ENHANCING COMMUNITY ADAPTATION TO CLIMATE CHANGE THROUGH CLIMATE RESILIENT FLOOD EARLY WARNING, CATCHMENT MANAGEMENT AND WASH TECHNOLOGIES IN MPOLOGOMA CATCHMENT, UGANDA (CARFEWW) PROJECT

Activity 2.2.1.2 Support construction of climate-proof faecal sludge management facilities

Terms of Reference to Conduct Feasibility Studies, Detailed Design and Construction Supervision of Three Climate-Proof Faecal Sludge Management Facilities.

May 2026

Tender Reference: WAU/RFP/2026/001

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1.0 INTRODUCTION

1.1 Background.

In July 2011, the Government of Uganda through its Directorate of Water Resources Management (DWRM) under the Ministry of Water and Environment (MWE) rolled out catchment based Integrated Water Resources Management (IWRM) by creating four Water Management Zones namely Albert, Kyoga, Upper-Nile and Victoria Water Management Zones (WMZs). Thus, some functions of the Directorate were de-concentrated. This is in line with major water policy reforms that include the adoption of a participatory catchment-based approach to the planning, management and development of the water resources. The de-concentration process thus ensures that the management and development of water and related resources follow the catchment where primary action takes place.

In guiding the water resources management and development roles, the WMZs have delineated manageable catchments for which Catchment Management Plans (CMPs) have been developed following the Uganda Catchment Management Planning Guidelines that were developed by DWRM in 2014 and revised in 2019. The CMPs are important tools that guide the holistic management and development of the water resources in the catchment with the participation of all the stakeholders represented by Catchment Management Committees (CMCs) formed during the preparation of CMPs.

The CMC is a catchment level executive arm of the Catchment Management Organisation (CMO), a multi-stakeholder body that facilitates collaborative water resources management, playing a pivotal role in developing and coordinating the implementation and monitoring of the CMP. The CMC is constituted by a multidisciplinary team of representatives of different actors at the district level. At Sub County level, the CMC functions and role are cascaded to the Sub Catchment Management Committees (SCMCs) composed of representatives of key stakeholders in the Sub Catchment.

Following the Uganda Catchment Management Planning Guidelines, the Mpologoma CMP was developed and approved by Catchment stakeholders in 2017. The plan highlights the catchment's challenges (issues) and possible solutions (interventions) that can address the issues affecting the water and related resources to ensure sustainable social, economic and environmental benefits of the stakeholders in line with the vision and strategic objectives they have developed for their catchment. It documents many ecosystems in the catchment, including wetlands, as undergoing increasing threat of degradation or modification in the face of climate change and population increase, which is greatly affecting the regulatory services of these ecosystems. The degradation of the wetlands has compromised ecosystem services, resulting in increased flood risks, declining water quality, and loss of livelihood opportunities for dependent communities.

As a way of contributing to the implementation of the Mpologoma CMP, the Ministry of Water and Environment received financing from the Adaptation Fund to implement "Enhancing Community Adaptation to Climate Change through Climate Resilient Flood Early Warning, Catchment Management and Wash Technologies in Mpologoma Catchment (CARFEWW) in Uganda project". The geographical coverage of the project is the 11 Districts within 6 sub catchments of Mpologoma Catchment, including Bududa, Namisindwa, Manafwa, Mbale, Tororo, Butaleja, Budaka, Kibuku, Namutumba and Kaliro in Eastern Uganda.

The day-to-day execution of the project activities is carried out by WaterAid Uganda (WAU) as the lead executing entity. WAU is working closely with executing partners such as the Directorate of Water Resources Management (DWRM), Kyoga Water Management Zone (KWMZ), Uganda Women Network (UWONET), Water Resources Institute (WRI), Wetland Management Department (WMD), Department of Meteorological Services, Rural Water and Sanitation Regional Centre 3 (RWSRC3), Eastern Umbrella of Water and Sanitation (EUWS) and Water and Sanitation Development Facility-East (WSDF-E), the local governments and Catchment Management Committees in the project area

1.2 Description of Mpologoma Catchment

The Mpologoma Catchment covers about 7,862 km^2 of land area and 1,127km^2 of water area. It is bordered on the south by a narrow strip of the Victoria WMZ, which separates the catchments from Lake Victoria. The catchment is characterised by the presence of Mount Elgon, standing 4,321 meters above sea level at the extreme northeast corner of the catchment, where the steepest slopes are found and a few extinct volcanoes and ridges along its southern and eastern rim at lower elevations along the border with Kenya. The altitude of the remainder of the catchment is between 1,150m and 1,033m, with the latter being the mean altitude of Lake Kyoga. Most wetlands in the catchment are located in this relatively flat area.

The Mpologoma catchment is characterized by a variety of ecosystems such as wetlands, farmlands, bushland, and forest land. It is relatively flat area with about 16% of the total area covered by wetlands. The catchment traverses a wide range of land-cover types, including settled agricultural areas, bushland, swamp/riverine, wetlands of different types, and forested areas. Mbale, Bududa, and Manafwa districts are part of the Mt. Elgon region, with open shrubland, grasslands, and herbaceous areas on the mountain peaks.

The catchment covers, wholly or partially, 17 districts of Budaka, Bududa, Bugiri, Busia, Butaleja, Iganga, Kaliro, Kibuku, Manafwa, Mayuge, Mbale, Namayingo, Namisindwa, Namutumba, Pallisa, Sironko, and Tororo. These districts have a fast-growing population, currently estimated at 5,725,368 million people (National Population and Housing Census UBOS,2024). The population densities are among the highest in the Kyoga Water Management Zone. The population growth rate is 3.2%, which also leads to increased exploitation and destruction of ecosystem resources.

Rapid socio-economic development and widespread environmental change is noticeable all over Mpologoma catchment. Subsistence agriculture is the economic mainstay, and crop farming is predominant and widely practiced in the catchment. The increasing human population in the catchment continues to encroach on the fragile ecosystems, including hilly and mountainous areas, wetlands mainly for rice and sugarcane growing, cultivation along river banks and indiscriminate cutting-down of trees especially for firewood, charcoal and timber. This dependency on climate-sensitive subsistence rain-fed agriculture leads to degradation of natural resources that eventually impedes the coping ability of populations against climate change, and renders the people therein, especially those inhabiting fragile ecosystems, highly vulnerable to landslides uphill and floods in lowlands following high rainfall events.

Mpologoma Catchment is relatively a flat area with about 16% of the total area of the catchment covered by wetlands (mainly seasonal wetlands). The main wetland systems include the Naigombwa, Namatala, Malaba, Mpologoma, Manafwa, Lumboka, and Lwakhaka wetland systems. Majority of wetlands in the Mpologoma catchment are riverine, exhibiting both permanent and seasonal characteristics. The wetlands provide critical ecosystem services such as flood regulation, groundwater recharge, and water purification. They act as silt filters, so that much of the transported sediments are retained within the wetlands and other vegetated areas, but also some transported silt is deposited in the piedmont where the slope becomes less steep.

