor’s degree in relevant field is added advantage.</p> <p><b>General experience:</b> Minimum of 7 years working experience</p> <p><b>Specific experience:</b> 5 years’ supervision of water supply infrastructure projects involving surface water intakes and conventional treatment plants, reservoirs and pipe networks.</p>
Clerks of Works – Electro-mechanical	<p><b>Education:</b> Higher diploma in Mechanical/Electrical Engineering or related field. Bachelor’s degree in relevant field is added advantage.</p> <p><b>General experience:</b> Minimum of 7 years working experience</p> <p><b>Specific experience:</b> 5 years’ specialist experience in installation and maintenance of electromechanical equipment in water supply infrastructure projects</p>

**NB: All CVs including for Key and Non-Key staffs shall be endorsed by the Experts and the Consultant’s representative (with power of attorney).**

#### **4.4 Familiarization with the Assignment**

To familiarise Consultants with the services to be provided under this consultancy, a pre-bid meeting will be held in Kyegegwa-Mpara-Ruyonza Project Area 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.

### **5 DURATION OF THE ASSIGNMENT**

The assignment is expected to last **48 months** and the time estimates for the various components is as follows:

1. Feasibility study and detailed design– 8 months.
2. Works tendering – 6 months
3. Pre-construction – 3 months
4. Construction supervision – 18 months
5. Defects liability period – 12 months

## 6. Final reporting and project closure – 01 months.

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.

## 6 PRICING

In accordance with the World Bank rules, the consultancy services shall be priced in any fully convertible currency, singly or in combination of up to three foreign currencies.

## 7 REPORTING AND MEETING REQUIREMENTS

### 7.1 Reporting Address

The Project Coordinator – Integrated Water Management and Development Project

Telephone: +256392731290 / 0772 578 223

E-mail: [ps@mwe.go.ug](mailto:ps@mwe.go.ug) / herbert.nuwamanya@mwe.go.ug

Plot 22/28 Port Bell Road, Luzira

Kampala, Uganda

The Consultant will be required to deliver a hard copy of each of the reports as shown in Table 7-1 below to the World Bank to;

The Task Team Leader - Integrated Water Management and Development Project

World Bank

Uganda Country Office

Rwenzori House, Plot 1, Lumumba Avenue

Kampala

As indicated in Tables 7-1, 7-2 and 7-3 below, 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 the tables.

The MWE and the World Bank shall review draft reports and approve/give comments within two weeks of submission.

### 7.2 Reporting Requirements and Content

## 7.2.1 Reporting Requirements and Content – Design Phase

During the design phase, the Consultant shall submit reports as stated in Table 7-1.

**Table 7-1: Reporting requirements-Design**

Description	Timing in months from contract effectiveness	No. of hard copies to		Electronic copies to MWE contact person
		World Bank	MWE	
Inception report	1	1	2	Word; Excel (all tables)
Feasibility study report	4	1	2	Word; Excel (all tables); CAD (all drawings); Copy of all documents in PDF
Updated ESIA and RAP reports	6	1	2	Word; Excel (all tables); CAD (all drawings); Copy of all documents in PDF
Draft Detailed design report	6	1	2	Word; Excel (all tables); CAD (all drawings); Copy of all documents in PDF
Final detailed design report	7	1	2	Word; Excel (all tables); CAD (all drawings); Copy of all documents in PDF
Draft tender documents	7	1	2	Word; Excel (BoQ); CAD (all drawings); Copy of all documents in PDF
Final tender documents	8	1	4	Word; Excel (BoQ); CAD (all drawings); Copy of all documents in PDF

The reports shall, as a minimum, have the following contents:

### 1. Inception report

The inception report shall define the design criteria and assumptions that are agreed by the MWE as the basis of design for the design component of the project. This may include revisions and alternatives to the relevant technical manuals where appropriate. It will also include initial findings from their visual and risk assessment, and include a detailed site inventory and photographic record, consultant's revised time schedule.

### 2. Feasibility study report

The report shall present results of socio-economic, hydrological and hydro-geological studies as outlined in the scope and shall include willingness to pay and affordability studies. The feasibility study report shall also include a baseline report indicating project beneficiary information, preliminary calculations and layouts of all measures proposed. Furthermore, appendices showing all raw data utilised as well as photographs of project related areas should be part of the documentation. The basis of all proposals shall be clearly cross

referenced to results gained during the economic feasibility studies, as well as all technical investigations. In addition, all standards and criteria applied for each solution proposed shall clearly be stated. The feasibility study should enable the client to choose feasible options for infrastructure development and management. The options chosen at this stage will be carried forward to the detailed design stage.

