

TERMS OF REFERENCE

Ramu 1 Hydro Power Station (HPS) Refurbishment Project – Papua New Guinea Construction Supervision Consultant (CSC)

1 Background

The Australian Government through the Australian Infrastructure Financing Facility for the Pacific (AIFFP) has allocated up to **USD75 Million** for the refurbishment of Ramu 1 Hydro Power Station (HPS), located in Eastern Highlands Province (EHP) of Papua New Guinea (PNG). PNG Power Limited (PPL), owns and operates this hydro power plant apart from two other hydro power plants: Yonki Toe of Dam (YTOD) and Pauanda. These hydro power plants form the Ramu Grid which supplies electricity to the highlands of PNG and down to the coast covering Morobe and Madang. YTOD and Pauanda are not included in this project scope as they come under a different funding arrangement.

The Ramu 1 HPS has 5 units installed back in 1976 with a name plate rating of 15MW each. The total expected power output should therefore be around 75MW but this has never been achieved. Currently there are only four (4) units running with one unit (unit #4) removed for maintenance purposes. Total output from the four (4) operating units is around 45MW.

The required output of the installed turbine units could not be achieved because of many restrictions. The main issue is the size of the tail race, which limits the overall power output to around 50MW only. Part of the refurbishment process is to improve the tail race restriction by widening it. Other issues are notably identified and forms part of the project scope, which shall be addressed accordingly with the aim of achieving better power output and efficiency for the overall Ramu Grid.

A reputable and suitably experienced consulting firm is being sought for this project to act as Construction Supervision Consultants (CSC). The CSC arrangement shall include appropriate professionals specific to the project requirements and in particular the hydro power works.

The appointed Consultant will report directly to the Project Management Unit (PMU) established by PPL specifically to implement the Ramu 1 HPS Refurbishment Project.

2 Objective of the Assignment

The objective of this assignment is to assist the PMU to implement the project and ensure the safe decommissioning of the old electromechanical equipment including turbines and control systems in a coordinated manner and the installation of new or refurbished components, systems and parts with the aim of modernizing the power plant.

The assignment therefore requires the establishment of a multidisciplinary team of international and national consultants (the CSC) to act independently and on behalf of the PMU to assist in project management, design review and approval, materials and equipment specification, selection and procurement, supervision of the refurbishment works, test and commissioning and capacity building of PMU and relevant PPL personnel.

3 Main Responsibilities

In undertaking this assignment, the CSC will be expected to take a consultative and collaborative approach in engaging with the AIFFP Support Unit, PPL/PMU, and the main contractors to ensure the following are met:

- Provide technical, financial and administrative support to the PMU.
- Provide day to day oversight of the contract implementation by the Mechanical and Electrical (M&E) and Civil/Structural Contractors, supervise all construction works, and control the quality of works.
- Review and approval of conceptual and detail design of equipment, structures, processes and systems.
- Review and approval of technical specifications for all equipment, processes and systems.
- Coordination of procurement of all goods required under the refurbishment works.
- Manage the interface between the two contractors indicated above and the PMU.
- Provide advice on any changes to scope, assess variation requests and instructions, and manage requests for information.
- Ensure compliance with the environmental and social safeguard requirements as well as Occupational Health and Safety.
- Forecast and monitor investment program expenditures. Ensure adequate accounting procedures are in place meeting requirements set out in financing agreements.
- Coordinate drawdown of project funds to meet forecast project expenditures. Verify and signoff on applications for interim payment and final payment certificates.
- Submit financial reports (statements of expenditure and annual audited financial reports) reflecting project expenditures, and ensure all accounting, auditing, and reporting requirements are met to legal agreements associated with the investment program.

4 Scope of Works

The CSC will report to the PMU through the assignment team leader and the scope of works involved covers the following :

4.1 Preparatory Works & Outage Scheduling

- Ensure all technical drawings, operational manuals, standard operating procedures, safety guidelines and other information critical for the operation of the power plant are compiled and made available.
- Prepare an outage schedule for the power plant according to the activity schedule prepared by the respective contractors.
- Liaise with PPL hydro team through the PMU to create a backup plan in the event of complete shutdown of the power plant. This is critical as Ramu grid depends heavily on Ramu 1 power station.
- Ensure that contractors are fully prepared and all required tools, equipment and manpower are on site to execute the refurbishment work.
- Ensure that all are site inductions, safety training, evacuation plans, and other risk and communication management strategies specific to the hydro power station are conducted together with PPL.
- Ensure proper PPEs are made available by PPL as well as the contractors for their crews.
- Ensure all tools and equipment are tested, checked and are fit for purpose. Contractors should provide a registry of their tools and equipment.

