

**BID DOCUMENTS**  
**PROVISION OF OPERATION &**  
**MAINTENANCE (O&M) SERVICES**  
**FOR**  
**MICRO HYDRO POWER PLANT (MHP)**  
**SHAHEED BB UNIVERSITY,**  
**SHERINGAL, DIR (U), KP**

**March 2026**

Prepared in accordance with:

1. PPRA Rules (primary governing structure)
2. PEC Standard Bidding Documents (Works & O&M)
3. PEDO & SRSP Micro Hydro O&M Models

**PROCUREMENT COMMITTEE,**  
**SHAHEED BB UNIVERSITY,**  
**SHERINGAL, DIR (U), KP**

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## SECTION-1

**INVITATION TO e-BID (NIT)**

Single stage two envelopes bidding as per PPRA Rules-2004, Rule-35, (b)

1. Shaheed Benazir Bhutto University, Sheringal Dir Upper Khyber Pakhtunkhwa, (the Procuring Agency-PA), invites electronic bids from the O&M Service Providers duly registered with PEC and FBR, (Income Tax and Sales Tax Department). Duration of services shall be one year extendable upto 3 year.
2. Bidding documents as per PPRA-Regulations, containing detailed terms and conditions, specifications and requirements etc. are available for the registered bidders on EPADS at **(www.eprocure.gov.pk)**
3. The electronic bids, must be submitted by using EPADS on or before (Date & Time mentioned on EPAD) (bid closing date and time). Original CDR of PKR equal to 2% of the annual O&M cost must be submitted to the employer before closing date and time. Electronic Bids will be opened on the same day at (the time mentioned on EPAD) (bid opening time).
4. Notification of the GRC constituted in terms of Rule-48 of PPRA rules, 2004 is provided on EPADS at **www.eprocure.gov.pk** and on PA's website.

Name & Designation:	Sahibzada Kashif Ahmad (AD Procurement)
Address:	SBBU, Sheringal Dir Upper Khyber Pakhtunkhwa
Phone/Fax Number:	0944-885409
Cell No:	0305-2075617

## SECTION 2

## INSTRUCTIONS TO BIDDERS

**1. Scope of Bid**

1.1 Shaheed Benazir Bhutto University (SBBU), Sheringal (the “Employer”) invites bids for the Operation & Maintenance services of the 250 kW Micro Hydropower Plant (MHP), as detailed in the Bidding Documents.

1.2 The successful bidder shall be responsible for 24/7 operation, routine maintenance, switching operations, fault response, load management, safety compliance, and reporting.

1.3 If MHP is closed for a reason originating from fault of the operator. Payment for the closure period will not be charged.

**2. Source of Funds**

2.1 The Employer will make payments for the services rendered out of recurring budget of University.

**3. Eligible Bidders**

3.1 This Invitation for Bids is open to all firms fulfilling the eligibility criteria specified below:

- a. Registered with FBR (Active Taxpayer List).
- b. Registered with KPRA.
- c. Valid PEC Registration in EE-02 or ME-01 (Operation & Maintenance).
- d. Not blacklisted by any Government / Autonomous / Donor agency.
- e. Legally established in Pakistan as a proprietorship, partnership, or company.

**4. Qualification of Bidders**

4.1 To qualify, a bidder must attached the documentary proof for all the requirements shown in evaluation criteria sheet, and should obtain at least 50% score in the Evaluation Criteria.

**5. One Bid per Bidder**

5.1 Each bidder shall submit only one bid, either individually or as a joint venture.

5.2 A bidder who submits or participates in more than one bid shall be disqualified.

**6. Cost of Bidding**

6.1 The bidder shall bear all costs associated with the preparation and submission of its bid.

6.2 The Employer shall not be responsible or liable for such costs.

6.3 The bidder should visit the site and should obtain all the information that may be necessary for preparation of bid, all the costs in this respect shall be borne by the bidder.

**7. Clarification of Bidding Documents**

7.1 A prospective bidder requiring clarification may do so only through EPADS before the deadline specified in the Bidding Data Sheet (BDS).

7.2 Clarifications or amendments issued by the Employer will be visible to all bidders on EPADS.

## **8. Amendment of Bidding Documents**

8.1 At any time prior to bid submission deadline, the Employer may amend the documents by issuing an addendum on EPADS.

8.2 All amendments shall be binding on bidders.

## **9. Language of Bid**

9.1 The bid, including all correspondence and documents, shall be written in English.

## **10. Documents Comprising the Bid**

The bid shall consist of two separate envelopes (electronic):

### **A. Technical Proposal**

- a. Bidder's Information
- b. PEC License
- c. FBR Certificate (ATL)
- d. KPPRA Registration
- e. Organizational Profile
- f. Financial Statements (last 3 years)
- g. O&M Experience
- h. Staff CVs
- i. Equipment List
- j. Methodology and Workplan
- k. Bid Security (scanned copy be uploaded in EPAD, where the original should be submitted to university)

### **B. Financial Proposal**

- a. Price Form / BOQ
- b. Staff cost
- c. Monthly and annual O&M cost
- d. Other applicable costs
- e. Bidder's Price Summary Form

## **11. Bid Prices**

11.1 Prices shall be quoted in Pak Rupees (PKR).

11.2 Price shall include all applicable taxes if not pertaining to tax exempted areas.

## **12. Bid Validity**

12.1 Bids shall remain valid for the period of 120 Days from date of opening of bids.

## **13. Bid Security**

13.1 Each bidder shall furnish a bid security amount equal to 2% of annual O&M costs in form of CDR in favor of employer.

13.2 Scanned copy must be uploaded on EPADS; original must reach the Employer before opening time of bids.

#### **14. Submission of Bids**

14.1 Bids shall be submitted electronically through EPADS only.

14.2 No hard copy of technical or financial bid will be accepted except bid security.

#### **15. Deadline for Submission of Bids**

15.1 Bids must be submitted on EPADS before the date and time indicated in the advertisement.

15.2 EPADS will automatically prevent submission after deadline.

#### **16. Bid Opening**

16.1 Technical bids will be opened online through EPADS.

16.2 Financial bids of only technically qualified bidders will be opened later.

#### **17. Evaluation of Technical Proposals**

Technical proposals shall be evaluated as per evaluation criteria given in the bidding documents.

#### **18. Financial Evaluation**

18.1 Financial proposals of only technically qualified bidders will be opened.

18.2 The bidder offering the lowest evaluated cost (L1) shall be recommended for award.

#### **19. Negotiations**

19.1 Negotiations shall be allowed only after evaluation, strictly as per PPRA Rule 40.

#### **20. Award of Contract**

20.1 The contract will be awarded to the lowest evaluated responsive bidder.

20.2 The selected bidder shall sign the Contract Agreement and submit Performance Security within stipulated time.

#### **21. Performance Security**

21.1 Performance Security (10% of the contract price=10% of annual O&M cost) shall be submitted by the successful bidder in form of CDR or Bank guarantee within 28 days of the issuance of award letter.

21.2 Failure to provide security will result in cancellation of award.

#### **22. Integrity Pact**

The successful bidders shall sign the Integrity Pact in accordance with the PPRA Rules.

#### **23. Employer's Right to Accept or Reject Any Bid**

The Employer reserves the right to accept or reject any bid or all bids in accordance with PPRA Rules, without assigning any reason.

#### **24. Site visit**

Bidders are advised to visit the site and accord all the requisite information about the constructed MHP on any official/working day, before preparation and submission of bid.

## SECTION – III

## EVALUATION CRITERIA

The evaluation shall be conducted in the following steps;

## A. Step-1: Mandatory Requirements (Pass/Fail)

Sr	Mandatory Requirement	Requirement	Documents to be attached
1	PEC Registration	Valid PEC license (as Operator in O-6 or above category)	PEC License
2	FBR Registration	Active Taxpayer (ATL)	Registration
3	KPRA Registration	Valid registration	Registration
4	Bid Security	2% of estimated cost (scanned copy + original submitted)	Original CDR
5	Affidavit	Not blacklisted by any Government / NGO / Donor	Affidavit on stamp paper
7	O&M Experience	The bidder must have completed or have in hand at-least one O&M project of minimum 250kW capacity	Attested copies on letter pad having address, email. And contact number for verification
9	Submission Method	Bid submitted electronically on EPADS	Hard copy be sent to employer for evaluation of bids

Only bidders fulfilling requirement of step-1 will be considered in step-2

## B. Step-2: Technical Scoring (Total: 100 Marks)

Minimum Score to Qualify = 50 Marks

Firm Experience – 30 Marks

Attach copies of LOI, Agreements for verification and evaluation

Description	Marks
O&M contracts three numbers (Govt/NGO/SRSP/PEDO/WAPDA/Community) each of capacity less than 100 kW	10
O&M contracts three numbers (Govt/NGO/SRSP/PEDO/WAPDA/Community) each of capacity greater than 100 kW and less than 250 KW	20
O&M contracts three numbers (Govt/NGO/SRSP/PEDO/WAPDA/Community) each of capacity 250 KW or above	30

*Note:* Only O&M contracts of energy projects (means O&M of MHPs).

Financial Strength – 20 Marks

Attach copies duly attested for evaluation

Average Net working capital (Last 3 Years)	Marks
Less than PKR 05 million	10
Greater than 5 million and less than PKR 10 million	15
Greater than PKR 10 million	20

Human Resources / Key Staff – 25 Marks

List and CV's be attached

Required Staff	Marks Allocation
PEC-Registered Engineer (Electrical/Mechanical)	10
Operations Manager	4

Required Staff	Marks Allocation
Lineman	3
Operational Technicians (3 persons)	3
Safety Officer	2
Technician with turbine experience	3

Maximum = 25 Marks (Partial staff = proportional marks)

Tools, Equipment, Safety Gear – 10 Marks (Attach list)

Description	Marks
Basic safety gear + multi-meter + testers	4
Toolkits for mechanical/electrical maintenance	3
Availability of backup tools, grounding rods, lockout system	3
Total = 10 Marks	

Methodology, Work Plan & SOPs – 10 Marks (Attach in bid documents)

Evaluation Area	Marks
Daily O&M procedures	3
Fault response plan	3
Safety and environmental compliance	2
Record keeping, reporting, logbooks	2
Total = 10 Marks	

Firm Capacity & Past Performance – 5 Marks, Attach copies of LOI, Agreements and completion for verification

Description	Marks
On-time performance in past contracts	3
Client satisfaction certificates	2

Total Technical Score = 100 Marks

Minimum Required to Qualify = 50

Only bidders scoring  $\geq 50$  will qualify for financial opening.

### **C. Step–3: Financial Evaluation**

Among technically qualified bidders:

- Financial proposals will be opened.
- The bidder with the Lowest Evaluated Cost (LC) will be recommended for award.

Corrections will follow PPRA/KPPRA rules.

## SECTION – IV

## SCOPE OF WORK / TECHNICAL REQUIREMENTS

## 1. General Description

1.1 The Contractor shall provide Operation & Maintenance (O&M) services of the 250 kW Micro Hydropower Plant (MHP) installed at Shaheed Benazir Bhutto University, Sheringal.

1.2 The scope includes 24/7 continuous operation, maintenance, safety, and reporting of plant performance.

1.3 The Contractor shall ensure optimal generation, minimal downtime, and full compliance with electrical safety, environmental, and occupational standards.

## 2. Key Objectives

- Reliable 24/7 electricity supply to all university buildings connected to the MHP.
- Preventive and corrective maintenance to minimize operational disruptions.
- Immediate response to faults or emergencies.
- Maintain plant efficiency and equipment longevity.
- Ensure safety of personnel and connected infrastructure.

## 3. Operation Duties

The Contractor shall perform the following operations:

Sr	Task	Frequency / Notes
1	Start-up and shutdown of MHP	Daily / as required
2	Monitor turbine, generator, and control panels	Continuous
3	Switch on/off electricity supply to hostels, classrooms, labs, admin blocks	As per schedule or emergency
4	Record daily generation in logbooks	Daily
5	Monitor voltage, frequency, and load balancing	Continuous
6	Coordinate with University / Maintenance Office for load adjustments	As required
7	Emergency shutdown during faults or maintenance	Immediate
8	Reporting operational issues to Employer	Daily / weekly summary

## 4. Maintenance Duties

## 4.1 Preventive Maintenance

- Lubrication of turbine and generator components.
- Inspection of control panels, wiring, breakers, and meters.
- Cleaning of intake, trash racks, and penstock.
- Checking alignment and vibration of rotating parts.
- Regular calibration of meters, sensors, and control instruments.
- Annual overhaul as per manufacturer recommendations.

#### 4.2 Corrective Maintenance

- Fault diagnosis and immediate repair of electrical and mechanical failures.
- Replacement of damaged or worn-out parts.
- Emergency response for outages or load failures.
- Coordination with manufacturers / suppliers for specialized repair.

#### 5. Safety & Compliance

- Ensure compliance with PEC O&M Safety Standards.
- Provide Personal Protective Equipment (PPE) to all operational staff.
- Maintain grounding, insulation, and earthing as per national standards.
- Comply with environmental and occupational health regulations.
- Implement lockout/tagout procedures during maintenance.

#### 6. Staffing Requirements

The Contractor shall deploy minimum staff as per (technical and financial proposal):

Role	Qualification / Experience	Minimum Required
Engineer (Electrical/Mechanical)	PEC Registered	1
Operations Manager	5+ years O&M experience	1
Lineman	Licensed / Experienced	1
Technician	Skilled in turbine/generator operation	3
Support staff	Safety / logs / maintenance support	As required

*Note: Staff rotation shall be planned to maintain 24/7 coverage.*

#### 7. Reporting & Documentation

The Contractor shall maintain:

- Daily operational logbooks (generation, load, faults)
- Monthly summary reports (generation, downtime, maintenance activities)
- Inventory records (spares, tools, consumables)
- Incident / accident reports, if any
- Annual performance report with recommendations

All reports shall be submitted to the Employer's Representative as per agreed schedule.

#### 8. Tools & Equipment

Contractor shall provide:

- Multi-meters, clamp meters, insulation testers
- Crimpers, wrenches, torque tools
- Grounding rods, earthing kits
- PPE: gloves, helmets, safety shoes, eye protection
- Any other tools required for turbine, generator, and electrical system maintenance

#### 9. Performance Requirements

- Plant availability:  $\geq 95\%$  per month

- Maximum downtime per event:  $\leq 4$  hours
- Response to emergency fault:  $\leq 1$  hour
- Monthly preventive maintenance completed on schedule
- Compliance with safety and reporting requirements

#### 10. Contract Duration

- Initial contract: 1 year, extendable subject to satisfactory performance.
- Performance evaluation will be conducted quarterly.

#### 11. Conditions of the contract and draft contract agreement

- A summary is further listed in the draft contract agreement and details have been further elaborated in the conditions of the contract. GCC+SCC.
- The bidder should carefully study entire bid documents and visit the site, collect data and prepare bid carefully keeping in view all the requirements.