### **3. ESIA and RAP Reports**

The ESIA report shall present the baseline data according to the Environmental and Social Safeguards findings. The report shall discuss the technical, economic, social and environmental parameters and the identified impacts for the proposed project and its alternative scenarios. An Environmental and Social Management Plan shall be presented in the report identifying the required actions needed to avoid or mitigate the environmental and social impacts of concern as well as the required monitoring measures and responsibilities for implementation and oversight and an estimate of investment and/or operating budget required. The ESIA report shall comply with the national legislation and the World Bank policies and Environmental, Health and Safety guidelines.

The RAP report shall present the project social and economic impacts, resulting from acquisition of land for the project, on individuals or groups of people and the proposed measures to compensate for or to minimize land acquisition and its impacts. The report shall detail the outcomes of the consultations with relevant stakeholders, including potentially affected persons regarding the social impacts of the proposed project and the agreed upon measures to cover the losses. The report shall also cover the Grievance Redress Mechanism, RAP implementation arrangements and schedule, Monitoring and Reporting arrangements both during the project and post project implementation, compensation costs and budget, livelihood restoration activities, community development and resettlement plan. The RAP report shall comply with the national legal, policy and regulatory framework as well as the World Bank Policies, specifically; World Bank policy on Involuntary Resettlement (OP 4.12).

### **4. Draft design report**

The report shall be based on the recommendations of the feasibility study. The report shall provide design criteria, detailed designs for all key structures and component details for the water supply and sanitation solutions adopted. Detailed dimensioning of all systems and structures, technical specifications, cost estimates, implementation schedules, site maps shall be provided. For the water supply system this shall include relevant details for the Intake, Water Treatment Plant (WTP), transmission and distribution mains, main storage facilities, booster stations where applicable, electromechanical equipment and accessories etc.. The report should further include as Appendices to the report; Schematic drawings, structural drawings, hydraulic and profile drawings, as well as detailed calculations and geotechnical investigations reports.

### **5. Final design report:** The final design report shall have the same contents as the draft design

report. The report shall reflect all changes requested by and agreed with the Client.

6. **Draft tender documents:** The draft tender documents shall be in accordance with the applicable World Bank requirements.
7. **Final tender documents:** The final set of tender documents shall have the same contents as the draft documents. The documents shall reflect all changes requested by and agreed with the Client.

### 7.2.2 Reporting Requirements and Content– Tendering and Construction Supervision Phase

During the construction phase, the Consultant shall submit reports as stated in Table 7-2 below.

**Table 7-2: Reporting Requirements-Tendering and Construction Supervision Phase**

Description	Timing in months from starting date	No. of hard copies to		Electronic copies to MWE contact
		MWE	World Bank	
<b>Tendering for works contract</b>				
Tender evaluation report	12	2	0	Word; Excel (all tables), A copy in PDF
Contract documentation	14	6	0	Word, A copy in PDF
<b>Construction Period</b>				
Monthly construction progress reports	17 - 35	2	1	Word; Excel (all tables), MS Project (time schedules)
Substantial project completion report	35	2	1	Word; Excel (all tables), A copy in PDF

The reports shall, as a minimum, have the following contents:

- 1) **Tender evaluation report:** The tender report shall be in accordance with the standard World Bank reporting format and guidelines.
- 2) **Contract documentation:** Contract documentation shall be in accordance with World Bank requirements.
- 3) **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), actual staffing levels and deployment of equipment by the contractor against planned, financial information, all agreed and all new variation and compensation events, all issues requiring client attention, health and safety information,



social and environment safeguard management information and other information that may have an impact on project progress. The report shall include a Gantt chart and should include photographic evidence of progress as well as key lessons. In addition, the report should project cash flows and work progress over the next three months. The report shall also include information on training of sector professionals undertaken as part of the project.

- 4) **Substantial project 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, safeguards performance, major issues that were encountered and lessons learnt during project implementation and how these were solved, the project schedule citing all delays if any, and financial information. Most importantly, the substantial completion report shall include a list of 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. Recommendations should also be made to MWE on how to improve service provision. The substantial completion report should also include a presentation on the report to be made by the Consultant to MWE.

### 7.2.3 Reporting Requirements – Defects Liability Period

During the defects liability phase, the Consultant shall submit reports as stated in Table 7-3 below.

**Table 7-3: Reporting Requirements-Defects Liability Period**

Description	Timing in months from starting date	No. of hard copies to		Electronic copies to MWE contact
		MWE	World Bank	
<b>Defects Liability Period</b>				
Interim report (quarterly)	(35-47)	1	1	Word; Excel (all tables)
Operational manuals	45	2	1	pdf
As built drawings	45	2	1	CAD (all drawings); ArcView GIS (location of all new & rehabilitated assets)
Completion of training report	45	2	1	Word; Excel (all tables)
Final completion report	48	2	1	Word; Excel (all tables)

The reports shall, as a minimum, meet the following requirements:

- 1) **Interim progress reports:** The interim progress reports 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 and measures taken by the Contractor to address the defects. In addition, the report shall indicate the Consultant's and/or the Contractor's progress on the undertaking of staff training.
- 2) **Operational manuals:** The Consultant shall, through the Contractor ensure that suppliers / manufacturers submit all operational manuals in English to the Client in the formats and numbers of copies specified in Table 7-3. The Consultant shall prepare an O&M manual for the system as constructed including any changes/modifications made during the system commissioning phase and recommendations for future operations.
- 3) **As built drawings:** The Consultant shall submit all 'as built drawings' to the Client in the format and numbers of copies specified in Table 7-3.
- 4) **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.
- 5) **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. The report should not include any outstanding actions.

