

ETALIN HYDRO ELECTRIC POWER COMPANY LTD. (EHEPCL)



ETALIN HYDROELECTRIC POWER PROJECT (3097 MW)

ARUNACHAL PRADESH, INDIA

PRE-QUALIFICATION DOCUMENT

(INTERNATIONAL COMPETITIVE BIDDING)

FOR

ETALIN/PACKAGE-EM2

EPC execution of Electro-mechanical works, consisting of design, engineering, procurement, fabrication/manufacturing, supply, erection, testing, and commissioning of Turbines, Generators, Butterfly Valve, Main Inlet Valve, Governor, , static excitation system, isolated phase bus duct, Gas Insulated Switchgear (GIS), Generator Transformers, Auxiliary and Station Transformers, Compress Gas Insulated Transmission lines (CGIT), Protection & Control systems, SCADA system, Pothead yard equipment and all related mechanical and electrical BOP's etc., for Tangon Limb (1228 MW, four units of 307 MW each) of Etalin Hydroelectric Power Project

AUGUST, 2014

**PREQUALIFICATION INVITATION DOCUMENT
(INTERNATIONAL COMPETITIVE BIDDING)**

FOR

ETALIN/PACKAGE-EM2

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PART-1
INVITATION FOR PREQUALIFICATION

ETALIN HYDRO ELECTRIC POWER COMPANY LTD. (EHEPCL)**INVITATION FOR PREQUALIFICATION
(INTERNATIONAL COMPETITIVE BIDDING)****PQ. No.: EHEPCL/ PQ-001/2014/Package-EM2****DATED: 18.07.2014**

1. The Etalin Hydroelectric Power Project is being developed in Dibang Valley district of Arunachal Pradesh, India. The project envisages utilization of waters of Dri and Tangon rivers for hydropower generation. The two rivers are tributaries of Dibang river and meet near Etalin village. Downstream of the confluence, the river is called Dibang which forms a major tributary of the Brahmaputra.

The proposed installed capacity of the scheme on Dri is estimated at 1842 (307 x 6) MW and that for the scheme on Tangon at 1228 (307 x 4) MW. Riparian flows from both the limbs have also been proposed to be utilized for power generation of 27 MW (19.6 MW on Dri and 7.4 MW on Tangon). The total installed capacity of the project is 3097 MW.

The entire catchments of both Dri and Tangon are within the Indian Territory and the main Dibang river flows throughout its length within the state of Arunachal Pradesh. Thus, there are no interstate or international aspects involved with the development of the project.

The development rights of the project have been accorded to ETALIN HYDRO ELECTRIC POWER COMPANY LTD; herein after referred to as "EHEPCL" / "Owner" a joint venture company of Jindal Power Ltd. (JPL) and Hydro Power Development Corporation of Arunachal Pradesh Ltd. The JV intends to develop the project on Build, Own, Operate and Transfer (BOOT) basis. The project was initially identified by Central Electricity Authority (CEA) and pre-feasibility studies for the project were carried out by National Hydroelectric Power Corporation (NHPC). Subsequently, the project scheme was developed in detail and financially evaluated in the Detailed Project Report (DPR) which was scrutinized by the Central Electricity Authority (CEA) and other statutory organizations. Accordingly, Techno Economic Clearance (TEC) for the project was accorded by CEA on 12th July' 2013 vide their letter no: 2/ARP/26/CEA/2010-PAC/3885-3917.

2. The Owner intends to implement the Project on split Engineering, Procurement & Construction (hereinafter referred to as EPC) basis for which it invites Pre-Qualification Applications on International Competitive Bidding (ICB) basis for the following works/contract under the Project:

ETALIN/PACKAGE-EM2: EPC execution of Electro-Mechanical works,

consisting of design, engineering, procurement, fabrication/manufacturing, supply, erection, testing, and commissioning of Turbines, Generators, Butterfly Valve, Main Inlet Valve, Governor, static excitation system, Isolated Phase Bus Duct, Gas Insulated Switchgear (GIS), Generator Transformers, Auxiliary and Station Transformers, Compress Gas Insulated Transmission lines (CGIT), Protection & Control systems, SCADA system, Pothead yard equipment and all related mechanical and electrical BOP's etc., for Tangon Limb (1228 MW, four units of 307 MW each) of Etalin Hydroelectric Power Project Estimated Completion Time : 50 months

Pre Qualification (hereinafter referred as "PQ") is open to Manufacturing Companies, EPC Contracting Company or Joint Venture(s) from any Country. Complete PQ document can be viewed / downloaded online through website www.jindalpower.com (hereinafter referred to as "Website"). Last date for submission of PQ Application is 31.10.2014 (15:00 Hrs IST). Subsequent amendments and/or extension of date, if any, for submission of PQ documents shall be posted only on the Website. A non-refundable fee of INR100,000/- or USD 1,750 shall be payable as processing fee, at the time of submitting the PQ Application. The non-refundable fee is to be paid in the form of a Demand Draft in favour of "Etalin Hydro Electric Power Company Ltd." payable at New Delhi, India.

Submission of Applications for Pre-Qualification alongwith all the required documents, information and prescribed processing fee must be received, in sealed envelope, on or before 31.10.2014 (15:00 Hrs IST). The envelope must be clearly marked "Application for Pre-Qualification for ETALIN/Package-EM2 of Etalin Hydroelectric Power Project (3097 MW)"

Late/ incomplete applications and applications without the requisite processing fee are liable to be rejected.

Only pre-qualified Companies/Joint Ventures will be invited to participate in the Bid. EHEPCL reserves the right to reject any or all Applications without assigning reason thereof and without any refund of processing fee.

Applicants in their own interest are advised to visit the Project site, to apprise themselves adequately to the extent required for preparation and submission of Application, well in time.

After completion of pre-qualification process, the Owner intends to call for submission of Bids from the pre-qualified Applicants for which Bid document shall be issued to prequalified Companies/JVs free of cost.

Whom to Contact

For any further information on the Pre-Qualification Document, the Applicants may contact the Office of the Etalin Hydro Electric Power Company Ltd:

Contact Person:

Mr. M.C.Bhardwaj

EVP (Contracts & Procurement)

Etalin Hydro Electric Power Company Ltd.

Tower-B, 2nd Floor

Plot No – 02, Sector-32

Gurgaon – 122001

Haryana, India

Phone- +91- 124-6612223

Mail Id: etalin.pq@jindalsteel.com

PART-2

INSTRUCTIONS TO APPLICANTS

PART – 2: INSTRUCTIONS TO APPLICANTS

1. SCOPE OF TENDER

- 1.1 ETALIN HYDRO ELECTRIC POWER COMPANY LTD. (EHEPCL) hereinafter referred to as “EHEPCL”/“Owner”, intends to implement Etalin Hydro Electric Power Project (3097 MW) located in Dibang Valley district of Arunachal Pradesh, India, invites Pre-Qualification Applications.
- 1.2 The Owner invites Applications from Companies / Joint Ventures on an International Competitive Bidding (ICB) basis for pre-qualification for the following EPC package of the Project:

Package No.	Details of Works	Estimated Period of Completion
ETALIN/Package-EM2	EPC execution of Electro-mechanical works, consisting of design, engineering, procurement, fabrication/manufacturing, supply including Transportation and Transit Insurance upto site, erection, testing, and commissioning of Turbines, Generator, Butterfly Valve, Main Inlet Valve, Governor, static excitation system, isolated phase bus duct, Gas Insulated Switchgear, Generator Transformers, Auxiliary and Station Transformers, Compress Gas Insulated Transmission lines (CGIT), Protection & Control systems, SCADA system, Pothead yard equipment and all related mechanical and electrical BOP's etc., for Tangon Limb (1228 MW, four units of 307 MW each) of Etalin Hydroelectric Power Project	50 Months

- 1.3 General information on the location, transportation and communication facilities, access to site, salient features, project layout, geology, hydrology, etc. are given at **Appendix- A**, “Information for Applicants”
- 1.4 Pre-qualification is open to manufacturing Companies, EPC contracting Companies or Joint Venture(s) of Companies from any country that shall hereinafter be referred to as ‘Applicants’.
- 1.5 For any clarification on the Pre-qualification Document, the Applicant shall send the request to the Owner through electronic mail/post. The Owner may respond to such

request for clarifications, received earlier than 15 days prior to the deadline for submission of Application.

- 1.6 At any time before the deadline for submission of Application and/or after the submission of Application, amendments may be issued by the Owner to amend, supplement various provisions in the Pre-qualification Document. Any amendments issued by the Owner shall become part of the Pre-qualification Document and shall be uploaded only on the Website. To give prospective applicants reasonable time to take an amendment into account in preparing their PQ documents, the Owner may extend as necessary the deadline for submission of the Application.

The Applicants are advised to visit the Website regularly for any such updates, clarifications etc. The Applicants are advised to submit their queries, clarifications etc. through e-mail as well as hard copy.

The clarifications shall be updated on the Website only. The Applicants may re-visit the Website prior to submission of PQ for any such details.

1.7 Applicant to Inform Himself Fully

a) Local Conditions

It is imperative for each Applicant to fully inform himself of all Indian as well as local conditions, factors and legislation that may have any effect on their submissions for prequalification and execution of the work. No request will be considered for clarifications from the Owner regarding such conditions, factors and legislation.

b) Site Conditions

- 1.b.1 The Applicant is advised to visit and examine the Site where the works are to be executed, facilities are to be installed and its surroundings and obtain for itself on its own responsibility all information in this regard. The costs of visiting the site shall be at the Applicant's own expense.
- 1.b.2 The Applicant and any of its personnel or agents will be granted permission by the Owner to enter upon its premises and lands for the purpose of such inspection, but only upon the express condition that the Applicant, its personnel and agents will release and indemnify the Owner and its personnel and agents from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage costs and expenses incurred as a result of such inspection.

- c) The Applicant shall be deemed prior to submitting his PQ to have:

- 1.c.1 Satisfied itself as to the means of communication with and access to and through the Site, the accommodation it may require and the precautions and the times and methods of working;
- 1.c.2 Satisfied itself as to the nature of the work, time required for complete execution of work and materials necessary for the execution of the Works;
- 1.c.3 Obtained for itself all necessary information as to the risks, contingencies and all other circumstances;
- 1.c.4 Inspected and examined the Site and its surroundings and carried out such surveys as it considers necessary
- d) For site visit the Applicant are requested to contact the undersigned:

Mr.V.B. Gupta
 Head (Projects)
 Etalin Hydro Electric Power Company
 Ltd
 District: Dibang Valley,
 Arunachal Pradesh
 Phone No. : +91-3801-278283
 E-mail: vinod_gupta@jindalsteel.com

Mr.M.M. Madan
 President (Hydro)
 Etalin Hydro Electric Power Company Ltd
 5th Floor, Tower-B,
 Plot No-02, Sector-32,
 Gurgaon -122001
 Haryana, India
 Phone No.: +91- 124 6612507
 E-mail : mm.madan@jindalsteel.com

1.8 Method of Applying

- 1.8.1 The Applicant shall necessarily furnish the Letter of Application and also fill up all the relevant Application Forms enclosed as Appendix-B, herewith in Pre-Qualification Document. The details shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized and holding Power of Attorney for signing the PQ documents on behalf of the Applicant. A certified copy of the Power of Attorney shall accompany the application. All pages of the PQ document shall be signed by the person or persons duly authorized to sign the PQ document on behalf of the Applicant as stated above.
- 1.8.2 In case of a Joint Venture, the Applicant is required to enclose the original copy of Undertaking from each Partner along with the Application, as per Annex-1 to Form 2A of Appendix B. Further, the Application made by a Joint Venture, shall be signed by the authorized representatives of all the Joint Venture partners. Certified copy(ies) of the Power of Attorney issued to such authorised representatives by legally authorised persons of all partner Companies of the Joint Venture shall

accompany the Application.

2. SUBMISSION OF APPLICATIONS

2.1 The PQ Application shall be prepared in one (1) original, with one Soft copy in CD and three (3) copies. The original and copy sets shall be clearly marked Original and Copy-1, Copy-2, Copy-3 respectively on the front cover of each set. In the event of discrepancy between original and copy, the original shall prevail.

2.2 Applications for Pre-qualification in a sealed envelope shall be submitted in one Original, with one Soft copy in CD and three hard copies to:

Mr. M.C.Bhardwaj
EVP (Contracts & Procurement)
Etalin Hydro Electric Power Company Ltd.
Tower-B, 2nd Floor
Plot No – 02, Sector-32
Gurgaon – 122001
Haryana, India
Phone- +91- 124-6612223
Mail Id: etalin.pq@jindalsteel.com

2.3 The envelope and the contained Application should be clearly marked:

"Application for Pre-Qualification for ETALIN/Package-EM2 of Etalin Hydroelectric Power Project (3097 MW)".

The name, mailing address, email id and telefax number of the Applicant shall be clearly indicated on the envelope.

2.4 A non-refundable fee of INR 100,000/- or USD 1,750 shall be payable as processing fee, at the time of submitting the PQ Applications. The non-refundable fee is to be paid in the form of a Demand Draft in favour of "Etalin Hydro Electric Power Company Ltd." payable at New Delhi, India

2.5 Late Application(s), incomplete Application(s), Application(s) without supporting requisite document(s) and Applications without the requisite processing fee is(are) liable to be rejected.

2.6 All the costs and expenses incidental to the Applicant towards preparation of PQ document, discussions, conferences, meetings, if any, including any discussions, technical and other presentation including any demonstrations, site visit etc. shall be

- to the account of the Applicant only and the Owner shall bear no liability whatsoever on such costs and expenses
- 2.7 The PQ prepared by the Applicant and all correspondence and documents related to the application of this package, exchanged by the Applicant and the Owner shall be written in English language only, provided that any printed literature furnished by the Applicant may be written in another language, as long as such literature is accompanied by a translation in English language in which case, for purposes of interpretation of the document, the translation shall govern. Each page of the Translation shall be duly self-certified by the Applicant.
- 2.8 The Owner is also inviting PQ proposals for other works package of the Etalin Project. The Applicant may submit their PQ applications for other work package(s). However, the Applicants' capability shall be evaluated for each package(s) separately as well as in combination so as to assess their competence to bid for one or more packages. Applicant, if desires to participate in other package as well, has to submit a separate application as per requirement of the respective individual Package.
- 2.9 The Applicant should clearly indicate new design features/ new technologies used by them in the previous/ existing job executed by them which are relevant to the scope prescribed herein.
- 2.10 The Applicant shall confirm that it does not anticipate a change in Ownership/Control during the proposed period of execution of work (If such a change is anticipated, the scope and effect thereof shall be defined by the Applicant in its PQ Application).
- 2.11 The Applicant shall submit complete information that it has an established project management organization covering the areas related to engineering of equipment/systems, interface engineering, procurement of equipments and the necessary field services required for successful completion of work covered in the scope.
- 2.12 The Applicant is expected to examine all documents submitted by them. Failure to provide information which is essential to evaluate the Applicant's credentials, or failure to provide timely clarification or substantiation of the information supplied may result in rejection of the Application.
- 2.13 A Company/Joint Venture of such companies/ member of a Joint Venture may submit only one Application for the package under consideration. If a Company/Joint Venture/ member of a Joint Venture submits more than one Application singly or in a

Joint Venture, all Applications where such Company is participating will be rejected. This however, will not apply in respect of equipment supplier(s)/sub-contractor(s) who may be proposed by one or more than one Company/Joint Venture. A Company submitting an Application individually or as a member of a Joint Venture cannot be an equipment supplier/sub-contractor of another Applicant. The Applicant, if desires to participate in other package(s) as well, has to submit separate application as per requirement of that Package(s).

