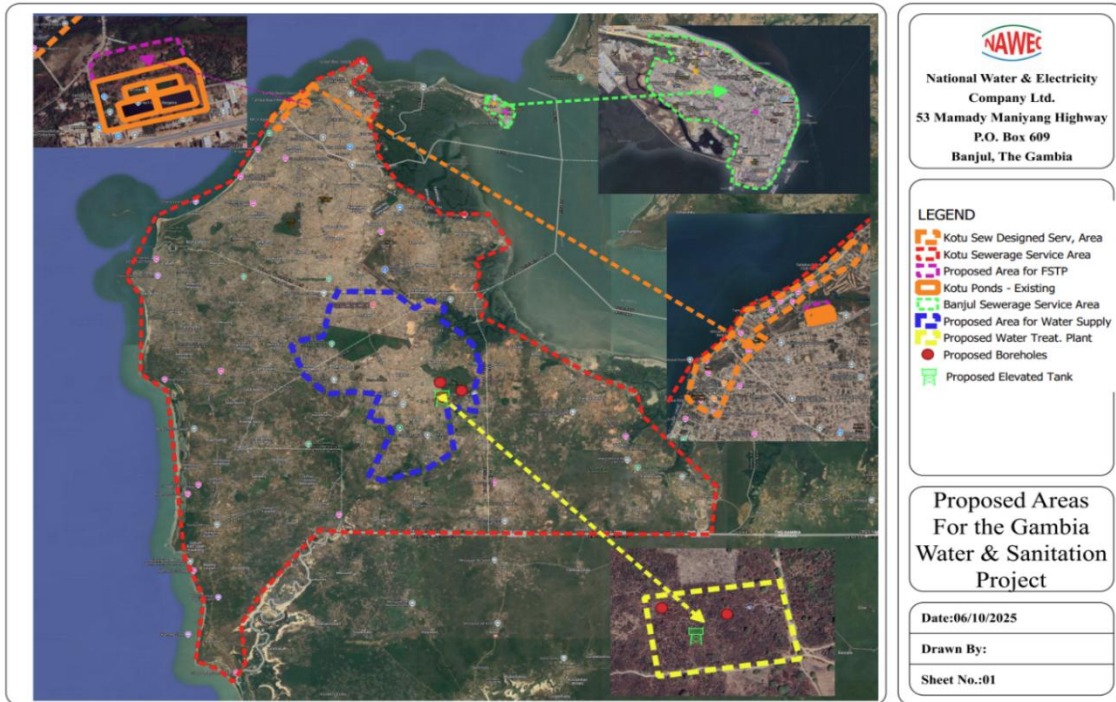


-REPUBLIC OF THE GAMBIA
MINISTRY OF PETROLEUM, ENERGY, AND MINES



TERMS OF REFERENCE

Consultancy Services for Feasibility Studies, Detailed Engineering Design, Procurement Support, Construction Supervision, and Defects Liability Support

*Urban Water Supply Systems in Kombo East and Urban Sanitation Infrastructure in Kotu and
Banjul*

The Gambia Water and Sanitation Project (WASAP)
Project ID: P513113

Document Control and Assignment Summary

Item	Description
Client	National Water and Electricity Company Limited (NAWEC) / WASAP Project Implementation Unit
Assignment area	Kombo East, including Brikama East; Kotu; and Banjul
Assignment scope	Urban water supply and urban sanitation components only
Indicative phases	Feasibility Study; Detailed Design; Procurement Support; Construction Supervision; Defects Liability Support
Selection method	Quality- and Cost-Based Selection (QCBS)
Contract form	Lump-sum for studies, design, and procurement support; time-based for construction supervision and DLP support

Scope boundary This TOR excludes rural sanitation, sector-wide institutional reform, transboundary water cooperation, and unrelated project components. Cross-cutting utility, environmental, social, climate, and operational tasks are included only where directly required for the urban water and urban sanitation investments.

