



Republic of Uganda

MINISTRY OF WATER AND ENVIRONMENT

WATER FOR PRODUCTION DEPARTMENT

IRRIGATION FOR CLIMATE RESILIENCE PROJECT

TERMS OF REFERENCE

FOR

**COMPREHENSIVE REVIEW AND FINALISATION OF DETAILED DESIGN FOR
NYIMUR IRRIGATION SCHEME IN LAMWO DISTRICT**

MARCH 2026

1 PROJECT BACKGROUND

Uganda's total population is estimated at 45.9 million (National Census, 2024) with an annual growth rate of 2.9% per annum. Between 85% and 90% of the population live in rural areas and derive their livelihood from agricultural related activities. The incidence on poverty is highest among the food crop producing category in the rural areas due to low income, with 31.1% living below the poverty line. Since majority of the population living in rural areas earn their living from agriculture, efforts to reduce poverty need to take into account increasing agricultural growth rates, diversifying agricultural production and expanding non-farm employment, without jeopardizing the dynamic stability of the agricultural ecosystems that ensures sustainability of the agricultural production. This concept is consistent with the National Development Plan and vision 2040 whose main goal is to eradicate poverty through appropriate investments and policies for agricultural sector transformation.

About 40% of the population is food insecure due to unsustainable production methods, especially in water stressed areas. This is not likely to change unless more attention and more resources are allocated to agricultural services and research. Seasonal changes and variations have become more common and are significantly affecting the rain-fed agriculture.

The Government of Uganda is committed to addressing the above challenges by prioritizing irrigation development through provision of formal irrigated agriculture systems in the Country as well as increasing functionality of both new and existing irrigation schemes. To consolidate these efforts, the Government of Uganda with financial support from the World Bank intends to undertake Design Review for Nyimur Irrigation Scheme in Lamwo District. This initiative aligns with the Government's broader program to modernize agriculture, aiming to boost incomes and improve the quality of life for poor subsistence farmers and their households. It also seeks to ensure food security and create employment opportunities through the development of agricultural enterprises and the promotion of sustainable land use and natural resource management. The project design emphasizes community-based participation, with districts and sub-counties as key implementation areas, and the private sector serving as the primary technical service providers.

The Design Review for which these terms of reference are formulated will cover a critical review, data validation and targeted updates of existing studies on available water resources, irrigation and other water demands, dam/reservoir development for multi-purpose uses, irrigation and drainage infrastructure development, upstream watersheds management as well as water supply system development for livestock use; essential agricultural support services to enable maximizing the irrigation investment benefits for agricultural production and productivity increase with transformational effects; and institutional development and capacity building for sustainable delivery of irrigation services.

The design review studies will check to ensure that the project is still technically sound and best alternatives are considered and analysed, attractive to and acceptable by the intended beneficiaries, operationally and managerially workable, economically and financially viable compared to without the project scenario, and sustainable and environmentally sound.

The above scheme is to be considered for financing by the World Bank under the Irrigation for Climate Resilience Project (ICRP). The goal of the project is to improve financially sustainable irrigation and drainage services and increase farmers' agricultural revenue in the project areas. This goal seeks to be achieved through development of irrigation and drainage infrastructure primarily for supplemental gravity irrigation services; provision of essential support services for crop

production and value chain development; and provision of technical assistance, capacity building and implementation support to develop and strengthen irrigation management institutions.

Nyimur Project Brief

The Nyimur Irrigation Scheme is a multipurpose water resources development project designed to address the socio-economic and agricultural needs of communities within the Nyimur River Basin in Palabek Ogili Sub-county, Lamwo District (

Figure 1), Northern Uganda. The basin lies entirely within Lamwo District between latitudes 0.280°N and 0.670°N and longitudes 34.050°E and 34.57°E. The Nyimur River drains an estimated catchment area of approximately 2,000 km², shared predominantly by northern Uganda and marginally by South Sudan. The proposed dam site (

Figure 2) is located across River Nyimur at coordinates 438276.12 E and 397651.30 N (WGS84, UTM Zone 36N).



Figure 1: Location map for Lamwo District

The scheme is strategically important for regional development, as it aims to enhance agricultural productivity, strengthen food security, create employment opportunities, and contribute to poverty reduction in Lamwo District. By enabling reliable, year-round irrigation, the project is expected to support a transition from subsistence farming to more commercial and climate-resilient agricultural production systems, thereby increasing household incomes and improving livelihoods within the basin.

As defined in the Feasibility Study (2017) and Detailed Design (2019), the project comprises of a 26m high earthfill dam with a crest length of approximately 803.5 m across River Nyimur. The dam

is complemented by a free-flow ogee-crested spillway located on the left bank, designed to safely discharge a Probable Maximum Flood (PMF) of 1,415 m³/s corresponding to a 10,000-year return period. Additional components include a control building, a gravity-fed irrigation network covering a net command area of approximately 2,900 hectares, and a drainage system consisting of primary and secondary canals to safely convey excess irrigation and stormwater runoff back to the natural hydrographic network. The irrigation system comprises lined main canals feeding secondary and tertiary distribution pipelines that supply the various zones within the command area.

The overall development objectives of the Nyimur Irrigation Scheme are to irrigate approximately 2,900 hectares of agricultural land, increase crop yields and cropping intensity, expand irrigated agriculture to benefit local farming households, and strengthen resilience to climate variability. The project is also intended to improve rural incomes and promote broader economic growth in the district.

The Feasibility Study for the project was prepared in 2017 and the detailed design completed in 2019, both by Studio Galli Ingegneria in association with Z&A Consulting Engineers International Ltd. These documents constitute the technical baseline for the current assignment. In view of the time elapsed since completion of the Detailed Design, the Consultant is required to undertake a comprehensive review of the Feasibility Study and Design Reports to reassess their assumptions, conclusions, and limitations. The review will evaluate compliance with updated national and international standards, incorporate new hydrological and environmental data where available, and confirm the continued technical, environmental, and economic viability of the scheme prior to implementation.