4.2 Project Supervision:

- In consultation with PPL/PMU and contractors, prepare a detailed work plan for the decommissioning of each turbine and associated electromechanical and controls systems and parts.
- Review contractors' project implementation schedule and assess the plant's technical risks and carry out sensitivity analysis to check project viability under these risks.
- Prepare a detailed project schedule and track the progress and changes.

- Assist the PMU Manager in preparing monitoring assessment procedures within PMU/PPL and the necessary guidelines for staff guidance during project preparation and implementation.
- Prepare regular analysis and progress reports.
- Assist the PMU Manager in assessing changes to the project design, project requirements and any consequent variation claims.
- Supervise all decommissioning and dismantling works.
- Supervise the installation of the key electromechanical equipment and systems.
- Supervise the construction of key civil and structural components of the hydro power plant.
- Prepare and submit an inception report, monthly progress reports, quarterly reports and a project completion report.

4.3 Review and Approval of Engineering and Other Technical Documents

- Review and approve all the technical design drawings for electrical, mechanical, controls and instrumentation, civil/structural and other auxiliary and protection systems provided by the respective contractors.
- Assess and approve the technical specifications, manufacturers test sheets, and factory acceptance test (FAT) sheets for all the electrical and mechanical equipment.
- Ensure adequacy of the operation and maintenance manuals.

4.4 Safeguards and OH&S Compliance

- Ensure compliance with the AIFFP's Safeguard Policy Statement, environmental assessment review framework (EARF) of the Project; and ensure compliance of project implementation with the government's laws, environmental policy and procedures, including preparation and submission of notification of each project under each tranche to the CEPA in accordance with the prescribed format, and other requirements as directed by CEPA;
- Ensure that the contractors provide Occupational Health and Safety management Plans (OHSMP), Environmental and Social Impact Assessment Plan (ESIAP), Electrical Safety Management Plan (ESMP), Construction Environment Management Plant (CEMP) and other safeguard documents relevant to the project.

4.5 Procurement

- Facilitate the engagement of local and international contractors for the supply of goods and services in line with AIFFP and PPL procurement guidelines.
- Coordinate with materials suppliers on the delivery schedule, the quantity, shipment, and logistics arrangements.
- Ensure that all materials and equipment required for the project are correctly specified by the E&M and Civil/Structural contractors in accordance with the standard designs.
- Verify all the materials supplied to confirm the quantity and pricing as indicated on the invoice, purchase order, bill of lading or delivery dockets.
- Coordinate with materials handling, movement, and storage from wharf to project site. Any defective and substandard materials shall be noted and arranged for replacement.
- Create a data base to hold the record of all the equipment and parts ordered, installed, and kept as spares. This data base would be provided to the hydro reliability team during the commissioning period for their operational requirements.
- Ensure to keep all the procurement documents safe. This includes all lease agreements, contract agreements, memorandum of understanding (MoU) and other needful documents.

4.6 Finance and Administration

- Assist the PMU Manager in developing detailed budgets for the project.

- Assist the PMU Manager with monitoring the financial performance of the project including managing and reviewing budget, assessing contractors' claims and other various claims.
- Provide high level advice to the PMU Manager regarding management issues.
- Coordinate with the respective government agencies on matters concerning tax, customs and wharfage charges.
- Project financial documents are kept well and maintained to ensure that overall project is capitalized meaningfully.
- Forecast and monitor investment program expenditures. Ensure adequate accounting procedures are in place meeting requirements set out in financing agreements.
- Coordinate drawdown of project funds to meet forecast project expenditures. Verify and signoff on applications for interim payment and final payment certificates.
- Submit financial reports (statements of expenditure and annual audited financial reports) reflecting project expenditures, and ensure all accounting, auditing, and reporting requirements are met to legal agreements associated with the investment program

4.7 Installations

- Ensure that all the installations done by the contractor are according to the design specifications, an in compliance with required standards. Most installations should comply to AS/NZ Standards or equivalent or better.
- Ensure that the contractors use correct tools and equipment in executing the construction and refurbishment work.
- Ensure that the contractors maintain a healthy work site at all times to avoid near misses, incidents and lost time injuries (LTIs) and deaths.
- Coordinate with the site contractors on their schedules to better manage shared resources.
- Assess all contractors to be competent and that key personnel and supervisors are always present on work site.