A. BACKGROUND AND RATIONALE

1. The Greater Banjul Area is the country's principal urban and economic center. Urban water services face production constraints, intermittent supply, low pressure, aging infrastructure, limited storage, and high non-revenue water. Sanitation services in Banjul and Kotu are constrained by deteriorated sewerage assets, underperforming treatment systems, and inadequate fecal sludge management. WASAP will address priority infrastructure gaps through integrated urban water and urban sanitation investments.
2. As the first standalone Water Supply and Sanitation Project, with Performance-Based Conditions (PBCs) in the sector, WASAP will support the Government in laying the foundations for more resilient, inclusive, and financially sustainable water and sanitation services. In coordination with development partners, the project will finance priority infrastructure to reduce service gaps in the Greater Banjul Area, including new boreholes, treatment and storage facilities, expanding the distribution networks, household connections, and measures to reduce non-revenue water. It will also strengthen sanitation service delivery through investments in fecal sludge treatment plant and flood-resilient sanitation systems, while improving water resources monitoring and management. These investments will be anchored in a broader reform agenda, including tariff and targeted reforms, aimed at strengthening sector governance, enhancing NAWEC's operational efficiency, and improving financial sustainability. Through its performance-based approach, the project will help address long-standing institutional fragmentation and establish the building blocks for a more resilient and sustainable water and sanitation sector, paving the way for deeper private sector engagement over the medium term.
3. The assignment will prepare and supervise investments in two closely linked areas:

Component	Core investment scope
Urban water supply	Brikama East water treatment facilities; four boreholes; raw-water and treated-water mains; ground and elevated storage; clear-water pumping; medium-voltage power and backup supply; SCADA; approximately 50 km of distribution network; and approximately 6,000 new household connections.
Urban sanitation	Kotu fecal sludge treatment plant;

B. OBJECTIVES OF THE ASSIGNMENT

4. The overall objective is to prepare technically sound, climate-resilient, environmentally and socially compliant, economically justified, and procurement-ready urban water and sanitation investments, and to support their implementation through procurement, construction supervision, commissioning, and the defects liability period.

5. The specific objectives are to:

- Validate demand, service areas, beneficiaries, design criteria, and priority investment needs.
- Assess existing systems and identify least-cost, lifecycle-efficient, and operationally sustainable solutions.
- Prepare feasibility studies, preliminary designs, detailed engineering designs, bills of quantities, cost estimates, and complete procurement packages.
- Integrate climate resilience, energy efficiency, occupational and community health and safety, environmental and social requirements, and operational sustainability into all designs.
- Provide technical support throughout bidding and contract award.
- Administer and supervise works, including quality, cost, schedule, environmental and social compliance, testing, commissioning, handover, and defects correction.
- Build NAWEC capacity through structured training, on-the-job knowledge transfer, and complete O&M documentation.

C. SCOPE OF WORK

6. The services are organized into five phases. Activities may overlap where justified by the implementation schedule.

Phase	Scope	Primary outcome
1	Feasibility Study	Approved preferred investment options and feasibility-level safeguards, costs, risks, and implementation plan.
2	Detailed Engineering Design	Procurement-ready designs, technical specifications, drawings, BOQs, cost estimates, and O&M provisions.
3	Procurement Support	Technically responsive bidding process and completed technical evaluation support.

Phase	Scope	Primary outcome
4	Construction Supervision	Works completed in accordance with contracts, designs, quality standards, E&S requirements, budgets, and schedules.
5	Defects Liability Support	Defects identified, corrected, verified, and closed before final completion.

Phase 1: Feasibility Study

Mobilization, Data Review, and Inception

- Review the PAD, existing studies, designs, master plans, utility records, GIS data, asset records, environmental and social instruments, and applicable laws and standards.
- Confirm the assignment scope, study methodology, work program, staffing, quality assurance arrangements, consultation plan, data gaps, and required investigations.
- Establish document control, design review, risk management, and coordination procedures with the PIU and NAWEC.
- Prepare an inception-stage risk register covering technical, environmental, social, climate, financial, procurement, and implementation risks.