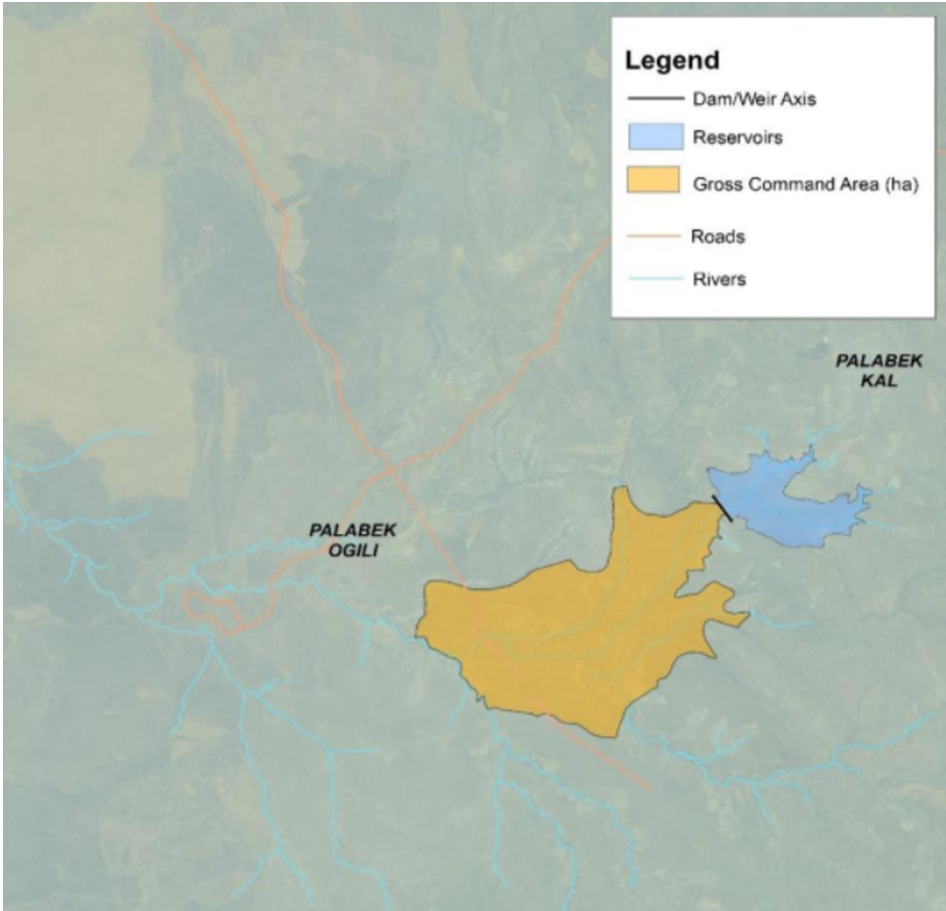


Figure 2: Location map for Nyimur Irrigation Scheme

2 OBJECTIVE OF THE ASSIGNMENT

The overall objective of this assignment is to critically review, update, and finalize the Feasibility Study (2017) and Detailed Design (2019) for the Nyimur Irrigation Scheme. This will involve a comprehensive verification of all prior data and assumptions, followed by the necessary additional investigations and analyses to produce a revised, bankable Detailed Design Report and tender-ready documents that meet current World Bank standards and safeguard policies.

The specific objectives of the assignment are to:

- (i) Confirm that the project remains technically, economically, financially, socially, and environmentally viable before proceeding to the updated Detailed Design and investment commitment.
- (ii) Verify that the existing design complies with all relevant national and international technical standards, codes, and best practices (e.g., dam safety, hydraulic structures).
- (iii) Assess the structural integrity and safety of the dam under all normal and extreme loading conditions (e.g., updated PMF, seismic events).
- (iv) Update all fundamental studies (hydrology, sediment, geotechnical, agronomic assessments) using the latest available data and climate change projections.
- (v) Identify and incorporate value engineering opportunities to optimize project costs without compromising quality or safety.
- (vi) Ensure the updated design fully incorporates all environmental and social safeguard measures and commitments.
- (vii) Produce a complete set of final detailed engineering designs, drawings, technical specifications, and bidding documents suitable for international competitive bidding.

3 SCOPE OF THE STUDY

3.1 Introduction

The Consultant shall use the existing Feasibility Study and Detailed Design Report as the baseline for the assignment. All tasks shall begin with a thorough review and validation of this existing information. Subsequent investigations and designs shall be targeted and proportional to the risks and gaps identified in this review. It should further be noted that the consultant shall justify all new fieldwork and this shall be subject to the client's approval.

3.2 Tasks to be performed for the Inception Report

Task 1: Critical review of the Feasibility study and Design Reports.

Following a thorough review of the Reports, the Consultant shall:

- (i) summarize the findings of the Design.
- (ii) list and describe the shortcomings of the Design that will be improved for the Interim Report.
- (iii) Identify any shortcomings in the existing investigations for geological analysis, site data collection, drills for more geological data, and all other data shortages; and provide a detailed data collection and investigation plan to address these gaps.
- (iv) Develop a detailed Inception Report outlining the review methodology, work plan, schedule, and a checklist of standards to be used for the validation.
- (v) The Inception Report shall include a survey scheduling plan that explicitly accounts for seasonal access constraints associated with the two rainy seasons in northern Uganda and shall identify mitigation measures for schedule risks arising from field access limitations.

3.3 Tasks to be performed for the Interim Report

Task 2: Water Resources Assessment and Sediment Studies

Task 2-1: Review of Water Resources Availability Assessment

The task objective is to review assessment of water resources availability to satisfy the estimated uses and demands and to match the water availability at monthly time segment with the demands.

The Consultant shall:

- (i) Review and update the existing current and potential future water uses and demands for the identified water uses at the sub-project areas, together with their seasonality, levels of service, priority of use and cumulative effects;
- (ii) Review and update upstream water uses (abstractions/diversions) and their impacts to the proposed project;

- (iii) Review and update the quantity and quality of both the surface and groundwater potential and availability and examine potential for conjunctive use of available surface and ground water resources in an environmentally sustainable manner; and;
- (iv) update optimal demands and their command areas to be served for the various water uses with the available water resources, without adversely affecting more downstream users.

Based on the analysis, the consultant will match the water availability for each time segment with the irrigation needs and other demands at different levels of probability using appropriate hydrological techniques.

With respect to groundwater, the Consultant should also review and validate:

- (i) the future ground water regime and behavior after the development of irrigation in the project area;
- (ii) impacts on the ground water table due to seepage and percolation and drainage from the irrigation canals;
- (iii) drainage control, groundwater table, and ground water quality control measures that need to be incorporated later into the detailed design of the project.

Task 2-2: Hydrological Analysis

The Consultant shall:

- (i) Review and validate hydrological analyses such as rainfall-runoff modelling to estimate reservoir yield, inflow design flood to facilitate the design and sizing of different hydraulic structures such as embankment height and length, spillway and outlet works;
- (ii) Extend the historical flow data by incorporating the last 6-8 years of records from relevant gauging stations.
- (iii) Re-run the hydrological models using the extended data series and the latest climate change projections to update the reservoir yield and inflow design flood.
- (iv) Assess the impact of the updated hydrological findings on the dam's spillway capacity and reservoir operating rules.
- (v) Review and validate flood routing through the downstream channel and floodplain to enable evaluation of effects in the event of excessive spills or dam break (hydrological dam safety considerations).

Task 2-3: Sediment Analysis

A comprehensive review of reservoir sedimentation and sediment flushing analysis must be carried out, including validation and updating of projections of long-term sediment accumulation, trap efficiency, and impact on storage volume.