The Mpologoma Catchment continues to experience severe climate-induced hazards, with floods and landslides posing the greatest threats to lives, livelihoods, and ecosystems. In the upper sub-catchments of Bududa, Namisindwa, Manafwa, and Mbale, steep slopes combined with deforestation, poor farming practices, and high rainfall intensity frequently trigger landslides that damage homes, displace households, and degrade productive land. In the low-lying areas of Butaleja, Budaka, Kibuku, Pallisa, Namutumba, and Kaliro, frequent floods cause prolonged waterlogging, destruction of farmland, outbreaks of waterborne diseases, and damage to community infrastructure such as roads, schools, and health facilities. This was noticed in the baseline study which was carried out in the sub-counties of Gogonyo, Namwiwa, Kasasira, Nangonde, Lyama, Budumba, Mazimasa, Kirewa, Bukibokolo, Kaato, Busano and Bumbo.

These hazards are further exacerbated by unsustainable land use, encroachment on wetlands, and loss of natural vegetation cover, which reduce the catchment's ability to regulate water flows and stabilize soils. As a result, communities face recurring displacement, loss of agricultural productivity, food insecurity, and heightened poverty levels. Without timely and integrated interventions, the frequency and severity of these disasters are likely to increase under the impacts of climate variability and climate change.

1.3 Overview of the CARFEWW Project

Building on the above background and context, the CARFEWW Project was conceived to support communities within the Mpologoma Catchment in

addressing the prevailing challenges of recurrent floods and landslides, which continue to compromise both ecosystem integrity and community livelihoods. As a way of supporting the implementation of IWRM in Kyoga WMZ, the CARFEWW Project will implement some of the priority measures of the Mpologoma CMP. The project is being implemented in 11 Districts (Bududa, Manafwa, Namisindwa, Mbale, Tororo, Butaleja, Budaka, Kibuku, Namutumba, Pallisa, and Kaliro) across 6 Sub-catchments of Upper Manafwa, Middle Manafwa, Lower Manafwa, Upper Mpologoma, Middle Mpologoma and Lower Mpologoma.

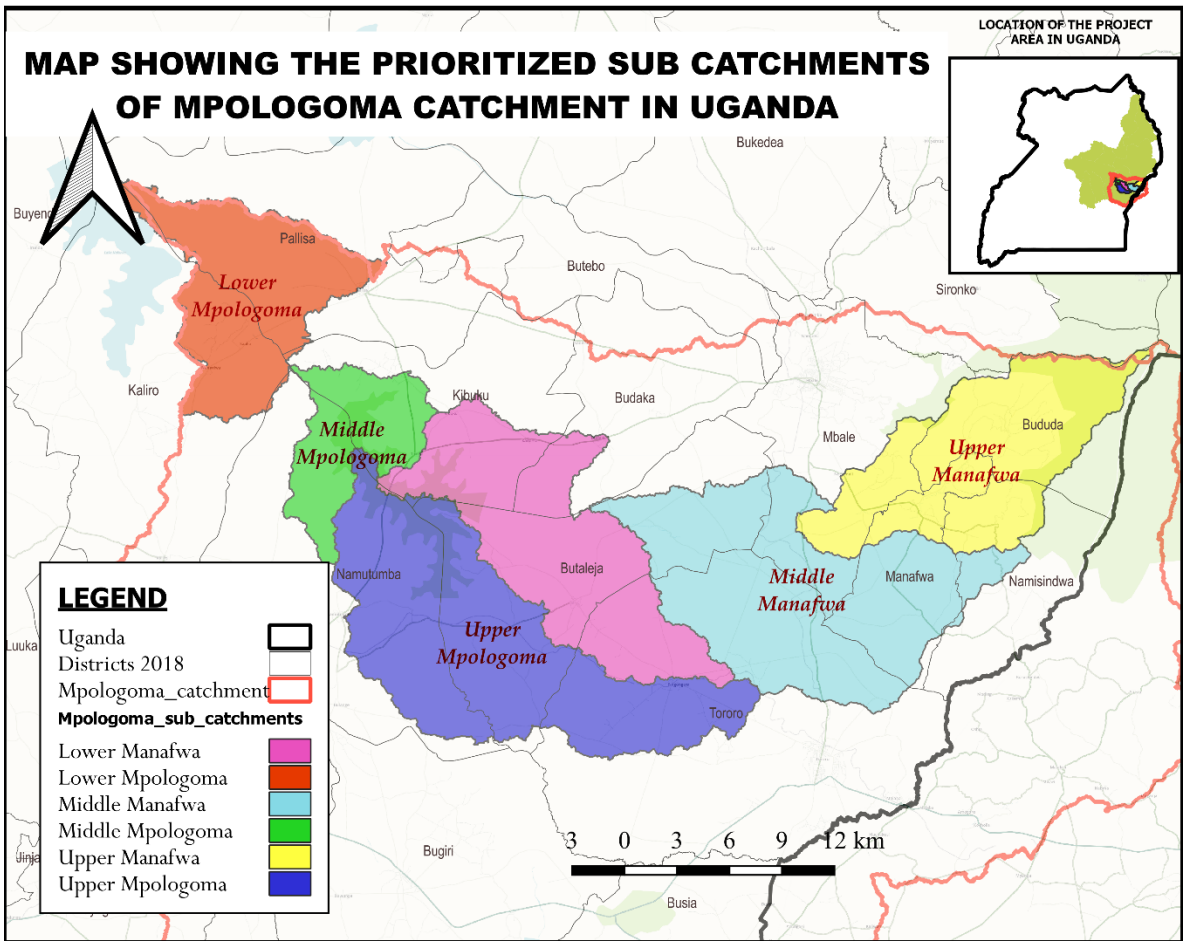

Figure 1: CARFEWW project sub-catchments within Mpologoma Catchment

The overall objective of the CARFEWW project is to increase the resilience of communities to climate change risks of floods and landslides through timely response to climate hazards, sustainable community access to water, sanitation and hygiene services, and integrated catchment management measures in Mpologoma catchment.

Specifically, the project seeks to meet the following objectives:

i. Strengthen the institutional capacity for planning, designing, implementing, and monitoring of integrated Flood Early Warning systems (FEWS) and climate-smart WASH technologies.

ii. Develop and promote adoption of Floods Early Warning systems (FEWS), climate-smart WASH and Catchment Management technologies.

iii. Facilitate communities to undertake adaptation actions for reinforcing the resilience of populations and ecosystems against floods and landslides.

iv. Enhance knowledge management and skills sharing in FEWS, climate resilient WASH and Catchment Management technologies.