Socio-Economic, Service Area, spatial Trent and Demand Assessment

- Define and map the project service areas and validate target communities and beneficiary populations.
- Prepare population and household projections, including relevant gender, age, poverty, and vulnerability characteristics.
- Assess existing access, service quality, reliability, water quality, household expenditure, sanitation practices, affordability, and willingness to connect or use improved services.
- Prepare urban water demand forecasts and wastewater/fecal sludge generation forecasts for appropriate short-, medium-, and long-term horizons.
- Design and implement representative household and service-user surveys, subject to Client approval of the sampling methodology and instruments.
- Prepare a detail spatial assessment for the project area including LULC for the next 10 years horizon

Urban Water Supply Feasibility Study

Task area	Minimum requirements
Existing system assessment	Inventory and assess production, treatment, transmission, storage, pumping, distribution, household connections, metering, SCADA, telemetry, power supply, water quality, service continuity, and operational constraints.
Water resources and source assessment	Assess proposed shallow and deep borehole sources, yield, quality, treatment requirements, abstraction sustainability, pumping requirements, and risks affecting reliability.

Task area	Minimum requirements
Water balance and NRW	Establish a baseline water balance; identify major physical and commercial loss areas; assess metering, pressure management, leak detection, and district metered area requirements.
Hydraulic modelling	Develop and calibrate an industry-standard hydraulic model; assess pressure, velocity, storage, peak demand, fire flow where applicable, system bottlenecks, operational scenarios, and future expansion.
Options analysis	Compare alternative configurations for production, treatment, raw-water mains, transmission, storage, pumping, distribution, connections, SCADA, backup power, and phasing.
Preferred option	Recommend the least-cost, reliable, energy-efficient, climate-resilient, and operationally manageable solution, including implementation sequencing and preliminary design.

Urban Sanitation Feasibility Study

Task area	Minimum requirements
Existing sanitation system	Assess sewer networks, manholes, pumping stations, Kotu wastewater facilities, Banjul infrastructure, sea outfall, existing fecal sludge management (FSM), collection and transportation, emptying and disposal services, and operational constraints.
Condition and performance assessment	Use available records and targeted inspections to identify structural, hydraulic, mechanical, electrical, process, environmental, and safety deficiencies; define additional CCTV and cleaning investigations required for design.
Fecal sludge assessment	Quantify and characterize fecal sludge generation, collection, transport, <u>emptying and</u> disposal practices, seasonal variation, service coverage, and projected demand. Prepare a baseline diagnostic and excreta flow mapping , a valid shift flow diagram (SFD) for the targeted area, using Susan A/SFD promotion initiative methodology. Asses and develop a CWIS strategic and institutional plan. The assessment shall evaluate the institutional arrangement, traffic structures, and private sector engagement model .
Technology and capacity options	Compare FSTP and WWTP rehabilitation/expansion options, capacity sizing, mass balances, process performance, energy needs, O&M complexity, residuals handling, odor control, effluent standards, and resilience.
Site and routing assessment	Assess land requirements, access, drainage, flood exposure, sensitive receptors, interfaces with existing facilities, utility relocation, land acquisition, and construction constraints.

Task area	Minimum requirements
Resource recovery	Assess technically and financially realistic opportunities for treated effluent reuse, biosolids, or biogas applications without compromising treatment performance or public health.
Preferred option	Recommend a phased, affordable, operationally sustainable, climate-resilient solution and prepare preliminary engineering layouts and process diagrams.

Cross-Cutting Feasibility Assessments

Assessment	Required content
Climate and disaster resilience	Flooding, drought, extreme rainfall, sea-level influence where relevant, salinity risks, heat, power interruption, asset vulnerability, design adaptation measures, emergency operating arrangements, and residual risks.
Energy and GHG	Energy requirements, energy-efficient equipment, renewable energy opportunities where feasible, backup power, lifecycle energy cost, and GHG implications.
Environmental and social	Screening, alternatives analysis, land and livelihood implications, stakeholder engagement, community and worker health and safety, construction impacts, mitigation hierarchy, required E&S instruments, and design inputs.
Economic and financial	CAPEX, OPEX, lifecycle costs, affordability, cost recovery implications, economic benefits, EIRR/NPV where required, sensitivity analysis, and comparison of options.
Institutional and operational	Operations responsibilities, staffing, skills, laboratory and monitoring needs, preventive maintenance, spare parts, consumables, and implementation capacity directly related to the assets.
Implementation and procurement	Packaging, phasing, market considerations, implementation schedule, key risks, required investigations, permitting, land readiness, and cost contingencies.

