



THE REPUBLIC OF UGANDA

MINISTRY OF WATER AND ENVIRONMENT

RURAL WATER SUPPLY AND SANITATION DEPARTMENT

TERMS OF REFERENCE

For

Consultancy Services for Feasibility Study, Detailed Engineering Design and Construction Supervision of Solar Powered Piped Water Supply Systems and Sanitation Facilities in Refugee Settlements and Host Districts in West Nile and Northern Uganda

Lot 3: Adjumani and Lamwo

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# **1. INTRODUCTION**

## **1.1. General**

Uganda is located in East Africa and lies across the equator, about 800 Kilometres inland from the Indian Ocean. It lies between 10 29' South and 40 12' North latitude, 290 34 East and 350 0' East longitude. The country is landlocked, bordered by Kenya in the East; South Sudan in the North; Democratic Republic of Congo in the West; Tanzania in the South; and Rwanda in South West. It has a total area of 241,551 square kilometers, of which the land area covers 200,523 square Kilometres. The total population of Uganda was 34.6 million persons in 2014 with an annual growth rate of 3.0%, this translates into 38.9 million persons by 2018, 80% resident in rural areas (UBOS, 2014).

The main technology options used for water supply improvements in rural areas include deep boreholes (44%), shallow wells (24%), and protected springs (21%). Others include tap stands/kiosks of piped schemes and rainwater harvesting tanks (11%). As of June 2018, the national safe water coverage in rural areas was estimated at 70%. There was no change in coverage from that of June 2017. Out of the 57,974 rural villages in Uganda, 38,183 (66%) of the villages had valid water sources as of June 2018. (MWE, Sector Performance Report 2018).

## **1.2. Sector Institutional Framework**

The Water and Environment sector consists of two sub-sectors: the Water and Sanitation (WSS) sub-sector and the Environment and Natural Resources (ENR) sub-sector. The WSS sub-sector comprises water resources management, rural water supply and sanitation, urban water supply and sanitation, and water for production. The ENR sub-sector comprises environmental management; management of forests and trees; management of wetlands and aquatic resources; and weather and climate. The sector institutional framework consists of:

- The Ministry of Water and Environment with the Directorates for Water Development (DWD), Water Resources Management (DWRM) and Environmental Affairs (DEA);
- Local Governments (Districts and Town Councils), which are legally in charge of service delivery under the Local Government Act;
- A number of de-concentrated support structures related to MWE, are at different stages of institutional establishment, including Technical Support Units (TSUs), Water Supply Development Facilities (WSDFs), Water Management Zones (WMZs), and Umbrella for Water and Sanitation Authorities;
- Four semi-autonomous agencies: (i) National Water and Sewerage Corporation (NWSC) for urban water supply and sewerage; (ii) National Environment Management Authority (NEMA) for environment management; (iii) National Forestry Authority (NFA) for forestry management in Government's Central Forest Reserves; and (iv) the Uganda National Meteorological Authority (UNMA) for weather and climate services;
- NGOs/CBOs (coordinated through UWASNET and ENR-CSO Network) and Water User Committees/Associations;

- The private sector (water and sanitation infrastructure operators, contractors, consultants and suppliers of goods); and
- Communities who are the users of water and sanitation services
- Since August 2017, Umbrella Water Authorities have been gazetted as Water Authorities to operate and maintain systems directly or indirectly by contracting and supervising private operators in urban and rural piped water schemes, outside the jurisdiction of NWSC.

### **1.3. The Rural Water Supply and Sanitation Sector (RWSSS) in Uganda**

The Rural Water Supply sub-sector is defined to include all those areas under the jurisdiction of District Local Councils and Rural Growth Centres, but excluding those urban areas governed by Town Boards, Town Councils, Municipalities and Kampala Capital City. In practice this means that rural water supply covers those communities and villages with populations up to 1,500 and Rural Growth Centres (RGCs) with populations between 1,500 and 5,000.

### **1.4. Rural Water Supply and Sanitation Services**

Vision 2040 goal is to have 100 percent of the population with access to safe piped water by 2040. The Second National Development Plan (NDP II 2015/16-2019/20) targets to increase access to safe water from 65 percent to 79 percent in rural areas by 2020. However, the NDP II planning horizon ends just at the beginning of IWMDP and hence NDP II targets fall largely outside the project period. As of the 2018 Water and Environment Sector Performance Report (MWE 2018), national safe water coverage for rural areas was estimated at 70%. Access to basic rural sanitation reduced to 79% in 2018 from 80% by June 2017. The functionality for rural water supplies remained the same (85%) as previous year 2017.

Fortunately, the Strategic Sector Investment Plan (SSIP 2018-2030) sets the investment priorities for the sector for the period between 2018 and 2030. The SSIP focuses on five areas of; village water supply, functional rural water sources, improved drinking water, safely managed drinking water and cost per capita. Over the planned project period i.e. 2019/2020 to 2023/24, the targets for the above five priority areas up to 2024 for a moderately low funding are; village water supply (100%), functional rural water sources (95%), improved drinking water (84%), safely managed drinking water (13%) and cost per capita (\$65).

The Water and Environment Sector will prioritize increasing access to safe water, increasing sanitation and hygiene levels and increasing functionality of water supply systems, incorporate gender analysis, implement water resources management reforms and promote catchment-based integrated water resources management.

The sector targets to increase water supply coverage in rural areas from 70% in June 2018 to 84% by June 2024 by ensuring that at least each village has a clean and safe water source; and by ensuring functionality and effective use of the water supply systems to at least 95% (SSIP 2018-2030). Safely managed drinking water will not be achieved even with moderately high

funding to the sector. In a bid to increase safe water coverage, the sector intends to adopt a policy shift from the use of point water sources to introducing piped water supply systems in the medium and long term, which is expected to be sustainable and will address water needs for both rural and urban areas. This policy shift will include:

- i. Development of large gravity-fed piped water supply schemes with river-based sources in mountainous regions to serve large areas across district boundaries, or motorized piped water schemes from surface water sources such as lakes and rivers to supply the underserved communities in rural areas;
- ii. promotion of integrated rainwater harvesting intended to cover water needs for human consumption, small cottage agricultural processing industries, small scale irrigation and water for livestock at household level; surface runoff harvesting using dams will also provide water for rural areas;
- iii. Development of solar-powered mini-piped water schemes to supply more persons that otherwise would be served using point sources with hand pumps.
- iv. Promotion of appropriate technologies by undertaking action research and development to identify suitable water supply and sanitation technologies for specific areas. The appropriate technologies are not limited to low cost technology but cover all service levels.

### **1.5. Objectives, Strategies and Priority Interventions**

The National Development Plan II (NDP II) is the current running plan and development framework of Uganda, derived from Uganda's vision 2040. The NDP II has 4 development objectives among which objective number 3 is to "Enhance Human Capital Development" under which development indicator number 10 the safe water coverage baseline and targets are defined. The NDP II envisions that safe water coverage in rural areas should reach 79% by 2020 and eventually to 100% by 2040 as envisaged by vision 2040.

Relatedly, Uganda's Strategic Investment Plan for the Water and Environment Sector (2018-2030) has the strategies and objectives projected to 2030 (see table 1 below) and derived from Vision 2040 and the foregoing NDP II (2015/16 – 2019/2020).

**Table 1: Rural Water Supply and Sanitation Objectives and Strategies as in SSIP**

<b>Objective</b>	<b>Strategies</b>
<p><b>Objective 1:</b></p> <p>By 2030, access to safe and affordable water supply in rural areas has increased 100%, in order to progressively fast track achievement of coverage for all including men and women.</p>	<p><b>Strategy 1:</b></p> <p>Construct, operate and maintain appropriate and climate change resilient community water supply systems in rural areas.</p>
	<p><b>Strategy 2:</b></p> <p>Improve functionality, sustainability and resilience of water supply systems in rural areas to provide safe water all-year-round and reduce the number of people suffering from safe water scarcity.</p>
<p><b>Objective 2:</b></p> <p>By 2030, access to improved sanitation has increased to 100% for households in rural areas, paying special attention to the needs of women and girls and those in vulnerable situations.</p>	<p><b>Strategy 1:</b></p> <p>Promote improved sanitation and hygiene practices in households, communities and rural growth centres in order to reduce the number of deaths and illnesses related to poor sanitation.</p>

The MWE with financing from the World Bank will implement the refugees and host communities water supply and sanitation sub component under the Integrated Water Management and Development Project to contribute to realization of objectives above. This sub component will, with financing from the IDA 18 Refugees Sub-Window, support activities designed to improve the sustainable provision of water supply and sanitation services to refugee settlements and host communities. This sub-component will target the districts of Yumbe, Arua, Moyo (including Obongi district nearly created from Moyo), Adjumani in West Nile, Lamwo in Northern and Kiryandongo in Central Uganda, where about 70 percent of the refugees in Uganda are being hosted.