The Consultant shall review and assess not only the risks of storage depletion but also evaluate the potential for increased loads on the dam, abrasion of outlet structures, and possible blockages of outlets that could disrupt water use and compromise the dam's capacity to safely manage flood events. Additionally, this review should check appropriate dead storage and sediment flushing outlet levels. The Consultant is also expected to check and validate sediment load estimates, including projections of upstream sediment release changes based on current and future upstream development plans.

Task 2-4: Water Quality and Quantity Assessment

The Consultant will review the existing water quality assessment results and conduct additional investigations to update and validate the existing data. The consultant shall check and validate the evaluation undertaken on the direct and indirect effects of water quality and water quantity change on downstream ecosystems dependent on periodic natural flooding, water quality during low flow periods, deposition due to changes in sediment transport regime, social considerations (like loss of water access and livelihoods), cumulative effects and any potential riparian issues (in the river catchment and downstream of the proposed irrigation schemes) due to the proposed developments to inform devising of mitigation measures.

Task 3: Irrigable Command Area Design

Task 3-1: Irrigation Potential Assessment

The objective of this task is to review the existing delineation maps for potential irrigation areas and undertake additional evaluations to identify any more areas suitable for irrigation. This assessment will consider the key determinants of irrigable land, including the availability and suitability of soil and land resources, water availability, irrigation water requirements, feasible crops and cropping patterns, and prevailing local climatic conditions. The consultant is required to update and validate:

- (i) potential crops and cropping patterns;
- (ii) land suitability for irrigation;
- (iii) irrigation water requirements; and
- (iv) water resources availability and options for developing water resources in the locality to meet the irrigation demand.

Task 3-2: Soil Surveys and Land Suitability Studies

The Consultant shall:

- (i) Review the existing soil maps and land suitability classifications to determine whether they are sufficiently detailed and accurate for assessing irrigation and drainage requirements within the proposed development areas, and update and validate the assessment as necessary.

- (ii) Conduct targeted soil sampling and analysis in specific areas where the original data is sparse, or where land use has significantly changed, to confirm soil properties and suitability for the proposed crops. The Consultant shall take appropriate measures to verify and ensure the quality and reliability of laboratory test results.
- (iii) critically evaluate and analyze findings of the updated topographic, soil surveys and land characteristics of the proposed project areas; and
- (iv) identify and delineate irrigation blocks and areas in terms of suitability for irrigated agriculture development.

Task 3-3: Evaluation of Crops, Cropping Patterns and Markets

The consultants shall review existing baseline information on the type of soils, topography and land-use patterns; water-use patterns (rain-fed crops, irrigated crops, drainage, surface and groundwater extraction); existing field-crop production and soil management practices, and undertake additional evaluations to update and validate the delineated major cropping pattern zones (considering types of irrigated crops grown, crop calendar and cropping intensity); review and update schedules of crops for consideration, review and validate expected yields and crop water requirements for alternative cropping programs, and examine the existing Agricultural Support Services. The assessment will cover:

- (i) the production and performance of the existing crops based on the current cropping patterns
- (ii) the potential of commercially oriented production system based on the available markets in the surrounding shopping centres, other urban markets such as Kampala and the neighboring countries in the region,
- (iii) the most profitable value chains that can be developed or upscaled in the proposed irrigation schemes,
- (iv) availability of competent service providers for technical advisory services, agro-input dealers, financial services (savings and credit/loans), agro-processors, traders/aggregators and warehousing among others which will be needed for extension support to the project's producer organizations;
- (v) the margins of the top five commodity value chains in the Nyimur area.
- (vi) Potential market for the top five commodity value chain in terms of the volumes and monetary value.
- (vii) determination of as to whether a supplementary or major irrigation (for all crops or combination for selected crops);
- (viii) the ownership structure of farms including consulting the potential irrigation farmers;
- (ix) constraints on farm productivity;

- (x) the market potential of the possible crops within and around the project areas;
- (xi) the potential for increased competitiveness of its products including an analysis of the comparative advantage of the project areas;
- (xii) availability of and accessibility to input supplies, storage, technology, finance, input markets, transport and distribution networks;
- (xiii) option for farm mechanization, product storage, handling and transportation,
- (xiv) availability of output market (incl. potential for grower/out-grower linkages) and
- (xv) Value chain and Climate Smart agriculture.
- (xvi) Assumption that only 85% of the command area will be utilized at any given time.
- (xvii) Increase area for high-value crops to take advantage of higher market prices during the dry seasons (water requirements will increase and command area will decrease).
- (xviii) A mix of rice and other crops (Existing study shows that annual IWR per ha for rice is almost 3 times that of non-rice crops, so if rice area is increased, overall area must decrease.)

The consultant will also review existing data on the gender division of labour in irrigated agricultural production for each socio-economic group, identify the needs of both women and men related to proposed agricultural activities. Based on the analysis, the Consultant shall formulate the cropping and irrigated agriculture development plans for the proposed scheme including the potential distribution of land areas between the small scale individual farms and large scale commercial farms. The consultant shall further identify suitable and appropriate cropping patterns for each type, estimate farm level crop production volumes, input and production costs, and gross and net returns, and generate incremental benefit estimations for use in the feasibility level economic and financial analyses.

All socioeconomic baseline assessments conducted under this task shall be gender-disaggregated, capturing data on women's roles in agricultural production, land access, and water use within the command area.

Task 3-4: Determination of Irrigation Water Requirement

The aim of this task is to evaluate irrigation water demand for the basic design parameters generated by task 5-3 above. The Consultant shall:

- (i) Review and update all the existing available agro-meteorological data, using the latest 6-8 years, for the project areas required for estimation of crop water requirements and irrigation water requirements of the scheme;

- (ii) verify the reliability and accuracy of data and make corrections as necessary before use. Quality analysis of collected data and gap filling of missing data using appropriate standard approaches and techniques is necessary.
- (iii) Validate the existing “Agro-climatological assessment” where the Consultant shall: review and update existing climatic data using the latest years and make estimates of farm and project level irrigation requirements for viable crops, cropping patterns and crop rotations and irrigation technologies to be adopted, using all available agro-meteorological data for the project area;
- (iv) deduce the peak irrigation water demand supported by analysis of different cropping patterns in the respective project areas for purposes of fixing canal design and
- (v) deduce irrigation water requirements at salient intervals for deciding the cropping pattern in order to compare with water availability.

Task 3-5: Command Area Development

The scope for command area development will include the following:

- (i) review and update the existing flood protection, land reclamation and drainage maps and assessments to ensure sustained economic operation of the command areas
- (ii) review, validate and update access road requirement both to and within the area
- (iii) review, validate and update general layout plans showing the location and principal features of main works required for the most suitable irrigation supply and drainage system.