**SECTION –V  
PRICE SCHEDULE / FINANCIAL PROPOSAL (BLANK)**

**1. Preamble**

- 1.1 The Financial Proposal shall be submitted separately from the Technical Proposal.
- 1.2 The bidder shall quote all-inclusive rates in PKR for staffing, materials, tools, consumables, and other O&M-related costs.
- 1.3 This Price Schedule is used for bid comparison only; detailed cost breakdown must accompany the summary.
- 1.4 Taxes shall be included in the bid price but itemized separately.

**2. Summary of Monthly O&M Cost**

Sr	Description	Unit	Quantity	Rate (PKR)	Amount (PKR)
1	Engineer	Month			
2	Operations Manager	Month			
3	Lineman	Month			
4	Operational Technicians	Month			
Total Monthly Cost					

**3. Annual O&M Cost**

Description	Monthly Cost (PKR)	Annual Cost (PKR)
Total Monthly Cost		
Grand Total (PKR)		

**4. Bidder’s Declaration**

I / We hereby declare that the financial information provided above is true and correct and that the rates quoted cover all works, materials, tools, labor, and applicable taxes required for full O&M of the MHP as per contract.

Authorized Signatory: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Designation: \_\_\_\_\_  
 Company Seal: \_\_\_\_\_  
 Date: \_\_\_\_\_

**5. Supporting Financial Documents (to be attached)**

- Detailed staff cost breakdown
- Tools & consumables cost breakdown
- Taxes & statutory contributions
- Any other cost justification

**CONTRACT AGREEMENT (DRAFT)****OPERATION AND MAINTENANCE OF MICRO HYDROPOWER PLANT (250 kW)****Draft As per PEDO Pattern**

By and Between

Shaheed Benazir Bhutto University, Sheringal, (hereinafter referred to as the “Client & Owner”), having its principal office at Sheringal, Dir Upper, Khyber Pakhtunkhwa,

And

M/S - - - - - , (hereinafter referred to as the “ O&M Service Provider”), having its registered office at - - - - -

**WHEREAS**

SBBU is the client & owner of a 250 kW Micro Hydropower Plant (MHP) constructed at its cost and premises in Sheringal Dir Upper, wishes to engage O&M Services provider to provide operation and maintenance services for the said hydropower plant.

M/S . . . . . possesses the technical capacity, tools, and trained personnel to operate and maintain the plant and has won the bid, duly offered the services for O&M of MHP.

NOW, THEREFORE, the parties hereto agree as follows:

Date and Place of Agreement; This agreement is made and entered into on this \_\_\_\_ day of -----month, 2026, at Shaheed Benazir Bhutto University, Sheringal, Dir Upper, Khyber Pakhtunkhwa (KP).

Duration of Agreement; The initial term of this contract shall be one (1) year, starting from \_\_\_\_\_, 2026, and ending on \_\_\_\_\_, 2027, unless terminated earlier.

**Scope of Services;** The Contractor shall provide complete operation and maintenance services of the 250 kW MHP at SBBU Sheringal. This includes but is not limited to:

- Daily operation of the plant to ensure reliable and continuous power generation
- Routine inspections and preventive maintenance
- Emergency repairs and fault rectification
- Record-keeping of generation data and maintenance logs
- Reporting to client on plant performance and any technical issues,
- Trouble shooting the system,
- Operating all the Chang over switches installed in the campus over the MHP Line,
- Addressing the issue as per MHP standard practices,
- Other required as MHP standards and practices,

**Manpower and Financial Details**

Position	Quantity	Qualification	Monthly Salary (PKR) per Head	Monthly Cost (PKR) Total
In-charge Engineer				
Shift Operators				
Weekend Operator				
Line Man				

Watchman				
Subtotal				
Routine Maintenance				
Company Profit				
Total Monthly Payment				

#### Payment Terms

- The O&M services provider shall submit an invoice to the Client for preceding month by the 1st day of each month.
- The Client shall make payment of PKR . . . . per month by or before the 15<sup>th</sup> of each month.
- Delay beyond 15 days shall allow the services provider to pause services until payment is released.

#### Responsibilities of the Contractor

- Ensure uninterrupted operation of the MHP
- Ensure the plant is run efficiently and safely
- Maintain necessary stock of consumables, lubricants, and small spares
- Provide periodic maintenance schedules and follow them
- Notify SBBU of any major fault or required shutdown in advance
- Other as mentioned in the contract agreement and contract documents
- To pay the utility for the accommodation provided by the client

#### Responsibilities of the Client

- Provide access to the powerhouse and related facilities
- Provide timely payments as per the agreed schedule
- Bear the cost of major spare parts and replacements (if any)
- Provide basic lodging/working space for on-site staff (if needed)
- Provide free of cost accommodation

**Reporting and Communication;** The Contractor shall maintain daily logs of plant operation, maintenance activities, and any fault occurrences. A monthly report shall be submitted to the Client.

**Liability;** The Contractor shall be responsible for any damage due to negligence or mishandling by its personnel.

**Confidentiality;** Both the parties shall keep confidential any technical, commercial, or sensitive information exchanged during the term of this contract.

**Termination;** This agreement may be terminated by either party with a 60-day written notice. In case of breach of contract, the non-breaching party may terminate this agreement with a 30-day notice.

#### Dispute Resolution

- Any dispute shall first be resolved amicably through mutual discussion.
- If unresolved, the dispute shall be referred to an independent arbitrator mutually agreed upon.
- The place of arbitration shall be Sheringal, KP, and the decision shall be binding.

**Force Majeure;** No party shall be held liable for failure to fulfill contractual obligations due to events beyond their control including, but not limited to, natural disasters, armed conflict, or government restrictions.

**Governing Law;** This Agreement shall be governed and construed in accordance with the laws of the Islamic Republic of Pakistan.

IN WITNESS WHEREOF, the parties have executed this Agreement on the day, month, and year first written above.

For Shaheed Benazir Bhutto University (SBBU), Sheringal

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Date: \_\_\_\_\_

For M/S -----

Signature: \_\_\_\_\_

Name: -----

Designation: -----

Date: \_\_\_\_\_

**CONTRACT AGREEMENT  
Draft As per PPRA-PEC Pattern**

THIS CONTRACT AGREEMENT (hereinafter called the “Agreement”) made on the ---<sup>th</sup> day of --- (month), ---- (year) between SBBU, Sheringal Dir (U) (hereafter called the “Employer”) of the one part and M/S ----- (hereafter called the “O&M Services Provider of 250 KW MHP”) of the other part.

WHEREAS the Employer is desirous that operation and maintenance services of 250 KW MHP (Micro Hydel Power) should be provides by the O&M Services providers and has accepted a Bid by the O&M Services provider for the Operation and Maintenance of 250 KW MHP and addressing any issue therein as per standard practices in the field.

NOW this Agreement witnesseth as follows:

In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

The following documents except those parts relating to Instructions to Bidders shall be deemed to form and be read and construed as part of this Agreement, viz:

- a. The Contract Agreement,
- b. The Letter of Acceptance,
- c. The completed Form of Bid,
- d. The Preamble to Conditions of Contract,
- e. The Particular Conditions of Contract,
- f. The General Conditions of Contract,
- g. The priced Schedule of Prices,
- h. Any other

In consideration of the payments to be made by the Employer to the O&M services providers as hereinafter mentioned, the O&M services providers hereby covenants with the Employer to provide the services and address any issue as per standard practice therein in conformity and in all respects with the provisions of the Contract.

The Employer hereby covenants to pay the O&M services providers, in consideration of the M&M services providers as per provisions of the Contract, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed on the day, month and year first before written in accordance with their respective laws.

Signature of the O&M Services provider;

Signature of the Employer;

.....

Shaheed BB University Sheringal, Dir Upper

Signed, Sealed and Delivered in presence of;

- 1. A .....
- 2. B .....

Shaheed BB University Sheringal, Dir Upper

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OPERATION & MAINTENANCE OF 250 KW MICRO HYDEL POWER STATION

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## PART–A: GENERAL AND INTERPRETATION

### 1. DEFINITIONS

1.1 In this Contract, unless the context otherwise requires, the following words and expressions shall have the meanings assigned to them:

Term	Definition
Employer	SBBU Sheringal or its authorized representatives responsible for overseeing the Contract.
Contractor	The party responsible for operation and maintenance (O&M) of the 250 kW micro hydel power station, including subcontractors, if approved.
Plant / Facility	All equipment, structures, and systems forming the micro hydel power station, including turbines, generators, penstock, intake, powerhouse, switchgear, SCADA, and associated infrastructure.
Contract Price	The total price payable by Employer to Contractor for full O&M services as per Priced Schedule, including adjustments, taxes, and approved variations.
Force Majeure	Events beyond the reasonable control of either Party, including natural disasters, floods, earthquakes, government restrictions, war, civil unrest, or any Act of God.
SHE	Safety, Health, and Environmental obligations defined under Part–M of this Contract.
KPIs	Key Performance Indicators specified in Part–E for plant availability, reliability, efficiency, and operational targets.
Annexures / Schedules	All technical, financial, and administrative documents forming part of the Contract, including Priced Schedule, Maintenance Schedule, SHE Plan, and Monitoring Templates.

1.2 Additional terms not listed herein but used in the Contract shall have the meaning assigned to them in PEC, PPRA, WAPDA, PEDO, or World Bank standard bidding documents as applicable.

### 2. INTERPRETATION

2.1 In interpreting this Contract:

- a) Words importing the singular include the plural and vice versa.
- b) Words importing a gender include all genders.
- c) References to persons include natural persons, companies, partnerships, corporations, or legal entities.
- d) References to a law or regulation include all amendments, replacements, or re-enactments thereof.
- e) References to days shall mean calendar days, unless otherwise specified.

2.2 In case of ambiguity, Part A definitions shall prevail, followed by Part B–O, then Annexures.

### **3. HEADINGS**

3.1 The headings, titles, or sub-headings in this Contract:

- a) Are for convenience only.
- b) Shall not affect the interpretation of any clause or sub-clause.

### **4. PRIORITY OF DOCUMENTS**

4.1 In case of conflict or inconsistency among Contract documents, the following descending order of priority shall apply:

1. Signed Contract Agreement
2. Letter of Acceptance
3. Special Conditions of Contract (SCC)
4. General Conditions of Contract (GCC)
5. Technical Specifications (Part–D & Annexure D)
6. Employer’s Requirements (Annexure / Part B)
7. Contractor’s Proposal (Part–C)
8. Drawings (Annexure / Part D)
9. Priced Schedule (Annexure A)
10. Minutes of Meetings and Clarifications (if any)

4.2 Any ambiguity not resolved by the above hierarchy shall be submitted to Employer for clarification, failing which standard engineering and O&M practice (GIIP) applies.

### **5. ENTIRE AGREEMENT**

5.1 This Contract, including all Parts A–P, Annexures, and schedules, constitutes the entire agreement between Employer and Contractor.

5.2 All prior negotiations, letters, memoranda, or representations, whether oral or written, are superseded by this Contract.

5.3 No Party shall be bound by any representation or warranty not expressly contained in this Contract.

### **6. CONTRACT AGREEMENT**

6.1 The Contract Agreement shall be executed on a Stamp Paper of appropriate value under Pakistani law and signed by authorized representatives of both Parties.

6.2 The Contract Agreement includes:

- a) Date of commencement and duration of Contract
- b) Scope of work and responsibilities
- c) Contract price and payment terms
- d) Reference to Annexures, Priced Schedule, and Technical Specifications

6.3 The Contract Agreement is legally binding and enforceable in accordance with laws of Pakistan.

### **7. LETTER OF ACCEPTANCE/INTENT (LoA/LoI)**

7.1 The Employer’s Letter of Acceptance (LoA) forms an integral part of this Contract.

7.2 The LoA confirms:

- a) Acceptance of Contractor's proposal
- b) Agreed Contract Price
- c) Commencement date
- d) Any specific conditions attached to the Contract

7.3 Upon receipt of the LoA, Contractor shall mobilize resources and commence the Contract as per Part B–Scope of Work.

## **8. EMPLOYER'S REQUIREMENTS**

8.1 Employer's Requirements define:

- a) Minimum operational standards and plant performance
- b) Availability and reliability targets
- c) SHE and environmental compliance expectations
- d) Reporting, monitoring, and documentation obligations

8.2 Contractor shall perform O&M services strictly in accordance with Employer's Requirements, unless variation approved in writing.

## **9. CONTRACTOR'S PROPOSAL**

9.1 Contractor's Proposal forms part of the Contract and includes:

- a) Methodology and staffing plan
- b) O&M schedule and procedures
- c) Technical approach to preventive, predictive, and corrective maintenance
- d) Compliance with SHE and performance standards
- e) Proposal for spare parts, tools, and consumables

9.2 Contractor shall adhere to the proposal unless deviations are approved in writing by Employer.

## **10. TECHNICAL SPECIFICATIONS**

10.1 Technical Specifications define:

- a) Design parameters and tolerances of turbines, generators, transformers
- b) Electrical, hydraulic, and civil works standards
- c) SCADA, instrumentation, and telemetry requirements
- d) Maintenance and operational manuals

10.2 Contractor shall strictly comply with Technical Specifications as part of O&M obligations.

## **11. DRAWINGS**

11.1 Drawings include:

- a) Civil, mechanical, and electrical layouts
- b) Hydraulic schematics and penstock details
- c) Control systems and SCADA layouts
- d) As-built drawings upon completion of installation

11.2 Drawings shall be used for operation, maintenance, and planning of repairs.

## **12. PRICED SCHEDULE**

12.1 Priced Schedule may include:

- a) Monthly O&M charges
- b) Spares, consumables, and labor costs
- c) Emergency and variation rates
- d) Mobilization / demobilization costs
- e) Taxes, duties, and approved variations

12.2 Payment shall be made in accordance with Part H – Commercial & Financial.

## **13. MINUTES & CLARIFICATIONS**

13.1 Minutes of Meetings, Clarifications, and Responses issued during the bidding or contract period shall be integral part of the Contract.

13.2 Contractor shall adhere to clarifications unless formally amended in writing.

13.3 All communications shall be recorded and filed for audit, dispute resolution, and compliance purposes.

## **14. CONTRACT LANGUAGE**

14.1 The official language of this Contract is English.

14.2 All reports, manuals, logs, and communications shall be in English.

14.3 Translation into other languages may be used for convenience only, without affecting legal enforceability.

## **15. GOVERNING LAW**

15.1 This Contract shall be governed by and construed in accordance with the laws of Pakistan.

15.2 Disputes arising under this Contract shall be resolved in accordance with Part K – Dispute Resolution & Arbitration, except as provided otherwise by law.

15.3 Employer and Contractor agree to comply with PEC, PPRA, PEDO, SRSP, WAPDA/KPPRA, and World Bank procurement standards wherever applicable.