### 7.3 Meeting and Workshop Requirements

Following the submission of the inception report, the Consultant will avail appropriate personnel for review meetings with the Client during the entire project period. The review shall be for the purposes of:

- 1) Assessing progress.
- 2) Obtaining signoffs on proposals made in respect of minimizing project's social and environmental impacts

- 3) Exchanging information and data relevant for the successful accomplishment of the entire assignment.

The nature of the meetings, locations (e.g. site, MWE offices, and Consultant's offices) and agenda shall be agreed upon by the Consultant's and the Client's project managers.

For ensuring organizational and stakeholder wide appreciation and ownership of the proposed recommendations, the consultant shall be required to organise coordination workshops for presentation of key reports after each project milestone to a representative group of stakeholders that is to be agreed with the Client. A minimum of three workshops is proposed and shall include presentation of project inception, draft feasibility study and draft detailed design reports. Two workshops will be held in Kyegegwa-Mpara-Ruyonza Project Area and one will be held in Kampala. For costing purposes, it shall be assumed that each workshop will be attended by 35 people.

## **8 DATA, SERVICES AND FACILITIES 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 (but not be limited to) the existing Feasibility Study and preliminary Design Report prepared by the MWE, preliminary Environmental and Social Impact Assessment (ESIA) report prepared by M/S ESL Ecoserv Ltd. and the preliminary Resettlement Action Plan (RAP) prepared by M/S JBN Consults Ltd. The Client will also assist the Consultant in obtaining work permits for the projects' Key Experts.

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

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

**The Consultant should include in his proposal costs of procuring a 4WD station wagon and a 4WD Double Cabin Pickup all from Toyota to be used during the execution of the assignment and all the maintenance costs for the vehicles during design phase. The Consultant should also include in his proposal a provisional sum of UGX 40 million for facilitation of the Client's proposed Counterpart staff during training in the design phase.**

## **9 SERVICES AND FACILITIES TO BE PROVIDED BY THE CONSULTANT**

In carrying out this assignment, the Consultant shall provide the following services, among others, which should be duly provided for in the Consultant's proposal:

1. Suitable office space necessary for the Consultant's team engaged on the assignment.
2. Office furniture and other related equipment including desk top computers complete with printers, auxiliary power units, and modern plan reproduction equipment all to be purchased by the Consultant through the contract as a reimbursable expenditure.
3. Office supplies, as required for the period of services.
4. Utility services and costs.
5. Long term accommodation for the Consultant's staff while in Uganda and hotel accommodation for short term experts.
6. Subsistence (or per diem) payments for official travel for Consultant's staff.
7. Secretarial and administrative support staff.
8. International and local telephone services for official communication only.
9. Transport for the duration of the lump sum contract.
10. Aerial photographs and maps, meteorological and geological data.

**NB:** The Consultant shall include in their costs, the full cost for the purchase as well as operation and maintenance of a 4WD station wagon and a 4WD double cabin pickup, all from Toyota for the entire duration of the lump sum assignment.

**All furniture, technical and office equipment and Vehicles procured under the project shall be handed over to the Client after termination of the consultancy services.**

## **10 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:

1. A fully furnished site office for the Resident Engineer and Clerk of Works, fully maintained and utility services paid.
2. Survey equipment.
3. Transport for official work of the Consultant (Project Manager and Resident Engineer)

4. Fully furnished accommodation for the Resident Engineer and Clerk of Works, fully maintained and utility services paid.
5. Remuneration for support staff of the Resident Engineer.

## **11 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:

1. Use of provisional sums.
2. Variations to works that materially differ in technology, geography, plant layout, etc. from the design agreed upon for the works contract.
3. Variations to works that increase the contract sum by more than the maximum allowable sum stated in the special conditions of contract of the works contract document.
4. Certification of any construction related claims by the Contractor including extension of time.
5. Certification of substantial project completion.

## **12 ENVIRONMENTAL AND SOCIAL POLICY**

The Environmental, Social, Health and Safety policy which will guide the supervision of the works has been attached in Annex 2.

## **13 CODE OF CONDUCT**

The code of conduct attached 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:

1. Received a copy of the code;
2. Had the code explained to them;
3. Acknowledged that adherence to this Code of Conduct is a condition of employment; and
4. Understood that violations of the Code can result in serious consequences, up to and including dismissal, or referral to legal authorities.

## **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 1995);
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.

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Project Manager

MWE



### **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.