The project aims to positively impact on the natural ecosystems through the implementation of catchment measures involving restoration and rehabilitation of degraded ecosystems as a way of preserving and increasing resilience of the ecosystems, biodiversity and human populations against floods and landslides.

Activity 2.2.1.2 under output 2.2.1 Sanitation services in small towns and rural growth centres improved, WAU, in collaboration with WSDF-E, and local governments will support the construction of 3 decentralised faecal sludge treatment plants (FSTPs) for selected towns. One faecal sludge treatment plant will be constructed for each of the 3 catchment levels.

2.0 JUSTIFICATION

Small towns across the Mpologoma Catchment rely almost entirely on on-site sanitation systems such as pit latrines and septic tanks, yet the area lacks any formal faecal sludge treatment facilities. This gap has resulted in the widespread and unsafe disposal of faecal sludge into wetlands, rivers, and open land, a practice that significantly threatens public health and water resources. Baseline findings reveal that sanitation systems in the catchment are highly fragile: while some sub catchments show relatively high latrine coverage, Upper Manafwa at 86%, Middle Mpologoma at 89%, and Lower Mpologoma at 84%, the functionality of these facilities is severely undermined by poor construction and climate impacts. In flood-prone towns, latrine collapse is a major concern, with rates reaching 84% in Mazimasa (Butaleja), 55% in Kirewa (Tororo), 51% in Gogonyo (Pallisa), and 51% in Bukibokolo (Bududa). These failures lead directly to contamination of springs, wells, boreholes, and rivers, contributing to high incidences of diarrhoea, typhoid, dysentery, and cholera, especially during the biannual rainy seasons.

Climate change is compounding these risks. The catchment experiences frequent flooding in downstream districts such as Butaleja, Pallisa, Kibuku, Kaliro, and Namutumba, while upstream areas, including Bududa, Manafwa, Mbale, and Namisindwa, face recurrent landslides. These hazards are intensifying due to erratic rainfall, deforestation, wetland degradation, and rising groundwater levels. Floodwaters routinely inundate latrines and septic tanks, causing overflow and transport of faecal sludge into open water sources. During storm events, desludging vehicles often cannot access communities due to cut-off roads, reducing service continuity and accelerating environmental contamination. Baseline data also show that wetlands in the project area are heavily degraded, up to 98.4% in some

locations, reducing their natural capacity to filter pollutants and exacerbating the impacts of uncontrolled sludge dumping.

In this context, the absence of engineered, climate-proof faecal sludge treatment infrastructure presents a major sanitation crisis. The CARFEWW project identifies the construction of 3 climate-resilient FSTPs as an essential adaptation measure to protect human health and the environment under increasingly severe climate conditions. The facilities must incorporate resilient features such as elevated structures, reinforced foundations, stormwater diversion systems, and safe leachate management to remain functional during floods and high groundwater episodes. Without such systems, communities will continue to face recurrent contamination, sanitation system failures, and disease outbreaks.

The situation is further challenged by institutional capacity gaps among Town Councils, Local Governments, Umbrella Authorities, and local operators, who lack sufficient technical knowledge in FSM planning, treatment processes, regulatory enforcement, and climate-resilient O&M. Therefore, the consultancy is justified not only to generate robust feasibility studies, detailed engineering designs, and high-quality supervision of construction, but also to strengthen local institutional capacity through training, development of SOPs, and operational readiness planning.

The feasibility study will also assess post-treatment resource recovery options and their potential community benefits. These options may include co-composting of dried sludge, production of soil conditioners, briquettes, and potential biogas generation, depending on the treatment technologies selected. The assessment will also evaluate environmental and public health risks associated with reuse pathways, ensuring that any resource recovery solution is safe, feasible, and aligned with national regulations and community acceptance

Overall, the assignment is a strategic and urgently needed investment to deliver safe, resilient, and sustainable sanitation services in one of Uganda's most climate-vulnerable regions, directly contributing to CARFEWW's goal of enhancing community adaptation to climate change.

3.0 MAIN OBJECTIVE

To plan, design, and supervise the construction and commissioning of 3 climate-proof FSTPs that safely treat faecal sludge from small towns in the Mpologoma Catchment, ensuring service continuity during floods/landslides and strengthening local O&M capacity.

3.1 Specific Objectives:

1. Conduct comprehensive integrated feasibility studies, covering technical, climate risk, environmental and social safeguards, institutional capacity, financial, and socio-economic viability, to confirm suitable sites and technologies and determine optimal design capacities informed by realistic demand projections

2. Prepare detailed engineering designs (drawings, specifications, BoQs, and cost estimates) aligned with MWE standards and incorporating climate-resilient features for flood- and groundwater-challenged areas
3. Undertake Life Cycle Costing (LCC) to determine full capital, O&M, replacement, and end-of-life costs, ensuring long-term financial sustainability
4. Recommend sustainable business and operational models, including options such as PPPs, delegated management, community-based models, or Town Council-led operations
5. Provide procurement technical support, including input to bidding documents, clarifications, and participation in the evaluation of bids
6. Supervise construction, ensuring quality, safety, environmental and social compliance, adherence to designs, and proper testing, commissioning, and follow-up during the defect's liability period
7. Develop O&M systems (SOPs, staffing & training plans, HSE protocols) and build Town Council/operator capacity for sustainable service delivery and resilience to flood.

4.0 CROSS-CUTTING PRINCIPLES / STRATEGIC REQUIREMENTS

To ensure the delivery of sustainable, resilient, and high-performing faecal sludge treatment systems, the Consultant shall integrate the following cross-cutting considerations throughout all phases of the assignment, including feasibility, design, construction supervision, and operational support

4.1 Environmental and Social Safeguards

The Consultant shall strengthen environmental and social risk management through the preparation and implementation of appropriate Environmental and Social Management Plans (ESMPs). This shall include measures to address odour control and nuisance management to promote community acceptance, as well as protection of surface and groundwater resources from contamination. The Consultant shall ensure that occupational health and safety (OHS) considerations are fully incorporated to safeguard both workers and surrounding communities. In addition, the Consultant shall adopt inclusive and gender-sensitive approaches to stakeholder engagement across all stages of the assignment, while ensuring full compliance with national regulatory requirements, including NEMA guidelines and applicable project safeguard frameworks