## **PART – B: SCOPE & DURATION**

### **16. SCOPE OF SERVICES**

16.1 The Contractor shall provide comprehensive Operation & Maintenance (O&M) services for the micro hydel power station, including but not limited to:

- a) Operation of Plant: Turbines, generators, transformers, switchgear, control systems, SCADA, and associated equipment.
- b) Preventive Maintenance: Scheduled inspections, lubrication, cleaning, minor repairs, and calibration of instruments.
- c) Predictive Maintenance: Condition monitoring using vibration analysis, thermography, and other diagnostic tools.
- d) Corrective Maintenance: Repair or replacement of defective components, troubleshooting system faults.
- e) Emergency Response: Immediate response to plant emergencies, equipment failure, grid outages, or natural events.
- f) Environmental Compliance: Monitoring and reporting of water usage, sediment management, environmental mitigation measures, and SHE compliance.
- g) Reporting: Preparation of daily, weekly, and monthly performance, hydrology, financial, and SHE reports in accordance with Part–N.
- h) Training: Training Employer’s personnel on operation, maintenance, safety, and emergency procedures as per Annexure K.

16.2 Contractor shall maintain continuity of service and ensure plant operates at agreed efficiency and availability levels as per Part–E (KPIs).

16.3 Contractor shall coordinate with the Employer, local authorities, and regulatory agencies for smooth plant operation.

### **17. SERVICE BOUNDARIES**

17.1 The scope of Contractor’s services shall be limited to the Plant boundaries, including:

- a) Powerhouse and associated electrical equipment
- b) Penstock, intake, forebay, and tailrace structures
- c) Access roads and maintenance pathways within Plant site
- d) Instrumentation and SCADA control systems
- e) Storage areas for spares, consumables, and tools

17.2 Contractor shall not be responsible for:

- a) External transmission lines of PESCO
- b) Water rights or upstream/downstream civil works unless expressly agreed
- c) Land acquisition or resettlement activities outside Plant premises

17.3 Any additional works requested by Employer beyond these boundaries shall be treated as a variation with separate pricing and schedule under Part–H.

### **18. MINIMUM SERVICE LEVELS**

18.1 Contractor shall maintain the Plant at minimum service levels, including but not limited to:

<b>Parameter</b>	<b>Minimum Standard</b>	<b>Measurement</b>
Plant Availability	≥ 95% per month	Operational hours / Total hours
Turbine Efficiency	≥ 90% of design	kWh output / design capacity
Response Time to Breakdown	≤ 2 hours	Notification to fault clearance
Preventive Maintenance Completion	100% of schedule	Logs and reports
SHE Compliance	Zero major incidents	Monthly SHE reports

18.2 Failure to meet service levels may result in liquidated damages, defined in Part–H, without prejudice to Employer’s other rights.

18.3 Contractor shall provide corrective action plans for any service level deviations within 5 working days.

## **19. COMPLIANCE WITH LAWS**

19.1 Contractor shall comply with all applicable laws, regulations, standards, and codes in Pakistan, including but not limited to:

- a) Environmental Protection Act and local environmental regulations
- b) Labor laws and employment regulations
- c) Electricity Act and grid code requirements
- d) Health and safety regulations
- e) Taxation, social security, and insurance obligations

19.2 Contractor shall obtain and maintain all licenses, permits, and approvals required for O&M.

19.3 Non-compliance shall be considered a material breach, and Employer reserves the right to terminate or suspend the Contract under Part–L.

## **20. REGULATORY APPROVALS**

20.1 Contractor shall assist the Employer in securing approvals from:

- a) National Electric Power Regulatory Authority (NEPRA)
- b) Provincial Energy Department / PEDO
- c) Local environmental authorities
- d) Water & Irrigation Department for flow regulation
- e) Any other statutory authority required for Plant operation

20.2 Contractor shall prepare all documentation, reports, and submissions for regulatory compliance.

## **21. COMMENCEMENT DATE**

21.1 The Contract shall commence on the date specified in the Letter of Acceptance (LoA) or on the mutually agreed date after fulfillment of conditions precedent.

21.2 Contractor shall notify Employer in writing 5 working days prior to commencement of O&M activities.

21.3 Any delay in commencement due to Employer or Force Majeure shall not reduce the contract duration, except as agreed in writing.

## **22. MOBILIZATION**

22.1 Contractor shall mobilize personnel, equipment, tools, and spares within 30 calendar days from the Contract Commencement Date (or as agreed).

22.2 Mobilization plan shall include:

- a) Deployment schedule of key personnel
- b) Delivery and commissioning of spare parts, consumables, and tools
- c) Safety, environmental, and operational readiness checks

22.3 Mobilization shall be certified by Employer upon satisfactory completion.

22.4 Any delay in mobilization caused by Contractor shall attract liquidated damages as defined in Part–H.

## **23. CONTRACT DURATION**

23.1 The initial Contract duration shall be as mentioned SCC, unless terminated earlier under Part–L.

23.2 Duration includes all O&M activities, preventive/predictive maintenance, emergency responses, and reporting obligations.

23.3 Time is of the essence in this Contract. Any delays impacting Plant operation or service levels shall be reported immediately.

## **24. EXTENSION**

24.1 The Contract may be extended beyond the initial duration with mutual consent:

- a) Extension shall be requested at least 90 days before expiry.
- b) Terms of extension, including price adjustments, service levels, and scope, shall be negotiated in writing.
- c) Any extension shall form an amendment to the Contract under Clause 199 – Amendments.

24.2 Extensions shall not automatically change KPIs or service boundaries unless agreed in writing.

## **25. RENEWAL OPTION**

25.1 Employer may grant renewal option for additional periods (e.g., 1–3 years) at its discretion.

25.2 Renewal shall be based on:

- a) Contractor's performance during the contract period (availability, efficiency, SHE compliance)
- b) Financial terms and market indices (price escalation formula)
- c) Employer's operational and strategic requirements

25.3 Contractor shall submit a renewal proposal at least 60 days prior to contract expiry.

25.4 Renewal shall be formalized by Letter of Renewal, signed by both Parties, referencing Part–H (Commercial & Financial) for payment terms.

## **PART – C: ROLES & PERSONNEL**

### **26. EMPLOYER OBLIGATIONS**

26.1 The Employer shall provide the Contractor with the necessary support and access to the Plant, including:

- a) Full access to the Plant site, control room, powerhouse, penstock, tailrace, and associated infrastructure.
- b) Provision of relevant as-built drawings, manuals, and operational history.
- c) Timely payment of the Contract Price in accordance with Part–H.
- d) Coordination with regulatory authorities for licenses, permits, and approvals.
- e) Assistance in resolving disputes or clarifications arising under the Contract.

26.2 Employer shall appoint an authorized representative (Employer’s Representative) responsible for:

- a) Monitoring Contractor’s performance
- b) Approving work schedules, reports, and variations
- c) Issuing instructions and clarifications
- d) Certifying completion of mobilization and milestones

26.3 Employer shall not interfere with the Contractor’s methods of operation, provided the Contractor meets all agreed KPIs and service levels.

### **27. CONTRACTOR OBLIGATIONS**

27.1 The Contractor shall perform all services in accordance with:

- a) Part–B (Scope & Duration)
- b) Technical Specifications (Part–D & Annexure D)
- c) Safety, Health & Environmental requirements (Part–M & Annexure F)
- d) KPIs (Part–E & Annexure E)

27.2 Contractor shall maintain adequate manpower, tools, spares, and resources to meet operational and maintenance obligations.

27.3 Contractor shall monitor plant performance, maintain logs, and submit reports as per Part–N.

27.4 Contractor shall ensure compliance with all applicable laws, labor regulations, and environmental standards.

### **28. AUTHORIZED REPRESENTATIVES**

28.1 Each Party shall designate an Authorized Representative with authority to:

- a) Make decisions regarding routine operations and maintenance
- b) Approve technical clarifications and minor variations
- c) Receive notices, communications, and approvals

28.2 Any change in authorized representatives shall be notified in writing 5 working days in advance.

28.3 Contractor’s Authorized Representative shall coordinate daily operations, reporting, and emergency response.

## **29. KEY PERSONNEL**

29.1 Contractor shall provide the Employer with a list of Key Personnel, as mentioned in SCC:

29.2 Key Personnel shall not be replaced without prior written consent of Employer, except in case of resignation, illness, or Force Majeure.

29.3 Contractor shall provide CVs, qualifications, and experience certificates for all Key Personnel before mobilization.

29.4 Contractor shall ensure Key Personnel remain available for the duration of the Contract.

## **30. REPLACEMENT OF STAFF**

30.1 Contractor may replace personnel only if:

- a) Employer is notified in writing 7 working days in advance
- b) Replacement personnel have equivalent or higher qualifications and experience
- c) Employer approves the replacement

30.2 Contractor shall bear all costs associated with staff replacement.

30.3 Any unauthorized replacement may be considered a material breach, attracting penalties as per Part-H.

## **31. SUBCONTRACTING**

31.1 Contractor shall not subcontract any part of the O&M work without prior written approval from Employer.

31.2 Subcontractors shall be bound by all obligations of the Contractor under this Contract.

31.3 Contractor shall remain fully responsible for acts, omissions, or non-performance by subcontractors.

31.4 Employer reserves the right to reject subcontractors based on technical competence, experience, or safety record.

## **32. QUALIFICATION REQUIREMENTS**

32.1 All personnel engaged by Contractor shall meet the minimum qualification mentioned in the SCC.

32.2 Contractor shall ensure all staff are trained and certified as required by WAPDA, PEC, PEDO, SRSP and World Bank standards.

## **33. TRAINING PROGRAMS**

33.1 Contractor shall implement training programs for its personnel and Employer's staff, including:

- a) Plant operation procedures
- b) Preventive and predictive maintenance techniques
- c) SCADA and instrumentation operation
- d) Safety, emergency response, and environmental compliance
- e) Record-keeping and reporting procedures

33.2 Training programs shall be documented, with attendance logs and certificates maintained in the Plant records.

33.3 Refresher training shall be conducted annually or as required by changes in equipment or regulations.

#### **34. LABOR LAWS**

34.1 Contractor shall comply with all labor laws and regulations in Pakistan, including:

- a) Employment contracts and wage compliance
- b) Social security contributions (EOBI, Workers' Welfare Fund)
- c) Insurance and compensation for work-related injuries
- d) Non-discrimination and equal opportunity

34.2 Contractor shall indemnify Employer against any claims arising from labor law violations.

34.3 Contractor shall maintain labor records, available for inspection by Employer.

#### **35. WORKING HOURS**

35.1 Standard working hours shall be 8 hours per day, 6 (six) days per week, unless emergency or maintenance work requires additional hours.

35.2 Overtime shall be compensated in accordance with labor laws and Contract provisions.

35.3 Contractor shall ensure 24/7 coverage for plant operation and emergency response, with proper shift rotations for Key Personnel.

35.4 All working hours, overtime, and shift schedules shall be recorded and submitted monthly for verification.

## **PART – D: PLANT OPERATION**

### **36. START-UP & SHUTDOWN**

36.1 Contractor shall operate the Plant in accordance with EPC-Contractor, Manufacturer's guidelines, Technical Specifications (Part–D & Annexure D), and safety standards.

36.2 Start-Up Procedures shall include:

- a) Verification of all mechanical, electrical, and hydraulic systems
- b) Checking lubrication, cooling, and auxiliary systems
- c) SCADA system initialization and control verification
- d) Conducting pre-start safety inspections and alarms testing
- e) Communication with grid operator prior to energization

36.3 Shutdown Procedures shall include:

- a) Controlled reduction of turbine/generator load
- b) Isolation of high-voltage switchgear and breakers
- c) Draining or securing water systems if required
- d) Recording operational logs and energy generation data
- e) Safety inspection post shutdown

36.4 Start-up and shutdown checklists shall be maintained daily, signed by responsible personnel, and retained for audits.

### **37. LOAD DISPATCH**

37.1 Contractor shall coordinate with the Employer and grid operator for load dispatch.

37.2 Contractor shall ensure:

- a) Power output matches grid requirements and dispatch schedules
- b) Proper ramping up and down of load to avoid grid instability
- c) Recording of dispatched energy and grid frequency

37.3 Contractor shall submit daily load dispatch reports including energy exported, peak load, and deviations.

### **38. GRID SYNCHRONIZATION**

38.1 Contractor shall ensure synchronization of the plant with the grid in compliance with:

- a) Grid code and NEPRA regulations
- b) Manufacturer's recommendations for generator synchronization

38.2 Synchronization procedures include:

- a) Voltage matching
- b) Frequency matching
- c) Phase sequence and alignment verification

38.3 Any unscheduled synchronization attempts shall be reported immediately to Employer.

### 39. POWER QUALITY CONTROL

39.1 Contractor shall maintain power quality parameters within acceptable limits:

Parameter	Standard / Limit
Voltage fluctuation	$\pm 5\%$ of nominal
Total Harmonic Distortion (THD)	$\leq 5\%$
Flicker	As per grid code
Frequency deviation	$\pm 0.5$ Hz from nominal

39.2 Contractor shall perform continuous monitoring via SCADA and maintain logs for:

- a) Voltage variations
- b) Harmonics and disturbances
- c) Compliance with grid operator requirements

39.3 Any power quality issues shall be corrected immediately or reported to Employer and relevant authorities.

### 40. VOLTAGE REGULATION

40.1 Contractor shall maintain system voltage within design limits by:

- a) Adjusting generator excitation
- b) Operating tap-changing transformers
- c) Monitoring SCADA voltage readings

40.2 Voltage deviations beyond design limits shall trigger automatic alarms and corrective actions.

40.3 Monthly voltage reports shall be submitted to Employer for review.

### 41. FREQUENCY CONTROL

41.1 Contractor shall maintain plant generation frequency within acceptable limits (nominal 50 Hz  $\pm$  0.5 Hz).

41.2 Frequency control shall be achieved by:

- a) Adjusting turbine governor settings
- b) Load shedding or ramping as per grid operator instructions
- c) Coordinating with other local generation units

41.3 Deviations exceeding limits shall be reported in Daily Operation Reports.

### 42. REACTIVE POWER

42.1 Contractor shall maintain reactive power (kVAr) within contractual limits.

42.2 Compensation of reactive power shall be performed using:

- a) Generator excitation adjustment
- b) Capacitor banks and reactive power compensation devices
- c) Coordination with grid operator to avoid penalties

42.3 Logs of reactive power delivered or absorbed shall be maintained and submitted monthly.

#### **43. ISLANDING OPERATION**

43.1 Contractor shall ensure the plant can safely operate in islanded mode if the grid is unavailable:

- a) Maintain frequency and voltage independently
- b) Avoid damage to plant equipment during islanding
- c) Limit power output to connected local loads (if any)

43.2 Islanding operations shall follow manufacturer and grid code guidelines.

43.3 Logs of islanding events, duration, and output shall be submitted with monthly reports.

#### **44. BLACK START**

44.1 Contractor shall maintain the plant in ready condition for black start operations.

44.2 Black start procedures include:

- a) Starting the plant without external grid supply
- b) Sequential energization of auxiliary systems
- c) Coordinating grid reconnection once power is restored

44.3 Contractor shall conduct annual black start drills and record outcomes in reports.

#### **45. DEEMED GENERATION**

45.1 Deemed generation refers to energy considered as delivered despite inability to supply due to grid constraints, Force Majeure, or Employer instructions.