4.8 Testing, Pre-commissioning and Commissioning

- Ensure all test and pre – check documents and reports are well managed and compiled.
- Assist in the supervision of test, pre-commission, and commissioning of the installations.
- Attend and witnessing of the testing of electrical and mechanical equipment, systems, and processes.
- Assess the testing and commissioning process and documentations provided by contractors and attend the testing and commissioning phase.
- Ensure that the contractors compile all the as-built drawings as true record of the works as constructed and create a drawing registry.

4.9 Capacity Building

- Provide capacity building to the PMU in safeguard matters and raise awareness in the PMU and contractors on all aspects of the statutory and policy requirements for environmental assessment and management as required by the government and AIFFP.
- Work with PPL to provide on the job training for procurement, new technology management, operation and maintenance of the HPS, OH&S and Environmental safeguards and project financial controls.
- Work with PMU to ensure the Capacity Building as provided by the Contractor is delivered properly and successful as per the contract.

5 Key Personnel:

All CSC team members must be senior technical consultants with specific experience in hydro power and related projects. As this is an implementation contract, the following type of personnel are expected with a suggested level of effort in person-days (8 hours):

Role/Position	Level of Effort	Experience
International Experts		
Hydropower Engineer (Team Leader)	36	University Degree in Engineering, 15 years of professional experience including design and project management on construction in the field of energy. 10 years of professional experience in Hydro Power Stations on HPS Projects and at least 3 years as a Team Leader.
Project Manager	36	University Degree in Engineering, 15 years of professional experience including design and project management on construction in the field of energy. 10 years of professional experience in Hydro Power Stations on HPS Projects and at least 5 years as a project manager
Electrical Engineer (Hydroelectrical)	30	University Degree in Electrical Engineering, 10 years of professional experience including design, engineering, construction, and project management of power plant projects, including at least one Hydro Power Plant (HPP) Project.
Mechanical Engineer (Hydromechanical)	30	University Degree in Mechanical Engineering, 10 years of professional experience in design, engineering, construction, and project management of power plant projects, including at least one Hydro Power Plant (HPP) Project.
Civil/Structural Engineer	24	University Degree in Civil/Structural Engineering, 10 years of professional experience in civil/structural design, engineering, construction, and project management of power plant projects or other similar industry with knowledge on tunnel works.
Procurement Specialist	24	University Degree, knowledge of international organizations and national agencies' procurement regulations and procedures. 10 or more years of experience in procurement for projects financed by international financial organizations
Hydrologist	3	University degree in engineering or science, 10 years of professional experience, including experience in carrying out studies and assessment for water flow and management for hydro power projects or similar
Quality Compliance Specialist	3	University degree in Engineering or similar, 10 years professional experience carrying out quality compliance checks and audits for power plants or similar industry.
Financial Specialist	3	University degree in Business or Accountancy,

		10 years of professional experience in project accounting and finance management involving international financial organizations.
National Experts		
Office Administrator		University Degree and/or professional qualification, 3 years of professional experience in business environment.
Instrumentation & Controls Engineer		University Degree in Electrical Engineering, 10 years of professional experience in instrumentation and controls including design, engineering, construction, and project management of power plant projects, including at least one Hydro Power Plant (HPP) Project.
Mechanical Engineer (Hydromechanical)		University Degree in Mechanical Engineering, 10 years of professional experience in design, engineering, construction, and project management of power plant projects, including at least one Hydro Power Plant (HPP) Project.
Civil/Structural Engineer		University Degree in Civil Engineering, 10 years of professional experience in civil/structural design, engineering, construction, and project management of power plant projects or other similar industry with knowledge on tunnel works.
Social Safeguards Specialist		University degree in Social Studies, 10 years of professional experience, including experience in carrying out social impact assessment studies of infrastructure projects and ensuring their delivery.
Financial Specialist		University degree in Business or Accountancy, 10 years of professional experience in project accounting and finance management involving international financial organizations.
Environment Safeguard Specialist		University degree in Environmental Engineering/ Science or equivalent, 10 years of professional experience, including experience in carrying out environmental studies of infrastructure projects and ensuring their delivery
OH&S Specialist		University degree in engineering or similar, 8 years' experience in heavy industry projects coordinating and managing safety and compliance.
Procurement Specialist		University Degree in Business or Engineering, Knowledge of international organizations and national agencies' procurement regulations and procedures. 8 or more years of experience in procurement for projects financed by international financial organizations

Curriculum vitae (CV) should be submitted for the technical personnel proposed for the project. These should not be more than two (2) pages long for each of the team members and should include as a minimum their role within the project, years of experience and experience relevant to the project.

