



तामाकोशी जलबिद्युत कम्पनि लिमिटेड

तामाकोशी पाँचौं जलबिद्युत आयोजना

थापागाउँ, नयाँ बानेश्वर, काठमाडौं

मौजुदा सुचि तथा बिज रोष्टरमा नाम समावेश गर्ने सम्बन्धित सूचना

(प्रथम पटक प्रकाशित मिति २०७७/०४/१३)

तामाकोशी जलबिद्युत कम्पनि लिमिटेड अन्तर्गत निर्माण गर्न लागिएको तामाकोशी पाँचौं जलबिद्युत आयोजनाको लागि आवश्यक समानहरु आपूर्ति, सिभिल निर्माण, सवारी साधन पार्टपुर्जा, मर्मत सम्भार तथा परामर्श सेवाको मौजुदा सुची तयार पार्ने कार्यको लागि नाम समावेश गर्न इच्छुक परामर्शदाता/आपूर्तिकर्ता/निर्माण व्यवसायी व्यक्ति, फर्म, संस्था, कम्पनिहरुले आफुले गर्न सक्ने कार्यको विवरण सहित फर्म दर्ता प्रमाण-पत्र, मु.अ.कर दर्ता प्रमाण-पत्र, स्थाई लेखा नम्बर (PAN) दर्ता प्रमाण-पत्र तथा अद्यावधिक कर चुक्ता प्रमाणपत्र सहित फर्मको नाम, ठेगाना र सम्पर्क नं. स्पस्ट उल्लेख गरि तोकिएको समय भित्र यस कार्यालयमा प्राप्त हुनेगरी निवेदन पेश गर्नुहुन जानकारीको लागि यो सूचना प्रकाशित गरिएको छ।

यसका साथै आयोजनाको लागि आवश्यक परेको समयमा परामर्शसेवा लिने प्रयोजनको लागि सम्बन्धित विषयका बिशेषज्ञहरुको सुची(रोष्टर) तयार गर्ने कार्य भैरहेकोले उक्त सुचिमा नाम समावेश गर्न इच्छुक व्यक्तिहरुले www.nea.org.np मा रहेको निवेदन फारम भरि माथि उल्लेखित कार्य सहित यो सूचना प्रथम पटक प्रकाशित मितिबाट १५ (पन्ध्र) दिन भित्र यस कार्यालयको इमेल ठेगाना tamakoshi5@nea.org.np वा info.tkjvc5@gmail.com वा यस कार्यालयमा आइपुग्ने गरि पठाउनु हुन अनुरोध छ। बिस्तृत विवरणको लागि वेबसाई www.nea.org.np हेर्नु हुन वा कार्यालयमा सम्पर्क गर्नु हुन अनुरोध छ।

सम्पर्क ठेगाना

तामाकोशी जलबिद्युत कम्पनी लिमिटेड

ओखरबोट मार्ग, थापागाउँ,

नयाँ बानेश्वर, काठमाडौं।

फोन.नं. ५२४५०६३/५२४५०६७



TAMAKOSHI JAL VIDHYUT COMPANY LIMITED

Tamakoshi V Hydroelectric Project

TERMS OF REFERENCE

ROSTER OF EXPERTS

1. Background

Tamakoshi Jalvidhyut Company Limited (TKJVC) was established as a sister organization of Nepal Electricity Authority (NEA) for Construction of Tamakoshi V Hydroelectric Project. The Tamakoshi V Hydroelectric Project is located in Bigu and Gaurishankar Gaupalika, Dolakha District of Bagmati Province.

Tamakoshi V Hydroelectric Project is designed with Design discharge of 66 m³/sec. This project is cascade project of Upper Tamakoshi Hydroelectric Project (Interconnection between TKHEP and Upper Tamakoshi is at Gongar, Dolakha). The installed capacity of this project is 99.8 MW and maximum generation capacity is 94.8 MW (Rated Capacity). It has three larger generation units of 31.6 MW each and smaller generation unit of 5 MW.