45.2 Contractor shall:

- a) Record instances where plant was ready but could not dispatch power
- b) Submit deemed generation logs with daily and monthly reports
- c) Ensure such energy is credited for commercial purposes as per Part-H (Payment & Financial Terms)

45.3 Employer and Contractor shall jointly verify deemed generation claims monthly.

## PART – E: MAINTENANCE & ASSET MANAGEMENT

### 46. PREVENTIVE MAINTENANCE

46.1 Contractor shall perform preventive maintenance (PM) in accordance with the Manufacturer’s manuals, Technical Specifications, and international standards.

46.2 PM activities shall include but are not limited to:

- a) Cleaning, lubrication, and calibration of turbines, generators, transformers, and auxiliary equipment
- b) Inspection of bearings, seals, couplings, and drive systems
- c) Electrical system checks including switchgear, circuit breakers, and protective relays
- d) SCADA and instrumentation calibration
- e) Civil structure inspection including intake, penstock, forebay, tailrace, and powerhouse

46.3 Preventive Maintenance Schedule:

Frequency	Activities	Responsible Person	Records
Daily	Visual inspection, logs, safety checks	Shift Operator	Daily Logbook
Weekly	Equipment cleaning, minor lubrication	Maintenance Technician	Weekly Report
Monthly	Full system inspection, minor repairs	Maintenance Supervisor	Monthly Report
Quarterly	Testing of protective devices, electrical tests	Electrical Engineer	Quarterly Report
Annually	Major inspection, vibration analysis, calibration	Key Personnel	Annual Report

### 47. PREDICTIVE MAINTENANCE

47.1 Contractor shall implement predictive maintenance (PdM) to anticipate failures and optimize asset life.

47.2 PdM activities include:

- a) Vibration analysis of turbines, generators, and pumps
- b) Thermal imaging of electrical and mechanical equipment
- c) Oil analysis for bearings, transformers, and hydraulic systems
- d) Electrical insulation resistance tests
- e) SCADA and instrumentation trend analysis

47.3 Contractor shall maintain a Predictive Maintenance Log, with:

- Condition assessment
- Recommendations for repairs or replacements
- Estimated time to failure and cost implications

47.4 Predictive maintenance shall be aligned with preventive maintenance schedule to avoid redundant tasks and ensure asset reliability.

## 48. CORRECTIVE MAINTENANCE

48.1 Corrective Maintenance (CM) shall be performed when equipment or systems deviate from operational standards, but the fault is non-critical.

48.2 Contractor shall:

- a) Identify root cause of failure
- b) Repair or replace defective components
- c) Update maintenance logs and work orders
- d) Notify Employer if corrective action impacts plant availability or KPIs

48.3 CM shall be performed within the response time defined in Part-B, Clause 18, typically  $\leq 24$  hours for non-critical systems.

## 49. BREAKDOWN MAINTENANCE

49.1 Breakdown Maintenance (BM) is for unexpected equipment failures affecting plant operation.

49.2 Contractor shall:

- a) Respond immediately ( $\leq 2$  hours) to breakdown events
- b) Mobilize necessary personnel, tools, and spare parts
- c) Restore operational status in minimum possible time
- d) Document incident, cause, corrective action, and downtime

49.3 Employer shall be notified immediately of major breakdowns, including estimated downtime and operational impact.

## 50. OVERHAUL & MAJOR REPAIRS

50.1 Contractor shall plan and execute overhauls or major repairs as per Manufacturer's recommendations or as dictated by predictive maintenance results.

50.2 Major overhauls shall include:

- a) Turbine rotor and generator stator inspections
- b) Transformer winding and insulation assessment
- c) Penstock, valves, and civil structures inspection
- d) SCADA hardware and software updates

50.3 Overhaul schedule shall be submitted for approval by Employer at least 30 days in advance.

50.4 Contractor shall provide a detailed report post-overhaul, including:

- Work performed
- Spare parts used
- Downtime and operational impact
- Recommendations for next cycle

## 51. EQUIPMENT REGISTER

51.1 Contractor shall maintain an up-to-date Equipment Register listing all Plant assets, including:

Equipment Manufacturer Model/Serial No. Installed Date Last Maintenance Next Maintenance

51.2 The Equipment Register shall be updated immediately after maintenance, repair, or replacement and submitted monthly.

51.3 Register shall include operational manuals, warranty details, and inspection records.

## **52. SPARES INVENTORY**

52.1 Contractor shall maintain a minimum spares inventory to ensure uninterrupted operation.

52.2 Spares inventory shall include:

- a) Turbine bearings, seals, and rotors
- b) Generator windings and exciters
- c) Transformers, circuit breakers, and relays
- d) Instrumentation and SCADA components
- e) Valves, pumps, and auxiliary systems

52.3 Contractor shall maintain spares logs, indicating:

- Quantity in stock
- Usage per month
- Reorder level
- Supplier details

52.4 Inventory shall be reviewed quarterly by Employer.

## **53. CONDITION MONITORING**

53.1 Contractor shall implement a Condition Monitoring Program (CMP) including:

- a) Vibration monitoring
- b) Thermal imaging
- c) Oil and lubrication analysis
- d) Electrical insulation and SCADA monitoring

53.2 CMP data shall be recorded digitally and submitted monthly, including:

- Trend analysis
- Alerts for potential failures
- Recommendations for corrective or preventive action

53.3 CMP shall comply with international standards for hydroelectric plants (IEC, ISO, FIDIC).

## **54. OBSOLESCENCE**

54.1 Contractor shall monitor obsolescence of critical equipment.

54.2 Contractor shall:

- a) Identify components at risk of becoming obsolete
- b) Recommend upgrades, retrofits, or replacement parts
- c) Ensure continuity of spare parts supply

54.3 Obsolescence planning shall be reviewed annually and incorporated in the Asset Management Plan.

## 55. ASSET LIFE CYCLE

55.1 Contractor shall manage the full life cycle of Plant assets, including:

- a) Installation, commissioning, and operation
- b) Preventive, predictive, and corrective maintenance
- c) Overhauls, major repairs, and refurbishment
- d) Decommissioning planning at end-of-life

55.2 Contractor shall maintain Asset Life Cycle Reports, detailing:

- Current condition and performance
- Remaining useful life
- Recommended actions for extension of asset life

55.3 Asset life cycle management shall be aligned with Employer's long-term O&M strategy, ensuring cost-effective and safe operation.

## **PART – F: WATER & HYDROLOGY**

### **56. WATER AVAILABILITY RISK**

56.1 Contractor shall operate the Plant recognizing hydrological variability, including seasonal and inter-annual changes.

56.2 Employer shall provide historical flow data and forecasts; however, Contractor is responsible for:

- a) Adjusting operations according to water availability
- b) Reporting expected shortfalls or excess flows
- c) Implementing water management strategies to optimize generation

### **57. MINIMUM ENVIRONMENTAL FLOW**

57.1 Contractor shall ensure that minimum environmental flows are maintained downstream of the plant, as mandated by environmental authorities and Part–B Regulatory Approvals.

57.2 Environmental flow requirements include:

- a) Continuous release of specified flow rates during low water periods
- b) Adherence to ecological standards for fish, flora, and riverine life
- c) Coordination with local authorities for monitoring compliance

57.3 Deviations from environmental flow requirements shall be reported immediately, with corrective actions documented.

### **58. SEASONAL FLOW**

58.1 Contractor shall plan operations according to seasonal flow variations:

- a) High-flow season (monsoon/floods)
- b) Medium-flow season (post-monsoon)
- c) Low-flow season (dry months)

58.2 Seasonal planning shall include:

- a) Load dispatch adjustments
- b) Turbine operation optimization
- c) Preventive maintenance scheduling to coincide with low-flow periods

### **59. SEDIMENTATION**

59.1 Contractor shall monitor and manage sediment deposition in:

- a) Intake channels
- b) Forebay and settling basins
- c) Penstock and turbine inlet structures

59.2 Sediment management shall include:

- a) Regular inspections and depth measurement
- b) Mechanical dredging or flushing as per design standards
- c) Maintaining logs of sediment removal, weight/volume, and disposal location

## **60. SILT & DEBRIS**

60.1 Contractor shall ensure silt and debris control to prevent damage to turbines and auxiliaries:

- a) Routine clearing of intake screens, trash racks, and debris chambers
- b) Monitoring upstream sediment loads and seasonal debris influx
- c) Reporting high debris events to Employer and taking immediate corrective measures

60.2 Contractor may maintain a Debris & Silt Log, including:

- Type and quantity of debris removed
- Date and time of cleaning
- Responsible personnel

## **61. INTAKE BLOCKAGE**

61.1 Contractor shall prevent intake blockages using:

- a) Trash racks, sediment deflectors, and screens
- b) Periodic cleaning and inspection schedules
- c) Emergency protocols for rapid clearance of blockages

61.2 Any intake blockage affecting plant operation shall be reported within 1 hour to Employer.

61.3 Contractor may maintain an Intake Blockage Log, noting cause, duration, and corrective action.

## **62. DESILTING BASIN**

62.1 Contractor shall manage the desilting basin to maintain sediment-free water for turbines.

62.2 Desilting basin operations shall include:

- a) Periodic removal of sediment deposits
- b) Monitoring of inflow/outflow water quality
- c) Ensuring structural integrity and free flow

62.3 Contractor may document basin maintenance activities, sediment volume removed, and schedule for next maintenance.

## **63. TRASH RACK**

63.1 Contractor shall maintain trash racks to prevent debris entering turbines:

- a) Daily inspection during operation
- b) Cleaning during low-flow or shutdown periods
- c) Monitoring damage to racks and replacing components as required

63.2 Trash rack performance may be reported monthly, including incidents of clogging, repairs, and improvements.

## **64. FLOOD ROUTING**

64.1 Contractor shall manage flood routing in coordination with Employer and regulatory authorities:

- a) Monitoring reservoir levels during high-flow events
- b) Adjusting turbine and spillway operations to avoid structural damage
- c) Issuing alerts and coordinating with local communities if flooding occurs

64.2 Contractor shall maintain a Flood Event Log, recording:

- Date/time of flood
- Reservoir levels and discharge rates
- Actions taken and damages prevented

64.3 Flood routing procedures shall be consistent with design standards, hydraulic studies, and safety regulations.

## **65. CATCHMENT PROTECTION**

65.1 Contractor shall support catchment protection measures to reduce sedimentation, erosion, and water quality issues.

65.2 Activities include:

- a) Monitoring upstream land use changes
- b) Collaborating with local authorities and communities on erosion control
- c) Maintaining vegetation buffers and sediment traps where feasible

65.3 Contractor shall report catchment issues and recommend mitigation actions, forming part of the monthly hydrology report.

## **PART – G: PERFORMANCE STANDARDS & PENALTIES**

### **66. PERFORMANCE STANDARDS**

66.1 Contractor shall perform all O&M activities to meet the performance standards defined in this Contract, including:

- a) Plant availability, reliability, and efficiency
- b) Equipment condition and operational readiness
- c) Safety, Health & Environmental compliance (Part–M)
- d) Reporting, documentation, and regulatory compliance

66.2 Performance shall be measured monthly, quarterly, and annually, using objective indicators specified in this Part–G.

66.3 Contractor shall implement corrective actions immediately for any deviations from standards.

### **67. AVAILABILITY TARGETS**

67.1 Plant availability shall be maintained at a minimum of 95% per month.

67.2 Availability shall be calculated as:

$$\text{Availability (\%)} = \frac{\text{Operational Hours}}{\text{Total Scheduled Hours}} \times 100$$

$$\text{Availability (\%)} = \frac{\text{Operational Hours}}{\text{Total Scheduled Hours}} \times 100$$

67.3 Scheduled shutdowns for preventive or predictive maintenance shall not be counted as unavailability, provided they are approved and planned.

67.4 Contractor shall submit monthly availability reports, signed by Key Personnel and verified by Employer.

### **68. RELIABILITY INDICES**

68.1 Contractor shall maintain equipment reliability, measured using:

- a) Mean Time Between Failures (MTBF): Higher MTBF indicates better reliability.
- b) Mean Time To Repair (MTTR): Lower MTTR indicates faster fault correction.

68.2 Reliability targets:

Parameter	Target
MTBF	≥ 2000 hours per turbine
MTTR	≤ 4 hours per incident

68.3 Contractor shall maintain incident logs to support reliability reporting.

### **69. EFFICIENCY BENCHMARKS**

69.1 Contractor shall operate turbines and generators at ≥ 90% of design efficiency.

69.2 Efficiency shall be calculated as:

$$\text{Efficiency (\%)} = \frac{\text{Actual Energy Output (kWh)}}{\text{Design Energy Output (kWh)}} \times 100$$

69.3 SCADA and plant meters shall be calibrated quarterly to ensure accuracy.

69.4 Monthly efficiency reports shall be submitted to Employer.

## 70. DOWNTIME LIMITS

70.1 Maximum allowed downtime for all plant systems shall be:

System	Monthly Downtime Limit
Turbines & Generators	48 hours
Transformers & Switchgear	24 hours
SCADA & Instrumentation	12 hours

70.2 Downtime beyond these limits shall trigger penalties as per Clause 71 and 73.

70.3 Contractor shall maintain Downtime Logs including start/end times, cause, and corrective measures.

## 71. LIQUIDATED DAMAGES

71.1 Contractor shall be liable to pay Liquidated Damages (LDs) for non-compliance with performance standards, including:

- a) Unavailability of plant beyond allowed downtime
- b) Energy shortfall below contracted or forecasted generation
- c) Failure to meet efficiency or reliability targets

71.2 LDs are pre-agreed amounts, not penalties, representing genuine pre-estimate of Employer's losses.

71.3 LDs shall not preclude Employer from claiming additional damages if losses exceed LD amount.

## 72. PERFORMANCE LDs

72.1 Performance LDs shall be calculated as mentioned in SCC:

## 73. AVAILABILITY PENALTY

73.1 If monthly availability falls below 95%, availability penalty applies as:

Availability (%)	Penalty Rate
94 – 92%	2% of monthly O&M fee
91 – 89%	5% of monthly O&M fee

Availability (%)

Penalty Rate

&lt; 89%

10% of monthly O&amp;M fee

73.2 Contractor shall submit remedial action plan for availability below target.

#### **74. ENERGY SHORTFALL PENALTY**

74.1 If actual monthly generation falls below contracted or forecasted energy due to Contractor's negligence, energy shortfall penalties apply:

- a) Shortfall = Contracted Energy – Actual Energy Delivered
- b) Penalty = Shortfall × Rate per kWh

74.2 Energy shortfall caused by Force Majeure, water scarcity, or grid constraints shall be excluded from penalties.

74.3 Contractor shall maintain energy generation logs and SCADA records to support claims or exemptions.

#### **75. BONUS FOR OVERPERFORMANCE**

75.1 Contractor shall be eligible for performance bonus if:

- a) Plant availability exceeds 100% per month
- b) Energy output exceeds 250 KW generation
- c) Reliability and efficiency targets exceed contractual minimum

75.2 Bonus shall be calculated as:

Bonus (Rs) = Excess Energy (kWh) × Bonus Rate per kWh  

$$\text{Bonus (Rs)} = \text{Excess Energy (kWh)} \times \text{Bonus Rate per kWh}$$

75.3 Employer shall review and approve bonus eligibility monthly based on operational data.

75.4 Bonuses shall not replace regular payments but incentivize high performance.

## **PART – H: COMMERCIAL & FINANCIAL**

### **76. CONTRACT PRICE**

76.1 The Contract Price is the total remuneration payable to the Contractor for performing all O&M services as per this Contract.