6 Expertise of the firm

The consulting firm will demonstrate key expertise in energy project management (design, supervision, construction) with specific knowledge on hydro power generation works or other similar power generation projects.

7 Outline Terms of Reference for Consultants

An estimated 159 person-months of both national and international consultants will be required to implement Phase 1 components.

Role/Position	Expected Tasks
International Experts	
Hydropower Engineer (Team Leader)	<p>The Team Leader will work with the PMU Manager to ensure that the project outcomes are achieved within the specified time and budget.</p> <ul style="list-style-type: none"> • As a team leader develop a comprehensive project work program and implementation schedule. • Monitor project progress against plan, report on progress, and propose remedial measures as necessary. • Coordinate activities of the consultant team including both field and home office staff. • Assist the PPL in undertaking factory inspection tests of key equipment in accordance with inspection plan. • Ensure contractor's designs and works are executed following project requirements. • Review and approve HPP designs (technical characteristics) submitted by the EPC Contractor; • Develop and maintain a project safety plan. Ensure compliance with plan. • Develop, implement and upgrade a document flow between the EPC Contractor, Consultant, PMU, and all other parties involved in the project implementation. • Review the contractors design, documentation and equipment selection. • Review the proposed material by the contractor used in construction/fabrication work and ensure that they comply to the requisite standards and PPL Requirements. • Review and update project schedule based on the contract using appropriate project management software. • Set work program and target milestones for each phase based on the project plan • Monitor critical activities based on the project schedule and advise PMU. • Prepares and submit updated work program and cash flow curve showing actual progress and identify areas of weakness and establishes means and methods for recovery, if any, as well as new critical activities. • Monitor day to day work progress and prepare the periodic program and report. • Maintain and record update of site work progress obtained from EPC contractor. • Prepares monthly report reflecting work progress summary. • Report to PMU about the current work progress and make comparison between plan and actual progress and study impact of alternative approaches to work. • Participate in project meetings and discussions with PMU as required. • Assists in preparing work program, cash flow and manpower histogram for PPL and AIFFP. • Performs other duties and responsibilities as may be assigned from time to time.

Project Manager	<p>The Project Manager inputs to the project includes the following:</p> <ul style="list-style-type: none"> • Represent the Consultant team on the site and coordinate activities of the consultant team primarily field staff. • Monitor project progress against plan, report on progress, and propose remedial measures as necessary. • Review and approve designs and drawings (technical characteristics) submitted by the EPC Contractor • Monitor day to day work progress and prepare the periodic program and report. • Maintain and record update of site work progress obtained from EPC contractor. • Prepares monthly report reflecting work progress summary. • Report to PMU about the current work progress and make comparison between plan and actual progress and study impact of alternative approaches to work. • Participate in project meetings and discussions with PMU as required. • Assists in preparing work program, cash flow and manpower histogram for PPL. • Performs other duties and responsibilities as may be assigned from time to time.
Electrical Engineer (Hydroelectrical)	<p>The Electrical Engineer will work with the PMU Manager and with the National Electrical Engineer to ensure that the project outcomes are achieved within the specified time and budget. The Engineer will provide input to this project and shall undertake the following activities.</p> <ul style="list-style-type: none"> • Assist in the supervision of Construction, monitoring project program according to the construction program, maintaining quality and construction standards and Commissioning of the projects. • Review contractor's detailed designs and drawings for the projects to ensure that they meet the necessary international standards and conforms to the Employer's Requirements. • Review the proposed construction materials and the construction process proposed by the contractor to ensure it conforms to the recommended international standards and the Employer's Requirements. • Undertake site visits to establish the project progress and effectively monitor the project progress and assess the contractor's claims. Provide advice to the PM on the necessary measures to effectively mitigate project issues. • Attend the inspection & witnessing of testing of electrical plant and equipment. • Assess the testing and commissioning process and documentation provided by the contractor and attend the testing and commissioning phase. • Review contractor's claims for milestone payments for civil portions and assist PMU/PPL to verify and adjust the claims. Assist PMU/PPL to assess any variations proposed by the contractor and assess it; • Provide skilled input to the contractor's design and documentation including assessment of changes in design to accommodate site conditions. • Assist PMU/PPL in undertaking the implementation of the projects by ensuring all electrical components meet International best practice and ensuring that the contractor's design is suitable for conditions at sites and allow for any limitations imposed by the site conditions. • Certify As-Built drawings.
Procurement Specialist	<p>The procurement specialist will be required to:</p> <ul style="list-style-type: none"> • Develop PMU's procurement capacity;

