THE REPUBLIC OF UGANDA

Uganda Cancer Institute

IsDB
البنك الإسلامي للتنمية
Islamic Development Bank

Uganda Cancer Institute
Upper Mulago Hill Road; P.O. Box 3935 Kampala, Uganda
Telephone: +256 414 540 410 / +256 417 336 725
Website: www.uci.or.ug E-mail: procurement@uci.or.ug

ESTABLISHMENT OF THE UGANDA CANCER INSTITUTE WEST NILE REGIONAL CANCER CENTRE IN ARUA AND THE EASTERN REGIONAL CANCER CENTRE RADIOTHERAPY UNIT IN MBALE

REQUEST FOR EXPRESSION OF INTEREST
(CONSULTING SERVICES-FIRMS)

COUNTRY: **THE REPUBLIC OF UGANDA**

PROJECT: **ARUA REGIONAL ONCOLOGY CENTRE AND RADIOTHERAPY UNIT IN MBALE**

SECTOR: **CONSULTANCY**

SUBJECT: **CONSULTANCY SERVICES FOR DESIGN AND CONSTRUCTION SUPERVISION OF THE UGANDA CANCER INSTITUTE WEST NILE REGIONAL CANCER CENTRE IN ARUA AND THE EASTERN REGIONAL CANCER CENTRE RADIOTHERAPY UNIT IN MBALE**

REF. NO.: **UCI/IsDB/CONS/25-26/00064**

DATE: **20TH APRIL, 2026**

Table of Contents

DETAILED TERMS OF REFERENCE

1. PROJECT BACKGROUND

1.1 Overview

The Government of the Republic of Uganda (GoU) represented by the Uganda Cancer Institute (UCI) has received financing from the Islamic Development Bank towards the establishment of the West Nile Regional Oncology Centre in Arua City (also called the Arua Regional Oncology Centre) and the Radiotherapy Unit of the Eastern Uganda Regional Oncology Centre in Mbale City, and intends to utilize part of the funds towards Consultancy Services for the Detailed Design and Supervision for the Construction and Equipping of the aforementioned facilities.

The Consultancy Services shall be executed in two (02) Lots as follows:

Lot1: Proposed West Nile Regional Oncology Centre (WNROC)in Arua City, hereafter also referred to as the Arua Regional Oncology Centre.

Lot2: Radiotherapy Unit for the Proposed Eastern Uganda Regional Oncology Centre (EUROC) in Mbale City, hereafter also referred to as the Mbale Regional Oncology Centre.

Offers to this Request for Proposal shall be submitted on an all-or-none basis. The Consultant must bid for all Lots; otherwise, the bid will be void".

1.2 Cancer Burden and Access to Oncology Services in Uganda

Uganda is experiencing a sustained and increasing cancer burden. Recent estimates indicate that Uganda records approximately 32,000-35,000 new cancer cases annually, with more than 22,000 cancer-related deaths each year, reflecting a very high mortality-to-incidence ratio. A significant proportion of patients present at Stage III or Stage IV disease, when treatment options are more complex, costly, and less likely to achieve curative outcomes.

Historically, cancer diagnosis and treatment services in Uganda have been concentrated at the Uganda Cancer Institute (UCI) main facility in Kampala. This centralization has resulted in long waiting times for services, overcrowding, delays in initiation of treatment, increased financial hardship for patients traveling long distances and treatment interruptions due to logistical and accommodation challenges.

Patients from Northern, West Nile, and Eastern Uganda - including those in Arua and Mbale - often travel hundreds of kilometres to access oncology services. This geographic inequity has contributed to delayed diagnosis, reduced treatment adherence, and poorer clinical outcomes.

1.3 Rationale for Establishment of Regional Oncology Centres

Common cancers in Uganda – including cervical, breast, prostate, liver, and oesophageal cancers – often require multimodal treatment incorporating surgery, chemotherapy, and radiotherapy. Radiotherapy is required in an estimated 50-60% of all cancer cases as part of curative or palliative treatment. The absence of regional oncology infrastructure significantly limits effective treatment delivery. As a result, access gaps remain substantial, contributing to avoidable mortality.

In response to the growing cancer burden and inequitable access to care, the Government of Uganda adopted a decentralization strategy aimed at establishing regional oncology centres to expand service delivery closer to patients. Arua was strategically selected to serve the West Nile sub-region, including cross-border populations, while Mbale was identified as a critical hub for Eastern Uganda, where cancer service gaps remain significant.

1.4 Overall Objectives of the Project

The establishment of regional oncology infrastructure in Arua and Mbale therefore represents a strategic response to the following aims and objectives:

- To reduce congestion at UCI
- To improve equitable access to life-saving radiotherapy
- To strengthen inpatient and surgical oncology capacity at the regional level
- To improve treatment continuity and survival outcomes

1.5 Objective of the Assignment

The overall objective of the assignment is to design and supervise the construction and equipping of the West Nile Regional Oncology Centre in Arua City and the Radiotherapy Unit of the Eastern Uganda Regional Oncology Centre in Mbale City in accordance with professional engineering standards and environmental social safeguards best practices.

1.6 Site Location

The proposed sites for the projects are owned by the Government and have no encumbrances or resettlement issues. Arua City lies in the North Western Corner of Uganda between latitude 030 10’N and 300 50’N and longitude 300 30’E and 310 30’E. Located 520km north of Uganda’s capital Kampala, it is bordered by the Democratic Republic of Congo on the west and is 75km from the South Sudan border to the North. The City is a hub of trade and commerce with vast investment and tourism opportunities.

Mbale is a city in the Eastern Region of Uganda approximately 225 kilometers northeast of Kampala, on an all-weather tarmac highway. The coordinates of the city are 1°04'50.0"N, 34°10'30.0"E. The city also lies on the railway from Tororo to Pakwach. Mount Elgon, one of the highest peaks in East Africa, is approximately 48 kilometers, north-east of Mbale.

2. STRATEGIC SCOPE OF THE ASSIGNMENT

2.1 Arua Comprehensive Cancer Care Facility

Under the Islamic Development Bank (IsDB) Loan financing, the Arua Regional Oncology Centre shall be developed as a comprehensive cancer care facility. This section outlines the essential physical construction elements and the supporting systems necessary for establishing a comprehensive cancer care facility. The specifications below represent the minimum requirements to be incorporated into the Arua facility's design.

Table 2-1 Key Facilities and Requirements for the Arua Regional Oncology Centre

Key Facilities	Minimum Requirements
1. Radiotherapy	• Two (02) Linear Accelerator (LINAC) Bunkers • One (01) HDR Brachytherapy Bunker • CT Simulation • Treatment Planning • Dosimetry and Quality Control systems • Radioactive Storage • Consultation Rooms • Nursing station • Patient waiting area
2. In-Patient Department (80 Beds)	• Oncology wards (male/female/paediatric segregation) • Isolation rooms • Nurse stations • Clean and soiled utility rooms • Family counselling rooms • Support service areas
3. Surgical Oncology	• Operating theatres (designed for oncology procedures) • Pre-operative and post-operative recovery rooms • Sterile processing interface • Scrub and sterile corridors • Surgical preparation rooms
4. Intensive Care Unit	• Oncology-dedicated ICU beds • Isolation provisions • Medical gas infrastructure • Direct adjacency to surgical oncology
5. Chemotherapy Unit	• Infusion bays • Cytotoxic preparation room (compliant with hazardous drug handling standards) • Drug storage • Waste handling area
6. Diagnostic Imaging	• Imaging preparation • Imaging rooms • Reporting rooms • Patient preparation areas
7. Other Hospital Units	• Emergency Department • Out-Patient Department • Diagnostic Laboratory

Key Facilities	Minimum Requirements
	• Palliative Care
8. Support Services	• Kitchen • Laundry • CSSD • Medical Records • Radioactive Storage • Administration • Engineering (BME and FM) • External Works • Circulation and Parking • Water Storage Tanks • Emergency Power Supply • Backup Generator • Medical Gas System • Waste Management

The West Nile Regional Oncology Centre in Arua City therefore shall be designed to function as a full-service regional oncology hub, capable of delivering integrated cancer care across the continuum of diagnosis, treatment, inpatient management and critical care.

2.2 Mbale Radiotherapy Unit

In Mbale, the IsDB Loan shall finance the construction of a Radiotherapy Unit within the broader Eastern Uganda Regional Oncology Centre in Mbale framework. The other components at Mbale, including OPD, IPD, surgical oncology, laboratories and others shall be financed under parallel separate arrangements by the Government of Uganda and the Austrian Government.

Table 2-2 Key Facilities and Requirement for the Eastern Uganda Regional Oncology Centre in Mbale

Key Facility	Minimum Requirements
Radiotherapy Unit	• Two (02) Linear Accelerator (LINAC) Bunkers • One (01) HDR Brachytherapy Bunker • CT Simulation • Treatment Planning • Dosimetry and Quality Control systems • Radioactive Storage • Consultation Rooms • Nursing station • Patient waiting area

Accordingly, this Consultancy assignment shall strictly limit its design and supervision scope in Mbale to the IsDB-financed radiotherapy unit and associated interface coordination

2.3 Rationale for Specialized Design and Supervision Services

The Consultant will be responsible for the comprehensive design, detailed engineering, documentation, statutory approval management, and supervision necessary to successfully complete the state-of-the-art West Nile Regional Oncology Centre in Arua and the Radiotherapy Unit in Mbale.

The general and specialized systems below represent the minimum requirements for a fully functional facility.

Table 2-3 Overview of Specialized Multidisciplinary Requirements

Disciplines	Key Requirements
Civil, Structural, and Architectural (CSA) Works	• **Concept Development:** Translating client needs into schematic designs and floor plans. • **Spatial Planning:** Organizing interior spaces for flow, navigation and functionality. • **Building Regulations:** Ensuring designs comply with local zoning laws and building codes. • **Site Development:** Designing, grading, and evaluating terrain. • **Structural Analysis:** Assessing the feasibility and safety of the architectural design. • **Load Calculation:** Designing the framing, foundations, and structural supports • **Radiation Shielding:** Specialized high-density concrete and shielding the LINAC and Brachytherapy Bunkers. • **Infrastructure Design:** Planning water drainage, sewage, and road access. • **Foundation Assessment:** Analyzing soil conditions to determine appropriate foundation types. • **Space Planning & Layouts:** Detailing, furniture placement, and optimizing flow. • **Material Selection:** Choosing finishes, lighting, and materials based on durability, acoustics, and fire safety. • **Lighting Design:** Coordinating light, ambiance, and fixture placement. • **Project Management Support:** Reviewing construction, answering contractor questions, and resolving site issues. • **Documentation:** Producing construction drawings and specifications
Medical Planning and Biomedical Engineering	• Equipment-CSA-MEP works interface coordination, • Compliance with international radiation safety standards (including IAEA guidance).
Mechanical, Electrical, and Plumbing (MEP) Solutions	• **Mechanical Systems:** Specialized HVAC systems in critical areas to maintain required air changes, controlled temperature, humidity, and air quality, ensuring sterile conditions and patient comfort.

Disciplines	Key Requirements
	• **Electrical Systems**: A robust electrical infrastructure including transformers, backup generators, fuel system and UPS units • **Plumbing Systems:** Efficient installations covering domestic water supply, drainage, and wastewater treatment, complemented by rainwater harvesting systems, all designed to maintain high hygiene standards and promote sustainability. • **Medical Gas Systems:** Centralized production and distribution of medical gases • **Cleanroom infrastructure:** For chemotherapy preparation e.g. fume hoods, isolators and pass-through boxes. • **Pneumatic Tube System**: An internal transport system connecting hospital departments to facilitate the rapid movement of samples, documents, and small medical items. • **Lifts**: Dimensioned to accommodate hospital beds. • **Safety and Emergency Systems:** Fire detection, alarm, suppression, smoke management, and emergency lighting systems. • **Low Current Systems:** Integration of CCTV surveillance, access control, public address system, nurse call system, structured cabling, voice and data networks to support communication, monitoring, and security. • **Building Management System (BMS):** A centralized platform to monitor and manage all MEP systems, improving energy efficiency and streamlining operations. • **Other General Equipment:** Kitchen, laundry, waste management, cold storage etc.
Hospital Information Systems and Clinical Software	• **Digital Infrastructure:** Design of a resilient specialized hospital network and server room infrastructure. • **Digital Integration:** Seamless integration planning Hospital Information Systems (HMIS/RIS/PACS/LMIS/CMMS) that are tailored to the needs of a modern oncology facility, to manage the vast data generated by diagnostic and treatment devices and enhance clinical, administrative, and technical operations.

2.4 Rationale for BIM Services and the Digital Twin

UCI mandates the use of Building Information Modelling (BIM) in the design and delivery of all major infrastructure projects. Using BIM in design and construction to create 3D data-rich models enhances collaboration, reduces errors, and helps to control costs throughout a project's lifecycle. By enabling clash detection, real-time updates, and improved visualization, BIM streamlines workflows and ensures better efficiency.

During the construction phase, the BIM model accumulates data as it evolves from one stage to another. The Digital Twin integrates this multi-stage information to depict the current state of

the facility. Prior to handover and commencement of the operational phase, the Consultant will coordinate and streamline asset data collection such as maintenance schedules, equipment information etc for integration with a maintenance and asset management tool that will enable real-time tracking of equipment performance, preventive maintenance schedules and work orders, ensuring operational reliability, minimizing downtime and informed decision-making.