76.2 Contract Price shall include:

- a) Labor, Key Personnel, and Subcontractor costs
- b) Spares, consumables, and minor tools
- c) Preventive, predictive, corrective, and breakdown maintenance
- d) Overhaul and major repair costs (unless separately agreed)
- e) Administrative and management costs

76.3 Any work outside the defined Scope (Part–B) shall require a Variation Order with a mutually agreed cost.

### **77. CURRENCY**

77.1 All payments under this Contract shall be made in Pakistani Rupees (PKR) unless otherwise agreed in writing.

77.2 Exchange rate risks for imported spares or materials shall be borne by the Contractor, unless otherwise explicitly stated.

77.3 Contractor may submit invoices for foreign-sourced items separately, in foreign currency, subject to Employer's approval.

### **78. TAXES & DUTIES**

78.1 Contractor shall be responsible for all applicable taxes, duties, and statutory contributions as per Pakistani law.

78.2 Employer shall deduct taxes at source (TDS) as required by law unless exempted under local regulations (e.g., District Dir exemptions, FBR notifications).

78.3 Taxes deducted shall be remitted to the relevant authority and evidence provided to Contractor.

78.4 Any dispute regarding tax deduction shall be resolved in accordance with local law and applicable Supreme Court rulings.

### **79. PRICE ADJUSTMENT**

79.1 Contractor shall be eligible for price adjustment to account for:

- a) Fluctuations in labor wages
- b) Cost changes in fuel, lubricants, and consumables
- c) Electricity, water, and other utilities used in operation

79.2 Price adjustments shall be calculated monthly or quarterly, using agreed formulas in Clause 80.

79.3 Contractor shall provide supporting documents for all price adjustment claims.

## 80. ESCALATION FORMULA

80.1 The escalation formula shall follow index-based methodology, e.g.:

$$\text{Escalation} = \text{Base O\&M Fee} \times \sum (W_i \times \Delta I_i)$$

Where:

- $W_i$  = Weight of cost component i
- $\Delta I_i$  = Change in index for component i (e.g., labor, materials, utilities)

80.2 Contractor shall submit supporting index data and calculations for review by Employer.

80.3 Escalation shall be applied retroactively from the first day of the month following the index change, unless otherwise agreed.

## 81. PAYMENT MECHANISM

81.1 Payments shall be made on a monthly basis for O&M services rendered.

81.2 Payment cycle:

- a) Contractor submits monthly invoice (Clause 82)
- b) Employer reviews and certifies the invoice (Clause 83)
- c) Payment is made within 30 days of certification

81.3 Payments shall include base fee, escalation, and any approved bonuses, less retention and penalties.

81.4 No payment shall be made for work not certified or not performed as per Contract standards.

## 82. MONTHLY INVOICES

82.1 Contractor shall submit detailed monthly invoices including:

- a) O&M fee breakdown (labor, spares, consumables)
- b) Escalation claims with supporting indices
- c) Bonuses for over performance (if any)
- d) Penalties applied, if any

82.2 Invoices shall be accompanied by operation and maintenance reports, downtime logs, and energy generation records.

82.3 Invoices must be submitted within 5 working days after month-end.

## 83. CERTIFICATION OF BILLS

83.1 Employer's Representative shall review and certify invoices within 15 working days of submission.

83.2 Certification shall confirm:

- a) Correctness of amounts claimed
- b) Compliance with Part-G performance KPIs
- c) Compliance with Part-D operational and Part-E maintenance standards
- d) Supporting documentation completeness

83.3 Any disputes or discrepancies shall be resolved within 7 working days, otherwise payment shall proceed based on certified amounts.

#### **84. RETENTION MONEY**

84.1 Employer shall retain 5% of monthly invoice as retention money to ensure performance compliance.

84.2 Retention money shall be released at the end of the Contract subject to:

- a) Completion of all O&M obligations
- b) No pending claims or liquidated damages
- c) Acceptance of all final reports and audit by Employer

84.3 Interest shall not accrue on retention money unless otherwise agreed.

#### **85. FINAL SETTLEMENT**

85.1 At the end of the Contract, Contractor shall submit a final account including:

- a) All invoices and payments received
- b) Penalties deducted and bonuses paid
- c) Reconciliation of retention money
- d) Energy generation and operational summary

85.2 Employer shall verify and release final payment within 60 days of submission of final account, subject to:

- a) Completion of handover procedures
- b) Acceptance of all logs, reports, and asset registers
- c) No outstanding disputes or pending claims

85.3 Final settlement shall constitute full and final discharge of Employer's obligations under the Contract.

## **PART – I: PAYMENT SECURITY (STANDARD)**

### **86. PAYMENT SECURITY**

86.1 Employer shall ensure timely payment of all amounts due to Contractor under this Contract.

86.2 Contractor shall have the right to invoke payment security mechanisms if payments are delayed beyond the agreed schedule (Part–H Clauses 81–85).

86.3 Payment security ensures that Contractor is protected against:

- a) Non-payment due to Employer's cash flow issues
- b) Delays caused by administrative or regulatory processes
- c) Arbitrary deductions not justified by Contract terms

### **87. ESCROW ACCOUNT**

87.1 Employer may open a dedicated Escrow Account with a bank approved by both parties to receive funds for Contractor payments.

87.2 Features of Escrow Account:

- a) Funds deposited are solely for O&M payments
- b) Automatic release upon submission of certified invoices
- c) Employer cannot divert funds without written consent of Contractor

87.3 Contractor shall have read-only access to the account statements to monitor fund availability.

### **88. LETTER OF CREDIT (LC)**

88.1 Employer shall provide a standby irrevocable Letter of Credit (LC) to guarantee payments under the Contract.

88.2 LC shall cover:

- a) Base O&M fees for at least 3 months
- b) Any anticipated performance bonuses or reimbursements
- c) Liquidated Damages amounts if disputed

88.3 LC shall be operational within 30 days of Contract signing and remain valid throughout the Contract duration.

### **89. DELAYED PAYMENT SURCHARGE**

89.1 In case of delayed payment beyond the 30-day payment period, Employer shall pay a surcharge calculated as:

Surcharge=OutstandingAmount×0.05%×Days Delayed Surcharge = Outstanding Amount \times 0.05\% \times \text{Days Delayed} Surcharge=OutstandingAmount×0.05%×Days Delayed

89.2 Surcharge shall accrue daily until payment is received in full.

89.3 Contractor shall have the right to add surcharge in his bill of succeeding month for preceding payments, delayed.

## **90. LATE PAYMENT INTEREST**

90.1 Late payment interest shall be applied on any overdue amounts not covered by surcharge, at KIBOR rate + 2% or as agreed in the Contract.

90.2 Interest shall accrue from the due date until full payment.

90.3 Interest shall not waive any other rights of the Contractor under this Contract.

## **91. PAYMENT GUARANTEE**

91.1 Employer may provide a Payment Guarantee, either from a bank or a reputable financial institution, ensuring that Contractor receives payment regardless of Employer's internal issues.

91.2 Payment Guarantee shall:

- a) Be unconditional and irrevocable
- b) Be callable immediately upon Contractor's written demand
- c) Cover the full contractual amounts for at least 3 months of O&M fees

91.3 Contractor may use the Payment Guarantee to remedy cash flow disruptions without waiting for dispute resolution.

## **92. SET-OFF PROHIBITION**

92.1 Employer shall not withhold or set-off any amounts due to Contractor unless explicitly allowed under this Contract.

92.2 Exceptions include:

- a) Liquidated Damages under Part-G
- b) Tax deductions required by law (Part-H Clause 78)
- c) Court or regulatory orders

92.3 Any other set-off or deduction shall be considered a breach of Contract.

## **93. NO WITHHOLDING EXCEPT LAW**

93.1 Employer shall not withhold payments for reasons not specified by law.

93.2 Any withholding of payments outside legal or contractual obligations shall:

- a) Entitle Contractor to claim interest or surcharge
- b) Allow Contractor to suspend operations after written notice
- c) Not affect Contractor's right to terminate Contract under Part-J (Termination Clause) if unresolved

93.3 Contractor shall promptly notify Employer in writing if unlawful withholding occurs and provide reasonable time for rectification.

## **PART – J: INSURANCE AND LIABILITY**

### **94. THIRD PARTY INSURANCE**

94.1 Contractor shall maintain Third Party Liability Insurance covering:

- a) Damage to property of any third party arising from Contractor's operations
- b) Injury or death of third parties during plant operation or maintenance

94.2 Coverage shall include:

- Minimum limit: PKR 10,000,000 or as mutually agreed
- Worldwide coverage during Contractor's activities
- Employer named as co-insured or additional insured

94.3 Contractor shall provide policy certificates to Employer before start of operations and renew annually.

94.4 Contractor shall notify Employer immediately of any claims and cooperate in settlement or legal proceedings.

### **95. PLANT INSURANCE**

95.1 Contractor shall ensure the Plant is insured against:

- a) Fire, explosion, flood, lightning, and natural disasters (Acts of God)
- b) Equipment breakdown, mechanical and electrical failures
- c) Vandalism, theft, and sabotage

95.2 Coverage shall include:

- Full replacement value of turbines, generators, transformers, penstock, civil structures, and auxiliary equipment
- Business interruption insurance for loss of revenue during downtime due to insured events

95.3 Contractor shall submit insurance certificates to Employer before commencement and provide copies of claims and settlements during the contract period.

### **96. WORKERS INSURANCE**

96.1 Contractor shall maintain insurance covering all employees and subcontractors, including:

- a) Workmen's compensation
- b) Personal accident insurance
- c) Occupational disease coverage

96.2 Coverage shall comply with Pakistani labor laws, PEC guidelines, and international safety standards.

96.3 Contractor shall provide evidence of insurance and report any incidents to Employer immediately.

### **97. INDEMNIFICATION**

97.1 Contractor shall indemnify Employer against:

- a) Losses or damages caused by Contractor's negligence or breach of Contract
- b) Claims from third parties due to Contractor's operations
- c) Failure to maintain insurance as required under Clauses 94–96

97.2 Employer shall indemnify Contractor against:

- a) Losses arising from Employer's instructions or negligence
- b) Unforeseen water releases, environmental flows, or flood events beyond Contractor's control

97.3 Indemnification shall not exceed the limits of insurance coverage, unless otherwise agreed.

## **98. LIMITATION OF LIABILITY**

98.1 Contractor's total liability for damages arising from this Contract shall be limited to the Contract Price unless damages result from gross negligence or willful misconduct.

98.2 Employer's liability to Contractor shall also be limited to payments due under the Contract, except in cases of intentional misconduct or breach of law.

98.3 Neither party shall be liable for consequential, indirect, or punitive damages, except where specifically provided in this Contract.

## **99. EMPLOYER LIABILITY**

99.1 Employer shall be liable for:

- a) Payment of Contract Price and agreed escalation/bonus
- b) Provision of access, water, and grid connections as required for operation
- c) Compliance with regulatory approvals that affect Contractor's performance

99.2 Employer shall not be liable for:

- a) Contractor's negligence or failure to perform O&M
- b) Delays caused by Force Majeure or third-party actions beyond Employer's control

99.3 Employer shall maintain insurance for structures under its responsibility outside the scope of Contractor's operations.

## **100. CONTRACTOR LIABILITY**

100.1 Contractor shall be liable for:

- a) Any damage to Plant, equipment, or environment due to negligence
- b) Injury or death of personnel caused by Contractor's actions
- c) Failure to perform maintenance or operation as per Contract standards

100.2 Contractor liability shall be mitigated by:

- a) Compliance with preventive, predictive, and corrective maintenance schedules
- b) Implementation of safety, SHE, and emergency procedures
- c) Maintaining all required insurance coverage

## **PART – K: FORCE MAJEURE & ACT OF GOD**

### **101. FORCE MAJEURE DEFINITION**

101.1 Force Majeure (FM) refers to any event or circumstance beyond the reasonable control of a Party, which prevents, delays, or materially affects performance under this Contract.

101.2 FM events include, but are not limited to:

- a) Natural events (floods, earthquakes, landslides, storms, lightning)
- b) Health emergencies (epidemics, pandemics)
- c) Political events (war, terrorism, riots, civil disturbances)
- d) Regulatory or governmental actions beyond the control of either Party

101.3 FM events cannot be caused by negligence, error, or omission of the affected Party.

### **102. NATURAL FORCE MAJEURE**

102.1 Includes events such as:

- Flooding beyond design limits
- Earthquakes exceeding regional seismic standards
- Landslides affecting plant access or operations
- Storms, lightning strikes, and severe weather conditions

102.2 Contractor shall implement emergency procedures to minimize damage during natural FM events.

### **103. POLITICAL FORCE MAJEURE**

103.1 Includes events such as:

- Government-imposed curfews, travel restrictions, or lockdowns
- Civil unrest, riots, or insurrections
- Terrorist attacks directly affecting plant operations

103.2 Contractor and Employer shall cooperate to mitigate operational disruptions during political FM events.

### **104. FLOOD**

104.1 Flood events include overbank flows, dam releases, or flash floods impacting the intake, penstock, powerhouse, or access roads.

104.2 Contractor shall:

- a) Maintain flood monitoring and early warning systems
- b) Follow emergency shut-down and evacuation protocols
- c) Document flood events and operational impact

104.3 Employer shall support temporary flood relief measures as needed for continued plant protection.

### **105. EARTHQUAKE**

105.1 Earthquake events include ground shaking or seismic activity affecting plant structures and equipment.

105.2 Contractor shall:

- a) Implement seismic safety measures as per design standards
- b) Shut down Plant safely during seismic events
- c) Conduct post-earthquake inspections and report damage

## **106. LANDSLIDE**

106.1 Landslides include soil, rock, or debris movements obstructing water conveyance or access roads.

106.2 Contractor shall:

- a) Monitor high-risk areas upstream and along access routes
- b) Clear debris in coordination with Employer or local authorities
- c) Suspend operations only if safety is compromised

## **107. STORM & LIGHTNING**

107.1 Storms include wind speeds exceeding design specifications and lightning strikes.

107.2 Contractor shall:

- a) Implement surge protection for electrical systems
- b) Suspend operation during high-risk periods if needed
- c) Maintain insurance coverage for storm-related damages

## **108. EPIDEMIC / PANDEMIC**

108.1 Includes government-declared public health emergencies restricting workforce or supply chains.

108.2 Contractor shall:

- a) Follow health and safety protocols
- b) Adjust shift schedules to ensure continuity
- c) Document workforce availability and impacts

## **109. WAR / TERRORISM**

109.1 Includes armed conflict, terrorism, or sabotage directly affecting plant operation.

109.2 Contractor and Employer shall cooperate to:

- a) Secure Plant assets
- b) Suspend operations if necessary
- c) Notify authorities and document impact

## **110. RIOTS / CIVIL DISTURBANCE**

110.1 Includes unrest, strikes, or public disorder interfering with access, operations, or safety.

110.2 Contractor shall:

- a) Follow safety protocols
- b) Maintain communication with Employer and local authorities
- c) Resume operation only when safe

### **111. CHANGE IN GOVERNMENT POLICY**

111.1 Includes regulatory or legal changes impacting operation, tariffs, water allocation, or labor rules.

111.2 Contractor shall:

- a) Notify Employer immediately
- b) Cooperate to implement adjustments
- c) Document additional costs for possible compensation

### **112. FORCE MAJEURE NOTICE**

112.1 The affected Party shall notify the other Party within 7 days of FM event occurrence.

112.2 Notice shall include:

- a) Nature and cause of FM
- b) Expected duration and impact on operations
- c) Mitigation measures undertaken

112.3 Failure to notify may result in loss of FM relief rights.

### **113. FORCE MAJEURE RELIEF**

113.1 Upon notification, affected Party shall be excused from performance for the duration of FM event.

113.2 Relief includes:

- a) Suspension of O&M obligations without penalties
- b) Extension of time for performance
- c) Exemption from availability, efficiency, or energy shortfall penalties

113.3 Both Parties shall cooperate to resume operations as soon as FM event subsides.

### **114. FORCE MAJEURE TERMINATION RIGHTS**

114.1 If FM event continues beyond 90 consecutive days, either Party may:

- a) Issue written notice of termination
- b) Agree on mutual settlement for works completed and payments due

114.2 Termination due to FM shall:

- a) Not constitute default
- b) Ensure Contractor is paid for work performed up to termination date
- c) Release both Parties from further obligations except for liability and indemnification clauses

114.3 Parties shall document FM event, impacts, and settlements for audit and legal purposes.

## PART – L: DISASTER SCENARIOS

### 115. PLANT WASHOUT

115.1 **Definition:** Complete or partial structural or equipment damage due to overtopping, extreme floods, or debris flow.