Feasibility Study Outputs

No.	Output
1	Inception Report and updated risk register
2	Existing Systems and Service Assessment Report
3	Socio-Economic, Demand, and Affordability Assessment
4	Urban Water Hydraulic Model and Technical Assessment
5	Urban Sanitation, Wastewater, and Fecal Sludge Assessment
6	Options Assessment and Preliminary Design Report
7	Climate Resilience, Energy Efficiency, and GHG Assessment

No.	Output
8	Economic and Financial Analysis
9	Environmental and Social screening and required instruments at feasibility stage
10	Final Feasibility Study and Priority Investment Program

Phase 2: Detailed Engineering Design

7. Following approval of the preferred options, the Consultant shall undertake all investigations and prepare complete, coordinated, construction-ready designs. Design assumptions, criteria, calculations, drawings, specifications, quantities, and costs shall be internally checked and independently quality-assured before submission.

Detailed Surveys and Investigations

- Topographic, cadastral, route, utility, and setting-out surveys.
- Geotechnical investigations for structures, pipelines, treatment facilities, reservoirs, and pumping stations.
- Water quality, wastewater, fecal sludge, soil, groundwater, and other laboratory testing required for design.
- CCTV, cleaning, condition, and structural surveys of priority sewerage assets and the Banjul sea outfall, as required.
- Traffic, drainage, flood-level, access, constructability, land, and utility-conflict investigations.
- Confirmation of environmental and social baseline conditions and design-stage mitigation requirements.

Urban Water Supply Detailed Design

Design package	Minimum design content
Boreholes and raw-water systems	Borehole completion reports, recommended pump size, headwords arrangements, raw-water mains, monitoring, security, drainage, access, power, controls, and integration with treatment.
Water treatment facilities	Process, hydraulic, civil, structural, mechanical, electrical, instrumentation, chemical handling, water quality control, residuals management, safety, and site development.
Transmission and pumping	Alignment, pipe materials, hydraulic and surge analysis, valves, chambers, crossings, thrust restraint, corrosion protection, pumping, standby arrangements, and energy optimization.
Storage facilities	Ground and elevated reservoirs, sizing, structural design, inlet/outlet arrangements, overflow, washout, access, safety, level control, security, and site drainage.
Distribution and connections	Approximately 50 km of network, hydraulic optimization, zoning/DMA's, pressure management, valves, hydrants where applicable, meters, household connections, road crossings, reinstatement, and future connections.

Design package	Minimum design content
SCADA and automation	Functional design, architecture, communications, instrumentation, cybersecurity-related functional requirements, control philosophy, interfaces, data storage, alarms, reporting, remote monitoring and automation and commissioning requirements.
Power systems	Medium-voltage and low-voltage systems, civil and structural interfaces (switch gear room, transformer foundation, ventilation), standby generation, protection, earthing, lighting, energy efficiency, and renewable energy options where feasible.

Urban Sanitation Detailed Design

Design package	Minimum design content
Fecal sludge treatment plant	Design basis, process flow, mass balance, receiving station, screening, treatment, dewatering/drying, leachate and odor control, residuals handling, reuse/disposal, civil works, buildings, roads, drainage, power, controls, laboratory and safety systems.
Kotu WWTP rehabilitation/expansion	Process assessment and design, hydraulic profile, rehabilitation and expansion works, mechanical/electrical systems, energy efficiency, effluent compliance, sludge management, flood resilience, instrumentation, and commissioning.
Kotu and Banjul sewerage	Rehabilitation and replacement of priority sewer sections, manholes, pumping stations, mechanical/electrical equipment, screens, lifting equipment, rising mains, controls, standby power, access, traffic management, and reinstatement.
Banjul sea outfall	Condition assessment findings, rehabilitation or replacement design as justified, marine/coastal constructability, structural and hydraulic design, corrosion protection, monitoring, safety, and environmental safeguards.
Maintenance equipment	Technical requirements for jetting/cleaning trucks, CCTV inspection equipment, sewer plugs/balloons, lifting and workshop equipment, testing, training, spares, and after-sales service.

