

# **Khyber Pakhtunkhwa Hydropower Development Program (KPHDP)**

## **Summary of Terms of Reference**

### **Project Implementation Consultants (PIC)**

#### **I. Background**

1.1 Pakistan is rich in natural resources including hydropower potential. Only small portion of hydropower potential (about 15%) has been developed. A large portion of this potential is in Khyber Pakhtunkhwa, concentrated in districts Chitral, Dir, Kohistan and Swat which is yet to be harnessed. Despite being rich in hydropower resources some of these remote areas are also facing acute shortage of electricity. Government of Khyber Pakhtunkhwa (GoKP), therefore, is pursuing development of several of these projects through public and private sector and is seeking World Bank financing. Several sites were identified in collaboration with German Agency for Technical Cooperation (GTZ) during 1990s and are among the priority projects of the GoKP. Of these PEDO has done feasibility for Kalkot-Barikot-Patruk HPP and Patruk-Shringal HPP and is in progress for Gabral-Kalam HPP. These and other such sites would be candidates for financing under the proposed Project. Brief description of the projects to be covered through the subject consultancy services is provided below:

- 1) **Kalkot-Barikot-Patruk HPP including associated and ancillary infrastructure and activities (KBPH).** Project is located 50km north-east of Dir town in District Upper Dir. The feasibility study has been carried out by M/s Electra Consultants in association with M/s Integration GmbH and was completed in 2013 after having detailed field investigations regarding topography, hydrology, geology, seismic, infrastructure, environment, layout planning and design, transmission, etc. The proposed project on Panjkora River would have a generating capacity of about 47 MW consisting of a weir, head race tunnel, sand trap, pressure tunnel, surge shaft, penstock, power house, tailrace, transmission line, offices, residential area, etc. with annual energy generation of 230 GWh. For this site construction supervision would be carried out under this consultancy contract;
- 2) **Patruk-Shringal HPP including associated and ancillary infrastructure and activities (PSH).** Project is located 35km north-east of Dir town in District Upper Dir. The feasibility study has been carried out by M/s Electra Consultants in association with M/s Integration GmbH and was completed in 2013 after having detailed field investigations regarding topography, hydrology, geology, seismic, infrastructure, environment, layout planning and design, transmission, etc. The proposed project on Panjkora River would have a generating capacity of 22 MW consisting of a weir, head race tunnel, sand trap, pressure tunnel, surge shaft, penstock, power house, tailrace, transmission line, offices, residential area, etc. with annual energy generation of 120 GWh; this would involve feasibility, design, bidding documents and construction supervision.
- 3) **Gabral-Kalam HPP including associated and ancillary infrastructure and activities (GKH).** The project is on Gabral River, a tributary of Swat River, about 8km upstream of Kalam Village in District Swat. Project is expected to have a generation capacity of 110 MW and will generate about 400 GWh annually. This would involve feasibility, design, bidding documents and construction supervision.

1.2 The feasibility studies for projects '1' and '2' above are available with PEDO and the feasibility study for project '3' above is in progress and expected to be completed by December 2019.

1.3 The development of the hydropower projects(HPPs) and the associated transmission lines to the nearest grid substation will also require full Environmental and Social Impact Assessments (ESIA), including a Cumulative Impact Assessment (CIA). This ESIA will be carried out via a separate contract, as required by World Bank supported projects. The Consultant should regularly coordinate its activities with the ESIA consultant and actively inform itself of the results of the ESIA. Results of the technical design studies and the parallel ESIA should be integrated to make the final choice of the best scheme layout for each of the HPP. The design of the project features should take into account environmental and social impacts, and the cost estimate and proposed implementation plan should take into account for implementing the Environmental Management Plans, Social Action Plan including resettlement compensation and livelihood improvement programs for the affected people.

1.4 The consultant's services and output will be reviewed by an Independent Panel of Experts (IPOE)/Advisors assigned by PEDO. The IPOE will include experts who will review main draft reports and give professional advice on all matters concerning project design, construction, bid documents, contract management and safeguards. The consultant should respond to IPOE's comments and recommendation, incorporate these in the final reports, or clearly motivate if not following the recommendations.

## II. Detailed Scope of Services

### Assignments

2.1 The consulting services are divided into following independent assignments that can run separately or concurrently.

**Assignment 1 GKH – Construction Supervision.** Support in procurement of works, goods and services related to this scheme, contract management and construction supervision in the role of "engineer" as well as management support and technical assistance. It would include review of tender design, finalize the bidding & other documents (Task A4) and help with tendering process (Task A5), leading to Construction Supervision Support (Task B).

**Assignment 2 KBPH and PSH – Design and Tender Documents.** Review and upgradation of feasibility study to international standards, preparation of detail designs and tender documents for these two schemes (Task A).

**Assignment 3 KBPH and PSH – Construction Supervision.** Support in procurement of works, goods and services related to these schemes, contract management and construction supervision in the role of "engineer" as well as management support and technical assistance (Task B)

**Assignment 4 Provision of technical assistance, training, capacity building** in all aspects of Hydropower projects, identification planning, design, development, construction

supervision, financial management, developing financing, legal and institutional strategies and structures as well as Project Management.

2.2 The consultancy services would include all other associated and ancillary infrastructure and activities associated with these hydropower schemes e.g. transmission line, access roads, offices and colonies for construction, land acquisition& resettlement, environmental management plans, social action plan, etc.