Table 2-4 Overview of BIM Delivery

Phase	Key Requirements
Project Phase	• **BIM Execution Plan:** Submission of a dedicated and detailed Multidiscipline BIM Execution Plan for prior approval. • **Project Information Model:** A comprehensive dataset spanning from the Client Brief, Concept, Definition, Design, Build and Commission • **RIBA Plan of Work 2020:** Strategic Definition, Preparation and Brief, Concept Design, Spatial Coordination, Technical Design, Construction, Handover, Use • **3D Modelling:** Visualization before construction. • **Clash Coordination:** Detecting interference between trades before construction. • **Quantity Take-Off**: Generate accurate quantification from fully coordinated 3D models. Quantity take-off automatically updated to reflect changes in the model. • **Constructability Review:** Resolving constructability issues and respond to RFIs to prevent work stoppages and wastage of material. • **Energy Optimization:** Detailed design of energy infrastructure; identify the best path to sustainability.
Handover and Closeout	• **Asset Information Model:** Documentation, Non-Graphical Data and Graphical Model (Digital Twin) • **COBie:** Use the COBie (Construction Operations Building Information Exchange) standard to streamline integration for specified assets and ensure structured data transfer for Facilities Management (FM).

PHASE 1

3. FUNCTIONAL PROGRAMMING AND MASTER PLANNING

3.1 Objective

This phase shall define the clinical service model, operational workflows, spatial requirements, radiation safety hierarchy, equipment interfaces, and long-term expansion strategy prior to commencement of detailed architectural and engineering design.

The Consultant shall ensure that the functional planning process eliminates downstream design conflicts, optimizes clinical efficiency, ensures radiation safety compliance, and prevents irreversible construction-stage errors.

The objective of the Phase 1 Component is to establish a comprehensive, evidence-based Functional Program and Master Plan for the proposed UCI Regional Centres in Arua and Mbale, in alignment with the approved project objectives and international oncology facility planning standards.

3.2 Planning, Concept Design, and Functional Integration

The Consultant shall establish detailed functional and spatial basis for the entire complex through the activities below. Special attention shall be given to minimizing "spaghetti workflow" and reducing patient stress in treatment zones.

- Obtain the final functional program and all requirements from the Client (UCI) and user representatives. Conduct formal discussions to review, validate, and finalize the specific space, flow, and operational needs of the specialized units.
- Prepare a comprehensive Master Layout Plan, spacial planning and building plans. The design must incorporate strategic provisions for future vertical and/or horizontal expansion without disrupting the facility's day-to-day operations or necessitating the decommissioning of critical units.
- Ensure efficient movement from registration to consultation, imaging, treatment and discharge
- Ensure minimal cross-traffic between high-risk and low-risk areas.
- Logical sequencing between CT Simulation, Treatment Planning, LINAC treatment rooms, Recovery areas
- Separate movement corridors for patients, clinical staff, service personnel and waste disposal
- Execute all required site surveys and Environmental Impact Assessments in compliance with local law.
- Plan, execute, and document technical visits. Allow for at least three (03) visits to relevant regional entities with representatives not exceeding three (03) on behalf of the Client and five (05) for the Consultant. The purpose is to collect data on best practices for specialized oncology services, engineering systems, and technical features to inform the final design. The cost must be accounted for in the Financial Proposal at a per diem rate of $650 per day.

The Consultant shall produce the following deliverables for formal approval before proceeding to Detailed Engineering Design.

Table 3-1 Summary of Functional Programming and Master Planning Deliverables

No.	Scope	Minimum Deliverables
1	**Functional Program Report**	• Patient volume projections • Departmental functional projections • Staffing and operational assumptions • Vendor-neutral equipment schedule • Radiation safety functional framework
2	**Approved Space Program**	• Room-by-room area allocations • Net and gross area calculations • Functional adjacencies • Circulation allowances • Technical service spaces This shall form the baseline for detailed design and BOQ preparation.
3	**Workflow Diagrams**	• Patient flow diagrams • Staff flow diagrams • Equipment servicing flow diagrams • Waste disposal pathways • Emergency evacuation routes • Radiation Zoning Plan - a formally documented radiation zoning map showing Controlled areas, supervised areas, public areas, access controls, shielding logic framework

3.3 Methodology Requirements

The Consultant shall:

1. Conduct stakeholder consultations with UCI.
2. Undertake site analysis (geotechnical, topography, utilities, access).
3. Review regulatory requirements for radiation facilities.
4. Conduct functional workshops with the clinical and engineering teams.
5. Develop adjacency matrices and bubble diagrams prior to schematic design.

3.4 Phase 1 Approval Milestones

No Detailed Engineering Design shall commence until:

1. The Functional Program Report is approved by the Client.
2. The Space Program is formally endorsed.
3. The Radiation Zoning Plan is cleared by relevant regulatory authorities (Atomic Energy Council).

PHASE 2

4. DETAILED ENGINEERING DESIGN

4.1 Objective

The objective of the Phase 2 Component is to prepare complete, coordinated, and fully compliant Detailed Engineering Designs (DED) for the Arua Regional Oncology Centre and the Radiotherapy Unit for the Mbale Regional Oncology Centre.

1) The Consultant shall ensure that the scope of design services reflects the financing structure and implementation boundaries defined in the PAD.

4.2 Detailed Design, Engineering, and BIM Delivery

2) The Consultant shall prepare conceptual, schematic and detailed designs for the facilities and requirements described in Tables 2.1 and 2.2. The detailed, coordinated, multidisciplinary engineering designs shall be executed using BIM methodology while ensuring design collaboration in a Common Data Environment (CDE).

3) Execute the full range of engineering services required for the successful construction and completion of the project, including:

    a) Detailed structural design for all buildings, including specialized high-density concrete and calculations for LINAC/Brachytherapy Bunkers (radiation shielding) with certified shielding calculations. As a mandatory requirement, radiation shielding calculations shall be independently reviewed and certified by a qualified Medical Physicist or Radiation Protection Expert prior to approval.
    b) Provide for structural loading and incorporate seismic and soil considerations.
    c) Internal and external sanitary, plumbing, drainage, medical gas plant (MPGS), water supply systems (raw, potable, purified/R.O., hot, dual-pipe recycled water), and waste/sewage treatment (STP).
    d) Design systems for the effective treatment and disposal of hazardous refuse, emissions (from specialized labs/chemo), and general waste (garbage collection, incineration).
    e) Internal/external electrical power, street lighting, electronic/communication systems, HVAC (specialized systems for critical areas), Building Management Systems (BMS), fire detection/protection, and vertical transport (Elevator installations).
    f) CCTV, access control, public address system, internet connectivity, Nurse Call System, and PABX installations.
    g) Sustainable Systems: Integration of Solar Energy use, stormwater drains, and rainwater harvesting systems.

4) BIM Modeling and Coordination:
    a) Prepare 3-D perspectives and detailed models on a suitable scale using BIM/Autodesk Revit.
    b) Prepare and issue fully coordinated drawings based on validated inputs from all sub-consultants and equipment manufacturers, ensuring all services are efficiently adjusted and routed within the available space.
    c) Generate complete working details, schedules, and specifications for all elements.

5) Prepare complete and comprehensive Room Data Sheets (RDS) for every room, especially specialized areas (ICU, Operating Theatres, Bunkers). RDS must include detailed elevations of all four walls showing the location, type, and exact height from the finished floor level (FFL) of all electrical sockets, sanitary fixtures, and Medical Gas Piping System (MPGS) points/installations.

4.3 Documentation, Approvals, and Procurement Support

6) The Consultant shall finalize all documentation required for statutory compliance, tendering, and contract award.

    a) Manage the entire process for preparation and securing approval of plans from all relevant authorities or Statutory Bodies (AEC, NEMA, Local Authority). This includes obtaining any required change and conversion of land use for the project.
    b) Cost Estimates and Documentation:
        - Prepare the Bill of Quantities (BOQ), detailed measurement sheets, and rate analysis for non-schedule items (supported by specifications and market rate analysis) for the preliminary and detailed cost estimates.
        - Prepare complete Bid Documents for tendering purposes, strictly following the IsDB Procurement Manuals and General Conditions of Contract, ensuring the documents adequately describe the whole project for placing the main Contractor and subsidiary contractors.
    c) Project Control and Handover:
        - Assist the Client in the preparation of PERT-CPM charts and utilize the Critical-Path-Method (CPM) in project management to ensure timely completion.
        - Generate As-Built drawings/completion drawings upon substantial completion, reflecting the final configuration of the facility.
        - Prepare detailed space planning concepts for the placement of medical/office equipment and furniture.

4.4 Planning of Clinical and Non-Clinical Areas

The following is a brief guide to the work required for micro space planning complete with medical equipment, furniture, office equipment, plantroom, medical and non-medical services - clearly showing outlines of the area planned by the Architect and the construction position/stage at site.

7) The Consultant shall take the following into consideration.

8) Prepare room-wise micro space planning of the area/services rendered thereon under different sub-heads of the utilities highlighting such areas with equipment templates, their size (LxWxH), quantities and location points.

9) Provide necessary layouts of space on micro planning level, with templates of proposed furniture and equipment at the appropriate/requisite points. This shall contain details of each sub-head, highlighting the type, numbers, make and details of vendors with brief of equipment proposed under different sub-heads, also the layout showing movement plan and details of material being proposed for partitioning and wet area planning where applicable. The technical specifications for equipment and materials shall be substantiated with vendors catalogues.

10) List out the list of equipment and append their specifications and supporting vendors specification, considering which the Consultant has planned the designated area of service.

11) Provide advice on the type and quality of material to be used for wall surfaces, flooring and false ceiling of specialty areas including casualty, operating theatres, laboratories, imaging, ICU's etc.

12) Provide a quality assurance plan for the planning/placement of equipment, highlighting all CAUTIOUS points to take care of during execution of works, and keeping in view the work already executed that may not require dismantling.

13) Plan the different functional areas of the facility considering the detailed requirements of each function.

14) Include area wise facility segregation and identification using color coded strips to facilitate smooth flow of patient traffic

Below is a brief on a few typical functional areas to be taken care of during the planning process: -

4.4.1 Outpatient Services

15) Take into consideration the typical functional requirements of triage, adjusting the same in physical facilities and space provided like general facilities clinics of the different medical disciplines and supporting facilities involved.

16) Include area wise facility segregation and identification using color coded strips to facilitate smooth flow of patient traffic in the OPD, planning the room layout of the consultation rooms for the various specialties to be housed in the facility, registration counter, help desk for incoming patients and waiting area.

4.4.2 Inpatient Services (Wards and Rooms)

17) Determine a functional layout that avoids use of the same space for movement of equipment and medical staff. Greater emphasis should be placed on use of technology in

providing nursing care than on nursing manpower. Focus on how to minimize work of Nursing Staff and to provide basic amenities to patients, ancillary accommodation, utilities, specialty ward etc.

18) The following should be planned and provided for in an organized manner:
- Necessary equipment, essential drugs storage and other requirements for patient care.
- Regulated patient access facility for visitors and attendants.
- Permitting monitoring of patients from control Desk and remote station.
- Detailed space and furniture planning.
- Utilities layout along the nurses' counters.

4.4.3 Intensive Care Unit

19) Permit continuous monitoring of critically sick from the control Desk and from remote station. The circulation area around the high dependency bed should be such that ground access to the patient remains always obstruction free.

20) Protective isolation should be secured to prevent transfer of infection of high dependency patients.

21) Installation of equipment and placement of other portable equipment keeping in view patient and staff movements and the positions for power sockets/switches and controls for ventilation, temperature, relative humidity and noise level.

22) Ensure a resilient type of flooring to provide for dampening of the sound level of moving equipment and staff.

23) A micro planning of space keeping in view check list of equipment is required in ICU.

4.4.4 Emergency/Casualty:

24) Emphasis shall be on TRIAGE principle and the Consultant Shall plan and prepare the detailed space and equipment planning. Prepare the area-wise furniture and utilities layout.

25) Plan the Triage/Observation areas for smooth and undisturbed patient flow with optimum utilization of the space and ensuring time saving in administering health care with enhanced patient safety.

4.4.5 Medical gases pipeline system

26) Decide the areas to be covered with MGPS based on latest prevailing international norms.

27) Prepare the detailed technical specifications and Bill of Quantities for tendering.

28) Prepare the area wise flow requirements and the pipe sizing designs based on the flow expectancy so worked out in line with the international design standards as per Health

Technical Memorandum (ref BS HTM 02-01A&B).

4.4.6 CSSD

29) Review the existing layouts for area-wise positioning of equipment and furniture and identify equipment gaps to be included at preparation of detailed technical specifications for tendering.

30) Optimize the existing area wise flow of the utilities.

4.4.7 Kitchen/Dining

31) This shall be planned in view of the staff, students, visitors, OPD patients, in-patients and attendants. Devise means to separate or optimize the flow of the utilities for staff/students and patients/attendants, for example, how to ensure staff on duty don't get delayed in avoidable queuing.

32) Plan keeping in view Outsourcing Supplies and Sale Principle. Prepare the detailed space and storage planning.

33) Recommend a suitable package for equipment and infrastructure and prepare the detailed technical specifications and Bill of Quantities keeping in view that fact that the space may be let out to an outsourced provider. Plan the equipment and infrastructure based on the estimated load of the hospital.

4.4.8 Operation Theaters

34) The Operating Theatres (OTs) should be designed in such a way that it may not be reserved rigidly for use of a particular specialty, and it should be of such a character so that it may be easy for all surgeon and nurses to use them without familiarizing themselves every time with a new set of conditions.

35) Review the technical features of the Theatre Panels that are already in the Client's possession and to ensure compatibility and seamless connectivity and synchronization with the design of the BMS to be provided.

36) The theatre operating table should be positioned in such a way so that utility services, including medical gas, lead from the ceiling and floor and there should not be any overhead beam or loose pipe/cables etc. trailing on the floor. The circulation area around the table be such that ground access to the patient remains always obstruction free.

37) The walling, flooring and ceiling should be advised of such nature which should be easily washable, non-staining, impervious and moderately electro conductive.