The consultant shall review the existing reliability of water supply, considering the various existing and future water uses and update/validate appropriate water conveyance systems to supply water to all parts of the land to be developed. The consultant shall provide a detailed comparative analysis of appropriate irrigation methods (including but not limited to pressurized gravity-fed methods like center pivot, sprinklers) best suited for the command area.

The consultant shall locate suitable irrigation water diversion structures in the command area and investigate pumping, storage or diversion requirement and reservoir operations required for irrigation with due consideration of floods and siltation in the command area.

3.4 Tasks to be performed for the Detailed Design

After the Client has selected from the alternatives presented in the Interim Report, the Consultant will need to develop Detail Designs and construction contract bidding documents, which meet the requirements of a bankable irrigation development project following international good practices. The design report should include updated assumptions, analyses, conclusions, and recommendations for the Detail Designs, as well as calculations and justification of the methods used for design, detailed organizational charts and schedules for implementation, drawings, bill of

quantities, contract specifications, contract packages etc. Relevant annexure including the Geological and Geotechnical design report (described under the Design report) should be included.

A synoptic sheet inserted in the main report, listing the main characteristics of the dam:

Type, height, crest width, slope of embankments, catchment area, design flood, maxi water level(MWL), normal water level(NWL), dead level(DL), various freeboard, type of spillway, effective reservoir volume, water surface area to the NWL, summary geology, etc., will enable the main features of the project to be visualized at a glance.

Task 4: Detailed topographic surveys

The Consultant shall:

- (i) Review the existing topographic maps both at the dam site and irrigable command area and conduct any necessary additional topographic surveys that may arise and prepare an updated topographic map of the scheme area to scale;
- (ii) Review, validate and prepare an updated topographic map of the dam/diversion at a scale not more than 1:500 and at a contour interval of not more than 0.5 m, showing all the features upstream and downstream, right and left of the proposed site, including observation pits and material source areas where appropriate; a minimum of 4 fixed, stable concrete markers will be installed on the site in order to locate the future dam and its ancillary structures, and to monitor the topography of the embankment;
- (iii) Review and validate dam site cross-sections at vertical and horizontal scales of 1:100 indicating pertinent features to the head works;
- (iv) Review and update topographic map of the irrigation command area at a longitudinal scale of not more than 1:1,000 at a contour interval of not more than 1m for steep areas and not more than 0.5m for plain and undulating areas: the topographic map should also show major features in the irrigable area, i.e. including canals, water fetching points, settlements, cattle crossings, hills, roads, water and electric utilities, burial grounds etc;
- (v) Review and update cross-sections at vertical and horizontal scales of 1:100 for the irrigation structures, indicating pertinent features to the head works;
- (vi) Review and validate established benchmarks for every 200 ha and connect them to national grid stations and benchmarks of the proposed head works;
- (vii) Review and validate cadastral survey maps of the dam reservoir and along the main, secondary and tertiary pipelines/ canals and at other irrigation facilities in the irrigation scheme command area. This completed survey should be checked and confirmed to be on cadastral maps;
- (viii) Review and validate longitudinal profiles of the scheme roads, main, secondary and tertiary canals, main and secondary drain, at a scale of vertical 1:100 and horizontal

1:500. Grid survey of the irrigation plots at the recommended and specified grid interval whenever as required for land leveling work.

The structures shall be presented on appropriate design drawings. The structures shall include but not be limited to access roads, foundation excavation and treatment works, embankment zoning, dam instrumentation, concrete outlines and placement details, reinforcement details, construction and expansion joint details, block-outs for mechanical installations and second stage concrete.

Task 5: Detailed Cadastral Surveys

The cadastral survey shall cover selected gross command area and shall be used to establish the actual boundaries and areas of the plots for the community members within the irrigation command area.

This assignment shall include but not limited to:

- (i) Where feasible, the consultant shall review and update existing deed plans and all other available documents and maps of the adjoining properties or any records of the irrigation command area from the Project area districts, utility maps, and any records of surveys. For unavailable title deeds, the consultant shall work with local leaders to establish extents of each property. After this data is gathered and analyzed, the field survey shall commence where the original data is inadequate.
- (ii) The initial survey operations shall concentrate on locating monuments or existing reference points.
- (iii) Using appropriate survey equipment to establish the plot dimensions and areas. For each plot/owner, the property corners shall be marked by iron pins, metal survey markers, iron pipes, and other features possibly establishing a line of possession as agreed with the community members
- (iv) The consulate shall collect all information in appropriate digital format for subsequent plotting and processing using CAD programs.

Task 6: Detailed Geological and Geotechnical considerations

- i. Review the existing borehole logs, field tests, and conclusions from the original geotechnical investigation.
- ii. Execute targeted additional investigations (e.g., 2-3 confirmatory boreholes along the dam axis, field permeability tests) to validate critical assumptions about foundation conditions, bearing capacity, and seepage potential at key locations (e.g., spillway, abutments).
- iii. The scope and location of additional investigations should be justified based on the review of existing data and the need to reduce identified uncertainties.

- iv. the geologic conditions related to selection of the dam/diversion site like rock type, overburden, fractures, bedding which have a strong influence on the need for foundation treatment and costs;
- v. the geotechnical characteristics of the soils and foundation rocks, leading to the development of the geotechnical model used in the stability calculations for the structure, which will include the “conservative” characteristics of the different zones of material making up the fill (bulk density, dry density d_s , moisture content, soil grain size, soil cohesion, soil angle of internal friction, etc.) and the rock foundation; other geologic conditions such as faults that may influence design, construction, and long term operation;
- vi. seismicity and earthquake intensity of the project area; and
- vii. sources or hydrogeological conditions, properties and quantification of construction materials, respecting the “practical” rule that recommends recognizing 1.5 to 2 times the quantities strictly necessary to build the fill. The Consultant shall: identify and geo-reference crucial soil and rock features, establish the engineering properties of rocks and soils (including construction materials), surficial deposits, and tectonic-structural patterns. The extent, depth, and type of exploration will depend on the complexity of the geology and size and type of dam/diversion as conceptualized by the consultant.