	<ul style="list-style-type: none"> • Develop and review tender documents. • Execute different project procurement tasks on PMU's request if necessary; • Help develop payment certification procedures; • Help PMU prepare withdrawal applications and disbursement projections; • Help PMU evaluate contractors' claims for additional costs and extensions of time; • Help PMU prepare Variation Orders and Requests for Proposals for additional consulting services as required. • Create plant parts list and maintain registry.
Hydrologist	<p>The Hydrologist will:</p> <ul style="list-style-type: none"> • plan and collect surface water or groundwater and monitor data to support projects and programs • Conduct watershed and storm water studies. • Prepare various maps and figures, including: contour maps of groundwater elevations, geologic structure, cross-sections, isopach, water quality, and other hydrogeologic data. • Install and maintain water property and water quality instrumentation. • Determine the nature and extent of contamination in groundwater. • Arrange to establish the most effective water management methods for the dam and pond. • Assess the impact of environmental changes and land use changes. • Predict and monitor rainfall and water yields and usage. • Liaise with PPL, CEPA (as water regulator), and other stakeholders on matters regarding water use. • Forecast flooding and produce water and drought management plans for the hydro station. • Prepare written reports and make oral presentations
Quality Assurance/Compliance Specialist	<ul style="list-style-type: none"> • The preparation of PPL QA manual control and supervision of all amendments and revisions • Control and the distribution of all PPL quality documentation • Monitor all quality related activities on the project • Verify contractor quality requirements are specified to vendors and contractor documentation submittals. • The preparation and control of project quality system management documentation prior to project commencement. • Review quality inspection personnel qualifications and training requirements • Monitor the disposition of all issued nonconformance reports. • Monitor the progress and effectiveness of the project quality management system. Recommend and implement improvements when required. • Coordinate all QA/QC activities with the Project Manager • Coordinate all QA/QC activities with the procurement specialist • Action and close all customer complaints • Control all achieve documentation upon the completion of the project. • Develop and maintain a project Quality Assurance program. Ensure compliance with plan.
Financial Specialist	<ul style="list-style-type: none"> • Assisting Project Managers with the overall project accounting from the start to the finish of the project and taking ownership of the systems required for this. • Producing monthly cost reports for projects and assisting Project Manager with the production of monthly earnings; including reporting on project variances of actuals vs budgets and updating forecasts.

	<ul style="list-style-type: none"> • Making suggestions on improvements to PMU monthly financial systems. • Help improve the measurement of projects profitability with the bidding process. • Assisting with the preparation of quarterly forecasts and cashflow projections. • Help to educate and encourage all staff to take more responsibility over the financial aspects of the projects that they are doing and the overhead costs that they are incurring. • Assist with inputs of data into the PPL accounting system, and producing reports. • Offering professional judgement on financial matters and advising on ways of improving business performance. • To shadow and understand the work of other members of the finance team and support/help them in their tasks. • Create and submit government reports and tax returns related to projects • Close out project accounts upon project completion
National Experts	
Office Administrator	<ul style="list-style-type: none"> • Coordinate travels, meetings, and site visits. • Provide secretarial support as required. • Make a list of contract and other documents and archive them. • Assist with addressing applicable project issues as required. • Records and updates information on construction works received from the EPC contractor. • Any other admin tasks as and when required.
Instrumentation & Controls Engineer	<ul style="list-style-type: none"> • Evaluate and develop alternative control system solutions that best meet PPL requirements. • Develop design reports, specifications, plans, and associated deliverables for the I&C and SCADA systems. • Specify instruments, controllers, computers, servers, ancillary equipment and components, and application software. • Assist in defining interface requirements for process valves, adjustable frequency drives, and packaged systems. • Develop new and modify existing application programming in PLCs (programmable logic controllers), HMIs (human machine interfaces) and associated components. • Participate in consulting, design, construction, planning, commissioning/start-up, training, and close-out phase activities. • Create documentation for application software. • Work with and Coordinate SCADA system requirements with other disciplines including civil, structural, architectural, process mechanical, HVAC, plumbing, and electrical during the design phase. • Interact with clients to gain an understanding of their systems. • Work with contractors, and sub-contractors to resolve issues during, construction and commissioning/start-up. • Ensuring that installation and operations conform to standards and PPL requirements. • Ensuring compliance with specifications, codes, or customer requirements by directing or coordinating installation, manufacturing, construction, maintenance, documentation, support, or testing activities. • Writing reports and compiling data regarding existing and potential electrical engineering projects and studies. • Preparing specifications for purchases of electrical equipment and materials.