38) The aeration and HVAC system should meet international standards for infection prevention and control (Ref. ASHRAE)

39) Cater for all necessary required facilities for surgeons and attending staff when they are in OT's for long hours. Moreover, as the complex operations can be for teaching purpose, also make other provisions outside the OT for usability of such students/faculty without interfering operation. This includes remote access (telemedicine). Plan for video recording and transmission of theatre operations.

40) Review the existing equipment - both medical and ICT/Telemedicine - that is already in the Client's possession and identify equipment gaps to be included at preparation of detailed technical specifications for tendering.

4.4.9 Laboratory and Blood Bank Services

41) Review existing architectural layouts and laboratory equipment/furniture locations; optimize the designs and make necessary provisions for utilities.

42) The walling, flooring, worktops (e.g. reception desk) and ceiling should be advised of such nature which should be easily cleaned, non-staining, impervious and moderately electro conductive.

43) Review the existing equipment and furniture that is already in the Client's possession or undergoing procurement and identify gaps to be included at preparation of detailed technical specifications for tendering.

44) Ensure compliance to the mandatory regulatory requirements and advise on measures necessary for the attainment of international Accreditations (ref. SANAS, CAP)

4.4.10 Waste Management System

45) Prepare the detailed space and equipment planning. Preparing the area-wise infrastructural and utilities layout.

46) Ensure compliance to the statutory requirements for the normal and bio-waste and its disposal in the color- c o d e d packs as per the standard guidelines

4.4.11 Pharmacy Services

47) Plan to keep in view the Outsourcing Supplies and Sale Principle. Prepare the detailed space and storage planning.

48) Prepare the area wise infrastructural and utilities layout with inward receiving/inspection and issue counters.

4.4.12 Hospital House Keeping Services

49) Prepare the area-wise infrastructural and utilities layout with facilities including washrooms and lockers.

4.4.13 Medical Records Section

50) Plan the location of the Medical Records section. Prepare the detailed space and storage planning.

4.4.14 Ambulance Services

51) Plan the Ambulance parking and landing bay. Plan and advise to organize ambulance services in a such a way so that it may enter emergency area through separate and hindrance free route. And relatives and attendants of such patients may be planned to be kept at a distance from the emergency treatment area.

4.4.15 Security Services

52) Plan for sheltering within both open and covered areas on discriminatory basis.

4.5 Water Supply

Water is one of the critical utilities in any medical facility yet therefore it must not be taken for granted. Design of water supply and sanitation system for the proposed Arua ROC will require the expertise of competent, experienced and specialist engineers. Since most of the services lines are concealed, faulty design and installation may lead to disastrous results that may be difficult to rectify later. Moreover, the defective installation would affect not only the functioning of the facility but also its hygienic conditions. The design of water supply and sanitary provisions should also take future requirement keeping in view the sensitivity of services. Therefore, a good MEP Consultant is crucial and thus emphasized. The facility will require following type of quality of water for routine use hence its quality and quantity should be taken care of with perfection during planning the scheme: -

4.5.1 Raw Water

53) The main source of water shall be assessed and determined. This water shall be stored as such for firefighting purposes. The water to the facility should be filtered to remove debris, biologic and chemical contaminants.

4.5.2 Drinking Water

54) UCI intends to provide water on its premises conforming to WHO guidelines. It is proposed that the same quality of water be provided for catering services and for ablution in various washrooms and wash basins.

4.5.3 Soft Water

55) Plan for soft water for the following services:
- Steam sterilizers and the CSSD
- Washers for Laboratory
- Washers for Endoscopy
- Instrument washers
- RO water plants

- Water based coolers of compressor pumps
- Vacuum plant
- HVAC Chillers
- Water distillers

56) Distilled water may be necessary for washing for laboratory glassware and for autoclaves.

4.5.4 RO Water

57) RO water may be required in the following areas and functions.
    - ICU beds for Renal Dialysis
    - Laboratory and Blood Bank
    - Sterile and Distilled Water Generators

4.5.5 Sterile (Bacteria Free) Water

58) Plan for sterile water in some areas. Adequate water treatment facilities for sterilization shall be provided by using online modular Bacteria Filters to generate Bacteria Free Water. The feed water for this shall be Soft Water. Areas that may need sterile water include:
    - Manual Endoscope Washer
    - All scrub stations in Operating Rooms

4.5.6 Hot Water

59) Plan for hot water at the following points/functions:
    - Appropriate ablution of hands or instruments in functional areas, where use density is high and in support areas, where use density is low.
    - Bathrooms and utensil washing in the Kitchen, Dining and Pantries.

60) Hot water for ablution shall be provided through a hot and cold-water mixer faucet.

61) Hot water shall also be used for controlling humidity during the rainy season.

62) The hot water shall be provided through a central Hot Water Supply System at temperatures not exceeding 65^{o}C (recommended Hot Water Temperature 60^{o}C).

4.6 Steam Supply

63) The facility may be provided with steam of requisite quality in its CSSD, TSSU and all sub-sterilization rooms. The steam shall be generated using a central boiler and distributed to these areas.

64) Provision of steam in kitchen is optional and shall be determined by the type of kitchen equipment defined for tendering or outsourcing.

4.7 Bed-Pan Washers

65) All sluice rooms in patient wards as designated shall be provided with an automatic Bedpan Washer cum Disinfector and a Bedpan and Bottle storage rack. The automatic Bedpan Washer cum Disinfector is an automatic machine fabricated from stainless steel which stands on the floor, is foot-operated and has an integrated steam generator. It washes and disinfects bedpans and urine bottles at an average temperature. For installation and service, this requires a clear area of 300 mm all around from walls etc.

4.8 Wash and Wastewater Disposal

66) There shall be efficient housekeeping practices to keep the facility clean and ensure containment of infections. One of the requirements of efficient housekeeping practice is washing the floors periodically. Even when mechanized housekeeping is practiced, a floor trap of adequate size is required to dispose off the waste wash water. It is therefore recommended to have the following provisions: -

i) The floors of functional areas not provided with floor trap, shall be so sloped that they drain to the nearest floor trap e.g. all patient rooms to slope into respective toilets, operating rooms to slope into scrub rooms, etc.
ii) Within the toilets, there shall be adequate slope for natural drainage. The sloping drainage shall be so planned that it moved from clear zone to protected zone to disposal zone and at no time it shall flow back into cleaner zone.
iii) The sanitary sewage shall be treated as per the National Environment Act before its final disposal and suitable STP units provided for this.
iv) Arrangements shall be made for water harvesting and incorporated in storm water drainage system.
v) Arrangements shall be made for recycling of wastewater after suitable treatment.
vi) All wastewater from kitchen shall be brought to a Grease Trap unit before its disposal to first manhole of the building.

4.9 Design Deliverables

The Table below gives a summary of deliverables from the Scope of Work described above and the attendant planning for spaces and services

Table 4-1 Summary of Design Deliverables (not limited to)

No.	Discipline	Deliverables
1	**Civil Work, Building and Architectural**	**Civil Engineering** • **Site Planning:** - Site grading Plan and Earthworks - Storm water management and Hydrological analysis - Erosion and sediment control - Topographic Survey - Geotechnical Investigation report - Environmental Impact Assessment report - Traffic Impact Assessment - Utilities (water, sewer, electricity, gas) • **Structural Design and Engineering:**

No.	Discipline	Deliverables
		- Design Basis report - Structural Design report - Radiation Shielding calculation report - Bunker structural drawings, calculations and basis of construction - Foundation and Substructure drawings - Structural Framing drawings - Reinforced Concrete Detailing schedules - Structural Construction specifications - Structural Shop drawings - Interface MEP coordination drawings • **Infrastructure Design:** - Roads, parking areas, walkways - Landscaping **Architecture** • **Schematic Design:** - Conceptual interior design • **Design Development:** - Detailed floor plans - Detailed elevations and sections - Material and finish selections - Window and door schedules • **Construction Documents:** - Architectural plans, elevations, sections, and details - Door, window, and hardware schedules - Finish schedules - Interior design details • **Interior Design:** - Space planning - Furniture, fixtures, and equipment (FF&E) schedules - Color schemes - Lighting design - Room Data sheets
2	**Electrical**	• **Site Analysis:** - Electrical load calculations (lighting, power, HVAC, medical equipment, any other equipment) - Power supply options (grid, generators, solar) - Short-circuit and load flow studies - Earthing system design • **Schematic Design:** - Single-line diagrams - Power distribution system layout - Lighting design (emergency and normal) - Electrical room locations - Equipment schedules • **Electrical Room Layout:**

No.	Discipline	Deliverables
		- Detailed drawings of electrical rooms - Equipment and panel schedules • **Power Distribution System:** - Detailed single-line diagrams - Cable tray and conduit routing - Voltage drop calculations - Protective device coordination studies • **Lighting and Power Systems:** - Lighting layouts and schedules - Receptacle and switch locations - Power outlets for medical equipment • **Grounding System:** - Grounding grid design - Equipment grounding details • **Emergency Power System:** - Generator sizing and specifications - Automatic transfer switch (ATS) selection - Emergency power distribution system • **Fire Alarm System:** - System design and layout - Control panel location - Smoke detectors and notification devices • Coordination with other disciplines (architectural, structural, mechanical, etc.) • Energy efficiency analysis and recommendations Consultant shall Consider the integration of the electrical systems with all other systems including. • Medical Gas Systems • Critical Power Systems (UPS systems for critical loads, Battery sizing and specifications) • Telecommunication Systems • Security Systems • Instrumentation, and ICT Deliverables
3	**Mechanical, plumbing, and other utilities including medical**	**Mechanical Systems** • **Site Analysis:** - Climate data analysis - Load calculations (heating, cooling, ventilation) - Equipment selection • **System Design:** - Central plant design (chillers, boilers, pumps) - Ductwork and piping systems - Equipment room layouts • **Piping and Instrumentation Diagrams (P&IDs):** - Detailed diagrams of mechanical systems • **Equipment Schedules:**

No.	Discipline	Deliverables
		- Specifications and quantities of equipment • **Coordination Drawings:** - Coordination with other disciplines (architectural, structural, electrical) **Plumbing Systems** • **Plumbing Fixture Schedule:** - Specification of plumbing fixtures • **Piping and Drainage Design:** - Water supply and drainage systems - Sanitary and storm water systems - Medical gas piping systems • **Plumbing Plans and Details:** - Detailed drawings of plumbing systems • **Equipment Schedules:** - Specification of plumbing equipment (pumps, tanks, etc.) - **LPG Systems** • **LPG Storage and Distribution:** - Tank sizes and locations - Piping and regulator systems - Safety devices (pressure relief valves, alarms) • **Equipment Schedules:** - Specification of LPG equipment • **Coordination Drawings:** - Coordination with other disciplines (structural, electrical) **Medical Gas System Design:** • Design of medical gas piping and distribution systems • Equipment selection and specifications • Alarm and monitoring systems
4	**Instrumentation, Telecoms, Information and Communications Technology**	**Telecommunications** • **Site Survey:** - Evaluation of telecom equipment requirements • **Telecommunication Room Design:** - Layout and equipment list for telecom rooms - Cabling infrastructure design • **Network Design:** - Voice and data network design - Network topology and protocols - IP addressing scheme • Integration of telecom systems with other building systems (e.g., nurse call, fire alarm) • **Documentation:** - Telecommunication system diagrams

No.	Discipline	Deliverables
		- Cable schedules - Equipment lists **Instrumentation** • **Patient Monitoring System:** - Selection and integration of patient monitoring equipment - Network design for patient data transmission • **Building Automation System (BAS):** - Integration of instrumentation with BAS for monitoring and control • **Documentation:** - Piping and instrumentation diagrams (P&IDs) - Equipment specifications - System integration drawings **ICT (Information and Communications Technology)** • **Network Infrastructure:** - Data network design and implementation - Wireless network design (Wi-Fi) - Server room design and specifications • **Security Systems:** - Access control system design and implementation - CCTV system design and installation - Intrusion detection system design • **Medical Information Systems:** - Selection and implementation of electronic health records (EHR) - Integration of medical devices with EHR • **Communication Systems:** - Internal and external communication systems (e.g., intercom, public address) • **Documentation:** - Network diagrams - Server room layout - Security system design drawings - ICT equipment specifications **Integration and Coordination** • **System Integration:** - Integration of telecom, instrumentation, and ICT systems with each other and with other building systems • **Interface Drawings:** - Development of interface drawings to show connections between systems • **Testing and Commissioning:**

No.	Discipline	Deliverables
		- Testing and commissioning of all systems **Specific Considerations for Hospitals** **Redundancy:** • Implementation of redundant systems for critical applications **Security:** • Enhanced security measures to protect patient data and privacy **Reliability:** • High availability and reliability of systems **Scalability:** • Design for future expansion and growth • By carefully planning and integrating these systems, hospitals can achieve optimal efficiency, patient safety, and operational performance.
5	**HVAC**	**HVAC Systems** • **HVAC Load Calculations:** - Heating and cooling load calculations for different zones • **System Design:** - HVAC system selection (centralized, decentralized) - Ductwork and piping design - Air handling unit (AHU) specifications • **Controls:** - HVAC control system design • **Equipment Schedules:** - Specification of HVAC equipment • **Coordination Drawings:** - Coordination with other disciplines (architectural, electrical)
6	**Safety**	• Fire Suppression System • Emergency Lighting • Fire Escape Routes • Fire Safety Management Plan • Surge Protection • Patient Safety Systems • Hazardous Materials Management • Emergency Preparedness Plans
7	**BIM Model deliverables**	• BIM Execution Plan (BEP) • Information Delivery Manual (IDM) • Model View Definitions (MVDs) • Clash Detection Reports • 3D Geometric Model • Coordination Model • Information-Rich Model

No.	Discipline	Deliverables
		• Digital Twin and CMMS Platforms for FM Operations

PHASE 3

5. TENDERING AND CONTRACTING PROCESS

5.1 Objective

The objective of the Phase 3 Component is to comprehensive procurement support services for the procurement of goods and works contractors (and where applicable, related services) for the Arua Regional Oncology Centre and the Radiotherapy Unit for the Mbale Regional Oncology Centre, in strict compliance with:

1. *The Islamic Development Bank (IsDB) Guidelines for the Procurement of Consultancy Services and Works*
2. *The financing structure defined in the PAD*
3. *Applicable national procurement laws, and*
4. *The approved Detailed Engineering Design.*

1) The Consultant shall ensure that all tender documentation is technically robust, commercially balanced, risk-allocated appropriately, and structured to minimize variation claims, design disputes, and post-award ambiguities.