115.2 Contractor Responsibilities:

- a) Implement emergency shut-down procedures
- b) Ensure personnel safety and evacuation
- c) Activate flood barriers, gates, and spillway controls
- d) Document damage and notify Employer immediately

115.3 Employer Responsibilities:

- a) Coordinate with local authorities for relief
- b) Facilitate insurance claims and emergency funding
- c) Support plant reconstruction and repair efforts

115.4 Reporting: Contractor shall submit a Plant Washout Report detailing cause, impact, and remedial actions within 7 days.

### 116. TUNNEL COLLAPSE

116.1 **Definition:** Structural failure of headrace, penstock, or tailrace tunnels affecting water conveyance.

116.2 Contractor Responsibilities:

- a) Ensure safe evacuation of personnel
- b) Stop water flow to prevent further damage
- c) Engage qualified engineers for damage assessment
- d) Maintain a Tunnels Incident Log including cause, damage extent, and corrective measures

116.3 Employer Responsibilities:

- a) Provide support for repairs and restoration
- b) Approve reconstruction methodology and budget

### 117. POWERHOUSE FLOODING

117.1 **Definition:** Water ingress into the powerhouse due to extreme rainfall, flood, or dam overtopping.

117.2 Contractor Responsibilities:

- a) Protect turbines, generators, switchgear, and control systems
- b) Initiate emergency drainage and pumping
- c) Suspend plant operation safely until flood subsides
- d) Document flooding extent, equipment affected, and restoration plan

117.3 Employer Responsibilities:

- a) Facilitate access for external support and emergency repair teams
- b) Approve expenditure for flood mitigation measures

## 118. DAM BREACH

118.1 **Definition:** Failure of upstream dam leading to uncontrolled water release affecting the micro hydel plant.

118.2 Contractor Responsibilities:

- a) Implement immediate safety and evacuation protocols
- b) Shut down turbines and secure all electrical equipment
- c) Notify Employer and local authorities immediately

118.3 Employer Responsibilities:

- a) Support emergency response and disaster management
- b) Coordinate with government agencies for flood warning and relief

118.4 Both Parties shall document breach impact and update risk mitigation plans for future prevention.

## 119. INTAKE AND CHANNEL COLLAPSE

119.1 **Definition:** Structural or functional failure of intake structure due to debris, sedimentation, flooding, or seismic activity.

119.2 Contractor Responsibilities:

- a) Suspend operation until intake is repaired
- b) Clear debris, sediment, and stabilize structure
- c) Update Intake Collapse Log including cause, repairs, and downtime

119.3 Employer Responsibilities:

- a) Approve emergency repair budgets
- b) Assist in sourcing materials and contractors for intake restoration

## 120. TRANSMISSION FAILURE

120.1 **Definition:** Interruption or damage to transmission lines or grid interconnection affecting power evacuation.

120.2 Contractor Responsibilities:

- a) Isolate plant safely to prevent equipment damage
- b) Coordinate with grid operator for restoration
- c) Maintain a Transmission Failure Log detailing cause, duration, and corrective actions

120.3 Employer Responsibilities:

- a) Facilitate coordination with utility or distribution company
- b) Ensure payment for unavailable power is treated as Force Majeure / grid constraints

## 121. ACCESS ROAD LOSS

121.1 **Definition:** Damage or obstruction of plant access roads due to landslide, flood, earthquake, or construction activity.

121.2 Contractor Responsibilities:

- a) Implement contingency plans for alternate access
- b) Coordinate transport of personnel, materials, and equipment safely
- c) Report the incident and estimated repair time

121.3 Employer Responsibilities:

- a) Approve emergency repair works
- b) Support contractor in arranging temporary access
- c) Facilitate liaison with local authorities for road clearance

121.4. Facilities to be Provided by the Employer;

The Employer shall provide the Contractor and its staff, free of cost, with residency/accommodation, telephone, internet, and other necessary facilities required for the proper execution of the works.

## **PART – M: HSE & ENVIRONMENT**

### **122. SAFETY MANAGEMENT SYSTEM**

122.1 Contractor shall implement a comprehensive Safety Management System (SMS) in accordance with national regulations and international best practices (ISO 45001, OSHA standards).

122.2 SMS shall include:

- a) Risk assessments for all plant operations and maintenance activities
- b) Standard Operating Procedures (SOPs) for routine and emergency tasks
- c) Safety audits and inspections, at least quarterly
- d) Record-keeping of incidents, near misses, and corrective actions

122.3 Contractor shall provide training and certification for all staff on SMS implementation.

### **123. PERSONAL PROTECTIVE EQUIPMENT (PPE)**

123.1 Contractor shall provide all personnel with adequate PPE, including:

- Helmets, gloves, safety boots, harnesses
- Eye and ear protection
- Life jackets near waterways or dam areas

123.2 PPE shall be maintained, inspected, and replaced as necessary.

123.3 Use of PPE shall be mandatory at all times in designated work zones.

### **124. EMERGENCY RESPONSE**

124.1 Contractor shall establish an Emergency Response Plan (ERP) covering:

- a) Fire, flood, earthquake, landslide, and other natural disasters
- b) Electrical hazards and equipment failure
- c) Oil spill or chemical leakage
- d) Evacuation procedures for personnel and contractors

124.2 ERP shall include:

- Emergency contacts and coordination with Employer and local authorities
- Evacuation routes and muster points
- Training drills at least twice a year

124.3 Contractor shall maintain emergency equipment, including fire extinguishers, first-aid kits, and spill containment kits.

### **125. ACCIDENT REPORTING**

125.1 Contractor shall report all accidents, incidents, and near misses within 24 hours to the Employer.

125.2 Accident reports shall include:

- a) Description of event and location
- b) Personnel involved and injuries sustained
- c) Cause analysis and preventive measures

125.3 Contractor shall investigate major accidents and implement corrective actions immediately.

## **126. ENVIRONMENTAL COMPLIANCE**

126.1 Contractor shall comply with national environmental laws, regulations, and permits, including:

- Environmental Protection Agency (EPA) regulations
- Water quality and discharge standards
- Forest and wildlife protection laws

126.2 Contractor shall ensure minimal environmental impact during operations and maintenance.

126.3 Contractor shall submit quarterly Environmental Compliance Reports to Employer.

## **127. NOISE CONTROL**

127.1 Contractor shall implement measures to minimize noise pollution, including:

- a) Use of low-noise equipment and silencers
- b) Scheduling noisy activities during daytime only
- c) Monitoring noise levels at key locations

127.2 Noise monitoring reports shall be submitted quarterly and corrective actions documented.

## **128. WILDLIFE PROTECTION**

128.1 Contractor shall protect local flora and fauna, including fish and wildlife in the catchment area.

128.2 Measures include:

- Avoiding habitat destruction
- Preventing accidental entrapment of aquatic species
- Coordinating with local environmental authorities

128.3 Any wildlife incidents shall be reported immediately to Employer.

## **129. WASTE DISPOSAL**

129.1 Contractor shall manage all solid and liquid waste generated during operations and maintenance.

129.2 Waste management shall include:

- a) Segregation of hazardous and non-hazardous waste
- b) Disposal in accordance with local environmental regulations
- c) Recycling and reuse where possible

129.3 Waste disposal records shall be maintained and auditable by Employer.

### **130. OIL SPILL MANAGEMENT**

130.1 Contractor shall implement an Oil Spill Prevention and Response Plan, including:

- Containment booms and absorbent materials
- Secondary containment for transformers, lubricants, and hydraulic oils
- Emergency response procedures for accidental spills

130.2 Oil spill incidents shall be reported immediately, and corrective actions documented.

130.3 Contractor shall train personnel in spill response drills at least annually.

## **PART – N: REPORTING & AUDIT**

### **131. DAILY LOGS**

131.1 Contractor shall maintain Daily Operational Logs recording:

- Plant start-up and shutdown times
- Turbine and generator operational parameters (voltage, current, frequency, reactive power)
- Water flow, reservoir levels, and sediment conditions
- Workforce attendance and safety checks
- Any minor incidents or unusual events

131.2 Daily Logs shall be:

- Signed by the Shift In-Charge
- Reviewed weekly by the Contractor's O&M Manager
- Submitted to Employer upon request

### **132. MONTHLY REPORTS**

132.1 Contractor shall submit comprehensive Monthly Reports covering:

- Energy generation and efficiency against targets
- Plant availability and downtime
- Preventive, predictive, and corrective maintenance performed
- Operational challenges and proposed improvements
- Health, Safety, and Environmental (HSE) performance metrics

132.2 Monthly Reports shall include supporting documents:

- Meter readings
- Work order completion records
- Maintenance checklists

132.3 Employer shall review and provide comments within 10 working days.

### **133. ANNUAL REPORTS**

133.1 Contractor shall prepare Annual Reports summarizing:

- Annual energy generation and efficiency
- Plant availability and reliability indices
- Financial performance, including O&M costs and escalations
- Major maintenance and overhauls performed
- HSE compliance and incidents
- Recommendations for next year's operations and improvements

133.2 Annual Reports shall be submitted within 30 days after year-end and serve as reference for contract renewal or extension.

## **134. INCIDENT REPORTS**

134.1 Contractor shall submit Incident Reports for:

- Accidents, injuries, or fatalities
- Environmental spills, oil leaks, or wildlife incidents
- Major equipment failures or operational hazards
- Any Force Majeure events impacting operations

134.2 Incident Reports shall include:

- Description and cause of incident
- Immediate actions taken
- Corrective and preventive measures
- Estimated impact on energy generation and plant availability

134.3 Reports shall be submitted within 24 hours for major incidents and 7 days for minor incidents.

## **135. EMPLOYER INSPECTIONS**

135.1 Employer shall have the right to conduct regular and ad hoc inspections of:

- Plant operation and maintenance activities
- Inventory of spares and materials
- HSE compliance
- Records and logs

135.2 Contractor shall provide full access to personnel, equipment, and documents.

135.3 Employer shall issue inspection reports with observations, and Contractor shall rectify deficiencies within agreed timelines.

## **136. THIRD PARTY AUDITS**

136.1 Contractor shall allow third-party audits conducted by:

- Independent engineering consultants
- Certified auditors for HSE, operational, or financial compliance

136.2 Audit scope may include:

- Verification of energy generation and plant efficiency
- Maintenance and operation practices
- Compliance with environmental and safety standards
- Financial audits of O&M costs and invoices

136.3 Contractor shall provide all necessary documentation and cooperate fully during audits.

## **137. REGULATORY INSPECTIONS**

137.1 Contractor shall facilitate inspections by regulatory authorities including:

- Environmental Protection Agency (EPA)
- WAPDA / PEDO / KPPRA

- Local government authorities for water, safety, and labor

137.2 Contractor shall provide:

- Access to Plant and equipment
- Copies of relevant logs, reports, and permits
- Assistance to regulators during inspections

### **138. AGP PAKISTAN AUDIT**

138.1 Employer reserves the right to have Auditor General of Pakistan (AGP) audits of the project finances, operations, and compliance.

138.2 Contractor shall:

- Maintain transparent and accurate records
- Facilitate access to financial records, invoices, contracts, and payment proofs
- Cooperate fully with auditors to address queries and provide clarifications

138.3 Findings from AGP audits shall be addressed promptly, with corrective actions implemented and reported to Employer.

## **PART – O: LEGAL & GOVERNANCE**

### **139. VARIATIONS**

139.1 Employer may issue Variations to the scope of services, including:

- Modifications to plant operation schedules
- Additional maintenance tasks
- Changes in technical specifications

139.2 Contractor shall comply with approved Variations and provide revised cost and schedule proposals if applicable.

139.3 Variations shall be documented in writing and signed by both parties prior to execution.

### **140. CHANGE IN SCOPE**

140.1 Changes in Scope may arise due to:

- Regulatory requirements
- Plant expansion or upgrades
- Emergency operational needs

140.2 Contractor shall:

- Assess impact on time, cost, and resources
- Submit impact report within 10 working days
- Implement changes only upon written approval by Employer

### **141. CLAIMS**

141.1 Contractor may submit claims for:

- Additional costs due to Variations
- Escalation or price adjustment under Part–H
- Delayed payments or Force Majeure events

141.2 Claims shall be:

- Submitted in writing within 30 days of the triggering event
- Supported by documentation (logs, invoices, correspondence)
- Reviewed by Employer for assessment and approval

141.3 Employer shall respond within 30 days; if unresolved, the matter shall proceed to Dispute Resolution (Part–O Clauses 142–145).

### **142. DISPUTE RESOLUTION**

142.1 All disputes arising under the Contract shall follow a tiered resolution approach:

- a) Amicable settlement (Clause 143)
- b) Dispute Adjudication Board (DAB) (Clause 144)
- c) Arbitration (Clause 145)
- d) Court Jurisdiction (Clause 146)

142.2 Disputes shall not suspend Contractor's obligations unless expressly agreed in writing.

### **143. AMICABLE SETTLEMENT**

143.1 Parties shall attempt amicable resolution within 30 days of dispute notice.

143.2 Representatives from both Employer and Contractor shall:

- Review dispute details
- Exchange documents and evidence
- Propose mutually acceptable solutions

143.3 If resolution fails, dispute shall proceed to DAB.

### **144. DISPUTE ADJUDICATION BOARD (DAB)**

144.1 A DAB shall be established comprising:

- One nominee of Employer
- One nominee of Contractor
- One independent Chairperson mutually agreed

144.2 DAB functions:

- Provide non-binding recommendations within 60 days
- Review technical, financial, and contractual matters
- Maintain records of hearings, submissions, and findings

144.3 Parties may accept or reject DAB recommendations; if unresolved, matter proceeds to arbitration.

### **145. ARBITRATION**

145.1 Arbitration shall follow ICC, UNCITRAL, or national arbitration rules as agreed.

145.2 Key provisions:

- Seat of arbitration: SBBU, Sheringal Dir (U) (or mutually agreed)
- Number of arbitrators: One or three depending on dispute value
- Language: English
- Final and binding decision on both parties

145.3 Arbitration costs shall be borne as decided by arbitral tribunal.

### **146. COURT JURISDICTION**

146.1 Courts of Province of project location shall have exclusive jurisdiction for matters not resolved by arbitration or not subject to arbitration.