2.14 The Applicant has the option of sending PQ Application by courier or registered post or submitting it in the person and shall ensure that it reaches to the Owner by the date and time stipulated. Submission of Application by Fax/Telex/e-mail will not be accepted.

2.15 **Deadline for Submission of PQ Application**

- a) PQ Application must be received by the Owner at the address specified above no later than 31.10.2014, 15:00 Hrs (IST). In the event of the specified date for submission of PQ Application being declared a holiday for the Owner, the Application will be received, up to the fixed time on the next working day.
- b) The Owner at its discretion, may extend this deadline for submission by amending the documents, in which case all rights and obligations of the Owner and Applicants will thereafter be subject to the deadline as extended.
- c) Any PQ Application received by the Owner after the submission deadline prescribed by the Owner is liable to be rejected

3. **QUALIFICATION CRITERIA**

3.1 The pre-qualification will be subject to Applicant's fulfilment of the Qualification Criteria set and stipulated hereunder, substantiated by authentic and relevant information documents and details in the prescribed formats **(Appendix-B)**. Additional information in support of their claims of achievements may be furnished by Applicant in any form of their device and design translated in English.

3.2 The Applicants should have proven experience as a Manufacturing company(ies) or an EPC contracting company or as a Joint Venture of companies in execution of any project with responsibility for Planning, Design & Engineering and execution, testing and commissioning of Electromechanical works of type, magnitude and nature similar to the items listed under at Para 3.3.1 hereunder. Only such experienced and capable entities shall apply for Pre-qualification.

3.3 The pre-qualification will be based on Applicant fulfilling criteria set forth hereunder as the minimum:

3.3.1 Technical Criteria

(a) General Experience

Experience as prime contractor or as partner in a joint venture of executing two large Electro-mechanical EPC contract(s) for valuing to a sum total of at least 225 million US \$ or equivalent in last fifteen (15) years.

The Applicant shall fully fill in the prescribed Pre-qualification Form (s) as per Appendix-B to detail General Experience in related business and shall attach signed copy (ies) of the following as evidence:

Successful Commissioning Certificate issued by the respective Project Authorities/ Owner if the project is already commissioned.

The Applicant shall also provide detailed communication address of the concerned Project Authority / Owner.

(b) Specific Technical Experience

Successful Experience, either by the Applicant itself or by the proposed manufacturer(s) who have given authorization to the Applicant in required format in designing, engineering, manufacturing, supply, installation/erection, testing and commissioning of the following electromechanical equipment/items having ratings as mentioned below in last fifteen (15) years:

i) Vertical Shaft Francis HydroTurbine:

Rated output of minimum 250 MW and rated head of minimum 340 m.

OR

Technical Difficulty Factor (TDF) of not less than 85000 provided one of the above mentioned criteria i.e. rated output or rated Head is met.

TDF in this case shall mean the product of rated output in MW and rated head in meters.

Applicant shall provide experiences in two projects; out of which at least one should be an operational project. The Applicant shall, in case of operational project(s), submit certificates issued by the Owner to demonstrate the successful operation of the above mentioned Turbine.

ii) Main Inlet Valve

Spherical Inlet Valves of minimum 2.5 m diameter and designed for a minimum head of 500 m

OR

Technical Difficulty Factor (TDF) of not less than 1250 provided one of the above mentioned criteria i.e. diameter or rated Head is met.

TDF in this case shall mean the product of diameter and design Head in meters.

Applicant shall provide experiences in two projects; both of which should be operational projects.

iii) Butterfly Valve

Butterfly Valves of minimum 3.2 m diameter designed for a minimum Head of 110m

OR

Technical Difficulty Factor (TDF) of not less than 350 provided one of the above mentioned criteria i.e. diameter or Head is met.

TDF in this case shall mean the product of diameter and design Head in meters.

Applicant shall provide experiences in two projects; both of which should be operational projects.

iv) Vertical Shaft Synchronous Generator:

Rated output of not less than 270 MVA and rated speed of not less than 200 rpm

OR

Technical Difficulty Factor (TDF) of not less than 54000 provided one of the above mentioned criteria i.e. rated output or rated speed is met.

TDF in this case shall mean the product of rated output in MVA and rated speed in RPM.

Applicant shall provide experiences in two projects; out of which at least one shall be an operational project. The Applicant shall, in case of operational project (s), submit certificates issued by the Owner to demonstrate the successful operation of the above mentioned Generator (s).

v) 400 kV Class GIS

Minimum 6 (six) bays of GIS equipment having rated voltage of not less than 400 kV and current rating of not less than 2000A and specified fault level of minimum 40 kA, which are in operation.

vi) 400 kV Class CGIT/GIL

Minimum 100 m length of **CGIT/GIL** of having rated voltage of not less than 400kV and current rating of not less than 2000A and specified fault level of minimum 40 kA ; which are in operation.

vii) Generator Step-Up (GSU) Transformers

Minimum 6 nos. of single phase GSU transformers having minimum rating of 100 MVA and voltage level of minimum 400 kV in two operational projects.

OR

Minimum of 3 nos. of three phase GSU transformers having minimum rating of 300 MVA and voltage level of minimum 400 kV in at least two operational projects.

viii) Computer based Control, Protection and Monitoring System

Computerized Control, Protection and Monitoring system, including SCADA & Man-Machine Interface, for atleast two power plants each with installed Capacity of 350 MW or more, which are under operation.

ix) Shunt Reactor

Two numbers of Shunt Reactor having rated voltage of not less than 400 kV and minimum 50 MVAR; which are in operation. The Applicant shall fully fill in the prescribed Pre-qualified Form (s) as per Appendix-B with respective experience that meet the criteria set forth in (i) to (ix) above and shall attach a copy (ies) of Successful Commissioning Certificate issued by the respective Project Authorities/ Owner as evidence. The Applicant shall also provide detailed communication address of the concerned Project Authority / Owner.

3.3.2 Financial Criteria**3.3.2.1 Turnover**

Average annual turnover of the Applicant (collectively by partners in case of a Joint Venture) in the related business for the preceding 5 (five) financial years shall be atleast the amount specified hereunder:

US\$ 144 Million or equivalent

Note: Equipment Supplier(s)/sub-contractor(s) turnover shall not be considered.

3.3.2.2 Profitability

The Applicant's should have earned 'Profit before Taxes' in three (03) years out of the preceding five (05) financial years. However, if losses are reported in two (02) years, it should not be in two consecutive years prior to the date of submission of the Applications.

3.3.2.3 Net Worth

The Net Worth of the Applicant should be positive and not less than the amount of its Equity Share Capital including Share premium in atleast four (04) of immediately preceding five (05) financial years. The minimum networth requirement is considered as **US\$ 72 million or equivalent** as on end date of last Financial Year preceding the application submission date for which audited financial statements are available.

The Net Worth shall be calculated based on subscribed and paid up Share Capital plus Share Premium plus Free Reserves plus Unallocated Balance/ Surplus amount of Profit and Loss account, less (a) Expenses not written off, (b) Accumulated losses in Profit and Loss Account, if not reduced from reserves and surplus. The Revaluation Reserves, Capital Reserves and amount of intangible assets like goodwill etc. will not be taken into account while calculating the Net Worth

3.3.2.4 Working Capital

The minimum working capital (current assets minus current liabilities) is considered as **US \$ 36 Million or equivalent.**

For this purpose current assets and current liabilities will be considered as classified in the audited balance sheet for the year immediately preceding the date of opening of Application(s). In case current assets and/or current liabilities are not classified separately in audited Balance Sheet, a certificate from Statutory Auditor/Certified Public Accountant (CPA) carrying out the Statutory Audit, for current assets and/or current liabilities, as the case may be, clearly defining the items considered for the same, should be enclosed. However, trade payables shall be a part of current liabilities. If the Working Capital calculated from the audited Balance Sheets is negative then such working capital shall be treated as zero. In case there is a shortfall in the Working Capital as per this, the unutilized Cash Credit Limits sanctioned to the Applicant by the Banks / Financial Institutions of international repute shall be considered to meet the shortfall. The statement displaying cash credit limits should not be more than three months old as on the last date for submission of application.

The working capital requirements should be satisfied by individual partner's of Joint Venture in proportion to their participation share in Joint Venture.

In case of Applicant associating equipment supplier(s)/sub-contractor(s), the Applicant shall meet the working capital requirement.

3.3.2.5 Bid Capacity

The available Bid Capacity of the Applicant at the time of submission of PQ, calculated as under should not be less than the estimated cost of the work:

Available Bid Capacity = $2.0 \times A \times N - B$,

Where; A = Maximum value of works executed in any one year during last five (05) years

N = Number of years prescribed for completion of the Subject contract Package i.e. $50/12 = 4.17$ Years.

B = Value of existing commitments (as on submission date) and ongoing works to be completed in the next 'N' years.

The Applicant shall submit documentary evidence together with a certificate from its statutory auditors in support of establishing 'A' and 'B' above, along with their Application. The provision as above for bid capacity shall be the qualification criteria. However, details as mentioned above shall be required to be re-submitted by the bidder and shall be reassessed at the time of evaluation of Technical/Price Bid invited from prequalified bidders and if Bid Capacity is found falling short of requirement as per above norms, the Award of work shall not be placed on such company/JV.

Notes:

1. For conversion to US\$, the exchange rate at the end of the respective accounting year shall be considered, the source of the exchange rate shall be the Reserve Bank of India.
2. Other income shall not be considered for arriving at Annual Turnover.
3. The Applicant's financial evaluation viz a viz the requirement as stipulated above shall be done on the basis of duly printed (offset) Annual Report for the immediately preceding 5 (five) years submitted by the Applicant along with the application. Further, standalone audited Annual Financial Statement of Applicant shall be forming part of the Annual Report.

In case, Applicant has not submitted the above mentioned Annual Report along with Application, then a certificate from CEO / CFO/ Head of Finance of the Applicant shall be submitted mentioning that the requirement of Annual Report as per governing law of country is not mandatory. In such cases duly notarized copies of Audited Printed Annual Financial Statement (Balance Sheet, Profit & Loss Statement, Cash Flow Statement, Auditor's Report thereon including all relevant Schedules / Annexure etc.) for the immediately preceding 5(five) years shall be submitted by the Applicant along with the Application.

4. In case where audited financial results for the immediately preceding year are not available/audited, then applicant shall furnish unaudited accounts & declaration to this effect duly certified by Statutory Auditor/Certified Public Accountant.
5. The Applicant shall further provide Statutory Auditor's/Certified Public Accountant's certificate specifying the Turnover in the related business, Profitability, Working Capital and Net Worth of the Applicant (calculated as per above laid down criteria) as on the closing date of the immediately preceding five (05) Financial Years.
6. Wherever, the Annual Report / duly notarized copies of Audited Printed Annual Financial Statement are in language other than English then copy duly translated & printed in English language and certified by approved / recognized English Translator (copy of approval/recognition of Translator to be attached) and Self-Certified by the Applicant shall be submitted along with Application.
7. In addition to above, wherever audited printed Annual Financial Statement contain turnover pertaining to other activities besides turnover in the related business of Applicant and breakup of turnover in the related business is not directly available from such financial statements, then statement of account depicting the turnover in the related business for that year duly certified by their Statutory Auditor/ Certified Public Accountant carrying out the statutory audit shall also be enclosed with the Application.
8. For the Purpose of compliance to the stipulated turnover criteria given at Financial Criteria, the turnover from Joint Ventures(s)/ proposed JV partner (s) as declared by all partners shall also be considered. The proportionate JV

Turnover shall be certified by their statutory Auditor if that is not appearing in the Audited Financial Statement.

3.3.3 Quality Assurance

The Applicant should have his own Quality Assurance System for design, manufacture, installation, testing, erection and commissioning of Electro-Mechanical equipments conforming to international standards such as ISO or equivalent certified by a competent and reputed international organization having current validity in order. Details of Applicant's Quality Assurance System shall be provided in Prequalification Form-7 and copy of his Quality Policy shall also be submitted with the Application. In case of Joint Venture and equipment supplier(s)/ sub-contractor(s), the above details of each separate entity need to be provided.

4. NATURE OF APPLICANTS

As an alternative to applying as a Sole Applicant, the Applicants can opt for any of the following modes of pre-qualification:

4.1 Joint Venture Applicants

In case of an Application from a Joint Venture, it shall comply with the following minimum qualifying requirements:

- (i) All the partners in a Joint Venture shall appoint one Lead Partner and all the partners should be incorporated legal entities, as an agency, company or society.
- (ii) The number of partners in the Joint Venture including the Lead Partner shall not exceed five (05).
- (iii) The Lead Partner of the Applicant (Joint Venture) shall fully meet the following:
 - General Experience criteria specified at para 3.3.1 (a) above, and
 - Average Annual Turnover more than 50% of criteria specified in para 3.3.2.1 above, and
 - Specific Experience as specified in para 3.3.1 (b) i **Or** 3.3.1(b) (iv), and
 - Quality Assurance System specified at para 3.3.3 above,
- (iv) The other partner(s) shall individually meet the following requirements:

- General experience, as prime contractor or as partner in a Joint Venture of executing four Electro-mechanical EPC contract totaling minimum US Dollar 20 million or equivalent in last fifteen (15) years, and
 - One or more of Specific Experience criteria under para 3.3.1 (b) other than that to be met by the Lead Partner as specified under 4.1 (iii) above, and
 - Average Annual Turnover shall not be less than 20% of criteria, specified under Financial Criteria, and
 - Quality Assurance System (related to other partner's scope of work) specified at Para 3.3.3 above,
- (v) The Specific Experience for each component to be met individually by the Lead Partner or other partner, as the case may be, and not collectively.
- (vi) All the partners of the Joint Venture should individually fulfill the Net Worth and Profitability criteria.
- (vii) The Joint Venture proposed should collectively satisfy, as a whole, the requirements specified above.
- (viii) The 'Bid Capacity' and "Working Capital" requirements should be satisfied by individual partners of Joint Venture in proportion to their participation share in Joint Venture.
- (ix) Lead partners of the Joint Venture/Consortium should have at least 50% participation share

4.2 EPC Contracting Companies

Applications from EPC contracting companies who are not in the business of manufacturing equipment or as a sole Applicant or as a lead-partner/partner in a joint Venture will also be entertained, provided that the Applicant has experience of executing similar hydroelectric projects as EPC contracting company and its proposed manufacturing companies/contractors/equipment suppliers/sub-contractors jointly meet as a whole all the essential qualification criteria set forth under para 3.3 above. In such cases, the Applicant shall establish that it has successfully executed in the last 15 years, at least two hydroelectric power projects (one of which is not be less than 750 MW) as EPC contracting company, and that it continues to be in the business of execution of similar EPC contracts. The letter (s) of authorization shall be obtained by

such EPC Contracting companies from the proposed manufacturing companies/contractors/equipment suppliers/sub-contractors etc. The letter(s) of authorisation shall be in the format– “Qualification Form-4C” contained in Appendix-B. Relevant particulars about the Financial capacity and past experience as EPC contractor and specific technical experience of the proposed manufacturer(s) of Electro-Mechanical equipment, contractors, equipment suppliers/sub-contractors etc. shall be submitted in the prescribed formats as per Appendix-B, duly supported and evidenced by testimonials/copies of certificates issued by the Project Authorities/Owners to establish their fulfilment of the stipulated Qualification criteria.