5.2 Scope of Services

2) The Consultant shall perform the Phase 3 tasks separately for the Arua Regional Oncology Centre (full works package) and the Radiotherapy Unit for the Mbale Regional Oncology Centre (radiotherapy-only works package).

3) The Consultant shall ensure that the tender package for the Mbale Regional Oncology Centre strictly excludes works financed under parallel funding arrangements, in accordance with the PAD.

5.3 Preparation of Tender Documentation

4) The Consultant shall prepare complete and coordinated Tender Documents for Works in accordance with IsDB Standard Bidding Documents (SBD), including the following:

5.3.1 Technical Documentation

5) The Consultant shall include:
   a) Approved Detailed Engineering Drawings
   b) Technical Specifications (discipline-wise)
   c) Bill of Quantities (BOQ)
   d) Equipment Interface Requirements
   e) Radiation Protection Specifications
   f) Quality Assurance and Testing Protocols
   g) Environmental and Social Safeguards Requirements
   h) Construction Methodology Requirements

i) Health and Safety Specifications
j) Commissioning Requirements

6) All documentation shall be fully cross-referenced and internally consistent.

5.3.2 Bill of Quantities (BOQ)

7) The Consultant shall:
   a) Prepare detailed, itemized BOQs aligned with approved DED.
   b) Ensure measurement standards are consistent and unambiguous.
   c) Clearly separate:
      (i) Radiation bunker works
      (ii) Structural works
      (iii) MEP works
      (iv) Medical gas systems
      (v) ICT infrastructure
      (vi) External works
   d) Avoid provisional sums unless absolutely necessary.
   e) Provide cost engineer's estimate for internal benchmarking.

8) BOQs shall minimize ambiguities that may lead to variation claims.

5.3.3 Radiation-Specific Tender Provisions

9) For both Arua and Mbale radiotherapy facilities, the Consultant shall include:
   a) Mandatory radiation shielding compliance clause.
   b) Concrete density testing requirements.
   c) Pre-pour inspection certification requirements.
   d) Radiation door installation standards.
   e) Independent radiation leakage testing requirement prior to commissioning.
   f) Obligation to comply with IAEA and national radiation authority requirements.

10) The Contractor shall not be permitted to modify shielding design without written approval from the Consultant and Client.

5.3.4 Interface with Equipment Procurement

11) The Consultant shall ensure that the Works Tender Documents clearly define:
   a) Contractor responsibilities for site readiness.
   b) Equipment anchoring and pit preparation.
   c) Power and cooling requirements.
   d) Access routes for equipment installation.
   e) Coordination protocols between Works Contractor and Equipment Supplier.

12) The Equipment Interface Matrix developed under Component 2 shall be annexed to the tender documentation.

5.4 Procurement Process Support

13) The Consultant shall support the Client throughout the procurement process as follows:

5.4.1 Pre-Bid Stage

a) Participate in preparation of Invitation for Bids (IFB).
b) Assist in preparation of procurement schedule.
c) Support in preparation of pre-qualification criteria (if applicable).
d) Conduct site visits with bidders.
e) Respond to technical clarifications.
f) Prepare addenda where required.

5.4.2 Bid Evaluation Support

14) The Consultant shall:
a) Participate as technical advisor during bid evaluation.
b) Review technical proposals for compliance with:
(i) Oncology construction experience.
(ii) Radiation bunker experience.
(iii) Healthcare MEP experience.
c) Review construction methodologies.
d) Evaluate work program realism.
e) Assess key personnel and equipment.
f) Identify deviations from specifications.
g) Provide written technical evaluation report.

15) The Consultant shall ensure strict compliance with IsDB procurement procedures during evaluation.

5.5 Post-Evaluation & Contract Finalization

16) The Consultant shall:
a) Assist in preparation of bid evaluation report.
b) Support contract negotiation (technical aspects).
c) Ensure the agreed corrections are incorporated into final contract.
d) Verify performance securities.
e) Confirm insurance compliance.

5.6 Risk Allocation & Contract Clarity

17) The Consultant shall ensure that:
a) Risk allocation between Employer and Contractor is clearly defined.
b) No design ambiguity remains at tender stage.
c) Variation thresholds are clearly stated.
d) Defects Liability Period (DLP) provisions are clearly articulated.
e) Delay damages provisions are structured and defensible.

f) Interface obligations between Works Contractor and Equipment Supplier are contractually defined.

18) Special attention shall be given to:
   a) Shielding compliance liability.
   b) Equipment readiness timelines.
   c) Delays caused by interface misalignment.

5.7 Safeguards & Compliance Integration

19) The Consultant shall ensure inclusion of:
   a) Environmental and Social Management Plan (ESMP) obligations.
   b) Occupational Health and Safety (OHS) requirements.
   c) Radiation exposure safety requirements.
   d) Gender-based violence (GBV) mitigation clauses.
   e) Code of Conduct obligations.

20) These shall be enforceable contractual provisions.

5.8 Deliverables Under Phase 3

21) The Consultant shall submit the following for Client approval:
   a) Draft Tender Documents (Works)
   b) Final Tender Documents (post-review)
   c) Engineer's Cost Estimate
   d) Pre-Bid Clarification Log
   e) Technical Bid Evaluation Report
   f) Final Contract Technical Package
   g) Procurement Risk Register

22) No bidding process shall commence without formal approval of the final Tender Documents by the Client.

5.9 Scope Delineation – Mbale Radiotherapy Unit

23) The Consultant shall ensure that:
   a) The Mbale Works Tender covers only the radiotherapy unit financed under IsDB Loan
   b) Works funded by the Austrian Government are explicitly excluded.
   c) Utility interface points between the IsDB-financed radiotherapy unit and other facilities are clearly defined.

24) Failure to delineate scope boundaries shall be considered a material professional omission.

PHASE 4

6. CONSTRUCTION SUPERVISION AND CONTRACT ADMINISTRATION

1) The consultant shall administer the construction contract and take technical control of the works.

2) Check and approve all contractors' materials, samples and drawings, calculations and method statements in a proper and timely manner.

3) Inspect and supervise testing of materials, plant, equipment (on-or-off site) as specified by the applicable codes and standards indicated in the construction contract.

4) Provide on-site staff in accordance with the requirements of the work.

5) Ensure that construction is not started on individual elements of the work prior to approval of detailed drawings, calculations and method statement.

6) Check the accuracy of as-built drawings to be prepared by the contractors.

7) Check, verify and endorse certificates of payment of contractors after the necessary verification of the work done and the payment support documents.

8) Perform all duties usually associated with supervision and administration of the contract.

9) Submit monthly progress reports to the Employer indicating the progress of the works. Reports should be based on contractors input data and should reflect any deficiencies and their effects on scheduled completion, the report should also show the cash flow position as compared to total Contract sum.

10) Meet periodically with the Contractor, equipment’s provider subcontractor and Client to discuss progress and resolve problems.

11) Monitor construction progress through review of contractor’s schedules.

12) Provide final inspection, witness testing and commissioning by the contractors and recommend acceptance of systems, equipment’s and installations, and issuance of substantial completion certificates.

13) Prepare completion and final accounts reports in forms acceptable to the Employer.

14) Assist the Employer in settling differences, claims or disputes that may arise including litigation, adjudication, arbitration etc.

15) Ensure that all equipment’s and facilities are manufactured and calibrated in accordance with the specification, attend the FAT test and undertake approvals at all stages of production as directed by the employer.

16) Identify trends in quality non-compliances and proactively identify with the consultants' measures to stop the trends; and monitor the preparation and submittal of final reports by the Contractor on quality management.

17) The Consultant shall submit for review by the Client details of the authority, qualifications, and experience of personnel assigned to construction contract design verification, to audit activities, and to inspection.

18) The Consultant shall maintain a Non-conformity Register to indicate the status of all non-conformities, which are identified by the Client. The Consultant shall issue a written report to the Client on all Nonconformity findings reported.

19) The Client shall have the right to suspend work activities should a party fail to address non-compliances.

20) The Consultant will oversee equipment installation, ensuring it adheres to project specifications and contract requirements. This may involve conducting acceptance testing based on established protocols to verify performance and safety compliance.

21) The Consultant will meticulously review and approve final equipment designs submitted by suppliers. This includes evaluating technical specifications, functionality, and adherence to project requirements. Collaborative discussions with the Client may be necessary to establish specific approval parameters.

22) To safeguard project quality, the consultant will monitor and supervise testing and certification procedures for all materials and equipment used in the construction process. This ensures adherence to specified standards and project requirements.

23) Operation and Maintenance Manual Review: The consultant will meticulously review, and revise equipment operation and maintenance manuals provided by suppliers. This ensures clarity, comprehensiveness, and alignment with the specific equipment installed on-site.

24) The Consultant shall review Project close-out documents as submitted by the Contractors to ensure that they comply with the requirements.

Table 6-1 Summary of Supervision Deliverables

No.	Category	Deliverables
1	**Project Management and Documentation**	• Record of site handover (possession of the site) • Approved Contractor's program of works for each site • Supervision documents – Instructions to contractors • Approved variations • Supervision bi-weekly and monthly reports • Minutes of site meetings (including joint site meetings) • Inception, Weekly, Daily, Monthly and Final reports as shall be defined by the Client • Practical completion certificates and Final completion certificates • Final statement of Account for the works.
2	**Financial and Contractual**	• Financial reports – cost appraisals • Payment certificates • Snag lists
3	**Technical and Engineering**	• As-built drawings and maintenance notes • Commissioning and training reports • Defect inspection reports • All as build drawings for all installed systems and constructions • Commissioning reports including Block and operating system diagrams • Operation manuals and procedures by systems • Final Equipment and instrumentation lists • Spare order lists • Supplier lists • Fabrication and installation dossiers
4	**Health Safety and Environment**	• Periodic reports about Health, Safety, Environmental Mitigation and Monitoring Plan activities and Environment Impact Assessment recommendations

PHASE 5

7. COMMISSIONING, OPERATIONAL READINESS AND DEFECTS LIABILITY MONITORING

7.1 Health Safety Environmental and Security Management

a) The Consultant shall work closely with the client, authorities, and Security Forces Consultants to develop preliminary Health, Safety and Security Plans. Where necessary and if non-objected by the client, the Consultant shall contract, manage, and coordinate specialised Health, Safety and Security Consultants to develop plans and provide advice and guidelines to ensure that the proper provisions are incorporated within the designs.

b) The Consultant must ensure that the Project wide health and safety culture is based around the OSH act 2006 and fundamentals of risk management such that the hazards associated with the Project environment are regularly assessed in order that perceived project risks can be mitigated at the earliest opportunity.

c) The Consultant shall establish the project outline for a health, safety and security management system and plan.

d) Manage the project in accordance with the health, safety and security plan.

e) Review and approve, as necessary, all health, safety and security management plans, procedures, permits, safe systems of work and any other paperwork required to manage the project.

f) By means of formal review and approval, the Consultant shall acquire a thorough knowledge of the intentions of all parties participating in the Project with regards to quality assurance, safety, and quality control. The Consultant shall verify and validate the effective implementation of such plans by means of surveillance and audit of project activities and the associated records.

7.2 Security

a) Two weeks after notification award, the Tenderer shall provide copies of Identity documents of personnel to be employed. Based on these documents, access Identification badges shall be provided to be used for daily access to site, without which access shall be denied.

b) The Consultant's personnel shall be subjected to normal access procedures as local employees of which might include spot checks.

7.3 Testing and Commissioning

a) The Consultant shall develop for the Client's non-objection a testing and commissioning strategy that is consistent with the requirement to assure that the Project as delivered complies with the Funders and Client's Requirements for the Project.

b) The Consultant shall work with the end-user as notified from time to time to coordinate all aspects of the design related to operations and to write client's Requirements for testing and commissioning.

c) The Consultant shall prepare a schedule listing all items and / or systems which require testing and commissioning for non-objection by the Client.

d) The Consultant shall prepare the means, methods and procedures for the testing and commissioning of all items and / or systems which require testing and commissioning for non-objection by the Client.

e) All equipment and product testing conducted during construction is the responsibility of the Contractor. However, the Consultant shall ensure the testing procedures comply with manufacturers recommendations. The Consultant shall review the final test reports and provide a written recommendation of the acceptance/rejection of the material, products or equipment tested within seven (7) calendar days of receipt of the report.

7.4 Operation and Maintenance Manuals

a) The Consultant shall coordinate and review the preparation and issuance of the equipment manuals provided by the Contractor(s) ensuring that they contain the operating procedures, maintenance procedures and frequency, cut sheets, parts lists, warranties, guarantees, and detailed drawings for all equipment installed at the facility.

b) A troubleshooting guide shall be included that lists problems that may arise, possible causes with solutions, and criteria for deciding when equipment shall be repaired and when it must be replaced.

c) Include a list of the manufacturer's recommended spare parts for all equipment being supplied for this project.

d) A list of names, addresses and telephone numbers of the Contractors involved in the installations and firms capable of performing services for each electromechanical item shall be included. The content of the manuals shall be reviewed and approved by the Consultant and Client Representative.

e) The Consultant shall include in the specification that the Contractor must provide a minimum of ten (10) "throwaway" copies of the manual for use at the training seminar and three (03) hardbound copies as part of the project close-out package.