146.2 Contractor shall not be barred from pursuing legal remedies in exceptional circumstances (e.g., injunctions, emergency relief).

## **147. TERMINATION FOR CONVENIENCE**

147.1 Employer may terminate the Contract at any time for convenience by providing 90 days written notice.

147.2 Contractor shall:

- Cease work as instructed
- Secure plant and equipment
- Submit final invoices for work performed

147.3 Employer shall pay all due amounts including work completed, approved variances, and accrued entitlements.

## **148. TERMINATION FOR DEFAULT**

148.1 Default by Contractor includes:

- Failure to perform O&M per Contract standards
- Persistent delays in reporting, maintenance, or payment security compliance
- Breach of HSE or environmental obligations

148.2 Termination procedure:

- Written notice specifying default
- Cure period of 30 days to remedy default
- Termination if default persists beyond cure period

148.3 Upon termination:

- Contractor shall handover plant, documents, and records
- Employer may engage another contractor to continue operations
- Contractor may claim payment for work completed and verified, excluding damages caused by default.

### **148.4 Termination of Service by the Contractor**

The Contractor may, after providing written notice to the Employer, terminate the services in the following circumstances:

1. Non-payment of dues by the Employer beyond thirty (30) days from the due date.
2. Suspension of services or repeated operational constraints that prevent the Contractor from performing its obligations under the Contract.
3. Any other substantial operational or administrative reasons that make it impracticable for the Contractor to continue the services, provided that such termination is communicated in writing to the Employer with reasonable notice.

Upon termination under this clause, the Contractor shall demobilize its staff and equipment as directed by the Employer, and the Employer shall settle all dues accrued up to the effective date of termination as per the terms of the Contract.

### **148.5 Suspension of Services;**

In case if the Employer orders suspension of services due to flooding, force majeure, security reasons, or any other administrative or operational reasons, the services may be suspended as directed by the Employer.

Upon suspension of services, the Contractor shall demobilize its staff and resources if so ordered by the Employer. In case the Employer orders suspension of services without demobilization of staff, the Employer shall pay the Contractor for the suspension period at the rates and prices agreed under the Contract.

## **PART – P: BANKABILITY (DONOR)**

### **149. LENDER RIGHTS**

149.1 Contractor and Employer if acknowledged that the project may be financed or partially financed by commercial lenders, development banks, or donor agencies.

149.2 Lenders shall have the right to:

- a) Access relevant project documents, including O&M reports, insurance policies, and performance data
- b) Verify compliance with technical, financial, and environmental obligations
- c) Receive timely notice of material events, including Force Majeure, termination, or default

149.3 Contractor shall cooperate with Lenders without unreasonable delay.

### **150. DIRECT AGREEMENT**

150.1 A Direct Agreement may be executed between:

- Employer
- Contractor
- Lenders

150.2 Purpose:

- Protect Lenders' interests in case of default or termination
- Outline step-in rights, dispute resolution coordination, and assignment procedures
- Ensure continuity of operations for financial security

150.3 Contractor shall abide by terms of Direct Agreement once executed.

### **151. STEP-IN RIGHTS**

151.1 Lenders shall have the right to step into the project in case of:

- a) Employer default in payments
- b) Contractor default that threatens project viability
- c) Extended Force Majeure impacting project performance

151.2 Step-in rights include:

- Taking control of the Plant operation, O&M contracts, or revenue collection
- Replacing Contractor with a qualified substitute if necessary
- Ensuring continuity of electricity supply

151.3 Contractor shall facilitate a smooth transition and provide full access to plant, records, and personnel.

### **152. ASSIGNMENT TO BANKS**

152.1 Contractor may assign rights under this Contract to Banks or Lenders as security for project financing.

152.2 Assignment may include:

- Payment rights
- Insurance claims
- O&M responsibilities under oversight

152.3 Employer shall recognize assignment provided Contractor has delivered written notice and Lender confirmation.

### **153. COMPENSATION ON TERMINATION**

153.1 In case of termination due to Employer convenience, Force Majeure, or Lender step-in:

- a) Contractor shall be entitled to payment for O&M work performed up to termination date
- b) Reimbursement for unamortized capital costs, spares, or materials procured but not used
- c) Liquidated damages, if applicable, to be paid by Employer or Lenders per Direct Agreement

153.2 Payment shall be made within 60 days of termination, subject to verification and certification by Employer or appointed auditor.

153.3 This clause ensures financial security and bankability of the project while protecting both Contractor and Employer.

## **PART – Q: SECURITY & ETHICS**

### **154. SITE SECURITY**

154.1 Contractor shall ensure adequate security at the plant site, including:

- 24/7 security personnel or surveillance systems
- Controlled access to sensitive areas (turbine hall, control room, intake, and transmission lines)
- Visitor logs and approval procedures

154.2 Employer shall provide support for coordination with local law enforcement if needed.

154.3 Contractor shall maintain a Security Management Plan reviewed annually and updated as necessary.

### **155. THEFT & VANDALISM**

155.1 Contractor shall implement measures to prevent theft, sabotage, and vandalism, including:

- Locking equipment rooms and fencing sensitive areas
- Inventory management for spares, tools, and consumables
- Security patrols and CCTV monitoring

155.2 All incidents of theft or vandalism must be reported immediately to Employer and law enforcement.

155.3 Contractor shall cooperate with investigations and support insurance claims.

### **156. ANTI-CORRUPTION**

156.1 Contractor shall comply with anti-bribery and anti-corruption laws, including:

- Prevention of bribery of public officials
- Avoiding facilitation payments or kickbacks
- Maintaining records of all transactions for audit

156.2 Contractor shall implement training programs for staff to ensure ethical conduct.

156.3 Any violation may lead to termination for default (Part–O Clause 148) and blacklisting by PEC or funding agencies.

### **157. CONFLICT OF INTEREST**

157.1 Contractor shall declare any potential conflicts of interest, including:

- Personal relationships affecting contract execution
- Financial interests in suppliers, subcontractors, or service providers

157.2 Contractor shall avoid situations that compromise impartiality in O&M operations.

157.3 Employer may require remedial actions or personnel replacement if conflicts arise.

## **158. FRAUD**

158.1 Fraud includes:

- Misrepresentation of operational performance
- Manipulation of logs, reports, or invoices
- Misappropriation of funds, equipment, or resources

158.2 Contractor shall establish internal controls and audit mechanisms to prevent fraud.

158.3 Fraudulent activities will be treated as contractual default and may result in:

- Termination of contract
- Financial and legal liability
- Blacklisting by PEC or donor agencies

## **159. BLACKLISTING BY PEC-PPRA-KPPRA**

159.1 Contractor shall ensure full compliance with Pakistan Engineering Council (PEC) regulations as well as PPRA and KPPRA.

159.2 Violation of contract obligations, HSE, anti-corruption, or ethical standards may lead to:

- PEC blacklisting
- Ineligibility for future projects funded by Government, donor, or private agencies
- Enforcement of contractual penalties

## **160. CONFIDENTIALITY**

160.1 Contractor shall maintain strict confidentiality of all project-related information, including:

- Technical data and drawings
- Operational and financial information
- Personal data of employees and stakeholders

160.2 Disclosure to third parties requires written consent of Employer.

160.3 Confidentiality obligations survive termination or expiry of this Contract.

## **161. DATA PROTECTION**

161.1 Contractor shall implement data protection measures in compliance with:

- National laws on data privacy
- Donor and financing agency requirements
- International best practices (ISO 27001, GDPR where applicable)

161.2 Measures include:

- Secure storage of digital and physical records
- Encryption of sensitive information
- Access control and regular audits

161.3 Data breaches must be reported immediately to Employer, and corrective measures implemented.

**PART – R: DIGITAL & CYBER****162. SCADA OWNERSHIP**

162.1 The Supervisory Control and Data Acquisition (SCADA) system installed for the plant shall remain the property of the Employer.

162.2 Contractor Responsibilities:

- Operate SCADA system for plant control, monitoring, and data collection
- Maintain SCADA software, hardware, and communication links in fully functional condition
- Ensure access controls and prevent unauthorized modifications

162.3 Contractor shall train Employer personnel on SCADA operation and provide documentation of configuration and operational manuals.

**163. CYBER ATTACK**

163.1 Contractor shall implement measures to protect the Plant from cyber threats, including:

- Malware, ransomware, and virus attacks
- Unauthorized remote access
- Sabotage or data manipulation

163.2 Contractor Responsibilities:

- Maintain firewalls, antivirus, and intrusion detection systems
- Ensure password policies, multi-factor authentication, and role-based access
- Report any cyber incidents immediately to Employer and assist in remediation

163.3 Cyber-attacks shall be treated as a Force Majeure event only if external and beyond reasonable Contractor control.

**164. DATA BACKUP**

164.1 Contractor shall implement robust data backup procedures to prevent loss of critical operational, financial, and HSE data.

164.2 Requirements:

- Daily backups of SCADA data, operational logs, and maintenance records
- Weekly offsite backup storage
- Verification of backup integrity at least monthly

164.3 In case of data loss, Contractor shall restore all critical data within 24 hours to minimize operational disruption.

**165. REMOTE MONITORING**

165.1 Contractor shall enable remote monitoring of plant operations for Employer and, if applicable, Lender representatives.

165.2 Remote monitoring shall include:

- Real-time turbine, generator, and transformer performance
- Water flow, reservoir levels, and spillway operations
- Alerts for deviations from operational thresholds

165.3 Contractor shall provide secure login credentials and ensure data integrity at all times.

## **166. IT SECURITY**

166.1 Contractor shall ensure comprehensive IT security measures for all plant-related systems, including:

- SCADA, telemetry, and communication networks
- Digital records and documentation
- Remote access interfaces

166.2 Security measures shall include:

- Encryption of sensitive data
- Regular software updates and patches
- Network segmentation and monitoring
- User access control and audit trails

166.3 Any breach of IT security must be reported immediately to Employer, with corrective and preventive measures implemented promptly.

## **PART – S: HANDOVER & CLOSE-OUT**

### **167. END-OF-TERM INSPECTION**

167.1 Contractor shall facilitate a comprehensive inspection of the plant at the end of the contract term.

167.2 Inspection Scope:

- Plant structures (intake, tunnels, powerhouse, transmission lines)
- Mechanical, electrical, and civil equipment
- Safety and environmental systems
- SCADA, telemetry, and digital systems

167.3 Inspection shall be conducted jointly by Employer and Contractor, with an independent technical expert if required.

167.4 A written inspection report shall be issued, documenting the condition, deficiencies, and recommendations for refurbishment.

### **168. RESIDUAL LIFE**

168.1 Contractor shall provide assessment of residual life of major plant equipment, including:

- Turbines and generators
- Transformers and switchgear
- Civil structures (intake, tunnels, tailrace, powerhouse)

168.2 Assessment shall include:

- Remaining operational life under normal O&M
- Estimated maintenance or refurbishment required
- Recommendations for extending service life

168.3 Residual life report shall be submitted in writing to Employer before handover.

### **169. MINIMUM CONDITION STANDARD**

169.1 Contractor shall ensure that all plant equipment and facilities are handed over in at least minimum condition standard, which includes:

- Safe operational condition
- Clean and functional
- Compliance with HSE and regulatory standards
- Proper documentation of all operational parameters

169.2 Any deficiencies identified shall be rectified by Contractor prior to final acceptance.

### **170. REFURBISHMENT**

170.1 Contractor shall perform any necessary refurbishment of plant equipment or facilities to meet handover standards, including:

- Mechanical repairs and overhauls
- Electrical maintenance and rewiring
- Civil works touch-up (painting, sealing, minor repairs)
- SCADA and digital systems calibration

170.2 All refurbishment works shall be certified by Contractor and reviewed by Employer prior to handover.

### **171. MANUALS & RECORDS**

171.1 Contractor shall provide complete operational and maintenance manuals, including:

- O&M manuals for all equipment
- HSE manuals and emergency procedures
- SCADA and digital system manuals
- Maintenance schedules, logs, and incident records

171.2 All manuals and records shall be accurate, complete, and updated to reflect actual plant conditions.

### **172. TRAINING OF EMPLOYER STAFF**

172.1 Contractor shall train Employer personnel on plant operation, maintenance, and safety procedures.

172.2 Training program shall cover:

- Daily operations and preventive maintenance
- Emergency response and disaster management
- SCADA operation and data interpretation
- Safety, HSE, and environmental compliance

172.3 Training shall include hands-on sessions, workshops, and simulations to ensure knowledge transfer.

### **173. SPARE PARTS HANDOVER**

173.1 Contractor shall hand over all spare parts, tools, and consumables procured during the contract period.

173.2 Handover shall include:

- Inventory list verified by Employer
- Condition and usability of spares
- Storage and handling instructions

173.3 Employer shall acknowledge receipt in written certificate.

### **174. FINAL ACCEPTANCE**

174.1 Final acceptance shall be granted after:

- Completion of end-of-term inspection
- Verification of residual life and minimum condition standards
- Submission of manuals, records, and spare parts
- Completion of training for Employer staff

174.2 Employer shall issue a Final Acceptance Certificate, which signifies:

- Handover of plant in operational condition
- Completion of Contractor obligations
- Release of final payments, retention, and bank guarantees as per contract

174.3 Final acceptance shall not absolve Contractor of latent defects or obligations under warranty and defect liability clauses.

## **PART – T: SPECIAL PAKISTAN CLAUSES**

### **175. NAB / FIA JURISDICTION**

175.1 Contractor and Employer acknowledge that National Accountability Bureau (NAB) and Federal Investigation Agency (FIA) may have jurisdiction over corruption, fraud, or financial irregularities related to the project.

175.2 Contractor shall:

- Cooperate fully with NAB/FIA investigations when legally summoned
- Maintain complete financial, operational, and HSE records for audit purposes
- Avoid actions that may trigger legal or regulatory investigations

175.3 Employer shall provide necessary legal support and coordination with authorities.

### **176. PARLIAMENTARY AUDIT**

176.1 Contractor shall comply with any audit or review conducted by Parliamentary committees, Public Accounts Committee (PAC), or Government oversight bodies.