5. APPLICATIONS BY MERGED/AQUIRED/SUBSIDIARY COMPANIES

- 5.1 In case of an Applicant Company, formed after merger and / or acquisition of other companies, past experience and other antecedents of the merged / acquired companies will be considered for qualification of such Applicant Company provided such Applicant Company continues to own the requisite assets and resources of the merged / acquired companies needed for execution and successful implementation of the work package put to tender.
- 5.2 If the Applicant Company is a manufacturer but a subsidiary company and it adduces documentary evidence of having had the support of and access to the assets and resources of a ‘Parent/Holding Company’ for execution of Electro-Mechanical works similar to the work package under consideration and the same is guaranteed by such ‘Parent/Holding Company’ for this work package through a Corporate Guarantee, past experience and Financial Capacity of such ‘Parent/Holding Company’ may be considered for pre-qualification of such Subsidiary Company. In such cases, the Parent/Holding Company shall submit a written undertaking as per the attached format given in Form 8; evincing its full support for the technical and financial requirements of the subsidiary company and further commit to take up the work itself in case of non-performance by the subsidiary company in the event of award of the work to the applicant subsidiary company. In case of award of work, the Parent/Holding Company of the subsidiary company shall submit the required guarantee as per the format attached as Form 8A or any other similar Form.

The above dispensation is allowed only to a manufacturing company which participates either as a Sole Applicant or a Joint Venture partner. The manufacturers

proposed under prescribed format "Qualification Form-4C" shall not be evaluated if they do not meet the qualification requirement on their own.

6. Associate Manufacturer(s)

- 6.1 Subject to fulfilment of the respective prescribed qualifying requirements mentioned earlier, Applicant shall have the option to associate reputed manufacturer(s) for supply of one or more items of equipment mentioned in paras 3.3.1 (b) i) to 3.3.1(b) ix). Specific technical experience of the manufacturer(s) so proposed shall be considered for qualification of such sole Applicant(s) or as partner(s) of Joint Venture Applicant(s) provided the experience particulars and authorisation letter (s) of the proposed manufacturer(s) are furnished in prescribed Qualification Forms contained in Appendix-B. The Applicant is allowed to propose more than one manufacturer for supply of one or more items of equipment mentioned in paras 3.3.1(b) except items specified in para 3.3.1 (b) i) Or 3.3.1 (b) iv) above, but only one (1) manufacturer can be proposed for supply of items listed in para 3.3.1 (b) i) & 3.3.1 (b) iv). Change of the proposed manufacture(s) shall be allowed only in exceptional circumstances, with prior permission of the Owner but, will not be allowed for supply of items listed in para 3.3.1 (b) i) & 3.3.1 (b) iv) in any case.
- 6.2 Manufacturer(s) of Electro-mechanical equipments listed under paras 3.3.1 (b) i) & 3.3.1 (b) iv) who have issued Letter(s) of Authorisation as per Qualification Form-4C for others are not permitted to participate directly by themselves as a sole Applicant(s) or in a Joint Venture against this Invitation. Application(s) for qualification submitted by such manufacturer(s) in contravention of above requirement will not be considered.

7. LOCAL REPRESENTATION

- a) Foreign Applicants, if they have in India a local representation/Indian Agent, shall indicate the name of such person or firm and also shall furnish the following information:
- i) The precise relationship between the Applicant and his Indian Agent.
 - ii) The mutual interests which the Applicant and the Indian Agent have in business of each other.
 - iii) Any payment which the Indian Agent receives in India or abroad from the Applicant whether as a commission for the Contract or as a general retainership fee.

- iv) Indian Agent's Income Tax Permanent Account Number.
- v) Applicant's Income Tax Permanent Account Number.
- vi) All services to be rendered by the Indian Agent whether of general nature or in relation to the particular Contract.
- vii) Details of their Registered Office in India

Any other technical data and further information or details, the Applicant wishes to submit in addition to the details asked for above as well as descriptive catalogues and drawings etc. may be enclosed along with above information.

- b) If the Applicant gives any wrong or misleading information and/or conceal any material fact/ information which can impact the decision of the Owner, the Owner hereby reserves the right to reject such proposal.

The proposal submitted shall become the property of the Owner with no obligation to return the same to the Applicant.

8. DISQUALIFICATION/INELIGIBILITY OF APPLICANT

Even though the applicant(s) meet the pre-qualification criteria, they shall be disqualified if they have:

- a) been involved in the Corrupt or Fraudulent or collusive or coercive Practices; and/or
- b) made misleading or false representation(s) in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
- c) Record of poor performance such as abandoning the works, termination of its awarded work, serious litigation history, or financial failures etc..

The Applicant /any member partner of the JV / Consortium shall not have been declared ineligible for poor performance / failure issued by the Govt. of India / State Govt. / Govt. Deptt. / Public Sector Undertaking (PSU) / World Bank / Asian Development Bank. A declaration to this effect shall be submitted by the applicant.

9. LITIGATION HISTORY

The Applicant shall provide accurate and complete information in Form-9 about any pending and/or decided litigation or arbitration resulting from contracts completed or ongoing under its execution over the last ten (10) years. In case of consistent history of awards against the Applicant or any partner of a Joint Venture may result in

rejection of PQ Application.

10. GENERAL

- 10.1 In case of a Joint Venture Applicant, the composition of the Joint Venture and role and responsibility of each constituent, the proposed participation share of each partner along with items of work to be executed by each partner shall be brought out as per the requirement of Appendix-B, Form 2A hereto. An undertaking shall be submitted by each partner of the Joint Venture in the format attached as Annex-1 to Form 2A. The Joint Venture Agreement, to be submitted along with Techno-Commercial bid, shall be on the lines of the format attached as Annex-2 to Form 2A.
- 10.2 Applicant or any of the partners in case of a Joint Venture or one of his proposed manufacturer claiming to have past experience by virtue of being a partner of a Joint Venture (which executed a particular work in the past), shall make their presentations in Prequalification Forms in Appendix-B for such experience. The specific experience of such Sole Applicant/JV partner/ manufacturer(s) shall be considered as per their role and scope of work in such Joint Venture(s) for which they will have to adduce documentary evidence of their role and scope of work in aforesaid Joint Venture Contract(s).
- 10.3 If the performance of the Applicant or any of the partners of Joint Venture/ manufacturer/equipment supplier/sub-contractor, in a current /past contract for any major work is unsatisfactory, the Applicant is liable to be disqualified.
- 10.4 Owner's Right to Accept or Reject Applications

The Owner without incurring any liability to Applicant(s) for whatsoever and without assigning any reasons thereof reserves the right to:

- (a) Amend the Scope of Work, to be tendered
- (b) Reject or accept any application including on account of national defence, and security considerations.
- (c) Cancel the pre-qualification process and /or reject any/all Applications.

The Owner will not entertain or be liable for any claim for cost and expenses in relation to the preparation of PQ to be submitted. The Owner will neither be liable for any such actions nor be under any obligation to inform the applicant of the ground of his decision.

- 10.5 Only those Applicants who have been Pre-qualified under this procedure will be informed and further invited to submit their Techno-Commercial bid.
- 10.6 The Owner, solely at its own discretion, reserves the right to consider the deviations in above Pre-qualifying criteria.
- 10.7 The Owner may impose certain restrictions on the foreign companies, participating in any form, and their employees in view of national Security, in the project situated in the sensitive region and border areas. The Owner and/or foreign companies, as applicable under the law, shall obtain clearance of Govt. of India regarding security implications prior to pre-qualifications of such company.

Appendix-A

INFORMATION FOR APPLICANTS

1.0 PREAMBLE

Jindal Power Limited (JPL), the major stake holder of Etalin Hydro Electric Power Company Ltd., is India's leading integrated power utility company in the private sector. At present, JPL has operational power generation capacity of 2437MW in thermal sector, with another 2400MW (4 x 600MW) of thermal power plant capacity under execution. Project portfolio (15,660MW) is in various stages of operation, implementation and planning.

JPL has signed agreements for developing 6100MW hydro electric projects in Arunachal Pradesh, India. The hydro power portfolio of the company includes 3097MW Etalin HEP, 680MW Attunli HEP, 1800MW Kamala HEP and 22MW Anonpani Small HEP.

2.0 PROJECT OVERVIEW

2.1 General

The development rights of Etalin project have been accorded to Etalin Hydro Electric Power Company Ltd. (EHEPCL), a joint venture company of Jindal Power Ltd. (JPL) and Hydro Power Development Corporation of Arunachal Pradesh Ltd. The JV intends to develop the project on Build, Own, Operate and Transfer (BOOT) basis. The project was initially identified by CEA and pre-feasibility studies for the project was carried out by NHPC. Subsequently, the project scheme was developed in detail and financially evaluated in the Detailed Project Report (DPR) which was scrutinized by the Central Electricity Authority (CEA) and other statutory organizations. Accordingly, Concurrence to the aforesaid scheme/project was accorded by CEA on July 12, 2013 vide their letter no: 2/ARP/26/CEA/2010-PAC/3885-3917.

The Project is located in Dibang Valley district of Arunachal Pradesh and envisages utilization of waters of Dri and Tangon rivers for hydropower generation. The two rivers are tributaries of Dibang river and meet near Etalin village. Downstream of the confluence, the river is called Dibang which forms a major tributary of the Brahmaputra.

The Etalin project is located upstream of Dibang project and is the largest hydroelectric project presently being developed in the country. The Project is designed as a run-of-the-river scheme having diurnal pondage by constructing diversion dams on Dri and Tangon rivers and diverting the water through two separate waterway systems to utilize the available heads in a common powerhouse

located at the confluence.

The proposed installed capacity of the scheme on Dri is estimated at 1842 (6 x 307) MW and that for the scheme on Tangon at 1228 (4 x 307) MW. Riparian flows from both the limbs have also been proposed to be utilized for power generation of 27MW (19.6MW on Dri and 7.4MW on Tangon). Hence, the total installed capacity of the project is 3097MW.

The entire catchments of both Dri and Tangon are within the Indian territory and the main Dibang river flows throughout its length within the state of Arunachal Pradesh. Thus, there are no interstate or international aspects involved with the development of the project.

2.2 Details of Proposed Scheme

The Etalin Hydroelectric project consists of two independent headworks and water conductor systems (one each on Dri and Tangon rivers), and a common underground powerhouse complex. The project is planned as a run-of-the-river scheme with sufficient storage for meeting daily peak hour energy generation requirements.

A brief description of project components (as per the approved DPR) is given hereunder. All civil structures upstream of the powerhouse are independent for each limb of the project.

Dri Limb

- Four nos. 10.9m diameter circular diversion tunnels, three on the right bank of 338m, 461m, 594m length and one 692m long for left bank with upstream and downstream coffer dams.
- 101.5m high concrete gravity dam with top at El. 1047.0m and deepest foundation level at El. 945.5m; the existing average riverbed level at the dam axis is El. 968m.
- Intake structure.
- 11.3m diameter circular shaped 10.722km long concrete lined Headrace Tunnel.
- Restricted orifice type vertical Surge Shaft, 26m in diameter & 132m high.
- Three 5.6m diameter pressure shafts which emanate from the surge shaft and bifurcate to form six unit pressure shafts of 4m diameter, each.

The shafts are about 512m long, out of which 377m is in vertical drop (in two parts, separated by a horizontal limb at about mid-height).

Tangon Limb

- Three nos., 11.5m diameter circular diversion tunnels with upstream and downstream coffer dams.
- 80.0m high concrete gravity structure with top at El. 1052.0m and deepest foundation level at El. 972m; the existing average riverbed level at the dam axis is El. 1003m.
- Intake structure.
- 9.7m diameter circular shaped 13.045km long concrete lined Headrace Tunnel.
- Restricted orifice type vertical Surge Shaft, 21m in diameter & 137m high.
- Two 5.6m diameter pressure shafts which emanate from the surge shaft and bifurcate to form four unit pressure shafts of 4m diameter, each. The shafts are about 512m long, out of which 377m is in vertical drop.

Common Powerhouse

A common Underground Powerhouse, 352m (L) x 23.5m (W) x 59.73m (H), accommodates six units of 307MW each for Dri limb in one machine hall and four units of 307MW each for Tangon limb in another machine hall, with a control room in the middle.

Common Transformer Hall

A common Underground Transformer Hall, 349.6m (L) x 16.5m (W) x 24.8m (H) accommodates 19 single phase transformers for Dri limb and 13 single phase transformers for Tangon limb.

Tailrace Tunnels

The main TRT for Dri limb is of 11.3m diameter while that of the Tangon limb is of 9.5m diameter. Both tailrace tunnels are circular in shape.

Dam-toe Powerhouses

The dam-toe powerhouses provided to use the riparian discharges are located on the left bank of the rivers, just at the toe of the two dams. They are surface structures and house one vertical axis Francis turbine in each case.

2.3 Accessibility

The project is located in Dibang Valley district of Arunachal Pradesh, a large, sparsely populated state situated in the North-Eastern part of India. Anini, the headquarter of Dibang Valley district is around 240km from Roing, an important town in the area and district headquarter of Lower Dibang Valley district. Roing is at about 110km from Tinsukia, the nearest railhead to the project. The nearest airport is at Dibrugarh, about 60km from Tinsukia.

Figure-1 shows the location of the Project on the map of Arunachal Pradesh.

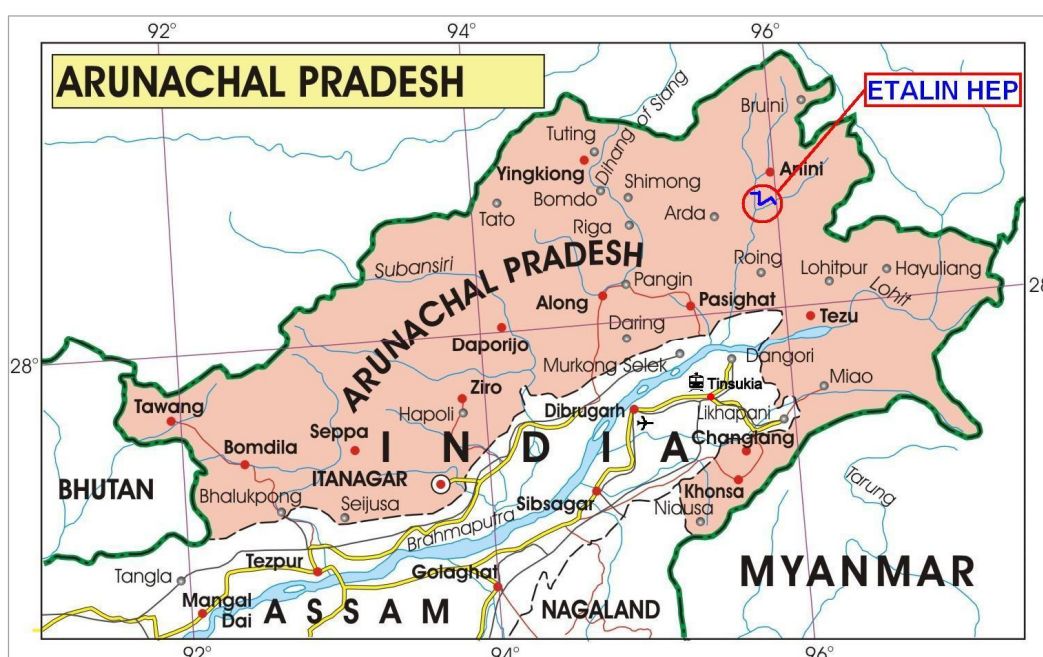
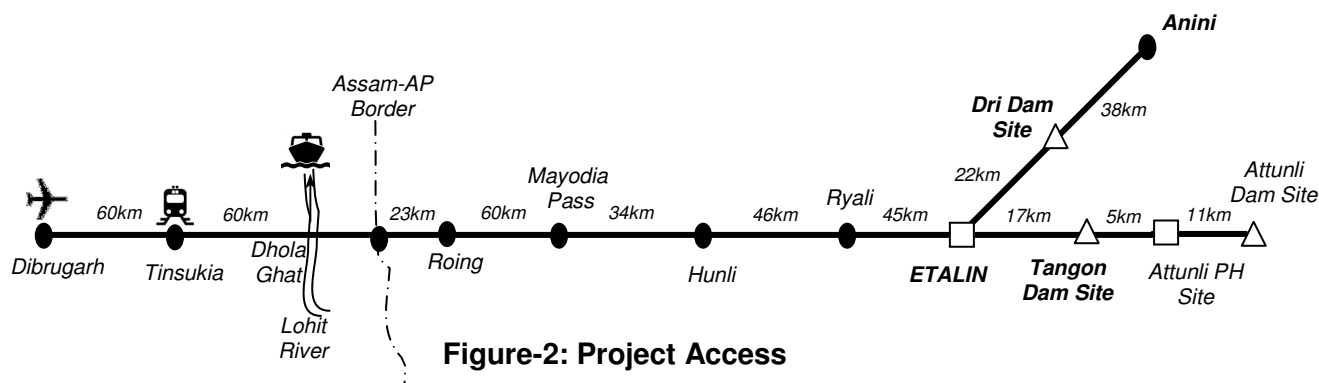


Figure-1: Project Location

Etalin village can be reached by a single lane road which connects Roing to Anini via Hunli. The road crosses a high altitude Mayodia pass (El. 2665m) between Roing and Hunli and is frequently blocked by ice and snow during peak winter months.