	<ul style="list-style-type: none"> • Help supervise contractors' works. • Monitor progress against plan. • Support with certifying progress payments. • Ensure adherence to project safety plan. • Support with certifying As-Built drawings. • Ensure adequacy of operation and maintenance manuals.
<p>Mechanical Engineer (Hydromechanical)</p>	<ul style="list-style-type: none"> • Support conceptual, preliminary and final mechanical engineering designs from layout to detailed designs. • Provide technical knowledge, expertise, experience and field engineering support services for hydro assets including rotating, related and other equipment used for power generation including hydroelectric units (particularly turbines) and related auxiliary equipment (governors, hydraulics, gates, cranes, air or nitrogen systems, heating systems and cooling systems) and all other mechanical equipment. • Supports Asset Management, Engineering and Project Management with identification, planning, design and execution of capital projects. • In consultation and coordination with PPL hydro maintenance team, provides O&M maintenance strategy, standards, processes, procedures and documentation. • Prepares project specific commissioning procedures and Operations and Maintenance procedure manuals. • Prepares project specific commissioning procedures and Operations and Maintenance procedure manuals. • Assists with the development and/or maintenance of hydroelectric mechanical design and maintenance standards for the safe and reliable operation of hydroelectric generating stations and supporting infrastructure. • Develops mechanical standards as directed and provides advice and guidance on mechanical standards. • Assists with the development and/or maintenance of hydroelectric mechanical design and maintenance standards for the safe and reliable operation of hydroelectric generating stations and supporting infrastructure. • Help review design submissions contractors. • Help supervise contractors' works. • Monitor progress against plan. • Support with certifying progress payments. • Support with certifying As-Built drawings. • Ensure adequacy of operation and maintenance manuals.
<p>Civil/Structural Engineer</p>	<ul style="list-style-type: none"> • Oversee and manage the activities for the inspections, maintenance and repair of all civil/structural works. • Monitor civil/structural maintenance activities for compliance with all applicable maintenance and safety procedures, regulations and standards. • Manage the dam/pond and other civil works instrumentation and monitoring program and maintain project records. • Establish and implement civil/structural works maintenance procedures and schedules for plant equipment. • Identify and solve issues relating to safety of Ramu 1 HPS pond and other civil works. • Detect, analyze, propose and implement modifications in the facilities that improve the maintainability of the plant, related to the penstock and tail race tunnel, civil works and buildings. • Establish the material and human resources to carry out the civil structural works/ maintenance.

	<ul style="list-style-type: none"> • Supervise and analyze the technical and financial performance of the civil/structural works. • Establish the scope and content of the civil/structural works. • Provide civil engineering assistance and technical guidance to personnel. • Maintain the records and drawings of all civil related structures for easy retrieval for future references. • Undertake inspection of existing civil structures to ensure excellent health of the plants' civil structures. • Manage support services required during the operation and maintenance of the plant. • Help review contractors, design submissions. • Help supervise contractors, works. • Monitor progress against plan. • Support with certifying progress payments. • Ensure adherence to project safety plan. • Support with certifying As-Built drawings.
Social Safeguards Specialist	<ul style="list-style-type: none"> • The Social Safeguard Specialist will initially focus on assisting the PMU to raise awareness in the PMU and contractors on all aspects of the statutory and guideline requirements for social assessment and management of the government and AIFFP. • The Social Safeguard Specialist will work with the Environment Specialist to develop a program to monitor the requirements of the EMPs (Environmental management plan) are fully integrated into the construction program of the project. • Review and analyze contractor's program to ensure social safeguard mechanism is incorporated and undertake field visits during implementation to the selected project sites to assess if the measures are effectively included during construction. • Working closely with the PMU gender development officer, ensure Gender Action Plan performance targets and activities are implemented, monitored and reported in quarterly reports. • Support the PMU in the development, implementation and monitoring of a Stakeholder Communication Strategy. • Develop HIV/AIDS training program for community near the project construction sites, who may be impacted by temporary influx of construction workers. Ensure adequate HIV/AIDS clauses are inserted into construction contracts. • Provide progress status on implementation of GAP and IPP in the PMU quarterly reports as per PPL and AIFFP requirement during project implementation. • Provide active support to the PMU in facilitating, managing and monitoring stakeholder and former landowner engagement in all the sub-projects under Phase 1. • Work closely with PMU and PPL in engaging with landowners and local community of the subprojects for the allocation of community-based contracts where applicable. • Support PPL and the PMU in monitoring the implementation of the Resettlement Plan as applicable and whether those impacted by the Subproject can restore, and preferably improve, their pre-project living standards, incomes, and productive capacity. • Review the monitoring and evaluation program, as required. • Assist the PMU in preparing monitoring report.
Financial Specialist	<ul style="list-style-type: none"> • Assisting Project Managers with the overall project accounting from the start to the finish of the project and taking ownership of the systems required for this.