176.2 Audit scope may include:

- Verification of O&M costs and invoices
- Assessment of operational performance
- Compliance with HSE and environmental regulations

176.3 Contractor shall provide all records, reports, and access required for audits.

### **177. TAX LAW SUPREMACY**

177.1 Contractor acknowledges that tax laws of Pakistan supersede other contract provisions unless otherwise exempted.

177.2 Contractor shall comply with:

- Income tax, withholding tax, GST, and provincial taxes
- PEC, FBR, and provincial tax notifications
- Tax exemptions applicable to specific districts, as per government notifications

177.3 Any dispute related to taxation shall be handled according to national tax laws and supporting judicial precedents.

### **178. COURT STAY HANDLING**

178.1 Contractor acknowledges that court injunctions or stays may affect O&M operations.

178.2 In the event of a stay:

- Contractor shall document operational impacts and report to Employer
- Contractor shall resume normal operations immediately once stay is lifted
- Employer shall coordinate with legal authorities to mitigate operational disruption

178.3 Costs arising solely due to court-imposed restrictions may be claimed under Force Majeure / Change in Law clauses, subject to documentation.

## **179. CHANGE IN LAW**

179.1 Any new or amended laws, regulations, or government notifications affecting the contract shall be considered a Change in Law event.

179.2 Contractor shall:

- Assess impact on costs, schedule, and operational requirements
- Notify Employer within 30 days of change
- Implement necessary measures to remain compliant

179.3 Employer and Contractor shall agree on equitable adjustments to contract price, schedule, or obligations to restore economic equilibrium.

## **180. ECONOMIC EQUILIBRIUM**

180.1 Contractor shall be entitled to equitable adjustment if events beyond their control materially affect:

- Costs of operations, labor, and spares
- Financial viability of contract obligations
- Exchange rate fluctuations impacting imported equipment or materials

180.2 Employer shall review documented claims and issue adjusted contract price or schedule within 60 days.

180.3 Economic Equilibrium adjustments shall not affect Employer's rights under Force Majeure, termination, or dispute resolution clauses.

## **PART – U: MISCELLANEOUS**

### **181. NOTICES**

181.1 All notices, communications, or instructions under this Contract shall be:

- In writing
- Sent by hand, registered post, courier, or email (with acknowledgment) or WhatsApp
- Addressed to the authorized representatives of Employer or Contractor

181.2 Notice shall be deemed received:

- On delivery (hand or courier)
- Three (3) days after posting
- On acknowledgment of email or digital communication

### **182. ASSIGNMENT**

182.1 Contractor shall not assign or transfer rights or obligations under this Contract without written consent of Employer.

182.2 Employer may assign rights or obligations to:

- Lenders or financing agencies
- Successor agencies in case of merger or reorganization

182.3 Assignment shall not relieve the Contractor of its obligations under the Contract.

### **183. WAIVER**

183.1 Failure by either party to enforce any provision of the Contract shall not constitute a waiver of that provision.

183.2 Any waiver must be:

- Expressly documented in writing
- Signed by the authorized representative of the party granting the waiver

### **184. SEVERABILITY**

184.1 If any provision of this Contract is held invalid, illegal, or unenforceable, the remainder of the Contract shall remain in full force and effect.

184.2 Parties shall negotiate in good faith to replace the invalid provision with a valid provision reflecting the original intent.

### **185. SURVIVAL OF CLAUSES**

185.1 Clauses that by their nature survive termination or expiry shall remain binding, including:

- Confidentiality (Part–Q Clause 160)
- Data Protection (Part–Q Clause 161)
- Liability & Indemnification (Part–J Clauses 97–100)
- Audit & Reporting obligations (Part–N)

- Force Majeure obligations (Part–K)

## **186. RELATIONSHIP OF PARTIES**

186.1 Contractor and Employer are independent parties.

186.2 Nothing in this Contract shall:

- Create an employer-employee relationship
- Grant authority to either party to act on behalf of the other except as expressly authorized

## **187. NO PARTNERSHIP**

187.1 This Contract does not create a partnership, joint venture, or agency relationship between Employer and Contractor.

187.2 Neither party may represent itself as a partner of the other.

## **188. PUBLICITY**

188.1 Contractor shall not issue any press releases or publicity regarding the project without prior written approval from Employer.

188.2 Employer may request contractor cooperation in public announcements, donor reports, or media coverage.

## **189. RECORDS RETENTION**

189.1 Contractor shall maintain all project records including:

- O&M logs
- Financial documents and invoices
- HSE and incident reports
- SCADA and operational data

189.2 Records shall be retained for a minimum of 10 years or longer if required by law, donor, or financing agencies.

## **190. SUSTAINABILITY**

190.1 Contractor shall perform all operations in accordance with sustainable and environmentally responsible practices, including:

- Efficient use of water and energy resources
- Minimization of waste generation
- Environmentally safe disposal of oils, lubricants, and other consumables
- Consideration for local communities and wildlife protection

190.2 Employer may request sustainability performance reports periodically.

## **CLOSING PARAGRAPH – CONTRACTOR RESPONSIBILITIES AND OBLIGATIONS**

### **191. CONTRACTOR OPERATIONAL COMMITMENT**

In addition to all the provisions, obligations, and clauses detailed above, the Contractor shall, at all times, operate and maintain the Micro Hydel Power Station in strict accordance with the site-specific requirements, Employer instructions, and conditions prevailing at the project location. The Contractor shall exercise the highest standards of professionalism, diligence, and engineering excellence, ensuring that all operations comply with international best practices and standards, including but not limited to FIDIC, IPP, World Bank, PEC, PEDO, WAPDA, PPRA, KPPRA, (and donor agency) Guidelines. The Contractor shall take all necessary actions to ensure the safe, reliable, and efficient operation of the plant, including but not limited to: continuous monitoring of equipment, preventive and corrective maintenance, adherence to SCADA and digital system protocols, water flow and environmental management, grid synchronization, reactive power and frequency control, HSE compliance, cyber and physical security, and any other measures required to prevent operational disruptions or accidents. Furthermore, the Contractor shall respond proactively to all emergencies, abnormal operating conditions, natural or man-made disasters, and Force Majeure events, taking immediate remedial action to protect the plant, personnel, and surrounding environment. The Contractor shall ensure that all technical, operational, and safety measures are fully documented, reported, and communicated to the Employer in a timely manner, facilitating informed oversight, audits, and regulatory compliance. In all circumstances, the Contractor shall prioritize the safety of personnel, protection of equipment, environmental preservation, and uninterrupted power generation, and shall take any additional action reasonably necessary to fulfill the Employer's objectives, maintain plant integrity, and achieve the highest operational standards throughout the contract period. This obligation is independent of, and in addition to, all other rights, responsibilities, and remedies outlined in this Contract, and shall survive the termination, expiration, or renewal of the agreement, ensuring continuous adherence to the principles of safe, reliable, and efficient plant operation.

## **SPECIAL CONDITIONS OF THE CONTRACT**

These Special Conditions of the Contract (SCC) shall alter, amend, modify the General Conditions of the Contract (GCC), where there is conflict in GCC and SCC, the conditions herein shall prevail.

### **6. CONTRACT AGREEMENT**

Add the following sub-clauses

6.4 the contract agreement shall be signed on non-judicial stamp paper of Rs 100/-

6.5 the contract agreement shall be as per provided format in the bidding documents.

### **8. EMPLOYER'S REQUIREMENTS**

The Employer's Requirements are further elaborated in the draft contract agreement.

### **10. TECHNICAL SPECIFICATIONS**

Contractor is deemed to have collected required data from the employer, and previous contractor (EPC) of MHP.

### **11. DRAWINGS**

Contractor is deemed have collected required data from the employer, and previous contractor of MHP.

### **12. PRICED SCHEDULE**

12.1 Priced schedule shall be as per financial proposal duly approved by the Employer

### **20. REGULATORY APPROVALS**

Any costs associated with mandatory approvals shall be paid by the employer as per actual cost incurred, hence such prices are not included in the Contract Price, unless otherwise agreed.

### **23. CONTRACT DURATION**

Contract duration shall be initially one year and may be extended upto three years if both the parties to the contract agreed, to do so.

### **26. EMPLOYER OBLIGATIONS**

26.2 Director of Works, SBBU, Sheringal Dir (U) is the employer's representative.

### **29. KEY PERSONNEL**

29.1 Contractor shall provide the Employer with a list of Key Personnel of the company include:

- a) Plant Manager / O&M Supervisor
- b) Mechanical Engineer
- c) Electrical Engineer
- d) SCADA / Instrumentation Technician
- e) Safety Officer / SHE Coordinator

### **32. QUALIFICATION REQUIREMENTS**

32.1 All personnel engaged by Contractor shall meet the following minimum qualifications:

Position	Qualification	Experience
Plant Manager	Bachelor (Mechanical / Electrical)	≥ 5 years in hydro plant O&M
Mechanical Engineer	B.E. Mechanical	≥ 3 years in hydro or power plant maintenance
Electrical Engineer	B.E. Electrical	≥ 3 years in hydro or power plant O&M
SCADA Technician	Diploma / Certification	≥ 2 years SCADA operation
Safety Officer	Degree or Certification in Safety	≥ 3 years O&M safety management

Or as mentioned in the technical and financial proposal of the contractor submitted and agreed by the employer during bidding and award of contract.

### **38. GRID SYNCHRONIZATION**

Replace the word “Grid” with “Generators”

### **46. PREVENTIVE MAINTENANCE**

46.4 Completion of PM tasks shall be documented and signed by responsible personnel, and submitted to Employer monthly.

### **50. OVERHAUL & MAJOR REPAIRS**

Rate of overhauling and major repairs shall not be included in current contract price, and shall be paid separately if approved by the employer.

### **56. WATER AVAILABILITY RISK**

Contractor may maintain a Water Availability Log, recording daily flow, reservoir level, and operational adjustments.

### **58. SEASONAL FLOW**

58.3 Contractor may submit seasonal flow operation plans to the Employer before each season.

### **59. SEDIMENTATION**

59.3 Contractor shall coordinate with Employer for major sedimentation events requiring additional resources.

### **72. PERFORMANCE LDs**

72.1 Performance LDs shall be calculated as below:

Performance LD(Rs) = Contract Price × Shortfall Energy (shortfall for which approval is not accorded)

72.2 LDs shall apply monthly and be deducted from Contractor’s payment unless otherwise agreed.

72.3 Contractor shall have the right to dispute LDs with supporting operational evidence.

### **76. CONTRACT PRICE**

76.1 The Contract Price is the total remuneration payable to the Contractor for performing all O&M services as per this Contract and mentioned in the financial proposal duly approved by the Employer, notified in the LoI.

**78. TAXES & DUTIES**

Local laws means the Laws of Islamic Republic of Pakistan.

**79. PRICE ADJUSTMENT**

This clause along with all sub-clauses are deleted and shall not be implemented in this contract.

**80. ESCALATION FORMULA**

This clause along with all sub-clauses are deleted and shall not be implemented in this contract.

**84 RETENTION MONEY**

84. Add “annually” at after the word “contract”

**88. LETTER OF CREDIT (LC)**

This clause along with all sub-clauses are deleted and shall not be implemented in this contract.

**94. THIRD PARTY INSURANCE, 95. PLANT INSURANCE,**

In the current contract these clauses are deleted and may be invoked if employer agreed to do so, hence Cost incurred over insurance shall not be included in contract price and shall be borne by the employer.

**100. CONTRACTOR LIABILITY**

100.3 Contractor shall notify Employer immediately of any incidents, accidents, or claims and provide full cooperation in resolution.

**104. FLOOD**

104.4 the flow if diverted from intake due to flood shall be diverted through excavation in the river through excavator the unless required & designed flow is properly diverted by the contractor, the working upto two hours shall be deemed included in the contract price, and if diversion could not done in two hours excavator work then extra time consumed shall be paid by the employer at the agreed rates.

**113. FORCE MAJEURE RELIEF**

The contractor staff shall not left the site unless allowed by the employer, and payment shall be continued accordingly.

116. TUNNEL COLLAPSE NA

118. DAM BREACH NA

119. INTAKE AND CHANNEL COLLAPSE

The contractor shall access the cost to be incurred along with proposed design, and shall execute if approved by the employer.

#### **148. TERMINATION BY CONTRACTOR**

The contractor upon in writing informing the employer within three months may terminate the contract.

#### **162. SCADA OWNERSHIP**

SCADA is still not installed, however if installed during the currency of the contract then all these clauses shall be invoked by the employer.

#### **170. REFURBISHMENT**

Major over hauling are not included in the contract price, if employer directed to do so, shall be paid accordingly.

#### **171. MANUALS & RECORDS**

A copy of the manuals provided by the EPC- Contractor to the employer shall be handed over by the contractor for implementation accordingly.

#### **180. ECONOMIC EQUILIBRIUM**

Adjustment in the contract price shall not be made.

The following clauses are added;

#### **192. COOPERATION;**

*The Contractor shall ensure a cooperative and professional working environment between its staff and the staff of other contractors and suppliers engaged at the University. Furthermore, the Contractor and its personnel shall extend full cooperation and assistance to the Employer in all matters related to the execution of the works.*

#### **193. Payment to staff;**

The Contractor shall ensure timely and regular payment of salaries and wages to all its employees without any delay. The Contractor shall be bound to grant mandatory leaves to its employees as per applicable labour laws, and proper records of attendance and leave, including casual leave, earned leave, overtime, and weekend duties, shall be maintained and made available for inspection by the Employer. The Contractor shall strictly comply with the Minimum Wages Act and all applicable labour laws and Government notifications. The employment of minors is strictly prohibited and shall not be allowed under any circumstances.

#### **193. Labour Laws;**

*Whether specifically mentioned herein above or not, the Contractor shall be solely responsible for compliance with all applicable labour laws, safety regulations, and Government rules concerning accidents, injury, disability, or death of its employees during employment. The Contractor shall ensure proper medical treatment, insurance coverage, and payment of compensation as required by law, and the Employer shall bear no liability in this regard.*

#### **194. Registration of staff;**

*The Contractor shall be responsible to register all its labour and staff with the relevant Workers Welfare Board, Employees Social Security Institution (ESSI), and Employees Old-Age Benefits Institution (EOBI), in accordance with applicable labour laws and Government rules. The Contractor shall submit documentary evidence of such registrations to the Employer.*

#### **195. Care in Operations;**

During operations, the operational staff shall perform their duties with due care, diligence, and professionalism, and shall ensure quality in all assigned tasks. The Contractor shall ensure that all operational staff use proper uniforms, protective clothing, gloves, and other required safety measures in accordance with applicable safety standards and regulations.

#### **196. Responsibilities of the Contractor**

The responsibilities of the Contractor shall may also include, but are not limited to, the following in addition to other mentioned in the contract documents:

- Diversion of water through excavator. If the diversion time of excavator exceeds two (2) hours, the additional time shall be paid by the Employer.
- Operation of plant and equipment on a 24/7 basis as required for uninterrupted services.
- Maintenance of transmission and distribution lines up to the changeover switch.
- Changing the changeover switch in accordance with the Standard Operating Procedures (SOP) and the approved Load Management Plan.
- Identifying, troubleshooting, and rectifying faults as they occur in the system.
- Supporting the Employer in load management activities.
- Coordination with the Works Department for operational and technical matters.
- Providing technical support to the Works Department in tracing and resolving faults in University electrical lines.