Roing is connected to Tinsukia via NH-37 and a district road. The road crosses river Lohit at Dhola Ghat, about 50km from Roing. Distance from Dhola Ghat to Tinsukia is 60km. Various alternatives are available to reach project site. The contractor may choose/decide the best alternative to transport the construction material/equipment. Project's equipment and material can also be transported to Tinsukia by rail or to Dhola Ghat by waterway. A bridge is also under construction at Lohit river connecting Dhola and Sadiya Ghats. Personnel can travel to Dibrugarh by air and reach the project site by road via Tinsukia. A helipad is available at Anini.

Access route to project is shown in Figure-2.



The other alternative motorable route is available from Tinsukia-Rupai-Namsai-Wakro tezu-Shantipur-Chapakhowa-Roing (300 km).

The diversion structure on Dri limb is located near Eron village, around 22km from Etalin, along Etalin-Anini road. The diversion structure on Tangon limb is located near Avonli village, which 17km from Etalin along Etalin-Maliney road.

2.4 Infrastructure, Project Roads & Bridges

Elaborate infrastructure works are required for constructing Etalin project.

A single lane road leads to the powerhouse site and Dri and Tangon limbs of project. The road is maintained by BRO. To execute the various civil works, roads would be required for linking various work sites to other sites and to job facility areas. The project roads will be at a workable gradient (a grade of 1:15). These roads would be connected to the existing roads in the area or to other project roads. The proposed road network is envisaged to be about 50km long.

Eight numbers of permanent and temporary bridges would be constructed to cross the waterways falling in the alignments of the roads.

2.5 Construction Power

There is no grid power available in the region. Therefore the contractor has to make its own arrangements of power supply.

2.6 Climatic Condition

The Project area falls in Climatic Zone III and experiences significant rains during monsoons. Rainfall generally occurs from May to October while the months of November to February are generally dry. Significant rains are also seen during March and April in some years. Yearly rainfall averages between 2000 and 4000mm and relative humidity is quite high; average of 90% in a year. Temperature varies widely

during the year and decreases rapidly with altitude; in the higher reaches the temperature may fall to as low as 2°C in winter months. Summer temperature in the foothills rises up to 45°C.

2.7 Hydrology

The catchment area of Etalin project up to the proposed dam site on Dri limb is 3685km². and the catchment area up to the dam site on Tangon limb is 2573km².

EHEPCL has installed three gauge and discharge measurement sites as well as an all-weather station in the project area, but this data is understandably only for a short period. Long term stage and discharge data is available at

- Elopa, CA of about 11666km²; data for 8 years (1998-2005), and
- Munli, CA of about 11276km², for about 8 years (2002-2008/09)

Both these stations are on Dibang river, downstream of the project. Reliable long term rainfall data is available at Roing and Jiagaon, also downstream of the project area. The available data has been checked for consistency and useful data has been identified. Using the above data and various correlations, reconstruction of long term flow series has been carried out at Elopa.

The observed data at Elopa has also been used and a complete series from the period from 1986 to 2008/09 has been developed at Elopa. The Elopa series has been appropriately transposed to the dam sites of Dri and Tangon limbs of the project.

Hydrological studies of the project have been concurred by Central Water Commission as part of approval of the DPR.

2.8 Physiography

Physiographically the state Arunachal Pradesh could be divided into four distinct domains namely:

- Himalayan ranges
- Mishmi Hills
- Naga Patkai ranges
- Brahmaputra plains

The Himalayan ranges in Arunachal Pradesh are the eastern most part of the Great Himalayan ranges and occurs as a gigantic crescent with its convex side

towards south and extends from Eastern border of Bhutan to Dibang and Lohit valleys in the east, abutting against Mishmi hills. They are divided into following four parallel linear zones:

- (a) Tethys or Tibetan Himalaya to the North.
- (b) Higher Himalaya
- (c) Lesser or lower Himalaya
- (d) Sub Himalaya to the South.

Lesser Himalayan hill ranges lying between the Higher Himalayas in north and Sub Himalayan in south are of lesser height with elevation ranging from 2500 to 4000m. The width is about 80-90km. The southern limit with Sub Himalaya is defined by Main boundary fault.

2.9 Geology

Regionally, the area of the proposed project is located on the eastern limb of the Eastern Syntaxial Bend (ESB) in eastern part of Arunachal Pradesh that exposes rocks ranging in age from Proterozoic to Tertiary and recent deposits.

The project area located in the Dri and Tangon valleys exposes the Mishmi Group of rocks, comprising dominantly diorite – granodiorite – granite (Mishmi Diorite - Granodiorite – Granite complex) with occasional bands of mafic rocks and schists, and biotite gneisses, metamorphosed to medium to high grade.

Dri Limb

The selected dam site is suitably characterized by a straight course of river with a gentle and narrow valley for more than 200m length. Rock exposures comprising of granodioritic gneiss with minor shear/ fracture zones at places have been observed on both the abutments up to dam top level. Beyond that level minor patches of thin overburden are occasionally seen on the left abutment. The thickness of overburden in the riverbed at the site varies between 10.5m and 19.5m. The deepest bedrock level is at El. 945.5m in the riverbed along the proposed dam axis. There are no significant shear zones, traversing the rock mass either in the riverbed or in the abutments.

The headrace tunnel (HRT) is expected to encounter granodiorite gneiss and biotite as tunneling media. A considerable length is also expected to encounter calcareous quartzite/marble bands, with thickness of individual bands being up to 230m.

Tangon Limb

At the selected dam site, bedrock is exposed on steep left abutment right from riverbed level and extends up to road level located about 200m above riverbed and beyond that. The right abutment is disposed at moderately steep angle and is covered by overburden comprising fluvial deposits up to El. 1060m and slope wash deposits above that.

Bedrock exposed at the site generally includes granodioritic/diorite gneiss belonging to Lohit Granodioritic Complex, biotite gneiss and quartzite which grades into calcareous quartzite and impure marbles belonging to Ithun Formation that represents meta sedimentary. The deepest foundation rock level is encountered at El 972.0m in the riverbed.

The HRT is expected to encounter bedrock comprising granodiorite gneiss and biotite gneiss with occasional silica and pegmatite veins.

The proposed powerhouse complex is located within the hill between Tangon and Dri rivers near their confluence. The rock mainly comprises of granodiorite, diorite, calcareous quartzite, biotite gneiss with pegmatite veins; minor shear seams are present occasionally. Bedrock is traversed by four prominent sets of discontinuities.

2.10 Seismicity of the Project Area

The project area lies in the Seismic Zone V as per Seismic Zoning Map of India as incorporated in Indian Standards. The zone is broadly associated with a seismic intensity of IX on Modified Mercalli Scale (MM scale).

State Remote Sensing Application Centre – Itanagar, on the basis of satellite imagery interpretation have traced out a number of lineaments within the vicinity of project area

Site specific seismic studies for the project have been carried out by IIT, Roorkee. The maximum credible earthquake (MCE) that can occur in the area has been estimated to be of magnitude 8.5 occurring along the Lohit thrust.

2.11 Environmental Aspects

A detailed Environment Impact Assessment (EIA) study as per Terms of Reference approved by Ministry of Environment and Forest (MoEF), Government of India has been conducted for studying different effects of the construction of dam on physical, biological and social environments and based on the recommendations, various Environmental Management Plans (EMPs) have been formulated.

The submergence areas at FRL is 83.66 Ha along Dri and 36.50 Ha along Tangon river.

Dibang Valley district where the project is located is entirely hilly and covered mostly by forests which are almost 52% of the total geographical area of the valley. The Tangon valley is characterised by dense Tropical Evergreen, Tropical Semi-evergreen and Sub-tropical forests at lower elevations and Pine, Temperate Broadleaved, Temperate Conifer and Alpine Forests at higher elevations.

The project area harbours large number of plant species which include Angiosperms, Gymnosperms, Pteridophytes, Lichens and Bryophytes. Most of the project area is covered with dense forests, which serve as an excellent habitat for various faunal members. The water quality of Dri and Tangon rivers is found to be excellent.

Among the fish, Snow Trout (*Schizothorax richardsonii* Family: Cyprinidae) and *Glyptothorax pectinopterus* (Family: Sisoridae) commonly known as River cat are frequently found in the tributaries of Tangon and Dri rivers. *Barilius tileo*, *Megarasbora elanga* and *Lepidocephalichthys annandalei* have also been reported from the Dibang river. The project study area comes under 4 circles, i.e. Etalin, Anini, Karonli and Anelin, with 40 census villages with a total population of 2213 belonging to 442 households. The study area is dominated by the Idu Mishmi tribe. Farming is the main occupation in the area and a few habitants are in Government and private jobs. Jhum cultivation is the main occupation of the farmers in area and it has been practiced since long. Majority of people in study area are dependent on this field of agriculture for their livelihood.

In total, there are 18 villages which are likely to be affected by the proposed Etalin HEP. In these 18 Project Affected villages covered under the study, there are 265 Project Affected Families and 1153 Project Affected Persons. Total land requirement of the Project is 1143.09 Ha (apart from 35 Ha notional area for underground works).

SALIENT FEATURES
(As per approved DPR)

- District and State Dibang Valley District, Arunachal Pradesh

A. Dam Complex & Water Conductor – Dri Limb

Location

- Coordinates
 - Dam Site 28° 42' 24"N, 95° 51' 52"E
 - Powerhouse 28° 36' 40"N, 95° 51' 51"E

Hydrology

- Catchment Area 3685 sq km
- Design Flood (PMF) 11,811m³/s
- Glacial Lake Outburst Flood (GLOF) 1,170m³/s
- River Diversion Flood 4,805m³/s
- Ecological release 30.64m³/s

Reservoir

- Full Reservoir Level (FRL) El 1045m
- Minimum Draw Down Level (MDDL) El 1039m
- Gross Storage at FRL 21.97 MCM
- Gross Storage at MDDL 17.37 MCM
- Live Storage 4.6 MCM
- Submergence Area 83.32 Ha

Diversion Tunnels

- Number 3 on Right bank & 1 on Left bank

- Diameter 10.9m Circular shape
- Inlet Invert / Outlet Invert El 975.0 m / El 964.0m
- Length 338m, 461m, 594m & 692m
- Slopes 1 in 30.73, 1 in 41.91, 1 in 53.96 and 1 in 62.92,
- Number and size of Gates in each tunnel 2 Nos, 4.45m (W) x 10.9m (H)
- Hoist Arrangement and Capacity 110MT, Electrically operated Rope Drum Hoist

Coffer Dam (Upstream)

- Type Concrete face with plum core
- Top level 993m
- Average river bed elevation 973m
- Top width 6.5m
- Length at top 140m

Coffer Dam (Downstream)

- Type Random fill with downstream sealing layers
- Top level El 975m
- Average river bed elevation El 966m
- Top width 5.0m
- Length at top 70m
- Upstream / downstream slope 1 in 1.5

Gravity Dam

- Average river bed level around 968m
- Top of Dam El 1047m
- Length at top 213.7m

- Foundation level (Deepest) El 945.5m
- Height above deepest foundation 101.5m
- Number of Blocks 14

Lower Spillway

- Number 7
- Crest elevation El 990m
- Gate Type and Size Radial gates; 6.1m (W) x 12.6m (H)
- Hoist Type and Capacity Twin Hydraulic cylinders, 2x175 MT
- Stop Log Gates 1 No., 7 units, 6.1m (W) x 2.585m (H)
- Hoist Type and Capacity Gantry Crane, 35 MT

Energy Dissipation Arrangement

- Type Trajectory Bucket
- Bucket radius 49.0 m
- Lip angle 30°
- Bucket Invert level El. 973.0m

Auxiliary Spillways

- Number 2
- Crest elevation El 1041m
- Size (including free board of 200mm) 5.0 x 4.2m
- No. of Gates 3 (2 Service & 1 Emergency)
- Hoist Type and Capacity Gantry Crane operating Stoplog units

Intake

- Number 2
- Invert elevation El 1021m
- Gate opening size 7.0 x 7.5
- Total width of trash rack arrangement 49m
- Length of trash rack arrangement 16.24m
- Length of inlet tunnel (including transition) 41.1m
- Number of Gates 2 – Service Gate
2 – Emergency Gate (Bulk Head)
- Hoist Arrangement and Capacity Rope Drum Hoist, 45 MT for bulk head Rope Drum Hoist, 80 MT for Intake Gate

Headrace Tunnel

- Number 1
- Diameter & Shape 11.3m Circular shape
- Length 10722m
- Slope 1 in 227.16
- Design discharge 480.3 m³/s
- Velocity 4.79m/s
- Number of intermediate adits 4
- Length of intermediate Adits 301, 740, 355 and 267 m

Surge Shaft

- Number and type 1, Restricted orifice type
- Diameter 26.0m
- Orifice Dia 5.5m
- Height 132m

- HRT invert at Surge shaft EI 970.0m
- Top of Surge shaft 1102m
- Maximum surge level EI 1100.5m
- Minimum surge level EI 990.9m
- Length of Surge shaft bottom tunnel 51 m
(including transitions)

Pressure Shaft

- Number 3
- Diameter 5.6m
- Length 49.2, 26.6, 49.2m
- Design discharge 160.1 m³/s each
- Steel Liner 28mm, ASTM 537 Class II

Unit Pressure Shaft

- Number 6
- Diameter 4.0m
- Length 512m each
- Height of vertical drop 195 and 182m
- Design discharge 80.05 m³/s
- Steel Liner 22 to 40mm, ASTM 537 Class II
40 to 44mm, ASTM 517 Grade F
- Intermediate Adit level & length EI 775.0m; 313m

Butterfly Valve (BFV) Chamber

- Dimension 131m (L) x 10m (W) x 20m (H)
- Number of BF Valves 6 Nos
- BFV diameter 4.0m
- BFV Centerline elevation EI 972.0m
- Floor Invert elevation EI 968.0m

Draft Tube

- Invert level EI 578.47m
- Size (Start / End) 1 No. – 11.53m (W) x 3.04m (H) /
2 No. - 6.5m (W) x 5.5m (H)
- Length 22.82m
- Slope 1 in 10

Draft Tube Tunnel

- Numbers 6
- Size and type D-Shape, 6.6m
- Length (including transition) 99m
- Slope 1 in 12

Downstream Surge Chamber

- Dimension 165 (L) x 13 (W) x 46 (H)
- Invert level EI 589.0m
- Gate operation level EI 621.0m
- Maximum Surge level EL 619.7m
- Minimum Surge level EL 597.4m
- Draft Tube Gate – Number and Size 6, 6.2 x 6.2m
- Hoist Arrangement and Capacity Rope Drum Hoist, 40 MT