4.2 Climate Resilience and Performance Indicators

Climate resilience shall be embedded as a core principle in the planning, design, and implementation of all project components. The Consultant shall define and apply measurable resilience performance indicators to guide decision-making and ensure long-term functionality of the facilities. These shall include appropriate flood protection levels and design return periods, as well as the ability of the systems to maintain operational uptime during extreme weather events such as floods and storms. The Consultant shall also ensure that drainage and stormwater management systems are effective

under varying climatic conditions, and that all infrastructure remains structurally stable and functional in high groundwater and saturated soil environments. These performance indicators shall be applied throughout design, construction supervision, and post-construction evaluation

4.3 Monitoring and Evaluation Framework

The Consultant shall develop and operationalise a practical Monitoring and Evaluation (M&E) framework to track performance across the faecal sludge management service chain. The framework shall incorporate measurable indicators covering treatment efficiency and compliance with national discharge standards, plant utilization rates in relation to design capacity, service coverage and accessibility of desludging services, and financial performance, including cost recovery and operational sustainability. The Consultant shall define appropriate data collection methods, reporting protocols, and institutional responsibilities to support continuous performance monitoring by plant operators, Town Councils, and relevant authorities

4.4 Knowledge Management and Learning

To facilitate replication and scaling of climate-resilient sanitation solutions, the Consultant shall ensure systematic documentation of lessons learned throughout all stages of the assignment, including feasibility, design, construction, and operational phases. The Consultant shall develop appropriate knowledge products such as technical briefs, case studies, and summary reports, capturing key insights and best practices. These outputs shall support the identification of replicable models applicable within the Mpologoma Catchment and in similar contexts elsewhere. The Consultant shall also promote knowledge sharing with key stakeholders, including the Ministry of Water and Environment, Town Councils, and sector partners, to support broader sector learning and innovation.

4.5 Stakeholders Engagement and Institutional Strengthening

The Consultant shall implement a structured and inclusive stakeholder engagement approach that ensures active participation and ownership by all relevant actors. This shall include engagement with Town Councils, District Local Governments, private sector operators such as desludging service providers, and local communities, including vulnerable and marginalized groups. Engagement processes shall be continuous and integrated across all phases of the assignment and shall be closely linked to capacity-building efforts. The Consultant shall support institutional strengthening by enhancing the technical, operational, and managerial capacities required for the sustainable operation and long-term performance of the faecal sludge management systems

5.0 GEOGRAPHIC LOCATION AND CANDIDATE TOWNS

The assignment will support the development of three (3) climate-resilient Faecal Sludge Treatment Plants (FSTPs) within the Mpologoma Catchment.

The final locations of the three FSTPs have not yet been confirmed and will be determined during the feasibility phase.

Bidders should prepare their proposals on the basis of three FSTP sites within the Mpologoma Catchment. The Consultant will support screening, assessment and confirmation of suitable sites in consultation with WaterAid Uganda, MWE, District Local Governments and Town Councils.

Site selection shall consider faecal sludge generation potential, land availability, accessibility for desludging services, environmental and social risks, climate hazards, flood and landslide exposure, groundwater conditions and readiness of local governments to host the infrastructure.

6.0 SCOPE OF WORK AND TASKS

The Consultant will undertake a comprehensive scope of work that covers the full cycle of planning, design, construction supervision, and post-construction technical assistance for the establishment of three climate-resilient faecal sludge treatment plants (FSTPs) across selected small towns in the Mpologoma Catchment. The tasks are grouped into key phases; however, all activities must be executed in a coherent, integrated manner that responds to the region's unique sanitation, environmental, and climate-related challenges. The assignment requires collaboration with WaterAid Uganda (WAU), the Ministry of Water and Environment (MWE), and the respective District Local Governments, given their oversight roles in the delivery of climate-resilient sanitation services.

6.1 Integrated Feasibility Studies

The Consultant will undertake integrated feasibility studies for the proposed faecal sludge treatment plants (FSTPs), adopting a full-service chain approach that covers containment, emptying, transport, treatment, and safe disposal or reuse. This will ensure that the proposed investments address broader sanitation service delivery challenges rather than focusing solely on infrastructure.

The studies will begin with an assessment of the existing sanitation context, including prevailing technologies, emptying practices, and sludge transport systems. Key service gaps, inefficiencies, and environmental risks will be identified, particularly those linked to unsafe sludge disposal and climate-related infrastructure failures in the catchment.

A forward-looking demand assessment will be carried out using GIS-based service area mapping, population growth projections, and dynamic modelling of faecal sludge generation. This approach will ensure that treatment capacities are appropriately sized and able to respond to future demand, seasonal variations, and changing service conditions.

Given the high vulnerability of the Mpologoma Catchment, the feasibility studies will incorporate a climate risk and vulnerability analysis to assess hazards such as flooding, landslides, groundwater fluctuations, and rainfall trends. Supporting hydrological and hydraulic analyses will be undertaken to

understand flood dynamics, drainage patterns, and site performance under extreme weather conditions, thereby guiding safe and resilient site selection.

The Consultant will evaluate multiple potential sites against criteria such as land availability, geotechnical suitability, climate risk exposure, accessibility, and proximity to sludge sources, while avoiding environmentally sensitive areas such as wetlands. Environmental and social screening will also be conducted to identify potential impacts related to ecosystems, public health, and community safety, with mitigation measures incorporated into a preliminary environmental and social management framework.

The feasibility studies will further include an assessment of alternative treatment technologies and system configurations, comparing centralized and decentralized options alongside conventional and nature-based solutions. These options will be evaluated based on technical feasibility, resilience, cost, operational requirements, and environmental performance to identify the most suitable approach.

All proposed interventions will be aligned with catchment management plans and water resource protection priorities to ensure consistency with broader integrated water resources management efforts. The feasibility stage will culminate in preliminary designs, including conceptual layouts, indicative sizing of treatment units, and initial cost estimates, which will guide decision-making and subsequent design phases.

Throughout the process, the Consultant will engage key stakeholders, including local governments, service providers, and communities, to validate findings, ensure site acceptability, and strengthen ownership of the proposed solutions.

6.2 Detailed Engineering Design

Following site confirmation, the Consultant will prepare detailed engineering designs for the proposed faecal sludge treatment plants (FSTPs), informed by site-specific investigations such as topographic, geotechnical, and hydrogeological studies. These will guide design decisions related to soil stability, groundwater levels, and drainage in the flood-prone conditions of the Mpologoma Catchment.

The design will prioritise climate resilience, ensuring that infrastructure performs reliably under both normal and extreme conditions. A design-for-exceedance approach will be applied so that facilities remain safe and functional during severe rainfall or flooding. Appropriate flood protection levels and safety margins will be incorporated to enhance long-term service continuity.

The Consultant will design the full treatment process, from sludge reception and pre-treatment to final treatment and disposal or reuse, selecting technologies that are robust, cost-effective, and suited to local capacities. Where appropriate, nature-based or hybrid solutions will be incorporated to improve sustainability and reduce operational complexity.