	<ul style="list-style-type: none"> • Producing monthly cost reports for projects and assisting Project Manager with the production of monthly earnings; including reporting on project variances of actuals vs budgets and updating forecasts. • Making suggestions on improvements to PMU monthly financial systems. • Help improve the measurement of projects profitability with the bidding process. • Assisting with the preparation of quarterly forecasts and cashflow projections. • Help to educate and encourage all staff to take more responsibility over the financial aspects of the projects that they are doing and the overhead costs that they are incurring. • Assist with inputs of data into the PPL accounting system, and producing reports. • Offering professional judgement on financial matters and advising on ways of improving business performance. • To shadow and understand the work of other members of the finance team and support/help them in their tasks. • Create and submit government reports and tax returns related to projects. • Close out project accounts upon project completion.
<p>Environment Safeguard Specialist</p>	<ul style="list-style-type: none"> • The international environment specialist (IES) will work intermittently with the PMU Manager and the Team Leader and with PPL's Environment Officer (EO) to ensure that the project outcomes are achieved within the specified time and budget. The Environmental Safeguard Specialist will provide input to the projects and shall undertake the following activities. • Provide capacity building to the PMU in safeguard matters and raise awareness in the PMU and contractors on all aspects of the statutory and policy requirements for environmental assessment and management as required by the government and AIFFP. Including obtaining necessary permits from the Conservation and Environment protection Authority (CEPA). • Provide capacity building and mentoring to PPL's EO. Assist PMU/PPL in strengthening the environmental management of the overall program by undertaking the necessary training for the EO in environmental assessment procedure and techniques, mitigation planning, environmental supervision and monitoring, and reporting. Involve the EO through on-the-job training, affecting transfer of knowledge and skills, in environmental management and monitoring of projects, and ensure staff capability in handling environmental management of the program under this and subsequent tranches. • Ensure compliance with the AIFFP Safeguard Policies, and environmental assessment review framework of the Project; and ensure compliance of project implementation with the government's laws, environmental policy and procedures, including preparation and submission of notification of each project under each tranche to the CEPA in accordance with the prescribed format, and other requirements as directed by CEPA. • Based on methods and procedures (checklists, database, reporting etc.), developed during Project 1, work with and support the EO to develop a program to (i) update assessment and EMPs required, based on detailed design and integrate these into bid documents; (ii) assist in the evaluation of bids in respect of environmental management matters; (iii) provide support and training to the contractor as they prepare their site-specific EMP (SEMP); (iv) review and approve the SEMP; and (v) monitor compliance with the approved SEMP..