The MWE intends to : (i) construct water supply and sanitation facilities, as well as providing associated services, including engineering, environmental and social studies and supervision of construction activities; (ii) construct a fecal sludge management facility to receive and treat sludge from refugee settlements and communities around Moyo and surrounding areas; (iii) strengthening the capacity of selected Regional WSS Authorities (UOs) in the areas of operational and financial management; (iv) carrying out of environmental and social management related activities with a view to: (a) protecting water sources and sensitizing communities; and (b) addressing the specific needs of refugees and host communities; and (v) strengthening the capacity of MWE to develop and carry out water supply and sanitation sector policies and programs with a view to promoting a more sustainable and efficient service delivery at refugee settlements.

## 1.6. The Project Area

Uganda currently faces the fastest growing refugee crisis in the world. It is the largest refugee hosting country in Africa and one of the top five in the world. According to the United Nations High Commissioner (UNHCR)/OPM data, by 31<sup>st</sup> March 2019, Uganda was host to 1,239,912 refugees, which is a 3% reduction from the October 2017 status. The majority of which were from South Sudan (65.2%) and the Democratic Republic of Congo (26.8%) and the rest from Burundi (3.1%), Somalia (2.3%), Rwanda (1.2%), Eritrea (0.9%), Sudan (0.2%), Ethiopia (0.2%) and others (0.1%). As of March 31<sup>st</sup> 2019, 65% of the refugees were settled in the 6 selected project areas of Yumbe, Adjumani, Arua, Moyo, Kiryandongo and Lamwo, which are among the most remote and least developed districts in the country besides hosting a large number of refugees. The remaining refugees are settled in the districts of Isingiro, Kikuube (formerly part of Hoima), Kyegegwe, Kamwenge, Kampala Capita City and Koboko. Refugees make up 2.8% of the Uganda's total population of 44.27 million by end of 2018.

Uganda has one of the most progressive refugee policies in the world. Under Ugandan law, refugees have the right to move freely, work, establish businesses, access public services, and obtain travel documentation. Refugees are hosted in designated settlements and are typically provided small plots of land for housing and agriculture. Most refugees live alongside host communities and receive humanitarian aid. They can also access services, such as education, health and water delivered, through a parallel system coordinated by the Refugee Department in the Office of the Prime Minister (OPM), as well as the services available in the hosting districts. However, the current large inflow of refugees into Uganda has posed tremendous pressure on land, services and resources of the country, particularly in the hosting districts and communities. Uganda, nonetheless, has pledged to continue its progressive approach to the management of refugee issues, through the Comprehensive Refugee Response Framework (CRRF), Refugee and Host Population Empowerment (ReHoPE) strategic framework, and Uganda's Second National Development Plan (NDP II). These frameworks aim to transition from humanitarian response to more holistic and sustainable development approach which promotes self-reliance and empowerment of refugees.

The current large inflow of refugees into Uganda has posed tremendous pressure on land and services of the host country. This poses exceptional constraints on capacities to deliver effective Water, Sanitation and Hygiene (WASH) services to the refugee populations, pointing to the need for collective action to address WASH challenges.

Currently there are challenges faced in provision of WASH services to refugees and host communities. The negative impact of refugees on water resources and the environment in the refugee settlements and hosting communities are already being felt. Water supply to the refugee settlements has become costly due to declining water quantities and quality in some sources near refugee settlements while wood for construction and fuel continues to be scarce and costly.

There also concerns over sustainability of the humanitarian assistance especially the need to transition from emergency towards longer-term development solutions. There is therefore a need for ensuring water and environmental sustainability within the refugee settlements and hosting communities by integrating humanitarian assistance with protection of water sources

and catchments, restoring degraded landscapes and promoting efficient water and biomass energy use practices and technologies. There is also a need to promote transition from emergency to development through implementation of systematic, well planned and structured mechanisms for refugee management that also aim at integrating delivery of social services in host communities in the refugee management programmes as well as ensuring sustainability of refugee programmes and rendering refugees more productive.

WASH and WRM service delivery should be integrated and scaled up through ensuring cost-effective measures, stronger institutional coordination and collaboration at national, district, refugee settlements and within host communities. Furthermore there is need for enhanced enforcement of water and environment policies and regulations and strengthening capacities of refugees and water and sanitation infrastructure development service providers to comply with water regulations.

With regards to sustainability of refugee WASH programmes; there is need for development and application of measures for ensuring that refugees actively engage in protecting and managing water and sanitation infrastructure as well as in promoting the sustainability for water and environment resources within the refugee settlement. In addition more active engagement with host communities to protect water sources and catchment and undertake landscape restoration activities is critically needed.

In view of the above, provision of water supply and sanitation services to refugee and host communities will employ a catchment based Integrated Water Resources Management (IWRM) approach where micro-catchment and source protection plans are prepared and implemented as a way of sustaining these interventions.

## **1.7. Existing Situation in the Project Area**

### **1.7.1. Water and Sanitation Situation in Refugee Settlements in Uganda**

According to UNHCR/OPM by October 2017, there were 1,278,897 refugees in settlements in Uganda; an estimated 295,739 households. The recommended amount of water per refugee is 20l/d. This therefore put the refugee daily water demand by October 2017 to 25,577,940 l/d (25,578 m<sup>3</sup>/d). According to UNHCR, the total amount of water supplied per day in October 2017 was 20,538,036 litres (sustainable systems including water trucking); of these 4,732,830 litres (23%) of water was delivered by trucking. Therefore the safe water access in settlements was 16.1 l/c/d (including trucking), and 12.4 l/c/d delivered by sustainable systems. Therefore, the sustainable water demand in refugee settlements in Uganda as of October 2017 was 9,772,734 l/d (9,772 m<sup>3</sup>/d).

By October 2017, the project districts were hosting some 1,026,821 refugees (80.2%) of the total number of refugees in Uganda then. The total amount of water supplied per day in October was 14,642,420 litres (sustainable systems + Trucking); of these 4,572,730 litres (31%) of water was delivered by trucking. Therefore the safe water access in settlements in the project area was 15.1 l/c/d (including trucking), and 10.4 l/c/d delivered by sustainable systems.

In October 2017, the water supply deficiency in Refugee Settlements then meant that refugees were not able to meet their hygiene needs. Refugees had to wait in line for more than one hour to get water from either a borehole or tap provided by the humanitarian organisations. Refugees who could not wait in long lines had to walk long distances to get water from dirty streams or had to go for days without bathing. The effect has been that in some cases, the lack of water has led to fights between locals and refugees for water. For instance, in August 2016, there was a cholera outbreak in Pagirinya refugee settlement Dzaipi Sub County in Adjumani district that was associated with lack of water and poor sanitation and hygiene in the settlement. Over 50 people, 49 refugees and one Ugandan were affected. Cases of diarrhea and skin diseases are common in crowded settlements such as Imvepi in Arua, Pagirinya in Adjumani, BidiBidi in Yumbe, Palorinya in Moyo and Palabek in Lamwo.

The inadequate water supply was supplemented by trucking water from far off distances. By October 2017, 81% and 37% of water supplied to Imvepi and Rhino settlements respectively in Arua was by trucking. More than 33% of water delivered in Palorinya settlement in Moyo, BidiBidi in Yumbe and Palabek in Lamwo was by trucking. It should be noted that currently, refugees do not pay for water services provided within the settlements.



**Figure 1: Water Trucking in Zone 3, BidiBidi in Kululu SC Yumbe District (Dec. 2017)**

Therefore, the sustainable water demand in refugee settlements in the selected project refugee host districts as of October 2017 is 9,335,070 l/d (9,335 m<sup>3</sup>/d). Water supply infrastructure to deliver this amount of water at a per capita consumption of 20 l/d will translate into serving 466,754 refugees.

The above analysis shows that 96% of the water supply gap in refugee settlements is in the selected project refugee host districts; hence the justification to concentrate project interventions in West Nile/North region. It should be noted that in the other regions, water trucking accounts for only 3% of the total water supplied, while in West Nile/North, water trucking accounts for 31% of the water supplied in settlements. In Kiryandongo there is NO trucking while in Arua (Imvepi settlement), 81% of the water supplied was delivered by trucking.

***Therefore, one of the project objectives is to ensure the construction of sustainable water supply systems to serve both the host communities and refugees that will contribute to the elimination of water trucking in refugee settlements.***

According to UNHCR, by October 2017, the 25,578 m<sup>3</sup>/d of water supplied daily was through motorized piped systems (89 No.), boreholes (1152 No.), and communal rainwater harvesting facilities (8,867 No.). According to the needs assessment by UNHCR, on top of the ongoing interventions, there would be need (gap/unmet needs) for additional systems categorized as follows; motorized piped systems (57 No.), boreholes (131 No.), and communal rainwater harvesting facilities (1,352 No.).