Civil and structural designs will focus on durability and resilience through measures such as elevated structures, reinforced foundations, effective drainage systems, and erosion control. Environmental protection will also be integrated through provisions such as liners, leachate management systems, and controlled drainage to prevent groundwater contamination and minimise risks to surrounding ecosystems and communities.

To enhance reliability, the design will include redundancy and safety features such as emergency bypass systems and overflow controls, alongside a modular approach that allows phased expansion without disrupting operations.

All outputs will be prepared in appropriate digital formats, including detailed drawings, specifications, Bills of Quantities, and cost estimates. The Consultant will submit draft designs for review and integrate stakeholder feedback into final design packages that meet national standards and are ready for procurement. The design will also consider operation and maintenance requirements to ensure that facilities are safe, accessible, and practical to operate over the long term

6.3 Lifecycle Costing (LCC)

The Consultant will undertake a comprehensive Life Cycle Costing (LCC) analysis to assess the full economic implications of the proposed faecal sludge treatment plants (FSTPs) over their lifespan. This will include not only capital costs but also operation and maintenance (O&M), rehabilitation, replacement, and end-of-life costs to ensure long-term financial sustainability.

The analysis will be closely aligned with feasibility and design outputs, using realistic demand projections, technology options, and site-specific conditions. Attention will be given to key operational cost drivers such as labour, energy, consumables, routine maintenance, and major repairs, which are critical for reliable service delivery.

To strengthen decision-making, the Consultant will incorporate sensitivity and scenario analyses, assessing how variations in sludge volumes, tariffs, O&M costs, and climate-related factors may affect financial performance. Both low and high demand scenarios, as well as potential climate stress conditions, will be considered to ensure robustness.

The LCC will also assess affordability for users and Town Councils by evaluating cost recovery potential through revenue streams such as tipping fees and, where feasible, resource recovery options. This will help identify funding gaps and any need for subsidies or financial support.

In addition, the analysis will establish key financial indicators, including cost recovery ratios and long-term viability benchmarks, to guide decision-making and support the selection of sustainable options. Overall, the LCC will provide a practical financial framework to ensure that the FSTPs are economically viable, in addition to being technically sound and climate resilient.

6.4 Business and Operational Models

The Consultant will develop and assess sustainable business and operational models for the long-term management of the proposed faecal sludge treatment plants (FSTPs), ensuring that appropriate institutional, financial, and operational arrangements are in place to deliver reliable services.

A range of management options will be evaluated, including public sector operation, delegated management, public–private partnerships, and hybrid arrangements. At least three viable models will be analysed, with clear definition of roles, responsibilities, and risk allocation to identify the most suitable approach based on local capacity and context.

The assessment will examine financial viability by analysing expected costs alongside potential revenue streams such as tipping fees, service charges, and resource recovery options. This will help identify funding gaps and any need for subsidies or additional financing mechanisms.

Institutional capacity will also be assessed to determine the readiness of Town Councils, local authorities, and private sector actors to manage and operate the facilities. Recommendations will be provided to strengthen institutional arrangements, staffing, and operational structures where needed.

In addition, the Consultant will explore opportunities for private sector engagement across the service chain, considering factors such as risk-sharing, investment attractiveness, and long-term sustainability.

The assignment will conclude with clear recommendations on the most appropriate business and operational model for each FSTP, ensuring alignment with financial sustainability, service performance, and long-term resilience.

6.5 Procurement Support

The Consultant will support the procurement process to ensure the selection of qualified contractors and alignment with approved designs. This will include preparing complete tender documents based on final designs, including technical specifications, drawings, Bills of Quantities, cost estimates, and all required bidding documentation to support a transparent and competitive process.

The Consultant will also assist during the bidding stage by participating in pre-bid meetings, providing technical clarifications, and supporting responses to bidder queries. Where required, technical input will be provided during bid evaluation to ensure that selected contractors meet project requirements.

6.6 Construction Supervision

Following contractor selection, the Consultant will provide construction supervision to ensure works are implemented in line with approved designs, specifications, and safeguards. A resident supervision team will be deployed on site to maintain continuous oversight of progress, quality, and compliance.

The Consultant will conduct inspections, approve contractor methods, and verify materials and workmanship, with particular attention to proper

implementation of climate-resilient features such as drainage systems, flood protection measures, and elevated structures. Compliance checks will focus on critical components, including liners, leachate systems, and drainage infrastructure, with independent verification undertaken where necessary.

A contractor performance management framework will be applied to monitor compliance with technical, environmental, and safety standards, including enforcement of corrective actions and penalties where required. ESHS requirements will also be strictly enforced to protect workers, communities, and the environment.

Regular reporting and coordination with the Client will be maintained to ensure that construction is completed to the required quality, within timelines, and in full compliance with climate-resilient design requirements

6.7 Testing, Commissioning and Handover

At the conclusion of construction, the Consultant will lead the testing and commissioning of each FSTP. This involves developing and implementing commissioning protocols, verifying system performance, inspecting all treatment units, and ensuring operational readiness under real-world conditions. The Consultant shall work jointly with WAU and MWE to confirm compliance with climatic and regulatory standards.

The Consultant will prepare complete handover documentation, including as-built drawings, O&M manuals, and training records. Any defects identified during commissioning must be rectified before final acceptance.

6.8 Capacity building and operational support

To ensure sustainable operation of the faecal sludge treatment plants (FSTPs), the Consultant will provide targeted capacity building and operational support to Town Councils, operators, and relevant service providers. This will focus on equipping stakeholders with the skills, systems, and tools needed for effective and climate-resilient facility management.

The Consultant will develop practical operation and maintenance (O&M) systems, including standard operating procedures, asset management plans, preventive maintenance schedules, and simple budgeting tools to guide both routine operations and long-term planning. Capacity building will emphasise hands-on training to strengthen practical skills in plant operation, maintenance, safety, and emergency response, while supporting operator competency development where feasible.

To support early-stage performance, the Consultant will provide post-commissioning technical support for at least 6 months, helping operators address operational challenges and optimise system performance under real conditions. Basic monitoring and tracking tools will also be introduced to improve record-keeping, performance monitoring, and decision-making.

Institutional strengthening will be addressed through clarification of roles, staffing, and coordination among stakeholders, including engagement with

private desludging operators. Overall, this component will ensure that the FSTPs are supported by capable institutions, skilled operators, and functional systems required for long-term, reliable, and sustainable service delivery.

6.9 Defect Liability Period (DLP) Support

During the Defects Liability Period, the Consultant will provide periodic oversight to ensure continued performance of the facilities. Responsibilities will include site inspections, monitoring of operator performance, reviewing any technical issues, verifying defect corrections by the contractor, and advising on system optimisation based on operational data and seasonal climatic conditions.