7.5 Training

a) The Consultant shall include in the specification that the Contractor shall schedule and coordinate all equipment training with the Client representatives. It shall state that the Contractor shall submit the Operation and Maintenance (O&M) manuals, training plan contents, and training durations to the Consultant, and Client Representative for review and approval prior to the training session.

b) The Consultant shall ensure that the training session is video recorded by the Contractor. A copy of the recording shall be transmitted to the client representative on compact disk who will forward the material to the Client for future reference.

c) All costs associated with the training sessions shall be borne by the Contractor installing the equipment.

d) A signed letter shall be prepared stating when the training was completed and must be accompanied with the training session sign-in sheet as part of the project close-out package.

7.6 Drawings

a) The consultant shall verify all dimensions on site, prepare and elaborate the drawings.

b) All drawings developed by the Consultant shall be done in an appropriate style and the scales suitably fixed so that they are easily readable at site or workshop by naked eye.

c) The drawings shall be adequate to represent all the necessary details, views

d) The detailed schedules will be a part of the drawings.

e) All drawings shall be in ISO A1, A2 and A3 format as and where applicable.

f) Except for similar components, each different component shall have detailed separate drawings to illustrate the in cross section, elevation, and plan.

g) All drawing dimensions shall be in metric system (i.e., meter, cm and mm).

h) All drawings details and notes shall be in English.

7.7 Communication and Reporting

a) The Consultant shall keep records of all meetings that affect the development of the design, whether created by the Consultant or issued by others, so that a comprehensive record of all decisions affecting the design is available to the Client Representative.

b) The Consultant shall distribute information received from working groups, meetings with sub-consultants and ad hoc meetings to the Client Representative.

c) The Consultant shall prepare and submit regular reports to keep the Client fully informed of project progress. The format and number of copies of each report will be agreed upon with the Client. These shall include both weekly progress reports and Monthly reports.

7.8 Reports

a) Reports shall contain facts only. Reports shall not be construed as being correspondence. The reporting requirements herein shall not relieve in any way consultant from his obligations to report promptly and specifically all and any matter significantly affecting the work cost, progress, or quality to client.

Table 7-1. Reporting Timelines

Title	Content	Submission
Inception	Detailed inception report	Draft: within 4 wks; Final: within 1 wk of receipt of comments
Monthly Progress Reports	Detailed progress update, by discipline. Outlining work completed and ongoing, the estimated percentage of work accomplished for each task and updated risk analysis of project implementation that could impact the quality and timeline of deliverables. It should also list any obstacles met, and suggestions to overcome them. A look ahead for the following month, areas of concern and details highlighted in "Meeting" section of this document	By the 5th of each calendar month
Weekly Progress Reports	Consultant shall submit a weekly report covering all activities up to the weekly cut-off date. The weekly cut-off date shall be Thursday close of day unless a different date is agreed between Client and Consultant. The weekly report shall be delivered and reviewed at the weekly meeting the following week. The report shall include, progress, look ahead for the next week, milestones review, areas of concern, issues arising, key decisions taken	Every close of week
Final Report	Draft final report detailing; Project description, objectives, timeline, key milestones, budget and expenditure analysis, team structure and roles, Detailed description of construction activities, including adherence to design plans and specifications. Quality control and assurance measures implemented, Safety performance, Overall project performance evaluation against key performance indicators (KPIs),	Draft: 1 month after Project close Final: 2 week of receipt of comments on draft

Title	Content	Submission
	Final inspection and defect rectification, among others shall be submitted	

b) Monthly reports during the construction phase shall be closely aligned with the project program and provide an overview of the following key aspects:

- **Financial Performance:** A cumulative expenditure record, estimated cost at completion for each project element, details of variation orders and claims related to construction, equipment, and consulting services.
- **Variation Orders:** A comprehensive record of issued and pending variation orders.
- **Claims Management:** Status updates on received, evaluated, and settled claims.
- **Technical Progress**: Status of Contractors works executions including projections as per program.

c) Completion Reports for all major project components or structures will be delivered within 60 days of completion. These reports will include:

- As-Built Records and Drawings
- Construction Methodology
- Construction Quality

7.9 Documentation

a) The Consultant shall provide a record of all work completed in a clear, readable and understandable manner. Reports shall be in English, and of high quality in compilation, printing and binding and in an acceptable manner. The Consultant shall make allowance for regular meetings with the client's technical team at each milestone to ensure correct information is captured, to provide clarity and achieve agreement on the content.

b) The Consultant shall have an Electronic Documentation Management System (EDMS) in place shared with Client. Proposed system shall be approved by Client. The Client shall have access to the project documents and exchanges between Client and Consultant via this EDMS. The EDMS shall, as a minimum:

a) Register all technical and correspondence documents in an organized manner.
b) Enable sorting of documents per type, discipline, transmittal, review date etc
c) Enable review any document issued by the Consultant.
d) Enable Client to provide comments directly on documents inside the system (e.g. pdf mark-up)
e) Keep records of comments and revisions

c) The Consultant shall provide all the documentation in relation to this project, including drawings in only English.

d) All drawings and project documentation shall be clearly printed in colour and bound in standard hard cover files.

e) These drawings shall be signed and approved by professionally Registered Engineer. Soft copy drawings shall be availed in standard auto card format while other soft copy documentation shall be supplied in pdf file format.

f) The Contractor at the end of the project shall submit a fully consolidated 5 project reports including images, test certificates, support reports, dossiers and drawings. A soft copy of the report shall also be provided at the end of the Contract.

g) The BoQ Shall be explicit covering all items of work. It shall be as exhaustive as possible to avoid changes, additions, deletions, and substitutions during execution and therefore the undesired disputes and claims.

h) The Consultant shall develop guidelines/ procedures to bring uniformity in all respects / aspects of preparation of drawings and documentation including but not limited to:
   (i) Sizes and specifications of tracing sheets.
   (ii) Arrangement of drawing.
   (iii) Title block, signatories and their responsibilities.
   (iv) Dimensioning
   (v) Lettering sizes and the thickness
   (vi) Format of layer name
   (vii) Designations of grid lines
   (viii) Abbreviations and symbols.
   (ix) Revisions.
   (x) Checking, clearance and approval of drawing.
   (xi) Protection / storage and filing
   (xii) File naming
   (xiii) Drawing number system

7.10 From Project Information Model (PIM) to Asset Information Model (AIM)

a) During the delivery phase (design and construction phase) the Consultant's project teams shall create information models using both graphical and non-graphical data, clearly structured and accurately linked. Such data builds in richness as the project stages progress (*Fig. 1*). At handover, the complete data shall be passed to the asset's end-users of the Client. The information model is called a "Project Information Model" (PIM) during the Delivery Phase and an "Asset Information Model" (AIM) once a project is handed over and complete.

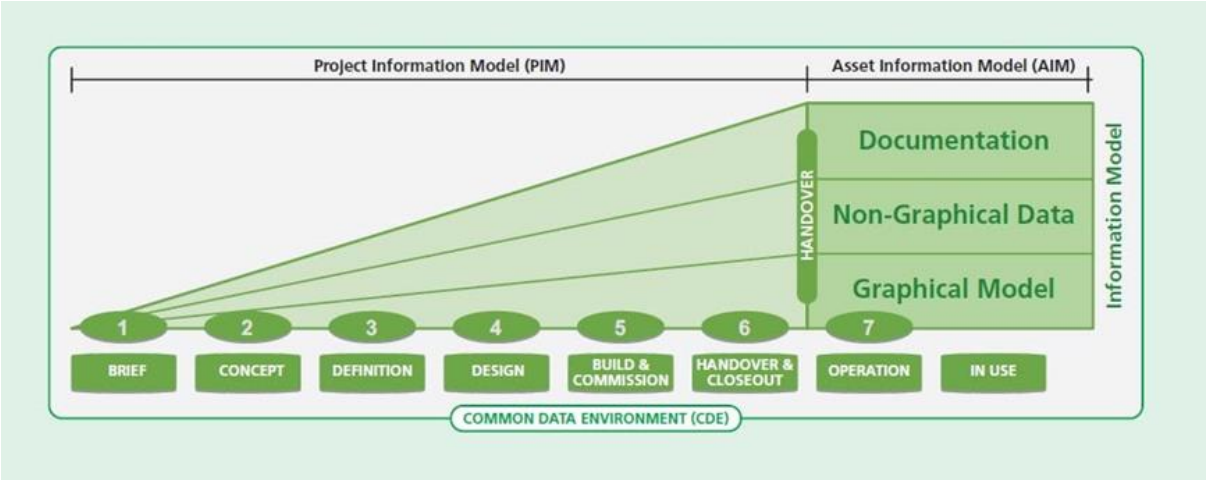

Fig. 1 Typical BIM Information Workflow

b) The Consultant shall handover to the Client a collated BIM Toolkit of information to supports the ongoing management of a building with a database detailing the information requirements including but not limited to the following:
    a) Schedule of maintainable assets
    b) Data structure
    c) Asset information requirements on Maintenance, Sustainability and Asset operation efficiency
    d) Information management standards
    e) Asset identification
    f) Asset information model (AIM) deliverables
    g) Information classification

c) The Asset Information Deliverables shall include (not be limited to) the following:
    a) Asset register or inventory
    b) Topographic data on the assets and quantities derived
    c) Asset condition data
    d) Asset capability information
    e) Asset performance service levels, failure rates, etc.
    f) Life expectancy data of equipment and materials
    g) Description of interventions for maintenance or renewal, and their costs
    h) Contextual data, such as climate and surroundings
    i) Asset history such as maintenance, alternations, renewals and replacements; and events such as accidents or other incidents.

7.11 Meetings

7.11.1 Weekly Meetings

a) Weekly meetings shall be held online, at client's discretion, depending upon the phase of the work-in-progress.

b) These meetings shall appraise the technical conformity of the work and the progress, and to initiate corrective actions when necessary. They shall focus on activities where the performance is ongoing or anticipated commencing. They are not anticipated to cover the Project status as a whole nor the activities that have been completed.

c) The Agenda shall be agreed before the meetings between Client and Consultant and shall include but not be limited to:

   a) Health, Safety and Environment
   b) Management and Services
   c) Engineering (*)
   d) Procurement and Supply (*)
   e) Construction (*)

   Each topic thus marked with (*) shall also cover the following:

   i) Progress review and forecast activities
   ii) Resources, actual and forecast.
   iii) Quality Assurance/Quality Control
   iv) Technical matters
   v) Areas of concern / plans for resolution

7.11.2 Monthly Meetings

a) Monthly meetings shall be organized at worksites and/or site, focusing overall project progress (actual vs. planned), to date and for the month. the consultant shall submit to client his monthly progress report, which shall serve as a basis for discussion.

b) The agenda shall be agreed before the meetings between Client and consultant and shall include but not be limited to:

   a) Health / Safety / Environmental,
   b) Executive Summary (general),
   c) Management and Services,
   d) Engineering (*),
   e) Procurement and Supply (*),
   f) Construction (*),
   g) CONTRACT matters.

   Each topic thus marked (*) shall also cover the following:

   i) Review of the state of the progress and the decisions taken since the last monthly meeting
   ii) Review of the progress curves and the schedule
   iii) Resources, actual and forecast
   iv) Review of the critical points for the project, areas of concern / plans for resolution
   v) Program planned for the following period.

7.11.3 Kick off Meeting

a) Upon contract award, the consultant shall organise a meeting. the agenda shall be agreed before the meeting between client and consultant and shall include but not be limited to:
   - project presentation to personnel involved in the project,
   - introduction of client and contactor organisation,
   - introduction of subcontractors,
   - Presentation of consultant ‘s schedules,
   - First 30 days look-ahead schedule
   - Any other subject as necessary

b) The meeting shall take place within two (2) weeks from the effective start date

c) Consultant’s personnel in attendance in these meetings shall include as a minimum the Project Manager (or his authorised representative) and the personnel in charge of HSE, engineering, and construction.

d) Other meetings including Adhoc or management meetings shall be organized as when needed.

e) The Consultant shall be responsible for convening the progress meetings. The Consultant shall be required to submit a meeting agenda, invitation, chair the meeting, take meeting minutes, and submit the minutes to the client (for review and agreement).

7.12 Schedule and Completion Obligations

a) The Consultant shall allow sufficient time in his design and design review schedule to obtain the necessary approvals from all third parties and the time taken to obtain these approvals shall not give rise to an extension of completion obligation.

b) **Project Schedule**: Within 7 days of contract award, submit a detailed project schedule for Client approval. This schedule will:
   - Integrate with approved civil, electrical, and mechanical work programs.
   - Account for all activities involving subcontractors and other parties.
   - Include early/late start & finish dates, float times, and bar charts.
   - Specify shutdown periods, vacation days, and non-working times.

c) **Baseline Schedule and Updates**:
   - The Client-approved schedule becomes the baseline for project monitoring and progress tracking.
   - Any revisions to the schedule require Client consent.
   - The Consultant will review contractor-proposed updates and resubmit for approval.

7.13 Monitoring and Evaluation

a) The client shall appoint a representative as a focal point to liaise with the Consultant to monitor and follow up the implementation of the services. All deliverables are to be endorsed by client before approval may be given by the Contract/Project Manager.

b) The Client will also set a Project Implementation Technical Committee to support steering, quality assessment and validation of the different deliverables expected from the Consultant.

c) The primary indicators used for monitoring the assignment will be timely provision of required inputs (including relevant expertise), timely submission of the required outputs, in accordance with the dynamic project activities and to the standard required. The performance and quality indicators shall include:
    a) Achievement of assignment objectives
    b) Ability to meet deadlines.
    c) Quality of services
    d) Reliability of data and robustness of evidence Completeness of the reports
    e) Clarity and conciseness of the reports
    f) Quality of the cooperation with the plant operator, the project financiers, and other relevant stakeholders

7.14 Defect Liability and Warranty Phase

d) The Consultant shall make quarterly periodical inspections of the completed works during the Defect Liability period and advise the Employer on any maintenance work to be undertaken by contractors and Issue final completion certificates.