	<ul style="list-style-type: none"> • Ensure that the SEMP complies with the contractual and environment safeguard requirements. • In coordination with the EO, develop and implement a detailed monitoring plan and supervise SEMP implementation and undertake regular compliance monitoring to ensure all works implemented are in accordance with the approved SEMP. • Report on monitoring results, particularly SEMP implementation and effectiveness of environmental impact mitigations and training provided to PPL and contractors in: (a) inputs to PMU quarterly progress reports; and (b) semiannual safeguards monitoring reports. • In discussion and coordination with PPL, assist in preparing/ or updating environmental assessment guidelines for energy sector focusing on hydropower projects in line with country systems/procedures and best practice (using SPS as benchmark) for staff guidance during project preparation and implementation.
OH&S Specialist	<ul style="list-style-type: none"> • Establish and improve proper safety standards and procedures to minimize or eliminate project related incidents and down times including; loss time injury, deaths, personnel injury and plant/equipment damage. • Undertake site visits, understand construction methodologies and logistics plan to establish project risks and hazards and establish risk assessments and develop mitigation measures, develop Job Safety Analysis (JSA) and Safe Work Procedures (SWP) • Provide guidance and training to correctly observe and adhere to established safe work practices applicable for power industries such Lock Out Tag Out (LOTO), HV/EHV Permit systems, Isolation procedures, work at heights, Standard Operating Procedures (SOP), amongst others. • Assist in the supervision of construction and monitoring project performance by way of managing safety standards and compliance. This includes keeping track of safety matters, dissemination of safety information, and promote safety. • Review contractors detailed OH&S policies and procedures for the projects to ensure that they meet the necessary international standards and conforms to the Employer's Requirements. • Review the proposed construction electrical safety management plan (ESMP) proposed by the contractor to ensure it conforms to the recommended international standards and the Employer's Requirements. • Undertake site visits to establish the project progress and effectively monitor the project progress and assess the contractor's interventions. Provide advice to the PM on the necessary measures to effectively mitigate project issues and risks. • Provide inputs and lead any OH&S incidents that may occur during the construction and commissioning phase of the project. • Assist PMU/PPL in undertaking the implementation of the projects by ensuring all electrical components, tools, and equipment are fit for purpose, and shall pose no danger to anyone at any time. This includes all power tools are tested and tagged, all electrical items have been tested to correct standards, all lifting devices are correctly rated and labelled. • Promote safe work environment by way of controlling project hazards through: Elimination, Substitution, Isolation, Engineering Controls , Administration and PPE.
Procurement Specialist	<ul style="list-style-type: none"> • Develop PMU's procurement capacity. • Execute different project procurement tasks on PMU's request if necessary;

	<ul style="list-style-type: none"> • Help develop payment certification procedures; • Help PMU prepare withdrawal applications and disbursement projections; • Help PMU evaluate contractors' claims for additional costs and extensions of time; • Help PMU prepare Variation Orders and Requests for Proposals for additional consulting services as required.
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8 Indicative Schedule

Activity	Timeframe	Schedule
Feasibility Study		
Inception Report	completed	completed
Feasibility Report		
ESIA Report		
Bidding/Tender - CSC	3 months	TBC
ToR Preparation		
Bid Document		
Tender		
Selection		
Contract Award		
Bidding /Tender – E&M Contractors and Civil/Structural Contractors	3 months	TBC
ToR Preparation		
Bid Document		
Tender		
Selection		
Contract Award		
Detailed Design	5 months	TBC
Civil/Structural		
Electrical		
Mechanical		
Hydrology		
Geotech		
Auxiliary		
Controls		

Design Review & Approval	4 months	TBC
Civil/Structural		
Electrical		
Mechanical		
Hydrology		
Geotech		
Auxiliary		
Controls		
Procurement	8 months	TBC
Civil/Structural		
Electrical		
Mechanical		
Hydrology		
Geotech		
Auxiliary		
Controls		
Installations	14 months	TBC
Civil/Structural		
Electrical		
Mechanical		
Hydrology		
Geotech		
Auxiliary		
Controls		
Test & Commission	3 months	TBC
Civil/Structural		
Electrical		
Mechanical		
Hydrology		
Geotech		
Auxiliary		
Controls		

9 Deliverables

The consulting firm shall submit the following required reports:

- **Inception Report.** This shall be submitted within one month after mobilization. It shall contain the proposed implementation plan, schedule of personnel deployment, and detailed approach and methodologies for implementation. An inception workshop will be conducted with the PMU / PPL and AIFFP within 30 days of the commencement of services to present the proposed program of activities and to seek feedback on improvements, which will be reflected in the consultants' inception report.
- **Monthly Progress Reports.** This shall be submitted by the end of each month during the consulting service period. The third monthly report of each quarter will also be the Quarter Progress Report. This shall contain (i) the latest progress status against the targets set in the initially agreed implementation plan in the inception report, (ii) justification for any major variations and (iii) mitigation measures to minimize any further variations.
- **Quarterly Report:** This shall be submitted quarterly which will be distributed to the stakeholders, such as AIFFP, DNPM, Treasury, Finance and PPL Management/Board.
- **Interim Report.** This shall be submitted within 12 months after mobilization. This shall contain achievement of the project in relation to the targets set in the TOR and agreed implementation plan. It shall include key findings of project-supported workshops, and key progress, monitoring and evaluation data to enable overall project monitoring.
- **Completion Report.** This shall be submitted at the end of the assignment, including accomplishments under the project, challenges faced, and lessons learned and comparison between estimates vs. actual outputs - for instance, technical, financial, economic, and environment and social safeguards, etc. A final review workshop will be conducted with relevant government agencies, stakeholders and AIFFP. The final workshop will summarize the final report.