The sanitation coverage in settlements in the selected refugee hosting project districts was on average 34%, and ***an additional 137 communal latrines and 980 institutional latrines*** would be required to cover the refugee community in the project area. As part of the effort to improve personal hygiene, a total of 1,652 handwashing facilities would be required in settlements in the project area.

### **1.7.2. Water and Sanitation Situation in Adjumani and Lamwo**

By October 2017, the six selected refugee hosting districts of the greater West Nile/Northern Uganda (Yumbe, Arua, Moyo, Adjumani, Lamwo and Kiryandongo) were a host to over 1,026,821 refugees making 80.2% of the total number of refugees in Uganda then. Yumbe district had the lowest rural water access rate (< 46%) followed by Arua (< 77%) of the six districts hosting refugees according to the 2017 Water Supply Atlas.

In Adjumani, 13,504 people in rural areas had no access to safe water. ***NWSC has planned to supply two settlements in Adjumani; i.e. Agojo settlement in Ciforo Sub County and Mungula settlement in Itirikwa Sub County. NWSC also proposes to supply one host community, the Ciforo Sub County host community. This means that only 2 out of 19 settlements in Adjumani would be covered by NWSC.***

In Lamwo, 6,033 people in rural areas had no access to safe water. The refugee population was 89.8% of the population of the three refugee hosting Sub Counties of Ogili, Palabek Gem, and

Palabek Kal. Though the water Atlas showed high access rates in these Sub Counties, the influx of refugees has put immense pressure on the resources in the hosting Sub Counties.

Currently, the predominant technology for delivering safe water to target areas is by deep boreholes (71%). Other technologies include springs, shallow wells, piped water (tap) and rainwater harvesting. Functionality of existing water supply systems in rural areas in the target districts is on average 82%. The general principle is that the water sources are available 24 hours for users to collect water; though there have been isolated cases where the available water is rationed by say restricted use during certain hours of the day. Water is collected from point water sources in many cases only during day time limiting the time for fetching water to only 12 hours a day. The design consumption for every person is 20 l/c/d, however, due to insufficient water, real consumption is less than 12 l/c/d for a family of 6 persons.

In areas where the safe water sources are insufficient (e.g. Yumbe 45% rural water access), the majority of the people have to look for alternative water sources most of which are unprotected (wells, streams and rivers) and hence unsafe for human consumption. In normal situations where communities have a protected source close to them, they have to pay a flat fee of up to 1,000 Uganda Shillings per month per household for water; but where there is no protected water source nearby, people pay water vendors between 1000 -5000 Uganda shillings for a 20 litre jerry can of water. This cost of water limits consumption and water use and escalates the possibility of outbreak of water borne diseases. In the six selected refugee hosting districts of Arua, Yumbe, Moyo, Adjumani, Lamwo and Kiryandongo only about 0.1% of the population is served by use of Rainwater Harvesting Tanks; meaning that rainwater harvesting plays a meagre role in the safe water access in these districts. Water storage is done in small containers usually 20 litres. Water collected at home is used for cooking and drinking. Protected water sources in rural areas are not meant for irrigation or watering domestic animals.

## **1.8. The Integrated Water Management and Development Project (IWMDP) - Refugee and Host Communities Sub Component**

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

The IWMDP Development Objective is to improve access to water supply and sanitation services, capacity for integrated water resources management and the operational performance of service providers in project areas. The project will also contribute to the achievement of National Development Plan II objectives, Vision 2040 and Sustainable Development Goals.

## **1.9. Feasibility Study and Detailed Engineering Design**

In order to address the water supply gap in Adjumani and Lamwo, 6 solar powered piped water supply systems and 20 toilets have been proposed. Feasibility studies and detailed engineering designs will be developed as part of the project. These water supply and sanitation

infrastructure will be implemented as part of the strategy to improve access to clean water, improved sanitation and hygiene in the refugee settlements and host communities.

A separate consultancy will be developed upon completion of the detailed engineering designs to prepare the ESIA, RAP and SPPs for the interventions

### **1.9.1. Proposed Large Solar Powered Piped Water Supply Systems**

The typical ground water sources will comprise of drilled boreholes of high yields at least 12 m<sup>3</sup>/h powered by solar and pumped to elevated storage steel tanks of minimum 100 m<sup>3</sup> and piped to a radius of at least 2 Km network (or as the pressure may permit). To achieve a minimum of 12 m<sup>3</sup>/h a series of wells will be drilled to supply a particular network. Such a system is capable of meeting the daily drinking water needs of at least 5,000 people. Compared to pumped systems, solar driven systems are preferred because of:

- i. Low O&M costs
- ii. Ability to be extended to cover wider areas and not just the point source
- iii. Reduction of walking distance
- iv. Elimination of long queues at point sources

The groundwater potential will be assessed using the established framework and guidelines for water source protection. Water source protection is aimed at, 1. Improving water quality by minimizing risks to humans and livestock and damage to pumps and water equipment, 2. Reliability of water quantity by ensuring adequate yields to meet demand and minimize seasonal variations, and 3. Better livelihood opportunities through sustainable land management and poverty reduction. A catchment based approach, protection of the groundwater resource will be considered including application and acquisition of groundwater abstraction permits for each of the scheme implemented.

Already in the feasibility study carried out in 2010, a number of existing boreholes were identified as having the potential to be developed into production wells and these could be solar pumped and networked to supply some of the villages in water stressed Sub Counties in the selected districts

### **1.9.2. Proposed Sanitation**

A total of 20 toilets are proposed to improve the sanitation situation in the project area. These facilities will be constructed in schools, health facilities, and administrative centres in the selected districts.

## 2. PROJECT OBJECTIVES

The aim of the **refugee and host community** water project Component is to improve the sustainable provision of safe water and sanitation services to the host communities and refugee population in the refugee hosting districts in West Nile and Northern Uganda; through provision of sustainable safe water and sanitation services, and management and protection of water source catchments. *The selected project sites should serve at least 30% refugee communities and 70% host communities.*

### 2.1. Specific Project Objectives

The specific objectives of the Project include:

- i) To increase safe water access in host communities and settlements
- ii) To Improve sanitation status in host communities and settlements
- iii) To improve food productivity through micro irrigation
- iv) To conserve and restore water source catchments

### 2.2. Objectives of the Consultancy Services

#### 2.2.1. Main Purpose of the Consultancy

The main purpose of the consultancy is to carry out a feasibility study and detailed engineering design of 6 solar powered water supply systems and 20 toilets. The consultancy will also carry out screening for likely Environmental and Social risks and impacts *and Source Protection Measures* for the proposed Water Supply and Sanitation Systems to meet the future demand for both the host communities and refugees in Adjumani and Lamwo under lot 3.

A separate consultancy will be developed upon completion of the detailed engineering designs to prepare the ESIA, RAP and SPPs for the interventions

#### 2.2.2. Specific Objectives of the Consultancy

- i. To establish the existing water supply and sanitation situation in the proposed project areas
- ii. To develop engineering designs for solar piped water systems to increase safe water access in the proposed project areas
- iii. To propose hygiene and sanitation improvements in the proposed project areas
- iv. To develop engineering designs for sanitation facilities
- v. *To carry out screening for likely Environmental and Social risks and impacts and Source Protection Measures*
- vi. To propose appropriate management, operations and maintenance of the proposed water supply and sanitation systems taking into consideration whole life costing of the solar pumping equipment, including but not limited to replacing solar cells, invertors, pumps, etc.

- vii. Prepare the detailed technical specification, detailed technical engineering drawings, detailed bills of quantities and bidding documents using the latest version of World Bank Standard Procurement document for major works.
- viii. Provision of consulting services for supervision of construction works for solar powered piped water supply systems and sanitation facilities in refugee settlements and host districts in West Nile and Northern Uganda
- ix. Knowledge and skills transfer to sector professionals in contract management, safeguard management as well as water and sanitation infrastructure construction skills.