8. COMPLETION SCHEDULE

The time schedule for completion of the project work shall be as shown in the table below.

Table 8-1 Combined Project Schedule

STAGE	ACTIVITY	DURATION	START MONTH	END MONTH	PREDECESSOR
S1	**Preliminary Studies, Detailed Design and Approvals**	**11**	**0**	**11**	
1.1	Site Discovery and Preliminary Studies (Inception, Geotechnical and Land Surveys)	2	0	2	
1.2	Conceptual Design and Master Planning	1	2	3	1.1
1.3	Detailed Engineering, Deliverables Issuance and Technical Documentation	6	3	9	1.2
1.4	Regulatory Compliance and Statutory Clearance	2	9	11	1.3
S2	**Detailed Engineering and Procurement**	**8**	**9**	**17**	**S1**
2.1	Tendering Document Preparation and Approvals	3	9	12	1.2
2.2	Tendering of Works and Goods - Lot 1 &2	3	12	15	2.1
2.3	Contract Awards and Negotiations	2	15	17	2.2
S3	**Construction and Equipping**	**26**	**17**	**31**	**S2**
3.1	Construction Works (Lot 1 Arua)	18	17	35	2.2
3.2	Construction Works (Lot 2 Mbale)	10	17	27	2.2
3.4	Equipment Installation (Lot 1 Arua)	5	35	40	3.1
3.5	Equipment Installation (Lot 2 Mbale)	3	27	30	3.2
3.6	Testing, Commissioning and Handover (Lot 1)	3	40	43	3.4
3.7	Testing, Commissioning and Handover (Lot 2)	1	30	31	3.5
S4	**Close-out and Defect Liability (DLP)**	**13**	**43**	**56**	**S3**
4.1	As-Built Drawings, Digital Twin and Occupancy Certificates (Lot 1)	1	43	44	3.4
4.2	As-Built Drawings, Digital Twin and Occupancy Certificates (Lot 2)	1	31	32	4.4
4.2	Defect Liability Period (12 Months) Lot 1	12	44	56	4.1
5.2	Defect Liability Period (12 Months) (Lot 2)	12	32	44	5.1

TOTAL DURATION (COMBINED): 56

Table 8-2 Project Schedule for West Nile regional Oncology Centre in Arua

STAGE	ACTIVITY	DURATION	START MONTH	END MONTH	PREDECESSOR
S1	**Preliminary Studies, Detailed Design and Approvals**	**11**	**0**	**11**	
1.1	Site Discovery and Preliminary Studies (Inception, Geotechnical and Land Surveys)	2	0	2	
1.2	Conceptual Design and Master Planning	1	2	3	1.1
1.3	Detailed Engineering, Deliverables Issuance and Technical Documentation	6	3	9	1.2
1.4	Regulatory Compliance and Statutory Clearance	2	9	11	1.3
S2	**Procurement**	**8**	**9**	**17**	**S1**
2.1	Tendering Document Preparation and Approvals	3	9	12	1.2
2.2	Tendering of Works and Goods - Lot 1	3	12	15	2.1
2.3	Contract Awards and Negotiations	2	15	17	2.2
S3	**Construction and Equipping**	**26**	**17**	**#REF!**	**S2**
3.1	Construction Works (Lot 1 Arua)	18	17	35	2.2
3.4	Equipment Installation (Lot 1 Arua)	5	35	40	3.1
3.6	Testing, Commissioning and Handover (Lot 1)	3	40	43	3.4
S4	**Close-out and Defect Liability (DLP)**	**13**	**43**	**56**	**S3**
4.1	As-Built Drawings, Digital Twin and Occupancy Certificates (Lot 1)	1	43	44	3.4
4.2	Defect Liability Period (12 Months) Lot 1	12	44	56	4.1

TOTAL DURATION (COMBINED): 56

Table 8-3 Project Schedule for Mbale Radiotherapy Unit

STAGE	ACTIVITY	DURATION	START MONTH	END MONTH	PREDECESSOR
S1	**Preliminary Studies, Detailed Design and Approvals**	**11**	**0**	**11**	
1.1	Site Discovery and Preliminary Studies (Inception, Geotechnical and Land Surveys)	2	0	2	
1.2	Conceptual Design and Master Planning	1	2	3	1.1
1.3	Detailed Engineering, Deliverables Issuance and Technical Documentation	6	3	9	1.2
1.4	Regulatory Compliance & Statutory Clearance	2	9	11	1.3
S2	**Procurement**	**8**	**9**	**17**	**S1**
2.1	Tendering Document Preparation and Approvals	3	9	12	1.2
2.2	Tendering of Works and Goods - Lot 2	3	12	15	2.1
2.3	Contract Awards & Negotiations	2	15	17	2.2
S3	**Construction and Equipping**	**14**	**17**	**31**	**S2**
3.2	Construction Works (Lot 2 Mbale)	10	17	27	2.2
3.5	Equipment Installation (Lot 2 Mbale)	3	27	30	3.2
3.7	Testing, Commissioning and Handover (Lot 2)	1	30	31	3.5
S4	**Close-out & Defect Liability (DLP)**	**13**	**31**	**44**	**S3**
4.2	As-Built Drawings, Digital Twin Occupancy Certificates (Lot 2)	1	31	32	4.4
5.2	Defect Liability Period (12 Months) (Lot 2)	12	32	44	5.1
	TOTAL DURATION (COMBINED):	**44**			

9. SPECIFIC DUTIES AND RESPONSIBILITIES OF THE CONSULTANT'S TEAM

9.1 Requirements for the Core Team

1) A dedicated Core Team, with key members based in-country, will provide consistent leadership and oversight throughout all project phases.

2) The Core Team will comprise, at a minimum, a Project Manager (also the Team Lead), Lead Discipline Engineers and a BIM/CADD Lead

9.1.1 Project Manager/Team Lead

3) Oversees all project activities and manages project risks subject to Client approvals.

4) He/She shall hold as minimum a degree in either Architecture or Engineering and shall be a legally registered practicing professional with a valid practicing license with not less than 15 years' experience in building construction design and supervision. Specific experience, in the design and supervision of relevant health infrastructure is a must.

9.1.2 Lead Discipline Engineers

5) Each major design discipline (Architecture, Structural, MEP, etc) will have a dedicated lead responsible for ensuring technical quality and timely delivery of their respective design packages.

6) The discipline Leaders shall hold as minimum a degree in their specific discipline and shall be a legally registered practicing professional with a valid practicing license with not less than 10 years' experience in building construction design and supervision. Specific experience, in the design and supervision of health infrastructure construction and equipment in installation as applicable is an added advantage.

9.1.3 BIM/CADD Lead

7) Leads the BIM and CAD modelling efforts, ensuring efficient data management, software utilization, and high-quality deliverables. The BIM lead shall have minimum 5 years' experience in delivery of facilities using BIM.

9.2 Requirements for the Project Delivery Team

8) All Core Team members shall have a minimum of one year experience with the Consultant and shall be fluent in the English language (both written and spoken), unless otherwise approved by the Client.

9) All project personnel shall possess the necessary qualifications and verifiable experience commensurate with their assigned roles and the project's specific requirements.

10) The Consultant's team will be fully equipped to deliver services that meet the highest quality standards, achieve cost-effectiveness, adhere to timelines, and comply with applicable codes and regulations.

11) The Consultant shall provide enough qualified personnel to successfully complete all project deliverables as outlined in the Contract.

9.3 Digital Project Management Technology

12) In collaboration with the Client, the Consultant will put in place and implement an information technology system specifically designed to streamline communication during the delivery phase and eventually the operation phase.

13) The system must provide a digital representation of the facility's physical and functional aspects.

14) As the primary enabler for the Consultant to redevelop the design and deliver the final extents of the project using BIM, the system shall be aimed at the following key objectives:

    i) To facilitate efficient data sharing, document control, and project progress tracking, to increase insight into the space's planning and design, generate more informative tender documents, and solve communications concerns during construction management (delivery phase).

       This includes but is not limited to identification from the model of all conflicts and clashes between the different disciplines: civil/structural, mechanical, electrical, plumbing, HVAC, ICT, instrumentation and equipment. The design shall be developed and managed to resolve these conflicts and clashes.

    ii) To provide a rational digital resource that can be used as a reliable basis for decisions during the facility's lifecycle (operation phase).

15) The Consultant shall ensure that their team members assigned to the Project receive adequate training on the system to effectively utilize it in their respective roles.

16) The Consultant shall also allow for two (02) appropriate Client computer systems and will deploy on them BIM software with license requirements of a period of three (03) years.

17) The Consultant shall be responsible for the accuracy and management of the model up to the transfer of responsibility for the development of the model to the Contractor(s) on award of the contract(s).

9.4 Responsibilities of the Consultant's Team

The Consultant shall assemble a highly qualified team of professionals with extensive experience in delivering projects of similar size and complexity, in conformity with the specification provided in *Table 4* below. This team will be structured to ensure effective communication, collaboration, and project success.

Table 9-1: Consultant's Team

Key Staff	Main Requirements
9.4.1 Project Manager /Team Lead	**Minimum Qualification and Experience** • Master's degree in Project Management or Construction Management preferred. • Bachelor's degree in Engineering or Architecture required. • Must be registered by the Uganda Engineers Registration Board or equal and in possession of a current Practicing License. PMP or PMI Certification is highly desirable. • Minimum 15 years of experience in project management, with at least 5 years in large-scale healthcare facility projects. • Demonstrated experience in managing complex projects with multiple stakeholders including Government and Multilateral funding agencies, and Consultants. • Proven track record in overseeing design, construction, and equipment installation for healthcare facilities. **Role and Responsibilities** The main role of the Project Management Consultant is to save time, ensure quality and stay within the budget. The project manager shall be familiar with: • Current building systems that are available on the regional market at a competitive price • Current labour and industrial prices, enabling him/her to establish a proper estimate in the specific area • Sub-contracting trades that can advise on detail • Specification review • Cost consulting and scheduling • Management • Inspections • Insurance programming • Samples and Testing • Shop drawing and coordination The project manager shall perform a variety of functions, such as managing general conditions on site, including start-up and overall supervision. Towards the end of construction, the project manager is responsible for drawing up a certificate of substantial completion. **Specific Experience**

Key Staff	Main Requirements
	1. At least two (02) health facilities of Medium (or regional) to Large Scale (tertiary) nature in the last 10 years 2. At least three (03) facilities with a heavy MEP component in the last ten (10) years 3. Proficiency in BIM and interoperability standards.
9.4.2 Architect	**Minimum Qualification** • Bachelor of Architecture • Must be registered by the Uganda Architects Registration Board or equal, with a current Practicing License **Role** • Review and optimization of architectural and engineering designs and preparations of the required tender documents • Develop the medical facility planning, space utilization, and interior design. • Draft engineering and detail engineering in line with the design/optimization process, paying particular attention to greening of the building. • Liaise with the BIM Coordinators in creating, updating and revising BIM Models throughout the project life cycle and the Asset Information Model at project handover. • Maintain sufficient contact with project teams throughout design, implementation, and installation processes. • Liaise with the Client's project team and end users responsible for space planning and medical equipment planning. • Developing a room-by-room equipment lists indicating the general location of equipment. Assist Architect in development of Room Data Sheets • Oversee all phases of the design, construction, deployment and installation of capital equipment. • Generate project work plans, including deliverables and due dates. • Obtain all the requisite permissions or certificates from the applicable regulatory authorities, including approval of the land use, the proposed built-up area, the open spaces around the building, the provision for parking, any recreational space/gardens that may need to be provided and the plans showing the individual rooms with sizes. • Obtain clearance for fire-fighting provisions and means of exit such as staircases. • Provide information on locally available materials and local methods of construction. • Advise on the traditional architecture of the region, to respond to it in their proposed aesthetic for the facility. • Ensure the facility obtains an Occupational Permit at handover **Specific Experience** 1. At least two (02) health facilities of Medium (or regional) to Large Scale (tertiary) nature in the last 10 years 2. Facilities with a heavy MEP component at least three (03) in the last ten (10) years 3. Proficiency in 5D BIM and interoperability standards.

Key Staff	Main Requirements
9.4.3 Architectural Modeller	**Minimum Qualification** • Diploma in Architecture • Proven experience in BIM. Competency certification is desirable. • At least five (05) years of experience in BIM modelling and coordination for large-scale projects. • Proficiency in BIM software for Architectural modelling. • Experience in developing BIM execution plans and coordinating with design and construction teams. **Core Responsibilities** • Assist the BIM Coordinator in creating, updating and revising BIM Models throughout the project life cycle and the Asset Information Model at project handover. • Create and update BIM Models based on contract drawings and latest information. • Develop BIM Models with the correct parameters and attributes for BIM Based qualification and 4D simulation • Produce BIM Model deliverables for Construction, documentation and fabrication **Specific Experience** 2. Ability to understand technical drawings and plans 3. Ability to produce IFC files 4. Ability to produce 3D models 5. Time management skills and ability to meet deadlines 6. Ability to maintain quality standards in all operations in use of computer software and applications
9.4.4 BIM Engineer /Coordinator	**Minimum Qualification** • Bachelors' degree qualified in engineering, architecture, construction management, computing or related discipline. • At least three (03) years' experience of working on multi-disciplinary projects with BIM standards. • Membership of a relevant Professional Body. Professional certification or registration with a relevant regulatory body is desirable. **Roles and responsibilities** The BIM Engineer will play a key role within the Digital Project Delivery (DPD) team and support project teams with developing, managing and delivering multi-disciplinary BIM standards and digital strategy. He/she will provide technical expertise and leadership to implement, develop and manage a successful BIM process from Precontract all the way through the project delivery and handover. The key responsibilities will involve: **a) Pre-contract stage** • Supporting the design review process and the development of the optimization requirements, BIM Execution Plan (BEP) and associated documents (e.g. MPDT, MIDP, TIDP, SCDC assessments, etc.).