Tailrace Tunnel**Link TRT(s)**

- Number 3 / 1
- Diameter 6.6m / 9.5m Modified Horse shoe
- Length 85m, 60m, 86m / 52m
- Invert at downstream surge chamber EI 589.0m

Main TRT

- Number 1
- Diameter 11.3m circular shape
- Length (including transition) 555m
- Invert level (Start / End) El 589.83 m / El 595.18 m
- Slope 1 in 102

TRT Downstream Transition

- Size - Start / End 11.3m D-shape /
11.3(w) x 8.0 (h) D-shape
- Length 50m
- Bottom slope 1 in 8

TRT Outfall

- Invert level El 601.4m
- Transition – size 1 No - 11.3(w) x 8.0 (h) D-shape to
3 No – 6.0(w) x 8.0 (h) Rectangle
- Transition – length 9m
- Minimum TWL El 603.0m
- Normal TWL El 605.6m
- Maximum TWL El 613.3m
- TRT Outfall Gates 3 Nos, 6.0m (W) x 8.0m (H)
- Gate Operating platform El 615.0 m
- Hoist Arrangement and Capacity Rope Drum Hoist, 45 MT

B. Dam Complex & Water Conductor – Tangon Limb**Location**

- Coordinates
 - Dam Site 28°39'18"N, 96°00'07"E
 - Powerhouse 28°36'40N, 95°51'51" E

Hydrology

- Catchment Area 2573 sq km
- Design Flood (PMF) 10,218 m³/s
- River Diversion Flood 3,670 m³/s
- Glacial Lake Induced Flood (GLOF) 2143 m³/s
- Ecological release 19.52 m³/s

Reservoir

- Full Reservoir Level (FRL) EI 1050m
- Minimum Draw Down Level (MDDL) EI 1040m
- Gross Storage at FRL 6.15 MCM
- Gross Storage at MDDL 3.21 MCM
- Live Storage 2.94 MCM
- Submergence Area 36.12 Ha

Diversion Tunnel

- Number 3 (on Left bank)
- Diameter 11.5m Circular shape
- Inlet Invert / Outlet Invert EI 1010.0 m / EI 1002.0m
- Length 368m, 490m and 631m
- Slopes 1 in 46.05, 1 in 61.27, 1 in 78.87
- Number and size of Gates in each tunnel 2 nos, 5.0m (W) x 11.5m (H)
- Hoist Arrangement and Capacity 90 MT, Electrically operated Rope Drum Hoist

Coffer Dam (Upstream)

- Type Concrete face with plum core
- Top level EI 1028.5m

- Average river bed elevation El 1006m
- Top width 6.5m
- Length at top 93m
- Upstream / downstream slope Vertical; 1 in 0.9 Stepped

Coffer Dam (Downstream)

- Type Random fill with downstream sealing layers
- Top level El 1010m
- Average river bed elevation El 1001m
- Top width 5.0m
- Length at top 75m
- Upstream / downstream slope 1 in 1.5

Gravity Dam

- Average river bed level El 1003m
- Top of dam El 1052m
- Length at top 184.1m
- Foundation level (Deepest) El 972m
- Height above deepest foundation 80m
- Number of blocks 12

Lower Spillway

- Number 6
- Crest elevation El 1018m
- Gate Type and Size Radial gates;7.9m(W) x 13.37m (H)
- Hoist Type and Capacity Twin Hydraulic cylinders,
2 x 150 MT
- Stop Log Gates 1 No., 8 units,7.9m (W) x 2.44m (H)
- Hoist Type and Capacity Gantry Crane, 35 MT

Auxiliary Spillway

- Number 1
- Crest elevation El 1046m
- Size (including free board of 200mm) 5.0 x 4.2m
- Hoist Type and Capacity Gantry Crane operating Stoplog units

Energy Dissipation Arrangement

- Type Trajectory Bucket
- Bucket radius 30.0 m
- Lip angle 30°
- Bucket Invert level EL 1001.5 m

Intake

- Number 3
- Invert elevation El 1027.5m
- Gate opening size 6.0 (w) x 5.75 (H)
- Total width of trash rack arrangement 74.0m
- Diameter of Inlet tunnel 6.0m Modified horse shoe
- Length of inlet tunnel 925m, 851m & 777m
- Number of Gates 3 – Service Gate
3 – Emergency Gate
- Hoist Arrangement and Capacity Rope Drum Hoist, 30 MT for Emergency Gate; Rope Drum Hoist 55 MT for Intake Gate

Desilting Basin

- Number and Type 3, Underground Duffore type
- Size 18.5m (W) x 26.5m (H)

- Length 350m
- Particle size removal 0.2mm
- Design discharge per basin 128.08 m³/s
- Outlet gate, Number and size 3 Nos, 4.5m (W) x 5.5m (H)
- Hoist arrangement and capacity Rope Drum Hoist, 45 MT
- Design discharge per flushing duct 21.34 m³/s
- Flushing duct size (upto SFT Gate chamber) 3 Nos - 2.0m (W) x 2.7m (H)
- Flushing duct size (SFT Gate chamber to Main SFT) 3 Nos - 2.0m (W) x 3.55m (H)
- Silt Flushing Tunnel (SFT) size 5.0m (W) x 5.7m (H)
- Length of flushing tunnel 515m
- Outlet level of flushing tunnel El 999.55m
- Flushing Duct Gate, Number & Size 6 Nos, 2.0m (W) X 2.7m (H) (2 Gates in Each Tunnel)
- Gate Hoist arrangement and capacity Hydraulic Hoist, 190 MT

Headrace Tunnel

- Number 1
- Diameter & Shape 9.7m Circular shape
- Length 13045m
- Slope 1 in 235.13
- Design discharge 320.2 m³/s
- Velocity 4.34m/s
- Number of intermediate adits 5
- Length of Adits 555, 370, 530, 417 & 366m

Surge Shaft

- Number and type 1, Restricted orifice type

- Diameter 21.0m
- Orifice diameter 4.25m
- Height 137m
- HRT invert at Surge shaft El 970.0m
- Top of Surge shaft El 1107.0m
- Maximum surge level El 1104.9m
- Minimum surge level El 984.0m
- Length of Surge shaft bottom tunnel 46 m
(including transitions)

Pressure Shaft

- Number 2
- Diameter 5.6m
- Length 46m and 46m
- Design discharge 160.1 m³/s each
- Steel Liner 28mm, ASTM 537 Class II

Unit Pressure Shaft

- Number 4
- Diameter 4.0m
- Length 512m each
- Height of vertical drop 377m
- Design discharge 80.05 m³/s
- Steel Liner 25 to 40mm, ASTM 537 Class II
40 to 46mm, ASTM 517 Grade F
- Intermediate Adit (Level, Length) El 775m, 422m

Butterfly Valve (BFV) Chamber

- Dimension 85.6 (L) x 10 (W) x 20 (H)

- No. of BF Valves 4 Nos
- BFV diameter 4.0m
- BFV Centerline elevation EI 972.0m
- Floor Invert elevation EI 968.0m

Downstream Surge Chamber

- Dimension 110(L) x 13 (W) x 46 (H)
- Invert level EI 589.0m
- Gate operation platform level EI 621.0m
- Maximum Surge level EL 619.6m
- Minimum Surge level EL 597.6m
- Draft Tube Gate – Number and Size 4 Nos, 6.2m x 6.2m
- Hoist Arrangement and Capacity Rope Drum Hoist, 40T

Tail Race Tunnel (TRT)

Link TRT(s)

- Number 2
- Diameter 6.7m Modified Horse shoe
- Length 81m and 99m
- Invert at downstream surge chamber EI 589.0m

Main TRT

- Number 1
- Diameter 9.5m circular shape
- Length (including transitions) 544m
- Invert level (Start / End) EI 589.83 m / EI 595.18 m
- Slope 1 in 99.45

TRT Downstream Transition

- Size - Start / End 9.5 m D-shape /
9.5(w) x 8.0 (h) D-shape
- Length 50m
- Bottom slope 1 in 8

TRT Outfall

- Invert at Outfall gate El 601.4m
- Transition – size 1 No – 9.5(W) x 8.0 (H) D-shape to
2 No – 6.0(W) x 8.0 (H) Rectangle
- Transition – length 9m
- Minimum TWL El 603.0m
- Normal TWL El 605.6m
- Maximum TWL El 613.3m
- Gate Operating Platform El 615.0m
- TRT Outfall Gates 2 Nos, 6.0m (W) x 8.0m (H)
- Hoist Arrangement and Capacity Rope Drum Hoist, 45 MT

C. Powerhouse Complex**Underground Powerhouse**

- Dimensions 352(L) x 23.5(W) x 59.73 (H)
 - Installed Capacity 3070 MW
- | | Dri Limb | Tangon Limb |
|--------------------------------|-----------------|--------------------|
| • Number of Units | 6 x 307 MW | 4 x 307 MW |
| • Turbine centerline elevation | El 595.0m | El 595.0m |
| • Maximum gross head | 442.0m | 447.0m |
| • Maximum net head | 441.9m | 446.9m |
| • Minimum net head | 415.90m | 413.40m |

- | | | | |
|---|-------------------|-----------|-----------|
| • | Rated Net Head | 420.00m | 420.00m |
| • | Service bay level | El 610.0m | El 610.0m |

Main Access Tunnel (MAT)

- | | | |
|---|----------------------------|------------------------------|
| • | Size and type | D-Shape, 8.0m (W) x 8.0m (H) |
| • | Length (Dri / Tangon Limb) | 474m / 779m |

Transformer Hall

- | | | |
|---|-------------------------|------------------------------------|
| • | Dimension | 349.6m (L) x 16.5m (w) x 24.8m (H) |
| • | Transformer floor level | El 610.0m |
| • | GIS floor level | El 622.0m |

Draft Tube Tunnel

- | | | |
|---|----------|---------------|
| • | Diameter | 6.2m, D-shape |
| • | Length | 98.5m |

Turbine

- | | | |
|---|----------------------|-------------------------------|
| • | Numbers & Type | 10 Nos, Vertical Axis Francis |
| • | Rated Turbine Output | 311.68 MW |
| • | Rated head | 420.0m |
| • | Speed | 250 rpm |
| • | Rate discharge | 80.05 m ³ /s |

Generator

- | | | |
|---|-------------------|----------------------------|
| • | Number & Type | 10 Nos, Semi Umbrella Type |
| • | Output | 341.11 MVA |
| • | Nominal speed | 250 rpm |
| • | Voltage/Frequency | 17.5 kV, 50 Hz |
| • | Power factor | 0.9 |

Transformer

- Type ODWF
- Rating 17.5 kV, 400/ $\sqrt{3}$ kV, 125 MVA
- Phase Single

Switchyard

- Type Gas Insulated Switchyard (GIS)
- Location Above transformer hall

Pothead Yard

- Size 234m (L) x 60m (W) and 120m (L) x 45m (W)
- Bench Elevation El 725m
- Nominal Voltage Class 400kV

Power Benefits

- 50% Dependable Energy 13, 694.3 MU
- 90% Dependable Energy 12, 846.8 MU
- Design Energy (@ 95% Plant availability) 12, 766.8 MU

D. Dri Dam-toe Powerhouse**Operating Levels**

- Full Reservoir Level El. 1045m
- Minimum Draw Down Level El. 1039m

Intake Structure

- Number of Intake 1
- Block Number 4
- Nearest Abutment Left

- Invert level of intake El. 1030m
- Size of Trash Rack Opening 17.00m (H) x 6.0m (W)
- Size of Gate 4.675m (H) x 2.8m (W)
- Hoist Capacity Rope Drum Hoist Capacity 18T
- Design Discharge 30.64 m³/s

Penstock

- Number and Diameter 1 No, 2.8m
- Thickness of Liner 10mm
- Type of Steel ASTM A537 Cl-2
- Length of Penstock 108.6m
- Design Discharge through Penstock 30.64 m³/s

Surface Powerhouse

- Dimensions 20m (L) x 20m (W) x 40.7m (H)
- Installed Capacity 19.6 MW
- Number of Units 1 x 19.6 MW
- Elevation of Turbine Runner Center Line 964.8m
- Design Discharge 30.64 m³/s
- Maximum Gross Head 77.8m
- Min. Gross Head 71.0m
- EOT Crane capacity (Powerhouse) 80 MT

Turbine

- Number and Turbine Type 1 Nos, Vertical Axis Francis
- Turbine Rated Output 20 MW
- Rated Head 72.5m
- Rated Speed 300 rpm

Generator

- Number & Type 1 Nos, Suspended Type
- Rated Capacity 21.8 MVA
- Generation voltage 11 kV
- Power factor 0.9

Transformer

- Type ONAN
- Rating 11/66 kV, 24 MVA
- Phase 3 –phase

Switchyard

- Max. voltage 72.5 kV
- Rated Voltage Class 66 kV
- Rated Continuous Current 191 A

Draft Tube Gate

- Type of Gate Vertical Lift Slide Type
- Gate Size 5.5m (W) x 3.1m (H)
- Hoist Type Rope drum hoist, Capacity 15T

Tailrace Duct

- Length 39.7m
- Duct shape Rectangular
- Duct size 5.5m (W) x 3.5m (H)
- Outlet sill elevation El. 965.8m
- Normal Tailwater Level 968.0m
- Maximum Tailwater Level 980.7m
- Minimum Tailwater Level 967.2m

Power Benefits

- 90% Dependable Energy 172 MU
- Design Energy (@ 95% Plant availability) 163 MU

E. Tangon Dam-toe Powerhouse**Operating Levels**

- Full Reservoir Level El. 1050m
- Minimum Draw Down Level El. 1040m

Intake Structure

- Number of Intake 1
- Block Number 2
- Nearest Abutment Left
- Invert level of intake, El. 1034m
- Size of Trash Rack Opening 18.00m (H) x 5.38m (W)
- Size of Gate 4.01m (H) x 2.4m (W)
- Design Discharge 19.52 m³/s

Penstock

- Number and Diameter 1 No, 2.4m
- Thickness of Liner 10mm
- Type of Steel ASTM A537 CI-2
- Length of Penstock 68.50m
- Design Discharge through Penstock 19.52 m³/s

Surface Powerhouse

- Dimensions 19m (W) x 32m (L) x 36.35m (H)

-
- Installed Capacity 7.4 MW
 - Number of Units 1 x 7.4 MW
 - Elevation of Turbine Runner Center Line 998.3m
 - Design Discharge 19.52 m³/s
 - Maximum Gross Head 49.0m
 - Min. Gross Head 38.5m
 - EOT Crane capacity (Powerhouse) 32 MT

Turbine

- Number and Turbine Type 1 Nos, Vertical Axis Francis
- Turbine Rated Output 7.55 MW
- Rated Head 43m
- Rated Speed 375 rpm

Generator

- Number & Type 1 Nos, Suspended Type
- Rated Capacity 8.22 MVA
- Voltage/Frequency 11 kV
- Power factor 0.9

Transformer

- Type ONAN
- Rating 11/66 kV, 9MVA
- Phase 3 –phase

Switchyard

- Max. voltage 72.5 kV
- Rated Voltage Class 66 kV

- Rated Continuous Current 72 A

Draft Tube Gate

- Type of Gate Vertical Lift Slide Type
- Gate Size 4.0m (W) x 2.5m (H)
- Hoist Type Rope drum hoist Capacity 10T

Tailrace Duct

- Length 27.9m
- Duct Shape and Size Rectangular, 4m (W) x 3m (H)
- Outlet sill elevation El. 999.85m
- Normal Tailwater Level El. 1001.5m
- Maximum Tailwater Level El. 1013.5m
- Minimum Tailwater Level El. 1001.0m

Power Benefits

- 90% Dependable Energy 65 MU
- Design Energy (@ 95% Plant availability) 62 MU

LIST OF DRAWINGS

S.NO	DRAWING NO.	TITLE
DRAWINGS		
1	Plate-1	PROJECT LOCATION – PLAN
2	Plate-2	PROJECT LAYOUT – PLAN
3	Plate-3	POWER HOUSE LAYOUT PLAN
4	Plate-4	E&M EQUIPMENT LAYOUT POWER HOUSE CROSS SECTION
5	Plate-5	E&M EQUIPMENT LAYOUT PLAN AT FLOOR EL 610.00
6	Plate-6	MAIN SINGLE LINE DIAGRAM

Appendix- B

PRE-QUALIFICATION FORMS

(Letterhead paper of the Applicant, or Lead Partner responsible for a Joint Venture)

LETTER OF APPLICATION

Date: --/--/---

Etalin Hydro Electric Power Company Ltd.