Detail design of the project has been completed by the Consultant Tractebel Engineering GmbH, Germany. Tender of permanent camp facilities construction works for the project has been issued and it is at the stage of evaluation. This project is in the way of construction phase.

This call for application is intended to establish a Roster of Experts/ Senior Engineers, who may be called upon as required for assignments as mentioned below, subject to the Specialists availability and mutually agreed terms and conditions.

2. Objective of the Experts.

The TKJVC intends to obtain the services of National Experts who are experienced in the design and development of hydropower projects to provide independent advice, involve as an expert, to provide guidance to the sub ordinates in related field and coordinate with the team of the projects. The Roster of Experts shall also form a Resource Pool for design works as necessary for TKJVC.

The objective of the Expert is to design, review and guide the engineers of TKJVC for the technology transfer complying national and international standards of excellence and safety, as reflected in the practice, under the legislation, regulations and guidelines of Nepal. The expert will be hired on hourly or daily or weekly or monthly or delivery basis based on the input requirement and the availability of experts.

The experts may be called upon for any other project study or investigation and detail design as TKJVC requires and may be engaged upon in the future.

3. Composition of the Specialists for the Roster



Roster is expected to contain specialists for the TKJVC as well as other assignments. It is envisaged that the Roster will comprise following experts:

1. Senior Geotechnical Engineer
2. Senior Tunnel Engineer/ Expert
3. Senior Hydro-Mechanical Engineer/ Expert
4. Senior Structural Engineer
5. Senior Hydropower Engineers/Experts
6. Senior Hydrologist / Hydrology/ Sediment Experts
7. Senior Construction Planner Experts
8. Senior Electro-mechanical Engineer/ Expert
9. Senior Contract Engineer/Expert
10. Senior Financial/Economic Analyst
11. Senior Transmission Line Engineer/Experts
12. Senior Water Supply / Sanitation Engineer.
13. Senior Geologist Expert.
14. Senior Legal Expert
15. Senior Cost Expert

4. Qualifications and Experiences of Experts

The qualifications and experiences of Expert shall be as followed:

SN	Description	Education & Experience
1	Senior Geotechnical Engineer	Minimum of a M.Sc. in Geotechnical/Geological Engineering with preference to advanced degrees and training.
		Minimum of 15 years of experience working on engineering projects with minimum 10 years' experience as Geo-tech engineer in at least one hydropower / similar project in Feasibility / Detail Design /Construction stage.
2	Senior Tunnel Engineer/ Expert	Minimum of a M.Sc. in Geotechnical/ Tunnel Engineering.
		Minimum of 10 years of experience in large scale projects or with minimum 5 years worked as Tunnel Engineer in at least one hydropower project in feasibility / Detail design stage/ Construction stage. Experience and knowledge of using Phase II or equivalent design software for tunnel and support works.
3	Senior Hydro-Mechanical Engineer/ Expert	Minimum Bachelor or Higher Degree in Mechanical engineering or equivalent.
		Minimum of 10 years of experience for Master's degree and 15 years of experience for Bachelor's degree in Large Scale projects with minimum 5 years as Hydro-Mechanical Engineer in at least one Hydropower / similar projects during feasibility / Detail design stage/ Construction stage.
4	Senior Structural Engineer	Minimum Master's Degree or Higher Degree in Structural Engineering or equivalent.
		Minimum of 10 years of experience for Master's degree with minimum 5 years strictly been worked as Structural Design Engineer in at least one Hydropower / similar project during Detail design stage/ Construction stage.