Key Staff	Main Requirements
	• Reviewing 3D BIM models received from the Contractor for federation, engineering checks, clash detection, logistics and cost management. • Supporting the Team Lead with the assessment of the supply chain digital capabilities. • Producing temporary works 3D model for technical reviews, estimating costs and clash detection. • Developing and coordinate visualisations and interactive 3D Models. **b) Project delivery stage** • Acting as BIM point of contact onsite carrying out walk-throughs and demonstrations to key stakeholders. • Assisting and supporting the project team to understand their contractual obligations to manage a BIM process. • Supporting the production and delivery of project BEP, MIDP, MPDT and digital implementation strategy. • Reviewing and validating Project Information Model (PIM) developed by design teams and sub-contractors. • Assisting the coordination of 3D Models in engineering and design team meetings. • Carrying out periodic clash detection, issue reports and liaise with design teams. • Support logistics team with the use of 3D BIM models for optimising the construction logistics and traffic management. • Working with site management team to promote and integrate the use Digital field tools and 3D BIM models. • Ensuring sub-contractors are fully aware of their roles and responsibilities within the DPD team. • Supporting Team Lead with DPD audits and implementation of new technologies. • Providing upskilling and hands-on training sessions for project teams. • Reporting success and measuring the benefits of DPD across the projects. **c) Project delivery stage** • Compiling and validating Asset Information Model (AIM), to provide the Client with a collated set of information of all the information developed by design teams, Contractors and sub-contractors, and other sources in the project that will support the operation and management of the facility. • Ensure that the AIM BIM models can capture an asset's entire lifecycle, from design and construction to operation and decommissioning, to enable asset managers to make informed decisions regarding asset replacement, upgrades, or decommissioning, and ensuring that resources are allocated efficiently and sustainably **Specific Experience** The BIM Engineer/Coordinator must be proficient in digital tools and systems including (but not limited to) the following: 1. Autodesk Revit: Comprehensive knowledge in developing, editing and publishing 3D BIM models and components.

Key Staff	Main Requirements
	2. Autodesk Navisworks: Comprehensive knowledge in production of NWD files for navigation, clash detection and data validation of PIM. 3. Autodesk AutoCAD: good knowledge in producing, editing and publishing 2D and 3D data. 4. Information Management: Essential Knowledge of working in a CDE such as Viewpoint
9.4.5 Sustainability Expert	**Qualification** • Bachelor's degree in a relevant Built Environment qualification such as Engineering, Architecture, Renewable Energy or similar. • At least eight (08) years' work experience • Membership of a relevant Professional Body. • Registration with a relevant regulatory body is desirable and/or Professional certification e.g. Green Star Accredited Professional is desirable **Role** • Formulate strategies for greening of the facility, that align with ecological preservation and organizational goals of the Client. • Develop a conceptual framework for sustainability analysis during different stages of project life cycle or project phases. • Carryout building performance analysis • Research on ways that the Client can reduce carbon footprint of the footprint and provide input during the design review/optimization process particularly regarding the aspect of Greening the building. • Advise the Client on short- and long-term sustainability strategies for the facility • Developing communication materials for the Client regarding the facility's sustainability goals • Advise on the processing of sustainability certification for the building, such as Edge certification or similar. **Specific Experience** 1. At least one (01) health facilities of Medium (or regional) to Large Scale (tertiary) nature in the last ten (10) years 2. At least three (03) facilities with a heavy MEP component in the last ten (10) years
9.4.6 Civil/Structural Engineer	**Minimum Qualifications** • Bachelor's degree in Civil Engineering. • Must be registered by the Uganda Engineers Registration Board or equal, with a current Practicing License. • At least ten (10) years' work experience in civil engineering design including healthcare facilities. **Role:** • Project brief, site surveys and Inception Report • Participate in review and optimization of architectural and engineering designs and preparations of the required tender documents

Key Staff	Main Requirements
	• Drafting of engineering and detail engineering in line with the design/optimization process, paying particular attention to greening of the building. • Review the design calculations for loads and stresses on structural foundations, beams and walls of the building • Use computer modelling simulations to assess the structural integrity of the building, analyse and predict how the building structure will act under varying conditions, e.g. high winds, flooding or earth tremors • Drafting of engineering details in line with the design/optimization process, paying particular attention to greening of the building. • Support the Team Lead in preparation of updated civil/structural design plans and details, schedules, equipment layout, specifications, bills of quantities • Participate in the development of an environmental, health and safety (EHS) plan for the Project • Ensure project meets legal, environmental and health and safety standards • Ensuring that the final approved designs comply with national and international standards as well as the regulatory requirements. **Specific Experience** 1. Expertise in site development, structural design, and geotechnical engineering for large-scale buildings. 2. At least two (02) health facilities of Medium (or regional) to Large Scale (tertiary) nature in the last 10 years 3. At least three (03) facilities with a heavy MEP component in the last ten (10) years 4. Proficiency in BIM and interoperability standards.
9.4.7 Electrical Engineer	**Minimum Qualifications** • Bachelor's degree in electrical engineering. • Must be registered by the Uganda Engineers Registration Board or equal, with a current Practicing License. • At least ten (10) years' work experience in electrical engineering design including health facilities **Core Responsibility** • Project brief, site surveys and Inception Report • Participate in review and optimization of architectural and engineering designs and preparations of the required tender documents • Drafting of engineering and detail engineering in line with the design/optimization process, paying particular attention to greening of the building. • Review/certification for electrical documents • Performing various design calculations such as estimation of load demand, load flow studies, generator sizing, transformer sizing, cable sizing, voltage drop calculation, short circuit calculation, lighting calculation, battery and UPS sizing, cathodic protection calculation etc. • Preparation of electrical system single line diagrams and equipment, lighting and earthing layouts

Key Staff	Main Requirements
	• Preparation of enquiry documents, technical recommendations, purchase specifications, vendor review for major electrical equipment • Responsible for coordinating with other engineering disciplines for smooth execution of the Project • Responsible for Class Approval of all the electrical deliverables (electrical reports and drawings) • Liaise with clients for project related activities and responsible for resolving site related queries and issues • Testing and commissioning of the installations • Project closure and handover **Review of Electrical Packages and Technical Bid Evaluation** • Reviewing vendor document for all electrical items • Generation of estimates for all major electrical equipment for giving an idea for equipment's pricing which will provide input for preparing project quotation • Pre-bid engineering and proposal services for estimation of work and competitive cost solutions • Performing the technical bid evaluation of the electrical packages • Preparation of planning schedule for complete engineering activities **Supervision Responsibilities** • Handling team of junior engineers and drafting team to deliver electrical deliverables within planned duration of time • Checking of AutoCAD/Revit Drawings, reviewing and incorporating comments in the drawing **Project Management Activities** • Scheduling of activities in the Electrical discipline • Client and vendor interactions by answering client, Vendor and site queries • Attend Client, Vendor meetings • Inter discipline co-ordination in detailed Engineering • Site Survey as per Engineering requirement • Any other administrative activities in the project. **Specific Experience** 1. At least one (01) health facilities of Medium (or regional) to Large Scale (tertiary) nature in the last ten (10) years 2. at least three (03) facilities with a heavy MEP component in the last ten (10) years 3. Proficiency in BIM and interoperability standards.
9.4.8 Electrical Modeller	**Minimum Qualification** • Diploma in Electrical Engineering • Proven experience in BIM. Competency certification is desirable. • At least five (05) years of experience in BIM modelling and coordination for large-scale projects. • Proficiency in BIM software for Electrical.

Key Staff	Main Requirements
	• Experience in developing BIM Execution Plans and coordinating with design and construction teams. **Role** • Assist BIM Coordinator in creating, updating and revising BIM Models throughout the project life cycle and the Asset Information Model at project handover. • Create and update BIM Models based on contract drawings and latest information. • Develop BIM Models with the correct parameters and attributes for BIM Based qualification and 4D simulation • Produce BIM Model deliverables for construction, documentation and fabrication. **Skills and Experience** 1. Ability to understand technical drawings and plans 2. Time management skills and ability to meet deadlines 3. Ability to produce IFC files 4. Ability to produce 3D models 5. Ability to maintain quality standards in all operations in use of computer software and applications
9.4.9 Mechanical Engineer	**Minimum Qualifications** • Bachelor's degree in Mechanical Engineering • Must be registered by the Uganda Engineers Registration Board or equal, with a current Practicing License. • At least ten (10) years' work experience in mechanical engineering design including healthcare facilities. **Core Responsibility** • Project brief, site surveys and Inception Report • Participate in review and optimization of architectural and engineering designs and preparations of the required tender documents • Draft engineering and detail engineering in line with the design/optimization process, paying particular attention to greening of the building. • Review/certification for mechanical discipline documents • Performing various design calculations such as building automation, elevators, HVAC systems, pneumatic transportation system, piped medical gas system, fire protection systems, utility piping, plumbing, and dust collection • Preparation of mechanical system single line diagrams and equipment layouts • Preparation of enquiry documents, technical recommendations, purchase specifications, vendor review for major mechanical equipment. • Responsible for coordinating with other engineering disciplines for smooth execution of the Project • Responsible for Class Approval of all the mechanical deliverables (mechanical reports and drawings) • Liaise with the Client for project related activities and responsible for resolving site related queries and issues

Key Staff	Main Requirements
	• Testing and commissioning of the installations • Project closure and handover **Review of Electrical Packages and Technical Bid Evaluation** • Reviewing vendor document for all mechanical items • Generation of estimates for all major electromechanical equipment for giving an idea for equipment's pricing which will provide input for preparing project quotation • Pre-bid engineering and proposal services for estimation of work and competitive cost solutions • Performing the technical bid evaluation of the electrical packages • Preparation of planning schedule for complete engineering activities **Supervision Responsibilities** • Handling team of junior engineers and drafting team to deliver electrical deliverables within planned duration of time • Checking of AutoCAD/Revit Drawings, reviewing and incorporating comments in the drawing **Project Management Activities** • Scheduling of activities in the Mechanical discipline • Client and vendor interactions by answering client, vendor and site queries • Attend Client, Vendor meetings • Inter discipline co-ordination in detailed Engineering • Site Survey as per Engineering requirement • Any other administrative activities in the project **Specific Experience** 1. At least two (02) health facilities of Medium (or regional) to Large Scale (tertiary) nature in the last ten (10) years 2. At least three (03) in facilities with a heavy MEP component the last ten (10) years 3. Proficiency in BIM and interoperability standards. 4. In-depth knowledge of ICC codes, HVAC calculations and ASHRAE Standards 5. Familiar with VAV systems, VRF systems, secondary pumping, boiler plants and Health Technical Memorandum BS HTM 02-01A&B.
9.4.10 Mechanical Modeller	**Minimum Qualification** • Bachelor's Degree in Mechanical Engineering • Specialization in BIM. BIM certifications (e.g., Autodesk Certified Professional) required. • At least five (5) years' experience in BIM modelling and coordination for large-scale projects. • Proficiency in BIM software and interoperability standards. • Experience in developing BIM Execution Plans and coordinating with design and construction teams. **Role**

Key Staff	Main Requirements
	• Assist BIM Coordinators in creating, updating and revising BIM Models throughout the project life cycle and the Asset Information Model at project handover. • Create and update BIM Models based on contract drawings and latest information. • Develop BIM Models with the correct parameters and attributes for BIM Based qualification and 4D simulation. • Produce BIM Model deliverables for construction, documentation and fabrication • Link the architectural and structural Revit model for preparing MEP model. • Modelling of services including HVAC, Plumbing, Fire Fighting etc • Coordination of all the MEP services in 3D. • Preparation of setting up levels, grids, views, browser arrangement, family arrangement, creating appropriate types and systems of services matching the project specifications. • Preparation of architectural and structural details (layout, grids, datum, etc.), checking schematics or extracting MEP specification. • Preparation of Containment Detail Drawing with Co-ordination of Mechanical and Plumbing services and makes the model error free. • Annotate models with labels and dimension, specify flow direction and preparing the schedules of the necessary services. • Placing the plan, sections, details view and legends in the title sheets. **Skills and Experience** 1. Ability to understand technical drawings and plans 2. Time management skills and ability to meet deadlines 3. Ability to produce IFC files 4. Ability to produce 3D models 5. Ability to maintain quality standards in all operations in use of computer software and applications
9.4.11 Quantity Surveyor	**Minimum Qualifications** • Bachelor's Degree in Building Economics or Quantity Surveying • Registration with the Uganda Surveyors Registration Board or equal, with a current practicing licence. • At least eight (08) years' work experience including healthcare facilities. **Roles** • Produce cost and schedule information for the project based on the information enriched BIM model • Facilitate effective information management throughout a project life cycle • Review the developed designs and provide relevant market information • Identify problems associated with using quantity take-off function in a BIM system such as design quality, unstandardized coding system and interoperability challenges associated with data exchange forma • Prepare specification documents • Prepare detailed Bills of Quantities from the detailed designs and specifications.