.....
.....
.....
.....

Sirs,

1. Being duly authorized to represent and act on behalf of <Name of Applicant¹> _____ (hereinafter referred to as "the Applicant"), and having reviewed and fully understood all the pre-qualification information provided, the undersigned hereby apply to be pre qualified by yourself as bidder for the following contract(s) under Etalin Hydro Electric Power Project (3097 MW).

ETALIN/Package-EM2 : EPC execution of Electro-mechanical works, consisting of design, engineering, procurement, fabrication/manufacturing, supply, erection, testing, and commissioning of Turbines, Generator, Butterfly Valve, Main Inlet Valve, Governor, static excitation system, isolated phase bus duct, Gas Insulated Switchgear, Generator Transformers, Auxiliary and Station Transformers, Compress Gas Insulated Transmission lines (CGIT), Protection & Control systems, SCADA system, Pothead yard equipment and all related mechanical and electrical BOP's etc., for Tangon Limb (1228 MW, four units of 307 MW each) of Etalin Hydroelectric Power Project

2. Attached to this letter are copies of original documents defining:
 - A. the Applicant's legal status;
 - B. the principal place of business and registered office address;
 - C. the place and date of incorporation
 - D. Certified copy of the certificate of incorporation
3. You and your representatives are hereby authorized to conduct any inquiry or investigations to verify the statements, documents, and information submitted in

¹ *In case of Joint Venture, list all partners of the Joint Venture.*

connection with this application, and to seek clarification from our bankers and clients regarding any financial and technical aspects. This Letter of Application will also serve as authorization to any individual or authorized representative of any institution referred to in the supporting information, to provide such information deemed necessary and requested by yourselves to verify statements and information provided in this application, or with regard to the resources, experience, and competence of the Applicant.

4. You and your representatives may contact the person(s) indicated in the Application Form-1 for further information. The undersigned is (are) fully authorized to act on behalf of the Applicant.
5. This application is made in the full understanding that:
 - (a) Any information submitted with this pre-qualification can be verified by you at any time or any stage of the tendering process;
 - (b) You without assigning any reasons thereof reserve the right to :
 - amend the scope of works to be tendered; and
 - reject or accept any Application, and
 - cancel the Pre-qualification process, and/or reject any/all Applications.
 - (c) You and your personnel and agencies shall not be liable for any such actions at Clause 5 (a) and 5 (b) above and shall be under no obligation to inform the Applicant of the grounds for them.
 - (d) Mere filing of this Application for pre-qualification does not create any legal right in our favour for allocation of final work contract to us. We have gone through all the terms & conditions of the Pre-qualification document and undertake to be abiding by the same. This Application shall be construed and interpreted in accordance with Indian Laws only. The Courts in New Delhi (India) shall have sole and exclusive jurisdiction on all the matters/dispute between the parties. Any dispute arising under this Application shall be referred to arbitration in accordance with Arbitration and Conciliation Act, 1996. Venue of arbitration shall be Delhi. The decision of the arbitrator shall be final and binding upon the Parties. The language of arbitration shall be English.

*APPLICANTS WHO ARE NOT JOINT VENTURES SHOULD
DELETE PARAS. 6 AND 7.*

6. Appended to this application, we give details of the participation of each party, including the responsibilities for execution of the contract.
7. We confirm that, in the event of our bidding for the Project, the Bid as well as any resulting contract will be legally binding on all Partners, jointly and severally.
8. The undersigned declare that the statements made and the information provided in the duly completed Application are complete, true, and correct in every detail.

*Signature**Signature**Signature*

Name
For and on behalf of
*(Name of Applicant
or Lead Partner of a Joint
Venture)*

Name
For and on behalf of
(Name of Partner-1 JV)

Name
For and on behalf of
(Name of Partner -2 JV)

-
- Notes:** 1) *Certified copy(ies) of the Power of Attorney(ies) for signatory(ies) should be attached to this letter.*
- 2) *Words indicated in italics in this letter form should be omitted in the Applicant's letter.*

APPLICATION FORM – 1

PAGE ___ OF ___ PAGES

GENERAL INFORMATION

All individual firms (including proposed manufacturers, equipment suppliers, sub-contractors) and each Partner of a Joint Venture applying for prequalification are requested to complete the information in this form.

The Applicant may propose to associate manufacturer(s) as per the “Instructions to Applicants”.

1.	Name of firm:	In case of joint venture: () Lead Partner () Partner () Proposed Manufacturer(s)
2.	Head Office address:	Country:
3.	Telephone Fax Email	Contact Person (s) Name Title/Position
4.	Place of incorporation/registration Date	
5.	Legal status of firm	Field of specialty in business
6.	Nationality of majority of owners or shareholders	Number of management executives ----- Persons
7.	Number of present permanent employees: (Unit: persons)	
	Name of Country	Engineers Non- Engineering Executives Factory Workers
	Home country Overseas branch 1 Overseas branch 2 All other branches	
8.	Name of place of major factories	
9.	Quality assurance system in major factories	Certified by:
10.	Agent or representative in India Name Address Telephone /Fax Email	

Date

Authorised Signatory_____

APPLICATION FORM – 2

PAGE ___ OF ___ PAGES

SOLE APPLICANT/JOINT VENTURE RECORD

Name of Company (Sole Applicant) or Partner of a Joint Venture
--

Use a separate sheet for each Partner of a Joint Venture

Financial Data

FISCAL YEAR	TURNOVER (Currency) /Eq. US \$	PROFITABILITY (Currency)/ Eq. US \$	NETWORTH (Currency)/Eq. US \$	Working Capital (Currency)/ Eq. US \$
1.				
2.				
3.				
4.				
5.				

Date _____

Authorised Signatory _____

Note: For conversion to US\$, the exchange rate at the end of the respective accounting year shall be considered.

APPLICATION FORM – 2A

PAGE ____ OF ____ PAGES

JOINT VENTURE SUMMARY

In case of joint venture, this form is requested to be filled and attached to Form 2

1. Members of Joint Venture

Names of all Partners of a Joint Venture	Proposed participation Share (%)*	Proposed Scope of Work
1. Lead Partner		
2. Partner-1		
3. Partner-2		
4. Partner-3		
5. Partner-4		

* Indicate participation in terms of responsibility in respect of planning, designing, deployment of key personnel and execution of the works of the lead partner of the Joint Venture and of each of the Joint Venture partners.

2. Summary of Financial Data

Total value of annual turnover, in terms of work billed to clients, in US\$ or equivalent converted at the rate of exchange at the end of the period reported:

Annual Turnover/Networth/Profitability and Working Capital – Summary						
(US\$ equivalent)						
Partner	Form 2 Page no.	DD.MM.YY TO DD.MM.YY	DD.MM.YY TO DD.MM.YY	DD.MM.YY TO DD.MM.YY	DD.MM.YY TO DD.MM.YY	DD.MM.YY TO DD.MM.YY
1. Lead Partner						
2. Partner						
3. Partner						
4. Partner						
5. Partner						
Total						

(Separate tables for summarizing Turnover, Networth, Profitability and Working Capital may be generated)

3. Responsibilities of Members of Joint Venture

Indicate responsibility in respect of supply of equipment, shipping, inland transportation, store handling, preservation, erection, erection supervision, training, commissioning and commissioning coordination etc. of Joint Venture partners for execution of works in the following format.

S. No.	Activity	Responsibility of (Name of Partner of JV)
a)	Supply of _____	
b)	Supply of _____	
c)	Erection of _____	
d)	Erection of _____	
e)	Commissioning of _____	
f)	Commissioning Coordination	
g)	Shipping	
h)	Inland Transportation	
i)	Store Handling	
j)	Training /O&M Support	

Date _____

Signature

Signature

Signature

Name
(Lead Partner of a Joint venture)

Name
(Partner -1 in JV)

Name
(Partner-2 in JV)

Annex-1 to Form 2A

FORM OF UNDERTAKING BY EACH PARTNER OF JOINT VENTURE

To,

Etalin Hydro Electric Power Company Ltd. (EHEPCL).

Sir,

Sub: Pre-qualification under International Competitive Bidding vide PQ Notice No..... dated.....issued by Etalin Hydro Electric Power Company Ltd. (EHEPCL).

With reference to the above, _____, a Company incorporated under the laws of _____, on date -----and having its registered office at..... has submitted its application for qualification for the said Pre-qualification. We have expressed our intention to form an unincorporated Joint Venture/ consortium with _____ as the Lead Partner/Other Partner for execution of EPC Contract (“CONTRACT”) for E&M Works ETALIN/Package-EM2 for Etalin Hydro Electric Power Project of 3097 MW capacity located in Dibang Valley District in the State of Arunachal Pradesh, India. Our proposed Scope of Work shall be as mentioned herein below:

If we are pre-qualified along with _____ as the Lead Partner/Other Partner, we hereby undertake to form an unincorporated Joint Venture along with the lead partner and submit our bid for the contract for performing our Scope of Work as defined above. Further if the Contract is awarded to the unincorporated Joint Venture, we undertake to enter in to appropriate Contract along with the lead Partner with EHEPCL and perform the said Contract.

Further, we understand and undertake that our joint venture configuration shall generally meet the requirements stipulated in the format attached herein.

Thanking You,

Yours faithfully,

For

Authorized Signatory _____

Note: To be submitted by each of the Partner on company letter head with a copy of Power of Attorney.

Annex-2 to Application Form 2A**FORM OF JOINT VENTURE AGREEMENT**

(This format is for information and to be submitted along with the Bid)

(To be executed on Non Judicial stamp paper of appropriate value as applicable in India)

This Joint Venture Agreement made and entered into on this ----- day of -----, 20....

BY AND BETWEEN

-----(***Name of the Lead Partner***) a Company incorporated under the laws of
----- (***Name of the Country***) with its Head/Registered Office at -----
----- (***Address of the Head/Registered Office***)* and a place of business in -----
----- (***Address of place of business***) hereinafter referred to as “**The Lead Partner**” which expression unless otherwise repugnant hereto includes its successors, administrators, and permitted assigns thereof, represented by Mr. -----
----- (***Name of Authorised signatory(ies)***).

AND

-----(***Name of the other Partner***) a Company incorporated under the laws of
----- (***Name of the Country***) with its Head/Registered Office at -----
----- (***Address of the Head/Registered Office***)* and a place of business in -----
----- (***Address of place of business***) hereinafter referred to as Partner-1 which expression unless otherwise repugnant hereto includes its successors, administrators, and permitted assigns thereof, represented by Mr. ----- (Name of Authorised signatory (ies)).

AND

-----(***Name of the other Partner***) a Company incorporated under the laws of
----- (***Name of the Country***) with its Head/Registered Office at -----
----- (***Address of the Head/Registered Office***)* and a place of business in -----
----- (***Address of place of business***) hereinafter referred to as Partner-2 which expression unless otherwise repugnant hereto includes its successors, administrators, and permitted assigns thereof, represented by Mr. ----- (Name of Authorised signatory (ies)).

All and/or each of them hereinafter referred to as “the Parties” or “The Lead Partner or Partner-1 or Partner-2” as the case may be.

WITNESSETH:

WHEREAS Etalin Hydro Electric Power Company Ltd. (EHEPCL), a Company incorporated under the Companies Act, 1956 having its Registered Office at, India (hereinafter called the "Owner") which expression shall include its successors, executors and permitted assigns) has solicited bids from parties pre-qualified on the basis of Global Invitation for Pre-qualification vide PQ Notice No. -----dated ----- for the execution of ETALIN/PACKAGE-EM2: EPC execution of Electro-mechanical works, consisting of design, engineering, procurement, fabrication/manufacturing, supply including Transportation & Transit Insurance, erection, testing, and commissioning of Turbines, Generator, Butterfly Valve, Main Inlet Valve, Governor, static excitation system, isolated phase bus duct, Gas Insulated Switchgear, Generator Transformers, Auxiliary and Station Transformers, Compress Gas Insulated Transmission lines (CGIT), Protection & Control systems, SCADA system, Pothead yard equipment and all related mechanical and electrical BOP's etc., for Tangon Limb (1228 MW, four units of 307 MW each) of Etalin Hydroelectric Power Project and the above Parties are one of the pre-qualified parties.

(* *strike out whichever is not applicable*)

WHEREAS the Parties are interested in jointly preparing and submitting a Bid for ETALIN /Package-EM2 of the Project as an unincorporated Joint Venture.

Article 1.0 PURPOSE OF THIS AGREEMENT

- 1.1 The purpose of this Agreement is to define the principles of collaboration among the Parties to:
- Prepare and submit Bid to the Owner for the EPC execution of Electro-mechanical works, consisting of design, engineering, procurement, fabrication/manufacturing, supply including Transportation and Transit insurance, erection, testing, and commissioning of Turbines, Generator, Butterfly Valve, Main Inlet Valve, Governor, static excitation system, isolated phase bus duct, Gas Insulated Switchgear, Generator Transformers, Auxiliary and Station Transformers, Compress Gas Insulated Transmission lines (CGIT), Protection & Control systems, SCADA system, Pothead yard equipment and all related mechanical and electrical BOP's etc., for Tangon Limb (1228 MW, four units of 307 MW each) of Etalin Hydroelectric Power Project as an unincorporated Joint Venture.
 - Negotiate and sign Contract in case of award.
 - Provide and perform the Facilities in accordance with the Contract.

1.2 NAME

For the purpose of participating in the Bid, the name of the Joint Venture shall be “_____”.

Article 2.0 LEGAL RELATIONSHIP OF THE PARTIES

- 2.1 This Agreement shall not be construed as establishing or giving effect to any legal entity such as, but not limited to, a company, a partnership, etc. It shall relate solely towards the Owner for bid submission for Package-EM2: : EPC execution of Electro-mechanical works, consisting of design, engineering, procurement, fabrication/manufacturing, supply, erection, testing, and commissioning of Turbines, Generator, Butterfly Valve, Main Inlet Valve, Governor, static excitation system, isolated phase bus duct, Gas Insulated Switchgear, Generator Transformers, Auxiliary and Station Transformers, Compress Gas Insulated Transmission lines (CGIT), Protection & Control systems, SCADA system, Pothead yard equipment and all related mechanical and electrical BOP's etc., for Tangon Limb (1228 MW, four units of 307 MW each) of Etalin Hydroelectric Power Project and related execution of Facilities to be performed pursuant to the Contract and shall not extend to any other activities.
- 2.2 The Parties shall be jointly and severally responsible and bound towards the Owner for the performance of the Facilities in accordance with the terms and conditions of the Bid document and/or Contract.