Cross-Cutting Design Requirements

- Apply approved national standards and recognized international standards, including applicable drinking-water, wastewater, structural, electrical, mechanical, occupational health and safety, and environmental requirements.
- Integrate climate-resilient design measures, flood protection, drainage, emergency operations, energy efficiency, safe access, maintainability, and security.
- Minimize land acquisition, livelihood impacts, service interruption, traffic disruption, and construction risks.
- Incorporate applicable mitigation measures from ESIAs, ESMPs, RAPs, stakeholder engagement requirements, and other project E&S instruments into drawings, specifications, BOQs, and bidding documents.

- Prepare design risk assessments, constructability reviews, interface matrices, and value-engineering recommendations.
- Ensure compatibility with NAWEC operating practices, existing assets, standard spare parts, and maintenance capacity.

Detailed Design Deliverables

Deliverable group	Contents
Investigations	Survey, utility mapping, geotechnical, laboratory, CCTV/condition, and site investigation reports.
Design basis	Approved design criteria, calculations, hydraulic/process models, mass balances, design risk register, and technical memorandum.
Drawings	General arrangements, plans, profiles, process, civil, structural, mechanical, electrical, instrumentation, SCADA, drainage, landscaping, access, and standard details.
Specifications and quantities	Deetail technical specifications, BOQs, measurement and payment provisions, equipment data sheets, schedules, and performance requirements.
Cost and implementation	Engineer's cost estimates, lifecycle cost updates, phasing, construction schedules, cash-flow forecasts, permits and land-readiness schedule.
Operations	Asset registers, O&M manuals/frameworks, preventive maintenance plans, spares and consumables lists, staffing and training plans.
Procurement packages	Complete bidding documents, Employer's Requirements where applicable, drawings, technical schedules, E&S provisions, and contract-specific technical appendices.

Phase 3: Procurement Support

- Finalize procurement-ready technical packages using the applicable World Bank Standard Procurement Documents and the Client's approved procurement strategy.
- Prepare and update technical specifications, drawings, BOQs, Employer's Requirements, engineer's estimates, qualification requirements, technical evaluation criteria, E&S provisions, and contract data inputs.
- Participate in pre-bid meetings and site visits; prepare responses to technical clarifications and, where required, draft addenda.
- Support technical evaluation of bids, including assessment of responsiveness, qualifications, methodology, work program, equipment, key personnel, E&S proposals, and proposed alternatives.
- Prepare technical inputs to bid evaluation reports and support clarification and contract finalization without altering the substance of bids.
- Update design documents and cost estimates to reflect approved procurement decisions before contract signature.

Phase 4: Construction Supervision and Contract Administration

Area	Consultant responsibilities
Mobilization and planning	Review contractor mobilization, work programs, construction methods, staffing, equipment, cash flow, quality plans, E&S plans, permits, insurances, and baseline schedules.
Contract administration	Act within delegated authority; maintain correspondence, records, instructions, approvals, notices, registers, and contract management systems; advise the Client on contractual matters.
Technical supervision	Review shop drawings, materials, equipment, method statements, temporary works, surveys, and design adjustments; maintain continuous site monitoring and supervision through qualified personnel.
Quality assurance	Approve inspection and test plans; witness factory and site tests; verify materials, workmanship, calibration, commissioning, and compliance with specifications.
Time and cost control	Monitor physical and financial progress, critical path, forecasts, quantities, payment applications, variations, claims, compensation events, and final accounts.
E&S and OHS	Monitor contractor compliance with ESMPs, labor and worker safety requirements, community health and safety, traffic management, grievance procedures, incident reporting, and corrective actions.
Stakeholder coordination	Coordinate with PIU, NAWEC, authorities, utilities, communities, contractors, and the World Bank; document progress and coordination meetings.
Testing and commissioning	Review commissioning plans; witness tests; verify performance guarantees; oversee trial operation; confirm training, spares, manuals, and readiness for handover.
Completion and handover	Inspect completed works; prepare punch lists; recommend substantial completion; verify as-built drawings, asset registers, O&M manuals, warranties, and handover documents.