		Good knowledge of one of the Design software like ETABS, SAP 2000, Staadpro, Prokon, Risa etc.
		Involvement in large projects inside the country with international consulting firms during design stage shall be given preference.
5	Senior Hydropower Engineers/Experts	Minimum Bachelor's Degree with elective subject water power engineering or Master's degree in Water Resources Engineering/ Hydropower Engineering or equivalent.
		Minimum of 10 years of experience for Master's degree or 15 years of experience for Bachelor's degree and with minimum 5 years worked as Hydropower Engineer in at least one Hydropower / similar project during feasibility / Detail design stage/ Construction stage.
6	Senior Hydrologist / Hydrology/ Sediment Experts	Minimum Bachelor's degree in civil engineering or Master's degree in Water Resource Engineering or equivalent.
		Minimum of 10 years of experience for Master's degree or 15 years of experience for Bachelor's degree with minimum 5 years as Hydrologist in at least one Hydropower / similar project during feasibility / Detail design stage/ Construction stage.
7	Senior Construction Planner Experts	Bachelor's degree in civil Engineering or higher degree or equivalent with minimum 10 years of experience in construction industry. Out of which, 5 of those years should strictly worked as construction planner for at least one Hydropower project during the detailed design or construction stage.
		Must have knowledge of software like Primavera P6 or equivalent.
8	Senior Electro-mechanical Engineer/ Expert	Minimum Bachelor's Degree in Electrical Engineering or Higher Degree in Electrical Engineering or equivalent.
		Minimum of 10 years of experience for the Master's Degree and or 15 years of experience for the Bachelor's degree with at least minimum 5 years working experience in at least one Hydropower Project during feasibility Study / Detail Design stage/ Construction stage.
		Experience in Electro- mechanical design of hydropower projects.
		Involvement in large projects inside the country with international firms shall be given preference.
9	Senior Contract Engineer/Expert	Bachelor's Degree or Higher Degree in any engineering discipline with experience in Hydropower Projects preferably worked with international team in English speaking environment.
		At least 20 years of overall experience and Experienced in Arbitration of claims or complaints is a good choice
		Well exposed with insurance policy and general context of contract system in Nepal.
		Candidate should have experience in FIDIC Contract system
10	Senior Financial/Economic Analyst	Master's Degree in Finance, or Engineering Economics or chartered accountant or other relevant majors.
		Having worked as a Financial Analyst for 15 years with minimum 5 years producing financial / economics indices from various " data collection and analysis" for at least one Hydropower project during feasibility study or detailed design.
		Experience in Financial/Economic Analysis of hydropower projects with international consultant or company inside the country or abroad will be



		highly preferred
11	Senior Transmission Line Engineer/Experts	<p>Bachelor's Degree or Higher Degree in Civil /Electrical Engineering or equivalent.</p> <p>Minimum 15 years of experience in relevant professional works.</p> <p>Minimum of 10 years of experience for the Master's Degree and 15 years of experience for the Bachelor's degree, out of which minimum 5 years should have worked in design of Transmission Line and Towers in Hydropower Projects during the feasibility Study / Detail Design stage/Construction stage.</p> <p>Extensive experience in design of Transmission Towers and foundations.</p> <p>Minimum of 10 years of experience for the Master's Degree and 15 years of experience for the Bachelor's degree, out of which minimum 5 years should have worked as power system analyst in Hydropower Projects of capacity greater than 20 MW in the feasibility Study / Detail Design stage/ Construction stage.</p>
12	Senior Water Supply / Sanitation Engineer.	<p>Bachelor's Degree in civil engineering or Master's Degree in Sanitation Engineering or equivalent.</p> <p>Minimum of 10 years of experience for the Master's Degree and 15 years of experience for the Bachelor's degree in the design and Construction supervision of water supply projects and sanitation Works.</p> <p>Experience in Hydropower Projects shall be given preference.</p>
13	Senior Geologist Expert.	<p>Bachelor's in Engineering Geology or Master's in Geology</p> <p>Minimum of 10 years of experience for the Master's Degree and 15 years of experience for the Bachelor's degree with minimum 5 Year Worked in feasibility study and detailed design of Hydropower Projects/ Construction stage.</p>
14	Senior Legal Expert	<p>Bachelor's Degree in Law or Master's Degree in Law or equivalent</p> <p>Minimum of 10 years of experience for the Master's Degree and 15 years of experience for the Bachelor's degree with minimum 5 Year Worked in legal matters related to hydropower.</p>
15	Senior Cost Expert	<p>Must have an engineering degree and preferably master's degree in cost estimation with at least 10 years of working experiences and minimum of 5 years of working experiences in cost estimation for hydropower projects.</p>