Article 3.0 LEADERSHIP

----- (Name of the Lead Partner) shall act as Leader of the Joint Venture. As such, it shall act as the coordinator of the combined activities of the Parties and shall carry out the following functions:

- 3.1 To ensure the technical, commercial and administrative co-ordination between the Parties for submission of the Bid to the Owner.
- 3.2 To lead the contract negotiations with the Owner.
- 3.3 The Lead Partner is authorized to receive instructions and incur liabilities for and on behalf of any or all Parties.
- 3.4 In case of an award of Contract, act as channel of communication between the Owner and the Parties to execute the Contract

Article 4.0 SCOPE OF FACILITIES AND SERVICES OF EACH PARTY

The Scope of Facilities to be performed by each Party shall be as herein below:

4.1 Scope of Facilities and Services :

The Scope of Facilities and Services for each Party shall be as follows:

4.1.1 (**Name of Lead Partner**) shall be responsible for the following (Define the scope of Facilities and Services):-

-
-
-

4.1.2 (**Name of Partner-1**) shall be responsible for the following (Define the scope of Facilities and Services):-

-
-
-

4.1.3 (**Name of Partner-2/3/4**) shall be responsible for the following (Define the scope of Facilities and Services):-

-
-
-

We all the Partners confirm that in the event of failure of any of the partner(s) to complete/fulfill its (their) responsibility, all the partners shall be jointly and severally legally responsible for the same.

4.2 Participation Share of each Partner

Lead Partner %
Partner-1 %
Partner-2 %
Etc. %

4.3 Capital Contribution to be made by each Party for the Facilities

Lead Partner %
Partner-1 %
Partner-2 %
Etc. %

4.4 Financial Commitment of each Party in terms of Contract Value

Lead Partner %
Partner-1 %
Partner-2 %
Etc. %

Article 5.0

All bills shall be raised in the name of _____ (Name of Joint Venture as appearing in Article 1.2 above) and the Payment shall be made in the name of the Joint Venture.

OR*

The bills will be raised by the respective Party and the payments shall be made in the name of each Party proportionate to the financial commitment of each Party as defined under Article 4.4 above.

(* strike out whichever is not applicable)

Article 6.0 SECURITIES

Securities in the form of Bank Guarantees, required under the Bid document and/or Contract shall be provided in the name of the Lead Partner of Joint Venture

Article 7.0 LIABILITY**7.1 LIABILITY OF THE PARTIES WITH RESPECT TO CLAIMS OF THE OWNER**

Each of the Parties shall be jointly and severally liable to the Owner for the Performance of the Work under the terms of the Contract.

Article 8.0 DURATION OF THE AGREEMENT

This Agreement is valid until end of Defect Liability Period of the Contract and full and final settlement of all accounts and disputes, if any, between the Parties and the Owner.

IN WITNESS WHEREOF, this agreement executed on the _____ day of _____ (month)

20..... by the duly authorized representatives of the parties hereto.

For and on behalf of M/s _____

(Lead Partner)

Name:

Seal:

For and on behalf of M/s _____

(Other Partner-1)

Name:

Seal:

For and on behalf of M/s _____
(Other Partner-2/3/4 as applicable)
Name:



Seal:

Note: This form shall be initialed by all the partners (who intend to qualify as a JV) while submitting the Application and the same shall be executed and submitted with the Bid in case the parties are pre qualified to Bid.

APPLICATION FORM – 3

PAGE ___ OF ___ PAGES

GENERAL EXPERIENCE RECORD

Name of Sole Applicant or Partner of Joint venture Applicant
--

Experience of Electro-Mechanical EPC works in the last fifteen (15) years for sole Applicant/ Lead Partner and for other partners to demonstrate the Applicant's business experience should be listed in the following table (Applicants are to list all the EPC works completed in the last fifteen (15) years :

Experience Record

S. No.	Name of Project	Country	Works done by the Applicant @	Role of Applicant (Sole contractor / lead partner in JV or otherwise) [*]	Contract Period month/yr to month/yr	Contract price (Equiv. US\$ Million) [#] of the awarded contract.	Applicant's financial value in the contract.	Page Reference Nos. of detailed data sheets.
1.								
2.								
3.								
	Total							

* State percentage participation (stake), if works were carried out in JV

Use Exchange rate as on date of award of contract.

@ Applicants falling under **the category of Para 4.2 need to meet** the additional criteria mentioned therein i.e. establish that it has successfully executed in the last 15 years, at least two EPC contracts of not less than 750 MW each and nature comparable with the Etalin/Package-EM2.

Date _____

Authorized Signatory _____

NB: (i) To attach detailed data sheet to substantiate experience.

(ii) Provide documentary evidence as stipulated in Para 3.3.1(a).

APPLICATION FORM – 4

PAGE ___ OF ___ PAGES

SPECIFIC TECHNICAL EXPERIENCE RECORD

Name of Sole Applicant or Partner of Joint venture Applicant or EPC Company or Manufacturer
--

On a separate page, using the format of Form 4A & 4B, each Applicant or Partner of a joint venture is requested to list experiences of a similar nature and complexity for which the Applicant wishes to qualify, undertaken and completed in the past/or on-going. The particular experience should include the following:

- Turbines
- Main Inlet Valve
- Butterfly Valve
- Generators
- Gas Insulated Switchgear (GIS)
- CGIT/GIL 400kV Class
- Generator Step up Transformers/ Aux. transformers/ Reactors
- Computer based control, protection and monitoring system
- Shunt Reactor

Wherein the Applicant proposes to associate manufacturer(s) for any equipment listed above, the information in these forms should also be supplied for each such manufacturer.

(Cont'd...)

Form 4 (...cont'd)

The information in Form-4A is to be summarized in the table form as shown below.

Summary - Contracts of Similar Nature and Complexity

Name of Project (reported on Form - 4A)	Country	Name of Contract	Contractor's Role (Sole contractor / lead partner in JV/ minority partner in JV)	Contract value in million US \$ *	Year of scheduled completion/ actual completion	Meets Criteria as stipulated in Para 3.3.1^								
						(B) i)	(B) ii)	(B) iii)	(B) iv)	(B) v)	(B) vi)	B vii)	(B) viiii)	(B) ix)
1.														
2.														
3.														
4.														

* Use Exchange rate as on date of award of contract, mention the exchange rate adopted.

^ Put "X" if the listed experience meets the criteria specified or else leave blank

NB: Please attach detailed data sheets for project & mandate description. If already described elsewhere, make a reference of the relevant page.

Date: _____

Authorized Signatory: _____

APPLICATION FORM – 4A

PAGE ___ OF ___ PAGES

PROJECT SUMMARY OF COMPLETED AND CURRENT CONTRACTS OF SIMILAR NATURE AND COMPLEXITY

Name of Sole Applicant or Partner of a joint venture or EPC Company or Manufacturer

Use a separate sheet for each contract. Copy of the Taking Over Certificate in respect of each completed contract should be attached.

List all relevant works, for which the Applicant wishes to qualify. Dimensions and design heads of the works should be summarized in forms 4Bi) to 4Bix)

1.	No. --- (in Form 4Bi), 4Bii) 4Biii), 4Biv), 4Bv), 4Bvi), 4Bvii), 4Bviii), 4Bix)	Installed Capacity	MW
	Name of Project		
	Country	State/Province	
	Name of River	Design Discharge: Approx. m ³ /sec.	
2.	Name of Employer	Address	
3.	Name of contract:		
4.	Nature of works (Turbine, Generator etc.) and special features (site conditions, design, etc.) relevant to the contract for which the Applicant wishes to prequalify:		
5.	Contractor's role (check one) <input type="checkbox"/> Lead Partner in a joint venture <input type="checkbox"/> Sole contractor <input type="checkbox"/> Manufacturer <input type="checkbox"/> Minority Partner in a joint venture		
6.	Contract value: Currency:	Equivalent INR	Of which, Applicant's share was: %
7.	Time period as per the Contract Document (years and months)	Date of award:	Date of Completion:

NB: Please attach detailed data sheets for project & mandate description wherever possible.

Date: _____

Authorized Signatory: _____

APPLICATION FORM – 4B(i)

PAGE ___ OF ___ PAGES

Para 3.3.1 (B) i)

EXPERIENCE RECORD: (1) VERTICAL SHAFT FRANCIS HYDRO TURBINE (2) GOVERNOR SYSTEM

Name of Sole Bidder or Partner of a Joint venture or EPC Company or Manufacturer

No.	Name of Project	Country	Installed Capacity	Rated Output (MW)	Rated Head H (m)	TDF 5x6	Turbine Type	Design Head (m)	Rated Speed (rpm)	Name of Manufacturer	Year of Commissioning	Remarks (if any)
1	2	3	4	5	6	7	8	9	10	11	12	13

Date: _____

Authorized Signatory: _____

Note: Enclose certificate from Concerned Project Authority

APPLICATION FORM – 4B(ii)

PAGE ___ OF ___ PAGES

Para 3.3.1 (B) ii)

EXPERIENCE RECORD: SPHERICAL INLET VALVE

Name of Sole Bidder or Partner of a Joint venture or EPC Company or Manufacturer

No.	Name of Project	Country	Design Head	Spherical Main Inlet Valve diameter (m)	TDF for Main Inlet Spherical valve (4x5)	Name of Manufacturer	Year of Manufacturing	Remarks (any)
1	2	3	4	5	6	7	8	9

Date: _____

Authorized Signatory: _____

Note: Enclose certificate from Concerned Project Authority

APPLICATION FORM – 4B(iii)

PAGE ___ OF ___ PAGES

Para 3.3.1 (B) iii)

EXPERIENCE RECORD: BUTTERFLY VALVE

Name of Sole Bidder or Partner of a Joint venture or EPC Company or Manufacturer

No.	Name of Project	Country	Design Head	Valve diameter (m)	TDF for Butterfly valve (4x5)	Name of Manufacturer	Year of Commissioning	Remarks (if any)
1	2	3	4	5	6	7	8	9

Date: _____

Authorized Signatory: _____

Note: Enclose certificate from Concerned Project Authority

APPLICATION FORM – 4B(iv)

PAGE ___ OF ___ PAGES

Para 3.3.1 (B) iv)

EXPERIENCE RECORD: VERTICAL SHAFT GENERATORS,

Name of Sole Applicant or Partner of a Joint venture or EPC Company or Manufacturer

No.	Name of Project	Country	Rated Output (MVA)	Rated Voltage (kV)	Rated Speed (rpm)	TDF (4x6)	Name of Manufacturer	Year of Commissioning	Remarks (if any)
1	2	3	4	5	6	7	8	9	10

Date: _____

Authorized Signatory _____

Note: Enclose certificate from Concerned Project Authority

APPLICATION FORM – 4B(v)

PAGE ___ OF ___ PAGES

Para 3.3.5 (B) v)

EXPERIENCE RECORD: GIS 400 KV CLASS

Name of Sole Applicant or Partner of a Joint venture or EPC Company or Manufacturer

No.	Name of Project	Country	GIS			Name of Manufacturer	Year of commissioning	Remarks (if any)
			Rated voltage (KV)	Fault and Normal Current Rating (A)	Number of bays (Nos.)			
1	2	3	4	5	6	7	8	9

Note:

Date: _____

Authorized Signatory _____

Note: Enclose certificate from Concerned Project Authority

APPLICATION FORM – 4B(vi)

PAGE ___ OF ___ PAGES

Para 3.3.1 (Bvi)

EXPERIENCE RECORD: CGIT/GIL 400kV CLASS

Name of Sole Applicant or Partner of a Joint venture or EPC Company or Manufacturer

No.	Name of Project	Country	CGIT/GIL		Name of Manufacturer	Year of commissioning	Remarks 9if any)
			Rated Voltage/ (kV/Class)	Length (M)			
1	2	3	4	5	6		

Date: _____

Authorized Signatory _____

Note: Enclose certificate from Concerned Project Authority

APPLICATION FORM – 4B(vii)

PAGE ___ OF ___ PAGES

Para 3.3.1 (Bvii)

EXPERIENCE RECORD: GENERATOR STEP UP (GSU) TRANSFORMER

Name of Sole Applicant or Partner of a Joint venture or EPC Company or Manufacturer

No.	Name of Project	Country	GSU Transformer				Name of Manufacturer	Year of commissioning	Remarks (if any)
			Capacity (MVA)	Rated Voltage (KV)	Number of Transformer (Nos.)	Single Phase or Three Phase			
1	2	3	4	5	6	7	8	9	10

Date: _____

Authorized Signatory _____

(Please show the Experience Records for Auxiliary transformers and Reactors, in the same format as above)

Note: Enclose certificate from Concerned Project Authority

APPLICATION FORM – 4B(viii)

PAGE ___ OF ___ PAGES

Para 3.3.1 (B) viii)

EXPERIENCE RECORD: (1) CONTROL, PROTECTION & MONITORING SYSTEM (2) GENERATOR AND LINE PROTECTION SYSTEM

Name of Sole Applicant or Partner of a Joint venture or EPC Company or Manufacturer

No.	Name of Project	Country	Control, Metering, Protection & Monitoring System	Name of Manufacturer	Year of commissioning	Remarks (if any)
			Power Station Unit Capacity (MW)			
1	2	3	4	5		

Date: _____

Authorized Signatory _____

Note: Enclose certificate from Concerned Project Authority

APPLICATION FORM – 4B(ix)

PAGE ___ OF ___ PAGES

Para 3.3.5 (B) ix)

EXPERIENCE RECORD: 400 kV CLASS SHUNT REACTOR

Name of Sole Applicant or Partner of a Joint venture or EPC Company or Manufacturer
--

No.	Name of Project	Country	Shunt Reactor	Name of Manufacturer	Year of Commissioning	Remarks (any)
			MVAR/Class (kV)			
1	2	3	4	5		

Date: _____

Authorized Signatory _____

Note: Enclose certificate from Concerned Project Authority

APPLICATION FORM – 4C

PAGE ___ OF ___ PAGES

LETTER OF AUTHORISATION

No. _____

Dated : _____

To,

Etalin Hydro Electric Power Company Ltd.

.....

Subject: Invitation of Applications for ETALIN/Package-EM2 of Etalin Hydro Electric Power Project,

Dear Sirs,

We, M/s _____, who are established manufacturers of _____, having factories at _____ (address of factory) do hereby authorise M/s _____ (*Name and address of sole Applicant or Partner of JV or EPC Contracting Company*) to submit an Application and to bid for {*item (s) of equipment*} manufactured by us and sign the resultant contract with you for the subject works.

We further undertake that we shall be directly responsible to the guarantees & warranties for the item (s) of equipment manufactured by us and shall be jointly and severally responsible with M/s _____ (Name of the Sole Applicant or Partner of JV or EPC Contracting Company) for the performance of the Contract(s), for the items of equipment mentioned, if awarded.

Yours faithfully,

For & on behalf of M/s _____

Station:
(Office Seal)
Date:

Authorised signatory
Name:

Note:

This Letter of Authorisation should be on the letterhead of the manufacturer and should be signed by a person having the Power of attorney, copy of which shall be enclosed.

APPLICATION FORM – 5

PAGE ___ OF ___ PAGES

CURRENT CONTRACT COMMITMENTS / WORKS IN PROGRESS

Name of Sole Applicant or Partner of a joint venture
--

Applicants should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion.

Name of Supply & Installation contract and country	Description of Contracted work	Stipulated date of completion	Contract value (US \$ equivalent)*	Value of balance work (US \$ equivalent)*	Estimated completion date
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					

I. Use Exchange rate as on date of award of contract

II. Mention the exchange rate.

Note: The Applicant should also indicate separately the Annual Manufacturing Capacity in MW terms and the current MW in hand

Date _____

Authorised signatory _____

APPLICATION FORM – 6

PAGE ___ OF ___ PAGES

FINANCIAL DATA

Name of the Company (Sole Applicant) and Partner of a Joint Venture.