Phase 5: Defects Liability Period Support

- Prepare a DLP inspection and expert-visit schedule before commencement of the DLP.
- Maintain a defects register and conduct periodic and event-driven inspections.
- Investigate defects, determine root causes, recommend corrective measures, and supervise remedial works.
- Verify retesting and performance after correction and advise on warranty obligations.
- Conduct final inspection, confirm closure of outstanding items, support final account close-out, and recommend final completion.
- Provide intermittent expert inputs; full-time site presence is not required unless justified by the nature of an unresolved defect.

Deliverables, Reporting, and Review

General Reporting Requirements

- All major reports shall include an executive summary, clear recommendations, updated risk register, action log, and appendices containing supporting data and calculations.
- Reports shall be submitted electronically in searchable PDF and editable native formats. Drawings, models, GIS data, calculations, BOQs, and databases shall be provided in their native formats.
- Unless otherwise agreed, the Consultant shall submit draft documents for Client review and shall provide a comment-response matrix with each final submission.
- Four hard copies of approved final major reports shall be provided, in addition to the electronic versions.
- All deliverables shall be written in English and use consistent units, terminology, numbering, and document control.

Indicative Deliverable Schedule

No.	Deliverable	Component	Indicative timing	Submission
1	Draft Inception Report	All	Month 1	4 hard copies + electronic
2	Final Inception Report	All	Month 1.5	4 hard copies + electronic
3	Urban Water Feasibility Study	Water	Month 3	Draft and final
4	Urban Water Preliminary Design	Water	Month 4	Draft and final
5	Urban Water Detailed Design	Water	Draft Month 6; final Month 6.5	Complete design package
6	Urban Water E&S Instruments / Updates	Water	Month 7	As required
7	Urban Water Procurement Package	Water	Month 7	Complete bidding package
8	Urban Sanitation Feasibility Study	Sanitation	Month 5.5	Draft and final
9	Urban Sanitation Preliminary Design	Sanitation	Month 7.5	Draft and final
10	Urban Sanitation Detailed Design	Sanitation	Draft Month 9.5; final Month 10	Complete design package
11	Urban Sanitation E&S Instruments / Updates	Sanitation	Month 10.5	As required
12	Urban Sanitation Procurement Package	Sanitation	Month 10.5	Complete bidding package

No.	Deliverable	Component	Indicative timing	Submission
13	Procurement Support Report - Water	Water	By Month 13 or upon completion	Electronic + 4 copies
14	Procurement Support Report - Sanitation	Sanitation	By Month 16.5 or upon completion	Electronic + 4 copies
15	Monthly Progress Summary	Applicable phase	Within 7 days after month-end	Electronic
16	Quarterly Progress Report	Applicable phase	Within 7 days after quarter-end	Electronic + 4 copies
17	Construction Completion / Close-out Report	Each works contract	Within 2 months of substantial completion	Electronic + 4 copies
18	Quarterly DLP Report	Each works contract	Quarterly during DLP	Electronic
19	Final Consultancy Report	All	One month before service completion	Draft and final
20	Final As-Built and Handover Review	Each works contract	Before final completion	Complete native and PDF files

Schedule control The Consultant shall validate the deliverable schedule in the Inception Report. Any adjustment must preserve procurement and construction milestones and requires Client approval.

Progress Report Content

Report	Minimum content
Monthly summary	Progress against schedule; staffing; key activities; decisions required; risks and issues; procurement or construction status; E&S/OHS status; financial summary; and next-month plan.
Quarterly report	Detailed physical and financial progress; schedule update and critical path; quality and testing; E&S/OHS performance; claims and variations; risk register; photographs and geotagged evidence where applicable; stakeholder issues; forecasts; and corrective action plan.
Special reports	Serious incidents; disputes; major claims; major variations; source inspection; factory acceptance testing; commissioning; and other matters requiring prompt Client decision.