5. Duties of the Experts

The primary tasks of the expert will include, but not necessarily be limited, to the following:

SN	DESCRIPTION	DUTIES
1	Senior Geotechnical Engineer	<p>Analyze, Design, Calculate and develop, drawings related to geotechnical part of Dam/ Weir, Intake, De-sanding Basin, Tunnels, Surge Tank, Penstock, Power House, Tailrace etc.</p> <p>Design support system of the tunnels and finalize investigations and instrumentations.</p> <p>Carry out necessary calculations and analysis related to tunnel and underground structure design.</p> <p>Inputs for the preparation of design basis memorandum</p>



2	Senior Tunnel Engineer/ Expert	Responsible for coordination and productivity of subordinates and provide technical guidance to engineers.
		Guide and coordinate design development and assists in providing technical expertise in design works,
		Prepare and responsible for completion of engineering project elements such as reports, designs, specifications and plans.
		Inputs for design basis memorandum and provide support for design review and quality assurance.
		Perform calculations and analyses related to tunnel and underground structure design,
3	Senior Hydro-Mechanical Engineer/ Expert	Carry out analysis, design and drawings of hydro – mechanical components
		Review and guide the hydraulic calculations prepared by design team member and work as mentor.
		Complete Design of Penstock, Gate, Valve, Steel Liner and similar components.
		Well exposed with the performance of turbine and its accessories
		Prepare design basis memorandum for hydro- mechanical works
4	Senior Structural Engineer	Complete responsibility on structural components including specifications, design criteria, and other available data preparatory to the accomplishment of the structural design and the preparation of design analysis.
		Analyze, Design and coordinate structural design and foundation requirements with all other design disciplines to provide a comprehensive design product.
		Prepare design basis memorandum for the structural components.
5	Senior Hydropower Engineers/Experts	Develop a hydropower scheme basis on river system by coordinating other members of the design team.
		Design and optimize headwork structures and prepare drawings and specifications
		Develop a design criteria for feasibility studies and detailed design and other reports
		Develop the feasibility studies from the view point of overall engineering aspects in accordance with international best practices.
		Prepare the reservoir sedimentation study carried out by the hydrological engineer to identify the least cost solution with minimum environmental impacts. Reflect the optimal design in the cost estimates and tender documents.
		Prepare any disaster risk management plan including local flood control and early warning systems, with the hydrological engineer.
		Finalize a generation scheme based on the reservoir sedimentation study with the hydrological engineer.
		Prepare reports for different levels of the study
		Work and review the project documents with respect to FIDIC form of contracts.
6	Senior Hydrologist / Hydrology/ Sediment	Investigations for surface water and/or groundwater as well as technical evaluations for their applications to hydrogeology
		Perform calculations of floods hydrographs and routing effects due to the rainfall pattern and catchment conditions.