### **3. SCOPE OF CONSULTANCY SERVICES**

The scope of the consultancy services will include but is not limited to:

#### **3.1. Feasibility Study and Preliminary Design**

The feasibility study will cover but not limited to the following tasks

##### **3.1.1 Baseline Assessment – Water Supply and Sanitation**

The objective of the baseline survey is to collect project area specific information as an integrated part of the project proposal

##### **a) Water supply:**

- The consultant will collect socio-economic data through community questionnaires, interviewing LC III, II and I and consult data available with the line departments in the district, and UNHCR and OPM in case of refugees. Sampling should at least cover 30% of the households and include group discussions with LC I, II and III as well as relevant Sub County staff. During the whole exercise the consultant ensures the involvement of District officers (DWO, CDO or DHI)
- In consultation with the District Water Office, a list of possible supply areas is indicated in as in attachment A. Assess the eligibility of any proposed existing borehole sources in the 6 selected districts (20 sites as in **table 6**). It is understood that a lot could have changed since the last prioritization of sites was done by the districts in November 2017, therefore, in selecting new sites, care should be taken to ensure that systems selected should serve at least 30% refugee communities and 70% host communities. Eligibility assessment shall cover 3 borehole sources per site as outlined in attachment A. The eligibility assessment should come up with the priority ranking of the borehole sources per site based on borehole location, borehole characteristics, benefitting domestic/institutional population and the existing operation and maintenance arrangements.
- The consultant will review and update the prioritized list of sites for development. The consultant shall prioritize sites for development based on the criteria below:
  - Water coverage vs existing alternative supplies and planned water
  - Population vs the proposed beneficiaries under the IWMDP
  - At least 30% refugee communities

- Borehole yield of existing boreholes/ground water potential
- The consultant will visit the project site to acquire site specific information related to site hydrology/hydrogeological conditions, borehole location, borehole yields (m<sup>3</sup>/hr), borehole size (mm), borehole depth (m) and pump installation depth (m), sanitary parameters and protection measures around each borehole. *The consultant shall carry out pump testing of the priority boreholes to verify/confirm the borehole yields for the 20 selected boreholes.*
- In cases where selected sites have no existing boreholes or the existing boreholes do not have sufficient yields to supply the identified beneficiaries, the consultant will carry out geophysical investigation, siting, drilling, drilling supervision and pump testing to provide sources to meet the required demand.
- Water resources assessment – hydrogeological investigations including geophysical assessments, aquifer performance, determination of safe yields, seasonal water quality assessment.
- Options analysis and ranking of sites in each district for development including mapping of the different locations
- The consultant will establish the raw water quality (including seasonal ground water quality assessment in the area based on assessment of existing data) of the source from which an appropriate treatment process will be designed. The test results shall be presented to DWD/TSUs and the District Water Office for review before embarking on the design of the treatment process
- During the baseline survey, the consultant shall identify current and future demand points (consumer locations) and plot them on a schematic layout (sketch Map); develop the anticipated water users list – based on local council 1 records (to serve both host communities and refugees) that will be used to determine the water demand for villages in the service area. The user list will help in determining all primary, secondary and tertiary distributions points. This should be done with the help of the District, Sub-county and Parish/Local Councils one (LC1) administrations, host communities and refugees and UNHCR/OPM
- The consultant shall assess and determine the water demands (both including historic, current and projected) for different supply areas (villages and concentrated settlements) within the Sub Counties and parishes based on a 20 year design period and an appropriate annual population growth rate determined from official data (UBOS) and UNHCR/OPM for the case of refugees. The determination of demands should be based on standard consumption rate for different water user categories. Appropriate values of the different consumption rates can be obtained from the Ministry’s water supply design manual 2013.
- Feasibility assessment of power supply options to meet the energy requirements for the water supply systems
- Data obtained in the field should as far as possible be backed-up with information readily available at district Headquarters and the Directorate of Water Development.

**b) Sanitation:**

- Feasibility assessment and options analysis of proposed sanitation systems (Technical, economic, environment, social and management assessment) to include land acquisition requirements, proposed site locations, technology types and cost estimates

- Assessment and recommendation on management and user fees options for the proposed public toilets to ensure sustainability based on current experience especially in refugee settlements and in the host districts in general
- Management assessment of the fecal sludge chain to support proper functionality of the proposed fecal sludge facility. This assessment shall also consider and recommend practical and viable solutions for demand creation (containment), emptying and transportation service provision

## **Output**

The output from the feasibility study is a *detailed feasibility report* containing baseline information outlining the feasible options, and recommendations on the course of action for the detailed engineering design stage. The report should outline but not limited to the following aspects:

### **1) General**

- a. water user village, parish, Sub County
- b. Population data, settlement patterns, for both host communities and refugees etc.
- c. Socio-economic information - living patterns, economic activities, level of income for both host communities and refugees
- d. Existing infrastructure – roads, power etc.
- e. organizational levels, existence of CBO's, local NGO's, self-help and community groups, Implementing Partners in refugee settlements by category
- f. names of resource persons available in communities and refugee settlements

### **2) Water Resources Assessment**

- a. Nature of catchment area, settlement patterns and key characteristics including human activities if any (farming, cattle watering, laundry, recreation etc.)
- b. Ground water assessments including aquifer performance, water quality including results/conclusion related to source protection measure for the sites to be developed and ranking of sites for the proposed locations
- c. Proposed borehole sites: borehole location (village name and geo-location), borehole yields (m<sup>3</sup>/hr), borehole size (mm), borehole depth (m) and pump installation depth (m).
- d. water quality during the wet season (physical, chemical and microbiological)
- e. flood or landslide occurrences
- f. any other information deemed relevant

### **3) Domestic Water Use**

- a. water use patterns, quantity used, collection time, kind and status of water sources
- b. Inventory of proposed water sources – Borehole details, user/ beneficiary data disaggregated by gender and status (refugee/host)
- c. current mode and level of payment for safe drinking water facilities by the beneficiaries including refugees
- d. currently used O&M systems/structures

e. water collection and storage facilities

**4) Other Water Uses**

- a. water use type (HEP, irrigation, industry, recreation, transportation, fishing, tourism, wild life, ecology), quantity used, location, kind and status of water sources
- b. current mode and level of payment for water facilities by the beneficiaries
- c. currently used O&M systems/structures
- d. water collection and storage facilities

**5) Sanitation/Hygiene**

- a. Complete sanitation form
- b. common water related diseases
- c. information on hygiene situation, hygiene levels, practices and beliefs, constraints towards improved hygiene practices

**6) Gender**

- a. women, men and children's roles in regards to WES responsibilities both at home and community setting, assessment of relation between water and GBV

**7) Environmental and Social Risks Screening and Source Protection Measures (as per source protection guidelines 2013)**

- a. type of activities carried out in the catchment area and assess whether these imply any risks
- b. flood or landslide occurrences
- c. potential threats to water quality
- d. indications of reduced ground water levels
- e. changes in seasonal variability
- f. conditions of the immediate environment
- g. presence of sufficient protection zone
- h. public access to source/water facility
- i. identification and packaging of source protection measures

**3.1.2 Preliminary Engineering Design**

- Preliminary design of systems and system components including preliminary topographic surveys and geological investigations, energy package and Cost estimates. The design to ensure cost optimization including life-cycle costs analysis, sustainability (management and water resources) environmental and social considerations.
- Assessment and recommendation on management and tariff options for the systems. The consultant shall incorporate recommendations from the deep dive assessment (2019). The consultant shall propose a water resources monitoring system (including monitoring wells and linkage with the WIS) and explore the feasibility of remote monitoring system.

- Feasibility assessment and options analysis of proposed water supply systems and proposed energy packages (Technical, economic, environment, social and management assessment) to include land acquisition requirements and an energy audit as appropriate
- Options analysis for packaging of the proposed works including estimated construction periods.

## **Output**

The output from the preliminary design is a *preliminary design report*, which shall contain the project design brief and outline design drawings. The preliminary design stage follows from the feasibility stage and involves field measurements, preparation of accurate estimates of flows and yields of water sources and their water quality, population estimates, implementation modalities and schedules; preparation of preliminary budgets, financial and economic assessments and environmental and social impact screening. The environmental and social impact screening should be submitted to the responsible authorities to enable decision making on the next steps of preparing ESIA's, Resettlement Action Plan (RAP), and Source Protection Plan (SPP) should commence at this stage.

## **3.2. Detailed Engineering Design**

The detailed engineering design will cover but not limited to the following tasks. Based on the confirmed options for development undertake detailed engineering design of the water supply system components, sanitation systems and the faecal sludge management facility to include;

### **3.2.1 Detailed Topographic Survey**

The objective of the topographic survey is to obtain data from which altitudes and distances can be derived. The processed data will be used as input for the hydraulic design of the intake, transmission and distribution systems.