Field Investigations will include but not limited to:

- i. Additional exploratory boreholes and trial pits for soil sampling and testing for engineering properties relevant for project design. The Consultant will propose the type of boreholes (cored or not), the number of boreholes recommended and their depth, as well as the tests to be carried out on these boreholes (water-permeability test, RQD; logging, etc.). Their lithographic section will enable the geophysical campaign to be calibrated.
- ii. Review and update of study of the foundations of the dam, the diversion axis, including the spillway and those of the ancillary structures (spillway, water intake and temporary diversion) will be undertaken based on existing geophysical campaign. The aim is to produce a realistic geological model of the foundations. The geophysical survey will be reviewed and validated, confirming data on the stratification around energy dissipation zones, water intake zones, river diversion works and construction material borrow areas. It should also specify the most appropriate location for the dam axis assessment of uncertainties arising from interpretation of geophysical results and their possible impacts on costs and site viability;
- iii. Review and update of geological profiles for the dam foundation, abutments, reservoir rim area and potential project command areas, showing all the geological structures in place and inducing the potential permeability and stability;
- iv. Review and update of geological map of the reservoir floor and rim, drawn to sufficient detail commensurate with the feasibility level to permit identification and assessment of potential leakage paths;

- v. Check and confirm geo-referenced possible sources of construction materials such as concrete aggregates and carry out tests to assess their engineering properties. The suitability of the dam fill materials shall be tested for compaction and permeability. Aggregates shall be tested on the likelihood of developing Alkali Aggregate Reactions when applied to concrete structures. The consultant is required to identify any additional sources of construction materials.
- vi. analysis of the existing tectonic / seismic intensity of the area and recommend safety design measures (against sliding of dam slopes, settlements, sliding of abutments, liquefaction of foundations, cracking of dam body, loss of filter zones). Additional boreholes may be required to develop geologic correlations and to determine the type of dams suitable for the site. The consultant could consider topping up selected boreholes with open type piezometers for monitoring pore water pressure and permeability.

The final output of this task will be a detailed report on the project geology/geotechnical aspects, with engineering properties for further use in the hydraulic and structural design of the dam/diversion, irrigation and appurtenant structures.

Task 7: Design of Dam and Appurtenant structures

The flood return period selected for temporary diversion structures during construction shall be reviewed. For a multi-year construction duration, at least a 25-year return period flood should be considered.

- (i) Review and update detailed structural and hydraulic designs of the various dam components including foundations and abutments, dam structure, spillways, energy dissipating works, retaining walls, seepage control and internal drainage systems, river diversion works, intake, bottom outlet and gates, outlet works, terminal works; electro-mechanical system and components, dam instrumentation considering both structural and hydraulic safety;
- (ii) Review and update the detailed structural and hydraulic designs, based on the latest climatic data, for the diversion structures with respect to maximum flood estimates keeping the geologic and geotechnical information into consideration; and
- (iii) the layouts and drawings of the different project components using AutoCAD software;
- (iv) Review, validate and update dam safety monitoring and management systems;
- (v) a schedule of quantities in line with Civil Engineering Standard Methods of Measurement (CESMM), and the cost estimates for use in cost estimates and the economic and financial analysis).
- (vi) propose dam safety monitoring and management systems (The dam monitoring system will have to be simple and “rustic”; for an LHSD, it will be limited to measuring embankment deformation (settlement), Interstitial pressures in the embankment and leaks at the structure outlet);

- (vii) reservoir operating rules based on the assessment of multi-purpose benefits of the storage. A reservoir simulation model shall be developed to assess different combinations of multipurpose uses and project scenarios so as to derive an optimum water allocation solution, and to calculate the benefits in the economic analysis for each project scenario. Specifically, the Consultant shall determine:
- the optimum reservoir size and operational rules;
 - efficient and economic uses of the reservoirs; and
 - the lifespan of the reservoir based on the assessment of multi-purpose benefits of the storage; and
 - prepare and participate in the international dam safety review panel (DSRP) reviews of the studies/designs, and take follow-up actions as required.

The operating rules should maximize the returns on investment in storage. The Consultant shall consider the prioritized multipurpose uses of the reservoir and environmental flows. The study should also explore the impact of climate change on the proposed projects and its intended outcomes.

Task 8: Irrigation System Engineering Design

The Consultant will:

- (i) Review and update the detailed design and layout of the irrigation system and the associated hydraulic structures, based on the revised design parameters, and updated data requirements. The designs will be compatible with the local management system conditions and/or capability and should include canals, drains, night storage or regulating reservoirs (if any), road alignments, canal size and lengths, location of structures, and water profiles along canals and drains at specified reaches. The designs should be the most economical, easily manageable and aligned with topographic features and geological investigations; due attention should be given to the possibilities of crossing irrigation and drainage canals by human and livestock movements;
- (ii) Make use of the updated flood protection requirements for the command area to update the design of the respective drainage system accordingly;
- (iii) Review, validate and update design for the canal-lining requirements using the inputs from the engineering geology assessments;
- (i) divide the irrigation area into blocks based on property ownership boundaries and in close collaboration with the Client. Provide a hydrant with a control valve and flow meter at the high point of each block.
- (ii) prepare general plans and drawings for the dam site and all irrigation infrastructure;

- (iii) Review and update designed access roads, which will give easy access to all the irrigation blocks;
- (iv) prepare specifications and priced bill of quantities and construction schedules accordingly. The work items and construction schedules will be presented to the Client and other stakeholders, for discussion and approval;
- (v) prepare operating and maintenance manual (including rule curves) for irrigation release outlet structures (gates).

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

Task 9: Infrastructure Design for Auxiliary works

Task 9-1: Design for Flood Mitigation Developments

The sub-task objective is to assess the risk of flooding in the project area, potential damages from future flooding to the proposed project infrastructure, to irrigation and drainage system, hydraulic structures, and crops. The Consultant should:

- (i) collect all information available in records and with local communities on the history of flooding, severity and damage caused by floods in the project areas;
- (ii) analyze latest hydro-meteorological records to assess the risk of flooding in the project areas with project situation;
- (iii) evaluate the flood risk in upstream areas consequent to new water storage facilities;
- (iv) identify major structural and non-structural measures to prevent adverse impacts to communities, irrigation system infrastructure and crops in the project area and
- (v) prepare design of structural measures, layouts and cost estimates which can be taken to avert floods under the planned project.

Task9-2: Design of Access and Scheme Roads

The sub-task objective is to undertake design of the access and scheme road network to take into account marketing and social opportunities, within the framework of government road programs. Studies will include the survey and design of the rural road network as well as stream crossings within the project area. The consultant will further prepare layouts and cost estimates for the proposed structural measures.

Task 10: Preparation of Cost Estimates

The Consultant shall prepare the costed bills of quantities for implementation of the works. All cost estimates must show the foreign and local currency requirements; taxes, subsidies shall be identified and their implications analyzed; physical and price contingency allowances should be quantified appropriately for each component/activity of the project. This will inform the Client on the reasonable cost implications for implementing the project.

The Consultant shall identify and value the costs and benefits that will arise with the proposed project for purposes of comparison with the situation as it would be without the project and determining the incremental net benefit arising from the project investment. This will involve preparation of financial cost estimates for the various project options and components with expenditure schedules for capital costs, replacement costs, operation and maintenance, management costs, etc. for all activities and services. A summary of the financial and economic cost estimates shall be provided in a tabular form and appropriately classified and discussed. The Consultant needs to aim reducing the scheme capital and O&M costs substantially to make the service delivery sustainable.