	Experts	Preform calculations of for the design discharge in the diversion tunnel, PMF discharge calculation for 100 ,1000 years period and prepare Routing Curve for Headworks and Tailrace.
7	Senior Construction Planner Experts	<p>Develop the project schedule in Primavera P6 or similar equivalent software.</p> <p>Identify the critical path and report any issues impacting the critical path</p> <p>Coordinate with the design team to ensure that schedule activities are accurately updated</p> <p>Provide reports in accordance with the project calendar.</p> <p>Examine and finalize construction methods for civil works in consideration of the site conditions, and work with estimated BOQ and manpower needed for the execution of the project.</p> <p>Prepare and finalize construction schedule for civil, hydro- mechanical and electromechanical works including transmission line works.</p>
8	Senior Electro-mechanical Engineer/ Expert	<p>Plan and carryout the electric equipment installation works, considering the site conditions.</p> <p>Prepare the technical section for the electrical equipment in the tender documents.</p> <p>Prepare a cost estimate as per the schedule for design, transportation and installation works for the electrical equipment.</p> <p>Prepare documentation on the actual design including all design principle criteria, parameters and standards. Also prepare all major calculations and analysis including all the drawings related to electromechanical equipment's and coordinates with the design team.</p> <p>Estimate construction power study for project construction and finalize construction power study of nearby substation, transmission line required including the preliminary design component of construction power supply system prepared by the design team.</p> <p>Prepare the technical specifications for the electrical equipment and transmission lines in the tender documents and review tender documents.</p>
9	Senior Contract Engineer/Expert	<p>Prepare all the contractual analysis required in the light of FIDIC clauses and technical specification.</p> <p>Prepare all required contractual documents related to EPC level Contract documents with respect to FIDIC clauses and technical specifications</p>
10	Senior Financial/Economic Analyst	<p>Determine and finalize all indicators such as Net Present Value (NPV), Benefit Cost Ratio, Internal Rate of Return etc. essential for analysis</p> <p>Prepare and finalize financial analysis of the projects and the project entity such as, commercial merits of the projects under alternative power market conditions (Electricity Market and Demand), financial packages and fiscal regimes.</p> <p>Prepare and identify risks associated with the project and allocated to the party that is assumed to cover the risk in the most cost efficient way in order to minimize financial costs of the venture.</p> <p>Identify and assess various financial sources including public funds from Nepal and other countries that may benefit from the projects, multilateral / bi lateral organizations and commercial financial institutions.</p> <p>Prepare sensitivity Analysis of the project.</p>
11	Senior	Prepare the transmission line routing with alternatives and select the tower



	Transmission Line Engineer/Experts	types and locations
		Carryout the design of the tower including analysis with structural models used for their optimum design.
		Select the Conductor type, schemes, specifications selection, and accessories and insulators selection and design
		Finalize the sub-station location and the switchyard design.
		The Transmission lines will be of 132 kV, 220 kV, 400 kV and similar voltages
		Inputs for design basis memorandum preparations
12	Senior Water Supply / Sanitation Engineer.	Calculate data required for the water supply system and design necessary structures for the system.
		Insure the water quality tests in the laboratory and finalize essential treatment plants and process for the safe potable water.
		Design the sanitation process in the camp, power house, Headwork control building and other locations as needed.
		Prepare cost and necessary tender documents for the execution.
13	Senior Geologist Expert.	To study the general suitability of site for the hydropower structures.
		To determine the possible difficulties that may occur during construction method.
		To determine the suitability of construction materials.
		To ascertain the nature of sub surface and their properties and behavior for the safe design of dams, tunnels and other structures.
		Seismological study of project to derive seismic design parameters, to ensure earthquake safety of the major structures and its associated seismic hazard and selected design and risk of failure of the competent structure. Review of pertinent and available geological and seismological reports and data.
		Evaluation of seismic status of faults, thrusts and other weak features in the vicinity of the dam sites and within the region, etc.
		Based on the available information and assessment of local and regional seismicity the seismic design criteria of structures shall be determined.
14	Senior Legal Expert	To advise the Company/project in legal issues related to contracts/consultant/contractor
		To advise Company for dispute resolution in different matters that Company/project may feel necessary
15	Senior Cost Expert	To give necessary suggestion/guidance on the matter related to cost
		To advise Company/Project on running/final bills submitted by Contractor/consultant

6. EVALUATION ON APPLICATIONS FROM LOCAL EXPERTS



Local Experts Application which meets the eligibility criteria will be ranked on the basis of the Ranking Criteria.