#### ***Methodology***

- In consultation with the District Water Office and DWD, the Consultant shall verify and mark locations of all proposed infrastructure taking into consideration other stakeholder and community opinion.
- The Consultant use a suitable survey equipment preferably a total station or better equipment with the necessary accessories to carry out detailed topographic surveys.
- The planned pipe route shall be surveyed and data should be collected from every location where a hydraulic construction is planned and where the characteristics of the profile are abruptly changing i.e. U-profile, water fall, river crossing, rock, etc.
- The surveyed route should as much as possible follow the route depicted by the schematic layout developed during the baseline survey
- Confirm land requirements for system installations such as reservoirs, borehole sites, pumping stations

## ***Output***

The output from this activity shall be topographic survey data recorded in a suitable format for use in the hydraulic design; the data should outline the following aspects:

- Point heights, section length
- Location of hydraulic constructions.
- Locations of hydraulic constructions have to be described, preferably by giving the name of the nearest landmark feature and coordinates should be determined by using a GPS.
- Per measured section (stroke) the soil conditions should be marked

The processed data should contain:

- The section distance and the altitude of the rod positions.
- Distances and altitudes should be transformed into a topographic profile scale H 1:1000 and V 1: 10000
- Locations of proposed hydraulic constructions and other specific features should be clearly indicated on the drawings
- In case of road or water course crossings, the size of the crossing should be indicated in the details.

The result of the topographic survey should be presented to DWD/TSUs and DWO before the development of the hydraulic design starts. The involvement of TSUs/DWOs is to ensure that local knowledge of the project area and expertise is taken into consideration in designing of appropriate water supply system. It is strongly advised to develop a draft hydraulic design when still in the project area.

### **3.2.2 Detailed Hydraulic/Engineering Design**

Based on the confirmed options for development, the consultant will undertake detailed engineering design of the water supply system components and sanitation systems to include:

#### **a) Water Supply**

##### ***Hydraulic Design***

The objective is to develop a hydraulic design that depicts the ground profile, the static pressure line and the hydraulic gradient. **The design should be based on Hazen-William formulae.** The design should be established in the most cost effective way and provide the tap stands with the designed flows.

- Determine the average and peak water demands estimated from the populations and water use at each of the supply points taking into consideration the design criteria as mentioned in the **water supply design manual 2013**

- Allocate the demands for each water supply system within the developed schematic layout (**primary and secondary distribution network**), and determine the resultant design flows.
- Using the peak water demand for the **supply area** carry out a **hydraulic design for the proposed Water Supply** depicting the pipe diameter, flow rate, velocity of flow, static pressure and hydraulic pressure in the entire primary and secondary pipe network.
- Taking into consideration the prevailing raw water quality; **design the intake, and the units and unit processes of the proposed treatment system for Water Supply**. This should include detailed drawings indicating site levels and site layouts/plans that can be used for construction. Specific drawings for scheme layouts should be overlaid on the topographical map of the areas and prepared for presentations on an A0 paper.

### ***Engineering and Structural Design***

- Detailed system component design – wells, pumps, transmission mains, treatment units, reticulation network, reservoirs etc.
- Structural design of foundations and civil structures
- Design of required electromechanical installations including energy systems to ensure energy efficiency and green infrastructure
- Prepare detailed technical specifications for all the engineering works including the intake works, treatment plants (all civil structures), storage facilities, transmission and distribution systems, energy systems and water offices.
- Prepare detailed technical construction drawings and bills of quantities including Engineers Estimates based on the prevailing market prices
- Prepare tender documents 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 to enhance Environmental, Social Health and Safety (ESHS) performance for construction of the works including detailed site information to bidders;
- Review and rank options for packing construction works into lots (e.g., grouping of sites and/ or scope). This should also include the estimated construction period for each work package
- Social, Environmental, Financial and Economic analysis of proposed water systems. The environmental analysis shall include source protection and ground water monitoring

### **b) Sanitation**

- Detailed engineering design of toilets and the Faecal Sludge Treatment Facility
- Detailed specifications, construction drawings and bills of quantities
- Social, Environmental, Financial and Economic analysis of proposed sanitation systems
- Similar detailed design and management requirements as for water supply and confirmation of task contents under FS stage.

### **3.2.3 Management Arrangements**

The management arrangements are aimed at looking for a competent management system to improve the operation and maintenance of rural water supply systems and their sustainability. The consultant shall consult MWE and the District Water Offices to acquaint with the past and present operation, maintenance and management constraints and challenges that installed water supply systems face. Management constraints and challenges should cover all aspect related to technical, financial, human resource capacity, tools and equipment, political, administrative and any other such internal and external forces that have or may make it difficult to sustainably run the proposed system. The consultant will propose management options for the water supply and sanitation (toilets and FSMF) systems including tariff options and required human resources; specify staffing requirements for scheme operation. The management options for the water supply systems shall include recommendations from the study on “Assessment of Water Service Delivery in Uganda Districts Hosting Refugees” (2019)

#### **Output**

The output from the detailed design is a *detailed design report*, which shall include detailed Engineering Report on all investigations, technical, economic, environmental and social investigations, structural design and calculations. As separate volumes accompanying the design report, should include detailed technical specification, detailed technical engineering drawings, detailed bills of quantities (costed and uncosted), tender documents in required format. A management proposal including operation and maintenance guidelines for the proposed water supply and sanitation system. The design should be verified and approved by the directorate water development. If approved the proposal for water supply and sanitation implementation can be conducted. The feasibility study and engineering design anticipated to take not more than eight (8) months.

### **3.2.4 Assistance in the Tendering Process**

This scope of work shall comprise the following

- Coordinating the contractors pre-bid meeting and providing appropriate responses to requests for clarification from bidders.
- Technical input during the evaluation of bid submissions and preparation of the bid evaluation report.
- Participation in pre-contract negotiations and preparation of the works contracts

### **3.3. 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 Multilateral Development Bank (MDB) harmonised version of the FIDIC conditions of contract. Construction supervision will also be in line with the

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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, a risk and environmental management systems to ensure compliance with construction standards.

Construction supervision covers three distinct phases: (i) pre-construction and mobilisation phase (3 months); (ii) construction phase (24 months) and (iii) defects liability phase (12 months).

### **3.3.1 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;

- i. Review the contractor's work programme and method statements and highlight areas that may pose a risk to timely and in-budget project completion.
- ii. Review the contractor's proposed staffing, equipment, and insurance, performance securities, advance payments guarantee, and recommended appropriate actions to the client.
- iii. Review and make recommendations on the contractor's procurement schedule.
- iv. Review and approve the contractor ESMP, including Labour Influx Management Plan and Workers' Camp & Accommodation Management Plans, Environment, Social, Health and Safety (ESHS) provisions, Grievance Redress Mechanisms, and Gender based Violence (GBV) Action Plan
- v. Carryout due diligence on and approve contractor's proposals for construction materials acquisition sources.
- vi. Carryout and/or supervise any pre-construction sensitization activities to address to associated environmental and social safeguards towards potentially affected communities and contractor/sub-contractor staff.
- vii. Review and approve the contractor's proposed procurements during mobilisation, ensuring that all materials are from the right source, quality and of sufficient quantities.
- viii. Monthly progress reporting to the client, and immediate reporting should any issues be identified that could impact on the project completion schedule.
- ix. Development and confirmation of training plan with the MWE

### **3.3.2 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 task shall specifically attend to the following;

- i. Supervise the contractor's work progress vs. the planned project time schedule and ensure that delays are being kept to minimum and, wherever possible, the contractor takes measures to make up for time lost and pull the project back to planned schedule.
- ii. 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.
- iii. Inspect, determine and approve the part of works, before, during and after construction of part and or whole of the works to ensure all time compliance with the specifications and standards.
- iv. Supervise the contractor's procurements, ensuring that all materials are from the right source, quality and of sufficient quantities. In addition, the consultant shall prepare/modify and approve specifications for equipment to be procured for the project as necessary.
- v. Supervise the contractor's construction activities, ensuring that all construction is undertaken as designed, or in accordance with client approved variations to the original design, and that all quality standards are met.
- vi. If necessary, make amendments to the design with approval from the client.
- vii. Ad measure 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 certificate in accordance with General Conditions of Contract and Particular Conditions.
- viii. Inspect and certify all completed works.
- ix. Prepare snag lists after substantial completion of works.
- x. Advise the client on contractual obligations and establish early warning systems to minimise financial impacts from compensation events and subsequent claims.
- xi. Ensure that the contractor meets Environment, Social, Health and Safety (ESHS) as indicated in Annex 1 & 2 and in the project ESIA.
- xii. 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.
- xiii. 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.
- xiv. 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.
- xv. 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.
- xvi. Develop and maintain a project progress reporting format that is both, concise and in accordance with the client's and World Bank requirements.
- xvii. Progress reporting to the client as indicated in the reporting schedule, and immediate reporting should any issues be identified that could impact on the project completion schedule.
- xviii. In consultation with the client, prepare the necessary variation orders.