Key Staff	Main Requirements
	• Liaise with the Client in preparation of tendering and contracting documentation. • Cost management and construction contract administration • Assessing project risk and cost reporting • Prepare Life Cycle and Sustainability Calculations • Prepare interim valuation of actual works • Carry out periodic financial appraisals • Providing any required BIM inputs and resolving any queries • Prepare financial appraisals **Specific experience** 1. At least two (02) health facilities of Medium (or regional) to Large Scale (tertiary) nature in the last eight (08) years 2. At least two (02) in facilities with a heavy MEP component the last eight (08) years 3. Expertise in cost estimation, tender documentation, contract administration, and variation management. 4. Proficiency in 5D BIM and interoperability standards.
9.4.12 Biomedical Engineer	**Minimum Qualification** • Bachelors' Degree in Biomedical Engineering; Or Bachelors' Degree in other fields of Engineering with a Postgraduate Diploma or Masters in Biomedical Engineering or Healthcare Technology Management • Postgraduate diploma in project planning and management is desirable • At least eight (08) years' experience including large-scale health infrastructure projects. • Membership of a relevant Professional Body **Roles** • Assist BIM Coordinators in creating, updating and revising BIM Models throughout the project life cycle and the Asset Information Model at project handover. • Develop medical equipment budgets, specifications and placement drawings for the facility construction completion project. • Develop equipment specifications in consultation with end users. • Conducts value cost analysis and comparative equipment studies to recommend the most cost and time effective equipment/systems. • Maintain sufficient contact with project teams throughout design, implementation, and installation processes. • Liaise with the Client's project team responsible for medical equipment planning. • Analyse, locate and recommend equipment to be purchased and consult with medical and administrative personnel, architects, and contractors. • Developing a room-by-room equipment lists indicating the general location of equipment. Assist Architect in development of Room Data Sheets • Lead equipment performance analysis for reuse of Client's existing equipment.

Key Staff	Main Requirements
	• Responsible for all phases of the design, construction, deployment and installation of capital medical equipment. • Outline project work plans, including deliverables and due dates. • Monitor and assess emerging healthcare technologies and information, report on healthcare related technology trends and information as appropriate across the project team. • Provide project management techniques, working knowledge to perform a functional analysis of the equipment as it relates to operations and electrical load, defining key equipment criteria for the project, offering alternative solutions to the design teams to reduce initial or lifecycle cost while maximizing function, without compromising patient care, disability requirements or ergonomics • Compiling an "equipment register" including manufacturer's installation data and "cut sheets" (equipment specifications) and obtaining other relevant data from equipment vendors using a Computerized Maintenance Management System (CMMS). • Create and update medical equipment asset inform BIM Models for Client's use after project handover **Specific experience** • At least two (02) health facilities of Medium (or regional) to Large Scale (tertiary) nature in the last eight (08) years • At least two (02) in facilities with a heavy MEP component the last eight (08) years • Proficiency in BIM and interoperability standards. • Experience in medical equipment planning, healthcare technology, biomedical or clinical engineering in an architectural or construction environment. • In-depth knowledge of the appropriate use and allocation of medical equipment for direct patient care. • Knowledge of healthcare industry practices including hospital and clinic procedures and department functions. • Ability to discuss with medical personnel, physicians, and administration, appropriate medical and operational support equipment. • Good working knowledge of healthcare facility construction projects from inception through completion. • Understanding of architectural and design schedules and the ability to coordinate equipment planning with building design and construction schedule. • Ability to interpret architectural drawings. • Ability to manage multiple projects.
9.4.13 ICT Specialist	**Minimum Qualifications** • Bachelor's degree in Computer Science, Information Technology, Engineering or equivalent. • Must have IT Professional Certification e.g., Cisco Certified Network Professional (CCNP), Registered Communication Distribution Designer (RCDD) etc

Key Staff	Main Requirements
	Or registration by the Uganda Engineers Registration Board or equal, with a current Practicing License and IT Professional Certification. • At least ten (10) years' work experience in IT infrastructure including large-scale healthcare facilities. **Core Responsibility** • Project brief, site surveys and Inception reports • Draft engineering and detail engineering in line with the design/optimization process for ICT and Extra Low Voltage (ELV), paying particular attention to greening of the building, including: • Network design, assessing requirements, information gathering, capacity planning • Ensuring standards for network application, cabling and installations • Locate spaces and work areas including Building Entrance Facility, Main Equipment Room, Building Distribution Room, Floor Distribution and Horizontal/Work Area Distribution. • Design cabling sub-systems including Open Pluggable Specification (OPS), Backbone, Horizontal and Network cabling • Design Network Architecture Design including Ethernet, VOIP, CCTV, Wireless, Access Control, Building Management System (BMS), Fire Alarm System, Nurse Call System, Access Control, Patient Monitoring Network, PABX Intercom and Health Information System • Preparation of Enquiry documents, technical recommendations, purchase specifications, vendor review for major ICT and ELV equipment. • Responsible for coordinating with other engineering disciplines for smooth execution of the Project • Responsible for Class Approval of all the ICT and ELV deliverables (reports and drawings) • Liaise with the Client for project related activities and responsible for resolving site related queries and issues • Testing and commissioning of the ICT and ELV installations • Compiling an "equipment register" including manufacturer's installation data and "cut sheets" (equipment specifications) and obtaining other relevant data from equipment vendors using a Computerized Maintenance Management System (CMMS). • Create and update medical equipment asset inform BIM Models for the Client's use after project handover • Project Closure and Handover **Technical Bid Evaluation and Review of Electrical Packages** • Reviewing vendor document for all ICT and ELV items and performing the technical bid evaluation • Technical Bid Evaluation of the ICT and ELV vendor packages • Generation of estimates for all major ICT and ELV installations for giving an idea for the pricing which will provide input for preparing project quotation • Pre-bid engineering and proposal services for estimation of work and competitive cost solutions • Preparation of Planning Schedule for complete Engineering activities

Key Staff	Main Requirements
	Project Management Activities • Project Management activities including scheduling of activities in ICT discipline • Checking of AutoCAD/Revit Drawings, reviewing and incorporating comments in the drawing • Client and vendor interactions by answering client, vendor and site queries • Attend client, vendor meetings • Inter discipline co-ordination in detailed engineering • Site Survey as per engineering requirement • Any other administrative activities in the project. **Specific Experience** • Experience in Health Care facilities. • At least two (02) health facilities of Medium (or regional) to Large Scale (tertiary) nature in the last 10 years • At least three (03) facilities with a heavy MEP component in the last 10 years. • Proficiency in BIM and interoperability standards
9.4.14 Interior /Landscape Designer	**Minimum Qualification** • Bachelor of Interior and Landscape Design Or Bachelor of Architecture with Masters or Postgraduate Diploma in Interior and Landscape Design or similar • At least five (05) years' work experience in interior design and landscaping including healthcare facilities **Role** **As Interior Designer** • Participate in the design review/optimization process, paying particular attention to greening of the building. • Interpret project requirements, Client and user needs • Incorporate ample natural light and mindful layouts that are strategically integrated into the architectural design to enhance the healing environment. • Research and follow industry changes, evolutions and best practices and develop • Produce "concept boards" and "sample boards" • Efficiently create uniquely desirable, artistic and inspirational interior designs, both 3 dimensional views and walkthrough videos • Research and advise on materials and products sourcing both locally and internationally • Accurately prepare construction drawings. • Supervise work progress • Work closely with designers, architects, suppliers and contractors **As Landscape Designer** • Identify Client and user needs and provide responsive solutions.

Key Staff	Main Requirements
	• Incorporate natural elements such as greenery, water features, and natural light and thoughtfully designed spaces that contribute significantly to the physical, mental, and emotional healing of individuals within these settings. • Carry out and document site inventories. • Create uniquely desirable, artistic and inspirational landscape designs, both 3 dimensional views and walkthrough videos. • Prepare construction drawings. • Advise the Client and project team on conservation and sustainability practices. • Adapt/revise plans according to circumstances and resolve problems that may arise during construction. **Specific Experience** • Proven experience in designing and implementation of space planning, layout, colour, lighting, materials selection, custom furniture and installations for interior spaces • Landscape design including patios, retaining walls, water features, plantings, lighting, etc. • Proficiency in a BIM and interoperability standards • team)
9.4.15 Health Safety & Environmental (HSE) Specialist	**Minimum Qualifications** • Bachelor's degree in Occupational Safety and Health, Civil Engineering, Environmental Sciences, Environmental Engineering, Social Sciences or related field • Post graduate training in Environmental Impact Assessment (EIA) or Environmental Audit and Monitoring, NEBOSH diploma or equivalent certification is highly desirable • Must be registered with or certified by the Uganda National Environmental Authority or equal with a current practicing license. • At least five (05) years' experience in environmental assessment and social safeguards natural resource management, stakeholder engagement, environmental and social monitoring **Role** • Develop, implement and monitor health, safety and environmental policies, procedures and programs. • Investigate site accidents, incidents and complaints and recommend corrective measures to prevent similar occurrences. • Promote a positive health and safety culture • Conduct risk assessments, analyse data and recommend corrective action plans. • Monitor, inspect and assess hazardous materials, hazardous waste and pollution control equipment. • Oversee emergency response plans and coordinate fire prevention activities. • Monitor compliance of statutory regulations related to health, safety and environmental policies. • Identify training needs, develop and implement safety training programs for the project team and on-site employees.

Key Staff	Main Requirements
	• Prepare and submit reports to the Client and regulatory agencies. • Assist in the development of safety budgets for the project and administer safety-related budgets. • Maintain records and documents related to health and safety standards **Specific Experience** • Developing safety policies and procedures • Conducting safety training • Conducting labour audit • Ensuring compliance with statutory regulations regarding workplace safety.

Table 7. CV Form

Form for CVs of Key Personnel

REQUEST FOR PROPOSAL - PROCUREMENT REFERENCE NO.: UCI/CONS/2023-2024/00056

CURRICULUM VITAE

1.	Proposed Position on the Project	[*insert:* ***candidate's role in the assignment that the firm is bidding for***]
2.	Name of Firm	[*insert:* ***name of firm proposing the candidate i.e. Consultant***]
3.	Name of Candidate	[*insert:* ***full name***]
4.	Date of Birth*	[*insert:* ***birth date***] Nationality[1]* [*insert:* ***nationality***]
5.	Education*	[*insert:* ***year when the academic qualification was obtained***] [*insert:* ***name and country of candidate's college/university and other specialized education i.e. above the level of secondary school***] [*insert:* ***qualification obtained***]
6.	Registration by a Regulatory Body and any other Professional Certification(s)[2]*	[*insert:* ***year when the registration/certification obtained***] [*insert:* ***name and country of registration/certifying body or institution***] [*insert:* ***name of certification obtained***] [*insert:* ***name of license number***]
7.	Membership in Professional Associations*	[*insert:* ***year of joining the professional association***]. [*insert:* ***name and country of professional associations*****]** [*insert:* ***name of membership number***]
8.	Countries of Work Experience	[***List countries where candidate has worked in before***]
9.	Work Experience	*Starting with present position, list every employment held by candidate since graduation, giving the following for each employment:* *[Testimonial is highly desired. Attach if available]* *From:* ***[Year]*** *To:* ***[Year]*** [*insert:* ***Employer Name, Address and Country*****]** [*insert:* ***Year From - To*****]** [*insert:* ***Position Held*****]** [*insert:* ***Key Duties*****]** [*insert:* ***Contact – Name, Address, Telephone, Email*****]**
10.	Short Trainings Attended*	*Starting with the latest, provide list of short training courses relevant to the project the Firm is bidding for* ***Year*** ***Training Description*** ***Organisation***
11.	Specific Skills and Competencies*	***List competencies relevant to the project the firm if bidding for*** [*indicate:* ***Competence on a scale of 1 (Basic) to 5 (excellent)***] ***No.*** ***Skills and Competencies e.g. Revit, CMMS, etc*** ***Level of Proficiency***
12.	Languages	[*indicate:* ***proficiency in each language: good, fair, or poor***]

[1] Attach copy of National ID. Non-Ugandans will be required to present a valid work permit and acquire a Practicing License of the Ugandan regulatory body if successful.

[2] Examples of Professional Certifications: Project Management Professional (PMP®), Cisco Certified Network Professional (CCNP), Microsoft Certified Systems Engineer (MSCE), Certified Public Accountant (CPA), etc

* Attach evidence and provide a list of the attachments submitted.

	Language	*Speaking*	*Reading*	*Writing*

13. Proposed roles to be Assigned on the Project	[*list:* ***specific tasks to be performed by the candidate under the assignment the firm is bidding for***]
14. Relevant Past Experience	[*insert: information on at least three (03) assignments in which the candidate has been involved that best illustrate candidate's capability to perform on the assignment the firm is bidding form.* ***Name of assignment or project:*** ***Year of completion:*** ***Location:*** ***Client:*** ***Contact Person:*** ***Total Contract Amount (current value, US$ equivalent)*** ***Main project features:*** ***Position held:*** ***Activities performed:***

15. References:

[*insert:* ***At least three individual references with substantial knowledge of the candidate's work. Include each reference's name, title, phone and e-mail contact information.***]

[The Purchaser reserves the right to contact other sources as well as to check references.]

16. Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications and my experience. I understand that any willful misstatement described herein may lead to my disqualification or dismissal by the Purchaser, and/or sanctions by the Public Procurement and Disposal Authority (PPDA).

I, the undersigned, hereby declare that I agree to participate with [*insert:* ***name of firm – see #2 above***] in the above-mentioned tasks. I further declare that I am able and willing to work for the period foreseen in the above-mentioned tasks, in the position for which I have been proposed.

Candidate's contact information: (e-mail……..……., telephone…….…….……)

_____	_____	_____
Names	Signature	Date{dd/mm/yyyy}
_____	_____	_____
Firm's Authorised Representative (i.e. Power of Attorney)	Signature	Date{dd/mm/yyyy}

17. List of CV Attachments the Candidate provided	**1) …** **2) …** **3) …**