Institutional and Coordination Arrangements

8. The Consultant shall report to the WASAP PIU and work closely with NAWEC's technical, operational, procurement, environmental, social, financial, and monitoring teams. The Consultant shall

coordinate with relevant national and local authorities, utility owners, affected communities, and other stakeholders as directed by the Client.

Party	Principal role
Client / PIU	Contract management, review and approval, coordination, procurement decisions, access facilitation, and communication with the World Bank.
NAWEC technical and operational teams	Technical data, design review, operational requirements, asset interfaces, commissioning, and knowledge transfer.
Consultant	Independent professional responsibility for studies, designs, procurement support, supervision, reporting, and quality assurance.
Contractors	Execution of works, contractor designs where applicable, quality control, E&S/OHS compliance, testing, as-builts, O&M manuals, and defects correction.

Inputs to Be Provided by the Client

- Access to available studies, records, maps, drawings, GIS data, asset information, E&S instruments, utility data, and procurement documents.
- Facilitation of access to project sites and coordination with public authorities and utility owners.
- Designation of focal points and timely consolidation of review comments and decisions.
- Available office or meeting facilities, where expressly agreed in the contract.
- No representation is made that available information is complete; the Consultant remains responsible for verifying information required for the services.

Contract and Payment Arrangements

Aspect	Arrangement
Proposal	Technical and financial proposals shall address all tasks, personnel, reimbursables, and deliverables required by this TOR.
Contract type	Lump-sum for feasibility, design, and procurement support; time-based for construction supervision and DLP support.
Payment basis	Payments shall be linked to approved deliverables for lump-sum services and verified personnel inputs/reimbursables for time-based services, as detailed in the Request for Proposals and contract.
Assignment duration	46.5 months, with overlapping phases as approved in the work program.

Consultant Qualifications and Experience

Firm Qualifications

- At least 15 years of experience in water supply and sanitation engineering.
- At least 10 years of experience in detailed design and construction supervision of water and sanitation infrastructure.

- Demonstrated experience with urban water treatment, transmission, storage, distribution, SCADA, wastewater, sewerage, pumping stations, and fecal sludge treatment.
- Successful completion of at least two comparable assignments financed by multilateral development partners within the last seven years.
- Demonstrated experience in Africa and with international conditions of contract, including FIDIC or equivalent.
- Established quality assurance, environmental and social, occupational health and safety, and design management systems.

Indicative Key Experts

No.	Position	Primary role
1	Team Leader / Senior Water and Sanitation Engineer	Overall leadership; design integration; contract administration; client coordination.
2	Deputy Team Leader / Resident Engineer	Day-to-day coordination and supervision; site leadership.
3	Water Supply / Hydraulic Engineer	Water demand, modelling, treatment, transmission, storage, distribution, and connections.
4	Wastewater and Fecal Sludge Process Engineer	FSTP/WWTP process assessment, technology selection, detailed design, commissioning.
5	Sewerage and Drainage Engineer	Sewer assessment, hydraulic design, rehabilitation, pumping, outfall interfaces.
6	Electro-Mechanical Engineer	Pumps, treatment equipment, power, controls, standby systems, testing.
7	SCADA / Instrumentation Specialist	Automation architecture, telemetry, instrumentation, functional specifications, commissioning.
8	Structural Engineer	Reservoirs, treatment structures, buildings, stations, and rehabilitation.
9	Geotechnical Engineer	Investigations, foundations, earthworks, pipeline geotechnics, constructability.
10	Quantity Surveyor / Cost and Contract Specialist	BOQs, cost estimates, payment certification, variations, claims, final accounts.
11	Quality Assurance / Materials Engineer	QA/QC systems, materials, laboratory and field testing, source inspection.
12	Environmental Specialist	E&S assessment, ESMP integration, monitoring, pollution prevention, reporting.
13	Social Specialist	Stakeholder engagement, land and livelihood impacts, GRM, social monitoring.
14	OHS Specialist	Worker and community health and safety, contractor systems, incident prevention and monitoring.