- xix. Schedule and organise witness testing events, including contractual tests for the completed works.
- xx. 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.
- xxi. Mentor and transfer knowledge to trainees including endorsement of monthly training reports to be submitted to MWE

### **3.3.3 Defects Liability Phase**

During the defects liability period, the consultant's tasks which will be performed in close cooperation with operation staff (MWE) as nominated by the client shall include, but not be limited to the following;

- i. Supervise and certify the contractor's addressing of the entire snag list, as agreed at substantial completion.
- ii. Monitor the performance of all plant, notify both the contractor and the client on defects identified, and recommend remedial actions.
- iii. Monitor the Grievance Redress Committees to ensure complaints are addressed prior to project closing
- iv. Supervise and certify the remedying of any defects that become apparent during the defects liability phase.
- v. Review and supervise the agreed upon 'on the job' training programme of MWE operational staff by the contractor.
- vi. 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 to the client.
- vii. Review, approve, and certify 'as built' drawings.
- viii. Review and certify the final statement of accounts.
- ix. Develop and maintain a defects liability reporting format that is both, concise and in accordance with the client's and the development partner's requirements.
- x. Quarterly site meetings with the contractor where all defects identified are recorded and a time schedule for remedying these shall be agreed.
- xi. Prepare monthly progress reporting to the client on the operation status of the plant.
- xii. Prepare final completion report.
- xiii. Prepare an asset register for each system.

### **3.3.4 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:

- i. Preparing the completion report for the works, which will be based on the record maintained during construction design and work 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.

- ii. 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.
- iii. 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.

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 latest Multilateral Development Bank (MDB) harmonised version of the FIDIC conditions of contract, Environmental and Social Policy and Code of Conduct.

## **4. ORGANIZATION OF THE ASSIGNMENT**

### **4.1 General Approach to the Consultancy**

At the start-up meeting, the consultant will discuss the details of the assignment with MWE before dispatch to the field. The consultant upon arrival in the district will submit introductory letters from MWE to introduce the consultancy to the Chief Administrative Officer (CAO) and will contact the District Water office (DWO) and relevant Technical Support Units (TSU) Staff in the respective regions to discuss the way the assignment will be carried out; in addition the consultant will obtain specific area/project related information from the District Water office, UNHCR/OPM in case of refugee data and project Sub Counties.

During the whole exercise, the consultant will work in close collaboration with counterpart staff (DWO, Environment Officer, DWD/TSUs, and Community representatives) and humanitarian agencies in the respective districts to guide the assignment and ensure accuracy of data and appropriateness of solutions.

### **4.2 Contractual Arrangements**

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

### **4.3 Liaison with 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 on the project.

### **4.4 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 members is planned to be involved in the project.

An organogram reflecting the responsibilities of each staff member and line management setup of the proposed team shall be part of the proposal. Organogram for supervision stage has been proposed (**Error! Reference source not found.4**), consultant is free to modify it. It is recommended that the consultant integrates local expertise into the project execution team.

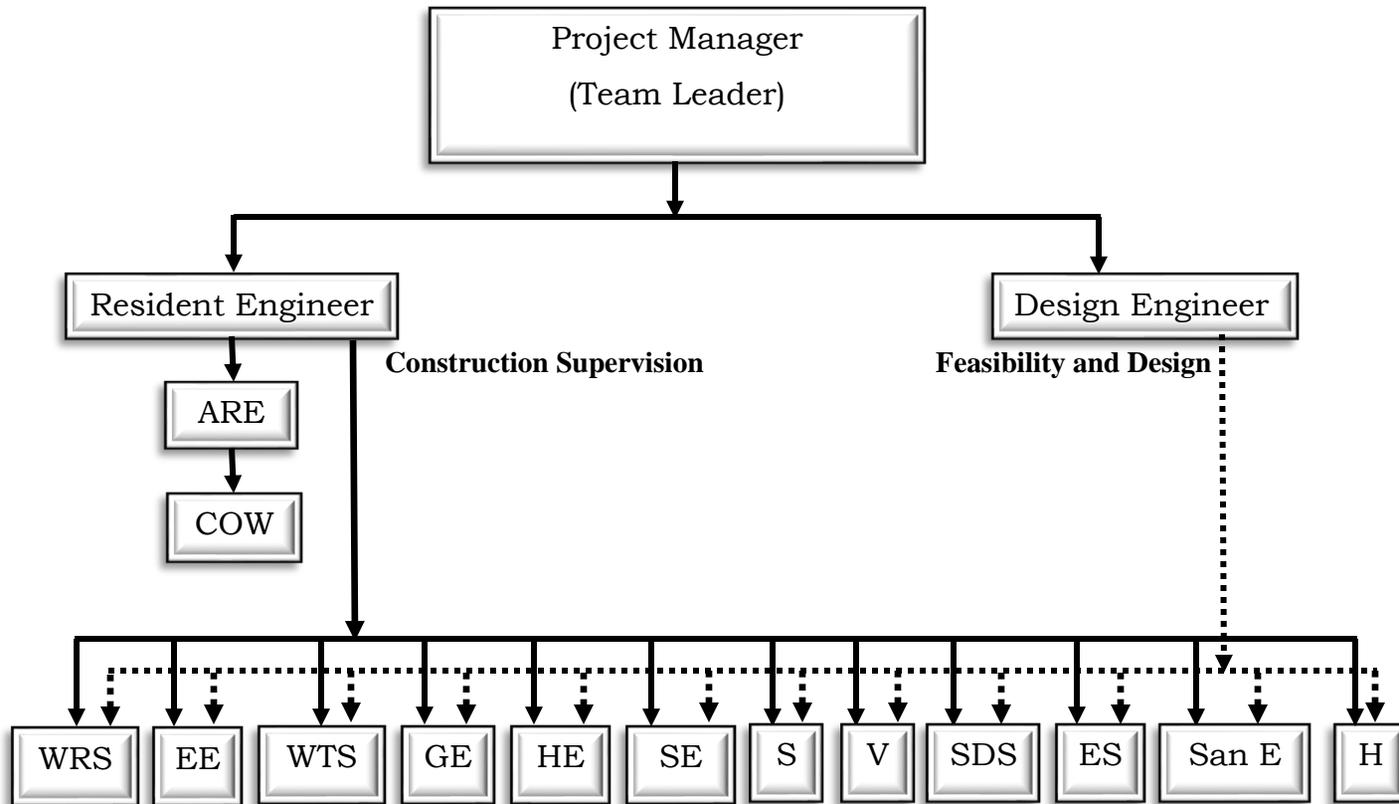
In the course of implementation of the assignment, all the proposed personnel must be available for this assignment. Staff changes shall not be accepted, except in exceptional circumstances and at the discretion of the Client.

**Error! Reference source not found.2** shows the required key personnel and the estimated time inputs. As a minimum, the key personnel shall be required to undertake this assignment within the stipulated timeframe. The consultant is free to propose additional staff beyond the minimum stipulated and also propose additional time, provided a clear justification is provided in the technical proposal.

**Table 2: List of Required Personnel with Minimum Time Inputs**

<b>Expert</b>	<b>No. Required</b>	<b>Minimum relevant experience (years)</b>	<b>Indicative Staff input (man-months) (Feasibility &amp; Design)</b>	<b>Indicative staff input (man-months) (Construction Supervision)</b>
Project Manager (Team leader)	1	15	6	8
Design Engineer	1	15	6	3
Hydro-geologist	1	15	2	2
Water Resources Specialist	1	15	1	0
Geotechnical Engineer	1	15	2	2
Resident Engineer	1	15	0	27
Water Treatment Specialist/ Process Engineer	1	10	2	5
Hydraulic Expert	1	10	6	3
Structural Engineer	1	10	6	3
Electromechanical Engineer	1	10	2	5
Assistant Resident Engineer	1	10	0	27
Sanitation Expert	1	10	3	12
Surveyor	1	10	2	12
Valuer	1	10	2	3
Clerk of Works	1	10	0	24
Social Development Specialist	1	10	2	21
Environmental Specialist	1	10	1	8
<b>Total</b>			<b>43</b>	<b>165</b>





**Figure 2: Proposed Organogram for Feasibility Study/Design and Construction Supervision**

**Key to Staff**

WRS – Water Resources Specialist	HE - Hydraulic Expert	SDS–Social Development Specialist	CoW–Clerk of Works
EE – Electromechanical Engineer	SE – Structural Engineer	ES – Environmental Specialist	H - Hydrogeologist
WTS – Water Treatment Specialist	S – Surveyor	San. E – Sanitation Expert	
GE - Geotechnical Engineer	V – Valuer	ARE – Assistant Resident Engineer	

**Table 3: Minimum Qualifications and Experience of Key Personnel**

Position	Minimum qualifications and experience
Project Manager	<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 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 or design review and construction supervision) of water supply and sanitation infrastructure projects including water treatment.</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>
Design Engineer	<p><b>Education:</b> Bachelor’s degree in civil engineering or other relevant discipline. Master’s degree in a relevant discipline will be added advantage.</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 or design review and construction supervision) of water supply and sanitation infrastructure projects including water treatment.</li> <li>• Experience as a Design Engineer 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>
Hydro-geologist	<p><b>Education:</b> Bachelor’s degree in geology/hydrogeology or other relevant discipline. Master’s degree in hydrogeology/water resources planning or a related field.</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 groundwater resources planning and assessment, groundwater investigations, catchment planning, water balance and water resources assessments for piped water systems, source protection</li> </ul>