The Consultant should prepare estimates of project benefits, which should include: direct/indirect benefits, tangible benefits (arising either from an increased value of production or from reduced costs), intangible benefits (such as new job opportunities, improved access to domestic water supply through availability of storage etc.). The consultant will also estimate secondary benefits created or costs incurred outside the project (using shadow pricing techniques/non market valuation), so that they can be attributed to the project investment, in the economic analysis. Residual values must be calculated.

Task 11: Construction Plans and Implementation Scheduling

The Consultant shall establish construction schedules for the implementation of the dam, irrigation system, and outlet works as well as for other project components. Apart from the construction items of the earthworks and concrete works for the main structures these schedules shall include mobilization, construction of access roads as well as routes to borrow areas, mapping and information on quantity and quality of borrow areas, establishment of the construction camp, provision of housing and transport facilities for supervising staff, construction packaging, work methods and preliminary labour force requirements. In the schedules the Critical Path Method shall be applied. Based on this the disbursement schedule of the project main components will be estimated as an input for the financial and economic analysis.

Task 12: Interface with the Environmental and Social Impact Assessment (ESIA) Firm

Environmental and Social Impact Assessment (ESIA) for the scheme will be prepared by a separate firm, and that assignment is expected to run concurrently with this design assignment. The consultant shall actively coordinate with the ESIA firm throughout the design process and shall share design outputs on a rolling basis as they are produced. Key outputs to be shared include preliminary and updated infrastructure layouts; borrow pit and spoil disposal locations; drainage and water management designs; construction phasing plans and methodology; and any design alternatives considered and rejected. The consultant shall also respond to technical queries from

the ESIA firm in a timely manner and shall review and comment on draft ESIA sections relevant to the design.

Task 13: Interface with the Dam Safety Panel

The client is constituting an independent Dam Safety Panel of Experts. The consultant shall cooperate fully with the Panel process as directed by the client. This includes presenting the dam design and supporting technical analyses to the Panel when required; providing clarifications and additional technical information as requested by the Panel; and incorporating Panel recommendations into the design under the client's instruction. Dam Safety Panel clearance of the dam design is a condition for finalisation of the design. The consultant shall make adequate allowance in their programme and resource plan for the time and effort required to support Panel engagements and to address Panel findings, which may require iterative design revisions.

Task 12: Documentation Requirements

Task 12 – 1: Preparation of Design Review Report

The Consultant will prepare a Design Review report for the scheme, which shall document Detailed Engineering designs for the agreed Engineering works (dam, irrigation infrastructure, livestock watering and municipal water supply abstractions, system layout, farm and access roads and technical drawings).

Task 12 – 2: Preparation of Dam Safety Plans

With reference to World Bank OP 4.37 on dam safety, the consultant will prepare the following Dam Safety Plans and broad framework plans:

- (i) Dam construction supervision and quality assurance plan, per World Bank safety of dams policy requirements;
- (ii) Operation & Maintenance (O&M) Plans (containing: General Information; Salient Project Features; Operation Guidelines and Procedures; Monitoring Programme; Safety Inspections; Directory of Drawings, Records, Suppliers and Vendor Manuals and Appendices) covering the different project components namely; storage dam infrastructure, irrigation system, livestock, aquaculture, mini hydropower and domestic water supply.
- (iii) Instrumentation Plan: including the dam monitoring instrumentation design/plan, and monitoring and data processing and analysis requirements, etc.
- (iv) Emergency Preparedness Plan for the dam containing:
 - a. issues of organization, communication, procedure for evacuation, local facilities, etc. and
 - b. Dam break analysis, Inundation map, emergency warning system and plan, safety equipment, warning levels and response matrix for different deficiency levels and other information specific to the reservoir).

Task 12 – 3: Bidding Documents Preparation

Once the Final Designs are approved by the Client, the tender documents for the civil works and for the supply and installation of electromechanical equipment should be prepared for the scheme. The text of the Conditions of Contract universally recognized (and generally adopted by the international Development Banks) is the FIDIC (Federation Internationale Des Ingenieurs Conseils)'s appropriate "book". The bidding documents should follow World Bank standard documents.

The following information will constitute the Tender Documentation.

- (i) Drawings, Bills of Quantities (BoQ) and all tender documents (including engineering cost estimates) prepared in accordance with the Civil Engineering Standard Method of Measurement (CESMM). The BoQ should be accompanied by details showing how the quantities of the works have been arrived at. It is expected that the proposal shall state the number of drawings to be produced with description of the purpose of each drawing.
- (ii) Specifications for workmanship and materials, which shall have been agreed upon in consultation with the Client.
- (iii) Special conditions of undertaking the supervision of construction works based on the FIDIC Contract for Works of Civil Engineering Construction.

The Tender documents shall include a provisional schedule, based on the Consultant's experience, framing the aimed duration of the construction Works. Such program shall include key dates (usually related to meteorological constraints or delivery planning of equipment) and be based on reasonable productions of main items (excavations, filling, concrete, etc.).

The Consultant will prepare specifications for workmanship and materials, which shall have been agreed upon in consultation with the Client. The Consultant will provide the security coefficients assumed for the stability studies; the hypotheses to take into consideration, justifying his choice for the seismic design of structures; and the standards intended to refer in the design of structures and equipment.

Tender Documents shall be based on the latest version of the World Bank Standard Procurement Documents and shall include the following among others:

- (a) Instructions to Bidders
- (b) Convention
- (c) Special Papers of Technical Requirements for Civil Works:
 - Description of the structures and work
 - Provenance, quality, preparation of materials,
 - Mode works,

- Mode of assessment work,
- Special clauses.
- Environmental and Social Safeguards
- Environmental Health and Safety

(d) Special Technical Requirements Specification for equipment

- Definition and consistency of work
- Specification of supplies,
- Conditions of contract, controls and fixtures.

(a) General Conditions of Contract

- Bidding work, Execution of works, Payment of expenses, Tax, Payments, Various clauses and Submission template.

4 STAKEHOLDER CONSULTATIONS

The Consultant shall conduct extensive consultations with all key governmental and non-governmental stakeholders relevant to the assignment. The line ministries and Organizations shall include, Ministry of Agriculture Animal Industry and Fisheries (MAAIF) and its agencies, Ministry of Finance Planning and Economic Development (MoFPED), Ministry of Water and Environment (MWE) and its agencies and regional structures, National Environment Management Authority (NEMA), Uganda National Meteorological Authority (UNMA), Ministry of Local Government (MoLG), Ministry of Energy and Mineral Development (MEMD) and District Local Governments (Lamwo).

Other stakeholders include Private Sector Institutions, Non-Government Organizations (NGOs), Civil Society Organizations (CSOs), Community Based Organizations (CBOs), Farmer/Producer Organizations which include community groups, associations, cooperatives, producers and produce agents, among others; and financial institutions engaged for agriculture credit at local and national level, insurance firms and other players in the agriculture sector linked to irrigation development.