7.0 DELIVERABLES AND REPORTING

The selected consultancy firm is expected to contribute to the following outputs during the period of performance. All deliverables shall be submitted in agreed formats, including editable digital copies.

Phase	Deliverable	Content	Timing
Inception	Inception reports 3 printed reports and a soft copy from 3 sites.	Methodology, work plan, QA/QC, staffing, data requirements, stakeholder plan; validated list of candidate towns.	3 weeks
Feasibility	Feasibility Study & Draft Design reports (3 printed reports and a soft copy from 3 sites)	Service area & demand, options analysis, climate/hazard risk assessment, site selection, schematic layouts, ESMP outline, capex/opex, implementation schedule, risk register.	Months 2-3
Design	Detailed Design Reports (3 sets)	Topo/geo reports; detailed drawings; tech specs; BoQs; cost estimates; O&M outline;	Months 3-4

		climate-proofing details; design report; regulatory submissions; responses to MWE review; final issue	
Procurement	Full tender documents for the procurement of a contractor.	Prepare full Tender documents for the procurement of the contractor after design completion. Response to queries in the technical document during pre-bid	Months 4-6
Supervision	Monthly Site Reports (1 hard copy and a soft copy)	Progress, Site meeting minutes, QA/QC, ESHS, tests, IPCs, issues & resolutions, photos.	Months 7-14
Commissioning	Commissioning & Handover Package	Test protocols, results, punch lists, as-built drawings, O&M manuals (final), training completion, and handover certificates.	Month 15
Post-Commissioning Support	Post-Commissioning Technical Backstopping Reports	Provision of post-commissioning technical support, including site visits, performance monitoring,	Up to 6–12 months after commissioning

		troubleshooting, operator support, and system optimization.	

8.0 TECHNICAL PROPOSAL REQUIREMENTS AND METHODOLOGICAL EXPECTATIONS

The Consultant shall propose a clear, technically sound, and context-appropriate methodology for carrying out the assignment. While bidders are expected to expand and refine their own approaches in their technical proposals, the following minimum requirements must be addressed:

8.1 Evidence-Based Planning and Analysis

The methodology must demonstrate how the Consultant will use existing CARFEWW project information, including the Concept Note and Baseline Study data on sanitation vulnerability, latrine collapse rates, flood and landslide hotspots, and environmental degradation across the Mpologoma Catchment. The approach should show how this evidence will guide decision-making at the feasibility, design, and supervision stages.

8.2 Climate and Hazard Risk Integration

The Consultant must outline how climate risk considerations, including flood recurrence, groundwater variability, rainfall intensity trends, and slope instability, will be embedded into feasibility assessments, site selection, detailed designs, and construction oversight. Designs must clearly reflect resilience measures, such as elevated structures, reinforced foundations, and stormwater diversion systems.

8.3 Stakeholder Engagement Approach

The methodology shall describe how the Consultant will engage WAU, MWE deconcentrated institutions, District Local Governments, Town Councils, and community actors during planning, fieldwork, design validation, and supervision. This should include information collection, validation workshops, and coordination with sanitation service providers.

8.4 Technical Investigation and Design Processes

The Consultant must outline the procedures and standards for carrying out topographical surveys, geotechnical investigations, hydrogeological assessments, process design, hydraulic analysis, structural design, and preparation of drawings, specifications, and Bills of Quantities. The methodology should reference compliance with MWE FSM Standards for Small Towns and Rural Growth Centres.

8.5 Quality Assurance and Quality Control (QA/QC)

The proposed approach should detail internal QA/QC mechanisms for feasibility analysis, engineering design verification, design reviews,

documentation, and construction supervision. This includes material testing, monitoring contractor performance, and enforcing adherence to technical specifications and environmental safeguards.

8.6 Environmental and Social Safeguards Integration

The methodology must explain how Environmental and Social (E&S) risks identified during feasibility, such as odour, surface water contamination, community safety concerns, and impacts on degraded wetlands, will be mitigated throughout design and construction. This includes alignment with NEMA requirements and CARFEWW safeguard provisions.

8.7 Construction Supervision and Contract Administration

Bidders shall outline how they will supervise construction works, certify progress, verify compliance with climate-resilient design elements, ensure ESHS enforcement, and manage variations or deviations. The methodology should include supervision modalities (resident, periodic), communication protocols, and documentation procedures.

8.8 Commissioning and Operation Readiness

The Consultant must describe the process for testing and commissioning all treatment units, verifying performance against design specifications, and ensuring climate-resilient operational capability. The approach must also include preparation of O&M manuals, SOPs, and training plans for operators.

8.9 Capacity-Building Approach

The methodology shall outline how the Consultant will support Town Councils and operators to build the skills needed for safe FSTP operation, routine maintenance, emergency preparedness during floods, and long-term sustainability of the facilities.

8.10 Risk Management and Adaptive Measures

The Consultant must include a strategy for identifying, monitoring, and mitigating risks throughout the assignment, including climate-related risks, land access constraints, contractor performance issues, and other operational challenges.

9.0 PROCUREMENT OF SERVICE PROVIDER FOR THE ASSIGNMENT

Given the Mpologoma Catchment's flood and landslide risks, the Consultant must demonstrate strong multidisciplinary expertise in climate-resilient infrastructure design and supervision, in line with MWE standards. The assignment is open to qualified consulting firms or consortia

9.1. Firm / Consortium Experience Requirements

The Consulting Firm/Consortium must demonstrate the following minimum qualifications:

- Completion of at least three (3) similar assignments in the last ten (10) years involving feasibility studies, detailed design, and/or construction supervision of faecal sludge treatment plants (FSTPs), wastewater treatment facilities, or related WASH infrastructure
- Proven experience in climate-resilient sanitation or water infrastructure projects, particularly in flood-prone, high groundwater, or environmentally sensitive areas
- Demonstrated experience working in contexts like the Mpologoma Catchment, including areas affected by floods, landslides, or rapid urbanization
- Proven track record of working with government institutions and development partners, including Ministries, Water Authorities, Local Governments, or similar entities
- Demonstrated capacity to integrate climate risk assessment and resilience measures; Full FSM service chain (containment, emptying & transport, treatment, and reuse/disposal) and Environmental and social safeguards
- Strong internal quality assurance/quality control (QA/QC) and project management systems

9.2 Required Professional Team and Minimum Qualifications

Given the scope of work, covering feasibility studies, climate risk assessment, environmental and social safeguards, detailed design, procurement support, construction supervision, commissioning, and capacity building, the Consultant shall propose a multidisciplinary team.

The team must adequately cover technical, environmental, financial, institutional, and social aspects of faecal sludge management (FSM), ensuring a comprehensive and integrated approach to project delivery.