Position	Minimum qualifications and experience
	<ul style="list-style-type: none"> <li>• Experience as hydro-geologist on not less than 3 previous projects similar in scale and content to this one. Particular in hydrogeological assessments</li> <li>• Experience in implementation of projects in Sub-Saharan Africa.</li> </ul>
Water Resources Specialist	<p><b>Education:</b> Bachelor's degree in water resources / hydrology/ or other relevant discipline. Master's degree in a water resources planning or a related field.</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 water resources planning and assessment, catchment planning, water balance and water resources assessments for piped water systems, source protection</li> <li>• Experience as Water Resources expert on not less than 3 previous projects similar in scale and content to this one. Particular in hydrological assessments</li> <li>• Experience in implementation of projects in Sub-Saharan Africa.</li> </ul>
Geotechnical Engineer	<p><b>Education:</b> Bachelor's degree in civil 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 the field of geotechnical engineering and shall have acted as Geotechnical Engineer on not less than 3 previous projects involving water infrastructure.</li> <li>• Shall be a Registered Engineer in Uganda or any other recognized engineering body.</li> </ul>

Position	Minimum qualifications and experience
Resident Engineer	<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 15 years working experience</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 10 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 similar projects (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 engineering society.</li> </ul>
Water Treatment Specialist/ Process Engineer	<p><b>Education:</b> Bachelor's degree in water / environmental / process 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> Shall have acted as Water Process Engineer or treatment expert on not less than 5 previous similar projects in water treatment.</p>
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> At least 7 years' experience in the field of water hydraulics and design of piped water systems.</p>

Position	Minimum qualifications and experience
Structural Engineer	<p><b>Education:</b> Bachelor's degree in civil engineering or other relevant discipline.</p> <p><b>General experience:</b> Minimum of 10 years working experience</p> <ul style="list-style-type: none"> <li>• <b>Specific experience:</b>7 years' experience in the field of structural engineering and shall have acted as Structural Engineer on not less than 5 previous projects involving water infrastructure as well as similar concrete structures.</li> <li>• Shall be a Registered Engineer in Uganda or any other recognized engineering body.</li> </ul>
Electromechanical Engineer	<p><b>Education:</b> Bachelor's degree in electrical / mechanical 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 the field of design, procurement, installation and operation and control of electromechanical systems for piped water systems, specific experience in design and installation of solar pumping systems.</p>
Assistant Resident Engineer	<p><b>Education:</b> Bachelor'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>• 7 years' experience in construction supervision of water supply and sanitation infrastructure including surface water treatment.</li> <li>• Experience as Resident Engineer/ Assistant Resident Engineer on at least two previous project (similar in scale and content to this one) in the East Africa region</li> <li>• Shall be a Registered Engineer in Uganda or any other recognized engineering society.</li> </ul>
Sanitation Expert	<p><b>Education:</b> Bachelor's degree in Civil/ Water / Environmental / Process Engineering or other relevant discipline. Master's degree in Sanitary Engineering or 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>

Position	Minimum qualifications and experience
	Shall have been a Sanitation Expert or similar position on not less than 2 previous similar projects involving fecal sludge treatment, and design of sanitation infrastructure.
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 in cadastral and topographic surveying among others. Must be Registered with relevant professional body.</p> <p><b>Specific experience:</b> Experience in surveying works on at least 3 previous water supply project in Uganda.</p>
Valuer	<p><b>Education:</b> Bachelor degree in Land and/or Development Economics or surveying or an equivalent</p> <p><b>General experience:</b> Minimum of 10 years working experience. Must be Registered with a relevant professional body.</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years' relevant experience in valuation for compensation on infrastructure development projects in Uganda</li> </ul>
Clerks of Works –	<p><b>Education:</b> Higher diploma in civil engineering or related field. Bachelor's degree in relevant field is an added advantage.</p> <p><b>General experience:</b> Minimum of 10 years working experience</p> <p><b>Specific experience:</b> 7 years' experience in supervision of water infrastructure projects involving surface water intakes and conventional treatment plants, reservoirs and pipe networks Three years' experience in supervision of construction of toilets and / or buildings</p>
Social Development Specialist	<p><b>Education:</b> Bachelor's degree in any social sciences field. A Master's degree is 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' relevant experience in managing project associated social risks,</li> <li>• Specific experience in implementing Resettlement Action Plans (RAPs), and Environmental and Social Management Plans (ESMPs) on World Bank funded infrastructure projects in Uganda.</li> </ul>

Position	Minimum qualifications and experience
Environmental Specialists	<ul style="list-style-type: none"> <li>• Experience in implementing RAPs and ESMPs in at least 2 projects of a similar nature</li> </ul> <p><b>Education:</b> Bachelor’s degree in environmental sciences/ engineering or equivalent</p> <p><b>General experience:</b> Minimum of 10 years working experience. Must be Registered with relevant professional body.</p> <p><b>Specific experience:</b></p> <ul style="list-style-type: none"> <li>• 7 years’ relevant experience in assessment and mitigation of environmental impacts on infrastructure projects in Uganda</li> <li>• Experience in delivering good international industry practice with respect to Environment, Health and Safety (EHS).</li> <li>• Experience with World Bank environmental policies</li> <li>• Experience in supervision of at least 2 infrastructure projects, managing associated Environment, Health and Safety aspects</li> </ul>

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 signed by expert and Project Manager).

#### **4.5 Familiarization with the Assignment**

To familiarise consultants with the services to be provided under this consultancy, a pre-bid meeting will be held in the districts of Arua for Lot 1, Yumbe for Lot 2, Adjumani for lot 3; 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 duration of the consultancy services is expected to last 48 months and the time estimates for the various components are as follows:

- i. Feasibility Study, detailed design, and source protection measures – 8 months.
- ii. Pre-construction – 3 months
- iii. Construction supervision – 24 months
- iv. Defects liability period – 12 months.
- v. 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 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: 000000000000

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

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 Error! Reference source not found.4 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 Error! Reference source not found.4, the consultant will be required to produce and submit the following principal reports and documents in the quantities and timing indicated. At each reporting stage, the consultant shall also be required to submit to the Client an electronic copy, using the software specified in Error! Reference source not found.4.

**Table 4: Summary of Reporting Requirements**

Description	Timing in months from starting date	No. of hard copies to		Electronic copies to MWE contact
		MWE	World Bank	
<b>Part 1 – Feasibility Study and Detailed Engineering Design</b>				
Inception Report	1	2	1	Word; Excel (all tables), MS Project (time schedules)
Draft Feasibility Report	4.0	2	1	Word; Excel (all tables); CAD (all drawings); Hydraulic modelling software to be agreed with client (all modelling related work)
Draft Design Report	5.0	2	1	Word; Excel (all tables); CAD (all drawings); Hydraulic modelling software to be agreed with client (all modelling related work)
Final Feasibility Report	5.0	2	1	Word; Excel (all tables); CAD (all drawings); Hydraulic modelling software to be agreed with client (all modelling related work)
Final Design Report	7	2	1	Word; Excel (all tables); CAD (all drawings); Hydraulic modelling software to be agreed with client (all modelling related work)
<b>Part 2 – Construction Supervision Period</b>				
Monthly construction progress reports	Months 1 – 27	2	1	Word; Excel (all tables), MS Project (time schedules)
Quarterly consultancy contract progress reports	Quarter 1 – 9	2	1	Word; Excel (all tables), MS Project (time schedules)
Substantial project completion report	27	2	1	Word; Excel (all tables)
<b>Part 3 – Defects Liability Period</b>				
Quarterly Interim progress report	Quarter (10 – 13)	2	1	Word; Excel (all tables)
Operational manuals	27	2	1	Pdf
As built drawings	25	2	1	CAD (all drawings); ArcViewGIS (location of all new & rehabilitated assets)
Asset register (update to existing Client register)	30	0	1	Software to be discussed with Client
Hydraulic models & associated reports	30	0	1	Word; Excel (all tables); Software to be discussed with Client
Final completion report	30	2	1	Word; Excel (all tables)

## **7.2. Reporting Requirements – General**

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

### **7.2.1. Reporting Requirements – Feasibility Study and Design Phase**

#### ***7.2.1.1 Inception Report***

The Inception Report shall clearly define the work plan and schedule for completing all elements of the contract, provide details of planned staffing, and describe the proposed deliverables.