Stakeholder consultations shall explicitly include measures to ensure meaningful participation by women. The consultant shall specify, in the Inception Report, the approach to women's participation in consultations, including minimum participation targets or standards. The design of scheme governance structures and water user associations shall incorporate provisions for women's representation and leadership roles, and these shall be reflected in the relevant design report sections.

Workshops shall be organized by the Consultant for dissemination of findings to all the key stakeholders. The financial and logistical obligations concerning these meetings shall be met by the Client. The Consultant will be required to include a provisional sum of USD 50,000 to meet the costs of holding the workshops/meetings. The Consultant shall only plan and budget for financial and logistical obligations towards all its key experts to ensure they fully attend and participate in the workshops. Any contractual liabilities shall be managed administratively with the Client according to the provisions of the Governing contract.

5 TRANSFER OF KNOWLEDGE AND TECHNOLOGY PROGRAMME

The consultant in his technical proposal shall describe its proposed knowledge transfer program.

Throughout the assignment, the consultant will be required to involve counterpart staff seconded to the project by the Client. The assigned staff may consist of but not limited to Engineers, Environmental officers, Social Scientists/Community Development Officers, Land Surveyors and Agricultural Officers.

The programme should address the following areas of knowledge and technology transfer:

- Engineering; formal courses and on-the-job training (on appropriate specialized software packages and integration of the counterparts with the Consultant' team)
- Agriculture; formal courses and training on-the-job (on design and implementation of irrigation, agriculture marketing and extension/outreach programs, appropriate specialized software packages and integration of the counterparts with the Consultant' team).
- Environmental and Social Impact Issues and occupation Health and Safety; formal training courses and on-the-job training (on compliance awareness of environmental and social issues according to ESMP and RAP and occupational health and safety).
- Assess and recommend appropriate training courses that could be provided by the Contractors within the framework of their contracts.

6 METHODOLOGY AND STANDARDS

The Consultant will be expected to employ the most effective methodology and standards to achieve results with optimal national stakeholder involvement. In addition, the Consultant will be expected to:

- (i) collect most data from review and analysis of existing secondary sources of information such as Sector development plans, Draft irrigation master plan, assessment reports, feasibility study reports, Final Design report and various other regional and relevant global publications.
- (ii) prepare clear, concise and focused reports; and
- (iii) ensure reports are delivered in time as per the agreement. British/American Standards shall be used for the studies, and their application shall be appropriately referenced. ICOLD dam design criteria shall be used to guide the definition of design floods, earthquakes, sediment management etc.

7 DELIVERABLES AND PERIOD OF PERFORMANCE

The Consultant will produce the following reports and make presentations of the same to the Client:

Report	Submission date	Description	No of Copies
Inception Report	1 month after commencement of the contract	<p>Contains the updated work plan, state of mobilization, refined work methodology and understanding of assignment, specify submission dates for each of the required technical reports in draft form, issues identified for Client's attention, proposed content and structure of the various reports. The proposed project schedule shall be broken down by tasks and sub-tasks and presented in Gantt chart form. A presentation shall be made by the Consultant after 1 month to review and approve the report.</p> <p>The Inception Report shall include a survey scheduling plan that explicitly accounts for seasonal access constraints associated with the two rainy seasons in northern Uganda, and shall identify mitigation measures for schedule risks arising from field access limitations.</p>	5
Interim Report	5 months after commencement of the contract	<p>The reports shall contain progress made, including details of the project area, links with existing institutions, lessons from similar projects, an assessment of constraints and opportunities, preliminary results from field investigations and surveys, socio-economic and environmental survey findings, geotechnical baseline report, preliminary findings of the various water use/water demand assessments, preliminary scheme layout and design alternatives, and relevant annexes. A presentation shall be made by the Consultant after 5 months to review and approve the report.</p>	5
Updated Feasibility Study Note	6 months after commencement of the contract	<p>A concise, focused report that validates the original Feasibility Study against current data, standards, and conditions, and clearly outlines what has changed and the implications of those changes.</p> <p>The report guides to confirm that the project remains technically, economically, financially, socially, and environmentally viable.</p> <p>The report should present the recalculated Economic Internal Rate of Return (EIRR), Financial Internal Rate of Return (FIRR), and updated cost-benefit analysis based on all new findings, serving as a formal go/no-go checkpoint for the client.</p>	5

Report	Submission date	Description	No of Copies
		A presentation shall be made by the Consultant after 6 months to review and approve the report.	
Draft Design Review Report	8 months after commencement of the contract	Details will include Detailed Engineering designs with calculations (raw data) for the agreed Engineering works (dam/ headworks, irrigation infrastructure, livestock watering and municipal water supply abstractions, system layout and farm and access roads) and technical drawings. A review meeting will be held after month 8 to discuss this report and stakeholders' comments raised incorporated after the presentation.	5
Final Design Review Report	12 months after commencement of the contract	The Final Design Review Report shall incorporate stakeholders' comments raised after the presentation of the Draft Design.	5
Tender Documents	12 months after commencement of the contract	Tender documents shall be prepared in accordance with World Bank requirements to enable soliciting of construction bids for the works. They will include: bills of quantities based on current market rates, construction drawings and specifications for construction materials and workmanship, in addition to the conditions of application. Construction Supervision Manuals for all levels of parties who will be involved in supervision of the construction works shall also be presented at this stage.	5
Monthly progress reports	Submitted 1 st week of every month	A Brief report comprising a narrative and bar charts or other graphic presentation, showing details of the Consultant's progress, changes in the assignment schedule, impediments and proposed remedies will be submitted on a monthly basis. Reports should include a financial summary, indicating amounts invoiced, amounts disbursed, and any other pertinent financial details.	5

A workshop will be organized to discuss the Draft Design Review Report. The workshop will be facilitated by the Client and consultants will make PowerPoint presentations and provide concise reports for discussion.

Note: The abovementioned workshop is different from the expected stakeholder public consultative meetings and/or workshops to be organized and facilitated by the Consultant in the project-affected areas for information gathering (as part of Consultant's fieldwork) and stakeholder review and comment on draft documents during the course of the assignment.

8 QUALIFICATION OF THE FIRM AND KEY PERSONNEL

The consultancy firm should demonstrate experience in carrying out at least two (2) similar assignments in the last 10 years. The similarity of the projects shall be based on the design of a storage dam (earthfill, rockfill, RCC or gravity dam) and irrigation system with a command area of not less than 4,000 ha, and with experience in similar conditions with at least one (1) assignment in Sub-Saharan Africa. The value of the similar design assignment cited should be at least USD 400,000.

The study team should comprise experienced professionals which will include national/regional/international consultants as necessary to ensure study relevance and effectiveness in light of prevailing local conditions. The team should reflect an appropriate mix of disciplines, education, skills and experience, an understanding of underlying development issues, and regional experience. The team should be made up of specialists each with relevant qualifications in the corresponding disciplines and experience in undertaking studies related to irrigation development and watershed management.