91. Team Leader / Senior Sanitation Engineer

- Overall coordination and management of the assignment
- Lead feasibility studies and detailed design process
- Ensure integration of all technical inputs
- Liaise with MWE, WAU, and local governments

Minimum Qualifications:

- Master's degree in Sanitary Engineering, Environmental Engineering, Water Engineering, or related field
- At least 10–15 years of relevant experience
- Proven experience in design and supervision of wastewater or faecal sludge treatment facilities.

2. Faecal Sludge Management (FSM) / Wastewater Treatment Specialist

- Assess sludge generation and treatment requirements
- Recommend appropriate treatment technologies
- Develop process designs and operational requirements

Minimum Qualifications:

- Degree in Environmental Engineering, Sanitary Engineering, or equivalent
- At least 8 years of experience in FSM or wastewater treatment
- Experience in low-cost and nature-based systems is desirable

3. Climate Resilience and Hydrology Specialist

- Undertake flood, erosion, and climate risk assessments
- Evaluate site vulnerability to floods and landslides
- Recommend climate-proofing measures

Minimum Qualifications:

- Degree in Hydrology, Water Resources Engineering, Climate Science, or related field
- At least 8 years of relevant experience
- Experience in climate-resilient infrastructure design

This position is considered a key expert role due to the climate resilience focus of the project.

4. Geotechnical and Hydrogeological Engineer

- Conduct geotechnical investigations
- Assess groundwater conditions and soil stability
- Advise on foundation design and groundwater protection

Minimum Qualifications:

- Degree in Geotechnical Engineering, Geological Engineering, or equivalent
- At least 7 years of relevant experience

5. Environmental and Social Safeguards Specialist

- Conduct environmental and social screening
- Prepare ESMP recommendations
- Lead stakeholder engagement and safeguards compliance

Minimum Qualifications:

- Degree in Environmental Science, Environmental Management, Sociology, or related field
- At least 8 years of experience in E&S safeguards
- Familiarity with NEMA requirements and donor safeguard frameworks

6. Financial and Business Model Specialist

- Conduct financial viability analysis
- Undertake Life Cycle Costing (LCC)
- Develop sustainable business and operational models
- Assess tariffs, revenue streams, and cost recovery

Minimum Qualifications:

- Degree in Economics, Finance, Business Administration, or related field
- At least 7 years of experience in infrastructure finance or utility business planning

This role is critical to ensure long-term financial sustainability of FSTP operations.

7. Institutional Development / Capacity Building Specialist

- Assess capacity of Town Councils and operators
- Develop O&M frameworks and staffing structures
- Design training and institutional strengthening programmes

Minimum Qualifications:

- Degree in Public Administration, Institutional Development, Management, or related field
- At least 7 years of relevant experience

8. Civil/Structural Engineer

- Undertake structural design of treatment units, buildings, retaining walls, and flood protection works
- Review contractor methodologies during construction
- Support construction supervision activities

Minimum Qualifications:

- Degree in Civil or Structural Engineering
- At least 8 years of relevant experience in infrastructure design and supervision

10.0 METHODOLOGY AND APPROACH

The Consultant will apply a structured, evidence-driven, and climate-responsive methodology to deliver feasibility studies, detailed designs, procurement support, construction supervision, and operational capacity-building for three climate-resilient faecal sludge treatment plants (FSTPs) across the Mpologoma Catchment.

10.1 Inception and preparatory work

The assignment will begin with an inception phase during which the Consultant will review all available CARFEWW documentation, baseline data, design standards and any other available literature. Discussions will be held with WAU, MWE, and District Local Governments to refine the study scope, verify the preliminary list of candidate towns, and confirm the geographic distribution of the FSTP in one of the 3 catchment levels. The Consultant will prepare a refined methodology, data collection tools, a stakeholder engagement strategy, and a detailed work plan with timelines. This phase will ensure alignment of expectations, clarity of deliverables, and readiness for field activities.

10.2 Feasibility study / Draft Design approach

The feasibility study will be conducted using a combination of field assessments, stakeholder interviews, technical data analysis, and environmental and climate risk evaluation. The Consultant will analyse sanitation profiles, current faecal sludge generation, population dynamics (noting the catchment's 3.2% annual growth rate), and sludge transport logistics.

Emphasis will be placed on capturing the region's sanitation vulnerabilities, including latrine collapse rates of 84% in Mazimasa (Butaleja), 55% in Kirewa (Tororo), 51% in Gogonyo (Pallisa), and 51% in Bukibokolo (Bududa), as well as the recurrent contamination of water sources during floods.

The Consultant will evaluate multiple potential sites per town, analysing land tenure, soil stability, groundwater levels, access roads, and environmental sensitivity, particularly in areas where wetlands are degraded by up to 98.4%. Climate and hazard risk assessments will consider rainfall intensity, flood recurrence, erosion pathways, and landslide risks, especially in the upstream

districts of Bududa, Mbale, Manafwa, and Namisindwa. This analysis ensures FSTP is located in safe, accessible, and climate-appropriate sites.

The Consultant will also conduct Environmental and Social (E&S) screening in accordance with NEMA requirements, identifying potential impacts and recommending mitigation measures to be integrated into ESMPs. This step ensures compliance and readiness for downstream regulatory approvals.

The feasibility study report will help in generating a draft design that will be reviewed by the design review committee before proceeding to another stage. The draft design should address the preliminary faecal Sludge characteristics, generation, concentrations and loads, proposed treatment structures, Facility process pollution removals. By the end of this stage, the report should be able to propose a Faecal Sludge Treatment Unit with preliminary costs.

10.3 Design Methodology

Following feasibility validation, the Consultant will undertake all activities needed to produce comprehensive, climate-resilient engineering designs for each FSTP. This includes topographical surveys, geotechnical investigations, and hydrogeological assessments tailored to the distinct flood-prone and high-groundwater conditions of the catchment.

Designs must align fully with MWE Faecal Sludge Management standards for Small Towns and Rural Growth Centres and should incorporate robust climate-proofing elements such as elevated treatment platforms, reinforced foundations, stormwater diversion systems, erosion protection measures, and safe leachate management pathways. The Consultant will design the entire process train, including reception facilities, screening units, drying beds or constructed wetlands, anaerobic baffled reactors or ponds (as appropriate), operator facilities, fencing, drainage systems, and flood-safe access roads. The Detailed design should address the final faecal Sludge characteristics, quantity of sludge generation, concentrations and loads, treatment structures, Facility process pollution removals, and site works.

The Consultant will compile design reports, detailed drawings, specifications, Bills of Quantities, and cost estimates for each FSTP and submit them through the WAU/MWE technical review process. All comments will be addressed in a final design package ready for tendering

10.4 Procurement Support Approach

The Consultant will support the procurement process by preparing complete tender documents based on the final approved designs, including technical specifications, drawings, Bills of Quantities, cost estimates, and all necessary bidding documentation. This will ensure a clear, transparent, and competitive procurement process.