i) **ELIGIBILITY AND COMPLETENESS TEST** **COMPLAIANCE**

Copy of Registered Nepal Engineering Council Certificate	
PAN Registration	
Form 1: Application	
Form 2: Curricular Vitae	
Form 3: Experience Forms 3A ,3B, 3C, 3D	

ii) **EVALUATION CRITERIA**

A. **QUALIFICATION (15 Marks)**

- Master's Degree
- Bachelor's Degree

B. **EXPERIENCE (85 Marks)**

NOTE:-The experience marks shall include the Specific experience in feasibility study, detailed design & construction supervision of Hydropower Projects. Besides, it shall include the general experience in Relevant works, knowledge of relevant design software & trainings on relevant subjects.



Form 1 : Application

Date:

To,

The CEO

Tamakoshi Jalvidhyut Company Limited

Okarbot Marg, New Baneshwor

Sir,

1. Being duly responsible.....hereinafter "the Applicant"), and having reviewed and fully understood all the required information provided in the Roaster of Experts, the undersigned hereby apply to be included in Roaster of Experts in the field of.....(to be filled by applicant) by the Tamakoshi Jalvidhyut Company Limited (TKJVC) as Expert for Feasibility Study / Detailed Design of the Hydropower Project / other Study works to be carried out.
2. Attached to application are photocopies of original documents defining:
 - a. Applicant's eligibility includes registered number from the Nepal Engineering Council, Pan No
 - b. Experiences status in format given in table 3A, 3B, 3C and 3D.
3. Tamakoshi Jalvidhyut Company (TKJVC) and its authorized representatives are hereby authorized to verify the statements, documents, and information submitted in connection with this application. This Application will also serve as authorization to a ny individual or authorized representative of any institution referred to in the supporting information, to provide such information deemed necessary and requested by yourselves to verify statements and information provided in this application, or with regard to the experience and competence of the Applicant.
4. I declare that, I have no conflict of interest in the proposed proceedings and I have not been punished for an offense relating to the concerned profession or business and I have not been declared ineligible.
5. I further confirm that, if I would found engaged to prepare the TOR for any ensuing assignment resulting from our work product under this assignment, I myself will be disqualified from the Roaster of Experts and participation in the assignment.
6. I, the undersigned, declare that the statements made and the information provided in the duly completed application are complete, true and correct in every detail.

Signature:.....

Name:.....

Mail Add:.....

Mobile No.:.....



Form 2: Curriculum Vitae



Form 3A: Experience in Feasibility Study of Hydropower Project.

List of experience in Feasibility Study of Hydropower Projects.

S. No.	Name of the Project	Location	Capacity	Client	Execution Year / Duration	Name of the Responsibilities
1						
2						
3						
4						
5						

Signature of Applicant:

Date:

Note: the experience of the applicant shall be supported with evidence/proof in the form of experience certificates.



Form 3B: Experience in Detail Design of Hydropower Project.

List of experience in Detailed Design Hydropower Projects.

S. No.	Name of the Project	Location	Capacity	Client	Execution Year / Duration	Name of the Responsibilities.
1						
2						
3						
4						
5						

Signature of Applicant:

Date:

Note: the experience of the applicant shall be supported with evidence/proof in the form of experience certificates.



Form 3C: Experience in Supervision of HEP structures.

List of experiences in Supervision of Hydroelectric Project.

S. No.	Name of Project	Location	Capacity	Year started	Year Completed	Client	Name of the Responsibilities
1							
2							
3							
4							

Signature of Applicant:

Date:

Note: the experience of the applicant shall be supported with evidence/proof in the form of experience certificates.



Form 3D: General Experience in Relevant work.

List of experiences in relevant job.

S. No.	Name of Project	Location	Capacity	Year started	Year Completed	Client	Name of the Responsibilities
1							
2							
3							
4							

Signature of Applicant:

Date:

Note: the experience of the applicant shall be supported with evidence/proof in the form of experience certificates.