No.	Position	Primary role
15	Climate Resilience / Energy Specialist	Climate risk, resilience measures, energy efficiency, and GHG considerations.
16	Surveyor / GIS Specialist	Topographic and route surveys, setting-out, GIS database, asset mapping.
17	Socio-Economist	Surveys, demand, affordability, beneficiary and service-level analysis.
18	Financial / Economic Analyst	Lifecycle costing, economic and financial analysis, sensitivity assessment.
19	CAD/BIM Technicians and Site Inspectors	Drawings, document control, daily inspections, records, measurements.

9. The Consultant shall propose justified staff-months and deployment schedules by phase. Staff-month estimates in the proposal shall be sufficient for concurrent design, procurement, supervision, and DLP activities.

Minimum Requirements for Key Personnel

Position group	Indicative minimum requirements
Team Leader	Relevant engineering degree; professional registration; at least 15 years of relevant experience; senior responsibility on at least five major water or sanitation assignments; contract administration experience; international and African experience; fluency in English.
Senior technical specialists	Relevant degree; generally at least 10 years of relevant experience; demonstrated experience on comparable infrastructure and donor-financed assignments.
National / site-based engineers	Relevant degree or professional qualification; generally at least 5-10 years of relevant experience; familiarity with local conditions, standards, utilities, and construction practices.
E&S and OHS specialists	Relevant degree; at least 5 years of relevant experience; demonstrated experience with World Bank ESF or comparable multilateral requirements and infrastructure projects.
Support specialists	Relevant degree or diploma; demonstrated competence in surveys, GIS/CAD, cost control, data analysis, inspections, or document control, as applicable.

Quality Assurance, Data, and Ownership

- The Consultant shall implement a documented quality management plan, including discipline checks, interdisciplinary reviews, independent verification of critical calculations, and formal approval before submission.
- All models, GIS files, databases, survey data, design calculations, drawings, specifications, BOQs, photographs, and reports produced under the assignment shall become the property of the Client.

- The Consultant shall maintain secure, version-controlled records and shall hand over editable native files and final archival copies.
- The Consultant shall identify and promptly correct inconsistencies, errors, omissions, and interface conflicts at no additional cost where attributable to the Consultant.
- Confidential and personal data shall be handled in accordance with applicable requirements and the contract.

Applicable Standards and Reference Documents

10. The Consultant shall identify the complete hierarchy of applicable laws, regulations, permits, standards, codes, and guidance in the Inception Report. As a minimum, the services shall comply with:

- Applicable laws and regulations of The Gambia.
- World Bank Environmental and Social Framework and project-specific E&S instruments.
- Applicable World Bank procurement documents and contract requirements.

11. Applicable drinking-water quality, wastewater discharge, occupational health and safety, structural, electrical, mechanical, fire safety, and accessibility standards.

- Internationally recognized engineering standards where national standards are absent or less specific, subject to Client approval.

Annex 1. Deliverable Review Checklist

Review dimension	Minimum confirmation
Scope	All required assets, interfaces, phases, and cross-cutting requirements are covered.
Technical	Design basis, calculations, models, drawings, specifications, quantities, and equipment schedules are consistent.
Cost	BOQs, estimates, contingencies, taxes, price basis, and lifecycle implications are clear and reconcilable.
Constructability	Site constraints, access, utilities, phasing, temporary works, traffic, service continuity, and permits are addressed.
Operations	Access, safety, maintainability, staffing, spares, training, manuals, asset registers, and monitoring are addressed.
Climate and energy	Relevant hazards, resilience measures, energy performance, backup systems, and residual risks are documented.
E&S / OHS	Applicable mitigation measures are reflected consistently in designs, specifications, BOQs, schedules, and contractor requirements.
Procurement readiness	Package boundaries, qualification requirements, technical criteria, Employer's Requirements, drawings, specifications, BOQs, and risk allocation are complete.
Quality control	Internal checks, interdisciplinary coordination, comment-response matrix, revision control, and approvals are documented.