The Consultant will also participate in pre-bid meetings, provide technical clarifications, and support responses to bidder queries. Where required, the Consultant will contribute to the technical evaluation of bids to ensure that selected contractors meet the project requirements.

10.5 Construction Supervision Approach

During the construction phase, the Consultant will deploy a robust supervision methodology to ensure that all works strictly adhere to the approved designs, specifications, safety measures, and environmental safeguards. Supervision will include review of contractor method statements, continuous monitoring of workmanship quality, verification of tests on materials and structural elements, and adherence to construction schedules. The Consultant will pay particular attention to the integration and performance of climate-resilient features, such as elevated platforms, stormwater diversion channels, flood bunds, reinforced embankments, and drainage systems, which are essential in the frequently flooded towns within middle and lower stream zones.

Regular progress reports, certification of interim payment certificates (IPCs), and enforcement of Environmental, Social, Health and Safety (ESHS) requirements will form part of the supervision routine. The Consultant will also conduct regular site meetings at designated locations to update stakeholders on the progress of works and discuss any challenges that may be affecting timely implementation of the project, if any.

10.6 Testing, Commissioning and Handover

The Consultant will lead all commissioning activities once construction works are completed. This includes developing commissioning protocols, evaluating hydraulic and treatment performance, verifying stormwater control systems, inspecting safety features, and ensuring that operational functions meet national and project standards. Commissioning outputs will include as-built drawings, O&M manuals, SOPs, and training documentation, culminating in formal handover to local authorities

10.7 Capacity Building and Operational Support

Recognizing the institutional capacity gaps identified in the Baseline Study, the Consultant will implement a structured capacity-building program for Town Councils, plant operators, and local utilities. Training will cover plant operation, preventive maintenance, record keeping, safety practices, emergency responses, particularly during flooding and daily operational tasks such as desludging reception, drying bed operation, sludge disposal, and leachate management. This capacity-building approach is essential for ensuring sustainable long-term operation of the FSTPs.

10.8 Defects Liability Period (DLP) Support

The Consultant will offer technical support during the Defects Liability Period, carrying out periodic site visits, monitoring plant performance, diagnosing operational issues, and verifying remedial actions undertaken by the contractor. This phase strengthens operational stability and ensures continuous optimisation of the facilities under real climatic and environmental conditions.

11.0 REPORTING AND COORDINATION

- The Consultant reports to the CARFEWW Project Manager with technical oversight from MWE (WSDF-E).
- A Joint Technical Review Panel (WAU/MWE) will review and approve Feasibility, Designs, and key supervision milestones

12.0 OWNERSHIP OF DATA AND MATERIALS

All data, surveys, drawings, models, specifications, BoQs, photos, GIS files, and reports generated shall be the property of WAU/MWE. The Consultant will provide editable formats (e.g., .dwg, .docx, .xlsx, .shp/.geojson, .pdf) and as-built packages at handover.

13.0 PAYMENT SCHEDULE (MILESTONE-BASED)

- 10%– Inception Report approved
- 15% – Feasibility & Draft Design Reports (3) approved
- 15% – Final Detailed Designs & Bidding Inputs approved
- 45% – Construction Supervision (pro-rata via certified IPCs and monthly reports)
- 10% – Commissioning & Handover package (3 sites) approved
- 5% – DLP Support completion

14.0 ETHICAL CONDUCT, SAFEGUARDS AND ZERO-TOLERANCE REQUIREMENTS

The Consultant shall conduct all activities under this assignment with the highest standards of professional ethics, integrity, and respect for the rights and dignity of all persons. Given the community-based nature of the CARFEWW Project and the involvement of vulnerable populations in flood- and landslide-affected areas, the following ethical and safeguarding obligations shall apply throughout the duration of the contract:

14.1 Zero-Tolerance for Fraud, Corruption and Misconduct

The Consultant, its staff, and all subcontracted personnel shall adhere to a strict zero-tolerance policy regarding fraud, bribery, corruption, collusion, falsification of data, or any unethical behaviour during feasibility studies, community consultations, procurement support, and construction supervision. Any such practices will constitute grounds for immediate termination of the contract and possible legal action by WAU/MWE.

14.2 Prevention of Sexual Exploitation, Abuse and Harassment (PSEA/H)

The Consultant must comply with WaterAid's safeguarding policies and international PSEA standards. This includes:

- Prohibition of any form of sexual exploitation, abuse, harassment, or inappropriate behaviour toward community members, colleagues, or beneficiaries.

- Ensuring all field staff are trained and sensitised on PSEA protocols before field deployment.
- Mandatory reporting of any safeguarding concerns to the Client within 24 hours.

14.3 Child Protection and Vulnerable Person Safeguards

The Consultant must ensure that no child (below 18 years) or vulnerable person is exposed to harm, intimidation, exploitation, or undue risk because of project activities. Field interactions, particularly during surveys, stakeholder consultations, and supervision activities, must follow strict child-safe procedures.

14.4 Conflict of Interest Disclosure

The Consultant shall declare any actual, potential, or perceived conflict of interest related to site selection, technology options, procurement support, or supervision of works. Failure to disclose relevant conflicts may result in disqualification or contract cancellation.

14.5 Data Protection, Privacy and Confidentiality

All data collected, including surveys, geotechnical test results, stakeholder information, community feedback, GIS layers, and photographs, shall be treated as confidential and used exclusively for purposes of this assignment. No data shall be shared with third parties without prior written approval from WAU/MWE.

14.6 Respectful and Ethical Community Engagement

During fieldwork, the Consultant shall ensure that all interactions with communities, particularly women, persons with disabilities, and marginalised groups, are carried out respectfully, transparently, and without coercion. Community entry protocols established by WAU, MWE, and District Local Governments must be strictly followed.

14.7 Health, Safety and Security Conduct Requirements

The Consultant must ensure that all staff operate in a safe and responsible manner, including adherence to PPE requirements, safe site access procedures, and emergency protocols, especially in flood-prone, waterlogged, or landslide-risk areas. All staff shall avoid reckless behaviour that may endanger themselves, contractors, or community members.

14.8 Non-Discrimination and Inclusion

The Consultant shall uphold principles of gender equality, disability inclusion, and non-discrimination in all activities, including hiring of field teams, stakeholder consultations, and training engagements.

14.9 Consequences of Non-Compliance

Non-compliance with any of the ethical or safeguarding standards outlined in this section shall result in corrective actions, suspension of field activities, or termination of the contract. Serious violations may be reported to relevant authorities for further action.