2.3 The technical and financial proposals of the consulting services should cover all Assignments. The Assignments would be financed initially from the Preparation Advance provided by the World Bank and from the World Bank Loan/Credit subsequently. It is the intention to tender the consultancy services in full to one firm or a consortium to avoid interface problems. Decision to commence each Assignment will be taken by PEDO together with the World Bank. Assignment 1 and 2 are expected to run concurrently. After the Commencement of Consultancy Services for first Assignmentthe commencement of next assignment will be contingent upon: (i) satisfactory performance by the Consultants during Assignment-1 and 2; and (ii) clearance and approval from the World Bank and the PEDO to proceed with the Assignment-3.

### **Description of Tasks**

2.4 Task A covers the preparation or review/updating of feasibility studies, preparation of detailed engineering design, bidding documents, PC-I& other documents required for approvals/clearances and support of the client during tendering and Task-B covers support of the Client during construction supervision. For clarity and ease, scope of each task is described below:

**Task A:**Prepare or review and upgrade feasibility studies to international standards, preparation of Detailed Engineering Design, Tender Documents and Support to Client during Tendering. The Task A would consist of but not limited to the following:

- i. Overall project preparation studies;
- ii. Surveys and site investigations;
- iii. Feasibility level designs;
- iv. Economic and financial analysis;
- v. Provide baseline data and assist environmental and social consultants to prepare ESIA, ESMP and RAP;
- vi. Preparation of estimates for environment flow requirements (EFR) downstream or upstream areas;
- vii. Ways to maximize benefits of the project and for that identify complementary and supplementary investments required to improve the value of the project to province and local area. This may include optimizing the EFR, investments in water waste treatment systems; water supply to the areas and communities around the project who may be dependent on the river flows;

- viii. Identify investments that would enhance the value of the project by complementing with other investments such as tourism; water parks, etc,
- ix. Investigations necessary for design of all works, main works, preparatory works, and complementary and supplementary investments;
- x. Detailed engineering design (tender designs) up to the level so that the contractor would be able to prepare construction drawings for approval of the Engineer.
- xi. Tender Documents
- xii. Preparation of PC-I, implementation arrangements, institutional setup,
- xiii. Obtaining Generation License; Filing and defending Tariff Petitions at EPC and COD stages as per regulatory requirements (also including Review petitions if needed)
- xiv. Project Management support, support in financial management, procurement, etc.
- xv. Support to the Client during tendering and contracting;
  - a. preparation of pre-qualification document, evaluation of EOI application and pre-qualification notices, attend pre-bid conference, replies of question and issuance of addendum if required.
  - b. evaluation of Bids and negotiation and award of bid.

**Task B:** Contract Management and Support to Client during Construction Supervision. The Task B would consist of, but not limited to, the following:

- i. Designated as "the Engineer" for approval of Drawings and for construction supervision.
- ii. Project management support and support in implementation of ESIA, EMP, SAP, and procurement and financial management etc.,

### **Task A: Preparation of Detailed Design, Tender Documents, PC-I and Support of the Client during Tendering**

This is likely to consist, but not limited to the, following tasks:

- Task A1: Review of Feasibility Study and up-gradation to the international standards
- Task A2: Preparation of Detailed Engineering Design
- Task A3: Preparation of Tender Documents
- Task A4: Preparation of Other Documents e.g. PC-I, Generation License, Tariff Petitions etc as per regulatory requirement, Power Purchase Agreement, Connection Agreement etc.
- Task A5: Tendering and Contracting

### **Task-B:Construction Design, Contract Management and Construction Supervision Support as the “Engineer”**

2.5 This includes, but not limited, to the following:

- Task B1: Preparation of Construction Design
- Task B2: Contracts Management
- Task B3: Construction Supervision
- Task B4: Support in implementation of EMP and RAP
- Task B5: Operation and Maintenance (O&M)
- Task B6: Program for Post-Construction Services

### **III. Consultancy Implementation Arrangements**

**Study Duration Period.** Duration of the contract will be for about 6 years including warranty/defect liability period post construction. The first phase of Assignment-1 (i.e. Task A4 and A5) are expected to be completed within 9 months and will be followed by Phase 2 (i.e. Task B) for a construction period of 4 years. Assignment-2 will run concurrently to Assignment 1 and is expected to be completed in 12 months followed by Assignment 3 for 4 year construction and one year defect liability period.

3.1 **Institutional Arrangements.** Project Management Organization (PMO) of PEDO headed by a Project Director will oversee the execution of all Assignments. The Consultants will work closely with PEDO Senior Management and coordinate work with other relevant units of PEDO, Energy & Power Department, local administration and relevant departments and agencies. The Consultants will establish an office in Peshawar at a convenient location from PEDO offices to whom they will be reporting on a day to day basis.

3.2 The Consultants shall prepare a detailed schedule and task-flow diagram, which depicts the interrelationship of various tasks in the assignment which lead to the completion works and mechanism of coordination with the client and other related entities. This will be kept updated throughout the Project duration.

3.3 General Manager (Hydel), PEDO will be representative of the Client and will be responsible to coordinate all interfaces with the Consultants. General Manager (Hydel) with support from the Head PMO will also assist the Consultants in resolving various administrative issues which may arise during the study duration. The Consultants' Project Manager will be the principal contact and will be expected to be readily available during project implementation.

3.4 The Consultants shall be responsible for all aspects of performance of services as set forth in the preceding sections of this TOR. PEDO will be responsible for providing the existing data and information including all reports prepared so far for the hydropower schemes.

3.5 **Staff Requirements.** The Consultants are encouraged to use the expertise available in Pakistan to the extent possible. However, international experience and experience with the World Bank financed projects are necessary to carry out the assignment. The Consultants are free to propose a staffing plan and skill mix necessary to meet the objectives and scope of services. If all the required skills are not available within the consulting firms, they are encouraged to make joint ventures with other firms.