Applicants, including each Partner of a joint venture, should provide financial information to demonstrate that they meet the requirements stated in the Instructions to Applicants. Each Applicant or Partner of a joint venture must fill in this form. If necessary, use separate sheets to provide complete banker information. A copy of the audited balance sheets should be attached.

<i>Banker</i>	Name of banker	
	Address of banker	
	Telephone	Contact name and title
	Fax	

Summarise actual assets and liabilities in US\$ equivalent (at the rates of exchange current at the end of each year) for the previous five (5) years. Based upon the known commitments, summarise projected assets and liabilities in US \$ equivalent for the next two years.

<i>Financial information in US\$ equivalent</i>	Actual : Previous five years					Projected : Next two years	
	1	2	3	4	5	6	7
<i>Exchange rate</i>							
<i>1. Total assets</i>							
<i>2. Current assets</i>							
<i>3. Total liabilities</i>							
<i>4. Current liabilities</i>							
<i>5. Profits before taxes</i>							
<i>6. Profits after taxes</i>							

(Attach audited financial statements for the last five years (for the individual applicant or each partner of a Joint Venture). The figures quoted must be appropriately flagged in the financial statements to identify them. Adopted exchange rates to be specified alongwith their source).

Firms may submit their balance sheets certified by a CEO / CFO/ Head of Finance, and supported by copies of tax returns, if audits are not required by the laws of their countries of origin.

Date _____

Authorised signatory _____

APPLICATION FORM – 7

PAGE ___ OF ___ PAGES

QUALITY ASSURANCE

Name of the Company (Sole Applicant); Partner of a Joint Venture and/or equipment supplier(s)/Sub-contractor(s):
--

Quality Assurance

Applicant should provide the information on quality assurance system and a typical set up of his organisation.

- A. Description on Applicant's Quality Assurance System
- B. Organisation Chart (*indicate positions of key personnel proposed*)
 - Base Office (Design Office/Procurement office/Manufacturing/fabrication unit as the case may be)
 - Site
- C. Narrative Description of Organisation Chart
- D. Description of Relationship between Base Office and Site Management

Date _____

Authorised signatory _____

APPLICATION FORM – 8

PAGE ___ OF ___ PAGES

**UNDERTAKING FROM PARENT/HOLDING COMPANY FOR SUBSIDIARIES
PARTICIPATING IN PRE-QUALIFICATION**

(On the letter head of Parent/Holding Company)

No:

Date:.....

To,

Etalin Hydro Electric Power Company Ltd;

Sub: Pre-qualification under International Competitive Bid vide PQ Notice No.....
dated.....issued by Etalin Hydro Electric Power Company Ltd. (“EHEPCL”).

We, M/s..... (Name of the Parent/Holding Company) having registered office
at(Address of the Parent/Holding Company) do hereby undertake that in the
event contract for work(Name of work) is awarded to M/s
..... (Name of the Subsidiary company) who is participating in your
Pre-qualification process as a(Sole Contractor /Joint Venture Partner), along with
.....(mention the name of Sole Contractor/Lead Partner/Other Partner/Manufacturer) we
shall provide the full support for technical and financial requirements for the (the
scope of work of subsidiary company) and we shall be responsible for the successful
completion of the scope of Supply and Services of M/s..... (Name of the
Subsidiary company).

In case the Applicant, M/s(Name of Subsidiary company) is pre-qualified
and awarded the Contract for execution of the Work, we hereby undertake to submit a
Parent/Holding Company Guarantee for an amount equivalent to the contract value
(proportionate to his share/scope) mentioned in the Contract with EHEPCL. The text of the
proposed Parent/Holding Company Guarantee is attached herewith.

We do hereby also confirm that we are not participating directly against the above Invitation
for Prequalification.

Yours faithfully,

For & on behalf of M/s.

(Name & Address of the Parent/Holding Company)

(Office Seal)

Station:

Date:

Enclosed: Format of proposed Corporate Guarantee

Note: *This Letter of undertaking should be submitted along with PQ Application and should be on the letterhead of the Parent/Holding Company. It should be signed by a person competent and having the Power of Attorney to bind the Parent/Holding Company. Power of Attorney in favour of this person to do so together with the authority of its executant be enclosed with this Letter of Undertaking.*

APPLICATION FORM – 8A

PAGE ___ OF ___ PAGES

FORM OF PARENT/HOLDING COMPANY GUARANTEE**THIS GUARANTEE** is made the day of..... 20...**BY:**,

a company organized and existing under the laws of _____ and having its Principal Office at _____ (hereinafter referred to as the "**Guarantor**", which expression shall unless repugnant to the subject or context or meaning thereof include its successors, administrators, executors and permitted assigns)

in favour of:

Etalin Hydro Electric Power Company Ltd. ("EHEPCL") having its Registered Office at, India (hereinafter referred to as the "**Owner**", which expression shall unless repugnant to the subject or context or meaning thereof include its successors, administrators, executors and permitted assigns)

Whereas:

- (A) The Owner and M/s.....[having its Registered Office at _____] (hereinafter referred to as the "Contractor" which expression shall unless repugnant to the subject or context or meaning thereof include its successors, administrators, executors and assigns) have entered into a contract dated _____ for the execution of ____ (name of the work package) for Etalin Hydro Electric Power Company Ltd. (EHEPCL) in the State of Arunachal Pradesh, India (hereinafter referred to as the "Contract") upon the terms and conditions contained in the Contract.
- (B) The Contractor is a [wholly owned]* subsidiary company of the Guarantor.
- (C) The terms of the Contract oblige the Contractor to provide a guarantee to the Owner.
- (D) The Guarantor has agreed to guarantee the due performance of the Contract by the Contractor in the manner set out below.

**(if not wholly owned, indicate the percentage holding of the Guarantor in the subsidiary)*

NOW THIS GUARANTEE WITNESSETH as follows :

1. In consideration of the Owner accepting the Guarantor's obligations set out in this Guarantee in discharge of the Contractor's obligations to provide such guarantee under the Contract, the Guarantor hereby irrevocably and unconditionally guarantees to the Owner as a primary obligation and not as a surety, the full, faithful, proper and punctual performance, observance and compliance respectively by the Contractor of

each and every one of the terms, provisions, conditions, obligations, covenants, warranties, undertakings and agreements on the part of the Contractor to be performed, observed and/or carried out by the Contractor as contained or referred to in or to be inferred from the Contract as such Contract may, from time to time, be amended (hereinafter referred to as "the Obligations"). This Guarantee is a continuing security and shall secure the Obligations notwithstanding the liquidation, administration, judicial management, receivership and/or other incapacity or any change in the constitution of the Contractor or the Guarantor or in the name or style thereto or any settlement of account or other matter whatsoever.

2. The Guarantor hereby irrevocably and unconditionally undertakes to indemnify the Owner against all losses, damages, costs and expenses suffered or incurred by the Owner by reason of any act, omission, default or breach on the part of the Contractor in performing and observing the Obligations. Notwithstanding anything contained herein, the liability of the Guarantor under this Guarantee shall be limited to the contract value mentioned in the Contract.
3. If at any time any default is made by the Contractor in the performance of any of the Obligations, the Owner shall notify the Guarantor accordingly in writing. The Guarantor shall not be entitled or obliged to make any enquiry either of the Owner or of the Contractor or any other party, and shall accept the said notification as final, binding and conclusive evidence of the Contractor's default. The Owner shall also certify in writing to the Guarantor the sum or sums that may be payable in consequence of any default by the Contractor in the performance of any of the Obligations pursuant to the terms of the Contract, and the Guarantor shall pay any sum or sums so certified. Payment of the sum or sums so certified shall be made immediately without set off or deduction, notwithstanding any objection by the Contractor and without any further proof and/or evidence. For the avoidance of doubt, if the Guarantor fails to pay such sums as may be demanded by the Owner in accordance with this Clause, the Owner shall be entitled to recover the same summarily as a debt due and immediately payable without set off or deduction. In addition, the Owner shall be entitled to recover in full any cost, fees, expenses and/or charges incurred by the Owner in connection therewith.
4. The obligations of the Guarantor hereunder shall not be discharged, released or affected by any act, omission, matter or thing which but for this provision might operate to release or otherwise exonerate the Guarantor from its obligations hereunder in whole or in part, or by any arrangement made between the Owner and

the Contractor with or without the Guarantors consent or knowledge, or by the Contractor, or by any forbearance whether as to amount, time, performance or in any other way.

5. Where any discharge (whether in respect of the Obligations of the Contractor or any security there for or otherwise) is made in whole or in part or any arrangement is made on the faith of any payment, security or other disposition which is avoided or must be repaid on bankruptcy, liquidation or otherwise without limitation, the liability of the Guarantor under this Guarantee shall continue as if there had been no such discharge or arrangement. The Owner shall be entitled to concede or compromise any claim that any such payment, security or other disposition is liable to avoidance or repayment.
6. The Owner shall not be obliged to exercise any other right and/or remedy it may have, including but not limited to taking legal action and/or commencing any proceedings against the Contractor, before making any demand under this Guarantee. This Guarantee is addition to and shall not merge with or otherwise prejudice or affect any other right, remedy, guarantee, indemnity or security that the Owner may have and may be enforced notwithstanding the same or any other pledge, lien or other security interest now or hereafter held by or available to the Owner.

Until all the Obligations have been discharged in full, the Guarantor shall not, after default by the Contractor and a claim has been made pursuant to this Guarantee, be subrogated to any rights, security or monies held, received or receivable by the Owner or be entitled to any right of contribution in respect of any payment made or monies received on account of the Guarantor's liability hereunder

7. This Guarantee shall be in addition to and shall not in any way be prejudiced by:
 - (i) any other security now or hereafter held by the Owner as security in connection with the obligations of the Contractor under the Contract;
 - (ii) any other right against any third party which the Owner may have, for performance of all or any of the Obligations
8. Payment of the sum or sums certified under this Guarantee shall be made immediately, notwithstanding any objection by the Contractor and without any further proof and/or evidence and shall be paid immediately forthwith on demand by the Owner without any protest or demur. Any such payment shall be made without set-off

or counterclaim and shall be made free and clear of, and without deduction for or an account of, any present or future taxes, duties, charges, fees, deductions or withholdings of any nature whatsoever and by whomsoever imposed.

9. The benefit of this Guarantee and all rights and powers hereunder may be assigned by the Owner. The Guarantor may not assign or transfer any of the Guarantor's rights or obligations hereunder without the prior written consent of the Owner.

The Guarantor hereby warrants, represents and undertakes to the Owner and such warranties, representations and undertakings to continue so long as the Guarantee remains subsisting that:

- (i) The Guarantor has full power to enter into and perform and will perform its obligations under this Guarantee, and all necessary corporate, shareholder and other action to enable it to execute, deliver and perform the same has been taken and it has obtained and will maintain in full force all necessary consents, licences and authorities and no limitation on its powers to borrow or give guarantees will be exceeded as a result of this Guarantee;
- (ii) This Guarantee has been validly created and constitutes a valid and legally binding obligation on the Guarantor enforceable in accordance with its terms and conditions;
- (iii) The creation of this Guarantee and the performance and observance here, does not and will not (i) contravene any existing applicable law, statute, rule or regulation or any judgement, decree or permit to which it is subject; (ii) conflict with or result in any breach of any of the terms of or constitute a default under any agreement or other instrument to which it is a party or to which it is subject or by which it or any of its property is bound, (iii) contravene or conflict with any provision of its memorandum and Articles of Association, Articles of Incorporation or other constitutive documents (howsoever called) or (iv) result in creation or imposition of or oblige it to create any charge or encumbrance on any of its assets, rights or revenues;
- (iv) It is not necessary to ensure the legality, validity, enforceability or admissibility in evidence of this Guarantee that this Guarantee or any other document be stamped, registered, filed notarised, recorded or enrolled in India and this Guarantee is in proper form for its enforcement in India;

- (v) No taxes, levies, imposts, duties of whatever nature are imposed by withholding or otherwise on any payment to be made by it under this Guarantee or are imposed on or by virtue of the execution or delivery by it of this Guarantee;
 - (vi) The execution by the Guarantor of this Guarantee constitutes the performance and observance by the Guarantor of the obligations expressed to be assumed by it hereunder and constitutes all private and commercial acts done and performed for private and commercial purposes.
10. This Guarantee shall be irrevocable and shall be valid till all the obligations of the Contractor has been fulfilled or discharged under the Contract.
 11. The construction, validity and performance of this Guarantee is subject to Indian law and the courts at New Delhi, India shall have exclusive jurisdiction over this Guarantee, without any reference to rule of conflict.
 12. The Guarantor hereby acknowledges that he has full knowledge of all the terms and conditions of the Contract.

IN WITNESS WHEREOF this Guarantee has been executed on the day of _____ 20____.

The Common Seal of the _____)
 _____)
 was hereunto _____)
 affixed in the presence of: _____)

Note:

- (1) **This guarantee format shall be initialed and enclosed with the Undertaking as a token of acceptance of its terms & conditions by the Parent/Holding Company. The guarantee shall be executed and submitted alongwith Performance Guarantee to be submitted under the Contract.**
- (2) **The Certified Copy of the authorization based on which this Guarantee is being executed needs to be furnished to the Owner.**

APPLICATION FORM – 9

PAGE ___ OF ___ PAGES

LITIGATION HISTORY

NAME OF THE COMPANY (SOLE APPLICANT); PARTNER OF A JOINT VENTURE
AND/OR MANUFACTURER(S):

Applicant, including each of the partners of a Joint Venture, shall provide information on any history of litigation or arbitration resulting from contracts executed in the last ten years or currently under execution. A separate sheet should be used for each partner of a Joint Venture.

Year	Contract Identification	Contract Value (in Eq. US \$)	Value of disputed amount (in Eq. US \$)	Arbitration Award Value if settled in contractor's favour (in Eq. US \$)	Reasons for disputes

APPLICATION FORM – 10

PAGE ___ OF ___ PAGES

ADDITIONAL INFORMATION

Name of the Company (Sole Applicant); Partner of a Joint Venture and/or equipment supplier(s)/Sub-contractor(s):
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Add any further information that the Applicant considers to be relevant to the evaluation of application for prequalification. If the Applicant wishes to attach other documents, list them below.

APPLICATION FORM – 11

PAGE ___ OF ___ PAGES

LIST OF APPLICATION FORMS

Name of Applicant (Sole Applicant or Joint Venture)

Indicate total number of pages for each Application Form submitted with Application.

Form No.	Title	Nos. of Pages
	Letter of Application	
1	General Information	
2	Sole Applicant/Joint Venture Record	
2A	Joint venture Summary along with Undertaking by each partner of JV and format of JV Agreement	
3	General Experience Record	
4	Specific Technical Experience Record	
4A	Project Summary of Completed and Current Contracts of Similar Nature and Complexity	
4B i)	Experience Record: (1) Vertical Shaft Francis Hydro Turbine (2) Governor System	
4B ii)	Experience Record: Spherical Inlet Valve	
4B iii)	Experience Record: Butterfly Valve	
4B iv)	Experience Record: Vertical Shaft Generators	
4B v)	Experience Record: GIS 400 kV Class	
4B vi)	Experience Record: CGIT/GIL 400kV Class	
4B vii)	Experience Record: Generator Step Up (GSU) Transformer	
4B viii)	Experience Record: (1) Control, Protection & Monitoring System (2) Generator and Line Protection System	
4B ix)	Experience Record: Shunt Reactor	
4C	Letter of Authorisation	
5	Current Contract Commitments/Works in Progress	
6	Financial Data	
7	Quality Assurance	
8	Undertaking from Parent/Holding Company	
8A	Parent/Holding Company Guarantee Format	
9	Litigation History	
10	Additional Information	
11	List of Forms	

Date _____ 20...

Authorized Signatory _____