The Inception report presents the following:

- i) The mobilization and establishment status of the Consultant;
- ii) The specific staffing plan;
- iii) The updated work plan the Consultant proposes to follow in carrying out the assignment, based on the Consultants initial findings;
- iv) Review of Methodology;
- v) Details of any constraints or inputs required from the employer;
- vi) Comments on the ToRs and the Consultants understanding of the assignment
- vii) Such remarks as are deemed appropriate including the works done so far.

#### ***7.2.1.2 Feasibility Report***

The feasibility study report should include:

- i) General arrangement and layout of proposed project;
- ii) Performance characteristics of the proposed project elements and components;
- iii) Preliminary cost estimates based on life cycle approach;
- iv) Plan for phased implementation;
- v) Implementation schedule;
- vi) Environmental, socio-economic impact of the proposed development; and
- vii) Recommendation of the best alternatives for detailed design.

#### ***7.2.1.3 Draft Design Report***

The consultant shall prepare and submit a report on preliminary design to the client for approval, which shall contain the project design brief and outline design drawings. This report shall include but not limited to;

- i) Population projections and demand estimates
- ii) Establish supply areas commensurate in relation to the feasible source yields
- iii) A geotechnical report;
- iv) Preliminary engineering designs (both hydraulic and structural) ,
- v) Preliminary drawings,
- vi) Preliminary specifications
- vii) Preliminary Source Protection Plans
- viii) Topographic and Cadastral Survey Report

#### ***7.2.1.4 Final Design Report***

The final design report shall be prepared with amendments arising from client's comments to the draft design report. This report shall include detailed Engineering Report on all investigations, technical, economic, environmental and social investigations, structural design and calculations.

The detailed designs would be expected to include:

- i) Statistical analysis of data collected for the population and demand projections, hydrological data and hydrogeological, meteorological data etc.;
- ii) Least cost lay-outs for different components of the project, i.e. treatment plants, hydraulic and structural works;
- iii) Structural and stability computations of different structures;
- iv) Calculations for pumps, motors, power generators and other machinery and equipment;
- v) Engineering analysis for deciding the most economic size of delivery mains; and
- vi) Hydraulic computations for the distribution system.

#### ***7.2.1.5 Final Tender Documents (phased where necessary) and Specifications***

The final Bills of Quantities, Tender documents in Bank format, and specifications shall be prepared with amendments arising from client's comments to the draft design report.

### **7.2.2. Reporting Requirements – Construction Phase**

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

#### ***7.2.2.1. 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, social safeguards, health and safety 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. In addition, the report should project cash flows and work progress over the next one month.

#### ***7.2.2.2. 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, major issues that were encountered during project implementation and how these were solved, the project schedule citing all delays if any, and financial information. Most important, the substantial completion report shall include a list with all snags to be addressed during the defects liability period, if any, and propose a time schedule for addressing the issues that have been identified. Recommendations shall be made to the Client on how to improve service provision. The substantial completion report shall also include a presentation on the report to be made by the consultant to the Client.

### **7.2.3. Reporting Requirements – Defects Liability Phase**

During the defects liability phase, the consultant shall submit reports as stated in Error! Reference source not found.4. The reports shall, as a minimum, meet the following requirements:

#### **7.2.3.1. *Interim/Quarterly Reports***

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

#### **7.2.3.2. *Operational Manuals***

The consultant shall ensure that suppliers / manufacturers / the contractor submit all operational manuals to the client in the formats and numbers of copies specified in Error! Reference source not found.4.

#### **7.2.3.3. *As Built Drawings***

The supervision consultant shall submit all 'as built drawings' to the client in the format and numbers of copies specified in Error! Reference source not found.4.

#### **7.2.3.4. *Asset Register Update***

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

#### **7.2.3.5. *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.

#### **7.2.3.6. *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.

### **7.3. Meeting Requirements**

For ensuring organisational and stakeholder wide appreciation and ownership of the project outputs, 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.

During the Design Period, one workshop is proposed and shall include presentation of the final draft design report. During the Construction Period, the consultant's resident engineer shall be available whenever stakeholder visits to the project sites are arranged by the Client.

During Construction Phase, monthly site meetings will be conducted and during the defects liability period, quarterly site meetings will be held.

## **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 recently concluded engineering studies, feasibility study and detailed design reports and tender documents, ESIA's, and RAP

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.

## **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:

- i. Suitable office space necessary for the consultant's team engaged on the assignment.
- ii. 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.
- iii. Office supplies, as required for the period of services.
- iv. Utility services and costs.
- v. Long term accommodation for the consultant's staff while in Uganda and hotel accommodation for short term experts.
- vi. Subsistence (or per diem) payments for official travel for consultant's staff.
- vii. Secretarial and administrative support staff.
- viii. International and local telephone services for official communication only.

All furniture, technical and office equipment 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:

- i. A fully furnished site office.
- ii. Survey equipment.
- iii. Transport for official work of the consultant

## **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:

- i. Use of provisional sums
- ii. Variations to works that materially differ in technology, geography, plant layout, etc. from the design agreed upon for the works contract.
- iii. 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.
- iv. Certification of any construction related claims by the contractor including extension of time.
- v. Certification of substantial project completion.

## **12. ENVIRONMENTAL AND SOCIAL POLICY**

This Environmental, social, health and safety policy will guide the supervision of the works. The policy has been attached in Annex 2.

## **13. CODE OF CONDUCT**

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

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

- i. Received a copy of the code;
- ii. Had the code explained to them;
- iii. Acknowledged that adherence to this Code of Conduct is a condition of employment; and
- iv. 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 the 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, and 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 illegal substances
4. Be non-discriminatory in dealing with the local community (including vulnerable and disadvantaged groups), other 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

## Attachment A

**Table 5: Proposed No. of Sites per District for Solar Powered Piped Water Systems**

No.	District	No. of Proposed Schemes
1	Adjumani	3
2	Arua	2
3	Lamwo	3
4	Moyo	3
5	Yumbe	6
6	Kiryandongo	3

**Table 6: Prioritised List of Sites for Large Solar Powered Water Systems as of Nov. 2017**

SN	District	Sub County	RGC	Population
1	Adjumani	Pachara	Unna P/S	1,286
2	Adjumani	Ukisijoni	Rubangabini	612
3	Adjumani	Arinyapi	Nyanma	607
4	Arua	Pawor	Pawor RGC	5,000
5	Arua	Bileafe	Ocodri RGC	5,000
6	Lamwo	Lokung	Ngomoromo RGC	3,000
7	Lamwo	Lokung	Pangira RGC	2,000
8	Lamwo	Padibe West	Padibe West RGC	3,000
9	Moyo	Gimara	Awitiri RGC	3,000
10	Moyo	Laropi	Laropi RGC	2,000
11	Moyo	Metu	Pajakiri RGC	3,000
12	Yumbe	Kululu	Lomunga	11,500
13	Yumbe	Drajini	Adibo	10,450
14	Yumbe	Kei	Awoba	8,750
15	Yumbe	Lodonga	Nyori	9,500
16	Yumbe	Kerwa	Kerwa	8,750
17	Yumbe	Kei	Rodo	6,800
18	Kiryandongo	Mutunda	Karuma	15,000
19	Kiryandongo	Mutunda	Mutunda	3,500
20	Kiryandongo	Gaspa	Gaspa	2,000

**Table 7: Proposed Water Supply Interventions in Lamwo District**

S/N	Proposed RGC Name	Sub County	Source of Water	Population
1	Ngomoromo RGC	Lokung	Borehole	3,000
2	Pangira RGC	Lokung	Borehole	2,000
3	Padibe West RGC	Padibe West	Borehole	3,000
4	Padibe East RGC	Padibe East	Borehole	2,000

5	Agoro RGC	Agoro	Borehole	3,000
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**Table 8: Proposed Water Supply Interventions in Adjumani District**

S/N	Proposed RGC Name/Village	Sub County/Parish	Source of Water/yield	Population
1	Nyanma/Oloboo	Arinyapi/Arasi	5	607
2	Ogolo P/S/ Ogolo	Arinyapi/Liri	3.5	1529
3	Arinyapi IDP/Madulu	Arinyapi/Ituji	3	684
4	Gulinya Road Junction BH/Kiraba Central	Ukusijoni/Kiraba	7	678
5	Unna Primary School BH/Unna Central	Pachara/Unna	8	1,286
6	Rubangabini/Rugangabini	Ukisijoni/Maaji	6.1	612
7	Arra Trading Centre/Arra	Pachara/Omi	8	980
8	Uderu	Pachara/Unna		125 HH
9	Forohwa	Ciforo/Okangali		158 HH
10	Ibibaworo	Pakele/Ibibaworo		58 HH
11	Angwarapi	Dzaipi/Miniki		209 HH
12	Nyeu	Pachara/Jihwa		117 HH