The areas of expertise required include: irrigation engineering and agriculture development, watershed management, rural development, civil/infrastructure/hydraulic engineering, hydrology, financial and economic analysis, geotechnical engineering, institutional analysis and environmental and social impact assessment. The Consultant may optimize their personnel to demonstrate the competences required for the assignment. The time input and qualifications of the key experts are as follows:

Position	Person - Months	Competences
Dam Design/ Civil Engineer (Team Leader)	12	Bachelor's degree in Civil/Water Resources/Hydraulic Engineering and Postgraduate qualifications in Civil/ Water Resources/Hydraulic Engineering/, with a minimum of 15 years' experience in water resources planning and design and construction supervision of hydraulic structures such as dams, hydropower projects and irrigation systems; Must be a registered Engineer with a relevant professional body; and has experiences as a team leader and/or principal expert in designing projects of similar nature and size, funded by International financing Institutions in the last 10 years.; demonstrated experience not only in dam design and civil engineering but also in the overall management and coordination of complex, multi-disciplinary irrigation projects.
Irrigation and Drainage Specialist	12	Bachelor's degree in Civil/Irrigation/Hydraulic Engineering and postgraduate degree in Irrigation Engineering, with 10 years' experience in the planning studies, design and construction supervision of irrigation and drainage projects of similar nature and size. <i>The Irrigation and Drainage Specialist will review the design reports and perform design of the irrigation infrastructure.</i>
Agricultural Planner/ Agronomist	4	Bachelor's degree in Agriculture or Agronomy and postgraduate degree in Agronomy or related sciences with at least 10 years of work experience in commercially oriented irrigation or irrigated agriculture development projects. <i>The Agricultural Planner/Agronomist will review the Design report (Irrigable command area design - irrigation potential assessment,</i>

Position	Person - Months	Competences
		<i>soil surveys and land suitability studies, evaluation of crops, cropping patterns and markets, determination of irrigation water requirement and command area development) and update accordingly.</i>
Geotechnical Engineer	4	Bachelor's degree in Civil/Geotechnical Engineering and postgraduate degree in Geotechnical/Geotechnics Engineering and at least 10 years' experience in Geotechnical/Geotechnics studies, design, and construction supervision of hydraulic infrastructure projects of similar nature and size (ICOLD LHSD dam).
Engineering geologist	4	Bachelor's degree in Geology/Geotechnical/Civil Engineering and postgraduate degree in Geology/Engineering Geology and at least 10 years' experience in Geological/Geotechnics studies, design, and construction supervision of hydraulic infrastructure projects of similar nature and size.
Hydrologist	4	Bachelor's degree in Civil/Agricultural/Water Resources Engineering and Postgraduate qualification in water resources /hydrology, and at least 10 years' experience in use of water resources models for surface assessments as well as experience in use of GIS/remote sensing in river basins. <i>The Hydrologist will review the water resources assessment and sediment transport in the design report and update accordingly.</i>
Soil Specialist/ Pedologist	4	Bachelor's degree in Agriculture/Crop Science/Soil Science, Landuse Planning/Management and postgraduate degree in Geoinformation Science and Systems, Crop Science/Soil Science, Land Evaluation and at least 10 years' experience in soil investigation for irrigation and watershed projects.
Land Surveyor	4	Bachelor's degree in Land Surveying and postgraduate qualifications in Land Surveying or Geographical Information Systems with demonstrated experience in use of remote sensing/GIS applications. Minimum of 10 years' experience in engineering surveys.
Social Development Specialist	4	Bachelor's degree in Social Sciences/ Social Development/ Social Work and Social Administration and postgraduate degree in Sociology, Development Studies, or related fields with 10 years of work experience with projects of similar nature and size. The Specialist shall have demonstrated experience in gender mainstreaming in agricultural and irrigation projects, and shall be responsible for ensuring that gender and social inclusion requirements are reflected throughout the design and stakeholder engagement process.
Environmental Specialist	4	Bachelor's degree in Environmental Sciences or Natural Sciences and postgraduate degree in Environment studies or related fields and at least 10 years work experience in Environmental studies for projects of similar nature and size. Knowledge of World Bank Social and environmental safeguards is a must.
Quantity Surveyor	3	Bachelor's degree in Quantity Surveying or related fields and at least 5 years' work experience in preparing cost estimates/bills of quantities for construction of water infrastructure projects of similar value.

Position	Person Months	-	Competences
Total Man- Months	59		

9 DATA AND SERVICES TO BE PROVIDED BY THE CLIENT

Data and documentation on hydrological, meteorological, water quality and other relevant aspects of the river basins which the Client may have will be availed to the consultant; however, the consultant has the ultimate responsibility for collecting the required data and documentation which cannot be made available by the Client from official sources. The Client will:

- (i) Facilitate in establishing communication with the relevant institutions
- (ii) Liaise and assist the consultant in obtaining any other information and documents required from other government agencies and which the Client considers essential for conducting of the assignment
- (iii) Provide assistance to obtain work permits for staff of the Consultant
- (iv) Provide assistance in obtaining Customs and Tax Exemptions, where applicable, as detailed in Special Conditions of the Consultancy Agreement and General Conditions of Service
- (v) Arrange consultative meetings and ensure linkage with relevant stakeholders and district authorities and
- (vi) Provide any document like the feasibility study report, draft design report, on request that the consultant may require either for purposes of preparing bid documents or in the course of performing Detailed Designs.

The Consultant shall operate their own project office and shall bear all accommodation, local transportation, visas, and other costs necessary to carry out the assignment.

10 COSTS AND CONTRACT DETAILS

Proposals should indicate how the funds will be best utilized to achieve the objectives of the assignment. Whilst all of the Consultant's costs incurred in their participation, supporting the arrangement and running of national and district workshops must be included in the consultant's financial proposal, the costs of holding the workshops themselves (costs of venue, participants' expenses such as transport and accommodation, materials etc.) will be met by the Client and should not be included in the Consultant's financial proposals. The costs of all other consultations, meetings etc. required by the Consultant to adequately complete the assignment must be included in the financial proposals.

11 REPORTING AND SUPERVISION ARRANGEMENTS

The Client is the Ministry of Water and Environment. The Consultant will be directly supervised by the Water for Production Department on behalf of the Client. The Water for Production Department will ensure close coordination and participation of other Government Agencies to ensure information exchange.

The Client will hold discussions with the Consultant at various stages of the consultancy to assess work progress, discuss constraints and possible interventions to ensure quality and meet deadlines.

12 QUALITY MANAGEMENT REQUIREMENTS.

The Consultant will be required to demonstrate in their proposal evidence of adoption of the use of a Quality Assurance System (ISO 9001 or equivalent), as well as describe how quality control will be implemented in the course of the project.